

**REPORT TO THE CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, JULY 17, 2019**

SUBJECT: **Proposed Amendments to Bylaw No. 2312 (as Amended by Bylaws No. 3028 and 3319), Liquid Waste Management Core Area and Western Communities Service Establishment Bylaw No. 1, 1995 – Capacity Allocations and Cost Apportionment**

ISSUE

As a result of the Core Area Wastewater Treatment Project, bylaw amendments are required to update the bylaw to reflect new conveyance and treatment capacities and cost apportionment methods.

BACKGROUND

The original establishment Bylaw No. 2312 (Appendix A), which was approved by the Capital Regional District (CRD) Board in July 2002, converted the letters patent powers of the CRD for liquid waste management for the Core Area and West Shore to a local service. This bylaw also established boundaries and participating areas for the service and indicated how annual operating and annual debt costs were to be recovered. The bylaw was last amended in 2006 after amendments to the Core Area Liquid Waste Management Plan (CALWMP) were approved in March 2003 by the Ministry of Water, Land and Air Protection (now the Ministry of Environment).

Since 2006, a number of additional amendments have been made to the CALWMP, and the Core Area Wastewater Treatment Project is under full construction and will be completed by December 2020. Once complete, the entire Core Area wastewater system will be connected together, operating as a single, integrated system with tertiary treatment at McLoughlin Point Wastewater Treatment Plant (WWTP).

As a result of all the recent upgrades to the system, it is necessary to update Bylaw No. 2312 to reflect those changes and the proposed conveyance and treatment capacity allocations and operating and capital cost sharing methodologies. It is proposed to have the changes in effect January 2021.

Existing Bylaw Overview

The primary purpose of the bylaw is to set out the conveyance capacity allocations and the cost apportionment methods for operating and capital expenses.

Conveyance Capacity

Each section of the four existing trunk sewer systems; namely, East Coast Interceptor, Northeast Trunk–Clover Section, Northeast Trunk–Bowker Section, Northwest Trunk–West and North Sections, and the associated pump stations and outfalls, have allocated capacities for each participant, which correspond to the participants' upstream municipal collection system connection point locations. The conveyance capacity figures in the current bylaw were established in 2004 and were based on estimated 2045 peak flows using (August 2003) Regional Growth Strategy population projections, water demand rates and inflow and infiltration rates for a 5-year

or 100-year storm event where applicable (See Appendix A–Schedule A). A number of conveyance system upgrades were contemplated over the long term as set out in the (2004) Core Area Liquid Waste Management Plan (Chapter 16) in order to convey the 2045 flows projected in 2004. Some upgrades have been completed and others remain to be completed.

Operating Cost Apportionment

Annual operating costs include all costs of operating and maintaining all of the system's infrastructure and administering the regulatory and marine environmental programs that support the service. To date, the annual operating cost for the service has been apportioned among participating areas connected to each of the four trunk sewer systems: East Coast Interceptor, Northeast Trunk–Clover Section, Northeast Trunk–Bowker Section, Northwest Trunk–West and North Sections. The apportionment is based on total annual flow into a facility or trunk from a participating area in proportion to the annual average flow of sewage from all participating areas connected to the facility or trunk.

Capital Cost Apportionment

Since 2002, the capital costs and net annual debt cost of participating area facilities have been apportioned on the basis of design capacity benefit. From the bylaw, design capacity benefit means a benefit to one or more participants that results from any new construction of, or capital additions or improvements to, sewage conveyance facilities or their ancillary facilities. To the extent that the benefit is the provision of, or the creation of conditions to allow, additional conveyance capacity, then the design capacity shall be calculated only on the extent to which each participant gains an increase in maximum allocated capacity. Where the benefit is not an increase in capacity, then the design capacity benefit shall be calculated on the existing maximum allocated capacity of each participant in the facility being altered, added to or affected by the change.

Conveyance and Treatment Capacity and Cost Apportionment – 2020 to 2045 and Beyond

Conveyance Capacity

As previously noted, with the completion of the McLoughlin WWTP and conveyance system projects, the Core Area Wastewater System will operate as a single, integrated system. The CRD recently retained KWL to complete a hydraulic model and capacity study of the entire conveyance system, utilizing the updated design criteria used in the recent Project scope refinement study conducted for the contemplated East Coast Interceptor and Currie Pumpstation upgrades.

The 108 ML/day design capacity of the McLoughlin WWTP was established in the initial project planning phase based on Average Dry Weather Flow (ADWF) projections of required capacity in 2030. The WWTP has been designed to provide tertiary treatment up to 2-times ADWF. ADWF is primarily domestic sewage (without the influence of rain water inflow and infiltration) and is determined by measuring the average flow from June 1 to August 31. Flows that exceed 2-times ADWF from the Macaulay Pumpstation (but less than 4-times ADWF) and 3-times ADWF from the Clover Pumpstation will receive primary treatment and be blended with tertiary treated effluent prior to discharge. Flows exceeding 4-times ADWF from the Macaulay Pumpstation and 3-times ADWF from the Clover Pumpstation (considered Peak Wet Weather Flows (PWWF)) are not

permitted at McLoughlin WWTP and will be discharged at the Clover and Macaulay Pumpstations after receiving preliminary treatment. There are commitments in the CALWMP to reduce inflow and infiltration sufficiently such that peak flows will be less than 4-times ADWF by 2030.

The recently completed hydraulic model and capacity study of the entire conveyance system has reconfirmed longer term conveyance system upgrades required to meet all of the above regulatory requirements and provide the capacity in the conveyance system to convey flows up to the allocated treatment capacity at McLoughlin WWTP. In summary, the study concluded that some Northeast Trunk / East Coast Interceptor conveyance upgrades are no longer required, and some Northwest Trunk conveyance upgrades will be required. The upgrades are required to convey average and peak flows from each participant to McLoughlin WWTP up to the ultimate design capacity of the WWTP. Without completing the conveyance upgrades, some pipe sections are at risk of overflowing into highly sensitive receiving environments during peak flow events.

Specifically, the conveyance upgrades no longer required are (as approved by the Committee in April 2019):

- Upgrades to the Currie Pumpstation (for additional capacity – in original Project scope)
- Twinning of the Currie Forcemain (in original Project scope)
- Twinning of the East Coast Interceptor (in original Project scope)

The conveyance upgrades required are:

- East Coast Interceptor – Bushby Street Bypass (in original Project scope – 2019/20 construction)
- Shoreline Trunk Sewer twinning/replacement (by 2025 – not in Project scope)
- Craigflower Forcemain twinning (by 2025 – not in Project scope)
- Parson's Siphon twinning (by 2030 – not in Project scope)

In summary, the proposed conveyance capacity figures, which include ADWF capacity allocations and PWWF Allocations, are set out in Appendix B, which would be referenced in the proposed bylaw.

McLoughlin Point WWTP Treatment Plant Capacity

As noted, the design capacity of the McLoughlin WWTP was established in the initial Project planning phase and the 2016 Project Board Terms of Reference based on projections of required capacity in 2030. The design capacity of 108 ML/day was established based on ADWF capacity and organic loading conditions, assuming a population equivalent for the service area of 436,000 people with a design per capita flow of 246 L/capita/day (196 L/capita/day of sanitary sewage and 50 L/capita/day of I&I).

The allocated treatment design capacities, summarized in Appendix C, were developed by the CRD, then presented to the municipalities and First Nations in 2010. Some of the participants requested slight amendments to their allocated capacity, and then the design and cost allocations proceeded based on the allocations noted in the October 10, 2012, staff report to the Core Area Liquid Waste Management Committee.

The ultimate capacity of the treatment plant is governed by organic load and hydraulic capacity. More recent capacity analysis, utilizing updated design criteria, now indicates that the McLoughlin WWTP will reach ultimate capacity by 2045. The extended available capacity has been identified as a result of the re-evaluation of:

- The longer term average dry weather flow reduction on a per capita basis due to lower water use as a result of ongoing replacement of older inefficient appliances and high flow plumbing fixtures.
- The longer term effects of inflow and infiltration (I&I) reduction based on municipal commitments
- Updated population estimates based on average annual growth of approximately 1.3% for the Core Area service area population as a whole (from the 2016 population census to 2045)

With this change in system configuration and processes, and the treatment capacity allocations that have been determined for the participants, there is a need to update the bylaw to reflect the current conveyance and treatment capacity allocations, and operating and capital cost sharing methodologies.

Once the conveyance upgrades are completed, the whole system will be able to convey and treat wastewater flows to the full capacity of McLoughlin WWTP (projected to be sometime between 2030 and 2045).

Development Cost Charge Program

Currently, the Core Area Liquid Waste Management Service does not have a Development Cost Charge (DCC) Program. Typically, local governments levy development cost charges on new development to pay for new or expanded infrastructure, such as sewer or water infrastructure, necessary to adequately service the growth related capacity requirements of new development. DCCs are established by bylaw with the approval of the Inspector of Municipalities.

The Core Area will continue to grow and the capacity of the system will eventually be reached sometime towards 2045. Therefore, to plan and prepare for the future growth, it is proposed that a service area-wide DCC program be implemented in 2021 to start collecting funds from development to fund future growth-related infrastructure and capacity requirements beyond 2045. This will likely include a new WWTP in the West Shore and the diversion of some flow from the Western Trunk sewer to the new plant. This would free up capacity at McLoughlin WWTP to accommodate growth in the rest of the Core Area. It is proposed to develop the program and DCC bylaw through 2020 and implement the program in 2021.

Operating Cost Apportionment

The October 10, 2012, Committee report, *Core Area Wastewater Treatment Program – Cost Allocation*, proposed methods for allocating operating and capital (debt servicing) costs. It was proposed that once the new conveyance and treatment projects were complete, the new operating costs be allocated based on using the following proportions of annual flow: 80% ADWF and 20% Average Annual Flow (AAF). For those participants with higher I&I flow, this approach does not provide a financial incentive to reduce I&I. Therefore, beginning in 2021, it is proposed

to apportion the system-wide annual operating cost (conveyance and treatment) based on total annual flow into the system from a participating area in proportion to the total annual flow from all participating areas connected to the system.

Capital Cost Apportionment – Long Term Conveyance and Treatment Infrastructure Capital Plan

Much of the conveyance system was constructed in the 1970's and 1980's. Some of the infrastructure has been upgraded as the equipment, such as mechanical and electrical components, have reached the end of their service life. For many years, the annual and short term capital program was relatively minor in scope and was funded primarily through operating surpluses held by each participant in reserve. Depending on the project, when there were insufficient funds in reserve, the projects were financed—some of the debt still exists for these projects and is due to retire over the next five years with the final payments in 2025. .

For over ten years, while the treatment and conveyance options were being considered and the project scope was being determined, the annual and short term capital plan has been largely deferred to ensure that investments were not being made in infrastructure that could become redundant. A long term capital plan has now been prepared for the 5, 10, 20 and 30 year time horizons for the major asset categories. The plan includes projects that will replace infrastructure at end of service life, to ensure the system continues to operate reliably without service interruptions or risk to property, public health or the environment. The plan also includes projects as previously noted, that add conveyance capacity 'just in time' in order to convey flows to 2045 and utilize the ultimate design capacity of existing conveyance facilities, such as pump stations, and the McLoughlin WWTP. The plan also includes budgetary cost estimates which will be refined as preliminary and detailed designs and higher class cost estimates are completed for the projects as they become active. The plan summary is attached as Appendix D.

It is proposed to amend the CALWMP infrastructure upgrading section to incorporate the long term capital plan and obtain approval of the Minister under the Environmental Management Act and the inspector of municipalities to allow financing of the projects. The existing reserve funds will be used (by participant) to offset the initial annual debt servicing costs until the reserves are drawn down. Some of the participants do not have any remaining funds in reserve. The past method of cost sharing on the basis of design capacity benefit to each participant in each trunk sewer service by each capital project has historically required debt be raised individually by participant. With the deferral of the annual and short term capital plans, there has also been a deferral of debt issuance. The total debt outstanding of \$8.6M at the end of 2019 will be retired through routine principal and interest payments by 2025; a reduction in debt servicing levels by \$2.5M overall.

Looking ahead, it is proposed to allocate all capital and debt servicing costs, on the basis of the design treatment capacity allocations at McLoughlin WWTP for each participant, calculated as follows: 70% of allocated design capacity as measured by ADWF and 30% of design capacity as measured by AAF (actual flows in prior year period October 1 to September 30). This method has been used to requisition the initial capital funding for the Core Area Wastewater Treatment Program.

ALTERNATIVES

Alternative 1

That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

1. That staff be directed to prepare a new draft bylaw to replace Bylaw No. 2312, to set out operating and capital cost apportionment, conveyance and treatment capacity allocations, method for acquiring additional capacity, and dispute resolution processes for the new Core Area Wastewater System and bring back to the Committee for review; and,
2. That staff be directed to prepare a terms of reference for the establishment of a Core Area Liquid Waste Management Service Development Cost Charge Program and bring back to the Committee for review.

Alternative 2

That staff be directed to come back with more information.

IMPLICATIONS

Bylaw No. 2312 requires updating in order to formalize and regulate the new capacity and cost allocation figures and methodologies. Not updating the current bylaw will result in it being outdated in 2021 without addressing the capacity and cost allocations. If the recommendation is approved, staff will prepare a draft bylaw that will set out operating and capital cost apportionment, conveyance and treatment capacity allocations, method for acquiring additional capacity, and dispute resolution processes. Capital plan and financial implications will also be presented for each participant including Esquimalt and Songhees First Nations. Preparation of the new bylaw as proposed will allow staff to explain and seek concurrence from the First Nations on their capacity and cost apportionment which will lead to updated sewer service agreements.

CONCLUSION

As a result of the requirements to convey and treat wastewater and the Core Area Wastewater System improvements that will be operational in January 2021, it is necessary to update Bylaw No. 2312 to reflect the changes and the proposed conveyance and treatment capacity allocations and operating and capital cost sharing methodologies. It is proposed to have the bylaw changes in effect January 2021.

RECOMMENDATION

That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

1. That staff be directed to prepare a new draft bylaw to replace Bylaw No. 2312, to set out operating and capital cost apportionment, conveyance and treatment capacity allocations, method for acquiring additional capacity, and dispute resolution processes for the new Core Area Wastewater System and bring back to the Committee for review; and,
2. That staff be directed to prepare a terms of reference for the establishment of a Core Area Liquid Waste Management Service Development Cost Charge Program and bring back to the Committee for review.

Submitted By:	Ted Robbins, B.Sc., C. Tech, General Manager, Integrated Water Services
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Kristen Morley, JD, General Manager, Corporate Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

TR:nm

Attachments

Appendix A: Bylaw No. 2312 (Consolidated)

Appendix B: Schedule A to Proposed Bylaw Amendment–Allocated Flow Capacities

Appendix C: McLoughlin WWTP Treatment Capacity by Participant

Appendix D: Long Term Capital Plan Budgetary Figures