

## Our Region

**We recognize that we must work together with our community members and neighbours to build a resilient future.**

The Regional District of Nanaimo (RDN) provides regional governance and services to Vancouver Island's central east coast. The RDN is British Columbia's third

most populous Regional District, and home to more than 140,000 people. We are situated within the traditional territory of several First Nations, including three that have villages and other lands under their jurisdiction: Snuneymuxw, Snaw-naw-as, and Qualicum First Nations. We are a diverse region made up of a mosaic of distinct communities that also include the municipalities of Nanaimo, Lantzville, Parksville, and Qualicum Beach, as well as seven unincorporated Electoral Areas.

**We live in a beautiful region and we will work to keep it that way.**

The RDN lies within the Georgia Strait-Puget Sound Basin – one of the most ecologically diverse bioregions in the world. This

includes a variety of interconnected habitats – ranging from marine, coastal, rivers, streams, lakes, wetlands, and estuaries, to fertile forests and mountainous sub-alpine ecosystems – that support an abundance of terrestrial, aquatic and marine life.

**Respect for the environment underlies our decisions.**

The RDN is recognized among Canadian local governments for its leadership in sustainable community

development and improving services and quality of life for residents, while reducing the local environmental footprint and dependence on limited resources. The mission of the RDN Board is to deliver services in a manner that enhances the environmental, social, and economic well-being of the residents and communities in the region. Our vision is an environmentally, socially, and economically healthy region; resilient and adaptable to change. We will meet current residents' needs without compromising our ability to do the same for future residents. Our Liquid Waste Management Plan (LWMP) is an integral component of our strategy to achieve that mission and vision.

### OUR PLAN

The RDN's original LWMP was completed in 1997 and approved by the Minister of Environment, Lands and Parks in 1999. This amendment shows the RDN's commitment to environmental protection, through improvements to treatment quality and highlights our vision to enhance our source control program, reduce per capita water consumption, and continue to economically recover resources from wastewater. This amendment also reflects our desire to continue engaging with First Nations to provide ongoing opportunities to identify adverse impacts as planning and implementation moves forward in the coming months and years.

This amendment was developed through a 5-year collaborative process, and charts our path for the next 20 years and beyond. It is our commitment to manage our liquid resources in a manner that meets the goals and needs of our residents and environment.

## OUR GUIDING PRINCIPLES

To achieve the vision and mission set by the RDN Board, the amended LWMP was crafted using three Guiding Principles: flexibility, sustainability and collaboration.

**Flexibility** is necessary to meet future demands, new environmental criteria and evolving technologies.

**Sustainability** represents affordable solutions for wastewater management that respect and protect the environment and public health. Our goal is to manage wastewater and rainwater as resources, not wastes.

**Collaboration** with other levels of government, including First Nations; government agencies; businesses, the public; and other stakeholders will guide the development and implementation of our wastewater management strategies.

## OUR REGIONAL PRIORITIES

### Protect Human Health and the Environment

We will manage our liquid waste and rainwater resources in a manner that protects human health and the environment, and future generations' access to those resources.



### Secondary Upgrades

Federal and provincial laws governing wastewater management require us to achieve a standard of effluent quality that can be achieved through secondary wastewater treatment or better. Currently, French Creek Pollution Control Centre (FCPCC) and Duke Point Pollution Control Centre (DPPCC) provide secondary treatment while Greater Nanaimo Pollution Control Centre (GNPCC) and Nanoose Bay Pollution Control Centre (NBPCC) provide chemically-enhanced primary treatment and must be upgraded in the upcoming years.

The RDN is proposing to amend existing approved plan commitments which have not yet been met. Through this amendment, the RDN is requesting an amendment to the existing approved timelines for secondary treatment upgrades at GNPCC and NBPCC.

The RDN proposes to complete upgrades at GNPCC by 2018 and NBPCC by 2023.

### Prepare for Growth

GNPCC and FCPCC are reaching their capacity and must be expanded to accommodate growth in the service areas. Preparing for growth, both through development cost charge (DCC) collection and capital projects planning, is a priority.

### Integrated Resource Management

We will take an integrated resource recovery (IRR) approach to liquid waste planning. Our decisions will consider potential energy generation, water conservation and reuse, nutrient recovery, greenhouse gas and odour emissions.

We recognize that water is a shared and interconnected resource and our waste management decisions affect our neighbours and the water resources we all rely upon. The RDN commits to managing our water resources in an integrated manner.

### Efficient Services and Asset Management

The RDN is committed to delivering affordable and efficient services to its residents while responsibly managing wastewater infrastructure. We will perform preventative and corrective maintenance, and replace infrastructure when necessary to optimize life expectancy and system performance. To maximize efficiency, the RDN will consider lifecycle costs, resource consumption, ease of operation, adaptability, and worker safety. Capital assets will be designed and managed for the long term.

### Meaningful Engagement and Consultation

Meaningful public consultation and First Nations engagement were essential to our LWMP amendment. Through our extensive public consultation process, we were able to inform every household about the LWMP amendment process and invite our residents to

participate directly in the decision-making process. A public evaluation of technical, environmental, social and economic considerations for the secondary treatment timing options, as well as a review of all ten LWMP programs, were integral parts of public consultation. The Draft LWMP Amendment was updated to accommodate feedback from the public. Changes that were made to the draft amendment to accommodate public feedback are summarized in this document.

The RDN also engaged 22 First Nations communities, as identified by the province, to identify and accommodate First Nations' interests. The RDN intends to continue engaging with First Nations after the LWMP amendment is complete. If LWMP-related impacts are identified in the future, the RDN intends to address them in a respectful manner.

Proceedings and results of public consultation and First Nations engagement are summarized in this document and detailed in separate reports which are submitted concurrently with this document.





## OUR 10 LWMP PROGRAMS

This amendment organizes specific commitments into ten programs. Within each program are a series of actions which provide the tools to achieve program goals and objectives.

### 1 PUBLIC WASTEWATER SYSTEMS

**Objectives:** To increase access to sewer services and reduce the risk to human health and the environment from failing onsite systems.



**Key Accomplishments:** The RDN works with property owners to establish sewer service in areas where failure of septic systems is identified. Since 2000, the RDN has undertaken sewer servicing feasibility studies in several communities, and undertaken a study identifying village centres with potential for investment in wastewater infrastructure.

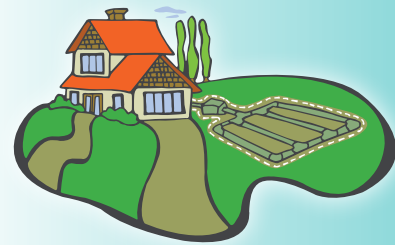
**Key Commitments:** The RDN will establish long term strategies to achieve wastewater servicing in growth containment areas, and for properties with failing onsite systems. Specific work includes: sewer servicing engineering studies for Bowser and Cedar villages; and developing a draft bylaw to allow properties with failing onsite systems to connect to sewer services.

### 2 PRIVATE ONSITE SYSTEMS

**Objective:** To protect human health and the environment from failing onsite systems through education and awareness.

**Key Accomplishments:** The RDN developed a comprehensive and innovative SepticSmart education program delivered on an ongoing basis through workshops and online. This program has been recognized across BC, and forms the basis of similar programs in other jurisdictions. We have recently enhanced the source control component of the program.

**Key Commitments:** The RDN will continue to update and improve the successful SepticSmart program. We will work with Island Health to develop targeted communications for areas at high risk for groundwater contamination and to limit holding tanks in new developments.



SepticSmart

### 3 SOURCE CONTROL

**Objective:** To reduce wastewater contaminants at the source.

**Key Accomplishments:** The RDN has established a comprehensive bylaw restricting the discharge of waste into our sewers. This bylaw provides an effective regulatory foundation for our source control efforts. Specific SewerSmart education programs have been implemented, targeting dental sector, restaurant sector, households, and garburator use.



**Key Commitments:** The RDN will continue to enhance the outreach and public education programs. Outreach will target residents, businesses and medical facilities to address pharmaceuticals, personal care products, organics, fat, oil, grease and inflow and infiltration (I&I). We will work with member municipalities to establish source control bylaw(s). We will also work with municipalities, harbour authorities and marinas to develop programs to discourage marine dumping. We will partner with community groups and agencies to promote source control. During the consultation process, participants identified several new opportunities for partnership on source control initiatives.

### 4 ODOUR CONTROL

**Objective:** To reduce nuisance odours from our wastewater infrastructure.

**Key Accomplishments:** Our wastewater facilities are an integral part of our communities, and we recognize the importance of being a good neighbour. The RDN has invested significantly to upgrade odour control equipment and measures at our facilities. Our target is no odour complaints, and at FCPCC we received no complaints in 2011. RDN staff investigate and respond to all complaints within 24 hours.

**Key Commitments:** The RDN will continue to improve odour control programs, including proactive odour management and incorporating odour control technologies into the design of planned sewage infrastructure. Our target will be zero odour complaints.



FOUL AIR SCRUBBERS AT FRENCH CREEK POLLUTION CONTROL CENTRE



## RAINWATER MANAGEMENT – DRINKING WATER & WATERSHED PROTECTION

**Objective:** To protect our water resources through an integrated wastewater-rainwater-watershed management approach.

**Key Accomplishments:** In 2008, the RDN implemented the “Drinking Water and Watershed Protection” (DWWP) service. This serves as the foundation of our rainwater management commitments under the LWMP.

The DWWP program focuses on learning more about our water resources to better manage and protect them, ultimately with an integrated watershed management approach. Effective partnerships with community members, government agencies, academia, and business are key to the success of the initiatives under this program.

Specific accomplishments of our DWWP and rainwater management activities include:

- ✓ Team WaterSmart awareness and education initiatives: Participation at community events; Water conservation workshops including: WellSmart, Xeriscaping, Rainwater Harvesting, Efficient Irrigation and Gardening, Stream Protection, Home Greywater Systems), and guidebooks including Rainwater Harvesting Best Practices.
- ✓ Incentive rebate programs including: Low Flow Toilets; Rainwater Harvesting Systems; Well Protection Upgrades; and Sustainable Development.
- ✓ Our Community Watershed Monitoring Network: Partners include the RDN, Community groups and Ministry of Environment collect valuable water quality data from 17 watersheds across the RDN, identifying priorities for action.



### DRINKING WATER WATERSHED PROTECTION

- ✓ WaterMap: An online interactive tool that provides public access to water resource information.
- ✓ Expansion of the provincial observation well network in partnership with Geological Survey of Canada and the Province.
- ✓ Development of the first phase of the region wide Water Budget Study, quantifying water availability and demand in order to gain an improved understanding of how population growth, land use and climate change will impact water resources.
- ✓ Approval of a regional Water Conservation Plan.

The RDN also establishes development permit areas under specific Official Community Plans

to protect water resources. Through formation of the W3C: Wastewater and Water Collaborative Meeting, the RDN also meets biannually with municipalities to share information related to advances in rainwater management. As well, member municipalities have introduced a broad range rainwater and stormwater management practices and standards into their development activities.

**Key Commitments:** The DWWP work undertaken to date provides the foundation for RDN Rainwater commitments in this LWMP amendment. Specific commitments include:

- Continued implementation of the seven programs detailed in the DWWP Action Plan, including Integrated Watershed Management Planning
- Collaboration with member municipalities to establish a Regional Rainwater Management Strategy to ensure conformance with provincial requirements (including eliminating sewer overflows and reducing I&I)
- Implementation of the recently approved Water Conservation Plan and refinement of the Water Budget Study to assist in land use and development decisions.
- Continuation and evolution of water education and incentive programs and watershed monitoring partnerships.



## 6 VOLUME REDUCTION

**Objectives:** To reduce wastewater production by promoting water conservation measures.

**Key Accomplishments:** Volume reduction programs (water conservation in homes and businesses) are carried out under the umbrella of the WaterSmart initiative (as described in Program 5 above). Activities include public outreach, communication, workshops, and rebates to support or enhance water conservation activities across the region. The RDN works with member municipalities to implement programs to reduce flows. Member municipalities establish capital plans to address inflow and infiltration at critical locations within Municipal boundaries. Average water consumption in the RDN has been reduced from 331 L/day in 2009 to 281 L/day in 2013.

**Key Commitments:** The RDN will continue to develop and implement water conservation measures through the DWWP program, with a target of reducing per capita water consumption by 25% between 2009 and 2030. We will partner with community groups and agencies to promote source control. During the consultation process, participants identified several new opportunities for partnership on source control initiatives.



## 7 INFLOW AND INFILTRATION

**Objectives:** To meet provincial standards and reduce the volume of surface and groundwater entering sewer systems to reduce wastewater infrastructure loading and costs.

**Key Accomplishments:** The RDN works with member municipalities to implement programs to reduce I&I. Member municipalities establish capital plans to address inflow and infiltration at critical locations within municipal boundaries. Combined sanitary-storm sewers have been eliminated.

**Key Commitments:** RDN will continue work with member municipalities to continue to reduce flows due to I&I and to eliminate any remaining sewer overflows.





## POLLUTION CONTROL CENTRES

The RDN operates four wastewater treatment plants. Currently, two provide secondary treatment and two provide chemically-enhanced primary treatment. Provincial and federal laws governing our treatment facilities require secondary treatment or better. Upgrading to secondary treatment will:

- Reduce toxins entering the marine environment
- Reduce potential health and environmental risks
- Help protect fishery resources
- Provide potential opportunities to economically recover resources.

The LWMP authorizes the RDN to find community-driven and cost-effective solutions to protect public health and achieve the required level of wastewater treatment over a reasonable timeframe. This amendment provides updated schedules to upgrade and expand our wastewater treatment infrastructure. Updated schedules were developed in consideration of technical, environmental, social and economic constraints, and through public consultation and First Nations engagement.



**Objectives:** To meet provincial and federal wastewater treatment standards, recover resources, and protect human health and the environment.

**Key Accomplishments:** Treatment facilities continue to operate in compliance with our permits and operating certificate, and odour control targets are met. Over the past decade,

the RDN completed numerous reports, studies, technical memos, and engineering reviews in connection with the upgrades and expansions of our pump stations, forcemains, interceptors and treatment plant facilities. These documents addressed effluent quality, energy efficiency, integrated resource recovery, asset management planning, and odour control.

As well, equipment expansion and engineering related to the planned secondary treatment upgrade at GNPCC is underway. Installation and commissioning of a new digester and sedimentation tank were completed in 2013. Engineering for the outfall replacement and secondary treatment are underway.

**Key Commitments:** The RDN will:

- Comply with permits and operational certificates.
- Complete the outfall replacement project at GNPCC by 2015 and secondary treatment upgrades by 2018.
- Expand secondary treatment capacity at FCPCC as required to address population growth.
- Complete the secondary treatment upgrades at NBPCC by 2023.
- Establish receiving environment monitoring programs in coordination with Ministry of Environment.
- Implement asset management strategies to ensure long term quality and integrity of our wastewater infrastructure.
- Develop a sewer servicing strategy for Nanoose Bay.

To complete secondary treatment upgrades at GNPCC by 2018, the average household tax for residents in the service area will increase by \$7-15 per year from 2014-2022. To complete secondary treatment upgrades at NBPCC by 2023, the average household tax for residents in the service area will increase by \$13-23 per year from 2014-2031.





## INTEGRATED RESOURCE RECOVERY

**Objectives:** To economically recover and utilize resources in wastewater.

**Key Accomplishments:** Biogas generated in the treatment process at GNPCC is used to fuel boilers, provide heat to processes and buildings and generate electricity.

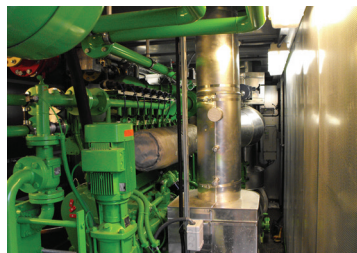
Reclaimed water from the treatment process is used at FCPCC and GNPCC as process and washwater in place of potable water. Treated effluent from FCPCC is used for golf course irrigation. Beneficial effluent reuse lessens the demand on potable water supplies and reduces the volume discharged to the ocean.

The RDN has a district heating agreement-in-principle with School District 68 to provide Hammond Bay Elementary School with heat from treated effluent.

GNPCC is one of the first wastewater treatment plants of its size in Canada to implement cogeneration. The electricity generated is sufficient to power 350 homes.

### Key Commitments:

The RDN will undertake a regional study in 2014 to identify integrated resource recovery (IRR) opportunities related to wastewater management in the Regional District. The study will provide the foundation for development of an IRR implementation strategy for the region. Major capital projects will include IRR opportunities where technically and economically practical.



COGENERATION PLANT



## BIOSOLIDS

**Objectives:** To beneficially utilize biosolids produced during wastewater treatment.



BOTTOM SAMPLE AFTER BIOSOLIDS APPLICATION

**Key Accomplishments:** Since 1999, biosolids generated at RDN treatment facilities have been beneficially reused in agriculture, landfill closures, mine reclamation and forestry. The RDN currently has an innovative partnership with Vancouver Island University (VIU) and SYLVIS Environmental to apply biosolids at VIU's managed woodlot. Application of biosolids at the woodlot has shown to increase tree growth between 50% and 400%.

**Key Commitments:** The RDN will continue to beneficially reuse biosolids, advance scientific knowledge, and enhance our biosolids education and outreach program.