

Service Plan for Infrastructure Engineering

2016-2019
(2019)



Capital Regional District

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1 Overview

1.1 Division & Service Summary

The Infrastructure Engineering Division provides water and wastewater utility planning, engineering services and capital project delivery for the Integrated Water Services Department. Technical services provided by the Division include:

- Strategic asset management planning
- Capital project delivery and project management
- Engineering design and drafting
- Survey and mapping
- Response to development servicing requests and underground utility referrals
- Engineering support to IWS Operations
- Dam safety inspections and administration
- Watershed hydrology and water supply planning

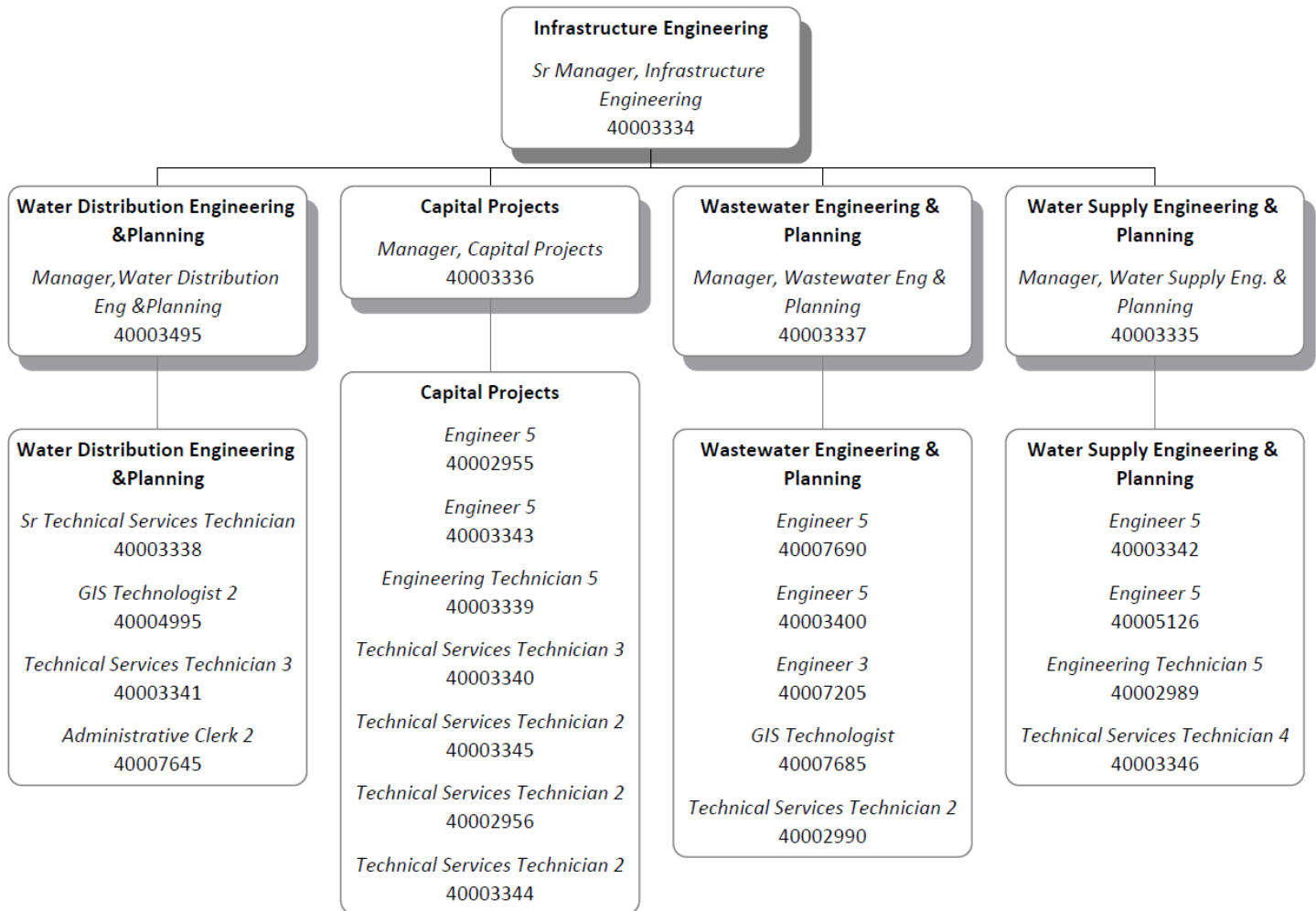
The above noted technical services are provided to the following CRD Services in the table below:

Service Purpose, Role or Overview	Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
Regional Water Supply Wholesale water supply to the 350,000 consumers in Greater Victoria supported through three key service areas: infrastructure planning, capital project delivery and engineering services	4 Core Municipalities (Saanich, Victoria/Esquimalt, Oak Bay) Saanich Peninsula JDF Distribution	Funded through bulk water sales revenue	Regional Water Supply Commission (Standing)
Juan de Fuca Water Distribution Retail water supply to the six municipalities in the Western Communities, Sooke, and four First Nations supported through three key service areas: infrastructure planning, capital project delivery and engineering services	6 Municipalities (Langford, Colwood, View Royal, Metchosin, Sooke, portion of Highlands) 4 First Nations JDF Electoral Area	Funded through retail water sales revenue	Juan de Fuca Water Distribution Commission (Standing)
Saanich Peninsula Water Wholesale water supply to residents in the three municipalities on the Saanich Peninsula supported through three key service areas: infrastructure planning, capital project delivery and engineering services	3 Municipalities (Central Saanich, North Saanich, Sidney)	Funded through wholesale water sales revenue	Saanich Peninsula Water Commission (Standing)

Service Purpose, Role or Overview	Participants	Funding Sources	CRD Board Committee and/or Commission Reporting Structure
<p>Core Area Wastewater Sub-regional wastewater conveyance, treatment, and disposal services in the Core Area supported through three key service areas: infrastructure planning, capital project delivery and engineering services.</p>	<p>7 Municipalities (Colwood, Langford, Esquimalt, Oak Bay, Saanich, Victoria, View Royal)</p> <p>Songhees Nation</p> <p>Esquimalt Nation</p>	<p>Funded through tax requisition based on each participant's flow or design capacity</p>	<p>Core Area Liquid Waste Management Committee (Standing)</p>
<p>Saanich Peninsula Wastewater Sub-regional wastewater conveyance, treatment, and disposal services for the Saanich Peninsula municipalities, and other participants supported through three key service areas: infrastructure planning, capital project delivery and engineering services.</p>	<p>3 Municipalities (Central Saanich, North Saanich, Sidney)</p> <p>Peninsula First Nations</p> <p>IOS and Victoria Airport</p>	<p>Funded through tax requisition based on each participant's flow or design capacity</p>	<p>Saanich Peninsula Wastewater Commission (Standing)</p>
<p>Local Services Local services in the JDF, SGI, and SSI Electoral Areas including 12 water systems, 4 sewer systems, 1 septage facility, and 11 harbour facilities supported through three key service areas: infrastructure planning, capital project delivery and engineering services.</p>	<p>Small service area customers within JDF, SGI, and SSI Electoral Areas</p>	<p>Funded through parcel tax and user charges (fixed and variable)</p>	<p>Various Harbour, Water and Wastewater Local Service Commissions (Advisory Commissions)</p>

1.2 Organization Chart

Infrastructure Engineering



1.3 Key Trends, Issues & Risks – Service Specific

- **Infrastructure Renewal:** In general, sewer and water Infrastructure in North America has not been replaced at a sustainable rate. There is now an increased awareness of the “infrastructure deficit” and the need to replace system components, although funding is not in place for most services yet.
- **Climate Change:** As climate change occurs the summers are becoming hotter and drier and the winters are seeing more intense rain storms. This can lead towards water shortages in the summer and flooding and increased power outages in the winter. Therefore, water resources must be conserved and efficiently used throughout the region and infrastructure in flood prone areas needs to be designed with possible flooding in mind in addition to increased requirements for backup power.
- **Infrastructure Vulnerability and Emergency Preparedness:** As the region grows and the infrastructure networks age, key components of the system could become vulnerable to providing reliable service especially during an emergency situation. Plans need to be updated to mitigate risks, enhance reliability, and to be prepared.
- **Regulatory Changes:** Increased stringency of environmental, safety and electrical regulations are causing cost increases for capital projects and operating budgets. Of particular note are the Provincial

requirements for dam safety and their impact on the variety of dams the service maintains and is required to improve.

- **Project Delivery:** To better meet the objectives and priorities of client’s needs and deliver more projects on time and on budget, the IE Division is exploring a number of procurement strategy options for capital projects. The design-build of the Japan Gulch Treatment Upgrade is an example of an alternative procurement option.
- **Infrastructure Growth:** To maintain client service at current levels, additional financial and personnel resources are required to meet rapid growth in a number of areas. Major growth areas that are now impacting the service are the rapid expansion of the Juan de Fuca water system and the addition of the Core Area Sewage facilities that are being delivered from now through 2020.

1.4 Link to Priorities

INTEGRATED WASTE MANAGEMENT

- Realign resources to effectively deliver on Board directives relating to integrated waste management and develop an overarching integrated plan
- Implement an assessment framework on integration opportunities, consider innovative approaches and report on the effectiveness of programs

CLIMATE CHANGE

- Realign resources to effectively deliver on Board directives relating to climate change and implement policy and practices to demonstrate leadership in operations

DRINKING WATER

- Protect and maintain an adequate supply of safe, reliable drinking water
- Invest in the renewal and replacement of aging infrastructure to deliver an adequate supply of safe, reliable drinking water

REGIONAL INFRASTRUCTURE

- Ensure that resources are available for investment in current and future infrastructure, demonstrating efficiency and value for money and meeting regulatory and service requirements
- Develop and implement asset management planning framework and tools to continue proactive and responsible management of assets and infrastructure, both natural and engineered

CORPORATE DEVELOPMENT

- Evaluate the use of innovative technologies and corporate support systems for continuous improvement and effective service delivery
- Ensure CRD service delivery is effectively supported through the development of best practices
- Enhance and ensure effective financial and audit reporting practices
- Support continued investments in workforce education, training and development

2 Services

2.1 Service Levels

Service	Base Year	Year 4 (2019)
Infrastructure Planning	Complete long-term Strategic Asset Management Plans (SAMP) for all service/systems. Plans to include modeling, capacity analysis, vulnerability assessment, emergency preparedness, infrastructure renewal plans, and financial plan for infrastructure replacement financing for 23 water and wastewater services	Continue SAMP delivery in alignment with corporate SAMP program

Capital Project Delivery and Project Management	Complete project design, procurement, and delivery of capital projects planned each year, on time and budget. 2015 capital program value for 23 services – approximately \$20 million	Complete \$25M-\$30M program Total capital program = \$38 M
Engineering Design and Drafting	Ongoing services for development referrals; survey and mapping; engineering support to utility operations; Dam safety inspections and administration; Watershed hydrology and water supply planning	Adjust to meet service delivery needs, as required

2.2 Workforce Considerations

Workforce (FTEs)					
Service	Base Year	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Regional Water Engineering, Planning & Dam Safety	6.33	7.33	7.33	5.25	5.25
Juan de Fuca Water Engineering & Planning				5.25	5.25
Wastewater Engineering & Planning	5.33	5.33	5.33	6.25	6.25*
Capital Project Engineering	8.33	8.33	8.33	8.25	8.25
Total	20	21	21	25	25

- * 1 Term: Supplemental Budget includes an allowance for retaining 1 staff on 2-year term engineer position to address upcoming workload demands over the next two years and to support the growth in wastewater due to the Core Area Wastewater program. The new 2-year term FTE is funded from operational and capital budgets related to wastewater. At the end of 2015, the current 5-year term engineer position (established for 5-year JDF fire flow upgrade program 2012-2016) converted into a permanent position.
- While there are no new positions required in 2019, there are 5 additional positions required to deal with utility growth and increased system complexity in the years 2020 and 2021.
- Two new positions are proposed in 2020, to provide the engineering support anticipated with the new Core Area Wastewater Conveyance and Treatment systems coming into service. The first position is for a Process Engineer to provide wastewater treatment process engineering support to operations (chemical and biological process analysis and adjustments, process flow analysis, equipment selection). This will be funded 100% by the Core Area Wastewater service. The second position is for an Electrical Engineering to support operations. With the increasing complexity of treatment (water and wastewater) processes and transmission/conveyance systems and across the larger utility services, there will be ongoing need for in-house electrical design and troubleshooting expertise, as well as system automation and controls expertise. This will be funded 40% by Core Area wastewater, 40% by Regional Water, 10% from Saanich Peninsula Water and Wastewater and 10% by Juan De Fuca Water. There will be two additional wastewater engineer/technologist positions requested in 2021 to support the wastewater engineering function.

3 Divisional Initiatives & Budget Implications

Title & Estimated Completion Date	Description	Priority	Budget Implications
2019			
Utility Infrastructure Replacements	Update service capital and financial plans with 2016-2018 asset management plan recommendations	Regional Infrastructure	Capital Budgets
Post Disaster Water Supply	Implement 2018 Post Disaster Planning Recommendations	Drinking Water Regional Infrastructure Corporate Development	Capital Budgets

4 Goals & Performance Indicators

Service Goals	Indicators or Measures
Reduce Processing and Response Time	<ul style="list-style-type: none"> Annual processing and response time for development servicing applications and utility referrals (baseline in 2015: response provided within 65 days of receipt). Target response within 60 days in 2016; 45 days in 2017; 40 days in 2018; and 30 days in 2019.
Maintain Strategic Infrastructure Investments	<ul style="list-style-type: none"> Number of infrastructure replacement projects* Total value of infrastructure investment annually* Strategic asset management plans in place* (baseline in 2015: 6 plans). Target completion of all plans in alignment with corporate program
Ensure Responsible Delivery and Completion of Capital Projects	<ul style="list-style-type: none"> Percentage of capital projects completed on time and on budget* (target minimum 85% annually)

**Corporate indicator – multiple divisions may contribute to this measure*

Please see revised table below.

Indicator Name	2018 Planned	2018 Projected	2019 Planned
Reduce Processing and Response Time	45 days	45 days	30 days
Maintain Strategic Infrastructure Investments	2015 – 3 plans 2016 - 4 plans 2017 – 5 plans 2018 – 4 plans	Previous 23 SAMP plans has been reduced to 16 plans with the elimination of Saltspring and the addition of SGI Harbours. Actual progress is: 2015 – 3 plans 2016 – 4 plans 2017 – 0 plans 2018 – 2 plans* 2019 – 4 plans* 2020 – 3 plans*	2015 – 100% 2016 – 100% 2017 - 0% 2018 – 100%* 2019 – 100%* 2020 – 100%*

		All 16 plans have been started and range in completion from 25% to 100% * Plan completion subject to alignment with corporate program	* Plan completion subject to alignment with corporate program
Ensure Responsible Delivery and Completion of Capital Projects	<i>80% of planned projects will have project plans and 90% will be delivered on budget and on schedule in accordance with the project plans</i>	85% of planned projects will have project plans and 90% will be delivered on budget and on schedule in accordance with the project plans	<i>85% of planned projects will have project plans and 90% will be delivered on budget and on schedule in accordance with the project plans</i>

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