



**The Corporation of the City of Cornwall**  
**Regular Meeting of Council**  
**Report**

Department: Infrastructure and Municipal Works  
Division: Environment  
Report Number: 2020-405-Infrastructure and Municipal Works  
Prepared By: Bill de Wit, Division Manager  
Meeting Date: November 23, 2020  
Subject: Repair of Wastewater Treatment Plant Travelling Bar Screen

**Purpose**

As indicated in the second quarter financial report presented to Council at their regular meeting of August 10, 2020, a subsequent report is to be provided to Council regarding the expenses incurred as a result of an emergency repair of the Wastewater Treatment Plant (WWTP) travelling bar screen. The purpose of this report is two fold; to provide Council with information regarding the failure of the bar screen; and, request Council direction with regard to allocation of funds to offset incurred costs pursuant to Section 4.3 of the Procurement of Goods and/or Services Policy.

**Recommendation**

That Council

- a. receive Report 2020-405-Infrastructure and Municipal Works
- b. authorize Administration to utilize funds from the Wastewater Works Reserve to offset this non-budgeted expenditure

## **Financial Implications**

Should Council approve the recommendations of this report, funds would be drawn from the Wastewater Works Reserve to offset costs incurred for the repair of the travelling bar screen. To date, repair costs total just under \$190,000.

As per the Reserves and Reserve Funds Policy, the Wastewater Works Reserve is set aside to allow for unforeseen events (both revenues and expenditures) that could impact levels of service.

As reported through the Third Quarter Financial Report to Council, the balance of the Wastewater Works Reserve at September 30, 2020 is \$3,842,312. The 2020 targeted balance of this Reserve is \$3,729,979.

## **Strategic Priority Implications**

This report addresses Council's accountability and transparency to the ratepayers of the City of Cornwall.

## **Background / Discussion**

As part of the Second Quarter Financial Report, Administration informed Council that the automated travelling screen located in the raw sewage pump station at the WWTP experienced a major mechanical failure. Administration was to provide a subsequent report to update Council and provide funding recommendations associated with this emergency work.

Currently, all raw sewage captured within the entire municipal wastewater collection system is accumulated by what is referred to as the "interceptor trunk sewer main". The 48-inch (1,200 mm) interceptor trunk main commences under the corner of Brookdale Avenue and Water Street, proceeds eastward under Water Street/Montreal Road and concludes at the raw sewage pump station. The raw sewage pump station is the structure located at the foot of the WWTP driveway entrance, on the south side of Montreal Road immediately adjacent to the St. Lawrence River.

All sewage collected by the interceptor is passed through a preliminary screening process at the raw water pump station. The screening device, described as the travelling bar screen, traps floatable debris (sanitary wipes, cleaning swiffers, paper towels etc.) from the incoming raw sewage. This debris has the potential to become entangled in pumps and/or treatment equipment and could result in plugging and/or possible equipment damage and/or process deficiencies. The travelling bar screen is approximately 40 feet tall and 4 feet wide and is comprised of a number of moving metal screen collection panels which trap floatable debris discharging from the mouth of the interceptor. The unit is secured in a vertical guide rail system within the wet well of the raw sewage pump station. The guide rail is designed to allow the travelling screen to be slid in or out of the wet well when necessary. Below is a picture which provides some perspective on the size and configuration of the travelling bar screen.



The moving screen panels are connected to chain links guided on tracks within the superstructure of the bar screen. The chain is driven by a motor which is timed to move the panels upwards every two hours or move when a specified sewage level set point is attained. When the timing interval is achieved, the screen panels move slowly upward from the subsurface interceptor discharge carrying the trapped debris out of the raw sewage and depositing the waste into a dumpster for subsequent disposal at the landfill.

On Saturday, May 16, 2020, alarms notified WWTP staff that the travelling bar screen was not operating. It was determined that the lower screen panels in the interceptor discharge area had been blocked with trapped debris. It appeared that one or more of the moving screen panels had become jammed somewhere below the surface level of the raw sewage. The blockage of the screen caused the interceptor pipe to backup with raw sewage. This backup resulted in a small quantity of untreated raw sewage bypassing directly into the St. Lawrence River. The spill was reported to the Ministry of Environment, Conservation and Parks.

In order to prevent further bypass of untreated sewage, WWTP management immediately ordered the rental of high capacity, portable sewage pumps to convey raw sewage around the inoperable travelling screen. Installation of the pumps instantly prevented further bypass of raw sewage and the pumps also did manage, over the course of days, to slowly lower sewage levels in the interceptor thereby alleviating potential basement flooding. Lowering the level of the incoming sewage also eventually allowed WWTP staff to visually assess damage to the bar screen. It appeared that components of the travelling bar screen superstructure had somehow twisted thereby causing the moving screen panels to jam in their tracks.

WWTP staff contracted mechanical and millwright staff from a local company to assist in the repair of the travelling bar screen in place. All attempts to repair the bar screen were hindered by fluctuating volumes of incoming raw sewage generated during various times of the day. Several efforts over several days to repair the unit in place failed. As attempts to repair the unit in place were unsuccessful, the decision was made to remove the bar screen from the wet well. Removal of the bar screen proved extremely difficult as it was subsequently learned that the bar screen had been fastened within the lower portion of the guiderails well below the surface level of the raw sewage. This prevented the bar screen to slide upward out of the guide rails and out of the wet well. The removal

process was also problematic due to the twisted superstructure components of the bar screen jamming within the guiderails. These issues were also compounded by the pressure of the incoming raw sewage forcing against the blocked portion of the screen. A crane capable of lifting 20 tonnes was employed to raise the screen from the wet well. Numerous attempts were made before the bar screen finally broke free. The entire effort associated with repair attempts and removal occurred over a six-day period.

Upon subsequent inspection, it was determined by the manufacturer of the bar screen, that repairs could be performed to make the unit fully operational. Management staff have authorized the work which has required the bar screen to be transported for repair at the manufacturer's facility in Saginaw, Michigan. It is anticipated that the repaired travelling bar screen will be shipped back to Cornwall for reinstallation during the week of November 30. In the meantime, WWTP staff manually clean a backup, non mechanized bar screen on a daily basis.

Although not confirmed, the cause of the failure is suspected to be a result of large quantities of used sanitary wipes being disposed into the sewage system. It is believed that residents are disposing substantially more sanitary wipes which had been used to implement disinfection procedures in an effort to prevent contraction of the COVID-19 virus. It is suggested that a large influx of used sanitary wipes accumulated on the lower bar screen panels resulting in excessive pressure exerted on the blocked screen panels by incoming sewage causing failure of the bolts securing the guide rail system to the wet well concrete walls. This in turn caused components of the travelling bar screen superstructure to twist when the panels attempted to move upward.

A synopsis of expenditures incurred associated with the repair of the damaged travelling bar screen are as follows:

Sewage pump rentals	\$31,163
Mechanical/millwright contracted services	61,895
Repair of travelling bar screen	80,976
Mechanical/millwright contracted services (reinstallation estimate)	10,000
Applicable taxes	<u>3,239</u>
Total	\$187,273

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Attachments:	
Final Approval Date:	Nov 17, 2020

This report and all of its attachments were approved and signed as outlined below:

**Bill de Wit - Nov 17, 2020 - 3:42 PM**

**Tracey Bailey - Nov 17, 2020 - 6:20 PM**

**Maureen Adams - Nov 17, 2020 - 8:08 PM**