CVRD

Water & Wastewater Utilities Review and Assessment for the Cowichan Valley Regional District

January 2017

Assessment and Report
Prepared by the INNOVA Strategy Group

INNOVA STRATEGY GROUP

1. Executive Summary

The Cowichan Valley Regional District (CVRD) Water & Wastewater Utilities Review and Assessment (RFP No. ES-016-16) was conducted by the Innova Strategy Group (Innova) in the fall of 2016. The review included an assessment and detailed examination of the challenge of managing and operating 35 water and wastewater utilities within a Regional District context. This report provides recommendations on the management and operations of the utilities; changes to the relationships with utility users/residents; and provides options for changes to the overall governance of existing and potential future utilities.

Throughout Canada and British Columbia, existing small water and wastewater utilities struggle to provide safe and reliable drinking water and environmentally sound and sustainable wastewater treatment. Major challenges include inadequate supply, inadequate funding, inability to achieve appropriate economies of scale, inability to meet drinking water quality guidelines, inability to meet discharge regulations, complex utility designs that are difficult to maintain, remote locations with poor access to materials and services, lack of qualified staff, aging infrastructure, and in some cases the inability to meet existing and future demand.

The CVRD Is faced with many of these same challenges, and are consistent with the nation-wide problem of utility infrastructure management, operations and renewal. This review has identified numerous improvements that may be implemented over the coming years, however, there are four primary performance areas that require immediate attention to ensure that CVRD provides optimum value to stakeholders and utility users.

1.1. Planning for Growth

There is a significant lack of long range planning linking growth, operational efficiency, and financial sustainability. The CVRD manages eight electoral area official community plans and there is a distinct lack of strategic planning for the services that support projected growth through each Official Community Plan (OCP). Linking the OCP with operational and financial objectives will ensure that political decisions are made considering long-term goals and objectives. This strategic integration will lead to significant cost savings to the utility users within the CVRD. Specifically, it is recommended that the following plans be systematically completed within the next two or three years, in the following order:

Asset Condition Assessment - A comprehensive utility condition assessment will provide detailed costs of the ongoing replacement and maintenance of each utility's assets, allowing for appropriate apportionment of costs.

Long Range Strategic Financial Plan - Long-term financial strategies must be developed that consider the balance between growth, asset replacement, operations, and finances. These plans must ensure financial sustainability for many years to come. Expected outcomes of the plan will include external government funding strategies, internal funding strategies, Development Cost Charge (DCC) opportunities, and other comprehensive financial solutions.

Long Range Regional Utility Plan - Each water and wastewater utility must have a long-term plan for upgrades, expansion to support growth, and replacement of infrastructure as it approaches the end of its' lifecycle. Any expansion of existing utilities, inclusion of new utilities, replacement of existing infrastructure, and growth related improvements need to be considered in the context of the OCP. Consideration of planning Smart Growth principles for development approvals along with a long-term goal for amalgamation of utilities will lead to more cost-effective management of all utilities. This is based on the core principle that the larger the utility, the lower the individual user cost.

1.2. Governance

The current CVRD utility governance model and subdivision approving authorities do not support the goals and objectives of elected officials, staff, and, most importantly, the utility users. It has become extremely difficult to effectively manage the expectations of utility users through the current disjointed model that essentially provides authority and leadership through the Electoral Area Services Committee. It is also a challenge to manage growth without jurisdiction. There are two recommendations for changes to governance in the CVRD:

Establish a Utility Commission – There should be strong consideration given to the creation of a water commission, a wastewater commission or a utilities commission to govern water and wastewater issues in the region. The commission should have clear terms of reference to ensure that any recommendations presented to the CVRD Board consider the best interest of the CVRD as a whole, not of individual users or individual user groups. Terms of reference should also include a commission candidate profile supporting professional industry experts, not specific community advocates. This would support the long-term goals of amalgamating water and wastewater utilities and ensuring that all new utilities are acceptable to overarching plans and objectives.

Establish CVRD Approval of Subdivisions – Within CVRD, subdivisions, and their utility infrastructure, are currently approved by the Ministry of Transportation and Infrastructure (MOTI). The CVRD has the ability, and would gain immense value, in taking over the role of approving authority for subdivisions. This change will ensure adherence to CVRD goals, objectives, and Smart Growth Principles.

1.3. Financial Sustainability

Financial sustainability is a core principle for ensuring safe water and wastewater treatment and distribution, to ensure continued protection of public health and the environment. Financial sustainability includes providing appropriate funding for operating and maintaining water and wastewater utilities as well as proactively planning to ensure there will be funds to renew and replace utilities as they come to the end of their useful life.

The federal and provincial governments recognize the overall local government asset replacement deficit and have allocated substantial funding to assist with renewal, however, the total allocation is less than 10% of the overall funding required across Canada. Local governments will continue to carry the financial responsibilities to maintain their water & wastewater infrastructure.

The majority of the 35 CVRD utilities are not collecting enough funds to be sustainable. Overall, a 67% increase in revenue is required to generate the required funds for long term capital upgrades, refurbishment, and replacement of infrastructure. The following components will be critical to achieving financial sustainability:

Increase Rates – Based on individual system asset condition assessments, increase rates either in full, or incrementally, to reach a financial steady-state for each utility. Ensure users understand the precise allocations including separation of operations and asset replacement funding required. This will be very challenging for the smaller utility systems with some facing a 200% increase in rates to achieve sustainability.

Determine Alternate Funding Sources – Seek every opportunity to leverage federal and provincial funding to support capital replacement and improvements. Consider the use of regional gas tax funding to assist with immediate utility deficits.

Optimize CVRD Utility Operations – Based on the findings of this report and through continuous improvement, ensure operations are efficient and cost-effective throughout the CVRD. There is an immediate opportunity to increase productivity and capacity through the following specific measures:

- Consolidate utilities whenever possible
- Include a qualified trades electrician/instrumentation technician in the existing operations staff roster
- Develop Standard Operating Procedures (SOP's)
- Increase the use of technology to monitor, measure and manage utilities (system integration, digital work processes, asset management, GIS, Open Data, mobile solutions, etc.).

Report Budget Impacts – This report contains recommendations that both can be implemented within the existing CVRD resource and budget framework while others will require additional resources. The CVRD and its governance stakeholders will need to review the financial impacts of the multi-utility model, fees and existing budgets in order to provide additional resources required to execute fully on these recommendations. Without these budget increases the CVRD will not be capable of delivering the changes required nor the services expected by users.

1.4. Communications & Relationships

The CVRD water and wastewater utility communications and relationship management has not generally met the expectations of utility users for several years. This is because of a very high number of distinct utility user groups, the existing multiple utility model, and a lack of staff capacity to deliver effective communications throughout the CVRD. Communications and renewed relationships can be corrected through a review of best practices and the implementation of an overall communication and relationship strategy that should be commenced immediately. Key components to include:

Stakeholder Engagement & Relations – CVRD staff, elected officials, utility customers, Provincial / Federal agencies, and advocacy groups will benefit from stakeholder engagement & relations strategies to ensure healthy relationships and optimum financial outcomes. This strategy should

define new ways to engage the utility customers and build relationships based on information and trust.

New and improved Communication Channels (website improvements, digital and social media, traditional print, radio, TV, regular mail vs email, etc.). These strategies should define new ways to engage the utility customers and ensure they have the appropriate amount of information at the right time.

Open Government – Expand on initial open government and open data offerings to provide enhanced transparency on information sharing/reporting.

Internal Communications – Enhancing existing internal communications will ensure that staff involved with water and wastewater utilities are educated and aligned in their approach.

Of all these issues, the most difficult challenge facing CVRD is setting utility rates at a steady-state level. Although rates vary considerably in British Columbia, a recent Ipsos Reid survey (2015 BCWWA) concluded that households in British Columbia are currently paying approximately $500 per year for both water and wastewater services (note that many of these respondents only use one of the two utility services). The survey respondents also indicated they would be willing to pay $1,032 per year for clean, safe drinking water and $1,008 per year for reliable wastewater disposal services.

The proposed rate increases vary from a 9% decrease in rates to a 255% increase. Yearly rates will be required to be set at a range of $392 to $2,732 per year with an average for water of $947 / household and $844 / household for wastewater services. The proposed rates identified in this report are based on the best information available however, each utility must have a detailed condition assessment performed to provide greater accuracy and predictability in the future. No matter which level of detail is used, there is no doubt that the utilities are generally grossly underfunded and have been that way for decades. For many years rates were set based on incomplete information and significant pressure from user groups, political interests, and others. This has created a backlog of work, limited asset replacement funds, and poor preventative maintenance practices. In order to ensure reliable drinking water and wastewater disposal in the future, difficult decisions will have to be made on the implementation of accurate, fulsome and balanced utility rates. Without these changes, communities will not have the benefit of safe drinking water and environmentally sound wastewater disposal.

The CVRD is a generally a well-run organization with dedicated staff, dedicated elected officials, and a vibrant and exciting future. Improvement to planning, governance, financial sustainability and communications will ensure that the CVRD continues to prosper for years to come. Although the implementation of these recommendations will take effort, courage and funding, the CVRD will be seen as leaders in the province of British Columbia.

Table of Contents

1. EXECUTIVE SUMMARY 3

2. BACKGROUND

2.1. Objectives & Approach 8
2.2. About the Region 12
2.3. The Organization 16
2.4. CVRD Water & Wastewater Utilities 18

3. FINDINGS & RECOMMENDATIONS

3.1. Leadership, Strategy & Planning 19
3.2. Financial Sustainability 29
3.3. Governance 37
3.4. Operational, Technical & Service Delivery 43
3.5. Communication & Relationships 51
3.6. People & Structure 56

4. IMPLEMENTATION PLANS 59

5. REFERENCES 63

6. APPENDICES

6.1. Appendix A: Financial Analysis – Water & Wastewater Utilities 66
6.2. Appendix B: Detailed Utility Analysis 68
6.3. Appendix C: BC Regional District Best Practices Survey 69
6.4. Appendix D: CVRD Water & Wastewater Utilities Survey Report 74
6.5. Appendix E: Interview & Group Session Participants 75
6.6. Appendix F: Site Visit Locations 77
6.7. Appendix G: CVRD Water & Wastewater Utility History 78
6.8. Appendix H: BC Regional Districts Size Rankings 80
6.9. Appendix I: Consultant Profiles 81

2. BACKGROUND

2.1. OBJECTIVES & APPROACH

The Cowichan Valley Regional District (CVRD) Water & Wastewater Utilities Review and Assessment was conducted by the Innova Strategy Group in the fall of 2016. The review included an examination and assessment of the overall management and operation of the current 35 water and wastewater utilities within the CVRD responsibility. Consideration was also given to the impact of possible additional utilities joining the CVRD management in the future.

The review objectives were developed with the understanding that the CVRD is faced with significant current and future challenges with managing a geographically diverse region with operationally independent utilities, often resulting in a more expensive utility model. There are significant local interests, political context and community energy that has and will continue to influence decisions regarding future utility servicing arrangements. It is critical that the CVRD understand the long-term challenges with maintaining existing utilities and/or adding utilities to its current inventory.

This review is intended to provide accurate data and forecasting to ensure the CVRD staff and the Board have the required information to make evidence-based decisions on the future governance and operations of the water and wastewater utilities in the CVRD. Although these decisions may be politically challenging, in the absence of data and/or options, staff and the Board cannot provide constituents with defensible arguments on any decision.

This review is intended to provide the findings and recommendations required for staff to recommend to the Board immediate changes to the operation, financial structure and funding requirements. The report will also provide viable options and rationale for future decisions on adding new and/or existing private utilities to the CVRD.

2.1.1. SCOPE

The CVRD's original proposal (RFP #ES-016-16) prescribed the following scope of works:

- Identify and gather necessary background information (Engineering reports, financial reports, drawings, maps, Island Health reports, etc.)
- Site visits to CVRD utilities
- Meetings with utility stakeholders
- Meetings with the Electoral Area Services Committee
- Meetings with Engineering, Finance and Administrative staff
- Final report presented to the Electoral Area Services Committee

2.1.2. APPROACH

The project team's approach included research, interviews, consultation, and collaboration. Based on the end of project deliverables, the specific project methodology included the following:

- **Review of existing materials, including**: existing CVRD services (age, takeover date, financial overview, deficiencies, emergency plans, compliance records, etc.); CVRD water and wastewater historical financial information; CVRD utility customer complaints; private utilities requesting takeover; and, CVRD utilities that may come with new development.
- **Review of best practices** included a survey and research with all regional districts in British Columbia and across Canada who are faced with the same challenges with small utilities. Emphasis was on the potential for viable governance options that could be appropriate for CVRD in the future.
- **Evaluation of the physical attributes** included 31 on-site utility reviews concentrating on the current physical state and operational conditions and challenges.
- **Evaluation of operational effectiveness** included a formal municipal service assessment (core service review) involving 37 individual interviews with operators, supervisors, managers, and CVRD staff involved with the wastewater and water operations. Industry best practices and statutory requirements were measured against the operations of the utilities.
- **Evaluation of relationships** included 17 interviews with utility users, Ministry of Environment Staff, Ministry of Transportation & Infrastructure staff, the Island Health Medical Health Officer, Engineering consultants, private sector Utility Operators, First Nations operators, and a comprehensive online survey made available to over 6200 customers and stakeholders. There were 710 responses for a response rate of 11.5%.
- **Analysis of all operational and financial data** for all 35 utilities and the development of a performance dashboard of each individual utility including: expected time to failure for each individual utility; risk analysis of existing and possible future utilities; asset replacement schedules; impacts from expected regulatory changes; and, impacts from expected demographic changes.
- **Analysis of governance options** considering: alternative service delivery models; alternate cost recovery models for existing utilities; criteria for new utility inclusion; utility acquisition process and standards; and, communications and engagement.

2.1.3. THE TEAM

The Innova team for this review consists of five consultants with a variety of expertise and experience. Consultant profiles are provided in Appendix I.

1. Kevin Ramsay
2. Kehl Petersen
3. Darcy Dragonetti
4. Mike Ippen
5. Brian Barnett

Key attributes of the team include:

- Over 140 years of local government experience,
- Leadership in utility management and operation,
- Leadership in organizational change management,
- Leadership in local government,
- Team members have conducted over 20 government core service reviews over the past 10 years, including 7 involving water and wastewater utilities,
- Three member of the team have instructed thousands of water and wastewater operators in Alberta, Yukon and BC.

2.1.4. REVIEW CATEGORIES

The following categories were used for structuring the examinations and reporting for the review:

A. **LEADERSHIP, STRATEGY & PLANNING** – Regional growth, utility long-term planning, funding models, asset management, technology, policy.

B. **FINANCIAL SUSTAINABILITY** – Financial management, budgeting, cost allocations, fees.

C. **GOVERNANCE** – Structure, accountability, authority.

D. **OPERATIONAL, TECHNICAL & SERVICE DELIVERY** – Water & wastewater utilities, capacity, response, regulatory compliance, environmental, maintenance services, health & safety, work processes (work orders), procedures, issue management, project management, budgeting & accounting, funding, and emergency management.

E. **COMMUNICATION & RELATIONSHIPS** – Information, notifications, input & feedback, relationships and overall communication.

F. **PEOPLE & STRUCTURE** – CVRD staff engagement, performance, development, roles, and responsibilities.

2.1.5. REVIEW SURVEY

The 2016 Cowichan Valley Regional District Water & Wastewater Utilities Review Survey was designed to provide information about how the CVRD's customers, regulators, partners and employees perceived the quality of service that CVRD provides. This information was in addition to the one-on-one interviews and group input sessions. Participants of the interviews and groups sessions were invited to participate in the survey as well.

This anonymous online survey was administered by the Innova Strategy Group and was opened to responses on October 22nd, 2016. The survey results in this report were extracted on November 24, 2016. Of the potential 6803 CVRD stakeholders, 710 participated in the survey for an overall response rate of 11.4%.

Participation in this survey was limited to those who received notice of the survey. The survey notification process included:

1. Email invitations to:
    - CVRD Electoral Directors with a request to pass on to residents in their area.
    - Electoral Area Residents as invited by the CVRD Electoral Directors via direct email.
    - CVRD Employees
    - CVRD Regulatory agency representatives
2. Public Notifications:
    - Notice on the CVRD Website with link to survey
    - Paper copies of survey printed for public meetings for those who do not have access to online.
    - Paper notices at CVRD reception desk

A summary of the survey results is located in the Communications & Relationships section of the report Findings and Recommendations.

The full survey result report is available in Appendix D.

Mesachie Lake, Cowichan Valley, BC, Canada, Taken October 11, 2010 by Will Brown, Creative Commons Copyright.

2.2. ABOUT THE REGION

The Cowichan Valley Regional District (CVRD) encompasses a total land area of 3,473.12 km² (1,340.98 sq mi.). The CVRD is located on the southern portion of Vancouver Island, bordered by the Capital Regional District to the south, the Alberni-Clayoquot Regional District to the northwest, and the Nanaimo Regional District to the northeast.

CVRD is comprised of:

- Four incorporated communities (municipalities): City of Duncan, Town of Ladysmith, Town of Lake Cowichan, and the District Municipality of North Cowichan
- Nine electoral areas,
- 34 Indian Reserves (IRs), 16 of which were populated at the time of the 2011 Census. First Nations within the CVRD include the Cowichan people, Chemainus, Penelakut, Lyakson, Halalt, Malahat First Nation, Stz'uminus First Nation, Lake Cowichan and Ditidaht First Nations.

The reported population for the CVRD (2011 Census) was 80,322, an increase of 4.4% from 2006. CVRD residents tend to be older (50+), and a large portion of those aged 20 -24 migrate out of the region, returning in their 30's. Approximately 11% of the population is Aboriginal, a large proportion of which are under the age of 25.

While there have been new homes built and other developments, there has not been a corresponding equivalent increase in population. This is a result of the declining average number of residents per home that has changed from 3.2 in 1985 to 2.4 in 2015, a 25% decrease. Over the past 30 years there has also been a decline in age distribution with the young adult segment (18 to mid-30's). There has also been a decline in the number of children per household as the region has seen a significant increase in "retirees".

The CVRD has eight Official Community Plans (OCP's) that cover the 9 electoral areas. Although the OCP's may designate increased density, it does not mean that the actual developments are likely to occur in any particular time frame. For example, there has not been a single new connection in Mesachie Lake Wastewater in the past 22 years, contrary to expectations with the OCP. There has been very little growth in Honeymoon Bay while there have been increases in Youbou. Cowichan Bay has seen several hundred new homes and expansions while there have been 10-15 in Eagle Heights. Most of the utilities in the south have expanded, some dramatically, while very little expansion has come in the northern electoral areas.

British Columbia Regional District and Municipal Population Estimates

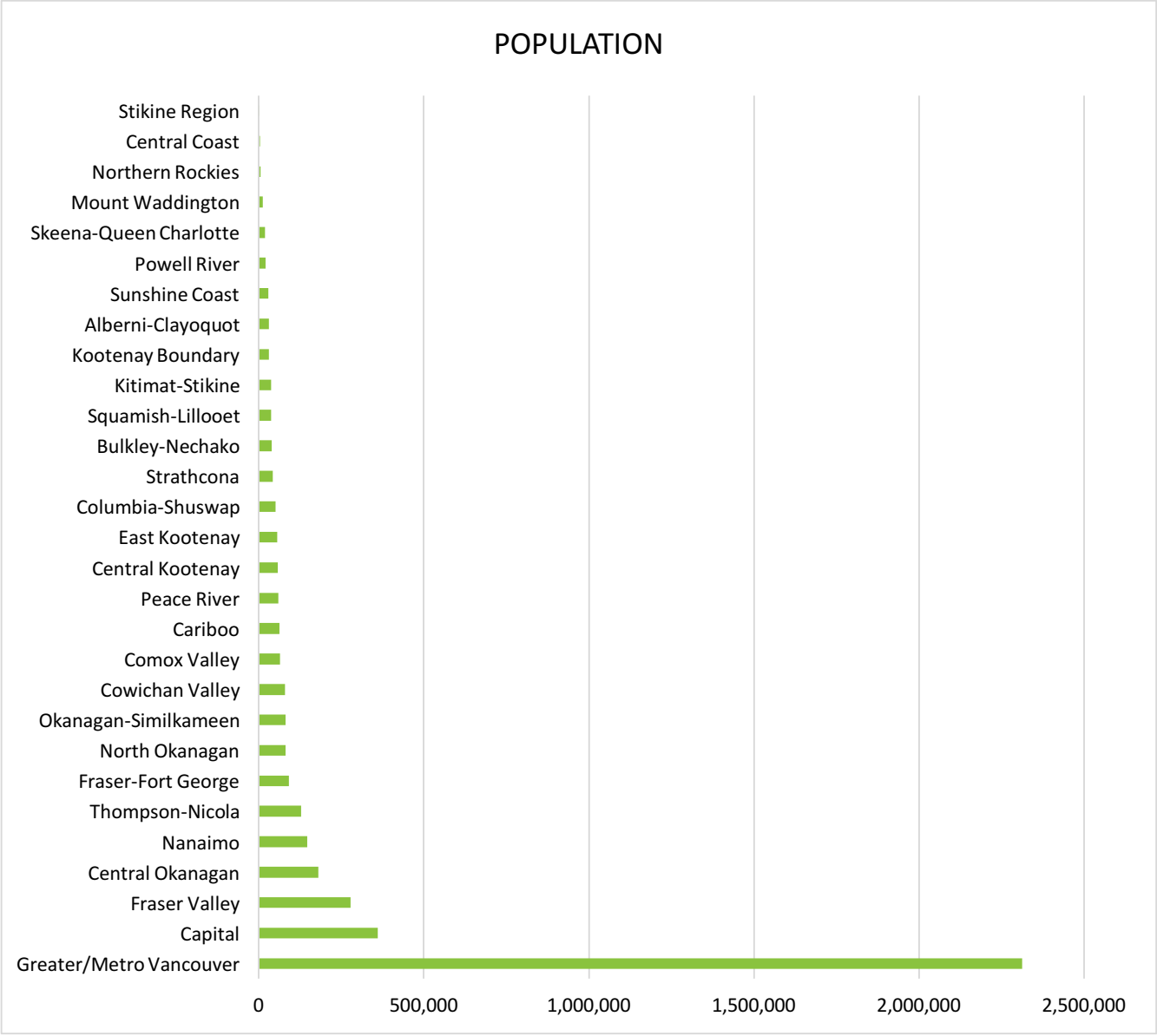
SGC	Name	Area Type	2011	2012	2013	2014	2015	2011-12 Changes	2012-13 Changes	2013-14 Changes	2014-15 Changes
19000	**Cowichan Valley**	**RD**	**81,485**	**81,191**	**81,366**	**82,235**	**82,787**	**-0.4%**	**0.2%**	**1.1%**	**0.7%**
19012	Duncan	CY	4,962	4,939	4,790	4,761	4,663	-0.5%	-3.0%	-0.6%	-2.1%
19021	Ladysmith	T	7,992	8,071	8,154	8,266	8,177	1.0%	1.0%	1.4%	-1.1%
19016	Lake Cowichan	T	3,003	3,054	3,063	3,107	3,114	1.7%	0.3%	1.4%	0.2%
19008	North Cowichan	DM	29,401	29,232	29,291	29,704	29,999	-0.6%	0.2%	1.4%	1.0%
19999	Unincorporated Areas	RDR	36,127	35,895	36,068	36,397	36,834	-0.6%	0.5%	0.9%	1.2%

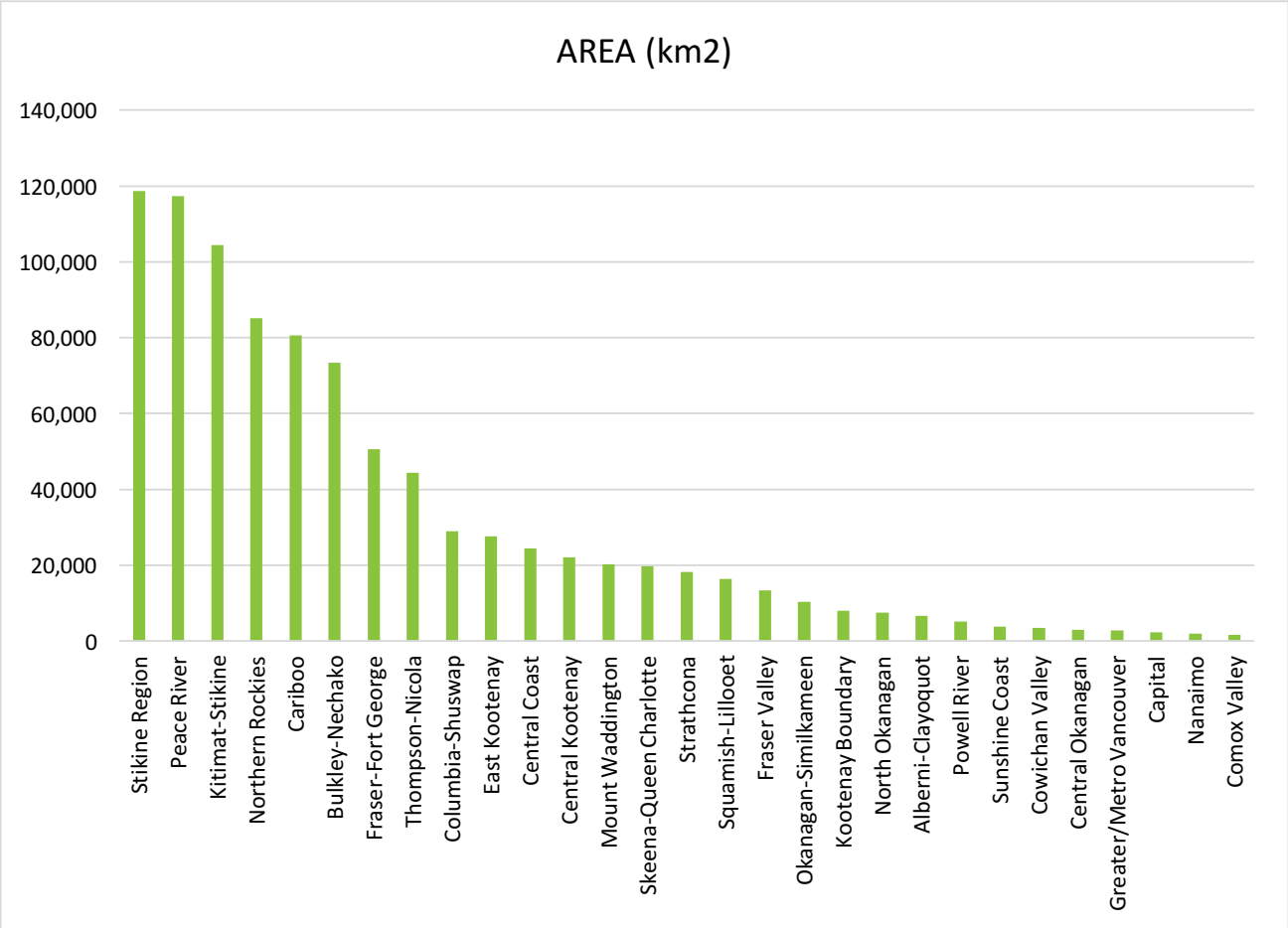
www.bcstats.gov.bc.ca/statisticsbysubject/demography/populationestimates.aspx

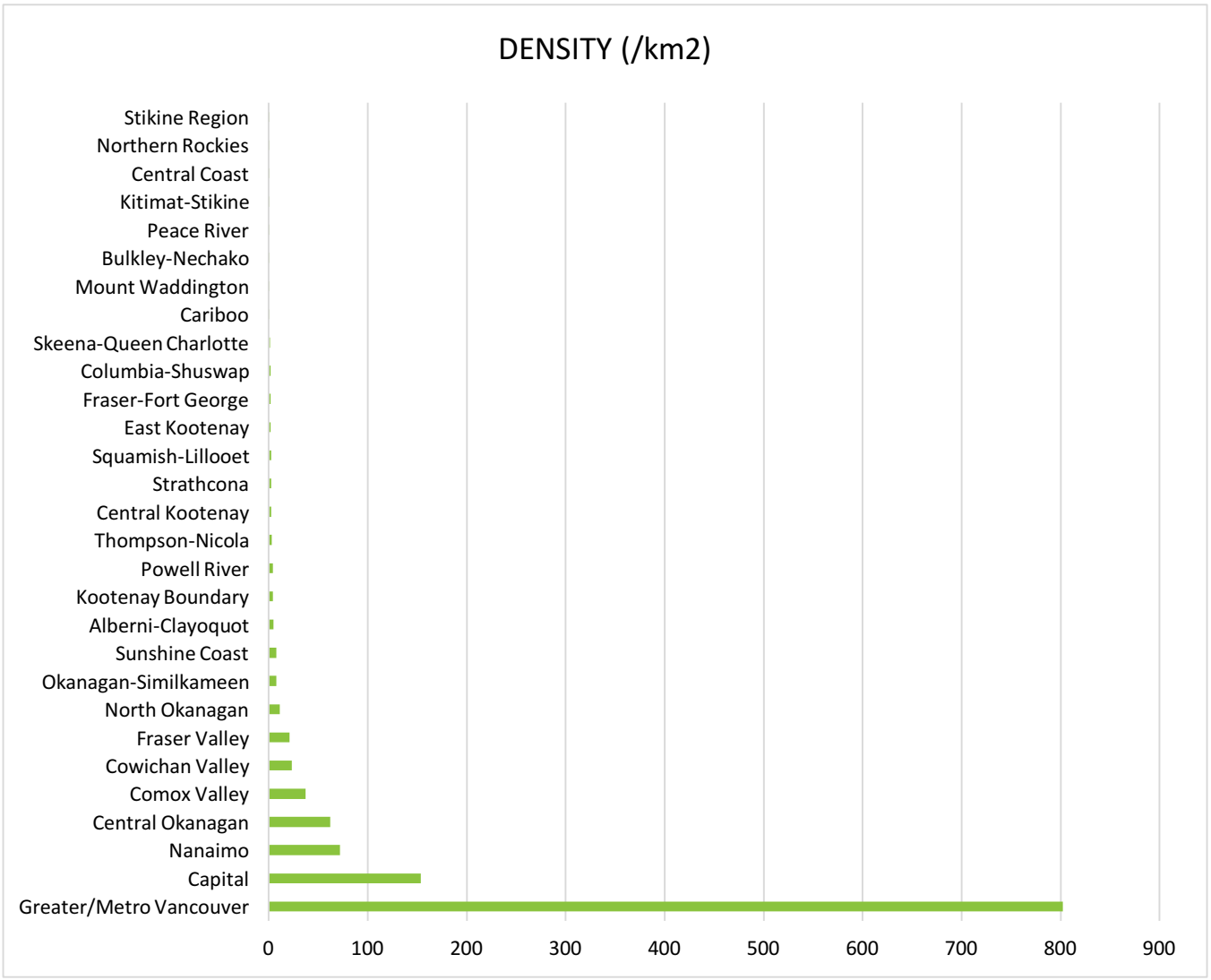
CVRD SIZE BY COMPARISON

Of the 29 regional Districts in British Columbia, the CVRD is the:

- 6th largest by population density (per km2).
- 10th largest by population.
- 24th largest by area (km2).




AREA (km2)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
Stikine Region
Peace River
Kitimat-Stikine
Northern Rockies
Cariboo
Bulkley-Nechako
Fraser-Fort George
Thompson-Nicola
Columbia-Shuswap
East Kootenay
Central Coast
Central Kootenay
Mount Waddington
Skeena-Queen Charlotte
Strathcona
Squamish-Lillooet
Fraser Valley
Okanagan-Similkameen
Kootenay Boundary
North Okanagan
Alberni-Clayoquot
Powell River
Sunshine Coast
Cowichan Valley
Central Okanagan
Greater/Metro Vancouver
Capital
Nanaimo
Comox Valley



Cowichan Lake, Cowichan Valley, BC, Canada, Taken August 08, 2014 by Nick Kenrick, Creative Commons Copyright.

2.3. THE ORGANIZATION

The CVRD is governed by a 15-member Board of Directors comprised of 6 Municipal Directors and 9 Electoral Area Directors. Electoral Area Directors are elected every four years by rural area voters. Municipal Directors are elected by the municipality they represent, and then appointed by the Council to sit on the CVRD Board. Regional Districts are the planning jurisdictions for electoral areas and produce Official Community Plans (OCPs) and establish zoning by-laws. They also provide a wide array of services established by bylaw including, but not limited to, utilities such as water, wastewater, recreation, fire and transit.

The CVRD Electoral Area Services Committee includes the 9 Electoral Area Directors. This committee is governed by the Board Committee and Commissions Procedure Bylaw (Bylaw 2922). The Committee determines service levels, financing and long term planning of the utilities serviced by CVRD. The Committee also makes decisions on the addition of new or existing privately owned utilities to be serviced by the CVRD.

CVRD staff support the direction of the CVRD Electoral Area Services Committee. This includes providing professional advice, operating the utilities, and financing the current 35 water and wastewater utilities. Each utility's finances are managed individually with costs apportioned through an accounting process. Core staff that support the function are primarily in the Engineering Department however, there is support from Corporate Services, Planning and Development, and Strategic Services.

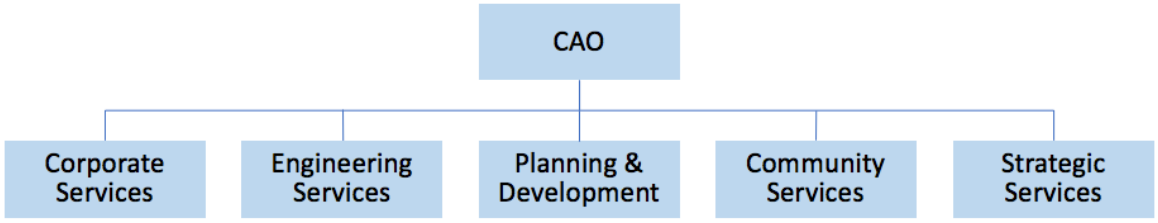
Water & Wastewater Utilities are based at the Works Yard. This division is responsible for the following areas related to the operation and maintenance of the utility assets and services:

- Water treatment, distribution and metering,
- Sewage collection and treatment,
- Stormwater collection and treatment
- Fleet maintenance,
- Support for special events,
- Administrative support and customer complaints/inquiries.

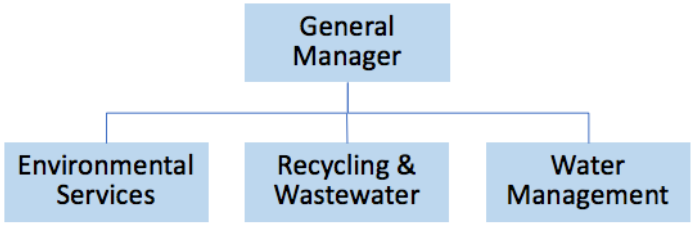
Engineering is responsible for the following areas:

- Capital construction projects,
- Asset management of public works assets,
- Engineering studies,
- Engineering advice and technical support,
- Engineering support for development reviews:
  - Engineering inspection
  - Transportation planning
  - GIS and mapping
  - Administrative support and customer complaints/inquiries

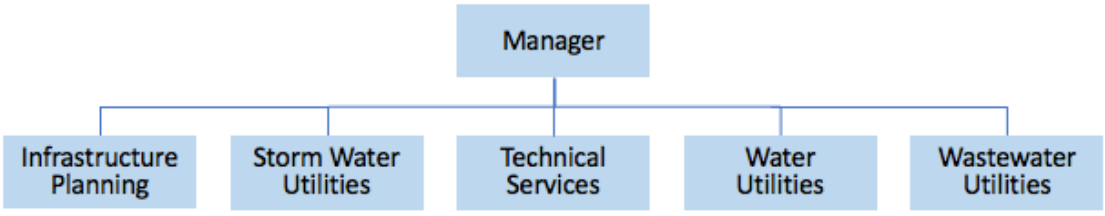
CVRD Organizational Structure (September, 2016)



Engineering Services Department



Water Management Division



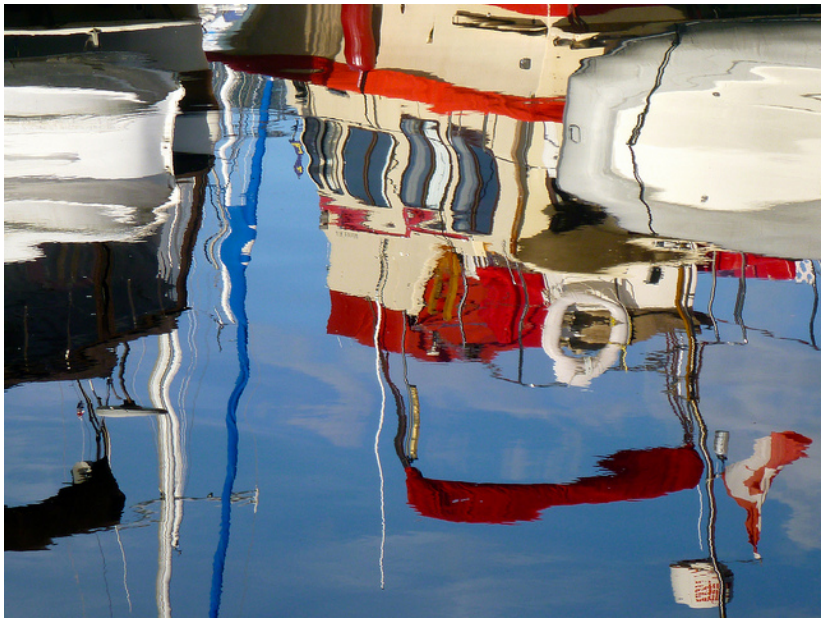
2.4. CVRD WATER & WASTEWATER UTILITIES

Water and wastewater utilities have been managed by the CVRD since 1969. The existing 35 utilities have been added over the years for different reasons, including:

- Directed by the Provincial Government
- Initiative of CVRD staff
- Requested by private utility owners
- Requested by private utility customers
- Requested by existing Improvement District
- Accepted as a condition of subdivision

Criteria for acceptance has changed significantly over the years and changes to provincial legislative requirements have also impacted the criteria for utility acceptance. Utilities accepted in the 1990's and 2000's would not be recommended for acceptance today. Utilities accepted over the past 10 years have been required to go through a detailed review and financial assessment before acceptance. In retrospect, decisions to accept utilities years ago were made with honourable intentions however, these decisions have created numerous long-term challenges with users and with the CVRD.

Due to challenges and concerns with existing and future governance of utilities, there is currently a moratorium on adding new utilities.



Maple Bay, Cowichan Valley, BC, Canada, Taken February 16, 2016 by Rick McCharles, Creative Commons Copyright.

3. FINDINGS & RECOMMENDATIONS

These findings and recommendations are based on the Innova team's research, observations, the stakeholder survey results as well as input received from interviews and group input sessions.

FINDINGS & RECOMMENDATIONS – Leadership, Strategy & Planning

This section focuses on the Leadership, Strategy & Planning elements of the CVRD in terms of long-term water and wastewater utility and regional planning strategy, regional growth impacts, asset management, technology, and organizational effectiveness. Key findings relating to Leadership, Strategy & Planning are:

3.1. FINDINGS – Leadership, Strategy & Planning

3.1.1. All of the stakeholders consulted for this review are in agreement that the number of water and wastewater utilities as well as the rate of additional utility acquisition is significantly high for any Regional District and is a resource (infrastructure, people, technology) challenge for the CVRD. It is clear to most stakeholders that the lack of a long-term financial and stakeholder relationship solution and plan will inhibit improvements.

3.1.2. CVRD Managers and Senior leaders are well aware of many of the challenges that this review has identified and continue to be open to changes and improvements.

3.1.3. **Leadership** – Generally the CVRD leadership team has managed the water and wastewater utilities well over recent years given significant, unprecedented growth and infrastructure replacement and maintenance challenges. There are small, but vocal, resident representation groups that are very displeased with how their utilities have been managed. Most of the issues that the CVRD leadership struggle with relate to a lack of finances to properly manage capital improvements.

3.1.4. **Long-Term Utility Vision & Planning** – There was considerable feedback and indications that a lack of vision and long-term planning related to utilities is a significant reason for existing utility issues and a major risk factor to the CVRD and residents.

3.1.5. **Operations** – Consistent strong, positive feedback regarding the ability of Operations staff to provide timely and quality service. Ongoing efforts and the style of leadership demonstrated by the CVRD operations supervisors is very well received, particularly with respect to W&S Senior Operator Rudy Dhami and Utilities Superintendent Todd Etherington. These two individuals are generally very well respected by their staff, residents, and other stakeholders.

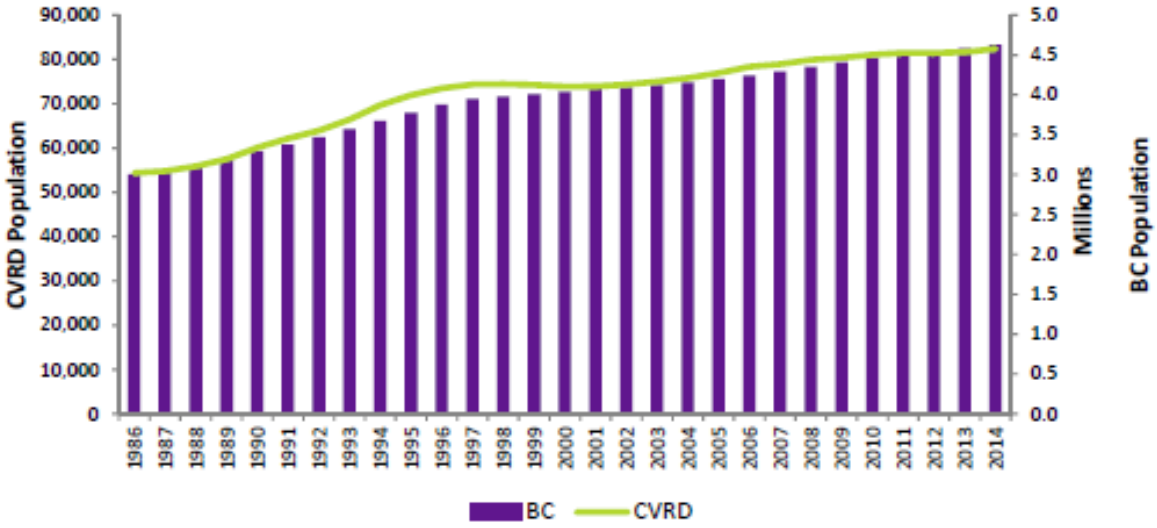
3.1.6. **Segmentation** – Managing 35 separate water and wastewater utilities is an industry record in BC. The impact of managing a regional network of utilities cannot be understated and is often not fully appreciated by stakeholders. The financial separation (utility fees, budgets, reporting) alone adds a significant resource impact to the CVRD in comparison to most local government organizations in BC. This separation also drives a much higher need for residents to be more involved and have more information about "their" utility than in most local governments. Most local governments would have planning and communication exercises about "the" utility or "our" utility, whereas the CVRD has 35 versions of this with "my" utility.

FINDINGS – Leadership, Strategy & Planning … continued

3.1.7. **Utility Growth** - The CVRD has acquired private water and wastewater utilities with significant compliance, capacity or maintenance issues. Bringing these utilities into the CVRD has had impacts on its ability to manage long-term planning for infrastructure replacement. Each utility was designed as a "stand alone" and was not designed to consider the broader region and broader planning needs.

The November, 2015 Lam & Co. report "*CVRD Regional Population, Housing and Employment*" provides excellent insight into past growth and potential growth scenarios. This information is critical for planning future changes to existing and proposed utilities.

The CVRD has experienced significant growth over the last 30 years. The majority of this growth is due to new residents moving into the CVRD, as opposed to local population growth, as the CVRD is an extremely desirable environment in which to live. Overall growth has far exceeded the Canadian average and has also exceeded the BC average most years, as follows:



Industrial and service industry growth has matched population growth. There are 403 industrial properties in the CVRD covering 1,740 ha of land. Industrial lands include properties that are zoned as industrial (e.g., light, heavy, eco, live/work industrial), as well as other types of properties zoned specifically to permit industrial uses (e.g., marine-related designations, rural resource). The central sub-region has the greatest number of industrial properties, particularly within the Municipality of North Cowichan. Close to 24% of the industrially zoned properties in the CVRD are vacant, and 41% are currently being used for nonindustrial purposes.

The current labour force in the CVRD is beginning to enter into retirement, resulting in decreased workforce participation. While some industries will not be replacing workers as they retire, other industries have been reporting growth. Overall, the economy of the CVRD is anticipated to move towards a more service-based economy.

FINDINGS – Leadership, Strategy & Planning … continued

The CVRD's industrial land stock has many strengths, and the region is well positioned to accommodate future economic changes. There are many opportunities to intensify use of its extensive inventory of industrial lands to achieve sustained economic growth.

The greatest impact on utilities is residential growth.

Expected population projections:

Figure 31 Population Projections for the Central Sub-Region

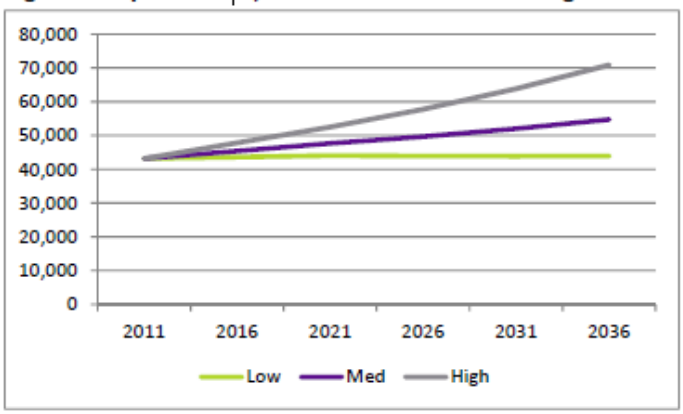


Figure 32 Population Projections for the North Sub-Region

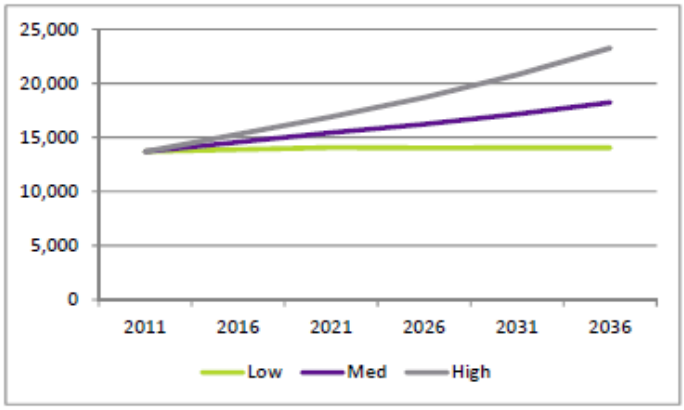


Figure 33 Population Projections for the South Sub-Region

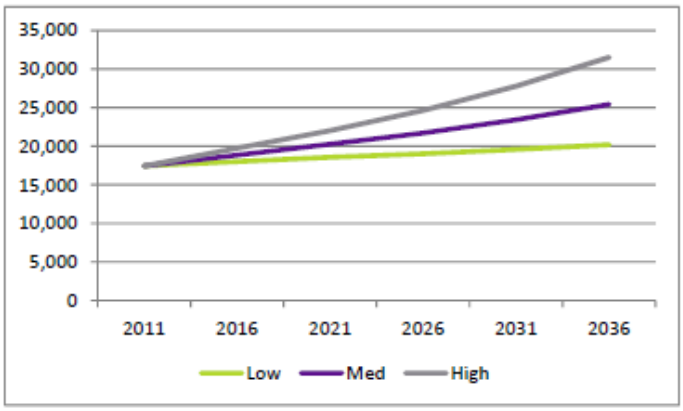
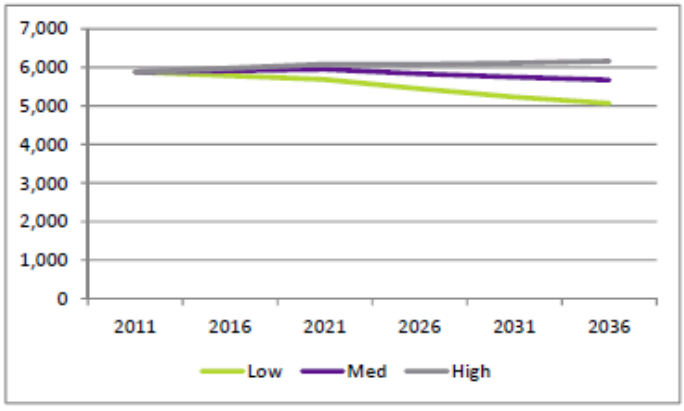


Figure 34 Population Projections for the West Sub-Region



FINDINGS – Leadership, Strategy & Planning … continued

It is reasonable to expect that with the current 35 CVRD managed utilities, another 16 utilities being actively considered to join the CVRD in the next 3 years, and a likely potential for 40 additional utilities with a projected population of 9,630+ new households/customers, the CVRD could be managing the equivalent of 91 utilities by 2066. This growth is a critical consideration as the CVRD considers this report and the recommendations within it.

CATEGORY	UTILITIES	CUSTOMERS
Current CVRD Water & Wastewater Utilities	35	6,227
Current CVRD Water & Wastewater Utility Takeover Applications	6	200
Current CVRD Water & Wastewater Utility Takeover possible	10	2700
2066 (50 yr) Projected Additional Water & Wastewater Utilities based on: ▪ Population CAGR of 2.6%. (21,186) ▪ Average 2.2 people per household – 9,630 additional households. ▪ Average 249 of households per utility	40	9,630
TOTAL	**91**	**18,757+**

UTILITY PLANNING PRINCIPLES

For utility planning purposes, the CVRD needs to consider all utilities within the region for the purpose of efficient utility management and growth. This includes not only the 35 existing utilities, but private utilities, improvement districts, municipal utilities, and any potential new utilities. The smaller the utility, the higher the unit costs to manage, therefore every effort needs to be made to amalgamate and combine utilities in the region.

There is a strong desire to look at the many independent utilities within the Region, with the intent to merge these utilities where possible, gaining efficiencies by reducing the number of facilities overall. In general, CVRD Engineering staff have attempted to amalgamate utilities, if at all possible. Examples include:

- Integration of 10 Youbou area utilities into a single utility.
- A large subdivision joined Shawnigan Water and Wastewater utilities bringing a well, reservoir expansion and new sewage disposal field to the utilities
- A large subdivision joined Kerry Village water and wastewater utilities bringing a well and new disposal field and ½ a new sewage treatment plant.
- 2 expansions of the Lambourn water and wastewater utilities were possible because several subdivisions were added to the utility.

FINDINGS – Leadership, Strategy & Planning … continued

3.1.8. **Provincial Regional District Best Practices** – Innova conducted a survey in November 2016 of regional districts in BC and determined that most are facing similar challenges with water and wastewater utilities. Of 27 regional districts surveyed, 11 responded with detailed comments. (Detailed Findings are located in Appendix C).

Survey findings include:

- CVRD has the greatest number of utilities and the greatest potential for additional utilities.
- Most regions do not have a detailed asset management plans. They follow PSAB reporting requirements but have not completed detailed condition assessments.
- Funding of small utilities is a challenge for all.
- Changes in legislation have caused significant financial concerns for all. Many utilities were added to regional districts when standards were much lower. New standards have created funding shortfalls and anxiety with users who are not willing to pay higher fees.
- Most regional districts rely on grants for assisting with capital improvements to existing small utilities.
- Residents typically resent the high fees for operating a small utility. They often have a traditional outlook on water in BC – that water is plentiful and clean.
- Two regional districts have written policy for adding new utilities under their jurisdiction. Most regional districts have some criteria that require a detailed assessment of any utility considered for inclusion. The Regional District of Central Kootenay has a comprehensive policy (Water and Wastewater Utilities Acquisition Strategy - 600-03-01) that ensures any new utilities are accepted with limited risk to the regional district.
- Half of the regional districts surveyed have standard operating procedures and performance standards for their small utilities. Others simply rely on meeting compliance with regulations.
- Almost all regional districts have a positive working relationship with the Ministry of Transportation and Infrastructure (MOTI) regarding subdivision approval. The feedback provided by regional districts is generally accepted by MOTI in their deliberations.
- Most regional districts are satisfied with the level of communications around their small utilities. They use a multitude of communication techniques including print advertising, public engagement, direct mail, operator interaction, and many use the opportunity to provide information through billing mail outs.
- Some regional districts utilize a water, wastewater and/or utility commission/committee to assist with governance. These are providing good value.

FINDINGS – Leadership, Strategy & Planning … continued

3.1.9. **Asset Management Plan** - CVRD senior staff understand the importance of, and are committed to, the completion of a robust asset management plan. The Policy has been adopted and funding is in place to complete the Plan. The Plan will inform the CVRD's financial plan and define activities and associated costs to maintain, refurbish and replace water and wastewater infrastructure.

3.1.10. **Asset Management Policy** - It appears this Policy is generally not followed by the CVRD Board.

3.1.11. **Long Term Capital Plans** - Long term capital plans for the water and wastewater utilities do not exist, which makes it near to impossible to make workable sustainable funding decisions for future expenses.

3.1.12. **Fragmentation** - Generally the CVRD water and wastewater utilities are planned for, developed and maintained individually rather than as one, or a few, integrated utilities. This is atypical for most regional or municipal organizations and adds complexity, effort and cost on a per capita basis.

3.1.13. **Development** – Generally there is a lack of planning and alignment of property development outside of existing water and wastewater infrastructure service areas which compounds the fragmentation issue.

3.1.14. **Integration Vision** – recognizing the long-term implementation window, many stakeholders agree that the CVRD needs to adapt, plan for and begin implementing a future vision of one common, administrative, water and wastewater utility that is connected to the CVRD Official Community Plan (OCP), the Regional Growth Strategy and a long-term water and wastewater utilities plan. The vision and plans should contemplate utilities not yet under CVRD control.

3.1.15. Concern was expressed regarding the absence of senior management at the operations centre, leaving the impression of a lack of interest in the operations work, and that it is less important.

3.1.16. Many of the staff and external stakeholders (residents, elected officials, regulators) feel that the vision for CVRD utilities needs to be set to the "Municipal Standard" (*Municipal Design Guideline Manual, Master Municipal Construction Documents Association, www.mmcd.net*).

3.1.17. **Long-Term Challenges** - CVRD utilities face many challenges in the years to come. Many of these challenges can be corrected with attention to planning and establishing a strong financial sustainable model to manage future financial pressures. Considering the future of CVRD, there are many unknowns that make full predictability extremely difficult. Based on historical trends, there is a very high probability that CVRD will continue to see growth. Existing utilities and new development will bring challenges, risks, and opportunities.

- **Existing Utilities** - Decisions made 20 to 30 years ago may limit the ability of the utility to provide safe and reliable drinking water and/or wastewater treatment. These small utilities may have been developed to meet the standards of the day, but as standards have evolved and changed, these utilities have not had the organizational or financial resources to meet new requirements. Below is a list of examples where this is occurring in the CVRD.

Wastewater Collection and Treatment

- Capacity – Some treatment plants are already at capacity and require expansion and or amalgamation with neighbouring utilities.
- Utilities – Many utilities are reaching their end of life and require immediate replacement. Funding is not in place.

Water Quantity and Quality

- Climate Change – Drier and hotter environments are causing changes to available resources.
- Source Water – Risks to adequacy in meeting Canadian Drinking Water Guidelines and licensing under the new Water Act.
- Development – Federal and Provincial governments can influence the location, scale, volume and demand of development.
- Utilities – Many utilities are reaching their end of life and require immediate replacement. Funding is not in place.
- Treatment Requirements – The 4-3-2-1-0 Drinking Water Objectives are difficult to achieve for any surface water utilities.
- Contamination - Industrial sites have a history of conflict with source water contamination. Commercial, institutional and residential development can also contaminate supplies.

- **Legislated Changes** – the impact on the CVRD and residents of recent changes to Provincial regulations relating to groundwater have been significant. It is difficult for users to accept additional costs. Historically federal and provincial governments have "downloaded" cost items onto regional districts and Municipalities and this could occur in other areas, such as maintenance and capital replacement of roads and highways.

3.1.18. **Long-Term Risks** – In all decision making, risks must be considered.

- Utility Failure – Some utilities are at risk of full failure as a result of poor planning, poor design, and/or inadequate asset replacement. Any failure would create immediate funding challenges as CVRD does not have adequate contingency to assist in a timely manner.
- CVRD Liability – CVRD has known liabilities with existing utilities that do not meet standards or are close to failure. In fact, most wastewater utilities do not meet the current standards although this is likely true for small utilities across the Province. Specific liability examples:
  - A non-compliance warning letter was received for the Mill Springs Wastewater Treatment utility on November 7, 2016

FINDINGS – Leadership, Strategy & Planning … continued

  - The possibility of contamination to Bear Lake is high. The Mesachie Lake wastewater utility is located very close to Bear Lake and is failing. The Local Service Area would not be able to bear the costs of a large financial claim and the CVRD, as a whole, could end up paying for the claim.
  - Elevated Arsenic levels have been recorded in the Burnam Estates groundwater supply.
- Source Water Contamination – There is always risk that a watershed or wellhead can be contaminated. Because there is very limited redundancy for existing water utilities, it would be very challenging to manage.
- Growth – Unplanned growth poses a significant risk for the CVRD
- Governance – If the CVRD is not able to consolidate and manage the stakeholders more effectively the cost and effort to manage these utilities will escalate
- Financial Oversight - CVRD experienced a challenging financial situation in the past related to the cost apportionment between utilities. At that time, funds were transferred between utilities which did not meet the expectations around the user pay model. This has been completely rectified and each utility is now being made whole. There are now policies in place to ensure that financial oversight is transparent and meets the goals and objectives of the individual utility funding model.

3.2. RECOMMENDATIONS – Leadership, Strategy & Planning

The recommendations relating to Leadership, Strategy & Planning are:

3.2.1. **Master Development Plan** (MDP) - develop and implement a Master Development Plan identifying long term strategic goals for the Region along with a 3-year departmental (Utilities) business plan which identifies ongoing capital and operating needs and new initiatives to best support the MDP.

3.2.2. **Growth Study** – Develop a regional growth feasibility study of the Region's infrastructure needs to determine how to best meet the water and wastewater requirements of the future given an expected growth rate of 2% to 5% per annum.

3.2.3. **Asset Management Plan** - The CVRD should allocate staff and funds to develop an Asset Management (AM) Plan as soon as possible.

3.2.4. **Asset Management Policy** – The AM Policy should be referenced and discussed in reports from staff to the Board when User Rates, Parcel Taxes, capital plans and other key infrastructure decisions are under consideration.

3.2.5. **Long Term Capital Plans** - The CVRD should allocate staff and funds to develop comprehensive long term capital plans as soon as possible. This is a specific element of the AM Plan.

3.2.6. **Key Performance Indicators** (KPI) – KPIs should be reviewed, expanded and formalized. Staff are using pump hours, units accomplished, and record water sample results, but they are not compiled in a useful manner, for management and operations. KPI's can provide staff with a current, accurate benchmark on performance in all operational areas. KPI examples include:

- Number of breaks per km of pipe per year
- Number of hours of training per FTE per year
- Percentage of adverse samples per utility per year
- Number of blockages per km per year(wastewater)
- Number of FTE's performing O&M per km per year

These KPIs should be used to measure productivity and utility performance so that future programming can be optimized. There are excellent KPI implementation programs in existence, when the CVRD wishes to pursue further.

3.2.7. **Amalgamate Utilities** - At every decision point in the future, CVRD should amalgamate utilities toward the goal of having only larger utilities that can be managed more efficiently. Amalgamation will drive operational efficiencies, affordable user costs, and the ability to manage future improvements.

3.2.8. **Amalgamate Source Water Treatment** – There are many opportunities, currently, and in the future, for the CVRD to combine resources for the development and management of water and wastewater treatment. A specific and important opportunity exists with a Ladysmith & Saltair water treatment partnership. Ladysmith has received a substantial grant and the CVRD can also seek similar funding. Together a combined water treatment facility will cost between 20% to 40% less than individual facilities.

RECOMMENDATIONS – Leadership, Strategy & Planning … continued

3.2.9. **Plan Utilities Around Growth** – If future development is planned effectively to offset the costs related to growth, mechanisms can be put in place to assist with long range goals. The full cost of utility amalgamation could be borne by developers. Development Cost Charges can be used to offset broader utility improvements.

3.2.10. **Apply for Additional Grants** - In 2014 the federal government signed a renewed Gas Tax agreement with the Union of BC Municipalities that will see approximately $1.3 billion in funding made available over the next ten years for municipal infrastructure projects. In addition, both the federal and provincial governments contributed $109 million each to the Small Communities Fund for municipal infrastructure projects in communities with populations under 100,000 over the next ten years.

3.2.11. **Increase Utilization of Technology** – As technology has continued to evolve, efficiencies can be realized through fuller utilization of existing technology (hardware and software) and new technology solutions such as CRM, SCADA, GIS, Open Data, etc. (See Section 3.8.3.).

3.2.12. **Leverage Partnerships** – There are many opportunities to partner with other agencies/ organizations that would encourage the optimization of operations and security of utilities. New utilities, or amalgamated utilities, should consider partnerships with Municipalities, First Nations, and the Private Sector. A specific partnership that should be reviewed is between the Saltair water utility and Ladysmith's water utility. These utilities were previously joined and share common source water. Both utilities require building treatment plants to meet the new legislative requirements. Ladysmith has already received a substantial grant.

3.2.13. **Provide Opportunities for CVRD Utilities** - Small utility system owners may feel that they are better served by the private sector and should be given the opportunity to move from CVRD to a private contractor.

FINDINGS & RECOMMENDATIONS - Financial Sustainability

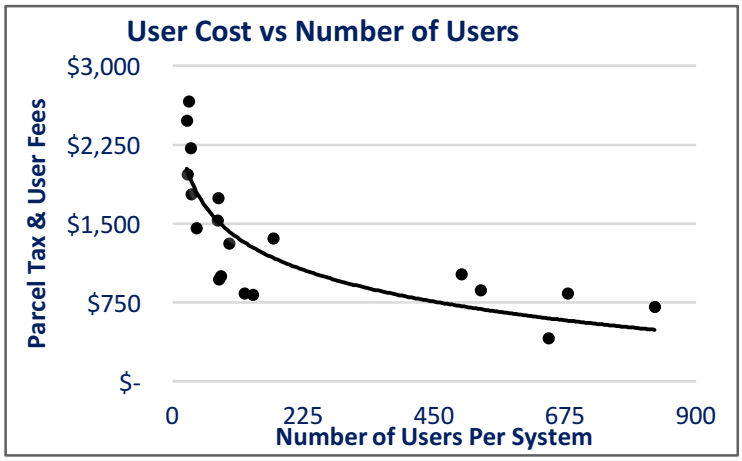
This section looks at the Financial Sustainability elements of the CVRD managed water and wastewater utilities in terms of both short and long-term financial planning, budgeting, reporting, cost allocations and fees. The key findings relating to Financial Sustainability are:

3.3. FINDINGS – Financial Sustainability

3.3.1. **Industry Context** – Asset Management BC's definition of asset management is "An integrated approach involving planning, finance, engineering and operations to effectively manage existing and new infrastructure to maximize benefits, reduce risks and provide satisfactory levels of service to community users in a socially, environmentally, and economically sustainable manner."

To be financially sustainable, the revenues earned by a water or wastewater utility should cover the full cost of operating and maintaining the utility, as well as accounting for the eventual replacement of the utility as it ages and comes to the end of its useful life.

The BC Water & Waste Association (BCWWA) recently reported that the majority of BC municipalities do not generate sufficient revenues from fees to pay the full cost of providing services. Smaller utilities have greater financial gaps because they do not have the benefits of "economies of scale". In some cases, rates would need to nearly double to reach financial sustainability.



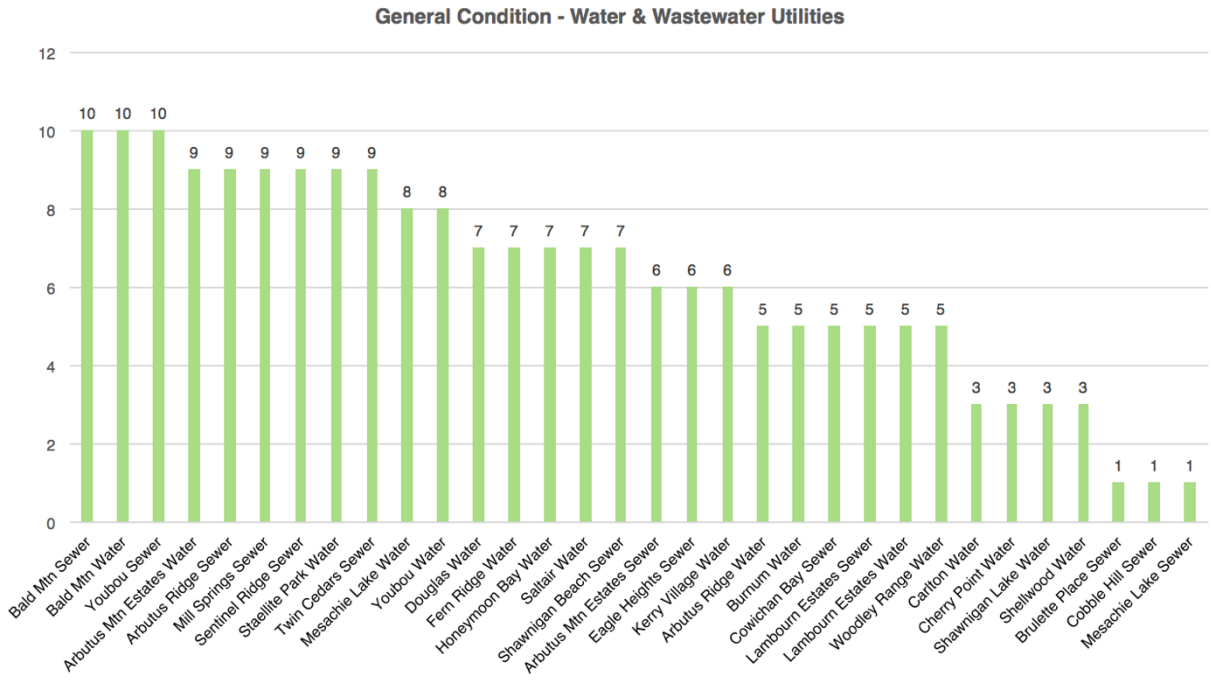
In 2015 the BCWWA contacted an Ipso Reid survey of water and wastewater utility users across BC. The survey results indicated a significant tolerance for rate increases to $170/month ($2,040/year) for both water and wastewater as follows:

- $86/month ($1,032/year) for clean, safe tap water.
- $84/month ($1,008/year) for sewer/wastewater services.

With the CVRD, the Water and Wastewater Parcel Tax and User Fees must increase by approximately 67% in order to establish sustainable revenues. While no one wants to pay higher taxes or fees, local governments cannot escape the reality that there is a real cost to operate and maintain infrastructure. Failure to pay for these essential services, directly increases risks to health and prosperity.

FINDINGS – Financial Sustainability … continued

3.3.2. **Condition Assessment** - The condition of the various CVRD water and wastewater utilities ranges considerably. In some cases, the utilities operate very well and there is no backlog of capital improvements. In other cases, utilities fail to meet established standards resulting in risks to public health or discharge of untreated wastewater. Each utility was ranked based on general condition assessments. The ranking is on a scale of 1 to 10, with 10 being a perfect utility.



3.3.3. **Water Utility Rate Assessment** – The value of the existing 19 water utilities is approximately $76 million. Approximately half of the infrastructure value is related to 3 utilities; Saltair, Shawnigan Lake and Youbou.

There are approximately 4,200 customers and the CVRD collects approximately $3.4 million from User Fees and Parcel Taxes annually. There is $700,000 (subject to year-end budget reconciliation) in capital reserves for all 19 water utilities.

In general, water utilities were rated 6.3/10, with 10 being a perfect utility; i.e. water quality meets Drinking Water Standards, there is sufficient capacity for domestic and firefighting purposes, there are minimal operational concerns and minimal backlog of capital upgrades.

A significant number of short and medium term capital projects are required in order to ensure water quality and supply meets acceptable standards. A 74% increase in revenue is required to generate the required funds for water utility long term capital upgrades, refurbishment and replacement of infrastructure.

FINDINGS – Financial Sustainability … continued

The results of the financial analysis suggest that water rates should be increased as shown below ($CAD):

	EXISTING	RECOMMENDED
Average Parcel Tax	$416	$606
Average User Fee	$396	$808
TOTAL	$812	$1,414

The recommended rates will allow the CVRD to build reserves and/or borrow to fund required capital upgrades.

3.3.4. **Wastewater Utility Rate Assessment –** There are 16 CVRD wastewater utilities worth an estimated $57.7 million. There is approximately $1.7 million in capital reserves, with approximately $1.2 million of this allocated to the Eagle Heights utility.

Approximately 3,700 wastewater utility customers generate almost $3 million in annual revenue through User Fees and Parcel Taxes.

The wastewater utilities have been rated 5.7/10, with 10 being a perfect utility; i.e. minimal operational concerns, meets applicable treatment standards and minimal backlog of capital upgrades. There are a number of significant capital upgrades required in the next 5 years. It is anticipated that Parcel Taxes and User Fees will have to increase by 48% to create a steady-state funding situation. Details are shown below ($CAD):

	EXISTING	RECOMMENDED
Average Parcel Tax	$357	$524
Average User Fee	$412	$698
TOTAL	$769	$1,222

The recommended rates will allow the CVRD to build reserves and/or borrow to fund required capital upgrades.

3.3.5. **Financial Transparency** – Many residents feel that either the CVRD is not providing the right type and amount of financial information, or they don't know enough, which indicates that there is a need to improve awareness of the financial status of each utility. Residents want a clearer picture on costs in order to understand rates/fees. A significant number of residents feel they do not have or understand the costs related to their utilities.

3.3.6. **Development Cost Charges** - The CVRD does not have a Development Cost Charges (DCC) Bylaw. Instead, the CVRD charges a standard $3,500 connection fee. There are currently no resources available to prepare a DCC Bylaw.

3.3.7. **CVRD Parcel Tax and User Fees** – The existing Parcel Tax and User Fees do not provide sufficient revenue for asset refurbishment and replacement expenses on a long term basis.

3.3.8. The CVRD has had to take over failing utilities that were in need of significant work and/or cost, however, residents are upset with the costs charged by CVRD related to operating them.

3.4. RECOMMENDATIONS – Financial Sustainability

The methodology used to determine the proposed future CVRD water and wastewater costs is based on average annual costs per service over the next 50-year utility life. Annual fees used to cover costs will continue to be paid through Parcel Tax and User Fees.

Parcel Tax rates are determined based on two considerations:

- **Allocations & Debt**: A portion of the CVRD's overhead costs are allocated proportionally to all sewer and water utilities based on the number of parcels connected to a utility system. Also, any debt from borrowing funds to finance capital upgrades are charged to the various utilities based on the number of parcels in a system.
- **Replacement Value**: The value of all the water and wastewater utilities has been determined and the replacement cost has been calculated based on the lifecycle of the systems. The Replacement Value is charged to utilities on a Parcel Tax basis.

User Fees are established based on historic and anticipated operating costs, maintenance expenses and staff expenses. These costs are charged to only the customers that are connected to and using a water and wastewater system.

The recommended rates reflect a 50-year cost average based on existing information. It is important that accurate condition assessment data be made available through the ongoing CVRD Asset Management Review in order to accurately predict true costs.

The recommendations relating to Financial Sustainability are:

3.4.1. The CVRD should consider changes in the cost allocation model. Through public consultation, consideration should be given to a single water utility and a single wastewater utility for all 35 small systems. The benefits of this model include:

- Operational economies of scale
- Decisions would be made in the best interest of the overall utility, not individual system and/or electoral area influences
- Amalgamating systems would be easier to achieve
- Public health and environmental sustainability would be considered in a regional context

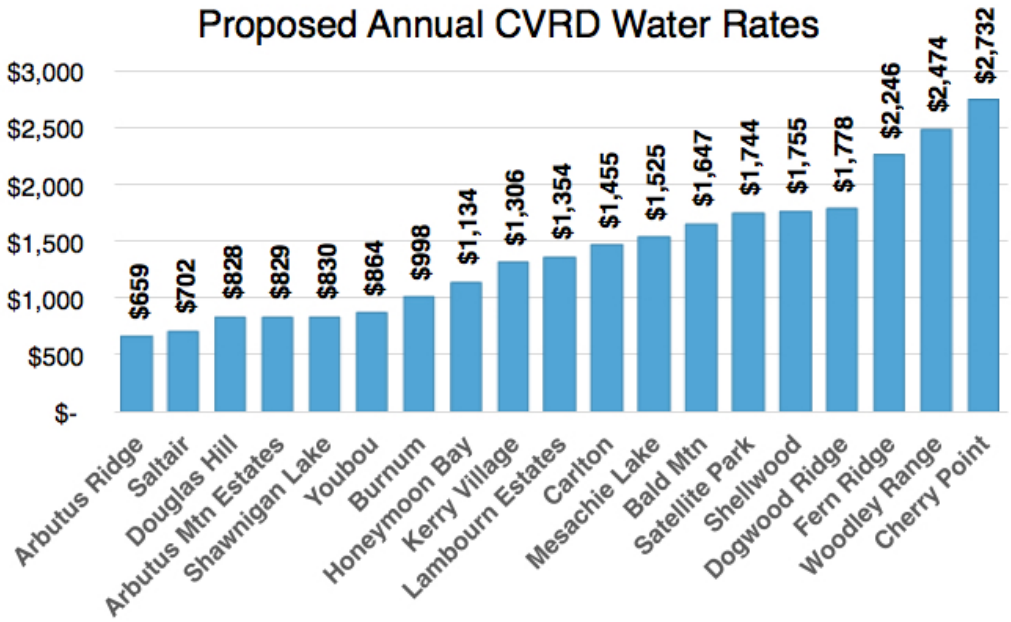
3.4.2. Develop and conduct a budgeting exercise to establish an appropriate level of funding for each jurisdiction with the possibility of merging individual cost centres.

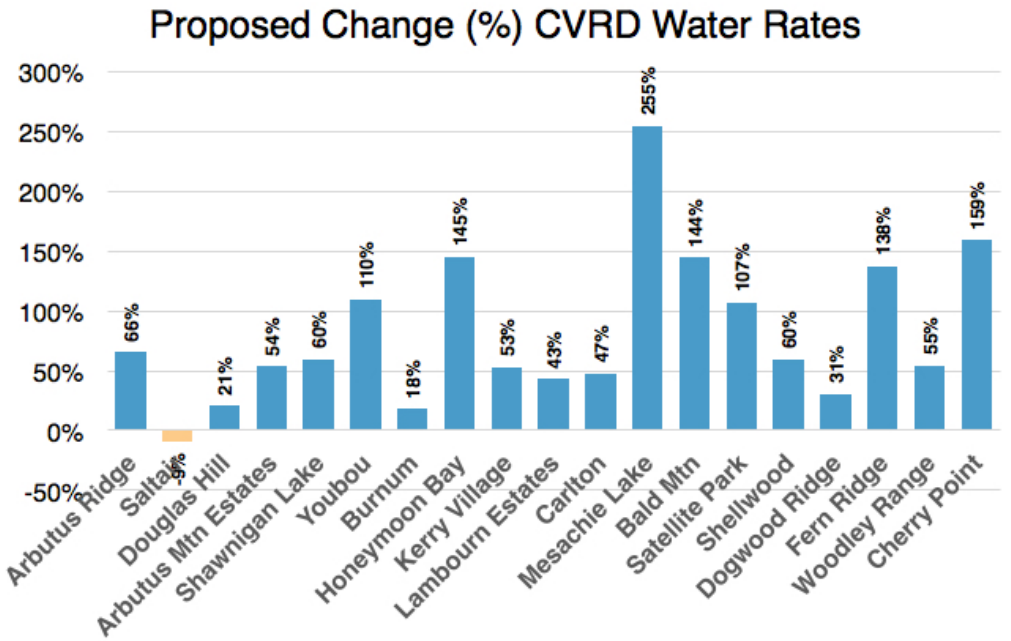
3.4.3. The CVRD should allocate resources to develop a Development Cost Charges Bylaw as soon as possible.

3.4.4. **Parcel Tax and User Fees** – Develop and implement a Parcel Tax and User fee increase either immediately or graduated over time:

RECOMMENDED WATER UTILITY FEES

NO.	NAME	PARCEL TAX	USER FEE	TOTAL
1	Arbutus Mountain Estates Water	$386	$444	$830
2	Arbutus Ride Water	$359	$300	$659
3	Bald Mountain Water	$261	$1,386	$1,647
4	Burnum Water	$143	$855	$998
5	Carlton Water	$431	$1,024	$1,455
6	Cherry Point Water	$1,422	$1,310	$2,732
7	Dogwood Ridge Water	$687	$1,091	$1,778
8	Douglas Hill Water	$303	$526	$828
9	Fern Ridge Water	$1,152	$1,094	$2,246
10	Honeymoon Bay Water	$933	$201	$1,134
11	Kerry Village Water	$694	$612	$1,306
12	Lambourn Estates Water	$762	$592	$1,354
13	Mesachie Lake Water	$884	$641	$1,525
14	Saltair Water	$376	$326	$702
15	Satellite Park Water	$1,030	$714	$1,7344
16	Shawnigan Lake Water	$454	$376	$830
17	Shellwood Water	$447	$1,308	$1,755
18	Woodley Water	$234	$2,240	$2,474
19	Youbou Water	$551	$313	$864
	TOTAL	**$11,506**	**$15,354**	**$26,860**

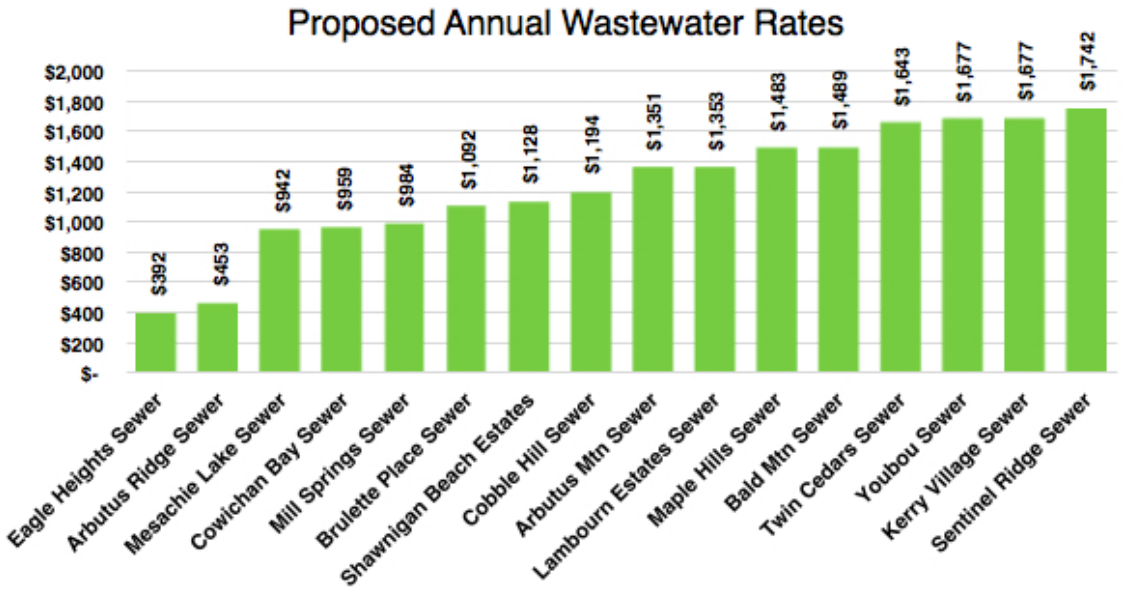

Proposed Annual CVRD Water Rates
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$-
$659
$702
$828
$829
$830
$864
$998
$1,134
$1,306
$1,354
$1,455
$1,525
$1,647
$1,744
$1,755
$1,778
$2,246
$2,474
$2,732
Arbutus Ridge
Saltair
Douglas Hill
Arbutus Mtn Estates
Shawnigan Lake
Youbou
Burnum
Honeymoon Bay
Kerry Village
Lambourn Estates
Carlton
Mesachie Lake
Bald Mtn
Satellite Park
Shellwood
Dogwood Ridge
Fern Ridge
Woodley Range
Cherry Point

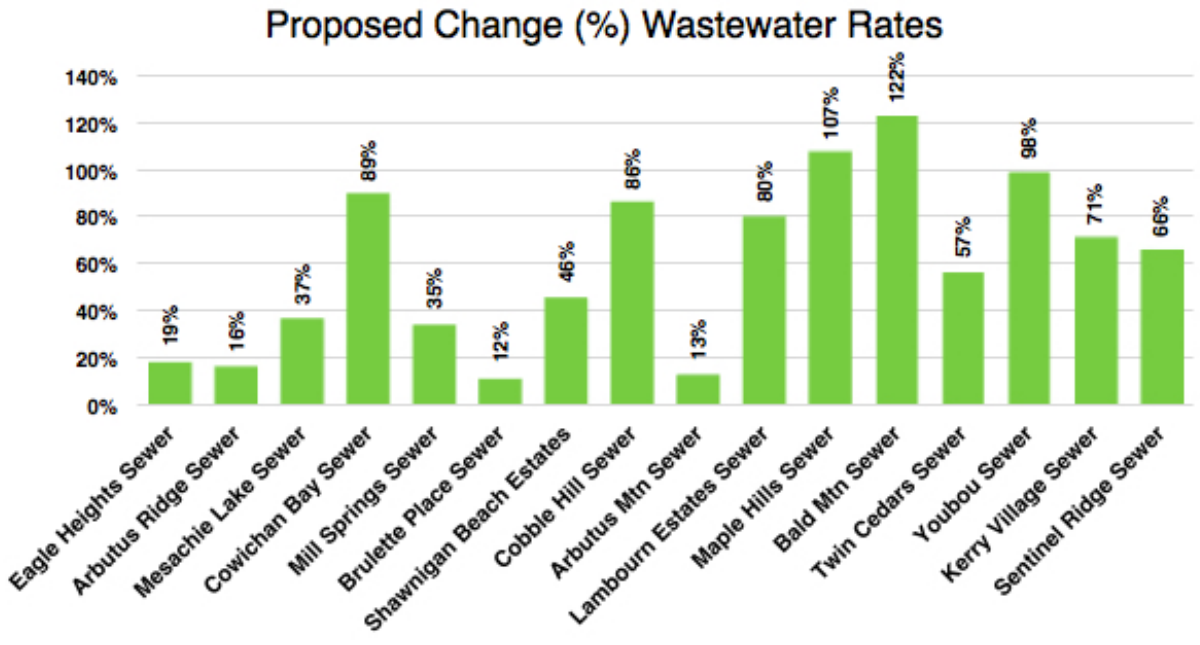

Proposed Change (%) CVRD Water Rates
300%
250%
200%
150%
100%
50%
0%
-50%
66%
-9%
21%
54%
60%
110%
18%
145%
53%
43%
47%
255%
144%
107%
60%
31%
138%
55%
159%
Arbutus Ridge
Saltair
Douglas Hill
Arbutus Mtn Estates
Shawnigan Lake
Youbou
Burnum
Honeymoon Bay
Kerry Village
Lambourn Estates
Carlton
Mesachie Lake
Bald Mtn
Satellite Park
Shellwood
Dogwood Ridge
Fern Ridge
Woodley Range
Cherry Point

RECOMMENDATIONS – Financial Sustainability … continued

RECOMMENDED WASTEWATER UTILITY FEES

NO.	NAME	PARCEL TAX	USER FEE	TOTAL
1	Arbutus Mountain Estates Wastewater	$896	$455	$1,351
2	Arbutus Ridge Wastewater	$174	$279	$453
3	Bald Mountain Wastewater	$300	$1,189	$1,489
4	Brulette Place Wastewater	$414	$679	$1,092
5	Cobble Hill Wastewater	$717	$476	$1,193
6	Cowichan Bay Wastewater	$411	$549	$960
7	Eagle Heights Wastewater	$230	$162	$392
8	Kerry Village Wastewater	$764	$914	$1,677
9	Lambourn Estates Wastewater	$794	$559	$1,353
10	Maple Hills Wastewater	$899	$583	$1,483
11	Mesachie Lake Wastewater	$432	$510	$942
12	Mill Springs Wastewater	$227	$757	$984
13	Sentinel Ridge Wastewater	$461	$1,281	$1,742
14	Shawnigan Beach Wastewater	$517	$611	$1,128
15	Twin Cedars Wastewater	$616	$1,027	$1,643
16	Youbou Wastewater	$583	$1,140	$1,723
	TOTAL	**$8,390**	**$101,170**	**$19,560**


Proposed Annual Wastewater Rates
$2,000
$1,800
$1,600
$1,400
$1,200
$1,000
$800
$600
$400
$200
$-
$392
$453
$942
$959
$984
$1,092
$1,128
$1,194
$1,351
$1,353
$1,483
$1,489
$1,643
$1,677
$1,677
$1,742
Eagle Heights Sewer
Arbutus Ridge Sewer
Mesachie Lake Sewer
Cowichan Bay Sewer
Mill Springs Sewer
Brulette Place Sewer
Shawnigan Beach Estates
Cobble Hill Sewer
Arbutus Mtn Sewer
Lambourn Estates Sewer
Maple Hills Sewer
Bald Mtn Sewer
Twin Cedars Sewer
Youbou Sewer
Kerry Village Sewer
Sentinel Ridge Sewer


Proposed Change (%) Wastewater Rates
140%
120%
100%
80%
60%
40%
20%
0%
19%
16%
37%
89%
35%
12%
46%
86%
13%
80%
107%
122%
57%
98%
71%
66%
Eagle Heights Sewer
Arbutus Ridge Sewer
Mesachie Lake Sewer
Cowichan Bay Sewer
Mill Springs Sewer
Brulette Place Sewer
Shawnigan Beach Estates
Cobble Hill Sewer
Arbutus Mtn Sewer
Lambourn Estates Sewer
Maple Hills Sewer
Bald Mtn Sewer
Twin Cedars Sewer
Youbou Sewer
Kerry Village Sewer
Sentinel Ridge Sewer

FINDINGS & RECOMMENDATIONS - Governance

This section looks at the Governance elements of the CVRD and the water and wastewater utilities in terms of effectiveness, oversight, structure, accountability and authority. The key findings relating to Governance are:

3.5. FINDINGS – Governance

3.5.1. **Infrastructure Approval: Current State** – Utility acquisition and development typically comes with subdivision approval and development. CVRD subdivisions and related water and wastewater infrastructure are currently approved by the Ministry of Transportation and Infrastructure (MOTI). This is typical for regional districts in the Province, although the model has created challenges for CVRD. Subdivisions have been approved without incorporating recommendations from CVRD staff, without recognition of CVRD zoning, and without meeting engineering standards. Although many of these issues are historical, challenges remain.

For the CVRD, and all British Columbia regional districts, the Approving Officer is situated in the Ministry of Transportation and Infrastructure district offices.

CVRD deals with a high number of subdivisions compared to other regional districts, and over the years there has been disagreement between CVRD and the provincial approval process. Although its primary responsibility is highway related, MOTI approves all components of a subdivision including water and wastewater utilities. Key challenges include:

- MOTI approval of subdivisions without taking direction from CVRD staff, particularly around operation and maintenance of new utilities.
- MOTI approval of subdivisions in remote locations that are difficult to service and do not represent Smart Growth principles
- The Medical Health Officer's recommendations are not always accepted by MOTI, or included with the application for subdivision.
- Turnover and staff inexperience within MOTI.

Fundamentally, Ministry staff are approving subdivisions without full consent from CVRD and their decisions do not necessarily represent the will of the residents in the region. Although the 9 electoral area directors are elected to represent their constituents, they do not have the ability to govern all development decisions in the region. Placing these decisions with Provincial staff does not appear to represent good governance within a growing region.

Substantial work has already been done to establish best practices and guidance documents for various elements of water utility approval. Most of these documents address the technical aspects of water treatment as well as utility design and construction.

Water resources are governed through several federal and provincial acts, including the BC Water Sustainability Act, the BC Drinking Water Protection Act, the BC Environmental Management Act, and the Federal Fisheries Act. These Acts provide the framework for regulations that establish criteria for water quality and treatment.

Utility designs use the following advisory documents:

- Technical (treatment, design and construction)
- Guidelines for Canadian Drinking Water Quality (Rev.2014)
- Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies in BC (2012)
- Drinking Water Officers' Guide (2007)
- Design Guidelines for Rural Residential Community Water Utilities (2012)
- Guidelines for Groundwater Reports and Well Testing in Support of a CPCN
- Guidance Document for Determining Groundwater at Risk of Containing Pathogens
- Water under Direct Influence of Surface Water (2012)
- Guide to Rural Subdivision Approvals (2012)
- Best Practice Guidelines for Approving New Small Water Utilities (2014)

3.5.2. Water Utility Design

The Best Practice Guidelines for Approving New Small Water Utilities is a relevant and newer document that provides appropriate direction for potential future small water utilities in CVRD. The guidelines target regional districts and the challenges with approving new utilities.

The following Best Practices are particularly relevant to CVRD:

- Local governments should adopt zoning and building bylaw regulations that support sustainable service delivery.
- Establish design and construction standards for community water utilities.
- Require land development applicants to provide a broad range of information on water services as early in the approval process as possible.
- Establish local government policies to support sustainable water service provision through public acquisition of newly developed water utilities.
- Promote the financial sustainability of small water utilities.
- Through coordinated communications, clarify the approval process for the creation of a new small water utility and coordinate regulatory efforts across authorities.

For the CVRD, when approving new small water utilities, the focus should be on ensuring sustainable water service provision. This provides the best chance of sustainability – ensuring new utilities have the capacities (organizational and financial) to meet future challenges such as aging infrastructure or the introduction of new drinking water standards.

3.5.3. Wastewater Utility Design

The design and operation of small wastewater utilities is administered through the Environmental Management Act – Municipal Wastewater Regulation. Determination of acceptable design is made by qualified professionals, based on Section 15 of the Act:

> *Certification by qualified professionals*
>
> *Statements, signed and sealed by the appropriate qualified professionals, certifying all of the following must be provided on registration:*
>
> *a. the design of the proposed wastewater facility and the associated documentation meet the requirements of this regulation;*
> *b. the proposed discharge from the wastewater facility will meet the requirements of this regulation;*
> *c. all required environmental impact studies have been conducted in accordance with this regulation;*
> *d. the operating plan for the proposed wastewater facility is adequate for its design;*
> *e. if an assurance plan is provided, the assurance plan is adequate to provide for repairs to, or the operation, maintenance or replacement of, the wastewater facility;*
> *f. if a director imposes conditions, limitations or requirements in respect of a substitution, notice, authorization, acceptance or waiver referred to in section 9 [director must act in writing], those conditions, limitations or requirements have been addressed.*

Wastewater utility collection has many standards that are accepted by Professional Engineers making the design and construction relatively simple. However, the science behind wastewater treatment and disposal is constantly changing and there continues to be a number of options available to Engineers. There have been many cases where a "new" treatment process has been approved by an Engineer and the technology has either failed or has not been sustainable.

It is important to understand the motivation behind the selection of treatment processes. Decisions are generally made based on what is affordable to the developer, not what is the preference of the CVRD or MOTI.

There is no "Best Practices Guideline" for the design of wastewater utilities in BC.

3.5.4. **Infrastructure Approval Opportunity** - The CVRD is well suited to include the role of approving officer within the organization. Planning staff are well trained and any additional costs of staff, consultants (surveyors, QEP's and lawyers to advise the approving officer), training and transition would be borne by the developer. This control over development in the region would increase the Board's independence in decision making and also ensure that all subdivisions meet the overarching objectives of the OCP and utility amalgamation.

FINDINGS – Governance … continued

It is worth noting that no regional districts have taken on the role of approving officer to date, although permitted by legislation. There may be concerns around organization capacity, the cost to provide approval services, reticence by Provincial employees, and/or a lack of understanding of the process.

3.5.5. **Legal Opinion – Approving Officer by CVRD** - Don Lidstone, Q.C., of Lidstone & Company is an expert on the Community Charter and Land Titles Act. Mr. Lidstone provided Innova with a legal opinion that the CVRD technically has the legal ability to take on the approving authority for subdivisions.

> "*The MOTI role is an artifact of ancient history when regional districts did not exist. All of the costs of the function may be recovered from fees [see Re: Eurig Estate (Supreme Court of Canada)], so none of the costs of the new service are subsidized by property taxes or other sources (noting as well that each regional district service is intended to be a fiscal silo without cross-subsidization from other services). The transition could also be budgeted to be covered from fees - or potentially from a one-time transition grant to allow the Province to download the function.*"

3.5.6. **Water & Wastewater Utility Acquisition Policy** – The CVRD does not have a policy at this time and typically uses best practices to guide decisions on acquisition.

3.6. RECOMMENDATIONS – Governance

The recommendations relating to Governance are:

3.6.1. **Establish a Utility Commission** Creating a water commission, a wastewater commission or a utilities commission to govern water and wastewater issues in the region will ensure the best decisions are made for the overall health of the region. This would support the long-term goals of amalgamating water and wastewater utilities and ensuring that all new utilities are acceptable to overarching plans and objectives.

- The commission should have clear terms of reference to ensure that any recommendations presented to the CVRD Board consider the best interest of the CVRD as a whole, not of individual users or individual user groups.
- Terms of reference should include a commission candidate profile supporting professional industry experts, not specific community advocates. Preference should be given to CVRD residents who are impartial and have a background in the governance of finance, civil engineering, and/or utility operations.

3.6.2. **Establish CVRD Approval of Subdivisions** – The CVRD to formally exercise the right to approve subdivisions in the region. This will improve the subdivision approval process, will ensure CVRD OCP direction is followed, and will increase the control of elected officials in the region.

3.6.3. **Water & Wastewater Utility Acquisition Policy** – It is critical that CVRD develops a policy that provides detail on the requirements for adding utilities to the CVRD. This will ensure fairness for both CVRD and the utility owners and will ensure that expectations are clear to all. Key components of the policy:

Objectives
- All costs associated with the utility review shall be borne by the private utility owners or developers
- Detailed criteria for acceptance (reference to standards, Acts, Bylaws)

Utility ownership
- Transfer of utility
- Governance of utility

Engineering requirements
- Immediate improvements required to bring to standard / regulation
- Long range condition and replacement schedule
- Immediate and long-term water supply or wastewater disposal capacity
- Comparison to all existing and/or contemplated standards / regulations
- Detailed review of options to amalgamate with adjacent / nearby utilities

Detailed Financial Analysis
- Determination of full costs to bring utility up to standard
- Determination of expected asset replacement costs for long-term (20 years)
- Detailed 20-year cost schedule
- Detailed operations and maintenance costs

Final Decision
- Mechanism for approval of utility owners
- Mechanism for approval of CVRD Board.

RECOMMENDATIONS – Governance … continued

Specific Criteria

- Existing utility acceptance will be based on amalgamation with adjacent utilities
- New developments may only be supported if amalgamated with other utilities
- Development Cost Charges to be applied to all new utilities.
- No acceptance of new or experimental treatment utilities
- CVRD will not service utilities until minimum 50% of services are in use.

3.6.4. **Supply Chain Management** - Supply Chain Management policies to be reviewed to support the timely acquisition of outside resources while maintaining financial integrity and transparency. This would include entering into annual service level agreements with a wider range of pre-qualified vendors (with standing purchase orders in place) for urgent work activities, reducing the need to use bank cards, to tender or obtain quotations under these circumstances.

FINDINGS & RECOMMENDATIONS – Operations, Technical & Service Delivery

This section looks at the Operational, Technical & Service Delivery elements of CVRD managed water and wastewater utilities in terms of quality, technical capability, maintenance, utility design, compliance, capacity, health & safety, issue management, project management, emergency management, service measurement, work processes and procedures. The key findings relating to Operations, Technical & Service Delivery are:

3.7. FINDINGS – Operations, Technical & Service Delivery

3.7.1. **Water Quality** – The water quality across the 35 CVRD managed utilities varies. Water samples are taken as per regulation. There has been 'false positives' samples spoiled by the sampler that question the safety of the water source.

3.7.2. **Utility History** – There is a wide variety of maintenance skill level and materials used across the 35 utilities managed by the CVRD. In some cases, a group of "do it yourself" (DIY) residents have taken on the responsibilities of repairing, monitoring, maintaining and in some cases replacing significant elements of their water or wastewater utility. In these cases the residents have been able to keep their costs low but the results do not meet CVRD standards. Many of these groups have since supported the transfer of their utility to the CVRD. See Appendix G.

3.7.3. **Scope** - Maintaining the wide variety of water and wastewater treatment facilities over a large geographical area takes up the vast majority of time and resources. A number of treatment methods are in place, from secondary chemical disinfection (with chlorine, Cl2) to primary treatment for phosphorus, iron and manganese for water utilities and, membrane bioreactor (MBR), Upflow Sludge Blanket Filtration (USBF) and rotating biological contractor (RBC) methodologies for the treatment of wastewater. The lift stations and wastewater plants visited were in reasonable condition and normally in compliance.

3.7.4. Generally the water and wastewater utility work within the CVRD is reactive, with very little emphasis on preventative work programming.

3.7.5. **Documentation** – there is limited documentation for many aspects of managing the operations work. Staff rely on the experience of senior operators.

3.7.6. The majority of residents and resident groups are very satisfied with the quality and service of their water and wastewater utilities.

3.7.7. While complaints from the public are tracked on an excel spreadsheet, work assignments are typically issued verbally with the subsequent work is not recorded.

3.7.8. **Water Restrictions** – There is mixed opinion on how the CVRD manages water restrictions. In some cases representatives feel that the frequency and duration of water restrictions established by the CVRD is appropriate while others feel that their water restrictions could have been avoided with local area induced and managed water reduction guidelines and monitoring.

3.7.9. **Emergency Response** – There are some concerns about the CVRD's capacity to respond to large scale, regional emergencies.

3.7.10. Performance and service measurements/metrics (and KPIs) have not been identified or tracked.

FINDINGS – Operations, Technical & Service Delivery … continued

3.7.11. **Preventative Maintenance** – Operations staff do not feel they have the time to provide preventative maintenance on utilities so they end up performing quick inspections before moving to the next location.

3.7.12. **Emergency Plans** – a number of stakeholders identified that the CVRD emergency plans need to be updated.

3.7.13. Operations do not have a computerized Asset Management Utility.

3.7.14. Mobile equipment and tools are satisfactorily resourced with two new vans recently purchased.

3.7.15. Surface water treatment requires the most work for both CVRD staff and Island Health.

3.7.16. Lately, Island health has been applying additional compliance pressure through the use of legal action.

3.7.17. **Facilities** – There have been some new facilities built through gas tax grants.

3.7.18. The selection of wastewater treatment technologies is sometimes misapplied with relatively complex MBR utilities built to accommodate a very small community.

3.7.19. Operations staff has little input in the design and construction utilities.

3.7.20. **Annual Inspections, Testing & Flushing** – regular annual inspection, sample testing and utility flushing does take place, however these programs are often unfinished due to competing priorities.

3.7.21. **Technology** – The findings relating to the technology elements of the CVRD water and wastewater utility management are:

- The CVRD IT (Information Technology) department and Operations department appear to have a good working relationship with a shared belief that increasing the use of existing and new technology is a key factor to improving productivity and efficiency.
- There is a shared understanding between IT and Operations that the development and application of technology has been mostly reactive.
- The CVRD technology support for the utilities would be better served with a long-term IT strategy and plan. Engineering and IT do not get an opportunity to sit down and plan the technology elements.
- There is a lack of data for many of the systems as they have been transferred to CVRD.
- The CVRD IT group is relatively small and relies on contractors to provide some elements of the technology.
- The volume and frequency of water and wastewater utility acquisition makes it difficult to manage the IT utilities to support them.

FINDINGS – Operations, Technical & Service Delivery … continued

- **Technology: SCADA** – There is some initial implementation of SCADA (Supervisory Control and Data Acquisition) technology to monitor and collect data on the water and wastewater utilities:
  - IT supports two SCADA utilities and there are data and access security concerns with the current SCADA configuration.
  - The degree to which the utilities are geographically distributed and separated makes integration of the SCADA utilities more difficult and costly.
  - Currently data collection is being managed with portable USB drives.
  - There is no full SCADA program implemented enough to provide meaningful, region wide, functionality on monitoring and maintenance planning.
  - Significant operational efficiencies will only come with scaling the SCADA network across a majority of the utilities.
- **Technology: Mobile** – CVRD IT is working with Operations on a mobile device strategy (tablets) to enable operations staff to increase access to required information in the field as well as enable in-field and real-time information logging and updating to the CVRD systems.
- **Technology: GIS** – CVRD is well on its way to developing and integrating Geographical Information Systems with work processes and work applications.
  - The CVRD GIS & Open Data vision is strong but not well known. Opportunities exist to develop this further and make open data an element of information sharing beyond just maps.
  - A pilot project started in 2012 to log the water and wastewater utility information into GIS continues to be developed and is expected to be ready to conduct a quality assurance process on 30 of the 35 CVRD utilities.
  - Building up the GIS based utility data is important for enabling the CVRD to manage its geographically broad and increasing utility inventory.
- **Technology: Open Data** – The CVRD has launched an open data initiative through the supply of open GIS data (map data, boundaries, some utility data, address points, etc.). There is some initial recognition of the value of utilizing open data more and in particular with providing information and increasing transparency with/for stakeholder groups.
- **Digital Work Processes** – It will continue to be difficult to collect meaningful utility data until more work processes (work orders, maintenance records, etc.) are digitized and integrated into data systems (asset management, GIS, etc.) Digital and mobile device forms have started to be used by the CVRD (Hydrant Maintenance) to make processes more efficient and capture more decision-making data.
- Generally, the CVRD will benefit the collection of more data relating to the water and wastewater utilities with its decision making in the future.

FINDINGS – Operations, Technical & Service Delivery … continued

3.7.22. **Maintenance Programs** – There are some maintenance programs that are not regularly completed, such as hydrant & valve maintenance.

3.7.23. **Remote Alarms Monitoring** – CVRD has started to implement remote alarm monitoring with utility log-in capability to troubleshoot issues and alarms.

3.7.24. **Review of Private Sector Maintenance** – Private system operators were interviewed and indicated the they have the same challenges as the CVRD in managing small systems. Qualified small system operators are not willing to take on small systems that have been poorly designed, built and operated. This often leads to unqualified operators running private small water and wastewater systems.

Qualified private operators are not necessarily less expensive than local government operators however, they can gain efficiencies through geographic location and a non-unionized workforce.

3.7.25. **CVRD SPECIFIC Water Utility Findings** – the following table provides details of utility specific findings.

NO.	NAME	FINDINGS
1	Carlton Water	▪ The treatment plant building needs urgent upgrades and equipment capital upgrades are overdue. Improvements should be undertaken ASAP.
2	Cherry Point Water	▪ The wells are located adjacent to a dairy farm, which is a significant concern because of a history of organic contamination in water samples
3	Kerry Village Water	▪ The existing well has operational issues and it appears an upgrade is required. This is another high priority project for the CVRD.
4	Lambourn Estates Water	▪ There are very serious issues with the existing reservoir resulting in potential contamination of water, this should be immediately addressed.
5	Mesachie Lake Water	▪ This water utility requires a disinfection plant. Without treatment, the water is considered a serious health and liability risk. ▪ Well water in the Mesachie Lake utility however, is untreated at the source.
6	Saltair Water	▪ This utility has very high pressure, which should be addressed ASAP. ▪ The surface water intake needs refurbishment or replacement ▪ A capacity study is required to determine if a new well is necessary ▪ Compliance with new regulations will require the addition of a costly water treatment facility.
7	Shawnigan Lake Water	▪ The Shawnigan Lake utility is at the end of its life cycle. The A/C and PVC distribution lines do not meet minimum standards and are starting to fail. A replacement plan is required. ▪ The reservoir also needs refurbishment or replacement. ▪ A capacity study is required to determine if a new well is necessary.

NO.	NAME	FINDINGS
8	Shellwood Water	▪ The well requires significant capital upgrades ASAP. ▪ The distribution lines are at the end of their lifecycle and a replacement plan is required.
9	Woodley Water	▪ The treatment plant is not functioning and upgrades or refurbishment is urgently required. ▪ Additionally, there are serious water capacity concerns and a long-term capital plan is required.

3.7.26. **CVRD SPECIFIC Wastewater Utility Findings** – the following table provides details of utility specific findings.

NO.	NAME	FINDINGS
1	Arbutus Mountain Estates Wastewater	▪ There are significant treatment plant problems which should be addressed ASAP.
2	Brulette Place Wastewater	▪ The treatment plant urgently requires major upgrades or replacement.
3	Cobble Hill Wastewater	▪ The disposal fields have failed and must be replaced, or the utility could be connected with Twin Cedars. A plan is required.
4	Cowichan Bay Wastewater	▪ The conveyance utility has significant inflow and infiltration (leaks) and there is a large backlog of capital improvements. A capital plan is required.
5	Eagle Heights Wastewater	▪ The conveyance utility has significant leaks and there is a large backlog of capital improvements. A capital plan is required.
6	Lambourn Estates Wastewater	▪ The conveyance utility has significant leaks and there is a large backlog of capital improvements.
7	Mesachie Lake Wastewater	▪ There are very serious issues with this utility. Disposal fields have failed resulting in pollution problems. The collection system is failing. This should be addressed ASAP
8	Shawnigan Beach Wastewater	▪ The conveyance utility has significant leaks and there is a large backlog of capital improvements. ▪ The lagoon and pump station are at the end of their life cycles and refurbishment is required ASAP. ▪ A capital plan is required.

3.8. RECOMMENDATIONS – Operations, Technical & Service Delivery

The recommendations relating to Operations, Technical & Service Delivery are:

3.8.1. **Preventative Maintenance Programs** – Develop and implement a plan to review, schedule, conduct and track regular preventative maintenance programs such as hydrant maintenance, valve maintenance, pump and motor inspections, meter testing, I & I studies, and system flushing.

3.8.2. **Enhance Technology Support** - The key focus areas for leveraging more technology include:

- Develop and implement a Utility IT Strategy and plan to ensure long-term IT planning in relation to long-term utility planning.
- Consolidate/Integrate existing utility info/data from multiple systems into one system to help to manage multiple utilities.
- As the IT function develops more IT solutions and capacity for the utilities operations, review the possibility of additional IT staff to support this growth in IT systems.
- Choose/develop and implement Asset Management software/system.
- Formalize the regular inclusion of IT staff during concept & design phases of major utility upgrades or construction in order to consider IT enhancements.
- Formalize processes to ensure that maintenance records are submitted or updated in systems including asset management.
- **Computerized Maintenance and Management System (CMMS)** – Explore the value (Cost vs. Impact) of implementing a CMMS with integrated Customer Relationship Management (CRM) to:
  - Log customer service requests.
  - Issue and track work orders.
  - Develop and manage annual Preventative Maintenance Programs (PMP).
  - Inventory engineering assets and related attributes in a central repository and store engineering records.
- **SCADA** – Conduct a SCADA assessment and budget to plan for increasing and integrating the use of SCADA technology. Include a security risk assessment as part of the assessment.
- **Mobile** – Increase the rate and scope of current mobile technology projects to improve data collection and staff efficiencies by moving off paper process to digital.
- **GIS** – Expand and enhance the CVRD GIS program to speed up the utility infrastructure data implementation and begin to link the data to other systems that help CVRD staff and the public manage and understand the utility infrastructure environment.
- **Open Data** – Expand the existing GIS based open data program to other data sets that will enhance both staff's and residents' ability to understand the current state and make better decisions or be better informed on finances.
- Utilize more technology/digital communications with and for residents.

RECOMMENDATIONS – Operations, Technical & Service Delivery … continued

3.8.3. **Water Restrictions** – Review and revise policies and procedures for establishing water restrictions along with any new communications channels that would improve the experience and effectiveness of water restrictions. Ensure representatives have input and provide feedback on the final plan before implementing.

3.8.4. **Emergency Response** – Develop a comprehensive Emergency Response Plan tailored for large scale, regional emergencies.

3.8.5. Establish and share utility performance and service measurements/metrics.

3.8.6. **Regulatory Enforcement Plan** – Collaborate with Island Health on preventative solutions to minimize increases in legal action to enforce water and wastewater regulations.

3.8.7. **CVRD SPECIFIC Water Utility Recommendations** – the following table provides details of utility specific recommendations.

NO.	NAME	RECOMMENDATIONS	PRIORITY
1	Arbutus Ridge Water	▪ Rectify the low capacity wells, located at top of ridge, that regularly run out of water each summer ▪ Rectify unacceptably high water pressure. ▪ Complete the well upgrades	HIGH HIGH HIGH
2	Carlton Water	▪ The treatment plant requires upgrades and capital upgrades are overdue.	HIGH
3	Cherry Point Water	▪ Develop treatment protocols to address high metals, contamination risk, and salt water infiltration	HIGH
4	Dogwood Ridge Water	▪ Water supply is limited in summer months and a new source should be established.	HIGH
5	Fern Ridge Water	▪ High pH is causing the reservoir to deteriorate, and it should be replaced in the near future.	HIGH
6	Kerry Village Water	▪ Upgrade the existing well and distribution system.	HIGH
7	Lambourn Estates Water	▪ Determine methods to control contaminates in the existing reservoir.	HIGH
8	Mesachie Lake Water	▪ This water utility requires disinfection. Without treatment, the water is considered a health and liability risk. ▪ A distribution system replacement plan is required.	HIGH MEDIUM
9	Saltair Water	▪ The very high pressure should be addressed. ▪ The surface water intake needs refurbishment or replacement. ▪ A capacity study is required to determine if a new well is required. ▪ A replacement plan is required for the distribution.	HIGH MEDIUM MEDIUM

10	Shawnigan Lake Water	▪ The A/C and PVC distribution lines do not meet minimum standards are starting to fail. A replacement plan is required. ▪ The reservoir needs refurbishment or replacement. ▪ A capacity study is required to determine if a new well is required.	HIGH MEDIUM MEDIUM
11	Shellwood Water	▪ The well requires significant capital upgrades.	HIGH
12	Woodley Water	▪ Upgrades or refurbishment of the treatment plant is required. ▪ A long-term capital plan is required to address inadequate water capacity in the whole system.	HIGH MEDIUM

3.8.8. **CVRD SPECIFIC Wastewater Utility Recommendations** – the following table provides details of utility specific recommendations.

NO.	NAME	RECOMMENDATIONS	PRIORITY
1	Arbutus Mountain Estates Wastewater	▪ The treatment plant requires a renewal plan.	HIGH
2	Arbutus Ridge Wastewater	▪ The treatment plant requires significant capital upgrades along with the disposal field.	HIGH
3	Brulette Place Wastewater	▪ The treatment plant urgently requires major upgrades or replacement.	HIGH
4	Cobble Hill Wastewater	▪ The treatment plant needs to be replaced immediately (estimated cost of $500,000). The disposal fields require capital upgrades.	HIGH
5	Cowichan Bay Wastewater	▪ A capital plan is required to address leaking infrastructure.	HIGH
6	Eagle Heights Wastewater	▪ A capital plan is required to address leaking infrastructure.	HIGH
7	Kerry Village	▪ The treatment plant requires upgrades within the next five years.	HIGH
8	Lambourn Estates Wastewater	▪ The conveyance utility has significant leaks and there is a large backlog of capital improvements. ▪ Treatment plant pollution needs to be addressed. ▪ A capital plan is required to address leaking infrastructure.	HIGH MEDIUM MEDIUM
9	Mesachie Lake Wastewater	▪ Address the disposal field and collection system issues.	HIGH
10	Shawnigan Beach Wastewater	▪ The conveyance utility requires replacement. ▪ The lagoon and pump station require refurbishment ASAP. ▪ A capital plan is required.	HIGH HIGH HIGH

FINDINGS & RECOMMENDATIONS – Communications & Relationships

This section evaluates the Communications & Relationships element of CVRD staff and key stakeholders (residents, elected officials, regulatory agencies and contractors) in terms of information access, input, feedback, notifications, and relationships. The key findings relating to Communications & Relationships are:

3.9. FINDINGS – Communication & Relationships

3.9.1. **Stakeholder Survey** – The survey results provide significant insight into CVRD services as well as views and preferences of utility customers and other stakeholders. The survey results identify CVRD strengths and successes as well as several areas for improvement including service quality, service response, long term planning, cost accounting and communication.

The results also indicate a desire to focus on improving the CVRD as the service provider and not change to a private operator. There is also some interesting fee policy information to be considered. One of the most significant observations is the relatively high frequency of participants that did not know enough to answer a question, which often indicates issues with communications.

3.9.2. **Stakeholder Survey Results Overview**

Generally, the survey results are aligned with the feedback received through the interviews and groups sessions.

- Participant Profile – 82% of the participants were water system customers, 43% Sewer, 3% employees and 2% elected official, supplier or regulatory agency. The top 6 Improvement Districts participating were:
    - Saltair Water 28%
    - Arbutus Ridge Water 16%
    - Arbutus Ridge Sewer 11%
    - Cowichan Bay Sewer 7%
    - Youbou Water 6%
    - Shawnigan Beache Estates 5%
- Service Quality (Water quality, supply, maintenance) – 61% meets or exceeds expectations, while 33% somewhat or does not meet expectations.
- Service Response (phone calls, emails, etc.) – 40% excellent or good, while 15% fair or poor. 45% did not know.
- Service Value (service value for the fees/cost) – 38% excellent or good, while 47% fair or poor. 14% did not know.
- Long Term Planning - 24% excellent or good, while 39% fair or poor. 36% did not know.
- Accurate Accounting - 21% excellent or good, while 32% fair or poor. 47% did not know.
- Customer Communication - 31% very effective or effective, while 56% somewhat effective or not effective. 13% did not know.

- Emergency Communication – 41% very effective or effective, while 23% somewhat effective or not effective. 37% did not know.
- Communication Preferences – 66% email, 28% regular mail, 2% website and 1% social media.
- Electoral Area Directors Representation – 29% excellent or good, while 55% fair or poor. 16% noted not applicable.
- Water Metering – 61% agree, 25% neutral, 15% do not agree.
- Private Sector Operators Preference – 5% yes, 14% maybe, 62% no.
- New System Criteria – CVRD standards compliant 52%, CVRD standards non-compliant with commitment to compliance 14%, Don't accept new systems 7%, I don't know 28%.
- System Funding Preference – By individual system - each system funded by its users 39.0%, By all systems – all CVRD system users pay the same amount by averaging all systems costs 17%, By all CVRD taxpayers - not just the users of these systems (like most local government environments) 32.0%, I Don't Know 13%.
- Support for Fee Increase – Additional Capacity – yes 12%, maybe 34%, no 44%, I don't know 8%
- Support for Fee Increase – Long Term Infrastructure Fund - yes 25%, maybe 34%, no 38%, I don't know 5%
- Properly Funded System Increase – (0-20%) 40%, (20-40%) 2%, (40-60%) 1%, Whatever it takes 14%, I don't know 44%.

OBSERVATIONS

The survey results indicate several areas for improvement including service quality, service response, long term planning, cost accounting and communication. The results also indicate a desire to make the changes to the CVRD provider and not change to a private operator. There are also some interesting fee policy information to be considered. One of the most significant observations is the relatively high frequency of participants that did not know enough to answer the question, which often indicates issues with communications.

See Appendix D for the full survey report.

3.9.3. **Resident Communications & Relationships** – Both the survey and the interview results indicate that although there are many examples of good communication between the CVRD and residents, generally they are not consistent and there is significant room for improvements.

Specific areas of feedback included:

- Emergency communication (breaks, leaks, contamination, unplanned shut downs, etc.) was the most consistent positive feedback and had the highest praise.
- **Trust** - Most residents have a good relationship with the CVRD relating to their utilities, however, where there have been significant issues (projects, financial/cost issues, etc.) between residents and CVRD, those relationships are often fractured and minimal trust exists. In these circumstances trust has been significantly eroded between resident

FINDINGS – Communications & Relationships … continued

- groups/representatives and CVRD and continues to be a major issue and time consuming exercise for both groups. A few of the area representatives say that they are paying more for fees than they were "promised".
- **Openness** – Generally the perceived level of openness and transparency of CVRD is directly related to a conflict that may be occurring between an areas representative and the CVRD. There are representatives that feel the CVRD is very open and transparent and there are others that feel they are intentionally hiding information.
- Some of the representatives are concerned about this review and resulting report ending up like other studies that they feel were never acted on by CVRD.
- Regular and effective communication with each resident area is difficult across 35 utility utilities. The CVRD acknowledges that the website design and content is not at the level it would like and is actively working to improve.
- The complexity of water and wastewater utility engineering and best practices are not readily known by most residents and this makes communication and relationship management challenging. There are a small and active number of residents with industry and engineering backgrounds that volunteer to help bridge the knowledge gap.
- Generally, after a utility acquisition the frequency and quality of communication diminishes.
- There is a high expectation among residents of communication (frequency, details) regarding water and wastewater utilities. This seems to be significantly more than most residents expect relating to other services. There is a resident communication and relationship expectation regarding utilities in the CVRD that is higher than most local governments in BC. This is a difficult expectation to fulfill by CVRD staff. Residents want to know about many maintenance and upgrade elements of their utilities that typically are not communicated in other jurisdictions.
- The highest demand for information, by far, is relating to costs and fees.
- Some residents do not feel they get a good or full annual overview of their utility in terms of challenges, plans and schedules.

3.9.4. **Cost vs. Fees** – Although there are areas that have representation groups with a detailed awareness of their utility budgets and fees, most areas do not fully, or in some cases even partially, understand the budget and fee structure for their utility. Generally, most representatives do not feel that they have a clear picture of costs and fees.

3.9.5. **Electoral Area Directors** - The Electoral Area Directors are the official and main conduit for receiving input from the residents. There appears to be significant inconsistency between each Electoral Area Director's knowledge and perceived effectiveness by residents. The specialized nature of utility operations makes this more challenging for the Electoral Area Directors.

There are a variety of ways in which the residents are providing input to the CVRD. Residents expect both CVRD and the Electoral Directors to bring information to them as well as take their

feedback to the CVRD. Some areas have formal organized committees that meet regularly, document meetings and communicate with residents and CVRD. Residents want to be a voice/committee with/between the community – fewer people contacting the CVRD directly – and more knowledgeable when they do.

There are differing views on how residents would be best represented around water and wastewater issues. Most residents feel that the Electoral Area Directors are not providing the quality of representation they should have. Some feel this situation is due to the breadth of Regional District functions, in addition to utilities, for which Electoral Directors are responsible. Others feel that their particular Electoral Director is not effective. In some cases, residents are known to "shop around" to other Electoral Directors for support on an issue or idea.

3.9.6. **Resident Groups** – Some of the residents for each of the subdivisions/areas have formed their own residents' group to assist with input and communications. There does not appear to be a process to elect or determine best representation. Some are more formal than others with documents such as terms of reference to guide how they represent their fellow residents. Many of these residents' groups use the group to make communication with the CVRD more efficient.

3.9.7. **Transparency** – Generally there is a desire by residents to have more transparency on the financial and operational aspects of their utilities.

3.9.8. **Operations and Finance Relationship** – There are a number of disagreements and possible misunderstandings between CVRD Operations and Finance staff relating to the access to and use of surplus funds.

3.9.9. **Internal Communications** - Staff generally feel that internal communications could be improved at all levels – especially regarding frequency and details. There is a general sense from the Operations group that communication is declining between the head office and those in the field and operations. Operations would benefit from knowing more about decisions made and the rationale behind their work to improve assisting customers. In some cases information is passed on that is not relevant to their work.

3.9.10. **Customer Communications** - Water and wastewater utility customers should be updated on rate changes, capital projects, compliance issues and other matters on a regular basis.

3.9.11. **Internal Meetings** - Nonproductive meetings with agendas that have little relevance take up too much valuable time.

3.9.12. **Internal Information Access** – There is no access to online information due to a lack of computer stations for outside workers at the Bings Creek Recycling (Operations) Centre.

3.9.13. **Internal Relationships** – Operations staff don't know the office staff very well as they typically have minimal interaction.

3.9.14. **Digital Communication Strategy** – CVRD staff are well aware that their website and other digital communication assets are not currently meeting their communication needs nor the needs of residents. Stakeholders agree with this.

3.10. RECOMMENDATIONS – Communication & Relationships

The recommendations relating to Communications & Relationships are:

3.10.1. **Stakeholder Communications & Relationship Strategy** – Develop and implement a stakeholder communication and relationship strategy that accommodates the current need for regular and detailed updates on utility finances, long-term planning and project schedules. This strategy should include:

- A review of the Stakeholder Survey results looking for opportunities to address feedback.
- **Financial Information** – Develop and get sample resident feedback on, and distribute/share financial cost and fee information that provides province-wide context of comparable value for fees charged.
- **Cost vs Fees** – Develop an extensive portfolio of information to explain the complexity of the budgeting and fee process.
- **Public Consultation** – Review the staffing requirements for extending the public consultation process for changes and improvements to utilities.
- **Education Session** – Consider establishing education sessions and material for residents to help them understand the complexities of water and wastewater utility management.
- **Digital Communications** - Continue with website and digital communications improvements and test new designs and content with sample residents.
- **Transparency** – Find additional ways to provide greater transparency and share any planned improvements.
- **Resident Group Representation** – After establishing a Utility Commission, ensure that ad-hoc resident groups have a channel to communicate with the Commission. Except for simple technical questions, the Commission, not staff, should deal with all higher level financial and governance concerns.

3.10.2. **Internal Communications** – Review and adjust internal communication strategies to ensure that relevant information is being shared to appropriate levels in the CVRD organization. Consider including a mechanism for employees to easily share improvement ideas with the management team that includes a response for each idea put forward to continue to build credibility and trust.

3.10.3. **Team Building** – Consider team building sessions/events to allow Operations, Engineering and other staff to meet and connect.

3.10.4. **Report Communication & Implementation Plan** – Develop a plan for sharing the results of this review and tracking the implementation plan progress with staff, residents and stakeholders to demonstrate that the CVRD has listened and intends to improve.

3.10.5. **Electoral Area Directors** – Review with Electoral Area Directors ways in which the representation of utility customers can be improved based on the input of this review.

FINDINGS & RECOMMENDATIONS – People & Structure

This section looks at the People & Structure elements of the CVRD in terms of engagement, culture, performance, development, structure, and roles. The key findings relating to People and Structure are:

3.11. FINDINGS – People & Structure

3.11.1. Generally, the staff of departments and divisions directly involved with the management and operations of CVRD utilities (Engineering, Water Management) are well respected by stakeholders and function well with each other.

3.11.2. Generally, employee skills and abilities are well utilized but are often stretched thin maintaining the many treatment facilities along with water distribution and wastewater collection networks that span a large geographical area. This, however, is also partly due to a lack of resources.

3.11.3. **Engineering Staff** – Engineering staff are generally focused on day-to-day issues and appear to have inadequate time to make meaningful progress on long term plans such as infrastructure condition assessments, 5-year capital plans or other fundamental strategies related to infrastructure management. Engineering did increase staff in 2016 Q4 and this should assist in the capacity required to accomplish long term plans.

3.11.4. **Operations Staff** - Operations staff are focused on day-to-day issues and do not have time to make progress on many standard maintenance programs such as leak detection for the water utilities, or an inflow and infiltration (I&I) program for the wastewater utilities. Operations staff:

- Are generally engaged in their work and care about the condition of the water and wastewater infrastructure they are responsible to maintain,
- Feel sufficiently recognized for their efforts by their immediate supervisors however, the organization is without a formal employee recognition program,
- Are not receiving regular scheduled employee performance and career development reviews,
- Feel stretched thin which means only the bare minimum is done at each facility. This is even more of an issue when someone is away,
- Vacancies take a long time to fill,
- Have generalized knowledge, have the tickets, but don't have specialized training, for example for pressure regulating value (PRV) maintenance, wastewater plant knowledge, and system hydraulics.
- Feel strong loyalty within their team,
- Feel they are understaffed in Utilities.

3.11.5. **Electrical Expertise** - A particular need was identified for in-house electrical/instrumentation expertise rather than contracting on an as-needed basis. Annual operating costs between $140k and $300k for this service over recent years were cited along with significant delays in "getting the work done." Current practice consists of saving electrical work until enough work has built up to warrant hiring an out-of-town contractor. The benefits to performing this function in-house include cost savings as well as employee expertise with the many different electrical

controls and automated utilities in place. Because of these planned delays, employees that are knowledgeable although not properly certified, feel compelled to do the work themselves, at a significant risk. Thee would seem to be a legitimate business case for moving this service in-house.

3.11.6. **Structure** – The CVRD organizational structure is typical for a local government organization. The span of control is well balanced and is not causing any apparent issues or preventing CVRD from making improvements in the near future. If the CVRD does not move to a more amalgamated utility model in the future, then the organizational structure will need to be revisited as additional operations and service relationship resources will be required to manage within the existing multi-utility model.

3.11.7. Staff in respective departments care and have good internal relations and generally feel they have a positive work environment.

3.11.8. **Internal Performance Management & Development** – There is no formal performance management process for unionized employees, although this is planned for 2017/2018. There is an introductory stage evaluation process for management/exempt staff. There are some development opportunities throughout the organization, however they are not consistently utilized. In some cases there is a budget for professional development however staff feel that they cannot always take time away from work because of work load pressures. The number and rate of new utility acquisitions and the condition of those utilities is one of the major reasons cited for the workload.

3.11.9. **Health & Safety (Operations)** – The OH&S program within the CVRD was formalized in 2013 and although staff generally understand their responsibilities and follow safe practices, there is still some risks and compliance issues. Examples include:

- Outside workers feel supported by supervisory staff to conduct their work safely.
- Staff understand the principles and requirements of working safely, despite no formal OH&S program.
- WHMIS, new employee orientation, regular tailgate meetings, and work site inspections occur on a regular basis.
- The Emergency Response Plan requires updating and exercising (in progress).
- Standard Operating Procedures (SOP's) require updating.
- MSDS's require a formal update (recognized in OH&S Committee minutes)

3.11.10. **Labour Relations** – There are very few or significant issues between the unions and management demonstrating positive work environment.

3.12. RECOMMENDATIONS – People & Structure

Many of the recommendations in other sections of this report will impact and assist the staff. The additional recommendations relating to People & Structure are:

3.12.1. **Long-term Planning Progress** - Engineering staff could be increased or supplemented with consulting services in order to make progress on long term plans.

3.12.2. **Operations In-house Electrician** - Hiring an in-house qualified electrician/instrumentation journeyman who can learn the details of each water, wastewater utility will provide additional capacity and specialization. The funding is already there, currently spent on contract electricians, so there is no need to wait for a retirement or vacancy. This specialist will allow for preventive maintenance, not just reactive, as well as the potential to provide electrical services to other departments, where possible.

3.12.3. **Temporary Engineering Technician** – An additional temporary Engineering Technician should be considered to develop and implement utility maintenance programs such as leak detection, I&I, cross connection control, and related programs.

3.12.4. **OH&S** – Enhance the OH&S program:

- Update the Standard Operating Procedures (SOP's) with a focus on deep excavations, written hazard assessments.
- Update the WHMIS program incorporating recent WorkSafeBC changes.
- Develop and implement a New Employee orientation package.
- Enhance ongoing annual field inspections, with documentation.
- Update, implement and exercise Emergency Response plans.
- Update and implement MSDS

3.12.5. **Recruitment Review** – Review the processes and timelines for recruiting operational engineering staff to ensure that these resource vacancies are filled in a reasonable timeframe.

3.12.6. **Operations & Communications Staff** – Once a communication and engagement plan is established, additional resources will likely be required to manage the additional communications and relationship requirements of managing a multiple utility model.

3.12.7. Develop and implement a performance development program for all unionized staff.

3.12.8. Develop and implement a formal Attendance Management program.

3.12.9. A joint Occupational Health and Safety Committee should be appointed to implement an OH&S and Wellness Program as soon as possible.

3.12.10. Senior management should attend the Operations Centre periodically to engage directly with outside workers.

3.12.11. Routinely celebrate project successes with staff and the Board.

4. IMPLEMENTATION PLAN

This implementation plan summarizes and organizes the recommendation portions of this report.

NO.	CATEGORY	ACTION ITEM	PRIORITY
1	Leadership, Strategy & Planning	Develop and implement an integrated Development Plan identifying long term strategic goals for the region.	HIGH
2	Leadership, Strategy & Planning	Create and operationalize a Utility Commission, or alternatively, a Water Commission and a Wastewater Commission	HIGH
3	Leadership, Strategy & Planning	Develop a long-range strategic financial plan.	HIGH
4	Leadership, Strategy & Planning	Develop an Asset Management Plan as soon as possible.	HIGH
5	Leadership, Strategy & Planning	Develop an Asset Management Policy and reference the policy in reports from staff to the Board when User Rates, Parcel Taxes, capital plans and other key infrastructure decisions are under consideration.	HIGH
6	Leadership, Strategy & Planning	Develop comprehensive long term capital plans for all assets.	HIGH
7	Leadership, Strategy & Planning	Develop a CVRD Utility Amalgamation Strategy and Plan.	HIGH
8	Financial Sustainability	Conduct a budgeting exercise in 2017 establishing appropriate levels of funding for each jurisdiction and the possibility of merging individual cost centres.	HIGH
9	Financial Sustainability	Develop a Development Cost Charges Bylaw.	HIGH
10	Financial Sustainability	Develop and implement a sustainable Parcel Tax and User Fee strategy, considering significant changes to rate structures.	HIGH
11	Governance	CVRD to take on the role of Approving Officer (currently with MOTI).	HIGH
12	Governance	Develop a Water and Wastewater Utility Acquisition Policy.	HIGH
13	Operational, Technical & Service Delivery	Develop and implement a Utility IT Strategy and plan.	HIGH
14	Operational, Technical & Service Delivery	Implement Asset Management Software/System.	HIGH
15	Operational, Technical & Service Delivery	Conduct a SCADA assessment and development budget and plan for increasing and integrating the use of SCADA technology.	HIGH

NO.	CATEGORY	ACTION ITEM	PRIORITY
16	Operational, Technical & Service Delivery	Utilize more technology/digital communications with and for residents.	HIGH
17	Operational, Technical & Service Delivery	Develop, implement and test regularly an Emergency Response Plan.	HIGH
18	Operational, Technical & Service Delivery	Work with Island Health to address water and wastewater regulation enforcement.	HIGH
19	Operational, Technical & Service Delivery	Address the issues within the CVRD Specific Water and Wastewater Utility Recommendations. Sections 3.8.9 & 3.8.10.	HIGH
20	Communications & Relationships	Develop and implement a stakeholder communication and relationship strategy that accommodates the existing need for regular and detailed updates for residents on utility finances, long-term planning and project schedules and updates. See Section 3.10.1 for details.	HIGH
21	Communications & Relationships	Consider team building sessions/events to allow Operations, Engineering and other staff to meet and connect. A BBQ at Bings Creek was mentioned.	HIGH
22	People & Structure	Routinely celebrate project successes with staff and the Board.	HIGH
23	People & Structure	Enhance the OH&S program	HIGH
24	People & Structure	Senior management should attend the Operations Centre periodically to engage directly with outside workers.	HIGH
25	People & Structure	Hire a qualified electrician/instrumentation journeyman.	HIGH
26	Leadership, Strategy & Planning	Develop KPIs.	MEDIUM
27	Leadership, Strategy & Planning	Develop a grant application plan and schedule.	MEDIUM
28	Leadership, Strategy & Planning	Develop a partnership strategy and implementation plan to broaden and enhance existing partnerships.	MEDIUM
29	Governance	Review, revise and develop supply chain management policies.	MEDIUM
30	Operational, Technical & Service Delivery	Develop and implement a plan to review, schedule, conduct and track regular preventative maintenance programs such as hydrant & valve maintenance, annual pump and motor inspections, testing & flushing.	MEDIUM

NO.	CATEGORY	ACTION ITEM	PRIORITY
31	Operational, Technical & Service Delivery	Consolidate/Integrate existing utility info/data from multiple systems.	MEDIUM
32	Operational, Technical & Service Delivery	Formalize the regular inclusion of IT staff during concept & design phases of major utility upgrades or construction in order to consider IT enhancements.	MEDIUM
33	Operational, Technical & Service Delivery	Formalize processes to ensure that new, upgraded and maintenance records are submitted or updated in systems including asset management.	MEDIUM
34	Operational, Technical & Service Delivery	Evaluate the value of a CMMS with integrated CRM system to track and manage stakeholder requests.	MEDIUM
35	Operational, Technical & Service Delivery	Increase the rate and scope of current mobile technology projects to improve data collection and staff efficiencies by moving off paper process to digital ones.	MEDIUM
36	Operational, Technical & Service Delivery	Expand and enhance the CVRD GIS program to speed up the utility infrastructure data implementation and begin to link the data to other systems that help the CVRD staff and the public manage and understand the utility infrastructure environment.	MEDIUM
37	Operational, Technical & Service Delivery	Expand the existing GIS based open data program to other data sets that will enhance both the staff's and residents' ability to understand current state and make better decisions or be better informed on finances.	MEDIUM
38	Operational, Technical & Service Delivery	Review and revise policies and procedures for establishing water restrictions along with any new communications channels that would improve the experiences and effectiveness of the water restrictions.	MEDIUM
39	Operational, Technical & Service Delivery	Establish and Share Utility performance and service measurements/metrics (KPI's).	MEDIUM
40	Communications & Relationships	Review and adjust internal communication strategies to ensure that relevant information is being shared to the appropriate levels in the CVRD.	MEDIUM
41	Communications & Relationships	Develop a plan for sharing the results of this review and tracking the implementation plan progress with staff, residents and stakeholders to demonstrate that the CVRD listened and intends to improve.	HIGH
42	Communications & Relationships	Review the Electoral Area Directors ways in which the representation of utility customers can be improved based on the input of this review.	MEDIUM

NO.	CATEGORY	ACTION ITEM	PRIORITY
43	People & Structure	Develop and implement a performance development program for all unionized staff.	MEDIUM
44	People & Structure	Develop and implement an attendance management program with support for employees to achieve attendance goals.	MEDIUM
45	People & Structure	Review the processes and timelines for recruiting operational engineering staff to ensure that these resource vacancies are filled in a reasonable timeframe.	MEDIUM
47	People & Structure	Once a communication and engagement plan is established additional capacity may be required to manage the additional communications and relationship requirements of a multiple utility model.	MEDIUM
48	People & Structure	Consider ways to resource the capacity to develop and implement utility maintenance programs such as leak detection, I&I, and cross connection control.	MEDIUM
49	Leadership, Strategy & Planning	Develop a regional growth feasibility study of the Region's infrastructure growth needs to determine how to best meet the water and wastewater requirements of the future with an expected growth rate of 2% to 5% per annum.	LOW
50	Operational, Technical & Service Delivery	As the IT function develops more IT solutions and capacity for the utilities operations, review the possibility of additional IT staff to support this growth in IT systems.	LOW

5. REFERENCES

1. Are our Water Systems at Risk? Assessing the Financial Sustainability of BC's Municipal Water and Wastewater Utilities Report, February 2015, BC Water & Waste Association and Urban Systems - http://bcwwa.org/resourcelibrary/Are%20Our%20Water%20Systems%20at%20Risk%20-%20Full%20Report.pdf
2. Population Estimates - http://www.bcstats.gov.bc.ca/statisticsbysubject/demography/populationestimates.aspx
3. Population Projections - http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationProjections.aspx
4. South Sector Liquid Waste Master Plan, 2015 CVRD
5. Municipal Design Guideline Manual, Master Municipal Construction Documents Association - www.mmcd.net
6. CVRD Regional Population, Housing and Employment, 2015 Lam & Co. Report for CVRD
7. Best Practices Guidelines for Approving New Water Systems, Report for UBCM by Urban Systems - www.ubcm.ca/assets/.../Policy/.../1_Final%20Subdivision%20BMP.pdf
8. Cowichan Basin Water Management Plan, 2007 report by Westland Resource Group Inc. - http://www.cowichanwatershedboard.ca/doc/cowichan-basin- water-management- plan
9. Water, Water Everywhere – Drinking Water in Island Health, 2014 report - http://www.viha.ca/NR/rdonlyres/7D096D26-A2DF-4746-BF0F-77E39BA25CB0/0/MHODrinkingWaterReportFINALNov272014.pdf
10. Fit to Drink: Challenges in Providing Safe Drinking Water in British Columbia, 2008 Ombudsman report to Legislative Assembly of BC - http://www.wsabc.ca/wp-content/uploads/2011/04/Ombudsmans-Report- on-Drinking- Water.pdf
11. CVRD Strategic Plan, 2014 – 2018 - http://www.cvrd.bc.ca/DocumentCenter/View/76405
12. Guidelines for Canadian Drinking Water Quality, Government of Canada (Rev.2014) - http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide- res_recom/index-eng.php
13. Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies in BC, Province of BC (2012) - http://www2.gov.bc.ca/assets/gov/environment/air-land- water/surfacewater-treatment- objectives.pdf
14. Drinking Water Officers' Guide, Province of BC, Province of BC (2007) - http://www2.gov.bc.ca/assets/gov/environment/air-land- water/dwog-introduction.pdf
15. Design Guidelines for Rural Residential Community Water Utilities, Province of BC (2012) - http://www2.gov.bc.ca/assets/gov/environment/air-land- water/water/water-rights/waterutilities/design_guidelines_rural_residential_water_mar2012.pdf
16. Guidelines for Groundwater Reports and Well Testing in Support of a CPCN, Government of Canada - http://www2.gov.bc.ca/assets/gov/environment/air-land- water/water/water-rights/waterutilities/cpcn_appen5_guidelines_for_groundwater_reports_and__well_testing.pdf

17. Guidance Document for Determining Groundwater at Risk of Containing Pathogens, Province of BC - http://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/documents/garp_assessment_v2_dec1_2015_final.pdf

18. Water under Direct Influence of Surface Water, Province of BC (2012) - http://www2.gov.bc.ca/assets/gov/environment/air-land- water/garp-gwudi- guidance.pdf

19. Guide to Rural Subdivision Approvals, Province of BC (2012) - https://www.th.gov.bc.ca/da/Subdivision_Home.asp

20. Environmental Management Act , Province of BC – Municipal Wastewater Regulation - http://www2.gov.bc.ca/gov/content/environment/waste-management/sewage/municipal- wastewater-regulation

21. BC Water Quality Guidelines, Province of BC - http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-

Creative Commons Copyright, Maple Bay, Cowichan Valley, BC, Canada, Taken September 11, 2006 by Tracy O.

The INNOVA Strategy Group appreciates the opportunity to work with the CVRD staff, residents, elected officials and regulatory partners. We were very impressed by the commitment, passion and pride demonstrated throughout the review process.

Innova Strategy Group Ltd.
1372 Lennox Street
North Vancouver, BC
V7H 1X3
kevin@isgl.ca
www.innovastrategygroup.com

6. APPENDICES

Appendix A: **Financial Analysis – Water Utilities**

CVRD Managed Water Utilities

			Existing Rates			Proposed New Rates									
						Parcel Tax Assessment							User Fee Assessment		
	# of Parcels	# of Households	Parcel Tax	User Fee	**Total Fees & Charges**	Replacement Value	Reserve Balance	Life Expectancy (Years)	Asset Contribution per Parcel (Subtotal #1)	Allocations & Debt	Allocations per Parcel (Subtotal #2)	Recommended Parcel Tax (Subtotals 1+2)	Operations, Maintenance, Wages & Benefits	Recommended User Fee	**Total Fees & Charges**
Arbutus Mtn Estates	123	124	$ 260	$ 280	**$ 540**	$ 2,000,000	$ 53,000	60	$ 264	$ 15,000	$ 122	$ 386	$ 55,000	$ 444	**$ 829**
Arbutus Ridge	646	646	$ -	$ 398	**$ 398**	$ 10,000,000	$ 117,000	60	$ 255	$ 67,000	$ 104	$ 359	$ 194,000	$ 300	**$ 659**
Bald Mtn	100	44	$ 404	$ 270	**$ 674**	$ 1,050,000	$ 26,000	60	$ 171	$ 9,000	$ 90	$ 261	$ 61,000	$ 1,386	**$ 1,647**
Burnum	88	83	$ 445	$ 400	**$ 845**	$ 153,000	$ -	60	$ 29	$ 10,000	$ 114	$ 143	$ 71,000	$ 855	**$ 998**
Carlton	45	42	$ 587	$ 400	**$ 987**	$ 624,000	$ -	60	$ 231	$ 9,000	$ 200	$ 431	$ 43,000	$ 1,024	**$ 1,455**
Cherry Point	30	29	$ 675	$ 380	**$ 1,055**	$ 1,846,000	$ 13,000	50	$ 1,222	$ 6,000	$ 200	$ 1,422	$ 38,000	$ 1,310	**$ 2,732**
Dogwood Ridge	33	33	$ 700	$ 660	**$ 1,360**	$ 580,000	$ -	60	$ 293	$ 13,000	$ 394	$ 687	$ 36,000	$ 1,091	**$ 1,778**
Douglas Hill	138	135	$ 371	$ 315	**$ 686**	$ 465,000	$ -	60	$ 56	$ 34,000	$ 246	$ 303	$ 71,000	$ 526	**$ 828**
Fern Ridge	34	32	$ 520	$ 425	**$ 945**	$ 940,000	$ 5,000	30	$ 917	$ 8,000	$ 235	$ 1,152	$ 35,000	$ 1,094	**$ 2,246**
Honeymoon Bay	229	497	$ 303	$ 160	**$ 463**	$ 8,884,000	$ -	50	$ 776	$ 36,000	$ 157	$ 933	$ 100,000	$ 201	**$ 1,134**
Kerry Village	89	98	$ 185	$ 667	**$ 852**	$ 2,500,000	$ 12,500	50	$ 559	$ 12,000	$ 135	$ 694	$ 60,000	$ 612	**$ 1,306**
Lambourn Estates	154	174	$ 267	$ 680	**$ 947**	$ 4,270,000	$ 5,000	50	$ 554	$ 32,000	$ 208	$ 762	$ 103,000	$ 592	**$ 1,354**
Mesachie Lake	81	78	$ 300	$ 130	**$ 430**	$ 3,247,000	$ 67,000	50	$ 785	$ 8,000	$ 99	$ 884	$ 50,000	$ 641	**$ 1,525**
Saltair	864	829	$ 579	$ 190	**$ 769**	$ 10,660,000	$ 19,000	50	$ 246	$ 112,000	$ 130	$ 376	$ 270,000	$ 326	**$ 702**
Satellite Park	82	77	$ 543	$ 300	**$ 843**	$ 2,530,000	$ 8,000	50	$ 615	$ 34,000	$ 415	$ 1,030	$ 55,000	$ 714	**$ 1,744**
Shawnigan Lake	710	680	$ 300	$ 220	**$ 520**	$ 13,370,000	$ 2,000	50	$ 377	$ 55,000	$ 77	$ 454	$ 256,000	$ 376	**$ 830**
Shellwood	31	26	$ 400	$ 700	**$ 1,100**	$ 232,000	$ -	60	$ 125	$ 10,000	$ 323	$ 447	$ 34,000	$ 1,308	**$ 1,755**
Woodley Range	37	25	$ 800	$ 800	**$ 1,600**	$ 233,000	$ 1,000	50	$ 125	$ 4,000	$ 108	$ 234	$ 56,000	$ 2,240	**$ 2,474**
Youbou	588	530	$ 262	$ 150	**$ 412**	$ 12,960,000	$ 20,000	50	$ 440	$ 65,000	$ 111	$ 551	$ 166,000	$ 313	**$ 864**
TOTAL	**4102**	**4182**				**$ 76,544,000**	**$348,500**								
AVERAGE			**$416**	**$396**	**$812**							**$606**		**$808**	**$1,414**

Appendix A: **Financial Analysis – Wastewater Utilities**

CVRD Managed Wastewater Utilities

	# of Parcels	# of Households	Existing Rates			Proposed New Rates														
						Parcel Tax Assessment									User fee Assessment					
			Parcel Tax	User Fee	Total Fees & Charges	Replacement Value	Reserve Balance	Life Expectancy (Years)	Asset Contribution per Parcel (Subtotal #1)	Allocations & Debt	Allocations per Parcel (Subtotal #2)	Recommended Parcel Tax (Subtotals 1+2)	Operations, Maintenance, Wages & Benefits	Recommended User Fee	Total Fees & Charges
Arbutus Mtn Sewer	123	121	$ 731	$ 465	$ 1,196	$ 3,985,000	$ 22,000	50	$ 644	$ 31,000	$ 252	$ 896	$ 55,000	$ 455	$ 1,351
Arbutus Ridge Sewer	646	646	$ -	$ 389	$ 389	$ 2,450,000	$ 78,000	60	$ 61	$ 73,000	$ 113	$ 174	$ 180,000	$ 279	$ 453
Bald Mtn Sewer	130	53	$ 400	$ 270	$ 670	$ 1,821,000	$ 21,000	60	$ 231	$ 9,000	$ 69	$ 300	$ 63,000	$ 1,189	$ 1,489
Brulette Place Sewer	58	56	$ 427	$ 550	$ 977	$ 500,000	$ -	50	$ 172	$ 14,000	$ 241	$ 414	$ 38,000	$ 679	$ 1,092
Cobble Hill Sewer	84	84	$ 392	$ 250	$ 642	$ 2,463,000	$ -	50	$ 586	$ 11,000	$ 131	$ 717	$ 40,000	$ 476	$ 1,194
Cowichan Bay Sewer	755	810	$ 247	$ 260	$ 507	$ 13,306,000	$ 277,000	50	$ 345	$ 49,000	$ 65	$ 410	$ 445,000	$ 549	$ 959
Eagle Heights Sewer	760	760	$ -	$ 330	$ 330	$ 7,587,000	$ 1,200,000	50	$ 168	$ 47,000	$ 62	$ 230	$ 123,000	$ 162	$ 392
Kerry Village Sewer	97	93	$ 257	$ 725	$ 982	$ 2,763,000	$ 10,000	50	$ 568	$ 19,000	$ 196	$ 764	$ 85,000	$ 914	$ 1,677
Lambourn Estates Sewer	138	145	$ 226	$ 525	$ 751	$ 4,080,000	$ -	50	$ 591	$ 28,000	$ 203	$ 794	$ 81,000	$ 559	$ 1,353
Maple Hills Sewer	60	60	$ 417	$ 300	$ 717	$ 2,307,000	$ 9,000	50	$ 766	$ 8,000	$ 133	$ 899	$ 35,000	$ 583	$ 1,483
Mesachie Lake Sewer	49	49	$ 390	$ 300	$ 690	$ 1,000,000	$ 41,000	50	$ 391	$ 2,000	$ 41	$ 432	$ 25,000	$ 510	$ 942
Mill Springs Sewer	239	210	$ 410	$ 320	$ 730	$ 1,931,000	$ -	60	$ 135	$ 22,000	$ 92	$ 227	$ 159,000	$ 757	$ 984
Sentinel Ridge Sewer	147	89	$ 286	$ 765	$ 1,051	$ 3,051,000	$ 61,000	60	$ 339	$ 18,000	$ 122	$ 461	$ 114,000	$ 1,281	$ 1,742
Shawnigan Beach Estates	371	391	$ 364	$ 410	$ 774	$ 6,588,000	$ -	50	$ 355	$ 60,000	$ 162	$ 517	$ 239,000	$ 611	$ 1,128
Twin Cedars Sewer	76	74	$ 657	$ 392	$ 1,049	$ 1,911,000	$ 20,000	50	$ 498	$ 9,000	$ 118	$ 616	$ 76,000	$ 1,027	$ 1,643
Youbou Sewer	78	43	$ 500	$ 345	$ 845	$ 1,997,000	$ -	50	$ 512	$ 2,000	$ 26	$ 538	$ 49,000	$ 1,140	$ 1,677
TOTAL	3,811	3,684				$ 57,740,000	$ 1,739,000								
AVERAGE			$ 357	$ 412	$ 769							$ 524		$ 698	$ 1,222

Appendix B: **Detailed Utility Analysis**

ARBUTUS MTN ESTATES WATER - 605

Description

This system was built in 2008. Water is supplied from two groundwater wells to 123 parcels (124 homes). Water is chlorinated and pumped by two heavy-duty pumps to a 750,000 liter steel-bolted reservoir.

The subdivision is gravity fed and a fire pump will start if pressure is less than 140kPA. The system is fully metered. Staff report that the infrastructure is generally in good condition and there are no serious concerns.

Water Quality

There have been fifteen minor complaints by residents over the past three years, and one positive total coliform test result in 2014.

Geographic

This water system is remote and there are no similar CVRD operations nearby.

2016 Rates

Parcel Tax $260
User Fee $280

Customers

123 parcels
124 users

Proposed 2017 Rates

Parcel Tax $260
User Fee $280

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$33,000
User Fees	$34,000
Other	$10,000
Debt Proceeds	$22,000
TOTAL	**$99,000**

Expenditures: Average 2016-2020

Operations	$64,000
Long Term Debt	$3,000
Capital	$32,000
TOTAL	**$99,000**

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	1967	$37,000	$246,000
Reservoir	2007	$185,000	$164,000
Treatment Plant	2007	$135,000	$120,000
Distribution System	2008	$817,000	$661,000
Distribution System	2008	$892,000	$722,000
		$2,066,000	$1,913,000
Capital Reserve Balance			$53,000
Asset Replacement Reserve Required (per parcel)			$264

Conclusions

The Arbutus Mountain Estates Water System is in generally good shape and no large capital expenditures are anticipated in the next 5 - 10 years.

Rating: 9/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$260	$386
User Fee	$280	$444
TOTAL	$540	$830

ARBUTUS MTN ESTATES SEWER - 805

2016 Rates

Parcel Tax $731
User Fee $465

Customers

123 parcels
121 users

Proposed 2017 Rates

Parcel Tax $798
User Fee $490

Description

This sewer infrastructure consists of an onsite gravity collection system, lift station, wastewater treatment plant, treated sewer lift station, force main and sanitary disposal field.

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$95,000
User Fees	$55,000
Other	$4,000
TOTAL	$154,000

Expenditures: Average 2016-2020

Operations	$150,000
Capital	$4,000
TOTAL	$154,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	1967	$60,000	$398,000
Collection System	2006	$2,394,000	$2,410,000
Treatment Plant	2006	$965,000	$975,000
Pump Station	2006	$140,000	$140,000
Collection System	2014	$61,000	$62,000
		$3,620,000	$3,985,000
Capital Reserve Balance			$22,000
Asset Replacement Reserve Required (per parcel)			$644

Conclusions

Although this the Arbutus Mountain Sewer System is relatively new, there are issues with the treatment plant and it is expensive to operate. Capital improvements are required, including screening.

Rating: 6/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$798	$896
User Fee	$490	$455
TOTAL	$1,288	$1,351

ARBUTUS RIDGE SEWER - 815

2016 Rates

Parcel Tax $0
User Fee $389

Customers

646 parcels
646 users

Proposed 2017 Rates

Parcel Tax $0
User Fee $401

Description

CVRD took on the Arbutus Ridge Sewer system in 2010. The system consists of a gravity sewer collection system, pump stations and dual biological treatment plants.

Effluent is pumped to a ground disposal field.

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$33,000
User Fees	$34,000
Other	$10,000
Debt Proceeds	$22,000
TOTAL	$99,000

Expenditures: Average 2016-2020

Operations	$64,000
Long Term Debt	$3,000
Capital	$32,000
TOTAL	CAD198,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Sewer System	2011	$128,000	$2,450,000
Capital Reserve Balance			$78,000
Asset Replacement Reserve Required (per parcel)			$61

Conclusions

This system was built in the late 80s and early 90s. In general the conveyance system appears to be in good shape. However the disposal field has failed and the treatment plant requires significant capital upgrades.

Rating: 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$0	$174
User Fee	$401	$279
TOTAL	$401	$453

ARBUTUS RIDGE WATER - 615

Description

Construction of the Arbutus Ridge strata took place between 1987 and 2014. CVRD took over the water system in 2010.

Water is supplied by 3 groundwater wells on the golf course lands. Water is chlorinated and pumped to a concrete reservoir (285,000 imperial gallons). The chlorination system has an emergency diesel generator.

A booster pump supplies water to the distribution network. (The booster station was rebuilt in 2015.) Distribution consists of 1,800 m of mains, 10,300m of distribution lines, 150 valves and 56 hydrants.

The system is not metered.

Water Quality

Microbiological: 2 total coliform test results on Nov 17, 2015.

Chemical: High HPC levels.

Some concern about discolored water and pesticides from adjacent golf course

Geographic

Close to CVRD Satellite Park water system, and the Braithwaite Estates (Improvement District) water system.

2016 Rates

User fee: $389

Proposed 2017 Rates

User fee: $398

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

User Fees	$280,000
Other	$20,000
TOTAL	$300,000

Expenditures: Average 2016-2020

Operations	$271,000
Long Term Debt	$6,000
Capital	$20,000
Transfer to Capital Reserve	$3,000
TOTAL	$300,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Water System	TBD	TBD	$10,000,000
Capital Reserve Balance			$118,000
Asset Replacement Reserve Required (per parcel)			$0

Conclusions

The water supply and quality is generally quite good.

Rating: 8/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	0	$359
User Fee	$398	$300
TOTAL	$398	$659

BALD MTN. SEWER - 811

2016 Rates

Parcel Tax $400
User Fee $270

Customers

130 parcels
53 users

Potential of 354 total users

2016 Rates

Parcel Tax $400
User Fee $270

Description

CVRD took over this system in 2010.

The system consists of a membrane bioreactor plant that has provision for additional treatment. Effluent is disinfected by UV prior to discharge into the ground via two infiltration basins.

The system consists of 128 serviced lots with a potential build-out of 354 single and multi-family homes.

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$52,000
User Fees	$24,000
Transfer from Capital Reserve	$3,000
TOTAL	$79,000

Expenditures: Average 2016-2020

Operations	$70,000
Capital	$5,000
Transfer to Capital Reserve	$4,000
TOTAL	$79,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	2009	$160,000	$165,000
Collection System	2009	$453,000	$455,000
Treatment Plant	2009	$1,110,000	$1,115,000
Building	2009	$75,000	$86,000
		$1,798,000	$1,821,000
Capital Reserve Balance			$21,000
Asset Replacement Reserve Required (per parcel)			$231

Conclusions

This system is new and in good shape. Relatively few issues.

Rating: 9/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$400	$300
User Fee	$270	$1,189
TOTAL	$670	$1,489

Additional Comments

The proposed increase in User Fees is relatively large. The User Fee increase is primarily due to the low number of customers. The operational expense (an average annual cost of $70,000 over the next 5 years) is shared amongst only 53 users, resulting in a User Fee of $1,189 per parcel. It should be noted that as more properties are developed, the User Fee will decrease. The anticipated future User Fee at build-out (130 parcels) is $538.

BALD MTN WATER - 611

Description

The system was constructed in 2008. Groundwater is supplied from 3 wells and pumped to a UV and chlorine injection treatment system and into a steel reservoir. Gravity flow to the customers. Fully metered. System is operating well.

Phase 2 was established in 2015 with 54 new properties added to the system.

The Bald Mountain Water System is also known as the Woodland Shores Water System.

Water Quality

Annual report not available on CVRD website.

Geographic

Remote are on Cowichan Lake. Near several other small CVRD water systems.

2016 Rates

Parcel tax: $404
User fee: $270

Customers

100 parcels
44 users

Proposed 2017 Rates

Parcel tax: $400
User fee: $270

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$52,000
User Fees	$24,000
TOTAL	$76,000

Expenditures: Average 2016-2020

Operations	$70,000
Transfer to Capital Reserve	$6,000
TOTAL	$76,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Land	2009	$60,000	$60,000
Reservoir	2009	$343,000	$345,000
Treatment Plant	2009	$164,000	$165,000
Distribution System	2009	$474,000	$476,000
		$1,041,000	$1,046,000
Capital Reserve Balance			$26,000
Asset Replacement Reserve Required (per parcel)			$171

Conclusions

This is a new system and in great shape. No issues. The challenge is to build reserves over the lifecycle of the infrastructure. There are water quality issues with hardness and calcium

Rating: 10/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$400	$281
User Fee	$270	$1,386
TOTAL	$670	$1,647

BRULETTE PLACE SEWER - 801

2016 Rates

Parcel Tax $427
User Fee $550

Customers

58 parcels
56 users

Proposed 2017 Rates

Parcel Tax $427
User Fee: $550

Description

The CVRD took over this system in 2010 from two strata developments.

The system consists of a gravity collection system to two pump stations that discharge to two treatment facilities which, in turn, discharge to two separate disposal fields. There are plans to combine the two systems.

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$28,000
User Fees	$29,000
Other	$80,000
Debt Proceeds	$45,000
TOTAL	$182,000

Expenditures: Average 2016-2020

Operations	$44,000
Long Term Debt	$5,000
Capital	$125,000
Short Term Debt	$8,000
TOTAL	$182,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	TBD		
Collection System	TBD		
Treatment Plant	TBD		$500,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$172

Conclusions

This is a worst-case situation for a wastewater treatment system. The collection system appears to be in reasonable shape. There are no estimates of the historical cost or the replacement cost. A is being established to reconstruct the treatment plant or join another wastewater system.

Rating: 1/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$427	$414
User Fee	$550	$679
TOTAL	$977	$1,092

BURNUM WATER - 619

Description

Constructed in 1991, the CVRD took over the system in 2013.

Three groundwater wells are disinfected at the well head and pump directly to a concrete reservoir.

Arsenic is a concern and a treatment pilot project is underway. A new treatment system, reservoir expansion and other upgrades are scheduled.

The system is fully metered.

Water Quality

Arsenic is a concern.

Geographic

Somewhat isolated. Shawnigan Lake is closest water system.

2016 Rates

Parcel tax: $445
User fee: $400

Customers

83 homes
88 parcels

Proposed 2017 Rates

Parcel tax: $445
User fee: $400

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$45,000
User Fees	$43,000
Other	$16,000
Debt Proceeds	$70,000
TOTAL	$174,000

Expenditures: Average 2016-2020

Operations	$64,000
Long Term Debt	$20,000
Capital	$85,000
Transfer to Capital Reserve	$5,000
TOTAL	$174,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Engineering Structures	2014	$110,000	$111,000
Equipment	2015	$37,000	$37,000
Treatment Infrastructure	2015	$6,000	$6,000
		$153,000	$154,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$29

Conclusions

The Burnum System has a history of high arsenic and there have been capacity issues associated with the two wells. Two pump upgrades have increased capacity.

Rating: 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$445	$143
User Fee	$400	$855
TOTAL	$845	$998

CARLTON WATER - 616

Description

Constructed in the late 70s, the CVRD took over the Carlton system in 2013/2014. Two wells pump directly to a reservoir. Two booster pumps draw from the reservoir to four pressurized diaphragm pump tanks prior to distribution. A sodium hypochlorite solution disinfects the water through a single pump.

There is a history of deterioration of this system. A propane standby generator and fire pump is not functional. The water treatment plant building requires replacement.

The CVRD recently constructed a new steel reservoir and a new high flow pump was installed in 2015/2016.

The system is fully metered.

Water Quality

No records available

Geographic

Near Shawinigan Lake and several small water systems.

2016 Rates

Parcel tax: $587
User fee: $400

Customers

42 users
45 parcels

Proposed 2017 Rates

Parcel tax: $587
User fee: $400

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$29,000
User Fees	$19,000
TOTAL	$48,000

Expenditures: Average 2016-2020

Operations	$42,000
Long Term Debt	$6,000
TOTAL	$48,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Land	2013	$18,000	$18,000
Watermains	2015	$10,000	$10,000
Treatment Plant	2015	$74,000	$74,000
Distribution System	2015	$153,000	$153,000
Source Infrastructure	2015	$108,000	$108,000
Reservoir	2015	$261,000	$261,000
		$624,000	$624,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$231

Conclusions

There are concerns with the water quality and quantity. Iron levels are high.

There have been upgrades to the system over the past few years, however the treatment plant still needs significant capital improvements. The small size of the system is problematic.

Rating: 4/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$587	$431
User Fee	$400	$1,024
TOTAL	$987	$1,455

CHERRY POINT WATER - 670

Description

CVRD took over this system in 1995. Water is supplied from one groundwater well and requires treatment for iron and manganese. Well water is conveyed directly to a 230,000 litre steel reservoir. A gravity system feeds the distribution lines. The system is fully metered.

A 2015 pilot project was set-up to treat iron and manganese with a sequestering agent.

Water Quality

Iron and manganese is a concern. Occasional total coliform test results. Frequent complaints about discolored water.

Geographic

Just south of Cowichan Bay, close to several other small water systems, including Lambourn Estates.

2016 Rates

Parcel tax: $675
User fee: $380

Customers

29 users
30 parcels

Proposed 2017 Rates

Parcel tax: $700
User fee: $380

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$25,000
User Fees	$15,000
Transfer from Capital Reserves	$2,000
TOTAL	$42,000

Expenditures: Average 2016-2020

Operations	$39,000
Capital	$2,000
Transfer to Capital Reserve	$1,000
TOTAL	$42,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Land	1988	$0	$0
Reservoir	1994	$35,000	$54,000
Treatment Plant	1995	$92,000	$139,000
Distribution System	1994	$995,000	$1,545,000
Source Infrastructure	2015	$108,000	$108,000
		$1,230,000	$1,846,000
Capital Reserve Balance			$13,000
Asset Replacement Reserve Required (per parcel)			$1,149

Conclusions

There are concerns with metal content in the water. It is believed that the adjacent dairy farm is a contributing factor to the water quality issues. Also, during well tests there was a salt contamination and well capacity increases suggesting surface water infiltration.

A sequestering agent appears to have resolved a high iron concern.

Significant capital upgrades are required however funds are limited.

Rating: 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$700	$1,422
User Fee	$380	$1,310
TOTAL	$1,080	$2,732

COBBLE HILL SEWER - 809

Description

The CVRD took over this system in 2008.

The sewer consists of a rotating biological contractor plant, five concrete tanks for pre-treatment. The plant requires odour control. Effluent is discharged to ground.

2016 Rates

Parcel Tax $392
User Fee $250

Customers

84 parcels
84 users

Proposed 2017 Rates

Parcel Tax $392
User Fee $300

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$35,000
User Fees	$23,000
Other	
Debt Proceeds	$105,000
TOTAL	$163,000

Expenditures: Average 2016-2020

Operations	$50,000
Long & Short Term Debt	$5,000
Capital	$106,000
Transfer to Capital Reserve	$2,000
TOTAL	$163,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Collection System	1993	$921,000	$1,406,000
Treatment Plant	1993	$650,000	$1,016,000
Electrical Upgrades	2009	$40,000	$40,000
		$1,611,000	$2,462,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$586

Conclusions

The treatment plant needs to be replaced immediately, at an estimated cost of $500,000. Additionally, the disposal fields require capital upgrades. The collection network appears to be operating acceptably.

There is a possibility that the Cobble Hill Sewer System could be integrated with the Twin Cedars system.

Rating: 1/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$392	$717
User Fee	$300	$476
TOTAL	$692	$1,193

COWICHAN BAY SEWER - 800

Description

This system was constructed in 1972.

The system consists of a gravity collection system, a pump station and forcemain to the Joint Utilities Board lagoons for disposal of effluent.

2016 Rates

Parcel Tax $247
User Fee $260

Customers

755 parcels
870 users

Proposed 2017 Rates

Parcel Tax $290
User Fee $260

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$230,000
User Fees	$277,000
Transfer from Capital	$14,000
Debt Proceeds	$298,000
Other	$33,000
TOTAL	$852,000

Expenditures: Average 2016-2020

Operations	$322,000
Long Term Debt	$93,000
Capital	$400,000
Transfer to Capital Reserve	$30,000
Force Main Reserve	$4,000
Transfer to Eagle Heights	$3,000
TOTAL	$852,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land Improvements	2005	$60,000	$65,000
Collection System	1972	$5,613,000	$9,899,000
Treatment Plant	1999	$598,000	$3,000,000
Collection System	373000	$341,000	$661,000
		$6,612,000	$13,625,000
Capital Reserve Balance			$277,000
Asset Replacement Reserve Required (per parcel)			$345

Conclusions

There is significant I&I associated with this system, which overloads the pump station and forcemain.

Recently, the CVRD constructed a new force main and connected the system to the Joint Utility Board (JUB) system. Upgrades to the JUB will require additional CVRD capital funding.

Rating: 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$290	$410
User Fee	$260	$549
TOTAL	$650	$959

DOGWOOD RIDGE WATER - 613

Description

This system was constructed in 1970. The CVRD took over the system in 2009.

Water, supplied from two wells, is pumped to a new treatment building for disinfection and then into a new 50,000 gallon steel reservoir. The CVRD constructed both the treatment system and the reservoir. A new booster pump distributes water.

A new high flow pump was recently installed to provide firefighting water. A new generator provides backup power to the high flow pump.

The system is fully metered. No outstanding operational issues.

Water Quality

n/a

Geographic

Isolated small water system, near Duncan.

2016 Rates

Parcel tax: $700
User fee: $660

Customers

33 parcels
33 users

Proposed 2017 Rates

Parcel tax: $700
User fee: $660

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$24,000
User Fees	$22,000
Transfer from Capital Reserve	$1,000
Debt Proceeds	
TOTAL	$47,000

Expenditures: Average 2016-2020

Operations	$41,000
Long Term Debt	$5,000
Capital	
Transfer to Capital Reserve	$1,000
TOTAL	$47,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Land	2010	$550,000	$58,000
Water mains	2011	$438,000	$479,000
Buildings	2011	$40,000	$42,000
Capital Upgrades WTP & Reservoir	2011	$122,000	$535,000
		$1,150,000	$579,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$293

Conclusions

Significant upgrades to the Dogwood Ridge water system were recently undertaken. New capital works include a reservoir, well upgrades and treatment plant improvements. One well must be overhauled in the next 5 years.

In general, there are good fire flows and distribution system is functioning well due, in part, to low pressures. Small size of system is problematic. Water supply is limited in summer months. Another source should be provided.

Rating: 7/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$700	$687
User Fee	$660	$1,091
TOTAL	$1,360	$1,778

DOUGLAS HILL WATER - 603

Description

The Douglas Hill system was constructed in 1982 and the CVRD took over operations in 2010/2011. Two groundwater wells pump directly to a water treatment building and then to a 450,000 liter concrete reservoir. The treatment and pumping systems (4 booster pumps) were upgraded in 2012.

The system is fully metered. There are no operational concerns.

Water Quality

21 total confirm test results in 2015.

Geographic

Close to Lambourn Estates and a few other small water systems.

2016 Rates

Parcel tax: $371
User fee: $315

Customers

Parcels: 138
Users: 135

Proposed 2017 Rates

Parcel tax: $371
User fee: $440

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$51,000
User Fees	$51,000
TOTAL	$102,000

Expenditures: Average 2016-2020

Operations	$91,000
Long Term Debt	$11,000
TOTAL	$102,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Water main	2010	$139,000	$159,000
Treatment Building	2015	$44,000	$44,000
Treatment Infrastructure	2015	$165,000	$165,000
Distribution	2015	$91,000	$91,000
Source Infrastructure	2015	$7,000	$7,000
		$446,000	$466,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$56

Conclusions

This system is generally in good condition. Water quality is very good and recent capital improvements include new pumps, treatment building and meters. The distribution system is 34 years old and in good shape.

Rating: 8/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$371	$303
User Fee	$440	$526
TOTAL	$811	$828

EAGLE HEIGHTS SEWER - 820

Description

CVRD took over this system in 1975.

The infrastructure consists of a gravity collection system and a pump station that discharges to the Joint Utilities Board lagoons for treatment and disposal.

2016 Rates

Parcel Tax $ -
User Fee $330

Customers

760 parcels
760 users

Proposed 2017 Rates

Parcel Tax $ -
User Fee $360

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	
User Fees	$280,000
Transfer from Capital	$122,000
Other	$83,000
TOTAL	$485,000

Expenditures: Average 2016-2020

Operations	$245,000
Long Term Debt	$50,000
Capital & Reserves	$190,000
TOTAL	$485,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Collection System	1990	$2,575,000	$6,863,000
Building	2003	$257,000	$687,000
Upgrades	2013	$44,000	$37,000
		$2,876,000	$7,587,000
Capital Reserve Balance			$1,200,000
Asset Replacement Reserve Required (per parcel)			$168

Conclusions

This system discharges to the Joint Utility Board system (JUB).

There is significant inflow and infiltration and the lift station requires significant capital upgrades. Upgrades to JUB will require additional CVRD capital funding.

Rating: 4/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$0	$230
User Fee	$360	$162
TOTAL	$360	$392

FERN RIDGE WATER - 608

Description

Constructed in 1995, the CVRD took over the Fern Ridge system in 2007/2008. Water is supplied from one well to a reservoir and hydro-pneumatic pressure tanks. Water is disinfected with hypo-chlorite. A dedicated supply line feeds the reservoir.

The distribution system consists of 150mm PVC lines. Two hydrants provide fire protection; but a recent flow tests indicates one hydrant has insufficient residual pressure during fire flow conditions.

Water service connections are metered.

Water Quality

All test results are good and no complaints from customers.

Geographic

Near other small systems, west of Shawnigan Lake.

2016 Rates

Parcel tax: $520
User fee: $425

Customers

34 parcels
32 users

Proposed 2017 Rates

Parcel tax: $560
User fee: $425

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$20,000
User Fees	$17,000
Transfer from Capital Reserves	$1,000
Debt Proceeds	$9,000
TOTAL	$47,000

Expenditures: Average 2016-2020

Operations	$35,000
Long Term Debt	$2,000
Capital	$10,000
Transfer to Capital Reserve	
TOTAL	$47,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Reservoir	1995	$34,000	$51,000
Treatment Infrastructure	2008	$56,000	$45,000
Watermains	1995	$555,000	$826,000
Buildings	1995	$12,000	$15,000
		$657,000	$937,000
Capital Reserve Balance			$5,000
Asset Replacement Reserve Required (per parcel)			$917

Conclusions

The water has high pH which is affecting some infrastructure.

The Fern Ridge system has one well, which has a good operational history, and the distribution system appears to be in good shape.

The reservoir is deteriorating from the high pH and will need replacement in coming years

Rating: 7/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$560	$1,152
User Fee	$425	$1,094
TOTAL	$985	$2,246

HONEYMOON BAY WATER - 660

Description

The Honeymoon Bay system was constructed in the 1970s and 80s. The CVRD took over the water system in 1994. In 2009, the two original surface water systems were abandoned and a new groundwater well was established. The surface water licenses remain valid.

In 2009, a 100,000 gallon reservoir and treatment plant was commissioned. A year later, in 2010, a water main extension was constructed to Sutton Creek. The system is fully metered.

This analysis includes Well #2 debt and the Sutton Creek debt.

Water Quality

Records unavailable

Geographic

Located on Cowichan Lake, close to 3 small water systems.

2016 Rates

Parcel tax: $303
User fee: $160

Customers

229 parcels
497 users

Proposed 2017 Rates

Parcel tax: $303
User fee: $160

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$78,000
User Fees	$57,000
Debt Proceeds	$80,000
TOTAL	$215,000

Expenditures: Average 2016-2020

Operations	$120,000
Short Term Debt	$8,000
Capital	$82,000
Transfer to Capital Reserve	$5,000
TOTAL	$215,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Treatment Plant	1994	$340,000	$527,000
Dam	1994	$41,000	$65,000
Treatment Plant	2009	$253,000	$254,000
Generator	2006	$15,000	$16,000
Reservoir	2008	$247,000	$200,000
Well	2008	$129,000	$105,000
Water main	1990	$3,573,000	$7,494,000
Distribution	2015	$223,000	$223,000
		$4,821,000	$8,884,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$776

Conclusions

Existing infrastructure is in good shape and includes a new reservoir and treatment plant. A new well to be established in 2017 to meet demand.

Rating: 7/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$303	$933
User Fee	$160	$201
TOTAL	$463	$1,134

KERRY VILLAGE SEWER - 850

Description

2016 Rates

Parcel Tax $257
User Fee $725

Customers

97 parcels
93 users
Rec Centre

Proposed 2017 Rates

Parcel Tax $280
User Fee $725

The system was constructed in 1984 and the CVRD took over this ownership in 2004.

The infrastructure was designed for a 64 lot mobile home park and consists of a gravity system. In 2012, a 32 lot subdivision joined the service. A new treatment plant and disposal field were constructed. The new homes are serviced by a STEP pumped system.

There are discussions underway regarding a 32-lot subdivision.

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$28,000
User Fees	$77,000
Transfer from Capital	$4,000
Other	$3,000
TOTAL	$112,000

Expenditures: Average 2016-2020

Operations	$97,000
Long & Short Term Debt	$6,000
Capital	$5,000
Transfer to Capital Reserve	$4,000
TOTAL	$112,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Treatment Plant	1983	$882,000	$1,669,000
Land	2010	$137,000	$144,000
Building	2010	$70,000	$73,000
Collection	2010	$759,000	$863,000
Discharge Structure	2015	$13,000	$13,000
		$1,861,000	$2,762,000
Capital Reserve Balance			$10,000
Asset Replacement Reserve Required (per parcel)			$568

Conclusions

Approximately 1/2 of this collection system is new and is operating well. The other half is old and there are some issues with inflow and infiltration. Also, there are significant concerns with the treatment plant which have been ongoing. Upgrades should be undertaken within the next 5 years.

Rating: 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$280	$764
User Fee	$725	$914
TOTAL	$1,005	$1,677

KERRY VILLAGE WATER - 690

Description

The original Kerry Village Water System was commissioned in 1983 as part of a mobile home development. In 2011, the system was upgraded as part of the Briarwood development with a new groundwater well that was tied-in to the distribution system. The well water is disinfected with a new chlorine addition system and treated with a sequestering agent for manganese. Treated water is pumped to a 70,000 gallon below-grade concrete reservoir.

A new treatment building, with a fire pump, was constructed in 2011 as part of the Briarwood upgrades.

The system is partially metered.

Water Quality

Regular complaints about discolored water.

Geographic

West of Mill Bay, close to three other small water systems.

2016 Rates

Parcel tax: $185
User fee: $667

Customers

89 users
98 parcels

Proposed 2017 Rates

Parcel tax: $185
User fee: $667

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$20,000
User Fees	$45,000
TOTAL	$65,000

Expenditures: Average 2016-2020

Operations	$65,000
TOTAL	$65,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Reservoir	1983	$40,000	$76,000
Treatment Infrastructure	1983	$124,000	$234,000
Water mains	1983	$868,000	$1,641,000
Buildings	2010	$55,000	$58,000
Water mains	2010	$438,000	$498,000
		$1,525,000	$2,507,000
Capital Reserve Balance			$12,500
Asset Replacement Reserve Required (per parcel)			$560

Conclusions

About half of this system was recently constructed, and the other half is approximately 30 years old.

The new portion is metered, has a new treatment plant and well. The older portion has an old well and there is little information on the distribution system which makes future capital expenditures uncertain.

Rating: 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$185	$694
User Fee	$667	$612
TOTAL	$852	$1,306

LAMBOURN ESTATES SEWER - 804

Description

CVRD took over this system in 2008.

The system consists of a gravity collection system. A new membrane bioreactor treatment plant was commissioned in 2010.

A number of homes are on independent septic tank effluent pump systems that discharge to the CVRD sewer collection system.

The effluent meets Class A standards and discharges into Cowichan Bay through a 530 meter outfall.

2016 Rates

Parcel Tax $226
User Fee $525

Customers

138 parcels
145 users

Proposed 2017 Rates

Parcel Tax $226
User Fee $525

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$33,000
User Fees	$83,000
Debt Proceeds	$5,000
TOTAL	$121,000

Expenditures: Average 2016-2020

Operations	$100,000
Long & Short Term Debt	$16,000
Capital	$5,000
TOTAL	$121,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Collection	1990	$510,000	$806,000
Collection	2006	$386,000	$390,000
Treatment Plant	1967	$134,000	$888,000
Collection	2010	$919,000	$1,044,000
Distribution System	2008	$892,000	$722,000
Upgrades	2014	$958,000	$952,000
		$3,799,000	$4,802,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$591

Conclusions

A serious pollution issue in Cowichan Bay was recently addressed by the construction of a new treatment plant.

There are significant inflow and infiltration issues and capital expenditures are required to address this issue. Repairs should be undertaken within the next 5 years.

Rating; 6/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$226	$794
User Fee	$525	$559
TOTAL	$751	$1,353

LAMBOURN ESTATES WATER - 604

Description

The system was constructed in 1980 and the CVRD took over the operation and management of the system in 2008. Three groundwater wells pump through a new water treatment building and supply two reservoirs; a 190,000 litre concrete reservoir and a 250,000 litre steel reservoir. The system includes sand filtration, disinfection and associated infrastructure.

There are concerns with high iron and manganese. There have been frequent complaints by customers.

The system is not metered.

Water Quality

Numerous complaints about discolored water. Occasional total coliform test results.

Geographic

Near Cowichan Bay, close to 3 other small water systems.

2016 Rates

Parcel tax: $267
User fee: $680

Customers

154 parcels
174 users

Proposed 2017 Rates

Parcel tax: $267
User fee: $580

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$41,000
User Fees	$94,000
Transfer from Gas Tax	$60,000
TOTAL	$195,000

Expenditures: Average 2016-2020

Operations	$128,000
Long Term Debt	$7,000
Capital	$60,000
TOTAL	$195,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Reservoir	1993	$70,000	$110,000
Water mains	1983	$67,000	$128,000
Water mains	1990	$1,980,000	$3,131,000
Water mains	2011	$563,000	$615,000
Buildings	2011	$66,000	$68,000
Water System	2014	$215,000	$218,000
			$4,270,000
Asset Replacement Reserve Required (per parcel)			$554

Conclusions

Some infrastructure has been replaced over the years, including a distribution system and hydrants. Approximately 50% of the system is new.

Water quality is a concern during summer months, and there is a history of high manganese deposits in the distribution line and a contamination in the old reservoir prior to take over. Upgrades to the reservoir are required. A meter program using Gas Tax funds is proposed for 2017.

Rating 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$267	$762
User Fee	$580	$592
TOTAL	$847	$1,354

MAPLE HILLS SEWER - 830

Description

CVRD took over this system in 1994.

The infrastructure consists of a gravity collection system with a biological contractor treatment plant.

Effluent is pumped from the treatment facility to ground for disposal.

2016 Rates

Parcel Tax $417
User Fee $300

Customers

60 parcels
60 users

Proposed 2017 Rates

Parcel Tax $450
User Fee $300

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$30,000
User Fees	$20,000
Transfer from Capital Reserve	$5,000
Debt Proceeds	$20,000
TOTAL	$75,000

Expenditures: Average 2016-2020

Operations	$45,000
Capital	$30,000
TOTAL	$75,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Collection	1994	$696,000	$1,081,000
Treatment Plant	1994	$673,000	$1,045,000
Upgrades	2008	$179,000	$161,000
Treatment Upgrades – Odour Control	2015	$19,000	$19,000
		$1,567,000	$2,306,000
Capital Reserve Balance			$9,000
Asset Replacement Reserve Required (per parcel)			$766

Conclusions

The wastewater treatment plant was constructed in 1994 and is operating well.

Although the system is showing signs that it is slowly aging, the inflow and infiltration rates appear to be minimal. No significant capital upgrades are expected in the next 5 - 10 years.

Rating: 7/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$450	$899
User Fee	$300	$583
TOTAL	$750	$1,483

MESACHIE LAKE SEWER - 810

Description

This system consists of two separate gravity collection systems including septic tanks and ground disposal systems. The system is substandard and in very poor condition.

2016 Rates

Parcel Tax $349
User Fee $300

Customers

49 parcels
49 users

Proposed 2017 Rates

Parcel Tax $390
User Fee $300

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$30,000
User Fees	$15,000
Other	$92,000
Debt Proceeds	$47,000
Transfer from Capital Reserve	$9,000
TOTAL	$193,000

Expenditures: Average 2016-2020

Operations	$35,000
Long Term Debt	$6,000
Capital	$150,000
Transfer to Capital Reserve	$2,000
TOTAL	$193,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	1969	$25,000	$157,000
Engineering Structures	1977	$230,000	$841,000
		$255,000	$998,000
Capital Reserve Balance			$41,000
Asset Replacement Reserve Required (per parcel)			$389

Conclusions

The Mesachie Lake Sewer System is likely the most challenging system under the CVRD's control. It was built in the 1940s and there are a number of very serious issues including the treatment plant and conveyance system. The disposal field is comprised of buried log structures, which resemble log homes, which are failing.

Wastewater is discharged to ground in close proximity to the adjacent lake and the community ground water source.

Significant capital upgrades are required within the next 5 years.

Rating: 1/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$390	$432
User Fee	$300	$510
TOTAL	$690	$942

MESACHIE LAKE WATER - 620

Description

The CVRD took over the Mesachie Lake Water System in 1969.

Water Quality

n/a

2016 Rates

Parcel tax: $300
User fee: $130

Customers

81 parcels
78 users

Proposed 2017 Rates

Parcel tax: $320
User fee: $130

Groundwater is pumped directly into the distribution system without pre-treatment. A 50,000 gallon steel-bolted storage reservoir calls for water at low levels. Water is gravity-fed from the reservoir to the distribution system when the groundwater pump is not operating.

A standby generator was installed in 1999. The Health Authority has indicated a chlorine disinfection system will be required.

The system is not metered.

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$31,000
User Fees	$21,000
Transfer from Capital Reserve	$5,000
TOTAL	$57,000

Expenditures: Average 2016-2020

Operations	$50,000
Capital	$5,000
Transfer to Capital Reserve	$2,000
TOTAL	$57,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Land	1977	$45,000	$165,000
Reservoir	1977	$40,000	$147,000
Water Treatment	1977	$150,000	$551,000
Storage	1998	$10,000	$15,000
Fuel Storage Tank	1999	$25,000	$35,000
Water main Replacement	2001	$66,000	$90,000
Water main Replacement	1977	$532,000	$1,942,000
Water main Replacement	1980	$48,000	$135,000
Water main Replacement	1988	$92,000	$167,000
			$3,247,000
Reserve Balance			$67,000
Asset Replacement Reserve Required (per parcel)			$785

Conclusions

It appears the Mesachie Lake distribution system has high water loss, which indicates signs of aging. Some portions of the distribution lines have been replaced, but more capital expenditures in the next 5 years is required. A disinfection system is also required. The reservoir appears to be in good shape, despite 40 years of age.

Rating: 6/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$300	$884
User Fee	$130	$641
TOTAL	$430	$1,525

MILL SPRINGS SEWER - 813

Description

This system serves 239 properties and has extra capacity to accommodate 400 properties.

The system consists of a gravity collection system. Treated effluent is pumped to ground disposal. Phase 1 was built in 1997 and transferred to the CVRD in 2015.

2016 Rates

Parcel Tax $420
User Fee $300

Customers

239 parcels
210 users

Proposed 2017 Rates

Parcel Tax $410
User Fee $320

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$110,000
User Fees	$80,000
TOTAL	$190,000

Expenditures: Average 2016-2020

Operations	$185,000
Transfer to Capital Reserve	$5,000
TOTAL	$190,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	1997	$646,000	$644,000
Force main	1997	$108,000	$108,000
Disposal Field	1997	$280,000	$280,000
Collection System – 15 Phases	1997	$900,000	$900,000
		$1,934,000	$1,932,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$135

Conclusions

Although there is some inflow and infiltration, it appears the infrastructure is generally sound and in good shape. There are minor issues including high maintenance demands and daily inspections at the WTP.

Rating: 8/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$410	$227
User Fee	$320	$757
TOTAL	$730	$984

SALTAIR WATER - 640

Description

Construction of the Saltair water system began in the early 1960's and was completed in the mid 1980's. The CVRD took over the system in 1986 by Order in Council and dissolution of the Saltair Waterworks District.

Stocking Lake, a small body of water, is the sole water supply. Water is disinfected with chlorine and UV. Water flows through a PRV to 730 m^3 reservoir, added to the system in 2014.

Water Quality

Two or three total coliform test results per year.

Geographic

Just south of Ladysmith. Adjacent to the Ladysmith municipal water system.

2016 Rates

Parcel tax: $579
User fee: $190

Customers

864 parcels
829 users

Proposed 2017 Rates

Parcel tax: $579
User fee: $190

The system has deteriorated significantly over the years and the CVRD launched a multi-year renewal program in 2012. Replacement of distribution lines and PRVs are underway. Additionally, Island Health requires a 4-3-2-1 treatment system for the surface water.

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$490,000
User Fees	$265,000
Transfer from Capital	$1,000
Debt Proceeds	$500,000
TOTAL	$1,256,000

Expenditures: Average 2016-2020

Operations	$316,000
Long Term Debt	$140,000
Capital	$800,000
TOTAL	$1,256,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Land	1980	$23,000	$62,000
Reservoir & Treatment	1987	$260,000	$492,000
Creek Infrastructure	1996	$41,000	$61,000
Upgrades	2004	$149,000	$188,000
Distribution System	2008	$222,000	$180,000
Water mains	1987	$1,398,000	$2,623,000
Water mains	1994	$2,008,000	$3,119,000
Water mains	1997	$1,456,000	$2,103,000
Water mains	2007	$330,000	$350,000
Building	1987	$37,000	$63,000
Water mains	2010	$55,000	$62,000
Water mains & Reservoir	2011 - 2016	$1,752,000	$1,752,000
			$10,656,000
Reserve Balance			$67,000 ($95,000 committed)
Asset Replacement Reserve Required (per parcel)			$264

Conclusions

This system has a new reservoir and disinfection. However, there is very high pressure that should be addressed immediately, and the surface water intake needs improvements within the next 5 years. There are liability concerns with the dam and various parts of the distribution system are failing.

Rating: 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$579	$376
User Fee	$190	$326
TOTAL	$769	$702

Additional Comments

With new 43210 regulations, a new water treatment plant will be required if Saltair continues to use surface water. The treatment facility is expected to cost approximately $4.6 million unless efficiencies can be gained by partnering with neighbouring water systems. Staff are currently working on partnering with Ladysmith. These costs are not included in overall costing and would be in addition to proposed rates.

SATELLITE PARK WATER - 601

Description

The Satellite Park Water System was constructed in 1973 and the CVRD took over operations and maintenance in 2006. It is comprised of a groundwater well that pumps chlorinated water to a new 126,000 imperial gallon steel-bolted reservoir. Water is fed by gravity to the lower distribution lines and to a treatment plant where it is boosted to the higher side of the system. A PRV controls pressure to part of the system.

The system has experienced some deterioration over the years.

Water Quality

Water quality appears to be good.

Geographic

Close to Arbutus Ridge and several other CVRD and independent small water systems.

2016 Rates

Parcel tax: $543
User fee: $300

Customers

82 parcels
77 users

Proposed 2017 Rates

Parcel tax: $567
User fee: $300

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$49,000
User Fees	$37,000
TOTAL	$86,000

Expenditures: Average 2016-2020

Operations	$66,000
Long Term Debt	$14,000
Capital	$2,000
Transfer to Capital Reserve	$4,000
TOTAL	$86,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Reservoir	1973	$7,000	$38,000
Reservoir	2009	$244,000	$245,000
Water mains	1973	$358,000	$1,858,000
Water mains	2010	$233,000	$238,000
Building	2010	$70,000	$73,000
Water mains	2010	$68,000	$77,000
			$2,529,000
Reserve Balance			$8,000
Asset Replacement Reserve Required (per parcel)			$615

Conclusions

This reservoir and WTP is approximately five years old and is in good shape. The infrastructure consists of a new plant, disinfection and PRV. The disinfection system is 43 years old and showing signs of deterioration

Rating 9/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$567	$1,030
User Fee	$300	$714
TOTAL	$867	$1,744

SENTINEL RIDGE SEWER - 802

Description

CVRD took over this system in 2007.

It is a Class A treatment system and disposal facility. The system utilizes both gravity collection and individual septic tank effluent pumps (STEP). Effluent is treated at a plant with UV. The plant utilizes a bioreactor with membrane. There are provisions for expansion of the plant. Effluent is discharged to ground.

2016 Rates

Parcel Tax $286
User Fee $765

Customers

147 parcels
82 users

Proposed 2017 Rates

Parcel Tax $357
User Fee $765

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$50,000
User Fees	$64,000
Other	$12,000
Debt Proceeds	$12,000
TOTAL	$138,000

Expenditures: Average 2016-2020

Operations	$115,000
Capital	$23,000
TOTAL	$138,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	2006	$493,000	$530,000
Collection	2006	$1,017,000	$1,100,000
Treatment Plant	2006	$965,000	$1,044,000
Upgrades	2012	$360,000	$376,000
		$2,835,000	$3,050,000
Capital Reserve Balance			$61,000
Asset Replacement Reserve Required (per parcel)			$339

Conclusions

This system is in generally good shape and significant capital upgrades are not expected within the next 5 - 10 years. There is a potential expansion by development in 2017-2018.

Rating: 9/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$357	$461
User Fee	$765	$1,281
TOTAL	$1,122	$1,742

SHAWNIGAN BEACH SEWER - 840

Description

CVRD took over the Shawnigan Beach sewer system in 1999.

The system is comprised of a gravity collection system and six pump stations. Sewerage is pumped to an aerated lagoon treatment system and a ground disposal system which has been reconstructed recently.

There are a number of concerns with the system and upgrades are required.

2016 Rates

Parcel Tax $364
User Fee $410

Customers

371 parcels
391 users

Proposed 2017 Rates

Parcel Tax $400
User Fee $410

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$164,000
User Fees	$160,000
Other	$1,000
TOTAL	$325,000

Expenditures: Average 2016-2020

Operations	$252,000
Long & Short Term Debt	$31,000
Capital	$40,000
Transfer to Capital Reserve	$2,000
TOTAL	$325,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	2006	$171,000	$182,000
Collection	1979	$835,000	$2,206,000
Collection	2000	$739,000	$1,019,000
Collection	2006	$1,217,000	$1,313,000
Pump Station	2000	$745,000	$1,243,000
Pump Station	2006	$219,000	$214,000
Lagoon System	2015	$408,000	$408,000
		$4,334,000	$6,585,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$355

Conclusions

This system has a history of non-compliance. There are serious issues with the lagoon and pump station. There are high rates of inflow and infiltration.

The disposal field was recently built which will help address the non-compliance issues.

Rating: 6/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$400	$517
User Fee	$410	$611
TOTAL	$810	$1,128

SHAWNIGAN LAKE WATER - 680

Description

The Shawnigan Lake water system was constructed in the 1970's and the CVRD took over the operation and maintenance in 1999. The primary source of water is Shawnigan Lake. There are two intake pipes and the water is disinfected with hypo-chlorination and then pumped into the distribution system. There are two reservoirs; a 450,000 liter steel reservoir and a 750,000 liter concrete reservoir.

A groundwater well provides backup supply. The well is protected by a Wellhead Protection Plan and water is disinfected by hypo-chlorination before entering the distribution system.

The system has deteriorated somewhat over the years. A 2015 upgrade focused on comprehensive water meters. Additionally, Island Health requires surface water treatment (4-3-2-1).

Water Quality

Occasional total coliform test results and high manganese

Geographic

North end of Shawnigan Lake, split into two distribution areas.

2016 Rates

Parcel tax: $300
User fee: $220

Customers

710 parcels
680 users

Proposed 2017 Rates

Parcel tax: $316
User fee: $220

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$250,000
User Fees	$240,000
Transfer from Capital Reserve	$10,000
Debt Proceeds	$800,000
TOTAL	$1,300,000

Expenditures: Average 2016-2020

Operations	$300,000
Long Term Debt	$157,000
Short Term Debt	$13,000
Capital	$830,000
TOTAL	$1,300,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Treatment, Storage	1978	$249,000	$835,000
Fish Ladders	2009	$35,000	$35,000
Upgrades	2002	$66,000	$88,000
Weir	2006	$185,000	$200,000
Electrical	2009	$25,000	$25,000
Water mains	1980	$2,588,000	$7,695,000
Water mains	1994	$39,000	$63,000
Water mains	2004	$671,000	$883,000
Water mains	2008	$3,565,000	$3,344,000
Upgrades	2013	$193,000	$199,000
			$13,367,000
Reserve Balance			$2,000
Asset Replacement Reserve Required (per parcel)			$377

Conclusions

The original A/C and PVC distribution lines did not meet standards and are now starting to fail. Additionally, the reservoir requires major capital repairs. It is anticipated the CVRD is expected to meet the new 4-3-2-1 standards for this system, which is expected to cost approximately $4.6 million.

Rating: 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$316	$454
User Fee	$220	$376
TOTAL	$536	$830

SHELLWOOD WATER - 617

Description

The Shellwood system was originally built in the 1970's. The CVRD took over operations in 2014.

Water Quality

n/a

Geographic

Isolated location, east of Ladysmith

2016 Rates

Parcel tax: $400
User fee: $700

Customers

31 parcels
26 users

Proposed 2017 Rates

Parcel tax: $900
User fee: $790

A groundwater well pumps directly into a new water treatment plant. A new booster pump increases system pressure.

The system is fully metered.

While there has been deterioration of the system over the years, the CVRD has made a number of upgrades since 2014. There are significant quality and quantity issues.

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$25,000
User Fees	$12,000
TOTAL	$37,000

Expenditures: Average 2016-2020

Operations	$32,000
Long Term Debt	$5,000
TOTAL	$37,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Land	2013	$67,000	$69,000
Water System	2015	$550,000	$550,000
			$619,000
Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$333

Conclusions

The Shellwood system has high iron and manganese.

A new reservoir and booster station was recently commissioned, however, the well needs upgrades and there is a history of water main breaks. Given this, the CVRD should develop a 5-year capital upgrades for this system to confirm the required upgrades.

The small size of the system is problematic.

Rating: 5/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$900	$656
User Fee	$790	$1,308
TOTAL	$1,690	$1,964

TWIN CEDARS SEWER - 803

Description

Twin Cedars is located just east of Cobble Hill Village.

The sewerage collection system serves 75 homes an elementary school and parkland. The disinfected and treated effluent is discharged to grounds via six infiltration basins. Reclaimed effluent is treated with chlorine prior to use in CVRD parkland for irrigation. The system is effectively in compliance with Ministry of Environment requirements.

2016 Rates

Parcel Tax $657
User Fee $392

Customers

76 parcels
74 users

Proposed 2017 Rates

Parcel Tax $657
User Fee $392

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$55,000
User Fees	$33,000
Transfer from Gas Tax	$6,000
TOTAL	$94,000

Expenditures: Average 2016-2020

Operations	$86,000
Capital	$8,000
TOTAL	$94,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	2011	$200,000	$207,000
Plant	2008	$1,280,000	$1,037,000
Collection	2014	$655,000	$667,000
		$2,135,000	$1,911,000
Capital Reserve Balance			$20,000
Asset Replacement Reserve Required (per parcel)			$498

Conclusions

This system is only 8 years old. It is in good shape; the main concern is fouling problems at the pump station. There is extra capacity for the Cobble Hill system which has treatment plant and disposal field issues.

Rating: 8/10

	Existing 2017	Recommended Steady State Funding
Parcel Tax	$657	$616
User Fee	$392	$1,027
TOTAL	$1,049	$1,643

WOODLEY RANGE WATER - 618

Description

The CVRD took over the Woodley Range water system in 2014. There are significant aquifer capacity concerns and water must be trucked-in to the community every year. A study is underway to examine capacity options.

Upgrades to the electrical, control, filtration and chlorine systems are under consideration. Additionally, plans are in progress to inspect and clean the reservoir, and to develop a wellhead protection plan.

Water Quality

Serious concerns regarding aquifer capacity.

Geographic

Isolated system, close to Nanaimo Airport.

2016 Rates

Parcel tax: $800
User fee: $800

Customers

37 parcels
25 users

Proposed 2017 Rates

Parcel tax: $800
User fee: $800

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$30,000
User Fees	$31,000
Transfer from Capital Reserve	$4,000
Transfer from Gas Tax	$4,000
Debt Proceeds	$2,000
TOTAL	$69,000

Expenditures: Average 2016-2020

Operations	$59,000
Capital	$10,000
TOTAL	$69,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Reservoir	2014	$120,000	$121,000
Treatment	2014	$100,000	$101,000
Wells	2014	$10,000	$10,000
			$232,000
Reserve Balance			$101,750
Asset Replacement Reserve Required (per parcel)			$125

Conclusions

This is a relatively new system, being 15 years old. However, there are some substantial issues with limited storage capacity.

The well supply is dependent on surface water infiltration. Water has to be hauled to the service area every summer. Due to the remote location and poor likelihood of obtaining a good source of groundwater, there is very limited ability to provide a sustainable long term solution for this water system.

Rating: 2/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$800	$234
User Fee	$800	$2.240
TOTAL	$1,600	$2,474

YOUBOU SEWER - 860

Description

CVRD took over the Youbou system in 2006.

The sewer collection and treatment system consists of a septic tank effluent pump (STEP), textile filters, gravity drum-type filters, UV disinfection and ground disposal.

2016 Rates

Parcel Tax $500
User Fee $345

Customers

78 parcels
43 users

Proposed 2017 Rates

Parcel Tax $500
User Fee $345

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$45,000
User Fees	$16,000
TOTAL	$61,000

Expenditures: Average 2016-2020

Operations	$49,000
Short Term Debt	$5,000
Capital	$7,000
TOTAL	$61,000

Asset Value

	In-Service Date	Historical Cost	Replacement Cost
Land	2005	$98,000	$107,000
Collection	2005	$620,000	$720,000
Treatment Plant	2005	$927,000	$1,079,000
Land	2014	$78,000	$90,000
		$1,723,000	$1,996,000
Capital Reserve Balance			$0
Asset Replacement Reserve Required (per parcel)			$512

Conclusions

This system includes STEP technology and is in great condition. It is 15 years old.

Rating: 10/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$500	$538
User Fee	$345	$1,140
TOTAL	$845	$1,678

Additional Comments

The proposed increase in the Youbou Use Fee is relatively large. The User Fee increase is primarily due to the low number of customers. Operational expenses ($49,000 annually) must be shared amongst 43 users. At build-out (78 parcels), the user fee is expected to decrease to $628 per parcel.

YOUBOU WATER SYSTEM - 653

Description

Portions of the original water system were constructed in the 1970's or earlier. In 2008, the CVRD merged two water systems into one, creating the Youbou Water System. The two systems still operate independently to a large degree, but they are connected and can provide backup to the other system.

Surface water from Youbou Creek and one well supply water to two treatment plants and three reservoirs. The system includes booster pumps, and dual-barrier disinfection. The CVRD intends to abandon the Youbou Creek supply because of Island Health's requirement for 4,3,2,1 treatment for surface water. There are plans to develop a high capacity well in Creekside Estates to supplement demand.

Water Quality

No concerns

Geographic

Located on the north side of Cowichan Lake, it is close to Bald Mountain.

2016 Rates

Parcel tax: $262
User fee: $150

Customers

588 parcels
530 users

Proposed 2017 Rates

Parcel tax: $262
User fee: $150

Youbou system is fully metered.

Revenue & Expenses Average 5 Year Plan

Revenue: Average 2016 - 2020

Requisition / Parcel Tax	$174,000
User Fees	$85,000
Debt Proceeds	$25,000
TOTAL	$284,000

Expenditures: Average 2016-2020

Operations	$190,000
Long Term Debt	$8,000
Short Term Debt	$26,000
Capital	$60,000
TOTAL	$284,000

Replacement Value

	In-Service Date	Historical Cost	Replacement Cost
Treatment, Storage	1990	$3,420,000	$5,310,000
Water mains	2005	$6,004,000	$7,123,000
Water mains	2010	$445,000	$497,000
Building	2011	$25,000	$25,000
Electrical	2009	$25,000	$25,000
			$12,980,000
Reserve Balance			$20,000
Asset Replacement Reserve Required (per parcel)			$441

Conclusions

Approximately 80% of this system is new. In general, it is in good condition and there are few concerns.

Rating 8/10

	2017 Proposed	Recommended Steady State Funding
Parcel Tax	$262	$551
User Fee	$150	$313
TOTAL	$412	$864

Appendix C: **BC Regional District Best Practices Survey**

Direct Comments - Best Practices Survey – BC Regional Districts
October, 2016

Participating Districts

1. Fraser Fort George	2. East Kootenay	3. Peace River
4. Prince Rupert	5. Comox Valley	6. Bulkley-Nechako
7. Okanagan Similkameen	8. Central Kootenay	9. Kitimat - Stikine
10. Alberni-Clayoquot	11. Islands Trust	

1. Does your organization have detailed asset management plans for each of your utilities?

Nope. We have 2 small water systems and 5 small community water systems and some of these systems are well over 30 years old. We are currently exploring what we need to be doing in the way of asset management.

Yes, we have an asset management plan for our utilities. Is it detailed, not exactly. We have a lot of useful content but it is the real finite details that we want to take to the next stage. Our initial asset compilation was a general scan with rational assumptions. We have some good working numbers to present to the Board for scheduled upgrades. However, we really want to delve into a full blown and detailed condition assessment now and along with that get more involved with the GPS component. What I mean by that is now we will have more than simply water distribution lines. We will document the lineal measurement of the lines, pipe composition, estimated or real date of construction, number of main collections converging on one intersection, number of lift stations, size and construction of vaults, pump make and model, serial numbers etc. etc..

No. We have met the required "Tangible Capital Asset" requirement for PSAB; and we're working on an Asset Management Plan; and we have short-term capital plans for some of our utilities, but I wouldn't say we have a comprehensive plan for each of our utilities.

The regional district is in the process of developing a comprehensive asset management program. We will begin with the Beaver Creek water system as the model. We have been proactive in developing and maintaining inventories of our water systems for the purpose of acting on necessary upgrades and replacements.

Not at this time. We are working on the asset management plan for one of our utilities, and the others will follow.

Not at this time although we have been participating in UBCM asset management seminars and are looking to develop a process early in 2017. We are still investigating whether the additional staff/consultants will be employed to aid in plan developments or complete any work in-house through the establishment of an asset management committee.

Yes. The part that we are still trying to improve on is field assessment of actual condition of our assets, particularly our in-ground assets. Right now most asset replacement schedules are based on standard schedules for replacement for specific types of assets (i.e. steel reservoir 50 years, etc.)

No, we do not have detailed asset management plans across each of our functions. We do however have some very good plans within specific functions. For example, in our Waste Water service we have developed detailed asset management plans for the service that include asset identification, criticality assessment, condition assessment, replacement timing, replacement value and a determination of the annual cost required for asset replacement. The service includes an annual financial contribution dedicated to asset replacement and managed for that purpose. In many of our other services we have also completed similar plans but not taken them through to completion or implementation.

Not really, we have basis information on age/value/condition but not detailed asset management plans; this is 'in progress'

asset management plans under development, should be completed within the next few months. (3 water and one sewer system)

2. Is ongoing funding a challenge for your utilities?

Yes. These systems serve a small number of users in rural settings so economy of scale is lost and many of the systems were built when asset replacement was not a factor and regulatory compliance standards were lower so users expectation on what they should pay presents a number of challenges.

Yes, funding is a challenge. I will go out on a limb and suggest that many water systems in BC were created without performing a business case model. The year, availability of water and the safety standards regime of the day also played a role. So, establishing a system for 5 – 10 residents was not a concern. But now with the regime of higher water safety (Walkerton/North Battleford) standards plus PSAB and asset management, small systems are very challenged to responsibly fund and manage them properly. A small number of residents benefitting from the system means that to adequately put funds into reserves can make the system almost cost prohibitive. It makes the system unsustainable unless provincial or federal grants are the answer to upgrades, rainy day accounts or any other improvement. Small systems are also challenged with adequate water fees to absorb operational costs. Many residents resent the fees or outright protest them because in their mind BC is potable water plentiful. Look around, there is a stream or river every other kilometer or less.

Funding is always a challenge for utility owners. We have capital reserves for most, but it's always problematic for small systems to raise the capital required for replacement without grants.

Yes in part on account of reluctance to increase charges, increased regulatory requirements, an overall infrastructure deficit and inadequate grant funding that we have to complete for. Asset man agent will help political leaders to set the right priorities.

Yes

In some cases yes, we have utilities that, as a result of their restrictive service area tax base, do not adequately fund capital and operational reserves. It has been difficult to maintain these reserves over time as equipment is replaced and the reserves are eroded.

Yes it is. However the last 2 years have seen some successes in regards to securing grants to augment reserves and capital borrowing. The establishment of asset management plan with presenting visually the long term financial performance to customers and Water Commissions has helped with acceptance of higher rates and therefore somewhat improved financial performance.

Ongoing funding is often a challenge for many of our services, especially utility services. Much of our infrastructure was constructed some 30 to 40 years ago and is approaching the end of its design capacity and in some cases its useful life. New infrastructure is expensive and without adequate reserve funds in place costs increase in order to cover higher debt payments required to fund replacement projects.

Yes, definitely. The region faces economic challenges generally and funding utilities is no exception. Costs escalate and the ability for users to pay does not…

properly funding utilities has become a problem, one we will be in the midst of correcting over the next couple of years

3. Do you have criteria or policy for adding new systems? If so, can you provide documents?

Nope. It is a rarity for adding a new system. However we have had discussions with developers and existing improvement districts regarding the RD taking over a system and we advise that we need a QP to undertake a full assessment of the existing system, including a comparative analysis of works to bring a system up to current standards, a go forward asset renewal plan and general support from the users that they are supportive of the RD taking over the system and willing to pay all associated costs in respect of capital investment and operations.

We do not have any written criteria or policy on adding new systems. I imagine you are referring to taking over existing small private, association or ID systems. Ours is an unwritten policy. The Board's train of thought is if the system is not up to snuff or does not meet current standards, then they do not want to touch them. Why would they? It will still be the same 20 – 30 households paying for all of the upgrades unless a heavy provincial or federal grant can be secured.

We have an old water utility acquisition policy under review. We acquired two new systems in 2016 and another two under review for 2017. We typically require a system analysis prior to accepting a new system paid for by the system or with a provincial planning grant.

No – this is hard as the regional district is typically the last resort.

Just an unwritten policy that we will only take over systems where the users have agreed to any upgrades required to bring the system up to standards set in our subdivision servicing bylaw.

There is no policy, rather a process. People generally come forward through their local area director with a request for service. Staff provide information on how to get funding and the public approval process to approve the service. If approved staff move forward with auctioning the install and service setup.

Yes we do. Please see attachment. It is somewhat outdated since we do have a moratorium for taking additional water systems on in place since 2012. (We took on 9 additional water systems on in 2011/2012).

We have a policy in place to help guide the transfer of an improvement district or private water system to the regional district. We produce an annual five-year financial plan for each of its services. These plans project all operating, maintenance and capital cost requirements for each service for the next five years. The FP's are reviewed and approved by the board and then consolidated into the financial plan. Adding a new service would require the creation of a FP. Further, anytime we contemplate adding a new service (most often as the result of a service conversion process), a feasibility assessment of the infrastructure is conducted to inform and interested stakeholders as to the potential costs and obligations regarding the system. The feasibility assessment results are used for planning purposes and also communicated to the public to ensure all parties are informed to the same levels.

We have not faced the addition of new systems and hence have not had cause to create a policy in this regard.

No specific formal policies in place with regard to adding new systems

4. Do you have criteria/policy for the operation and maintenance of your utilities?

No Board Policy other than the Board's direction that we meet our regulatory obligations. As we move towards an Asset Management Policy we would see this a component of that Policy.

No, we do not have any criteria or policy regarding operation or maintenance procedures. However, we are currently working through an accountability framework and key process steps for staff. Plus, we are applying asset management best practices to our systems as best we can and as the Board allows. We are also looking at developing an Asset Management Policy for our financial department.

No. We rely on provincial standards for that.

Yes and no – depending on the system and its complexity.

We have procedures for daily/weekly/monthly/annual operation in the form of checklists, Preventative Maintenance Plans and reports.

Operational and maintenance standard operations procedures are developed when the systems are designed and constructed.

Since we are dealing mostly with very small water systems (19 in total) we are mostly just aiming for compliance. We are starting to implement in some of our systems backflow devices and in a couple metering programs. We have as well some water conservation programs with summer staff supporting the public awareness component. Leak detection is still in its infancy. Often limited to night flow analysis.

The criteria by which we operate is provided by regulatory permission (environmental permits or operating certificates). Internally we follow many best practices for the operation and maintenance. At several (but not all) of our facilities we employ computerized maintenance systems to track and schedule our maintenance tasks and activities.

Yes, criteria/policy/practice, regular schedule for maintenance

operating policies are in place

5. Do you feel that your feedback through the MOTI subdivision approval process is valued?

Yes. We have always had a close working relationship with the MoTI Approving Officer.

For the most part yes, our input into MOTI subdivisions is valued. We do not have many regulatory bylaws in effect in the Regional District. As such our referrals most always reference our OCP's. The Ministry has been very obliging to observe and respect our OCP's and seldom, if at all, have overridden them with their decisions.

We have a good relationship with our Subdivision Approving Officer and we have a Subdivision Bylaw that he takes into account, as well as referring all applications to us for comment. In the end, it's still a provincial decision.

No issue here.

Our feedback helps guide MoTI in their decisions.

MOTI carefully considers the input we provide during the referral process. We have a good working relationship with MOTI and are able to ask questions, provide concerns, and have good dialogue back and forth.

In terms of MOTI, that relationship has been varied, most often the challenge centers around maintenance of rural roads and how we maintain rural road standards in the modern era.

In regards to utilities: yes since proof of water is required for the applicant.

Yes, we have developed good working relationships with our local MoTI office and meet several times per year with our provincial approving officer. Earlier in 2016, MoTI senior staff and our CAO entered into an implementation agreement intended to promote collaboration in order to implement the objectives and policies of our Regional Growth Strategy. We note that our requests for conditions of preliminary layout approval are particularly heeded when the conditions derive from a regulatory bylaw (i.e. zoning bylaw versus Official Community Plan bylaw).

Yes, when we get referrals and raise concerns, they take those very seriously

MOTI values RD feedback from subdivision process

6. Does your organization communicate effectively with your utility users?

Interesting question, as we don't have a formal communication strategy with users. We take a common-sense approach to engaging our users when we doing things like undertaking maintenance and we haven't had any issues arise that has caused us to think about how we communicate, so I suspect we are meeting their needs.
I would say that depends on who you are speaking to. But on average I would say yes, we do have effective communication with our utility users. We only have two utilities. One small water distribution system and one small sewer system. The sewer system is relatively quiet. So there has not been a ton of engagement with them. However, the water system has been engaged due to capital investment and asset management best practices. That went over well and after the last budget the raise in taxes was not questioned. I would say that denotes effective communication.
I believe so. Each Electoral Area Director is involved in the communication side and has a good handle on issues. We have Board-appointed Water Commissions for a couple that administration meets with semi-regularly and we send out notices and updates with our water bills. If there's anything significant or any significant project specific to a system we hold Town Hall meetings and invite ratepayers into the discussion prior to implementation.
Yes we use our utility billing to keep them informed regularly, conduct an annual budget meeting for the public and have advisory committees for the larger systems.
Yes. In addition to notifications sent with quarterly billings, and emails and mailouts when required, we have also established utility advisory commissions for most of our utilities, with members of the communities participating in discussions and helping to disseminate information back to users.
Communications over the past three years have improved, with the addition of a communications manager to the District. Ad campaigns have been produced and mailers to residents through their utility bills. We are looking to continuing to improve over the coming years with identified budgets
I believe we do. It still requires more work and increased resources. Since we have mostly very small rural systems with a large regional spread a lot of our communication happens on the customer operator level and works very well. The larger communication is often difficult because the situation seems to be in every system just a bit different and makes general messaging often difficult and ineffective. We attempt to counteract a bit through local "Advisory Committees" or already historically established "Water Commissions".
We communicate with its utility users in a variety of ways, including direct mail outs for important initiatives, adding information bulletins to utility bills, website posts and newspaper advertisements. This range of public engagement is effective on some measures but could be improved on other measures. We are committed to finding better and more effective ways to engage its residents and ratepayers.
Yes. We have regular (monthly) commission meetings and the commissioners are in close contact with the users generally, even going door-to-door recently to address a grant application in relation to planned infrastructure replacement.
We try and hopefully have effective communications with our utility users

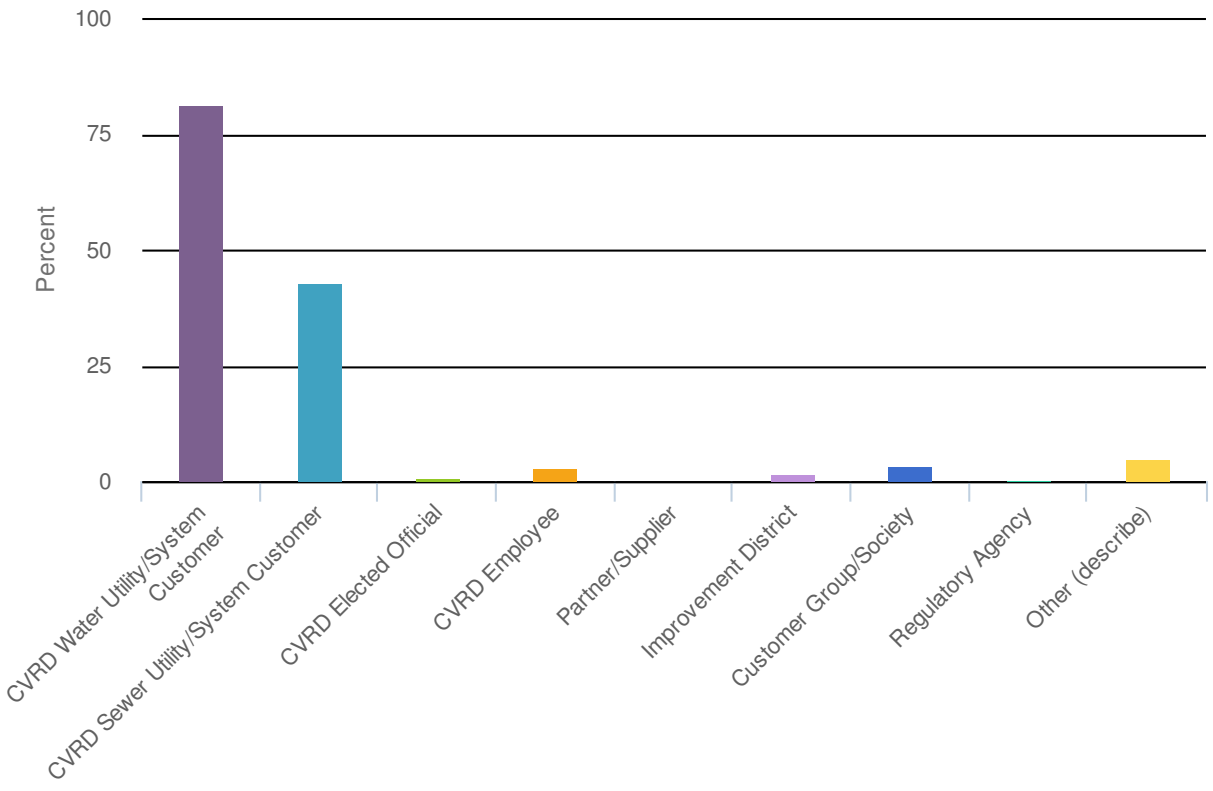
Appendix D: **Report for Cowichan Valley Regional District Water & Wastewater Utilities Review Survey**

Report for Cowichan Valley Regional District Water & Wastewater Utilities Review Survey

1. Response Counts

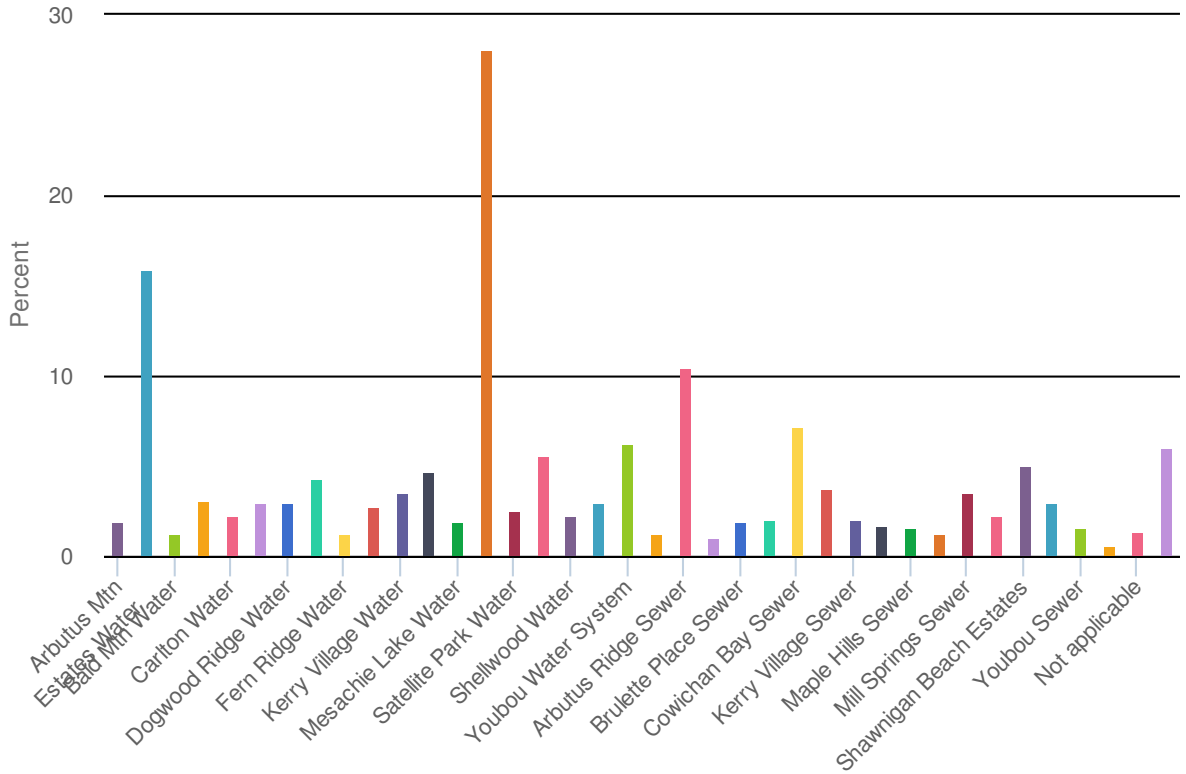
Completion Rate:	**74%**	
Complete	504	
Partial	177	
Total	681	

2. Please select all that describes you. (multiple answers ok)



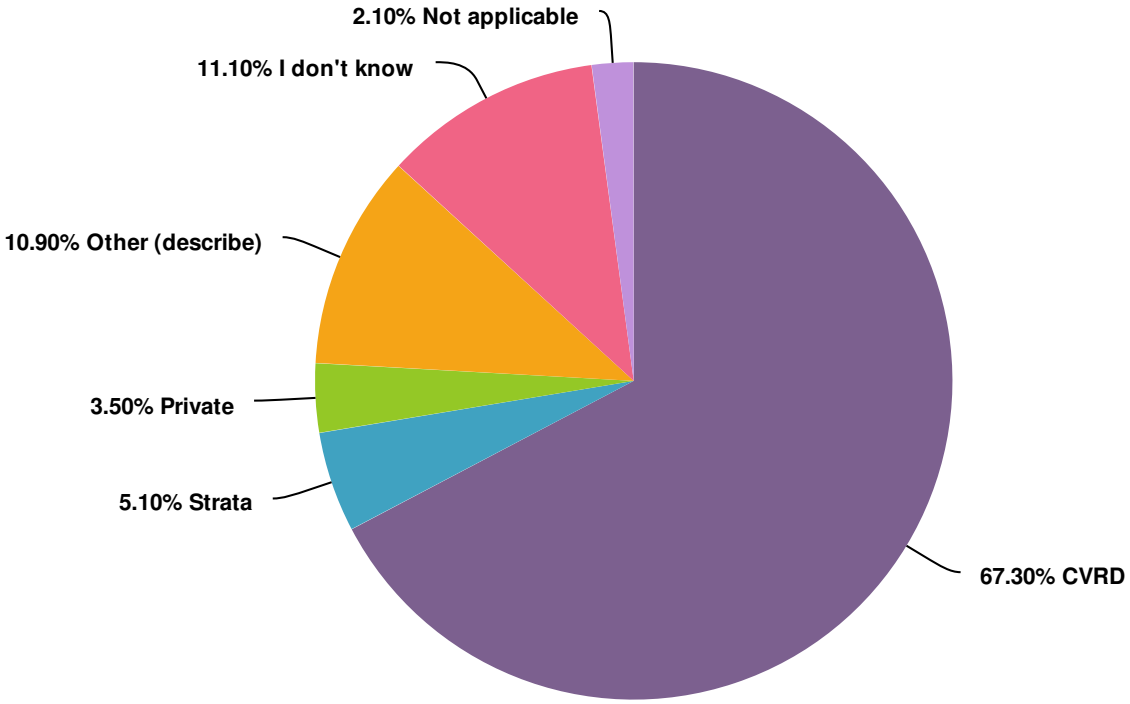
Value	Percent	Count
CVRD Water Utility/System Customer	81.6%	422
CVRD Sewer Utility/System Customer	42.7%	221
CVRD Elected Official	1.0%	5
CVRD Employee	3.1%	16
Partner/Supplier	0.2%	1
Improvement District	1.9%	10
Customer Group/Society	3.5%	18
Regulatory Agency	0.4%	2
Other (describe)	4.8%	25

3. Please select which CVRD utility/system(s) you currently are associated with? (multiple answers ok)



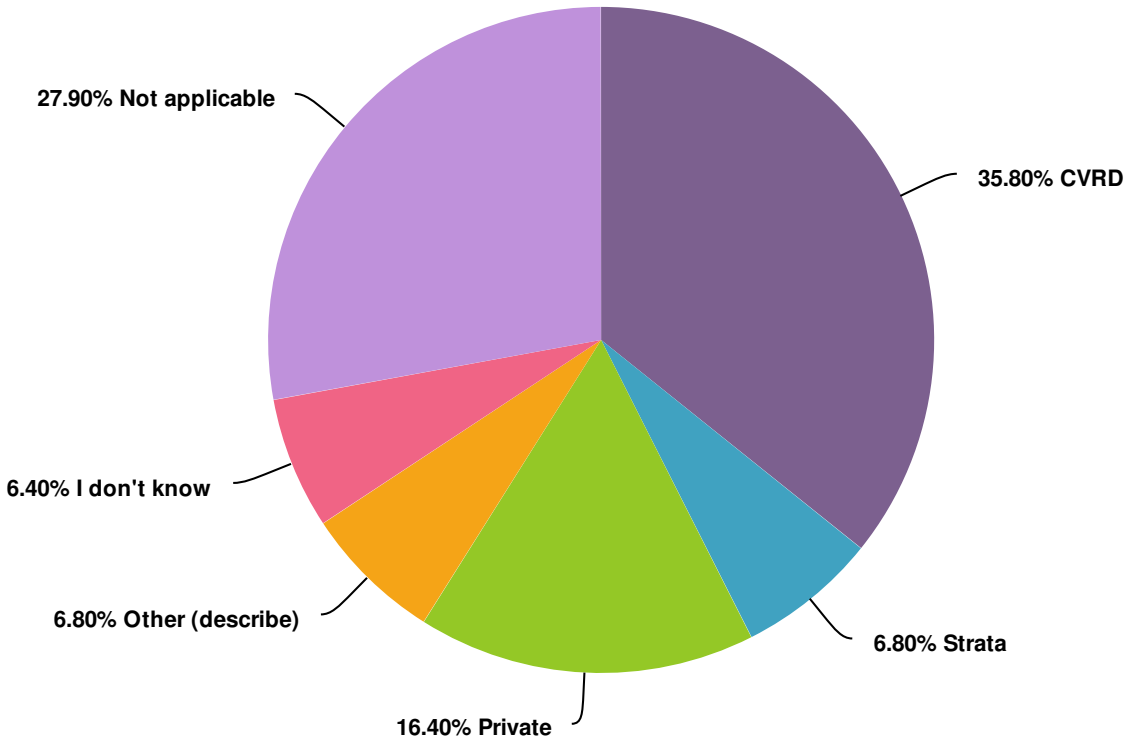
Value	Percent	Count
Arbutus Ridge Water	15.9%	82
Burnum Water	3.1%	16
Douglas Hill Water	4.3%	22
Kerry Village Water	3.5%	18
Lambourn Estates Water	4.7%	24
Saltair Water	28.1%	145
Shawngian Lake North Water	5.6%	29
Youbou Water System	6.2%	32
Arbutus Ridge Sewer	10.5%	54
Cowichan Bay Sewer	7.2%	37
Eagle Heights Sewer	3.7%	19
Mill Springs Sewer	3.5%	18
Shawnigan Beach Estates	5.0%	26
Other - write in	6.0%	31
All Others (click to expand)	46.3%	239

4. Who OWNS your Water utility/system(s)?



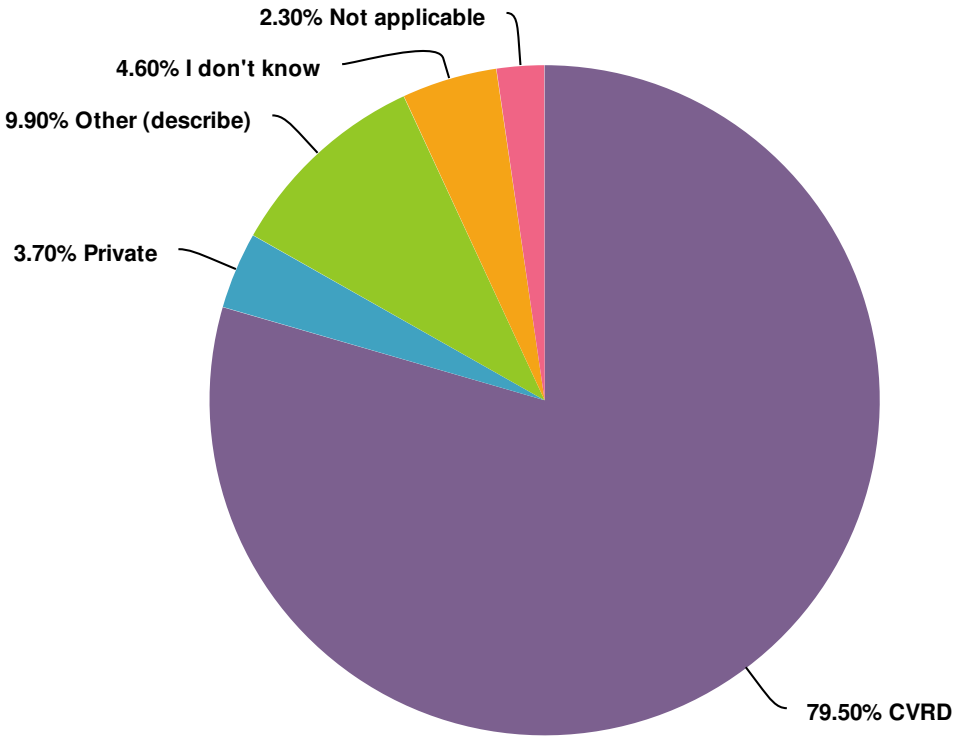
Value	Percent		Count
CVRD	67.3%		346
Strata	5.1%		26
Private	3.5%		18
Other (describe)	10.9%		56
I don't know	11.1%		57
Not applicable	2.1%		11
		Total	514

5. Who OWNS your Sewer utility/system(s)?



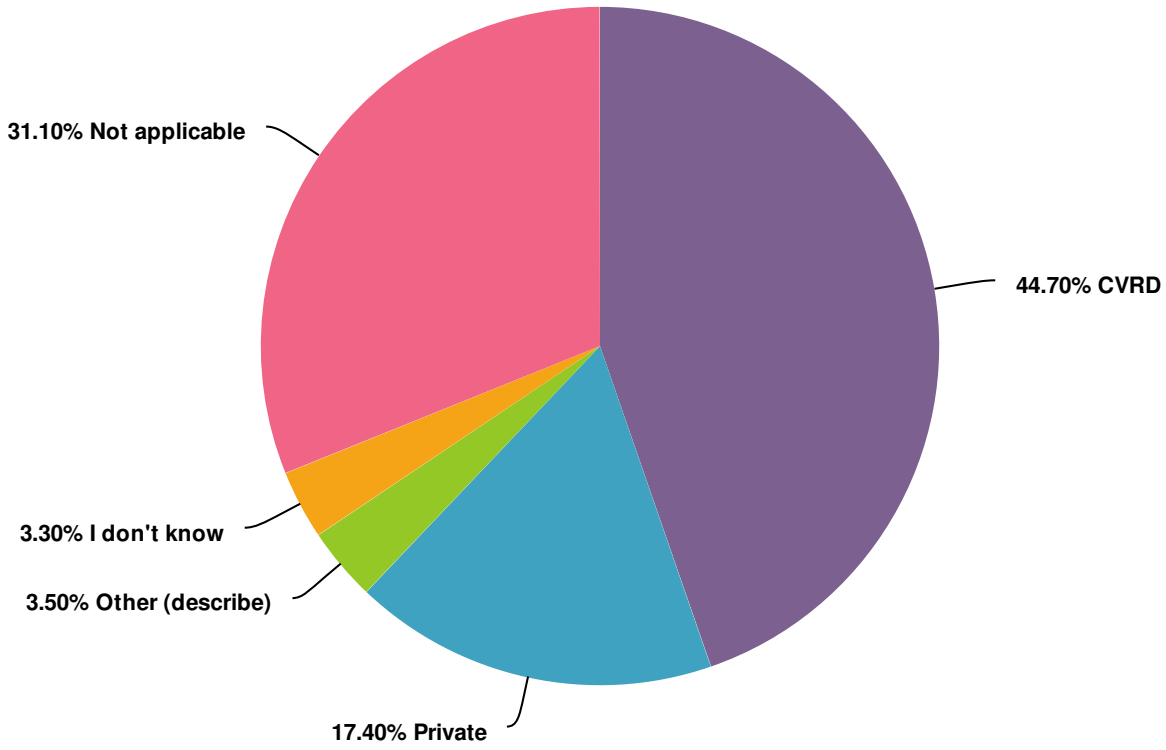
Value	Percent	Count
CVRD	35.8%	185
Strata	6.8%	35
Private	16.4%	85
Other (describe)	6.8%	35
I don't know	6.4%	33
Not applicable	27.9%	144
	Total	517

6. Who OPERATES your Water utility/system(s)?



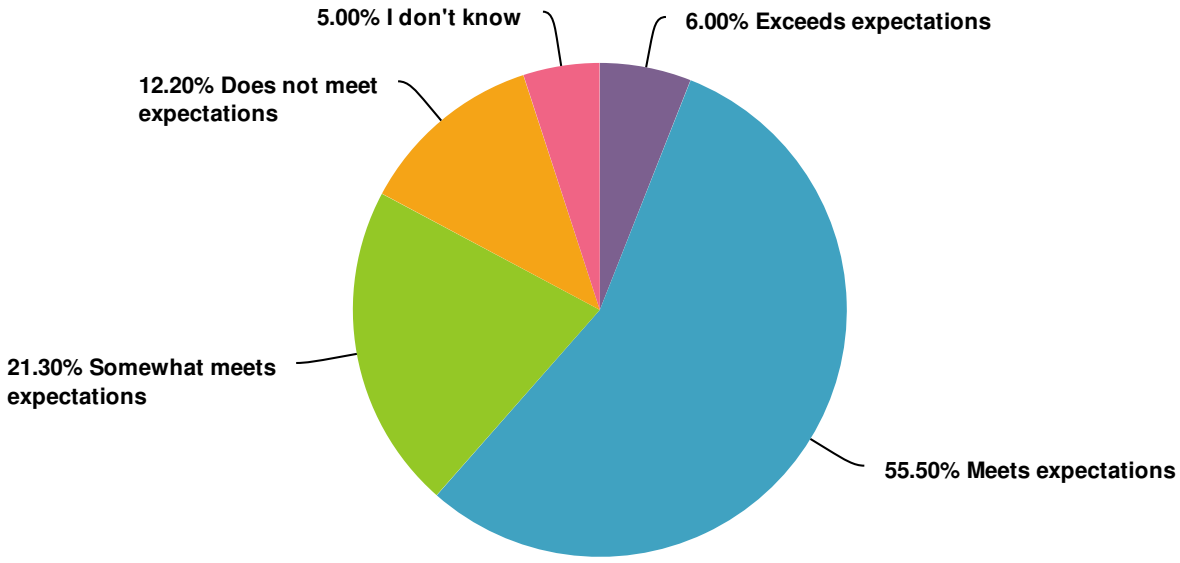
Value	Percent		Count
CVRD	79.5%		411
Private	3.7%		19
Other (describe)	9.9%		51
I don't know	4.6%		24
Not applicable	2.3%		12
		Total	517

7. Who OPERATES your Sewer utility/system(s)?



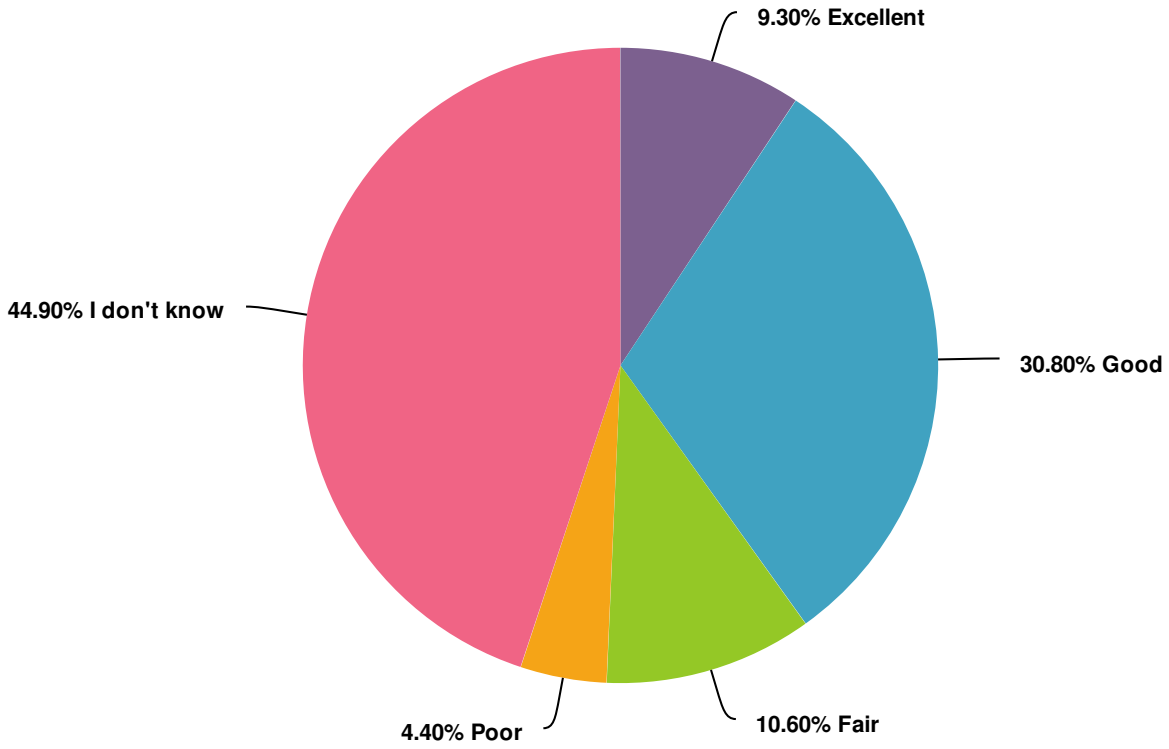
Value	Percent	Count
CVRD	44.7%	231
Private	17.4%	90
Other (describe)	3.5%	18
I don't know	3.3%	17
Not applicable	31.1%	161
	Total	517

8. How would you describe the CVRD utility/system(s) quality of service (water quality, supply, maintenance, etc.)?



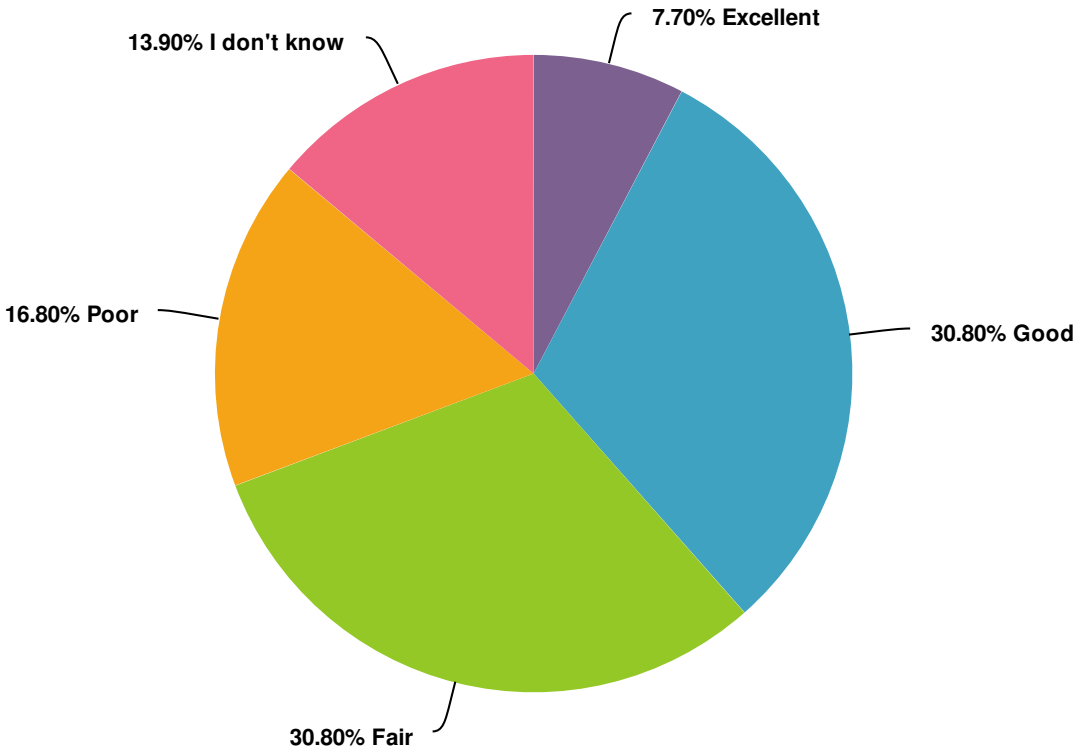
Value	Percent		Count
Exceeds expectations	6.0%		31
Meets expectations	55.5%		287
Somewhat meets expectations	21.3%		110
Does not meet expectations	12.2%		63
I don't know	5.0%		26
		Total	517

9. How would you describe the CVRD utility/system(s) timeliness of response (returning phone calls & emails, etc.)?



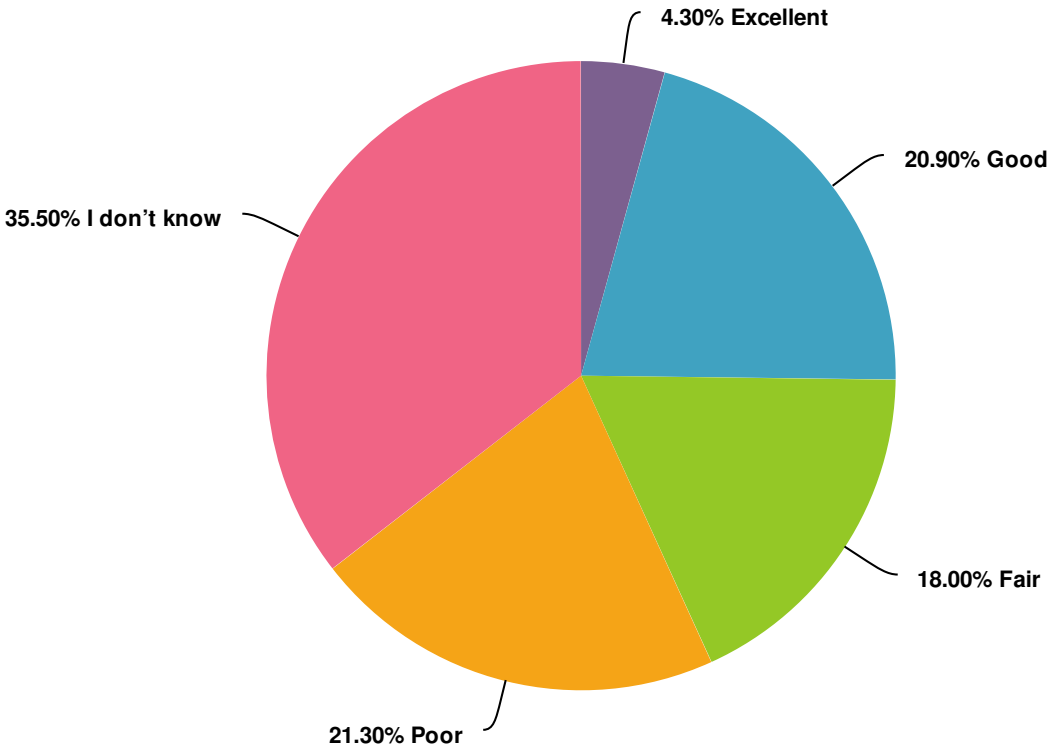
Value	Percent		Count
Excellent	9.3%		48
Good	30.8%		159
Fair	10.6%		55
Poor	4.4%		23
I don't know	44.9%		232
		Total	517

10. How would you describe CVRD utility/system(s) value for service (do you receive appropriate value for the fees/cost)?



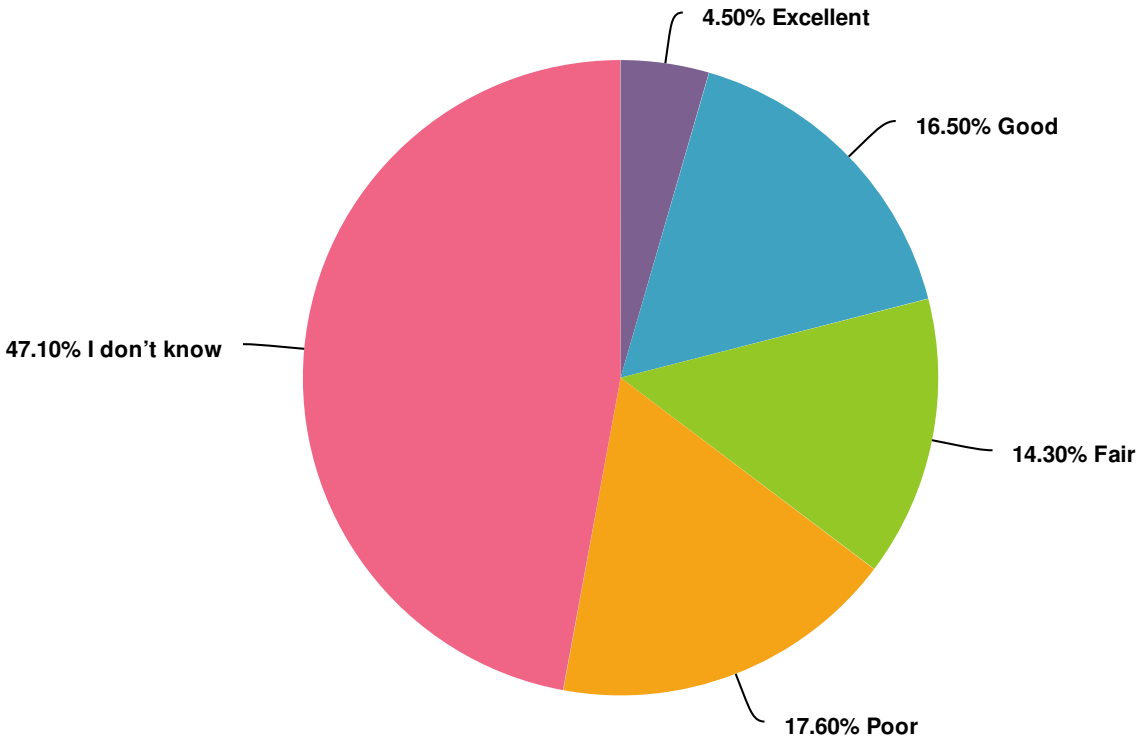
Value	Percent		Count
Excellent	7.7%		40
Good	30.8%		159
Fair	30.8%		159
Poor	16.8%		87
I don't know	13.9%		72
		Total	517

11. How would you describe the long-term planning CVRD is providing for the utility/system(s)?



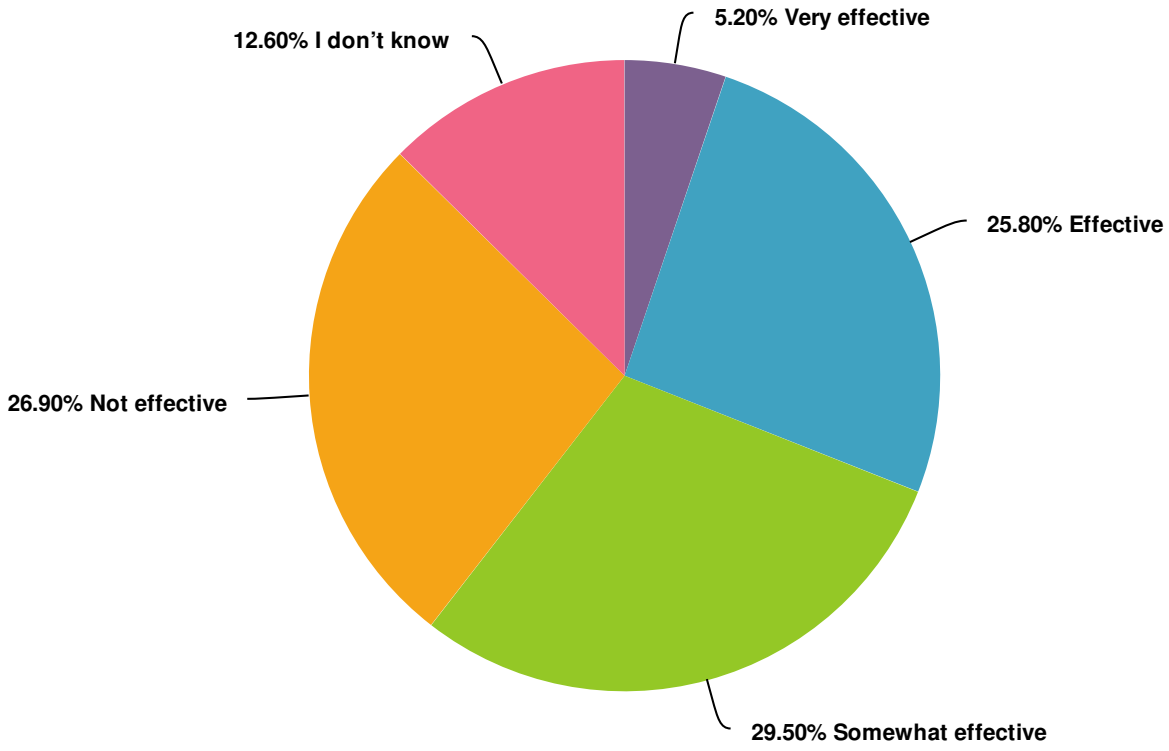
Value	Percent		Count
Excellent	4.3%		22
Good	20.9%		108
Fair	18.0%		93
Poor	21.3%		110
I don't know	35.5%		183
		Total	516

12. Do you believe CVRD is providing accurate accounting of the costs for the utility/system(s)?



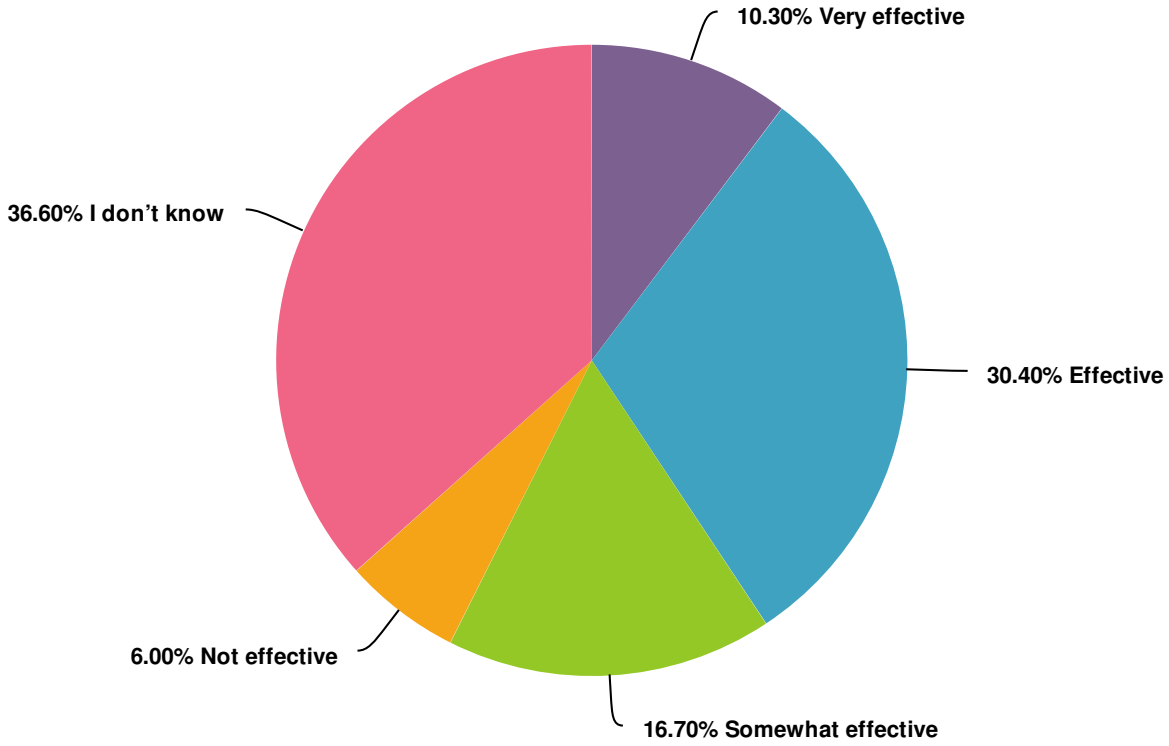
Value	Percent		Count
Excellent	4.5%		23
Good	16.5%		85
Fair	14.3%		74
Poor	17.6%		91
I don't know	47.1%		243
		Total	516

13. How effective is the CVRD in communicating with customers about utility/system(s) services and any challenges?



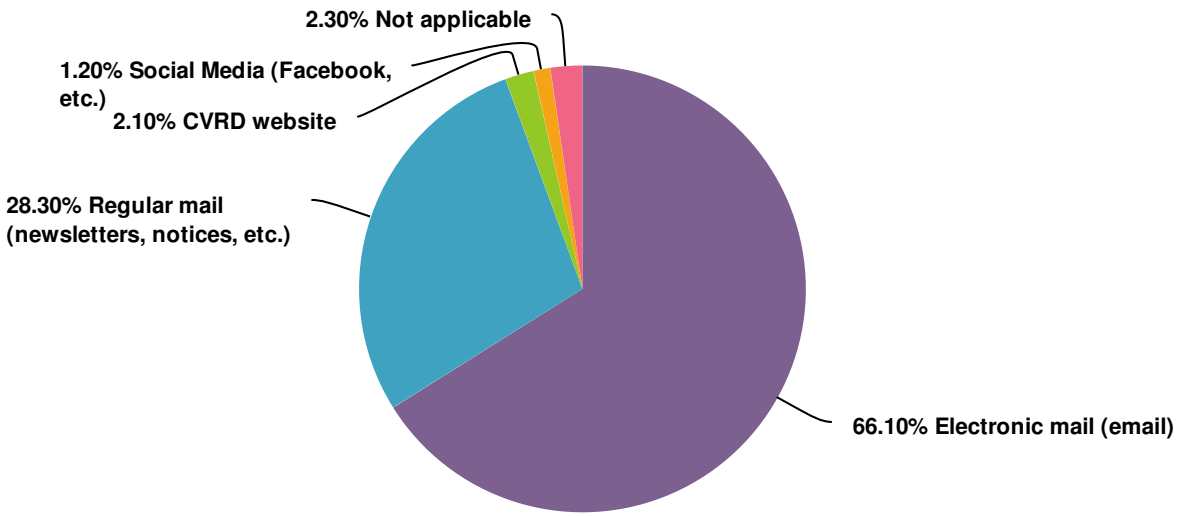
Value	Percent		Count
Very effective	5.2%		27
Effective	25.8%		133
Somewhat effective	29.5%		152
Not effective	26.9%		139
I don't know	12.6%		65
		Total	516

14. How effective is the CVRD with utility/system(s) emergencies (breaks, leaks, contamination, unplanned shut downs, etc.)?



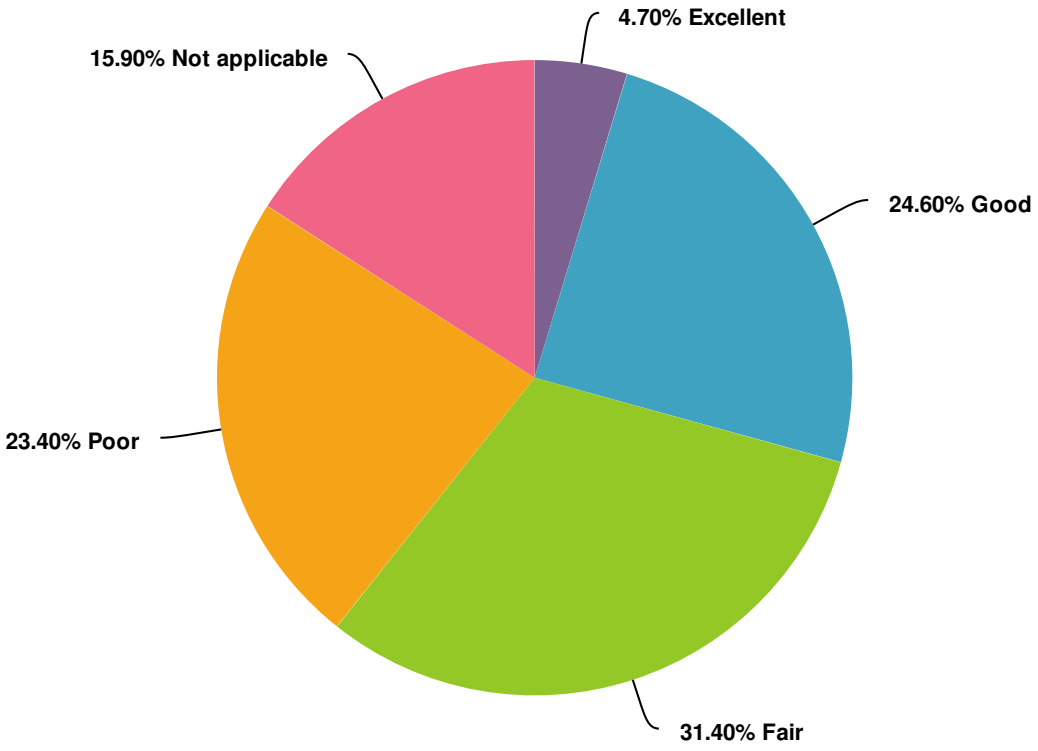
Value	Percent		Count
Very effective	10.3%		53
Effective	30.4%		157
Somewhat effective	16.7%		86
Not effective	6.0%		31
I don't know	36.6%		189
		Total	516

15. When receiving information from the CVRD, what works best for you?



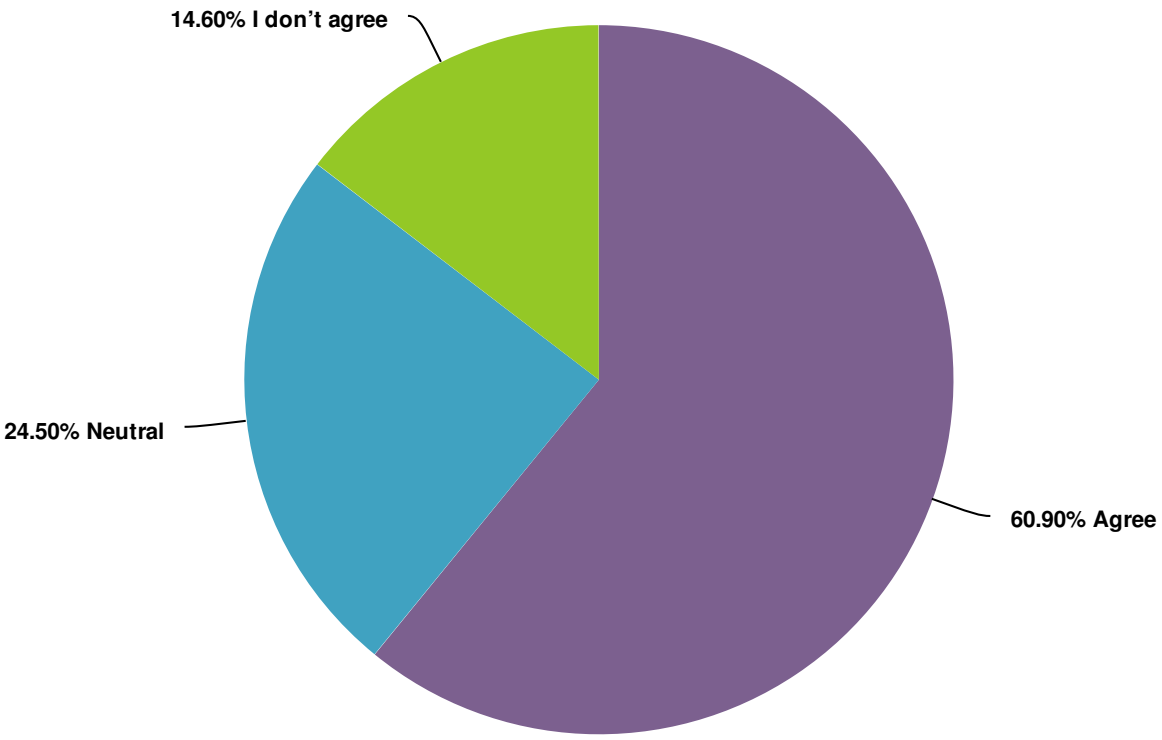
Value	Percent	Count
Electronic mail (email)	66.1%	341
Regular mail (newsletters, notices, etc.)	28.3%	146
CVRD website	2.1%	11
Social Media (Facebook, etc.)	1.2%	6
Not applicable	2.3%	12
	Total	516

16. Do you believe utility/system(s) customers are well represented by their Electoral Area Directors?



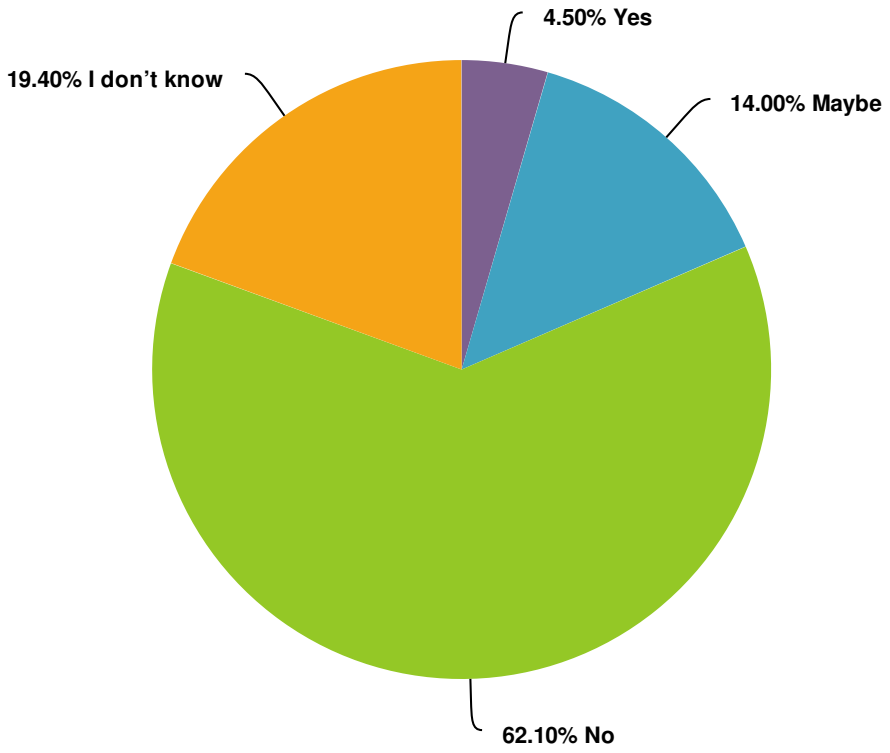
Value	Percent		Count
Excellent	4.7%		24
Good	24.6%		127
Fair	31.4%		162
Poor	23.4%		121
Not applicable	15.9%		82
		Total	516

17. Do you believe all water services should be metered to set rates based on actual use?



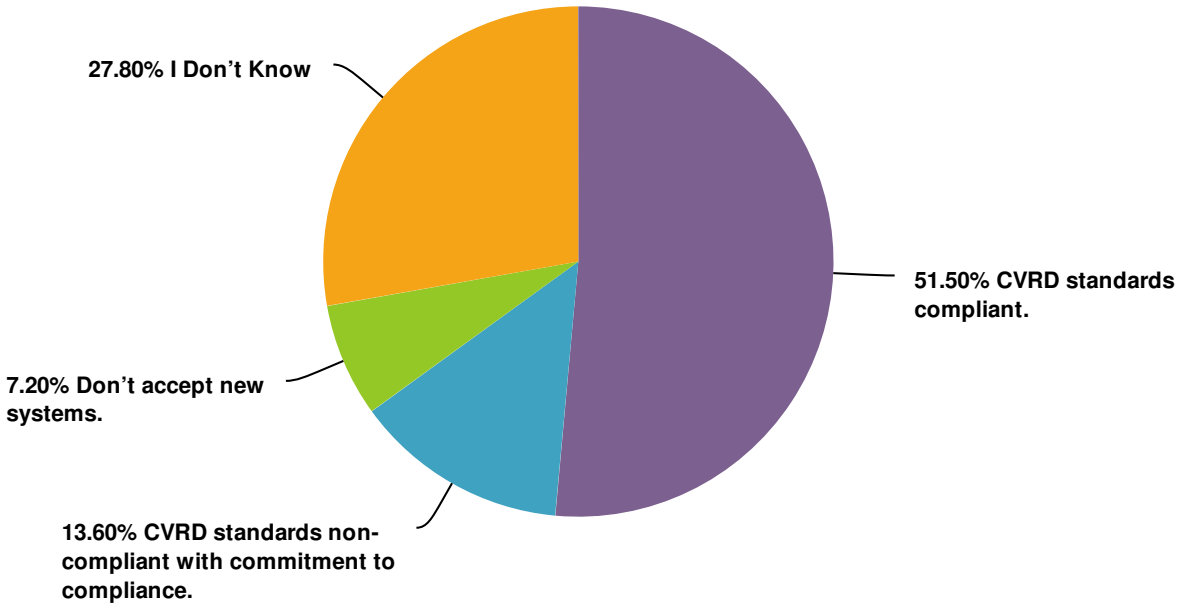
Value	Percent		Count
Agree	60.9%		313
Neutral	24.5%		126
I don't agree	14.6%		75
		Total	514

18. Do you believe customers would be better served by a private sector system operator?



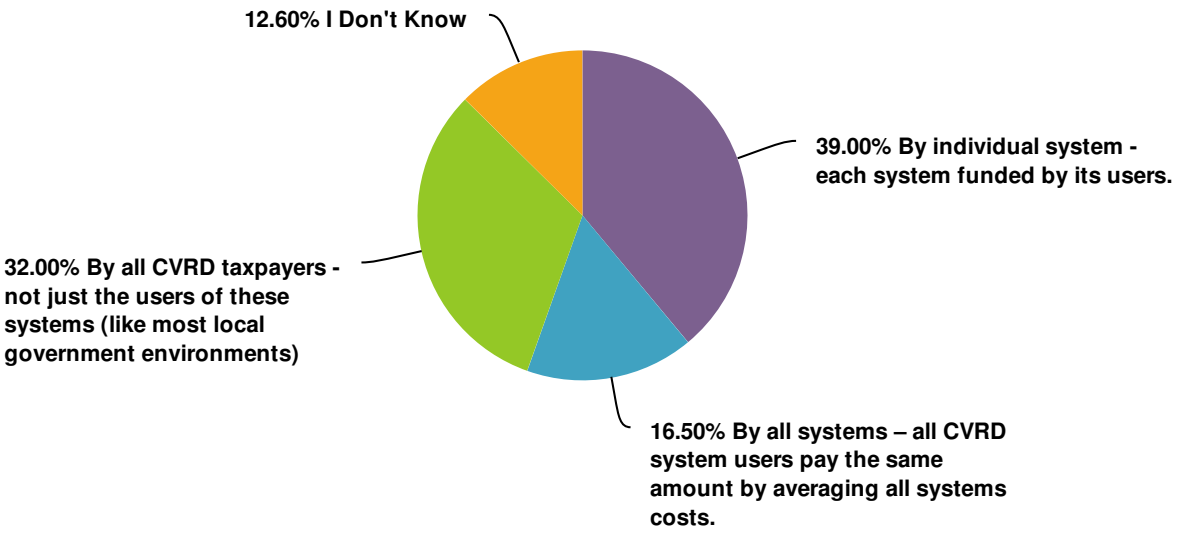
Value	Percent		Count
Yes	4.5%		23
Maybe	14.0%		72
No	62.1%		320
I don't know	19.4%		100
		Total	515

19. In the future, what should be the criteria for adding new utilities/systems?



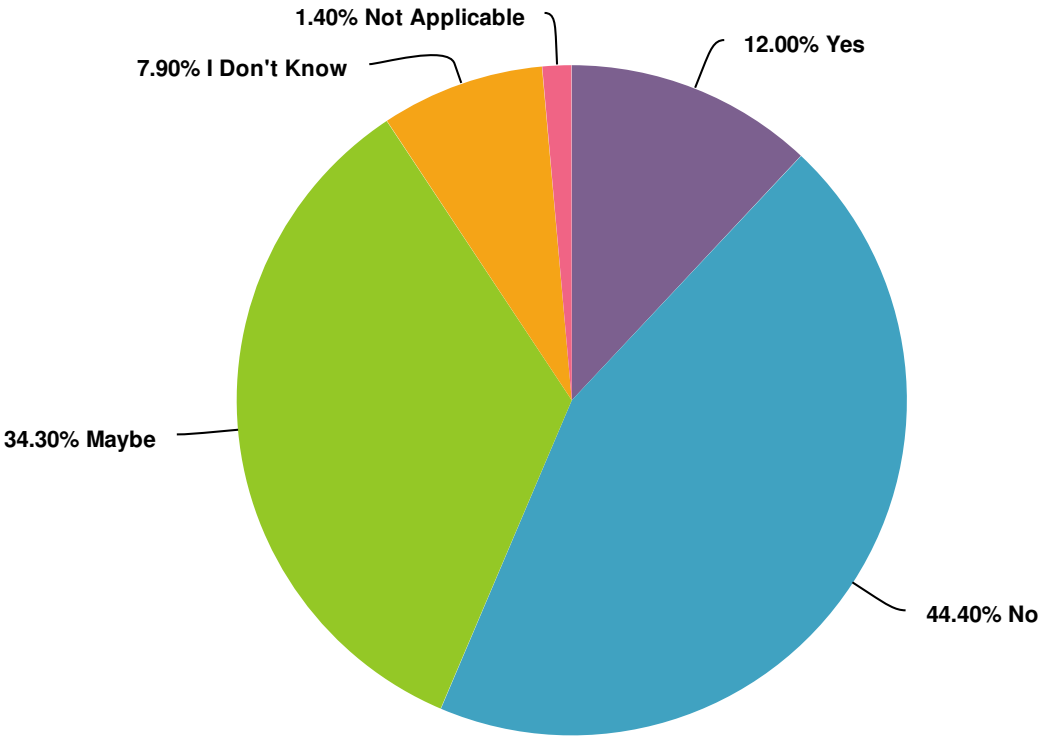
Value	Percent	Count
CVRD standards compliant.	51.5%	265
CVRD standards non-compliant with commitment to compliance.	13.6%	70
Don't accept new systems.	7.2%	37
I Don't Know	27.8%	143
	Total	515

20. What is your preference for funding utilities/systems?



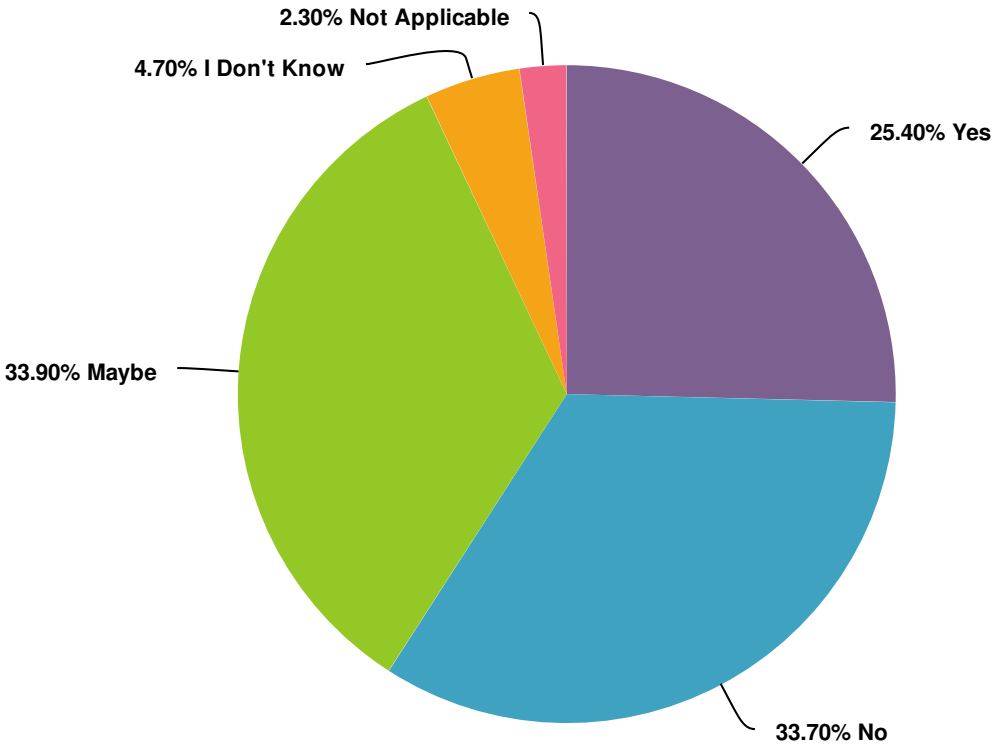
Value	Percent	Count
By individual system - each system funded by its users.	39.0%	201
By all systems – all CVRD system users pay the same amount by averaging all systems costs.	16.5%	85
By all CVRD taxpayers - not just the users of these systems (like most local government environments)	32.0%	165
I Don't Know	12.6%	65
	Total	516

21. Would you support a fee increase to pay for additional CVRD maintenance service capacity?



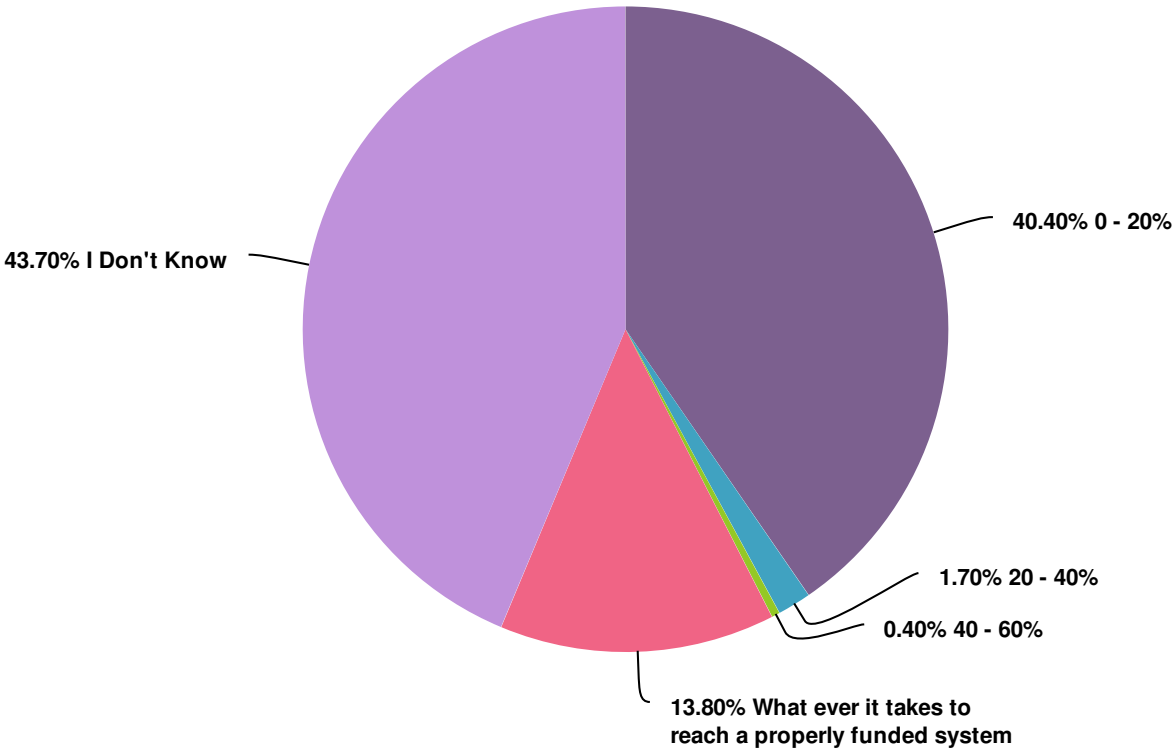
Value	Percent		Count
Yes	12.0%		62
No	44.4%		229
Maybe	34.3%		177
I Don't Know	7.9%		41
Not Applicable	1.4%		7
		Total	516

22. Would you support additional fees in order to establish a long-term utility/system(s) infrastructure replacement fund?



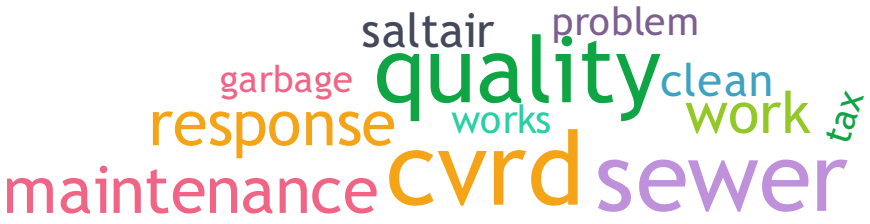
Value	Percent		Count
Yes	25.4%		131
No	33.7%		174
Maybe	33.9%		175
I Don't Know	4.7%		24
Not Applicable	2.3%		12
		Total	516

23. In order to reach a properly funded level for your utility/system(s), how much would you be willing to pay?

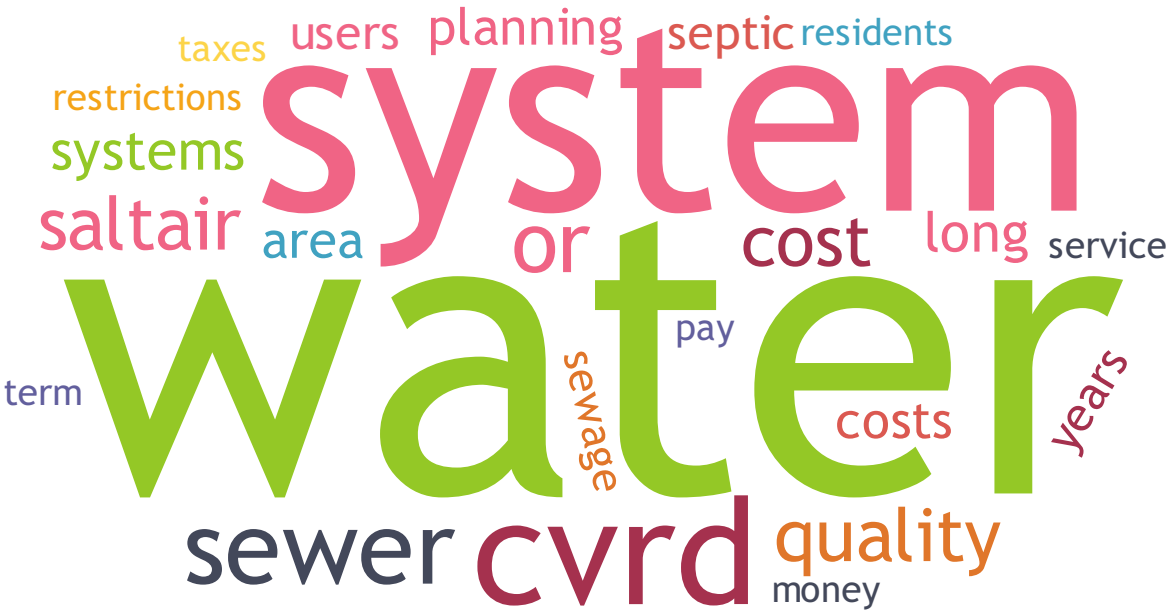


Value	Percent	Count
0 - 20%	40.4%	208
20 - 40%	1.7%	9
40 - 60%	0.4%	2
What ever it takes to reach a properly funded system	13.8%	71
I Don't Know	43.7%	225
	Total	515

24. What aspects of the CVRD utility/system(s) services would you describe as working well? Please describe.



25. What aspects of the CVRD utility/system(s) services would you describe as needing improvement? Please describe.



26. Any additional comments?

Appendix E: **Interview & Group Session Participants**

NO.	NAME	ORGANIZATION	ROLE
1	Brian Carruthers	CVRD	Chief Administrative Officer
2	Ross Blackwell	CVRD	GM, Planning & Development
3	Mike Tippett	CVRD	Manager, Community & Regional Planning
4	Rob Conway	CVRD	Manager, Development Services
5	Mark Kueber	CVRD	GM, Corporate Services
6	Sharon Moss	CVRD	Manager, Finance
7	Barbra Mohan	CVRD	Manager, Human Resources
8	Chris Ewing	CVRD	Manager, Information Technology
9	Rob Grant	CVRD	GIS Supervisor, Information Technology
10	Cynthia Lockrey	CVRD	Manager, Strategic Services
11	Joe Barry	CVRD	Corporate Secretary
12	Louise Knodel-Joy	CVRD	Senior Engineering Technologist
13	Todd Etherington	CVRD	Utilities Operations Superintendent
14	David Parker	CVRD	Engineering Technologist 3
15	Rudy Dhami	CVRD	W&S Senior Operator
16	Bill Elder	CVRD	W&S Operator
17	John Lewis	CVRD	W&S Operator
18	Neil Litchfield	CVRD	W&S Operator
19	Mark Malones	CVRD	W&S Operator
20	Chad Smith	CVRD	W&S Operator
21	Terry Boyles	CVRD	W&S Operator (LTD)
22	Andrew Rose	CVRD	W&S Operator (new Employee)
23	Hamid Hatami	CVRD	GM, Engineering Services
24	Brian Dennison	CVRD	Manager, Water Management
25	Kate Miller	CVRD	Manager, Environmental Services
26	Jeralyn Jackson	CVRD	Capital Projects
27	David Koch	MOTI	Highways Approval Officer, Victoria
28	Mark Hall	IHA	Health/Water Inspector
29	Dr. Paul Hasslebach	IHA	Medical Health Officer
30	Laura Hunse	MOE	Environmental Protection Officer

NO.	NAME	ORGANIZATION	ROLE
31	Kristen White	MOE	Environmental Protection Officer
32	Rick Couroux	MOE	Water Comptroller
33	Jennifer Gardner	IHA	Island Health
34	Stacy Sowa	IHA	Island Health
35	Rob Warren	KWL	Feasibility Study Authors
36	Jeff Somerville	WSP	Feasibility Study Authors
37	Joe Woolls		Private System Operator
38	Sean Sanders		Private System Operator
39	Fred Bosma	Cowichan Tribes	Housing Manager, Cowichan Tribes
40	Laura Hunse	MOE	Environmental Protection Officer
41	Electoral Area Directors	CVRD - ELECTED	9 Electoral Area Directors
42	Mel Dorey		Electoral Area Services Committee
43	Kevin Goldfuss		Operations Manager, Ladysmith
44	Dan McClure	Area A	Former Carlton Improvement District
45	Peter Dunn	Area H	Former Shellwood Improvement District
46	John Hemstock	Area H	Woodley Range Resident
47	Jim Campbell	Area A	Mill Springs Strata Council Pres.
48	Dave Darling	Area F	Resident & Alt Director
49	Lynne Smith	Area G	Water committee
50	Jim Bomford	Area D	Residents group
51	Jurgen Duewel	Area C	Civil Works Committee Chair
52	Mark Docherty	Area E	Former Dogwood Improvement District
53	Marcia Stewart	Area I	Customer with Youbou water utility

Appendix F: **Site Visit Locations**

NO.	LOCATION	TYPE
1	Eagle Heights Wastewater	Lift station
2	Lambourn Estates Wastewater	MBR Plant
3	Arbutus Ridge Wastewater	Lift station
4	Arbutus Ridge Wastewater	RBC Plant
5	Maple Hills Wastewater	RBC Plant
6	Twin Cedars Wastewater	MBR Plant
7	Sentinel Ridge Wastewater	Plant
8	Crab Pot Wastewater	Lift station
9	Marine Vista Wastewater	Lift station
10	Dogwood Estates Water	Well pump/reservoir
11	Douglas Hill Water	Pump house/treatment plant
12	Lambourn Estates Water	Pump house, treatment plant, reservoir
13	Burnam Estates Water	Pump house
14	Cherry Point Estates Water	Pump house
15	Satellite Park Water	Pump house
16	Arbutus Mountain Estates Water	pumphouse
17	Arbutus Ridge Estates Water	Pump/ PRV
18	Fernridge Water	pumphouse
19	Lakeside Estates Water	pumphouse
20	Shawnigan Estates Water	pumphouse/reservoir
21	Saltair Water	Pump/treatment plant/reservoir
22	Ingot Road Water	Pumphouse
23	Fernridge Water	Pumphouse
24	Kerry Village Water	Pump/reservoir
25	Briarwood Park Water	Pump house
26	Shellwood Water	Pump
27	Carlton Water	Pumphouse/Reservoir
28	Mesachie Lake Water	Well pump
29	Honeymoon Bay Water	Pump house/plant
30	Bald Mountain Water	Pump house/plant
31	Youbou Water	pump house/reservoir

Appendix G: **CVRD Water & Wastewater Utility History**

CVRD Water Utilities

AREA	NAME	BUILT	TO CVRD	CUSTOMERS
B	Arbutus Mountain Estates Water	2006	2008	123
C	Arbutus Ridge Water	1988	2009	643
I	Bald Mountain Water	2007	2010	78
B	Burnum Water	1991	2014	84
B	Carlton Water	1978	2013	31
D	Cherry Point Water	1995	1995	30
E	Dogwood Ridge Water	1982	2010	33
C	Douglas Hill Water	1993	2010	138
A	Fern Ridge Water	1995	2008	35
F	Honeymoon Bay Water	1940-1983	1994	303
A	Kerry Village Water	1983	2004	96
D	Lambourn Estates Water	1967	2008	133
F	Mesachie Lake Water	1940–1968	1969	101
G	Saltair Water	1957	1986	845
C	Satellite Park Water	1973	2006	81
B	Shawnigan Lake North Water	1980	1999	690
H	Shellwood Water	1972	2013	31
H	Woodley Rage Water	1999	2013	37
I	Youbou Water Utility	1947-1970	2005	598

CVRD Wastewater Utilities

AREA	NAME	BUILT	TO CVRD	CUSTOMERS
B	Arbutus Mnt Estates Wastewater	2006	2008	123
C	Arbutus Ridge Wastewater	1988	2009	643
I	Bald Mtn Wastewater	2007	2008	78
A	Brulette Place Wastewater	1995	2009	59
C	Cobble Hill Wastewater	1993	2008	84
D	Cowichan Bay Wastewater	1971	1971	716
E	Eagle Heights Wastewater	1975	1975	760
A	Kerry Village Wastewater	1983	2004	96
D	Lambourn Estates Wastewater	1967	2008	111
C	Maple Hills Wastewater	1933	1994	60
F	Mesachie Lake Wastewater	1940	1969	49

AREA	NAME	BUILT	TO CVRD	CUSTOMERS
A	Mill Springs Wastewater	1997	2015	203
A	Sentinel Ridge Wastewater	2006	2006	104
B	Shawnigan Beach Estates	1980	1999	371
C	Twin Cedars Wastewater	2007	2007	76
I	Youbou Wastewater	2005	2006	78

FUTURE CVRD Water and Wastewater Utilities

AREA	TYPE	STATUS	NAME	TO CVRD	CUSTOMERS
B	Water	New Dev	Elkington Forest Water	2016?	77
I	Water	New Dev	Marble Bay Water	?	70
I	Water	New Dev	Youbou Mill Site Water	2019?	1200
H	Water	Takeover Appl.	Shell Beach Water ID	?	30
A	Water	Takeover Appl.	Wace Creek ID Water	?	15
A	Water	Takeover Poss.	Keparo Water Society	?	28
A	Water	Takeover Poss.	Meredith Rd ID Water	?	43
A	Water	Takeover Poss.	Mill Bay Waterworks ID	?	760
A	Water	Takeover Poss.	Oceanview ID - Water	?	21
B	Water	Takeover Poss.	Shawnigan Village Water	?	500
C	Water	Takeover Poss.	Braithwaite Estates ID - Water	?	212
C	Water	Takeover Poss.	Cobble Hill ID - Water	?	190
D	Water	Takeover Poss.	Cowichan Bay ID - Water	?	835
F	Water	New Dev	Paldi Drainage	2018?	500
F	Water	New Dev	Pebble West	2019?	100
H	Water	Takeover Appl.	Diamond ID	?	80
B	Wastewater	New Dev	Elkington Forest Wastewater	2016?	77
A	Wastewater	New Dev	Stonebridge Wastewater	2017?	800
F	Wastewater	New Dev	Paldi Wastewater	2018?	500
I	Wastewater	New Dev	Marble Bay Wastewater	?	70
B	Wastewater	New Dev	Shawnigan Station Wastewater	2018?	100
I	Wastewater	New Dev	Youbou Mill Site Wastewater	2019?	1200
A	Wastewater	Takeover Appl.	Lilmac Estates Wastewater	?	28
A	Wastewater	Takeover Appl.	Windsong Place Wastewater	?	25
A	Wastewater	Takeover Appl.	Bayview Center Wastewater	?	Commercial
A	Wastewater	Takeover Poss.	Lions Cove Wastewater	?	36
A	Wastewater	Takeover Poss.	Brentwood College Wastewater	?	?
F	Wastewater	New Dev	Paldi Drainage	2018?	500

Appendix H: **BC Regional Districts Size Rankings**

RANK	NAME	POPULATION	AREA (km2)	DENSITY (/km2)
1	Greater/Metro Vancouver	2,313,328	2,883	802.5
2	Capital	359,991	2,340	153.8
3	Fraser Valley	277,593	13,335	20.8
4	Central Okanagan	179,839	2,905	61.9
5	Nanaimo	146,574	2,038	71.9
6	Thompson-Nicola	128,473	44,448	2.9
7	Fraser-Fort George	91,879	50,676	1.8
8	North Okanagan	81,237	7,503	10.8
9	Okanagan-Similkameen	80,742	10,414	7.8
10	Cowichan Valley	80,332	3,475	23.1
11	Comox Valley	63,538	1,701	37.4
12	Cariboo	62,392	80,609	0.77
13	Peace River	60,082	117,391	0.51
14	Central Kootenay	58,441	22,095	2.6
15	East Kootenay	56,685	27,543	2.1
16	Columbia-Shuswap	50,512	28,929	1.7
17	Strathcona	43,252	18,278	2.4
18	Bulkley-Nechako	39,208	73,361	0.53
19	Squamish-Lillooet	38,170	16,310	2.3
20	Kitimat-Stikine	37,361	104,461	0.36
21	Kootenay Boundary	31,138	8,082	3.9
22	Alberni-Clayoquot	31,061	6,588	4.7
23	Sunshine Coast	28,619	3,777	7.6
24	Powell River	19,906	5,075	3.9
25	Skeena-Queen Charlotte	18,784	19,781	0.95
26	Mount Waddington	11,506	20,244	0.57
27	Northern Rockies	5,578	85,111	0.07
28	Central Coast	3,206	24,492	0.13
29	Stikine Region	629	118,663	0.01

* The Stikine Region is not officially classified as a regional district, and is administered directly by the provincial government.

Appendix I: **Consultant Profiles**

Kevin Ramsay, AScT, RTMgr

With the City of Surrey, District of West Vancouver, the City of Vancouver, District of Squamish and the City of Port Moody, Kevin held a total of 19 different local government positions including Waterworks Superintendent, Manager of Safety & Training, Yards Superintendent, Manager of Waterworks, Manager of Streets, Manager of Sanitation, Director of Emergency Management, General Manager of Human Resources, Chief Administrative Officer, and City Manager. In 2016, after 34 years in local government, Kevin retired from the City of Port Moody and started up the Innova Strategy Group.

Kevin excels in leading-edge performance enhancement, maximizing leadership capacity, and core service reviews in local government. Much of his success is related to restructuring supervisory/management groups and team building, with an ongoing focus on leadership values. He has provided keynote addresses, seminars, curriculum training, and one-on-one mentoring on leadership, change management and core service reviews. Kevin has been fortunate to have had the opportunity to present, instruct and mentor his leadership values throughout the world.

Kevin has become a Canadian expert on organizational reviews and has provided numerous presentations and papers to organizations across Canada. Overall, Kevin has led over 23 core service reviews resulting in multiple $ millions in operational efficiencies. Kevin's approach is different than most financial auditors who take a top-down approach. His takes a bottom-up approach that ascertains the real problems and concerns inherent in most organizations. This "organizational friendly" methodology has now been adopted in many other local government organizations.

Kevin's leadership has also encompassed a number of related organizations as he currently sits, or has sat, as President, Chair, and/or Director for the BC Water & Waste Association, Canadian Water & Waste Association, BC Environmental Operators Certification Program, American Waterworks Association, Water Environment Federation, Applied Science Technologists & Technicians of BC, Canadian Council for Human Resources in the Environmental Industry, BC One Call, the Public Works Association of BC, the Pacific National Exhibition, the Pacific Northwest Preparedness Society, and WorksafeBC.

As Principal of ISG, Kevin leads the most qualified industry experts in providing value-added services to local government organizations. ISG employees and associates are dedicated to providing value, quality and strong leadership to the industry, while staying connected to the latest technologies and trends.

Kehl Petersen, CHRP

Kehl is a leader, consultant and change agent with over thirty diverse years of experience focused on many elements of the people side of change, innovation, strategy and technology. Kehl is Certified Human Resource Professional with experienced leadership in change management, engagement, innovation, people strategy, technology product management, business process improvement, learning & development, performance, communication and team management.

Kehl is a connector and is actively utilizing his experience and skills to identify and facilitate change - from new business revenue, organizational improvements, and positive stakeholder experiences to social change. Kehl is involved in the open government movement, the innovation community and spends some of his time coaching other professionals in focusing on and marketing their skills and passions.

Kehl brings a valuable mix of working environment experience including government insurance, telecommunications, technology, healthcare, construction, IT services, non-profit, union and non-union, public and private, start-up and mature, large, medium and small organizations, acquisitions, start-ups and outsourcing.

Kehl is comfortable, confident and effective whether working with executives, managers, front line employees, customers or partners. Kehl is known for cultivating relationships and developing meaningful and effective stakeholder strategies through listening, coaching, and facilitating.

Darcy Dragonetti, AScT

Graduating from BCIT in 1981, Darcy's career has centered on public works operations. With the District of West Vancouver, City of Vancouver, and the Regional Municipality of Wood Buffalo (Fort McMurray), Darcy has held numerous leadership positions including Waterworks Superintendent, Manager of Public Works, Transfer and Landfill Operations Superintendent, Manager of Solid Waste, Manager of Sustainable Operations, Manager of Underground Services, and Director of Environmental Services.

Darcy is one of the preeminent instructors in the Province and has taught approximately 500 students through his career in courses on public works inspection, concrete technology, water operations, and wastewater operations. He has developed courses and taught for the BC Institute of Technology, Yukon College, BC Water and Waste Association, and World Water and Wastewater Solutions. Darcy is consistently rated as an exceptional instructor and continues to provide instruction throughout BC, Alberta, and the Yukon.

Darcy's related achievements include Director of Operations for the Western Canada Summer Games (Wood Buffalo), Chair of the BCWWA Operator Education Committee, and Chair of the Board of Examiners for the Applied Scientists and Technologists of BC. Darcy is s Certified Landfill Manager (SWANA), Certified Manager of Transfer Stations (SWANA), Certified Instructor (BCWWA), Accredited Instructor (EOCP), Business Continuity Professional (DRIC), and a Certified Operator (EOCP)

Michael Ippen

Mike brings over 32 years of local government experience including 28 years in management, in public works, human resources and utilities. Graduating from university as a professional teacher, Mike chose to advance his career in local government, interconnecting the two skills throughout his career.

Working for the District of North Vancouver, Municipality of Saanich, and City of Victoria, Mike has held senior leadership positions including Superintendent of Utilities, Manager of Waterworks, Manager of Human Resources, Manager of Public Works, and Manager of Utility Operations.

As an instructor / facilitator since 1991, Mike has taught hundreds of students throughout BC, the Yukon and Ontario in a variety of disciplines including supervision, management and leadership, and water and wastewater collection utility operations. He has conducted successful training programs for BC Water & Waste Association, BC Institute of Technology, Local Government Management Association, the American Public Works Association, Coastal Water Suppliers Association, Columbia Basin Trust, Ontario Clean Water Agency and the Environmental Operators Certification Program.

Mike has been actively involved as an executive Board member for a number of external organizations including BC One Call, BC Water & Waste Association, American Waterworks Association, and American Public Works Association. Mike is currently President of the 4600 member BC Water & Waste Association, serving the water industry throughout BC and the Yukon.

Brian Barnett, P. Eng.

Brian has over 20 years of senior management experience in the municipal government and is known as a leader in municipal infrastructure management in British Columbia. His career focus has been on strategic planning, financial management, organizational effectiveness, engineering, development and asset management.

Brian's strengths come from his in-depth knowledge about municipal government and the factors that influence decisions in the municipal setting. Engineering, financing and the public approval process are important factors to consider when developing infrastructure and asset management plans. Brian is known for finding common interests from diverse stakeholder groups, facilitating win-win solutions and developing practical implementation plans that exceed expectations.

Brian's Engineering career has included the Resort Municipality of Whistler, District of Squamish, and the City of Port Moody. In Whistler rand Squamish, Brian was responsible for all Engineering, Parks and Public Works. Brian has been involved in many external organizations including BCWWA, AWWA, and WEF.