

STAFF REPORT

THE CORPORATION OF THE TOWN OF COBOURG



Report to:	Mayor and Council Members	Priority:	<input checked="" type="checkbox"/> High <input type="checkbox"/> Low
Submitted by:	Bill Peeples, Manager Environmental Services Public Works Division bpeeples@cobourg.ca	Meeting Type:	Open Session <input checked="" type="checkbox"/> Closed Session <input type="checkbox"/>
Meeting Date:	July 19, 2021		
Report No.:	Public Works-056-21		
Submit comments to Council			

Subject/Title: **Digester Cleanouts – Plant #2**

RECOMMENDATION:

THAT Council approve the revised scope of work for the primary digester cleanout at WPCP #1 to include the cleanout of all five (5) digesters at WPCP #1 and #2 with an upset limit of \$300,000 to be funded by the approved capital budget allocation for the one primary digester cleanout at WPCP #1.

1. STRATEGIC PLAN

N/A

2. PUBLIC ENGAGEMENT

N/A

3. PURPOSE

To expedite the digester cleanouts at both water pollution control plants to prevent equipment damage and reduce the risk of explosion.

4. ORIGIN AND LEGISLATION

Environmental Services 2021 Capital Budget (Account No. 2140043)

5. BACKGROUND

It is standard practice for the Anaerobic Digesters be taken out of service for cleaning and general maintenance every 5-7 years. Cleaning involves the physical removal of inert (i.e. non-biodegradable) material such as sand, hair, grit and plastics. Once the tank has been emptied and cleaned, routine maintenance is performed. This includes checking the tank's concrete floor and walls for cracks, ensuring that the mix jets are free from any obstructions and all sacrificial (i.e. zinc) anodes* are replaced. Plant #1 has one primary digester and a secondary digester that were last cleaned out in 2012. Plant #2 has two smaller primary digesters that were last cleaned out in 2014 and one secondary digester that was last cleaned in 2015.

**Sacrificial anodes preferentially degrade so that the steel (i.e. iron) inside the Digester will not corrode.*

6. ANALYSIS

The primary digester at Plant #1 had operational problems in 2020 and therefore the costs associated with the cleanout were added to the 2021 Capital Budget. In May of 2021, the primary digesters at Plant #2 began to exhibit similar, but more severe, operational problems to those experienced at Plant #1. Due to the severity of the problem at Plant #2, deferring a cleanout until 2022 is not recommended.

Currently at Plant #2 the methane produced from the digestion process, is pushing floating inert material into the gas train where it is plugging the gas lines and preventing the internal safety devices (e.g. flame arrestors, thermal valves, pressure relief valves) from functioning properly. Failure of these safety mechanisms could potentially result in a methane explosion and/or catastrophic failure of the digester rooves. The photo below shows sludge being drained from the safety equipment at Plant #2 by Plant Operators.



7. FINANCIAL IMPLICATIONS/BUDGET IMPACTS

Environmental Services tendered the Digester Cleanout at Plant #1 earlier this year. Terrapure was the low bid and Council subsequently approved \$65,533 for them to carry out this work. Terrapure's cleanout method is somewhat revolutionary and quite different from its competitors. Not only does their process eliminate any impact to the facility's operations, it also costs significantly less. Based on historical cleanout costs, Environmental Services budgeted \$300,000 to cleanout the Digester at Plant #1. Terrapure's bid price for this job was only \$65,533, leaving \$234,467 of unused budgeted funds.

All of the digesters at both Plants need to be cleaned in the next 12-15 months. Given the low cost of Terrapure's process and the current operational problems at Plant #2, it is prudent to perform a cleanout of the Plant #2 digesters immediately and while Terrapure is already on site for the Plant #1 capital project. By extending the contract to include the secondary digesters at Plant #1 and the digesters at Plant #2, the Town will save considerable money by eliminating the equipment mobilization costs associated with having to transport equipment to Cobourg more than once. Additionally, waiting until 2022 will risk damage to the safety devices that prevent methane explosions and could risk the failure of the digester rooves due to the increasing pressures from the methane gas that cannot escape as they would under normal operating conditions.

Environmental Services is proposing that Council allow any unused funds from the previously approved Digester Cleanout at Plant #1 (i.e. Capital Account 2140043) to be allocated to the secondary digesters at Plant#1 as well as the digesters at Plant #2. The Plant #2 primary digesters are smaller than that of Plant #1 and it is estimated that both primary digesters at Plant #2 can be cleaned out for roughly the same cost as the single digester at Plant #1. The secondary digesters are also smaller than the primaries and typically do not contain as much sludge/debris as the primary tanks.

It should be noted that anaerobic digesters are sealed (i.e. air tight) vessels whose contents are not completely known until they are actually removed from service, emptied and inspected. While highly unlikely, there is always a possibility that the actual volume of debris inside the digester will be higher than the predicted (i.e. historical) volumes. If this occurs and Staff do not feel confident that all of the digesters can be adequately cleaned with the available budget, this work will not be undertaken without further approval. The previously approved \$300,000 will serve as an upset limit to clean out as many of the digesters as possible.

8. CONCLUSION

In the interest of safety and cost effectiveness, it is recommended that the unused funds from the previously approved Capital Account No. 2140043 be allocated to the remaining digester cleanouts at WPCP Plant #1 and Plant #2.

Report Approval Details

Document Title:	Digester Cleanout - Plant 2 - Public Works-056-21.docx
Attachments:	
Final Approval Date:	Jul 8, 2021

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

Laurie Wills, Director of Public Works - Jul 8, 2021 - 1:23 PM

No Signature - Task assigned to Tracey Vaughan, Chief Administrative Officer was completed by delegate Ian Davey, Treasurer / Director of Corporate Services

Tracey Vaughan, Chief Administrative Officer - Jul 8, 2021 - 2:16 PM