



**Wastewater
Treatment Project**

Treated for a cleaner future

CRD Wastewater Treatment Project

Monthly Report

Reporting Period: October 2017

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1 Executive Summary

1.1 Introduction

This monthly report covers the reporting period for October 2017 and outlines the progress made on the Wastewater Treatment Project during this time.

The Wastewater Treatment Project (the “Project”) includes three main Project components (the “Project Components”): the McLoughlin Point Wastewater Treatment Plant (the “WWTP”), the Residuals Treatment Facility (the “RTF”) and the Conveyance System (which includes upgrades to the conveyance network, including the construction of pump stations and pipes). The Project scope will be delivered through a number of contracts with a variety of contracting strategies.

Overall the Project is progressing as planned. The WWTP Project Component is continuing with Harbour Resource Partners (“HRP”) progressing engineering of the WWTP and outfall, drilling of the harbour crossing from Ogden Point, and site work at McLoughlin Point.

The RTF Project Component is in the procurement phase. The Request for Proposals (“RFP”) is progressing as planned, technical submissions were received in September 2017 and evaluation of the submissions commenced.

The Conveyance System is being delivered through seven contracts, including two design-build contracts and five design-bid-build contracts. The two design-build Conveyance System contracts were in procurement during the reporting period:

- Following evaluation of the RFP proposals, Kenaidan Contracting Ltd. was selected as the contractor for the Clover Point Pump Station; and
- Shortlisted proponents continued development of their proposals for the Macaulay Point Pump Station and Forcemain RFP.

























The five design-bid-build Conveyance System contracts are in the engineering phase. Progress over the period included:

- Arbutus Attenuation Tank: Kerr Wood Leidal progressed the incorporation of code updates into the design for the Arbutus Attenuation Tank;
- Residual Solids Conveyance Line:
 - Following evaluation of the RFP proposals, Parsons was selected as the successful proponent to provide design consulting services for the Residual Solids Conveyance Line; and
 - the alignment of the Residual Solids Conveyance Line was confirmed: while the route is close to final, it is still subject to input from communities and feedback received during the November community information meetings will be considered, along with other technical and financial considerations, in finalizing the design.
- Clover Forcemain: Kerr Wood Leidal reviewed the indicative design and the results of the geotechnical investigations undertaken to-date, as well as previous studies and technical reports, and have completed a geotechnical assessment. The assessment concluded that the Dallas Road alignment is suitable from a geotechnical perspective and that the forcemain can be constructed and operated without having an adverse environmental or geotechnical impact on the Dallas Road bluffs.





1.2 Dashboard

Table 1 indicates the high level status of the Project and each Project Component with regards to the six Key Performance Indicators (“KPI”) that were defined within the Project Charter.

Table 1- Executive Summary Dashboard

Key Performance Indicators		Project Overall	WWTP	RTF	Conveyance System	Comments
Safety	Deliver the Project safely with zero fatalities and a total recordable incident frequency (TRIF) of no more than 1*.					No recordable incidents; site inspections ongoing.
Environment	Protect the environment by meeting all legislated environmental requirements and optimizing opportunities for resource recovery and greenhouse gas reduction					No environmental issues.
Regulatory Requirements	Deliver the Project such that the Core Area complies with provincial and federal wastewater regulations.					No regulatory issues.
Stakeholders	Continue to build and maintain positive relationships with First Nations, local governments, communities, and other stakeholders.					Engagement activities were ongoing in the reporting period related mainly to the Ogden and McLoughlin Point construction activities, with planning for Saanich engagement activities. Significant efforts will continue to be made to provide accurate and timely information to stakeholders.
Schedule	Deliver the Project by December 31, 2020.					No schedule issues
Cost	Deliver the Project within the Control Budget (\$765 million).					Project expenditures within Control Budget but cost pressures identified. Corrective action has been identified and is being implemented (see section 2.7 for details).

* A TRIF of no more than 1 means that there is 1 or fewer recordable incidents (being a work-related injury or illness that requires medical treatment beyond first aid or causes death, days away from work, restricted work or transfer to another job, or loss of consciousness) for every 200,000 person-hours of work.

Status	Description
	KPI unlikely to be met
	KPI at risk unless correction action is taken
	KPI at risk but corrective action has been identified/is being implemented
	Good progress against KPI

2 Wastewater Treatment Project Progress

2.1 Safety

Safety information for the reporting period and cumulative for the Project from January 1, 2017 is summarised in Table 2. The total recordable incident frequency (TRIF) for the reporting period, inclusive of Project Contractors and Project Management Office (PMO) staff was zero.

A minor first aid event was recorded at the McLoughlin Point site. An environmental monitor lost his footing and in catching himself, he popped a pre-existing blister under his work glove and required a Band-Aid. The first aid event was recorded and the environmental monitor returned to work.

Daily site safety tours and weekly safety inspections were carried out by PMO construction and safety personnel over the reporting period. With ongoing construction activities on the Project these inspections continued and documented site inspections were performed weekly with an HRP and CRD representative. Office and site orientations were delivered as required.

Other safety activities conducted over the reporting period included:

- PMO staff participated in “The Great British Columbia ShakeOut” held on October 19th at 10:19 a.m., with over 890,000 other participants province-wide. PMO staff practiced how to “Drop, Cover and Hold On” in response to an earthquake. A participant attendance list was taken and a corrective action form was developed based on the outcome of the drill. The earthquake drill was a success with full participation of 26 PMO Team members and visitors following the correct earthquake emergency response protocols;
- Revision 2 of HRP’s Silica Exposure Plan for the McLoughlin Point site was reviewed to ensure continual compliance with silica safety precautions;
- two PMO safety orientations completed for new communications personnel, this included a review of tasks, the hazards associated with those tasks and control measures to mitigate the identified hazards for the WTP office and active worksites;
- CRD WTP Safety Manager completed contractor safety evaluation for Clover Point Pump Station; and
- the WTP Safety Manager and CRD corporate safety representatives performed a monthly site inspection at Ogden Point and McLoughlin which focused on rigging practices employed lifting heavy loads with cranes and other hoisting equipment. Rigging activities were safe and no additional safety actions were required.

Table 2 – WTP Safety Information

	Reporting Period (October 2017)	Project Total to-Date (from January 1, 2017)
Person Hours		
PMO	3,822	25,482
Project Contractor	11,631	66,799
Total Person Hours	15,453	92,281
Number Of Employees		
PMO	26	
Project Contractors working on Project site	64	
Total Number Of Employees	90	
Number Of Occurrences		
Near Miss Reports	0	2
High Potential near Miss Reports	0	1
Report Only	0	2
First Aid	1	1
Medical Aid	0	0
Medical Aid (Modified Duty)	0	0
Lost Time	0	0
Total Recordable Incidents	0	0
Frequency Rates		
First Aid Frequency	0	0
Medical Aid Frequency	0	0
Lost Time Frequency	0	0
Total Recordable Incident Rate	0	0

2.2 Environment and Regulatory Management

Environmental and regulatory activities continued over the reporting period related to both the planning and permitting of upcoming work and the execution of current work.

2.2.1 Environment

Environmental work in October progressed as planned, with a continued focus on the management of contaminated soils at McLoughlin Point and the preparation of the Municipal

Wastewater Regulation (“MWR”) Registration package. Key activities completed in October included:

- HRP continued characterizing and delineating contaminated soils at the McLoughlin Point site. CRD, Stantec and HRP met with Department of National Defence (DND) staff to discuss potential migration of contamination from the McLoughlin Point site to adjacent DND property. Investigations to determine the extent of this contamination are expected to take place in November;
- Millennia (the Project’s archaeological advisor) continued field investigations in support of the archaeological impact assessment. Investigation sites included the Arbutus Attenuation Tank area, Macaulay Pump Station area and Macaulay Forcemain route;
- CRD, Stantec and HRP completed an on-site assessment of environmental controls at the McLoughlin Site. The purpose of the assessment was to identify areas that posed a higher risk to the environment (e.g. parts of the site that slope towards the ocean) and review controls at those locations. The site visit was successful, with all parties agreeing that suitable controls are in-place, and identifying some improvements to processes to ensure that suitable controls are maintained.

2.2.2 Regulatory Management

In October, the Project Team continued to monitor the advancement of construction-related regulatory approvals and supported or led the advancement of permit applications. The permitting activities for the reporting period involved reviewing and providing feedback on HRP permit applications, engaging with municipalities and the federal and provincial governments in support of obtaining key permits (summarized in Table 3 below), and planning for future permit applications.

On October 24, Fisheries and Oceans Canada (DFO) sent a letter to the CRD indicating that a *Fisheries Act* Authorization would be required for the construction of the McLoughlin Point outfall. The *Fisheries Act* Authorization is a subset of the Transport Canada Facilities Alteration Permit. HRP are responsible for obtaining the *Fisheries Act* Authorization, and have begun to prepare the application. The Transport Canada permits and Provincial authorizations required for the McLoughlin Point Outfall (Crown Grant and Notice from the Director) are conditional on receipt of the *Fisheries Act* Authorization, so the anticipated dates of receipt of these permits and authorizations has been deferred. HRP is managing the delay in obtaining these permits by adjusting the planned start of outfall construction from January 2018 to July 2018 (the next available fishery construction window) and have advised that this will not result in a delay to the overall project schedule.

The Project Team, Stantec and HRP progressed construction-related regulatory applications and were engaged in planning for future regulatory submissions. Key permitting activities for October included:

- HRP submitted an application to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR) for Provincial Tenure Crown Grant for the McLoughlin Point outfall. The Provincial Tenure Crown Grant is made up of a licence for construction and a permanent tenure following construction completion;
- the CRD in conjunction with the Project Team advanced an application with FLNR for a licence and tenure for a parcel of Provincial Crown land at Clover Point that is required for access to construct and operate and maintain the expanded pump station;

- the Project Team, CRD, Stantec and HRP continued to advance the MWR Registration application. Bi-weekly meetings with the Ministry of Environment and Climate Change Strategy to share information and resolve potential issues continued; and
- HRP submitted an Environmental Effects Determination to the DND as part of the approval process to allow contamination investigations to proceed on DND property adjacent to the McLoughlin Point site.

The status of key Project permits are summarized in Table 3. The table is not a list of all required Project permits, but rather a summary of the status of key Project permits.

Updates to Table 3 from that presented in the Project's Q3 2017 Quarterly Report are as follows:

- i) related to the McLoughlin Point Outfall:
 - the *Fisheries Act* Authorization was added as DFO confirmed that it is required;
 - the anticipated dates of the following were deferred as they are conditional on receipt of the *Fisheries Act* Authorization – as noted earlier in this section of the report, HRP have advised that this will not result in a delay to the overall project schedule:
 - the receipt of the Transport Canada Facility Alteration Permit and Licence,
 - the anticipated receipt of the Provincial Tenure Crown Grant; and
 - the anticipated receipt of the Notice from a Director.

Table 3 - Key Permits Status

Permit / Licence	Anticipated Date	Status	Responsible Party
<i>McLoughlin Point WWTP</i>			
Rezoning within the Township of Esquimalt	Obtained	Complete	CRD
Township of Esquimalt Development Permit	Obtained	Complete	HRP/CRD
Township of Esquimalt Development Permit Amendment	Q4 2017	On track	HRP
Township of Esquimalt Phased Building Permits <ul style="list-style-type: none"> Phase 1: Early Works 	Obtained	Complete	HRP
Township of Esquimalt Phased Building Permits <ul style="list-style-type: none"> Future phases to be determined with Township of Esquimalt 	TBD	TBD	HRP
Department of National Defence Licence (facility siting, works access and laydown, including for Macaulay Point)	Obtained	Complete	CRD
Municipal Wastewater Regulation ("MWR") Registration	Q4 2018	On track	CRD
Notice from the Director to Construct under Section 40 (b) of the MWR	Q3 2017	Complete	HRP
<i>McLoughlin Point Harbour Crossing</i>			
Greater Victoria Harbour Authority Licence (works access)	Obtained	Complete	CRD

Permit / Licence	Anticipated Date	Status	Responsible Party
Transport Canada Licence (works access)	Obtained	Complete	HRP
Transport Canada Facility Alteration Permits (HDD and installation of the casing and pipe)	Obtained	Complete	HRP
Transport Canada lease	Following completion of construction	On track	HRP
McLoughlin Point Outfall			
Fisheries and Oceans Canada (DFO) <i>Fisheries Act</i> Authorization	Q2 2018	On Track	HRP
Transport Canada Facility Alteration Permit	Q2 2018	Submitted: under review by Transport Canada	HRP
Transport Canada Licence (works access)	Q2 2018	Submitted: under review by Transport Canada	HRP
Provincial Tenure Crown Grant	Q2 2018	Submitted: under review by Ministry of Forests, Lands, Natural Resource Operations and Rural Development	HRP
Transport Canada Lease	Following completion of construction	On track	HRP
Notice from the Director to Construct under Section 40 (b) of the MWR	Q2 2018	On track	HRP
Macaulay Point Pump Station Upgrade			
Township of Esquimalt Development Permit	Q1 2018	On track	DB Contractor
Clover Forcemain			
City of Victoria Licence (works access)	Obtained	Complete	CRD
Clover Point Pump Station			
Rezoning within the City of Victoria	Obtained	Complete	CRD
City of Victoria Licence (facility siting)	Obtained	Complete	CRD
ECI/Trent Twinning			
City of Victoria Licence (works access)	Q1 2019	On track	Design Consultant

Permit / Licence	Anticipated Date	Status	Responsible Party
<i>Arbutus Attenuation Tank</i>			
Vancouver Island Health Authority Licence (works laydown)	Q2 2019	On track	CRD
<i>Residual Solids Conveyance Line</i>			
Ministry of Transportation and Infrastructure permits (works access)	Q1 2018	On track	Design Consultant
<i>Residuals Treatment Facility</i>			
Operational Certificate	Prior to start of RTF operations	On track	RTF Project Co
District of Saanich Development Permits	Q2 2018	On track	RTF Project Co

2.3 First Nations

First Nations communication and engagement was ongoing over the period.

The Songhees Nation Liaison and Esquimalt Nation Liaison continued coordination activities with their respective Nations, including meeting with their leadership to identify potential candidates for employment on the Project. Additionally, both First Nation Liaisons assisted the Project Team in disseminating Project related notices to their communities.

Members of the Esquimalt and Songhees Nations assisted Millennia with their archaeological investigations at Macaulay Point, along the Macaulay Foremain route and at the Arbutus Attenuation Tank site. The investigations were in support of the Archaeological Impact Assessment.

The Project Team finalised Project Component-specific First Nations Consultation Reports for the McLoughlin Point outfall and the Clover Point Pump Station. The Consultation Reports were submitted to Transport Canada and FLNR as part of the applications outlined in section 2.2.2.

2.4 Stakeholder Engagement

During the month of October, the Project maintained its ongoing two-way Communications and Engagement Plan to provide Project information to stakeholders, communities and the public and to respond to public inquiries. The key focus of the communications and engagement activities was to keep residents and stakeholders informed of Project plans, progress and construction information, and to receive and respond to questions and concerns raised by the community.

A variety of materials and methods supported the implementation of the Communications and Engagement Plan, including a public inquiry program, Project website updates, construction notifications, and community and stakeholder meetings.

Construction Communications

Construction was underway in the month of October in two areas: McLoughlin Point and Ogden Point.

Construction Notifications

McLoughlin Point blasting schedules were posted to the website to ensure the public was aware of what to expect in the upcoming week. An example of one of these blasting schedules is attached as Appendix A.

Project Website

The Project website, wastewaterproject.ca, was updated throughout the month. The site includes all construction and media releases, relevant reports and a “Community Questions” page to provide stakeholders with answers to commonly-asked questions.

Two information sheets were uploaded to the information materials section of the Project website: the Arbutus Attenuation Tank Information Sheet (Appendix B) and an updated Construction Schedule Information Sheet (Appendix C), revised to account for the schedule updates outlined in the Q3 2017 Quarterly Report. The construction schedule remains subject to optimization as the Project and planning progress, and the Project Team will update the information sheet accordingly.

Community Meetings

Over the reporting period the Project Team held meetings with the following community groups and representatives, and municipality representatives:

- District of Saanich staff
- District of Saanich Council meeting
- Township of Esquimalt Technical Working Group;
- Township of Esquimalt Liaison Committee;
- James Bay Neighbourhood Association;
- Greater Victoria Harbour Authority;
- Department of National Defense;
- City of Victoria staff; and
- Willis Point Community Association Representatives

Public Inquiries

Public inquiry numbers from the Project email address and 24/7 information phone line (1-844-815-6132) are noted in Table 4.

Table 4- Project Inquiries

Inquiry Source	Contacts for October
Information phone line inquiries	13
Email inquiries responded to	2

Key themes of the public inquiries are as follows:

- construction and impacts of the Residuals Treatment Facility;
- route of the Residual Solids Conveyance Line;
- concerns about property damage;
- requests for information meetings;
- employment, supplier and contractor interest; and
- requests to be added to email update list.

Media Releases

No media releases were issued in October.

2.5 Resolutions from Other Governments

There were no resolutions related to the Project passed by other Governments during the reporting period.

An update is provided on progress related to resolutions passed by other Governments in prior reporting periods.

2.5.1 Update on Progress on Previous Resolutions of the Core Area Liquid Waste Management Committee and City of Victoria related to Dallas Road Waterfront Geotechnical Monitoring

Resolutions were passed at the Core Area Liquid Waste Management Committee's (CALWMC) April 12th meeting and the City of Victoria's May 11th meeting related to Dallas Road Waterfront Geotechnical Monitoring. The resolutions and the Project Board's response to those resolutions are in italics.

CALWMC April 12th resolution:

That the CRD Board request that the Core Area Wastewater Treatment Project Board:

4. Closely monitor geotechnical issues along the Dallas Road waterfront and advise the Core Area Liquid Waste Management Committee of any issues that arise and solutions.

City of Victoria's May 11th resolution:

Put in place risk mitigation measures to protect the Dallas Road Bluffs during construction including but not limited to:

a. Assembling an interdisciplinary team to study and address the protection of the bluffs.

b. As part of the detailed design of the conveyancing, include a plan for the preservation of the bluffs.

And that the Project Board report out to the public at one of their regular community meetings, to the JBNA and to Victoria City Council on the measures outlined.

Project Board's response / Project Team's plan (as captured in the Project's April – June 2017 Quarterly Report)

Geotechnical investigations and monitoring will take place along Dallas Road with an enhanced focus on the shoreline and bluffs prior to, during and after the construction of the Clover Point Forcemain and related pipework. The geotechnical investigations will include a series of test holes drilled along the pipe alignment to establish existing geological conditions and to collect samples for laboratory testing and use in establishing geotechnical design parameters for the pipe and bluff stability analysis. The geotechnical monitoring will include the installation of instruments near the bluffs and along the pipe alignment. Recordings from these instruments will be used to monitor conditions during the construction and post construction phase of the project.

The design process for the conveyance system from Ogden Point to Clover Point (the Clover Point Forcemain) has begun. It includes the development of an indicative design and a final design. Stantec, as the owner's engineer, will undertake the indicative design. Another qualified engineering firm (which we will call the 'Second Engineering Firm') will review the indicative design and prepare the final design. Both firms will have input into the undertaking of, and access to the outcome of, geotechnical investigations and monitoring outlined above.

Specifically, the Project Team will competitively-procure the Second Engineering Firm to review the indicative design and prepare the final design. This firm will have expertise in the fields of geotechnical, terrain analysis, environmental and civil engineering. The firm will be provided with the indicative design and the results of the geotechnical investigations undertaken to-date, and will be responsible for reviewing that work as part of developing the final design. They will also be responsible for fulfilling the duties of Engineer of Record as defined by the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC). Professional members of the firm and their qualifications will be noted as part of their work.

As part of their scope of work, the Second Engineering Firm will prepare a plan to mitigate any impacts on the bluffs during construction. As noted, this plan will include post construction monitoring for 12 months following completion of construction.

Reports detailing the results of the geotechnical investigations and the indicative alignment will be complete in the fall of 2017. The Project Team will report on these to the public at one of their regular community information meetings, to the James Bay Neighbourhood Association and to Victoria City Council. Results will also be posted on the Project website.

As of the end of October the Project Team has made the following progress on the plan outlined above:

Geotechnical investigations have been undertaken along Dallas Road with an enhanced focus on the shoreline and bluffs. The geotechnical investigations included:

- 24 boreholes drilled along the pipe alignment, with samples sent for laboratory testing;

- three slope inclinometers (one near Paddon Avenue, and two near Douglas Street); and
- one standpipe piezometer with two nested groundwater monitoring wells near Douglas Street.

The results of the geotechnical investigations were used to establish existing geological conditions and geotechnical design parameters for the pipe and bluff stability analysis.

In preparation for geotechnical monitoring during and after the construction of the Clover Point Forcemain, instruments have been installed near the bluffs and along the pipe alignment. Recordings from these instruments will be used to monitor conditions during the construction and post construction phase of the project.

The design process for the Clover Point Forcemain has been advanced. As laid out above, the design process includes the development of an indicative design by Stantec, as the owner's engineer, and a final design by a second engineering firm.

The Project Team has competitively-procured a design engineering team led by Kerr Wood Leidal to undertake the responsibilities of the second engineering firm: namely to review the indicative design, prepare the final design and be responsible for fulfilling the duties of Engineer of Record as defined by the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC).

The Kerr Wood Leidal-led team is an interdisciplinary team with expertise in the fields of geotechnical, terrain analysis, environmental and civil engineering, as outlined in Table 5.

Table 5– Clover Forcemain Design Engineering Team Expertise

Company	Relevant Qualifications	Member	Role/Specialty	Years of Experience	Degrees
Kerr Wood Leidal	Extensive familiarity with the Dallas Road Bluffs, including preparation of a conservation plan for the bluffs that considered vegetation impacts, geotechnical assessments, climate change impacts and an archaeological overview.	Colin Kristiansen, P. Eng.	Project Manager	26	BASc, MBA
		Dave Murray, P.Eng.	Civil Engineering Specialist	28	BSCE, Dip. Civil
CH2M Hill	Expertise in seismic design of large diameter forcemains including specialists seismic design and resiliency for large diameter forcemains including ground improvements as well as trenchless technology.	Joe Broberg, P.Eng. ⁽¹⁾	Large Diameter Pressure Pipe	43	BSCE, MSCE, MBA
		Donald Anderson, P.E.	Seismic Specialist	43	BSCE, MSCE, PhD, D.GE
		Andrew Finney, P.Eng	Trenchless Technology	24	BSCE, MSCE
Thurber Engineering	Geotechnical specialists having extensive local experience that includes the Dallas Road Bluffs, with specialists in the field of slope stability and terrain hazard assessments.	Stephen Bean, P.Eng.	Geotechnical Specialist	31	BASc, M.Eng
Plan Dynamics Ltd.	Environmental specialists, having extensive local experience in terrestrial and aquatic habitat, species at risk, ecology, etc.	David Harper CPESC, MCIP, RPP	Environmental Specialist	43	B.A., M.A., Ph.D.
Millennia Research	Archaeological expertise with extensive experience in local archaeological assessments and impact studies.	D'Ann Owens, RPCA	Archaeology Specialist	23	BA (Hons)

⁽¹⁾ Joe Broberg is the Technical Leader for the Team.

⁽²⁾ Millennia Research was retained directly by the Project Team to provide archaeological services for the Project. D'Ann Owens participated in the review of archaeological issues for the Clover Forcemain.

The Kerr Wood Leidal team have been provided with the indicative design and the results of the geotechnical investigations undertaken to-date, and have reviewed that work in preparation for developing the final design. Kerr Wood Leidal also reviewed previous studies and technical reports, and have completed a geotechnical assessment. The assessment concluded that the Dallas Road alignment is suitable from a

geotechnical perspective and that the forcemain can be constructed and operated without having an adverse environmental or geotechnical impact on the Dallas Road bluffs.

A report outlining the results of the geotechnical investigations to-date and the geotechnical assessment of the alignment will be posted on the Project website in November.

The Project Team will report on the results of the geotechnical assessment to the public at the November 27th, 2017 community information meeting, to Victoria City Council on December 14th, 2017 and to the James Bay Neighbourhood Association at a meeting on January 10th, 2018.

The Project Team remains committed to completing the following:

Geotechnical monitoring will take place along Dallas Road with an enhanced focus on the shoreline and bluffs during and after the construction of the Clover Point Forcemain, including post construction monitoring for 12 months following completion of construction.

As part of finalising the design, the Kerr Wood Leidal-led team will prepare a plan to mitigate any impacts that construction may have on the bluffs. Kerr Wood Leidal will monitor the construction contractor's adherence to that plan.

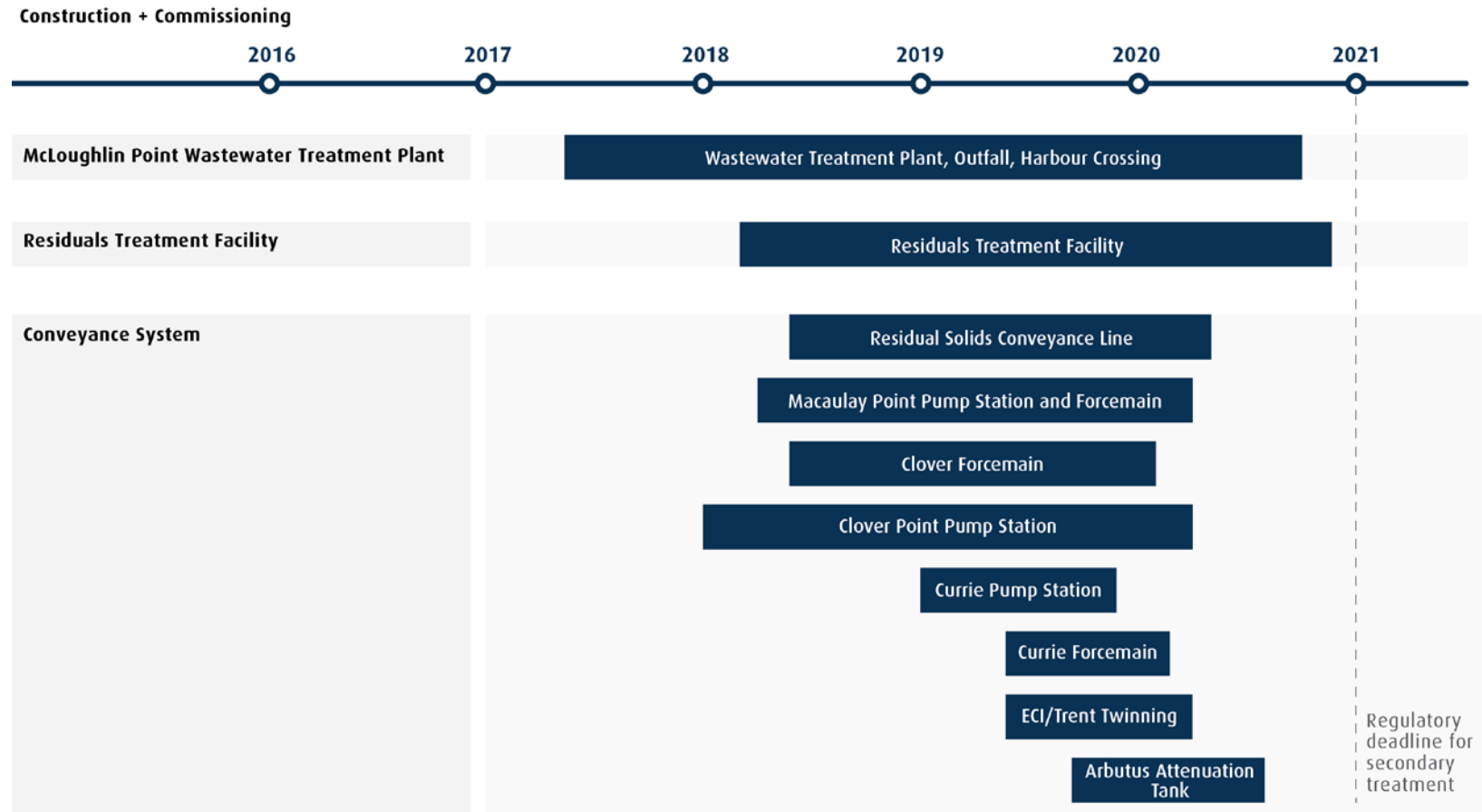
2.6 Schedule

Overall the Project scheduled activities progressed as planned during October. All major and key interface milestones were on target to complete as per schedule. Progress over the reporting period is summarised in section 2.9.

Figure 1 shows the high-level Project schedule. This schedule is unchanged from that shown in the previous monthly report, however it remains subject to optimization as the Project and planning progresses, and updates are anticipated to be made in the next Project report.

Figure 1-High-Level Project Schedule¹

Wastewater Treatment Project Schedule*



* Schedule subject to updates as project planning progresses.

¹ This schedule is unchanged from that shown in the Q3 2017 Quarterly Report, however it remains subject to optimization as the Project and planning progress, and updates are anticipated to be made in the next Project report.

2.6.1 30 and 60 day lookahead

Key activities and milestones for the next 30 days (November) are:

Safety

- the WTP Safety Manager will provide office safety orientations to any new Project Team staff;
- WTP Safety Manager and/or Construction Manager will conduct daily site inspections at all active Project work sites;
- Project Team review of incident reports: these reviews will be ongoing for the duration of the Project. As incident reports are submitted by Project contractors they will be reviewed to ensure that measures are put in place to prevent a recurrence. Depending on the type of incident notices may be sent to other Project contractors to advise them of the incident and the preventative measures taken;
- participation in Joint Occupational Health and Safety Committee meeting;
- participation in bi-weekly CRD safety meetings;
- safety orientation for Kenaidan's geotechnical investigation team at Clover Point; and
- review of Kenaidan's Health and Safety Program and Site Specific Safety Plans.

Environment and Regulatory Management

- Project Team to continue preparing application for MWR Registration;
- HRP to continue preparing *Fisheries Act* Authorization application;
- Kenaidan to begin preparing a request for a Notice from a Director to allow construction to begin at Clover Point; and
- Millennia to continue Archaeological Impact Assessment field investigations.

First Nations

- First Nations members will be in the field, supporting Millennia archeologists as they further assess the Project construction and work to mitigate potential disturbance of cultural materials;
- the Esquimalt and Songhees Nation Liaisons will continue to work with the Project Team to support the incorporation of Indigenous art in the public realm improvements associated with Clover Point; and
- the Esquimalt and Songhees Nation Liaisons are working to schedule a meeting in December with their Chiefs to seek direction on developing an archeology protocol.

Stakeholder Engagement

- hold four community information open houses (two in Saanich, one in Esquimalt and one in Victoria);
- issue of Project Update # 4;
- notifications for community meetings: advertising, emails to stakeholders, mail out to residents;and
- ongoing community liaison meetings

Cost Management and Forecast

- assign WBS codes to the new contracts;
- prepare cost reports;
- monitor schedule;
- grant claim submission(s) to Building Canada Fund; and
- fiscal year end preparation.

Construction

Ogden Point

- complete drilling of the pilot hole for the Victoria Harbour Crossing;
- begin the reaming process for the Victoria Harbour Crossing; and
- develop temporary power plan with BC Hydro for the Niagara Street pipe pull.

McLoughlin Point

- tsunami wall and planter wall construction;
- outfall shaft blasting;
- blast rock crushing;
- detailed excavation;
- BC Hydro duct bank installation along Victoria View Road;
- complete excavation and disposal of contaminated material; and
- commence foundation system installation.

Engineering

- review of HRP design submittals;
- review of Residual Solids Conveyance Line indicative design and continue progressing preliminary design;
- commence detailed design of the Residual Solids Conveyance Line;
- continued development of detailed design for the Clover Forcemain; and
- completion of 30% design workshop with City of Victoria staff for 30% design for the Clover Point Pump Station (public realm improvements, architectural concept and landscaping) and Clover Forcemain (alignments for forcemain and cycle path);

Procurement

- evaluate proposals received in response to the Residuals Treatment Facility RFP; and
- hold second round of collaborative meetings for the Macaulay Point Pump Station and Forcemain RFP

Key activities and milestones for the next 60 days (December) are:

Safety

- winter driving safety seminar for the Project Management Office Staff;

- site inspections with HRP, Kenaidan, and the CRD Corporate Safety Manager; and
- monthly communication meeting with WTP Safety Manager and CRD Corporate Safety Manager.

Environment and Regulatory Management

- Project Team to continue preparing application deliverables (including HRP updates to the Marine Environmental Impact Study) for MWR Registration;
- Kenaidan to submit request for Notice from a Director to the Ministry of Environment and Climate Change Strategy for Clover Point Pump Station; and
- HRP to submit application for *Fisheries Act* Authorization
- .

First Nations

- a tour of the Hartland Landfill for WSANEC leadership and staff is tentatively scheduled for December.

Stakeholder Engagement

- ongoing community liaison meetings.

Cost Management and Forecast

- assign WBS codes to the new contracts;
- prepare cost reports;
- monitor schedule;
- grant claim submission(s) to Building Canada Fund; and
- fiscal year end close.

Construction

Ogden Point

- continue reaming process for Victoria Harbour Crossing.

McLoughlin Point

- continue construction of tsunami and planter walls;
- continue foundation system installation; and
- continue outfall shaft blasting and stabilize outfall shaft walls.

Engineering

- McLoughlin WWTP HRP submittal of 50% design (previously-anticipated to be submitted in November);
- continued development of detailed design for the Clover Forcemain
- Presentation to Victoria City Council of the:

- design proposal for the exterior of the Clover Point Pump Station and the Public Realm Improvements associated with the Clover Point Pump Station;
- results of the geotechnical assessment of the Clover Forcemain;
- alignment of the Clover Forcemain; and
- alignment and design of the cycle track (connecting Clover Point to Dock Street) associated with the Clover Forcemain;
- continued development of detailed design for the Residual Solids Conveyance Line; and
- work with the RTF Preferred Proponent to finalize the Project Agreement prior to execution in January.

Procurement

- selection of the preferred proponent for the Residuals Treatment Facility RFP; and
- selection of the preferred proponent for the Macaulay Point Pump Station and Forcemain RFP.

2.7 Cost Management and Forecast

The monthly cost report for October is attached as Appendix D. The cost report summarizes Project expenditures and commitments by the three Project Components and the major cost centres common to the Project Components.

Cost pressures were identified in the Project's Q3 2017 Quarterly Report as a result of two risks that materialised over the July - September reporting period:

- contaminated materials at McLoughlin Point; and
- proposal price greater than budget for Clover Point Pump Station, expected to be on account of cost escalation due to inflationary pressures in the Victoria area construction market.

In order to address these pressures the Project team in concert with Stantec are reviewing the scope and construction cost estimates for the remainder of the contracts and identifying opportunities where savings could be realized. With this corrective action our confidence level is still high that we will be able to deliver the project within the Control Budget.

2.7.1 Commitments

Commitments were made over the reporting period in furtherance of delivering the Project. The commitments made during the reporting period resulted in an increase in committed costs of \$3.7 million. The following were the significant commitments made in the reporting period:

- KWL - Arbutus Attenuation Tank design consultant services;
- KWL – Clover Point Forcemain design consultant services;
- HRP - contract change orders; and
- BC Hydro – electrical site servicing.

2.7.2 Expenses and invoicing

The Project expenditures for the reporting period were as expected and were within the budget allocations for each of the budget areas. The main Project expenditures incurred over the reporting period were associated with: WWTP construction activities; Hartland Temporary Storage earthworks; BC Hydro site servicing; and PMO-related costs.

2.7.3 Contingency and Program Reserves

The contingency and program reserve draws over the reporting period are itemised in Table 6. The remaining contingency and program reserve is anticipated to be sufficient to deliver the Project within the Control Budget.

Table 6 - Actual Contingency and Program Reserve Draw-Down Table

WTP Contingency and Program Reserve Draw	Draw Date	\$ Amount
Total Contingency and Program Reserve Draw as at Sep. 30, 2017		\$1,467,698
McLoughlin Point Site Remediation: Hydrocarbon Contaminated Material and Hazardous Waste	Oct-17	\$1,668,441
Golder Associates geotechnical services for independent review of the design of the foundation system proposed for the McLoughlin Point	Oct-17	\$100,000
WWTP Total Draw		\$1,768,441
-		\$0
RTF Total Draw		\$0
Clover Point Pump Station Design-Build Contract - proposal price greater than budget on account of cost escalation due to inflationary pressures in the Victoria area construction market.	Oct-17	\$2,448,800
Clover Point Pump Station Design-Build Contract Honorarium fee for unsuccessful bidders	Oct-17	\$47,619
Conveyance Total Draw		\$2,496,419
-		\$0
PMO Total Draw		\$0
-		0
BC Hydro Total Draw		0
-		\$0
WTP Program Reserve Draw		\$0
Total Contingency and Program Reserve Draw as at Oct. 31, 2017		\$5,732,558
Total Contingency and Program Reserve Remaining		\$63,585,493

2.8 Key Risks and Issues

The Project Team actively identified and managed Project risks over the reporting period.

Table 7 summarizes the highest-level risks that were actively managed over the reporting period, as well as the mitigation steps identified and/or undertaken over the reporting period.

The risk levels have remained unchanged from the previous reporting period, though some risks have been added as the level or risk management of those risks increased over the reporting period.

Risk Level Key - Assessed risk level (based on likelihood and potential impact)	
L	Low
M	Medium
H	High

Table 7- Project Active Risks Summary

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level (based on likelihood and potential impact)	Trend in risk level from previous reporting period
Project				
First Nations engagement	The assessed risk level reflects the Project Team's priority of establishing strong and effective relationships with First Nations interfacing with, or interested in, the Project.	First Nations engagement activities remained ongoing over the reporting period (see section 2.3 for further details).	M	No change
Divergent interests between multiple parties and governance bodies whose co-operation is required to successfully deliver the Project	The assessed risk level reflects the Project Team's priority of establishing strong and effective relationships with municipal, provincial and federal government departments.	The Project Team continued engagement with municipal, provincial and federal government departments throughout the reporting period.	M	No change
Misalignment between Project objectives/scope and stakeholder expectations	The assessed risk level reflects the Project Team's priority of establishing strong and effective community stakeholder engagement.	Community engagement activities were ongoing over the reporting period.	M	No change
Senior government funds issue delayed	The assessed risk level reflects the Project Team's priority of ensuring Project funding commitments are honoured.	Responsibility for meeting funding commitments have been assigned and are being monitored.	M	No change

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level (based on likelihood and potential impact)	Trend in risk level from previous reporting period
Provincial or Federal government/agency permit requirements not met	Project Component required Provincial or Federal permit conditions are not met by Project contractors resulting in delays or work stoppage.	The Project Team is compiling a permit compliance register to monitor and manage Project permit condition compliance by Project contractors. Meetings with Federal and Provincial agencies to fully understand and meet requirements in a timely fashion.	M	No change
McLoughlin Point Wastewater Treatment Plant				
Unexpected contaminated soil conditions during excavation	Site has more contaminated soils than initial assessment.	CRD and HRP are working collaboratively to minimize the costs associated with remediating the McLoughlin Point site while ensuring that contaminated materials are removed and disposed of in accordance with all applicable legislation.	H	No change
Conveyance				
Unexpected geotechnical conditions results in higher procurement and/or construction costs	Geotechnical conditions result in redesign and/or higher construction cost than budgeted.	Ensure adequate investigations to manage the risk of unexpected geotechnical conditions: comprehensive geotechnical investigations have been undertaken for the Clover Forcemain, Macaulay Point Pump Station and Forcemain, and Residual Solids Conveyance Line. This geotechnical information has been provided to procurement participants.	M	No change

Risk Event	Description of Risk Event	Risk mitigation activities undertaken or planned in the reporting period	Assessed risk level (based on likelihood and potential impact)	Trend in risk level from previous reporting period
Due to high cost escalation (inflation) Conveyance works contracts' amount higher than budgeted	Cost of conveyance contracts higher than estimated and budgeted	Conveyance contracts will be competitively-procured. The Project team in concert with Stantec are reviewing the scope and construction cost estimates for the contracts that haven't yet been awarded in order to identify opportunities where savings could be realized to offset escalation.	M	No change
Engineering design development results in increases to the estimated construction cost.	Conveyance contract amounts higher than budget due to design development (through indicative and detailed design phases).	Reconfirm construction cost estimates at each stage the design process. The Project team in concert with Stantec are reviewing the scope in order to identify opportunities where savings could be realized to offset any increases during design development.	H	No change

2.9 Status (Engineering, Procurement and Construction)

2.9.1 Wastewater Treatment Plant (WWTP)

The WWTP Project Component continued scheduled activities with HRP progressing engineering of the WWTP and outfall, drilling of the harbour crossing from Ogden Point, and site work at McLoughlin Point.

Engineering

HRP progressed multiple design and detailed planning in October, including:

- continued development of the 50% Detailed Design Report;
- completed Construction Package 1 – Tsunami and Planter Walls (Issued for Construction);
- re-submitted Construction Package 2 – Geo-Concrete Columns;
- continued development of Construction Package 3 – Foundations;
- received RFI responses (site fencing, biosolids return flow, shop voltages);
- submitted RFIs (FRP tank access, stainless steel pipe finish, butterfly valve materials);
- planning for the pipe pull on Niagara Street; and
- coordination with BC Hydro and the City of Victoria regarding utility relocation requirements for the pipe pull on Niagara Street.

Construction

Key construction activities in progress or completed by HRP in October were as follows:

McLoughlin Point

- rock blasting and removal of blast materials;
- outfall shaft blasting;
- crushing of blast rock for use as structural fill and backfill;
- delineation of contaminated material (hydrocarbon and chlorides);
- installation of groundwater monitoring wells for groundwater contamination and vapour monitoring;
- excavation and removal of contaminated material from site and disposal at an accredited facility;
- construction of truck turnaround and Victoria View Road widening (completed);
- Installation of BC Hydro duct bank along Victoria View Road;
- slope stabilization and protection of completed excavations;
- groundwater treatment for hydrocarbon contamination and discharge; and
- erosion and sediment control monitoring to protect environment from runoff.

Ogden Point

- drilling of pilot hole to 797m (85%) under the harbour.

Photographs of construction progress at McLoughlin Point are shown in Figures 2 – 6.



Figure 2 — Crushing of blast rock



Figure 3- Widening of Victoria View road



Figure 4 – Truck turnaround



Figure 5 – Installation of BC Hydro ductbank



Figure 6 – Slope stabilization and protection

2.9.2 RTF

The Residuals Treatment Facility is in the procurement phase and the procurement progressed as planned for the period.

The proponents submitted their technical submissions and the Project Team commenced evaluation.

2.9.3 Conveyance System

Engineering

The alignment of the Residual Solids Conveyance Line was confirmed:

- In 2014, alignment options were developed based on technical, environmental, social and economic considerations. The options were evaluated by the CRD, with input from the District of Saanich, Township of Esquimalt and City of Victoria, and a preferred alignment was selected.
- The evaluation of the alignment has since been reviewed and validated by the Wastewater Project Team in consultation with the municipalities.
- While the route is close to final, it is still subject to input from communities and feedback we receive during the November meetings will be considered, along with other technical and financial considerations, in finalizing the design.

The alignment of the Clover Forcemain was confirmed:

- Kerr Wood Leidal completed the “Second Engineering Firm” review of Stantec’s indicative design for the Clover Forcemain, and confirmed Dallas Road as the forcemain corridor:
- Kerr Wood Leidal reviewed previous studies and technical reports, and completed a geotechnical assessment.
- The assessment concluded that the Dallas Road alignment is suitable from a geotechnical perspective and that the forcemain can be constructed and operated without having an adverse environmental or geotechnical impact on the Dallas Road bluffs. As outlined in Section xXX, a report summarising the assessment will be posted to the webstie.

Kerr Wood Leidal progressed the incorporation of code updates into the design for the Arbutus Attenuation Tank.

Procurement

Kenaidan was selected as the design-build contractor for the Clover Point Pump Station.

Shortlisted proponents continued developing proposals for the Macaulay Point Pump Station and Forcemain RFP. The second round of collaborative meetings are scheduled for November 2017.

Following evaluation of the RFP proposals, Parsons was selected as the successful proponent to provide design consulting services for the Residual Solids Conveyance Line.

Appendix A: Blasting Schedule- week commencing October 30th 2017


**Wastewater
Treatment Project**
 Treated for a cleaner future

Construction Notice

October 30, 2017

McLoughlin Point: Blasting Schedule

Site preparation for the McLoughlin Point Wastewater Treatment Plant is underway. The contractor, Harbour Resource Partners, will conduct controlled blasting and excavation as a part of this work.

Blasting Schedule for the week of October 30*:

Monday, October 30	4-6 blasts per day
Tuesday, October 31	4-6 blasts per day
Wednesday, November 1	4-6 blasts per day
Thursday, November 2	4-6 blasts per day
Friday, November 3	4-6 blasts per day

*Blasting Schedule is subject to change.

Blasting Procedure

- Each blast will last less than 60 seconds.
- All blasts will be covered with 5,000 pound blast mats. Blasting signs will be posted on the site boundary, and warning signals will be used as follows:
 - 12 short whistles at one second intervals followed by a two minute pause
 - Blast will be detonated
 - One long whistle signals all is clear

Blasting Hours: Monday to Friday, 8:00 a.m. to 4:30 p.m.

About the Wastewater Treatment Project

The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees First Nations. The Wastewater Treatment Project will be built so we comply with federal regulations by the end of 2020, and is being funded by the Government of Canada, the Government of British Columbia and the CRD.

Harbour Resource Partners is the contractor selected by the CRD to build the McLoughlin Point Wastewater Treatment Plant, cross-harbour undersea pipe, and marine outfall for treated wastewater at McLoughlin Point.

To learn more about the Wastewater Treatment Project, or to sign up for construction updates, please visit wastewaterproject.ca. To contact the project, please email wastewater@crd.bc.ca or call 1.844.815.6132.

Appendix B: Arbutus Attenuation Tank Information Sheet (October 2017)



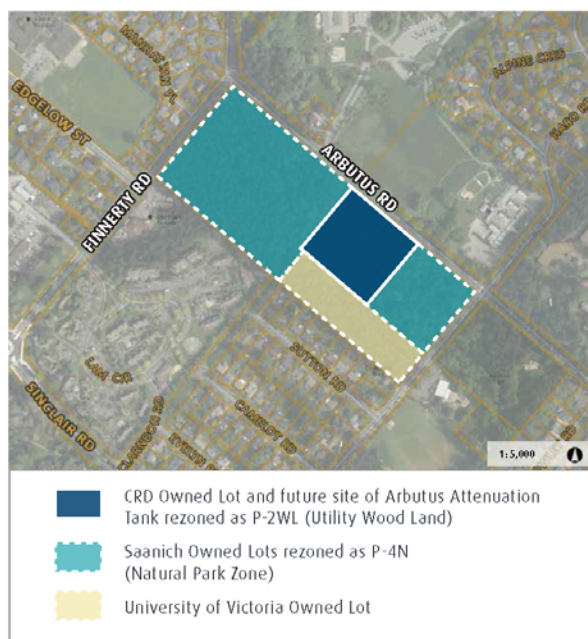
**Wastewater
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Information Sheet

Arbutus Attenuation Tank - Saanich

The Arbutus Attenuation Tank is part of the Wastewater Treatment Project. It will be a buried underground concrete tank that will temporarily store wastewater flows during high volume storm events, to reduce the number of sewer overflows. The tank is one of several wastewater conveyance system upgrades that are part of the Wastewater Treatment Project to deliver tertiary wastewater treatment to residents in the Capital Regional District (CRD)'s core area municipalities.

HARO WOODS AND PROPERTY LOCATION



PROJECT DESCRIPTION

The Arbutus Attenuation Tank will be located on Arbutus Road, across the street from Queen Alexandra Hospital, in Saanich.

- In July 2013, Saanich Council approved the rezoning and subdivision of two properties on Arbutus Road. This enabled a land exchange agreement with the CRD, which allows the Arbutus Attenuation Tank to be installed on lands that are already partially cleared and have been previously disturbed during the construction of existing sewers.
- The land exchange secured the long-term preservation of the vast majority of Haro Woods as a nature park, adding 2.8 hectares of land to Saanich's park inventory.
- As part of the construction of Arbutus Attenuation Tank, there will be road frontage improvements including bike lanes, sidewalks, and stormwater management.
- Once construction is complete the site will be planted with vegetation considering the local woodland setting.


**Wastewater
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Information Sheet

CONSTRUCTION

- Construction of the tank is expected to begin in 2019 and will take approximately one year to complete.
- The Wastewater Treatment Project Team will engage with the surrounding communities before and during construction to ensure that the community is fully informed on the progress of the construction and has advance notice of construction activity. Communication tools include: a project information phone line, email, social media, website, community updates, construction notices, traffic media updates, advisories where appropriate, and community information meetings.

WHAT IS THE ARBUTUS ATTENUATION TANK?

- The Arbutus Attenuation Tank will temporarily store wastewater flows caused by inflow and infiltration (of rainwater and groundwater) during high volume storms.
- The 5,000m³ tank will be empty except during high volume storm events.
- High volume storm events usually occur in the winter. During these events, excess wet weather flows will be diverted into the Arbutus Attenuation Tank.
- The temporary storage of wastewater will mitigate overflows and reduce impacts along the coastline.
- Once the high storm flow has passed, the tank will empty back into the existing sewer system, through the East Coast Interceptor (ECI) trunk sewer system, which directs wastewater to the Clover Point Pump Station and then to the McLoughlin Point Wastewater Treatment Plant.
- Once the tank is emptied, an automatic cleaning system will be activated to clean the floors, walls and columns of the tank.
- CRD staff will inspect the tank after each use to ensure it is cleaned and that all wastewater has drained back into the sewer system.
- The tank will be kept under negative air pressure to draw air within the tank directly into an activated carbon absorber system that will contain and suppress potential odours. This system has been implemented successfully at the Marigold Attenuation Tank.

About the Wastewater Treatment Project

The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees First Nations. The Wastewater Treatment Project will be built so we comply with federal regulations by the end of 2020, and is being funded by the Government of Canada, the Government of British Columbia and the CRD.

For More Information

Website: wastewaterproject.ca
Email: wastewater@crd.bc.ca
Project Information Line: 1.844.815.6132

Appendix C: Construction Schedule Information Sheet (October 2017)

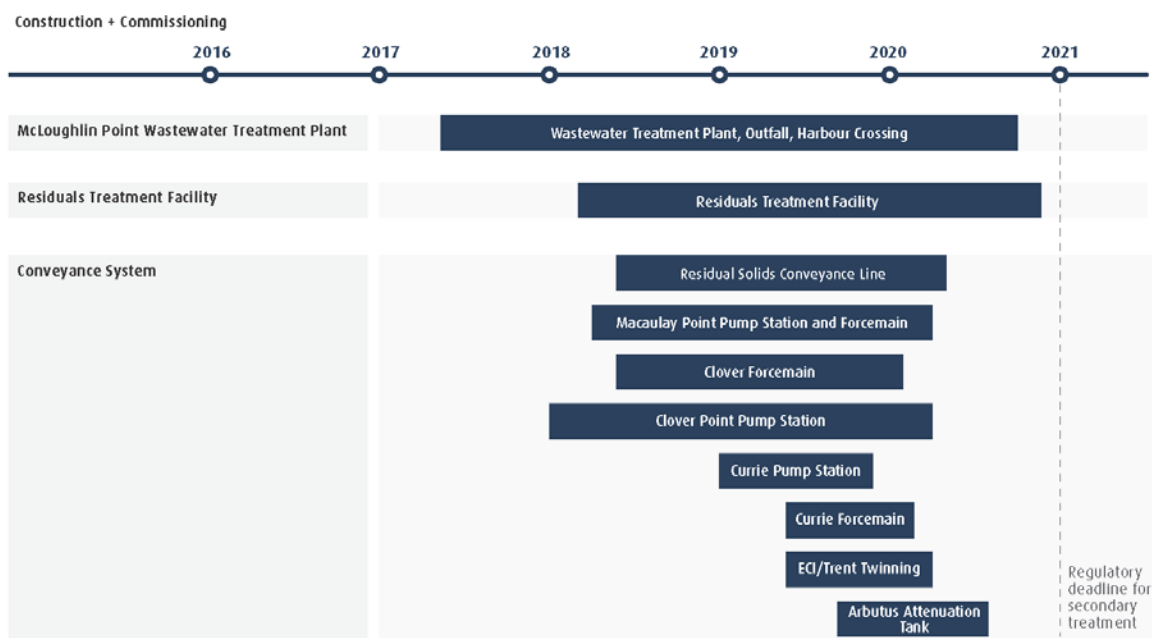


**Wastewater
Treatment Project**
Treated for a cleaner future

Information Sheet

Wastewater Treatment Project Schedule*

The Wastewater Treatment Project will be constructed through nine separate contracts, and construction will be staged to the end of 2020. Communications and engagement activities will take place in advance of project construction beginning in each area.



* Schedule subject to updates as project planning progresses.

About the Wastewater Treatment Project

The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees First Nations. The Wastewater Treatment Project will be built so we comply with federal regulations by the end of 2020, and is being funded by the Government of Canada, the Government of British Columbia and the CRD.

For More Information

Website: wastewaterproject.ca

Email: wastewater@crd.bc.ca

24-7 Project Information Line: 1.844.815.6132

Appendix D: Monthly Cost Report

ASSET MANAGEMENT COST REPORT as at October 31, 2017														
Project Component	Control Budget	Allocated Budget	COST EXPENDED					COMMITMENTS			FORECAST		VARIANCE	
			Expended to September 30, 2017	Expended over reporting period (October 2017)	Expended to October 31, 2017	Expended to October 31, 2017 as a % of Budget	Remaining (Unexpended) Budget at October 31, 2017	Total Commitment at October 31, 2017	Unexpended Commitment at October 31, 2017	Uncommitted Budget at October 31, 2017	Forecast to Complete	Forecast at Completion	Variance at Completion \$	Variance at Completion as a % of Budget
McLoughlin Point Wastewater Treatment Plant ^A	378	378	58	8.6	67	18%	310	337	269	41	310	378	-	0%
Residuals Treatment Facility ^A	195	195	11	0.6	12	6%	183	18	6	177	183	195	-	0%
Conveyance System ^A	192	193	26	0.8	26	14%	166	38	11	155	166	193	-	0%
Total Costs	765	765	95	10	105	14%	660	392	287	373	660	765	-	0%
<div>A - Including PMO and Common Costs</div> <div>* Values presented in \$millions, results in minor rounding differences</div> <div>** Cost report presents approved expenditures</div>														