REGIONAL DISTRICT OF NANAIMO

Water Service Area Annual Report 2024

Melrose Water System

June 2025

REGIONAL DISTRICT OF NANAIMO

Water & Utility Services Department

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REGIONAL DISTRICT OF NANAIMO

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1.0 Introduction

The following annual report describes the Melrose Water Service Area and summarizes the water quality and production data from 2024. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, Operator Certification, the Emergency Response & Contingency Plan, and the Cross Connection Control Program.

This report is to be submitted to Island Health by the Spring of 2025.

2.0 Melrose Water Service Area

The Melrose Water Service Area was established in April 2005 when the RDN acquired the existing Melrose Terrace Strata water system. The water service area is comprised of 28 residential properties on Melrose Road located near the Alberni Highway, west of Coombs. The water source for the Melrose Water Service Area comes from one groundwater well located nearby. The water is chlorinated and stored in a single reservoir. The water is then filtered through sand and charcoal filters before entering the distribution system. A portable generator is available in the event of a power outage. A map of the Melrose Water Service Area is provided in Appendix A for reference.

2.1 Groundwater Wells

One groundwater production well is present at the reservoir site on Melrose Road, west of Coombs, B.C.

Well / Name	Well Depth	Wellhead Protection	Treated/Untreated with Chlorine
#1	26.2 m	Yes	Treated

2.2 Reservoirs

One service reservoir (steel construction) is present at 3853 Melrose Road, and has a capacity of 136 m^3 (30,000 imperial gallons).

2.3 Distribution System

The water distribution system in Melrose is comprised of 0.3 km of 150mm PVC (poly-vinylchloride) watermains. There are no fire hydrants located within the system.

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3.0 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, Temperature, pH, Conductivity, Chlorine residual, Salinity, TDS
Monthly	BC Centre for Disease Control	Total coliforms, E.Coli
Annual Source Water Testing (every Fall)	Bureau Veritas	Complete potability testing of raw well water, including T-Ammonia
Annual System Water Testing (every Spring)	Bureau Veritas	Complete potability testing of distribution system, including T-Ammonia

4.0 Water Quality - Source Water and Distribution System

Up-to-date water quality test reports and lab data are posted monthly on the RDN website at https://rdn.bc.ca/melrose-terrace. Tables of water quality testing results for both the source water and the distribution system are provided in Appendix B of this report.

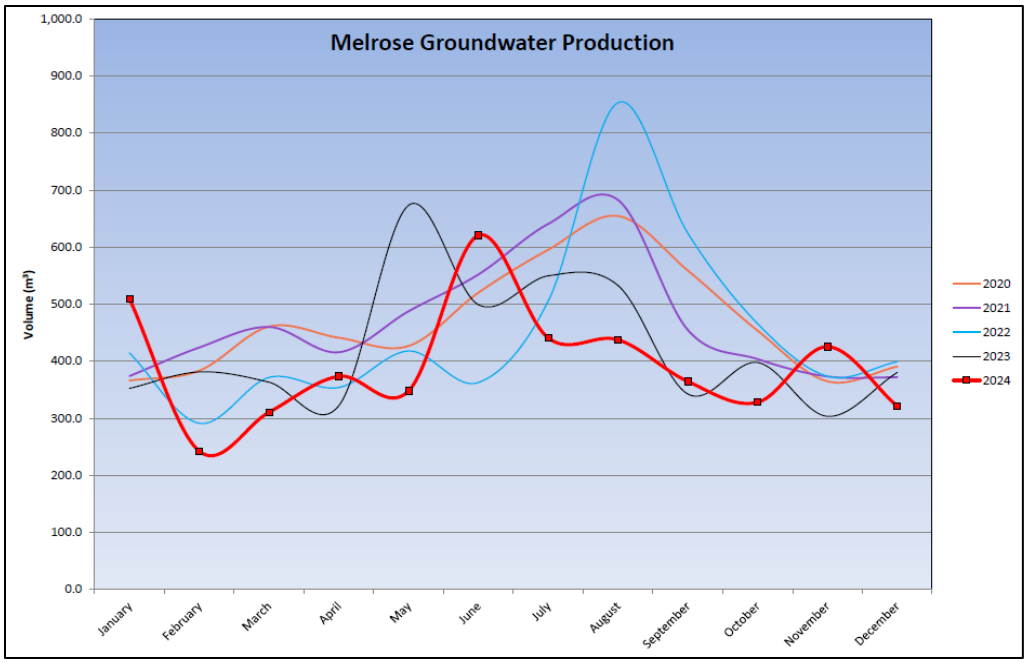
5.0 Water Quality Inquiries and Complaints

No complaints or inquiries were received from the Melrose Water Service Area in 2024. A summary of the water system incidents in 2024 is given in the table below.

Activity in 2024	Date(s)	History/Notes
Boil Water Advisories	None	None, ever.
High Turbidity Events	None	None, ever.
Equipment Malfunction	None	None.
Water Main Breaks	None	None.
Pump Failures	None	Temp power outages.

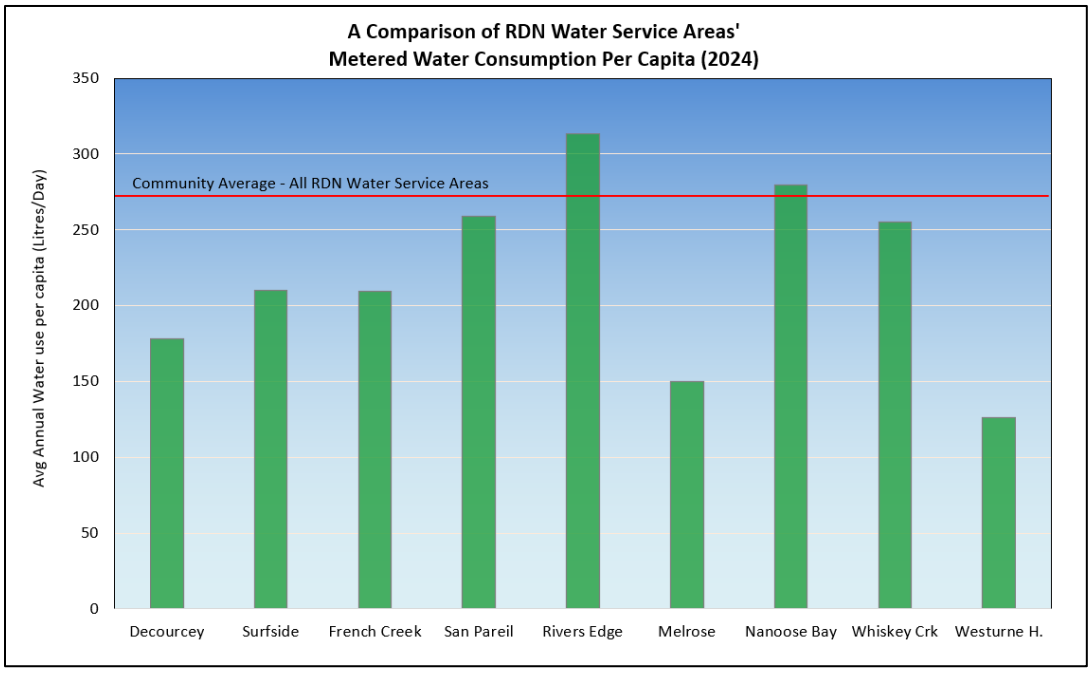
6.0 Groundwater Production and Consumption

The monthly water production in the Melrose water system for the past 5 years is shown in the chart below.



Consumption

In the fall/winter of 2023/2024, the average usage per home in Melrose was 0.31 cubic metres per day (68 imperial gallons). In the summer of 2024, the average water usage was 0.45 cubic metres per day (99 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 150 L/day (based on 2.4 people/household). This consumption is ***44% less*** than the average of all the other RDN water systems of 270 L/day/capita in 2024.



7.0 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. The water storage reservoir is drained and cleaned once a year. Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

8.0 Operator Certification

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

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

9.0 Water Service Area Projects

9.1 2024 Completed Studies & Projects

- Began planned reservoir repairs and maintenance;
- Completed well protection plan?;
- Corresponded with residents regarding water conservation;
- Completed irrigation checks for high water users;
- Counselled residents regarding water leak repairs and bill adjustments;
- Enforced outdoor watering restrictions during summer months;
- Continued the 2020-2030 Water Conservation Plan;
- Followed Cross Connection Control program to reduce backflow prevention risks;
- Completed regular watermain flushing;
- Continued valve maintenance program; and
- Maintained a high level of water quality.

9.2 2025 Proposed Projects & Upgrades

- Completed repairs and maintenance to the reservoir;
- Install chlorine analyzer;
- Hach equipment service and calibrations;
- Well level transmitter replacement;
- Complete irrigation checks for high water users;

- Continue watermain flushing program;
- Continue valve maintenance program;
- Continue the 2020-2030 DWWP Water Conservation Plan; and
- Continue to offer numerous water-saving incentives via rebates.

Melrose Reservoir Top Section Replacement (2024)

10.0 Emergency Response & Contingency Plan

The Regional District Emergency Response & Contingency Plan (ERCP) contains procedures and contact information to efficiently respond to water system emergencies such as contamination of water supply, loss of supply, pump failure, and drought management. The ERCP was reviewed and updated in 2024, and copies are available on our website, at each RDN office, in each pumphouse, and in each Water Services vehicle. A copy of the ERCP is also attached to this report in Appendix C.

11.0 Supply Security

The RDN continues to effectively manage water supply in its service areas in response to ongoing demand and the effects of climate change. Most RDN water service areas are unlikely to expand, so growth in demand is not expected. Initiatives that provide resiliency for the groundwater sources that serve residents remain a high priority. Reservoir capacity and redundancy are reviewed with regards to water storage during periods of drought, and water from backup sources is available to be delivered in the case of an emergency. Groundwater quality is regularly tested in all RDN water service areas. The aquifers within the regional district are monitored through the RDN's Drinking Water and Watershed Protection (DWWP) program. The most sustainable way to protect water supply is through demand management (conservation), which is promoted through outreach and stewardship initiatives provided by the RDN's Team WaterSmart , as well as the RDN Water Service Area's Water Conservation Plan 2020-2030. Rebates for well water testing, water smart landscaping, and rainwater harvesting further assist RDN residents to reduce water usage in high demand seasons. A tiered system for water rates (introduced in 2023) helps promote

conservation by rewarding low water users with reduced rates and encouraging high water users to seek ways to use less. Additional planning and preparation initiatives will be introduced in the future to support water supply security.

12.0 Cross Connection Control (CCC)

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

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

Two of the RDN's water system operators are certified backflow assembly testers through the British Columbia Water & Waste Association (BCWWA), and one operator is additionally certified as a Cross Connection Control Inspector.

13.0 Cyber Security

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

14.0 Closing

An annual report for 2025 will be prepared and submitted to Island Health in the Spring of 2026. Annual reports are also available on the RDN website: https://rdn.bc.ca/melrose-terrace.

Melrose Reservoir New Top Section (2024)

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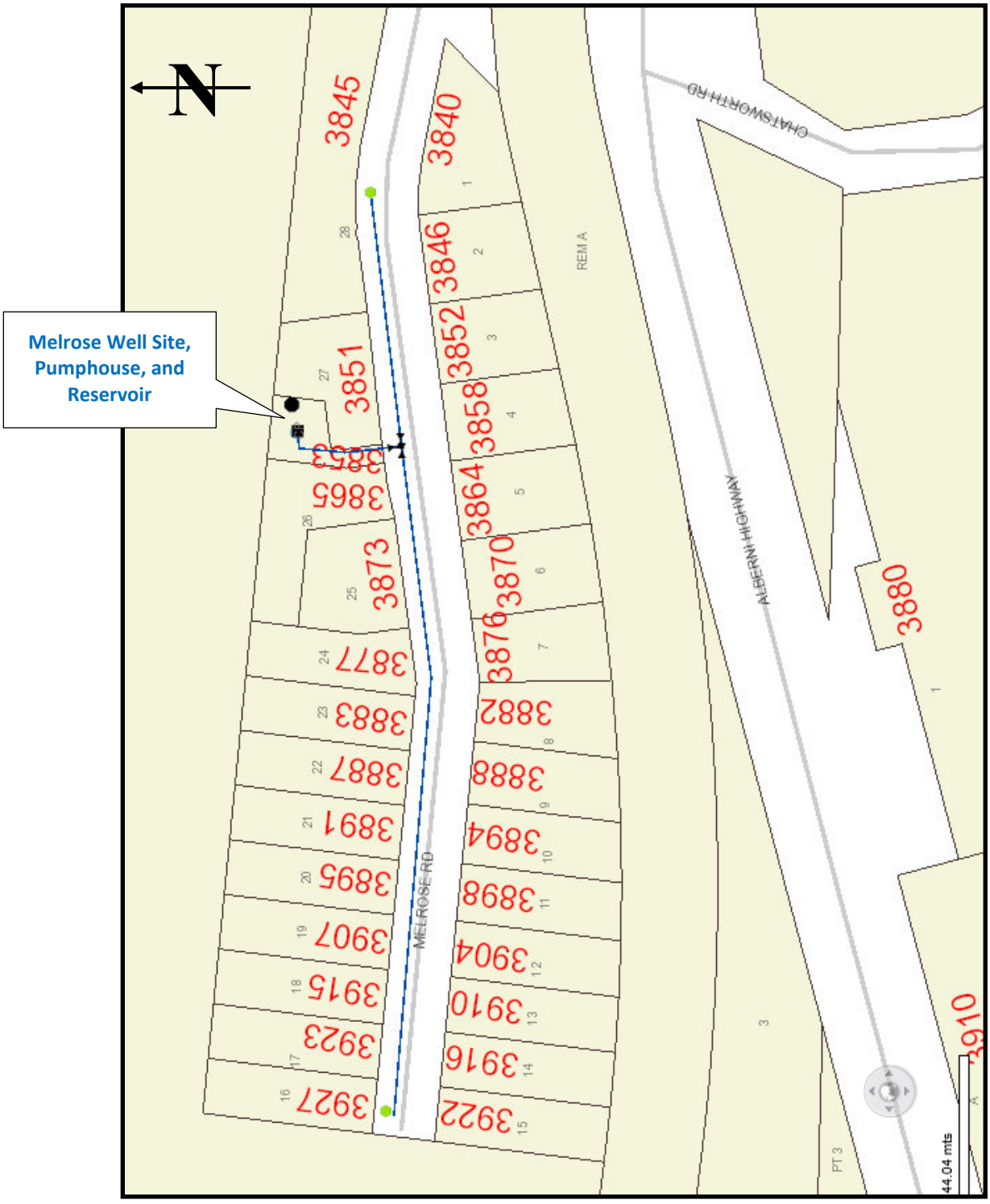
APPENDIX A

MAP OF MELROSE WATER SERVICE AREA



MELROSE TERRACE COMMUNITY WATER SYSTEM

Facility Location: 3887 Melrose Road, Qualicum Beach

Facility Information: Facility Type: 15-300 connections

Facility Sampling History:

Site Name	Date Collected	Total Coliform	Total E. Coli
Melrose Terrace Sample Port - 3927 Melrose Road	3-Jan-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	6-Feb-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	4-Mar-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	9-Apr-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	8-May-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	5-Jun-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	2-Jul-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	6-Aug-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	4-Sep-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	2-Oct-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	6-Nov-2024	LT1	LT1
Melrose Terrace Sample Port - 3927 Melrose Road	4-Dec-2024	LT1	LT1

Interpreting Sample Reports

At Island Health, the results of drinking water sampling are reported using the following coding system:

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