

**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, MAY 20, 2020**

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**SUBJECT**     **Sooke Lake Reservoir - Intake Tower Screen Replacement and Financial Plan Amendment**

**ISSUE SUMMARY**

The raw water screen inside the intake tower at Sooke Lake Reservoir has failed and Capital Regional District (CRD) staff will need to operate this intake without any screening for a number of months before replacement can be made.

**BACKGROUND**

As raw water from Sooke Lake Reservoir enters the intake tower, it passes through a travelling screen. Unfortunately, the screen has recently failed. As a result, staff now need to immediately finalize the design for the screen replacement, proceed with procurement of the new screening equipment, and plan for installation as outlined below. This work is estimated at \$1.8 million. This work was not budgeted in the current capital plan and will require a budget amendment with the funding drawn from the 2020 capital reserve contribution, along with additional budget amendments.

**Travelling Screen – Function and Operation**

The travelling screen in the Sooke Lake Reservoir intake tower screens out organic and inorganic particles larger than the 0.5 millimeter (mm) openings in the mesh screen. The screen is intended to provide an operational benefit by reducing particle sedimentation in the transmission and distribution systems.

The recent failure of some of the screen drive/mechanical components has resulted in the screen being irreparable. There is no redundant screening equipment, so the raw water is currently entering the system unscreened as the damaged screen components had to be removed from the tower. However, even without the failure, the CRD has operated and would continue to operate on occasion without the screen, albeit for a relatively short period, while routine maintenance and inspections are conducted in the intake tower. During this work, an unscreened intake bypass is used, but this bypass only has sufficient capacity to meet winter demand requirements. In order to meet summer demand requirements, the intake tower must be in service.

Island Health is aware of this situation and the plan to replace the screening equipment (see below). There are no concerns regarding the impact on the potability of the drinking water supplied to Greater Victoria. However, there may be localized operational impacts such as a need to increase the maintenance frequency of in-stream strainers/screens in the municipal distribution systems, particularly if the reservoir experiences higher algal activity in the spring/summer months. Staff are monitoring raw water turbidity levels on a daily basis. The municipal water distributors have been advised of the issue. CRD staff are also in direct contact with the Victoria General and Royal Jubilee Hospital Operations staff who are monitoring the hospital water

filtration systems and reporting any anomalous findings to the CRD – to date there have been no negative impacts on the hospital water systems.

The last major maintenance tasks on the screen, including replacement of the main drive sprocket and drive chains, were completed in 2014 and 2015, at which time it was anticipated that the screen would continue to perform adequately for up to ten years, but eventually, a full replacement would be necessary given the age of other components. CRD staff began the process of assessing the condition of the screen system with the assistance of Stantec in 2017, which led to the \$2.5 million project recently completed. This project included removal of the intake tower concrete roof and the installation of a gantry crane above the 21 metre tall screen assembly so that it can be removed/replaced section by section, full electrical upgrade for the screen and intake gate power/controls and provision for portable generator connection, concrete and steel structural work to the intake tower drywell, and safety anchor points for crews working inside the intake tower.

### Screen Replacement Project Plan

When the screen initially failed, working with Stantec Consulting Ltd., CRD staff evaluated the options of repairing/rebuilding the failed screen components and completely replacing the screen assembly, including the motor, drivetrain, screen panels, and spray wash pump. The complete replacement option estimate resulted in approximately 30% higher equipment costs as compared to repairing the screen and will provide a service life of approximately 30 years. Installation costs are estimated to be approximately the same for both options. The total recommended budget for the project is \$1.8 million.

The project schedule is as follows:

1. May 2020: Capital budget amendment
2. June – October 2020: Procure screen equipment (six week shop drawing review and approval and 14 week equipment delivery)
3. November 2020: Screen installation (four week installation and commissioning)

CRD staff have begun advancing the project and finalizing equipment specifications so that the new screen equipment can be procured as soon as the budget is approved.

### Additional Financial (Capital) Plan Amendments

The approved 2020 - 2024 Regional Water Supply Capital Plan included over 100 projects, many of which were planned or were instream for the 2020 budget year. The 2020 capital plan budget was \$19.691 million in total. Along with amending the financial plan for the screen replacement project, staff are recommending additional financial plan amendments for the 2020 – 2021 budgets to assist with financing the screen replacement project, reflect updated project scheduling, and accommodate project delivery capacity resulting from unplanned work. The recommended amendments are summarized in Alternative 1 below.

## **ALTERNATIVES**

### *Alternative 1*

1. The Regional Water Supply Commission recommends that the Sooke Lake Reservoir Intake Tower Screen Replacement Project proceed as planned; and,
2. That the Regional Water Supply Commission recommends to the Capital Regional District Board, that the 2020 - 2021 Regional Water Supply Service Financial Plan be amended as follows:

<b>Project</b>	<b>Current 2020 Budget</b>	<b>Current 2021 Budget</b>	<b>Amended 2020 Budget</b>	<b>Amended 2021 Budget</b>
SLR Intake Screen Replacement	0	0	\$1.8M	0
RWS Strategic Plan Development	\$0.5M	0	\$0.1M	\$0.4M
St Giles & Cecelia Meter Replacement	\$1.0M	0	0	\$1.0M
Butchart Dam No.5 Remediation	\$3.2M	0	\$0.3M	\$2.9M
Sooke Lake Dam Instrumentation	\$0.75M	\$0.2M	\$0.2M	\$0.75M
Charters Dam Decommissioning	\$0.9M	\$0.9M	\$0.15M	\$1.65M
<b>Total</b>	<b>\$6.35M</b>	<b>\$1.10M</b>	<b>\$2.55M</b>	<b>\$6.70M</b>

### *Alternative 2*

That this report be referred back to staff for additional information.

## **IMPLICATIONS**

### *Financial Implications*

The screen replacement project can be funded from capital funds on hand, which are primarily funds transferred to capital reserves in 2020. This can be done without impacting the priority projects that are planned for completion this year. This is partly due to the fact that some projects are being delayed or deferred for a variety of reasons, which reduces the capital 'cash flow' requirements this year. It is proposed to amend the financial plan to reflect these changes.

## **CONCLUSION**

The Sooke Lake Reservoir intake tower travelling screen has recently failed. As a result, staff will now need to immediately finalize the design for the screen replacement, proceed with procurement of the new screening equipment, and plan for installation. This work is estimated at

\$1.8 million and will require a budget amendment with the funding drawn from the 2020 capital reserve contribution, along with additional budget amendments.

**RECOMMENDATION**

1. The Regional Water Supply Commission recommends that the Sooke Lake Reservoir Intake Tower Screen Replacement Project proceed as planned; and,
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