



REGIONAL
DISTRICT
OF NANAIMO

FRENCH CREEK POLLUTION CONTROL CENTRE STAGE IV EXPANSION AND ODOUR CONTROL PROJECT – STATUS UPDATE AND NEXT STEPS

RECOMMENDATION

That the Board receive the French Creek Pollution Control Centre (FCPCC) Stage IV Expansion and Odour Control Project update for information dated May 10, 2022.

BACKGROUND

This report aims to provide an update on the outcome of the recently completed value engineering (VE) study and the next steps for the project. Below is a summary of the project progress and reporting on the VE study findings.

The French Creek Pollution Control Centre (FCPCC) provides Parksville, Qualicum Beach, and Electoral Area G with wastewater treatment. The Stage IV Expansion and Odour Control Upgrade Project (FCPCC Project) will provide incremental secondary treatment capacity (30% increase) required for planned growth through 2040. In addition, the upgrades aim to significantly reduce odours, contribute to carbon neutrality, and manage the sustainability of our assets by replacing failing facilities that are nearing the end of life.

The FCPCC was constructed in 1978, with the last major expansion completed in 1997. The 1997 expansion was designed to provide wastewater capacity until at least 2012, based on a 2.5% growth rate. However, the actual growth rate has been less than 1.5%, and the introduction of low flow fixtures and water conservation practices have resulted in lower flows than originally projected. In addition, since the last expansion, modifications have been made to several treatment processes to help increase the plant's overall capacity. As a result, the FCPCC facility is only now reaching its 80% design capacity.

Detailed Engineering Design

Detailed engineering design of the FCPCC Stage IV was at 90% completion in the Spring of 2021 and was ready to proceed to tender for construction. However, the estimated construction cost increased substantially through each design stage, driven primarily by material cost volatility and escalation of construction costs in BC. These estimated cost increases led to the Board's direction on June 22, 2021, to complete a Value Engineering (VE) study (21-365) to review the design and obtain an independent review to validate that the proposed project will provide maximum value to the community.

Value Engineering Study and Next Steps

The VE study was recently completed. The study reviewed the current design for the FCPCC Project and proposed 21 alternatives of varying processes and complexity. The proposed alternatives ranged in costs from potential savings of \$6.7M to increased costs of \$12.4M. Staff spent several months categorizing and evaluating the alternatives. Of the 21 alternatives, five were major process changes. The evaluation recommended studying one

of the proposed major process changes (VE Study BF-14: Abandon Trickling Filter) and another significant standalone alternative (VE Study BF-04: Flow Balancing), as described below.

BF-14: Abandon the existing trickling filter and use the existing facility for primary treatment in combination with the current design for Combined Treatment Units. The design consultant will further develop and validate this proposed option, and the study is expected to be complete in Fall 2022. The VE study estimated the potential cost savings to be in the order of \$6M. It is noted that the cost-saving may not be materialized with the rapidly escalated construction cost. However, if validated, this alternative has several process and operational benefits over the current design of updating the existing trickling filter. Primarily, it:

- a) provides additional primary settling capacity during storm events. When flows exceed the capacity of the secondary treatment system, the plant will have additional primary settling capacity to help to meet effluent discharge quality requirements and reduce non-conformances.
- b) removes a high odour generating and hard-to-maintain process (trickling filter) and eliminates the need for a significant downstream odour removal process.
- c) removes a treatment process from the expansion project, better aligning with the recently upgraded Greater Nanaimo Pollution Control Centre, simplifying and improving plant operational efficiency.
- d) fits well with future expansion needs by effectively utilizing the existing plant to reduce the loading of sewage entering the secondary treatment, which will improve operational efficiency and productivity.

BF-04: Use the Qualicum Interceptor to balance inflows to the plant and eliminate the Flow Equalisation Tank from the current design. The RDN has engaged Aplin & Martin – who recently modelled the interceptor – to study the alternative. This study is expected to be complete in the Summer of 2022. The VE study estimated the potential cost savings to be in the order of \$2M.

If confirmed, this alternative would primarily add value by using existing infrastructure to balance flows without the need to build a new tank.

Both above-proposed alternatives can significantly improve the process and operational objectives of the expansion project.

It is noted that even if staying with the existing design, the cost of construction completion is very likely higher than the current estimate. Therefore, investigating the alternatives mentioned above provides a good cost buffer in aiming to complete the project within the budget while adopting better wastewater treatment processes and technologies to serve the community better.

PROJECT SCHEDULE

Validating the above alternatives will take several months to complete, and the results could lead to design changes requiring additional time before construction commences. However, the potential added benefits are worth exploring. In addition, alternate project delivery methods are being investigated to expedite construction. Below is the potential timeline for the project if the two proposed alternatives are verified to proceed. Any potential schedule improvements from alternate project delivery methods are not factored into the below timeline.

Proceed with BF-14: Abandon Trickling Filter and BF-04: Balance Flows Alternatives

- Summer 2022
 - Balance Flows study complete
- Fall 2022
 - Abandon Trickling Filter study complete
- Winter 2022/23
 - Proceed with the two alternatives based on study recommendations and Board approval. Design changes for abandoning the Trickling Filter are the critical path item.
 - The design consultant provides a proposal for and proceeds with design changes.
- Spring 2024
 - The design consultant completes design changes for abandoning the Trickling Filter.
 - The design consultant issues an updated cost estimate.
 - Proceed with tendering and construction.
- Summer 2024
 - The expansion project is tendered.
- Fall 2024
 - Expansion project construction is awarded.
- Winter 2024/25
 - Expansion project construction commences.
- Winter 2026/27
 - Expansion project construction completes.

Upgrades and improvements to the existing French Creek Pollution Control Centre will continue to focus on odour control and process enhancements during the ongoing review and development of the VE recommendations: Abandon Trickling Filter and Flow Balancing. Some of these improvements include optimizing the ATAD Digester Odour Control System's performance, which has already resulted in reduced odour complaints. Working with Vancouver Island University to identify the odour sources, Wastewater Operations will continue improving the system incrementally. In addition, maintenance work is planned for the Trickling Filter flow distribution system and the Dewatering Odour Control System to improve performance and enhance the treatment processes going forward. These upgrades and improvements along with the Value Engineering exercise will be communicated on the RDN Get Involved project web page and at a public meeting to be scheduled summer/fall 2022.

FINANCIAL IMPLICATIONS

The costs to perform the two follow-up studies are within the current Board-approved budget. There are no financial implications to the project at this time.

STRATEGIC PLAN ALIGNMENT

This project aligns with the strategic plan through:

- Environmental Stewardship - Continue to improve the quality of treated wastewater in the Region.

REVIEWED BY:

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