



REGIONAL
DISTRICT
OF NANAIMO



2021 Annual Report

Liquid Waste Management Plan

Submitted to the Ministry of Environment and Climate Change Strategy
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June 2022

RDN File No.: 5345-60

ENV File No.: OC-5989

www.rdn.bc.ca

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1) Introduction

1.1 Regional District of Nanaimo

The Regional District of Nanaimo (RDN) provides regional governance and services to 170,000 people on the central east coast of Vancouver Island. Communities in the RDN include the municipalities of Nanaimo, Lantzville, Parksville, and Qualicum Beach, as well as seven unincorporated Electoral Areas (A, B, C, E, F, G, and H) and communities of the Snuneymuxw First Nation, Snaw-naw-as First Nation, and Qualicum First Nation as shown in Figure 1.

Figure 1. Communities in the Regional District of Nanaimo



1.2 Wastewater Services

The RDN provides services for wastewater treatment and disposal. The RDN treats wastewater from 135,000 people and operates four treatment facilities:

- Greater Nanaimo Pollution Control Centre (GNPCC)
- French Creek Pollution Control Centre (FCPCC)
- Nanosee Bay Pollution Control Centre (NBPCC)
- Duke Point Pollution Control Centre (DPPCC).

About 35,000 people and businesses are outside sewer service areas and use privately-owned onsite (septic) systems for wastewater treatment. Island Health also authorizes a small number of properties to use holding tanks. The RDN also treats trucked liquid waste from septic tanks and holding tanks.

1.3 Liquid Waste Management Plan

The RDN Liquid Waste Management Plan (LWMP) is the region’s long-range plan to manage wastewater. It forms our Provincial authorization to discharge along with Operational Certificate ME-05989 (DPPCC) and Permits PE-338 (GNPCC), PE-4200 (FCPCC), PE-7214 (NBPCC).

The LWMP organizes specific commitments into ten programs. The ten LWMP programs are:

1. Public Wastewater Systems Program
2. Private Onsite Systems Program
3. Source Control Program
4. Odour Control Program
5. Rainwater Management / Drinking Water & Watershed Protection (DWWP) Program
6. Volume Reduction Program
7. Inflow & Infiltration Program
8. Pollution Control Centres Program
9. Resource Recovery Program
10. Biosolids Program

The LWMP programs make 118 commitments. The LWMP also identifies five emerging issues to follow.

1.5 Annual Report

The RDN prepares an annual report on the LWMP by June 30 of each year. This 2021 annual report tracks the status of the 118 program commitments. It is organized into the following sections:

- Section 2 updates the status of outstanding commitments.
- Section 3 highlights ongoing progress towards select commitments that were previously met.
- Section 4 documents progress to address emerging issues.
- Section 5 summarizes refinements made to the commitments.
- Section 6 shows the steps towards a future LWMP amendment.

2) LWMP Commitments

By the end of 2020, 105 of the 118 commitments were already met. Table 1 provides an updated status of the 13 outstanding LWMP commitments.

In 2021:

- One commitment was met with a modification (see Public Wastewater Systems in Table 1).
- Eight commitments were in progress (two of which were met in early 2022).

Four commitments are scheduled for the future.

Table 1. Status of In Progress and Outstanding Commitments

Program	Commitment	Status
Public Wastewater Systems	Develop a webpage to inform the public of historic sewer servicing studies and of the criteria for the provision of future sewer services.	Met (Modified): Historic sewer servicing studies tend to be outdated and remain available by request. The RDN website does post the criteria for the provision of future sewer services.
Private Onsite Systems	No outstanding commitments	
Source Control	No outstanding commitments	
Odour Control	No outstanding commitments	
Rainwater Management / Drinking Water and Watershed Protection	Collaborate with Development Services, Water Services, Energy & Sustainability Services, and member municipalities to create a Rainwater Management Plan.	In Progress (Met in 2022): The Regional Strategy on Rainwater Management was completed in 2022.
	Subject to Board approval of the Rainwater Management Plan, Wastewater Services and Water Services will coordinate the plan, administer the budget, and oversee collaboration with other departments and jurisdictions.	In Progress (Met in 2022): In March 2022 the RDN Board (Motion 22-205) endorsed the Regional Strategy for Rainwater Management for collaborative implementation with member municipalities, Provincial agencies, and community partners.
Volume Reduction	No outstanding commitments	
Inflow & Infiltration	Design [NBPCC treatment] upgrades to RDN infrastructure so flows up to 2 times [average dry weather flow] ADWF will receive secondary treatment and all flows in excess of this amount will receive primary treatment.	In Progress – awarded contract for preliminary design in December 2020. Design continued through 2021.
	Enhance the source control program to encourage landowners to check gutters and outside drains for connection to the sewer system, avoid planting trees and shrubs over sewer laterals, ensure basement drains and sump pumps are not connected to the sanitary sewer, and replace broken or leaky pipes located on private property.	Scheduled: Est. 2024+ Applied for an infrastructure planning grant in 2020 to complete an Inflow & Infiltration Homeowners Best Practices Guide. The application was not successful.

Program	Commitment	Status
Pollution Control Centres	Upgrade NBPCC to provide secondary treatment by 2023. [The LWMP also notes that the RDN may readdress the timeline in the future through an LWMP Amendment].	<p>In Progress: Continued preliminary design through 2021. Project information is posted at: getinvolved.rdn.ca/nbpcc.</p> <p>Note: The timeline for secondary treatment at NBPCC was under review in 2021 because other projects in the same service area must be accelerated. In February 2022, the RDN Board passed Motion 22-124 to seek an LWMP Amendment to change the timeline for NBPCC secondary treatment upgrade to prioritize critical sewer upgrades.</p>
	Expand FCPC capacity.	<p>In Progress: Detailed design continued in 2021. Began a value engineering study in 2021 to improve project design and provide maximum value to the community. Project information is posted at: getinvolved.rdn.ca/french-creek-expansion.</p>
	Coordinate with Development Services through the [Official Community Plan] OCP review process to identify property owners in growth containment boundaries [in Nanoose Bay] who are interested in establishing public wastewater services.	<p>Schedule TBD: The Development Services’ OCP review schedule determines this timeline. An Electoral Area E OCP review has not occurred since LWMP approval in 2014.</p>
	[For NBPCC] Consider resource recovery, visual, and olfactory buffers and the number of pump stations required.	<p>In Progress: Preliminary design for the secondary treatment upgrade began in 2021 and considers resource recovery, visual buffers, and olfactory buffers. Pump stations will be covered in a separate future project.</p>
	Review and update the Fairwinds sewer servicing agreement and [Development Cost Charge] DCC bylaw for the Nanoose Bay area.	<p>Scheduled: Est. 2023+</p>
	Develop a DCC bylaw to allow properties in the growth containment area to purchase capacity at DPPCC.	<p>In Progress: a DCC bylaw review was completed in 2017.</p>

Program	Commitment	Status
Resource Recovery	Examine opportunities for using reclaimed water for the Fairwinds Golf Course.	Scheduled: Est. 2023+
Biosolids	Improve the quality of biosolids through upgrades to wastewater treatment infrastructure and innovative technologies and techniques (i.e., decrease volatile solids content and pathogen concentrations).	In Progress: In 2020, issued a Standing Request for Expression of Interest to explore management opportunities. In 2021, started a review of biosolids management options used in other jurisdictions (completed in 2022). Note: FCPC biosolids consistently meets Class A* quality. GNPCC biosolids consistently meets Class B* quality. *As determined by the Organic Matter Recycling Regulation.

3) Ongoing Program Implementation

Activities continue on many LWMP commitments that were met in previous years. Table 2 documents some ongoing activities completed in 2021 that advance overall program objectives. Section 3.1 documents meetings held to support LWMP program implementation.

Table 2. Ongoing Program Implementation in 2021

Program	Commitment	Activity
Public Wastewater Systems	Coordinate with Development Services through the OCP review process to identify property owners in growth containment boundaries who are interested in establishing public wastewater services.	The OCP review schedule is led by Development Services. The Area F OCP review was on hold through 2021 due to Provincial restrictions on gatherings.
	Work with property owners, as needed, in locations where there are known onsite system failures to establish connections to public wastewater infrastructure.	<ul style="list-style-type: none"> ▪ Added six properties to the French Creek Sewer Local Service Area in 2021. ▪ Added one property to the Fairwinds Sewer Local Service Area in 2021. ▪ Supported sewer connection inquiries from six additional properties.
Private Onsite Systems	Enhance the source control component of the SepticSmart program.	SepticSmart was offered through the RDN website rdn.bc.ca/septicSMART . Workshops were not offered due to Provincial restrictions on gatherings.
	Host at least four SepticSmart education workshops annually.	

Program	Commitment	Activity
Source Control	Monitor influent and biosolids quality and review discharge permits to assess potential contaminant sources.	Completed the Contaminants of Emerging Concern Planning Study, looking at influent and effluent quality at GNPCC and FCPC.
Odour Control	Incorporate odour controls into the design phase of future capital works projects including upgrade of GNPCC, NBPC and expansion of FCPC.	<ul style="list-style-type: none"> ▪ Preliminary design of NBPC Secondary Treatment Upgrade was underway in 2021. Detailed design will address odour control. ▪ Design of the FCPC Expansion includes a significant component on odour control. In 2021 the RDN initiated a value engineering exercise on this project.
	Investigate, document, and respond to odour complaints within 24 hours.	Separate annual reports for each facility document odour reports and responses. In 2021, there were 6 odour reports for FCPC, 10 for GNPCC, 1 for NBPC, and 0 for DPPC.
Rainwater Management / Drinking Water and Watershed Protection	Establish watershed performance targets and standards to mitigate the impacts of land development.	The RDN completed Phase 1 of the Watershed Performance Targets for the French Creek Water Region as a pilot area.
	Monitor water quality in selected streams to study the impact of land use on watershed health (e.g., Community Watershed Monitoring).	Completed the 11 th year of surface water quality sampling with the RDN Community Watershed Monitoring Network . This includes 15 trained stewardship groups in over 26 watersheds.
	Implement the Water Conservation Plan.	Implemented the Regional District of Nanaimo Water Service Areas Water Conservation Plan (2020-2030) by: <ul style="list-style-type: none"> ▪ Enhancing water awareness through Team WaterSmart outreach events, curriculum-connected school materials, workshops. ▪ Encouraging sustainable practices through rebate programs. ▪ Coordinating with Water Service Providers to communicate regional watering restrictions.

Program	Commitment	Activity
	Continue to provide water education, incentive programs and watershed monitoring partnerships.	<ul style="list-style-type: none"> ▪ Provided over 140 rebates to residents for rainwater harvesting; wellhead upgrades; well water testing; and irrigation and soil improvements. ▪ Offered virtual workshops and activities to engage the community in water stewardship education: <ul style="list-style-type: none"> ○ 20 activities for Water to Earth Month ○ 2 WellSmart webinars ○ Freshwater Connections school curriculum toolkits completed and available on website for educators ○ 6 DWWP Educational Videos. ▪ Completed the 8th year of groundwater monitoring via the RDN Volunteer Observation Well Network which includes 30 wells.
Inflow and Infiltration	Use [closed-circuit television] CCTV to inspect GNPCC and FCPC interceptors on a 5-year cycle.	Ongoing GNPCC and FCPC CCTV programs inspect accessible sections of the gravity interceptor. (Forcemain sections are not part of the CCTV program and poor access limits CCTV of some sections.)
	Maintain and install flow meters and rainfall gauges as needed.	The following maintenance was done in 2021: <ul style="list-style-type: none"> ▪ Monthly inspections of Lantzville, Johnstone Rd (Qualicum Beach), Ocean Place (Parksville) flow meters, and FCPC effluent meter. ▪ Replacement of Johnstone Road (Qualicum Beach) flow meter and depth sensor. Repair to underground conduit line. ▪ Dye test calibration of NBPC and GNPCC Parshall Flumes.
	Repair manholes as needed; perform regular maintenance of interceptors	<ul style="list-style-type: none"> ▪ Completed repairs to the Departure Bay Forcemain. ▪ Completed repairs on the Columbia Beach interceptor near manhole 2 and 3.
Pollution Control Centres	Explore federal and provincial grant options to fund secondary treatment	Applied to the Investing in Canada Infrastructure Program (Rural and Northern Communities) for grant funding for the NBPC sewer upgrades in 2021.

Program	Commitment	Activity
	Monitor the condition of the Departure Bay forcemain.	Monitoring found actionable items. Completed repairs to the Departure Bay Forcemain in 2021.
	Revise DCC bylaws at GNPCC, NBPCC, and FCPC.	DCC Bylaw review underway for GNPCC and FCPC.
	Other	Continued to inform residents of major projects through the RDN website .
Biosolids	Other	Beneficially managed 7,571 tonnes of biosolids in 2021.

3.1 Meetings

3.1.1 LWMP Monitoring Committee

LWMP Monitoring Committee meetings were held on May 20, 2021, and October 28, 2021. Recent meeting agendas and minutes are available at rdn.bc.ca/agendas-minutes-videos.

3.1.2 W3C

The RDN hosts Wastewater and Water Collaborative (W3C) meetings twice a year to meet with staff from the City of Nanaimo, District of Lantzville, City of Parksville and Town of Qualicum Beach to advance regional programs and policies related to the LWMP. In 2021, virtual W3C meetings were held on March 31 and September 22.

3.1.3 Regional Strategy for Rainwater Management

Water Services hosted several meetings to advance the Regional Strategy for Rainwater Management.

- January 19, 2021 – Rainwater Working Group Meeting
- May 18, 2021 – Rainwater Working Group Meeting
- June 8, 2021 – Regional Strategy for Rainwater Management Kick-off Meeting
- July 13, 2021 – Regional Strategy for Rainwater Management Technical Workshop #1
- October 5, 2021 – Rainwater Working Group Meeting
- October 26, 2021 – Regional Strategy for Rainwater Management Technical Workshop #2.

4) Emerging Issues

The LWMP recognizes that new issues may emerge from innovations in water quality monitoring and from an evolving regulatory environment. The LWMP commits to keeping informed on the emerging issues listed below.

- Shellfish Harvesting Areas
- Contaminants of Emerging Concern
- Heritage Resources
- Climate Change
- Non-point Sources of Pollution.

4.1 Shellfish Harvesting Areas

The Canadian Shellfish Sanitation Program (CSSP) is a federal food safety program, jointly administered by the Canadian Food Inspection Agency, Environment Canada, and Fisheries and Oceans Canada. The program provides assurance that bivalve molluscan shellfish (i.e., mussels, oysters, and clams) meet food safety and quality standards for both domestic and international markets, thereby protecting the public from the health risks of consuming contaminated shellfish.

Under the CSSP, Conditional Management Plans may be developed to allow shellfish harvesting in areas in proximity to wastewater infrastructure. These areas meet the standards for safe harvest of shellfish, except when a temporary source of pollution exists. As long as the pollution source is not present, the Conditional Management Plan allows the shellfish harvesting area to remain open.

FCPCC currently operates with a Conditional Management Plan for two pump stations that have bypasses. The bypasses are designed to allow untreated wastewater to discharge to the marine environment if the volume of wastewater entering the interceptor exceeds the capacity of the pump station. Bypasses prevent damage to infrastructure and reduce the risk of flooding private residences. These bypasses have been in place since the system was built in the 1970's and during this time there has been no reported need to bypass the flow. Furthermore, pump redundancy, back-up power, and a Supervisory Control and Data Acquisition System make it unlikely that an overflow would occur at these locations. RDN's Conditional Management Plan outlines the roles and responsibilities of each partner, as if a discharge of untreated wastewater occurs from the pump station bypasses. The FCPCC Conditional Management Plan has been in effect since 2015.

4.2 Contaminants of Emerging Concern

Contaminants of emerging concern, sometime called emerging contaminants, refer to a variety of pharmaceuticals, personal care products, and industrial contaminants. Many contaminants of emerging concern lack established methods for sample collection and testing. Similarly, Provincial or Federal standards for acceptable levels are not present for many of these contaminants.

Most of the contaminants in wastewater come from private residences and businesses. For that reason, the RDN will continue to improve the quality of effluent through strategic investments in critical infrastructure as well as by promoting the Source Control Program and Sewer Use Regulatory Bylaw.

To better understand contaminants of emerging concern in RDN wastewater:

- In 2018, the RDN hired a consultant to prepare a memo on contaminants of emerging concern and microplastics. The memo was included in that year's annual report.
- In 2020, the RDN initiated a study to investigate contaminants of emerging concern in wastewater at GNPCC and FCPCC. Samples were collected and analyzed in 2020 and 2021. Study results were presented at the [October 26, 2021, Regular Board Meeting](#).

4.3 Heritage Resources

The Province of BC protects heritage sites through the *Heritage Conservation Act*. This protection applies to both private and Crown land and a provincial heritage permit is required before altering or developing a heritage site. Before 2019, the RDN determined archaeological potential as warranted for each project. Since 2019, RDN Wastewater Services has held Blanket Permits/Multi-assessment Permits from the Archaeology Branch. The RDN also obtains site-specific permits when appropriate.

4.4 Climate Change

4.4.1 Sea Level Rise Adaptation

The RDN is preparing for sea level rise through the Sea Level Rise Adaptation Program. Progress is as listed below. More information is available at: rdn.bc.ca/sea-level-rise-adaptation-program.

- 2015: Terms of Reference completed
- 2017: the RDN acquired the LIDAR data (with a \$10,000 contribution from Wastewater Services)
- 2017: the RDN was awarded a \$150,000 grant to acquire coastal floodplain mapping
- 2018: Updated the Floodplain Management Bylaw No. 1496
- 2018-2019: Coastal flood hazard mapping
- 2020: Coastal flood hazard information was released
- 2021: Coastal flood hazard information revised.

4.4.2 Departure Bay Pump Station Vulnerability Assessment

In 2019, Wastewater Services invested \$15,000, with the aid of an Infrastructure Planning Grant, to investigate the vulnerability of the Departure Bay Pump Station to the effects of sea level rise. The draft study was completed in 2020.

4.5 Non-Point Sources of Pollution

Non-point sources of pollution come from sources other than an outfall pipe. Some examples of non-point pollution include agricultural and stormwater runoff, onsite sewage systems, and discharges from vessels.

- The LWMP Private Onsite Systems Program addresses pollution from onsite sewage systems.
- The RDN also has agreements with BC Ferries and Seaspan to establish a pump ashore program at GNPCC and DPPCC to accept and treat the wastewater produced on the vessels.

5) LWMP Refinements

The Liquid Waste Management Plan states that the LWMP Monitoring Committee may recommend refinements to the plan to keep implementation on track with the overall objectives and targets without an amendment or update. Annual review and refinement provide the flexibility to sustainably manage wastewater and adapt to changes. Refinements to the LWMP since its approval are summarized below.

5.1 Public Wastewater Systems

The LWMP identifies an action to draft a bylaw to allow properties with failing onsite systems to connect to sewer services, where available. Implementation of such a bylaw requires the modification of several bylaws, some which are not implemented by Wastewater Services. Instead of a bylaw, the RDN will continue to assess properties case by case.

The LWMP identifies an action to develop a webpage to inform the public of historic sewer servicing studies and of the criteria for the provision of future sewer services. Historic sewer servicing studies are available upon request since they lose their relevancy over time. A guide that walks homeowners through the sewer connection application process is posted on the [RDN website](#).

5.2 Private Onsite Systems

The LWMP identifies an action item to:

- Review and revise the Pump & Haul Local Service Establishment Bylaw (No. 975) and the Sewage Disposal Regulation Bylaw (No. 1224) so only grandfathered properties and properties with failed onsite systems qualify for the septage receiving rate reduction, and
- Work with Island Health and Building Inspection Services to limit holding tanks on new developments.

Holding tanks are permitted by Island Health; the authority to limit pump and haul tanks lies with the Province of BC. When addressing the action items above, it became clear that the role of Wastewater Services is to set quality standards and establish a rate structure for wastewater treatment. To this extent, in 2017, the RDN repealed Bylaws No. 975, 988, 1217, and 1224 and replaced them with Bylaw No. 1732. Bylaw No. 1732 establishes the quality criteria and rate structure for wastewater treatment. Key points are summarized in Appendix C of the 2016 LWMP Annual Report. RDN Wastewater Services will work with Island Health if there are efforts led by that agency to limit holding tanks.

The LWMP identifies an action item to work with Development Services to adopt draft changes to Land Use and Subdivision Bylaw (No. 500) which would enable the RDN to acquire privately-owned onsite systems serving at least 60 parcels, if petitioned. To date, RDN has not received a petition, so bylaw changes are not justified. The RDN will continue to assess a petition on a on a case-by-case basis.

5.3 Pollution Control Centres

The LWMP says that the RDN will expand and provide secondary treatment at GNPCC by 2018. Construction of the Secondary Treatment Upgrade Project was underway in 2018. GNPCC began providing secondary treatment in 2020.


6) LWMP Review and Amendment

In 2021, the RDN initiated an LWMP amendment with the following actions:

- **October 28, 2021:** LWMP Monitoring Committee Meeting to introduce the LWMP Amendment, the Terms of Reference, and the Communication and Engagement Plan.
- **November 2, 2021:** Submitted LWMP Amendment Terms of Reference to the Ministry of Environment and Climate Change Strategy.
- **November 30, 2021:** Met with ENV staff to discuss Wastewater Capital Projects and the LWMP Amendment.
- **December 7, 2021:** Received Board approval of the LWMP Amendment Communication and Engagement Plan.
- **December 9, 2021:** Launched the [Public Engagement Website for the LWMP Amendment](#)
- **December 21, 2021:** Mailed letters to First Nations organizations introducing the LWMP and the intentions for the amendment.

Progress on the LWMP Amendment will continue in 2022.



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