

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Managing Director, Environmental & Engineering Services
and City Engineer

Subject: Greenway Wastewater Treatment Plant UV Disinfection
Equipment Single Source

Date: April 20, 2021

Recommendation

That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, the following actions **BE TAKEN** with respect to upgrades to the UV disinfection system at Greenway Wastewater Treatment Plant:

- a) the contract for purchase of a UV disinfection system **BE AWARDED** to Trojan Technologies as a single source procurement for a total value of \$1,154,700.00 plus HST in accordance with Sections 14.4 (d) and (e) of the City of London's Procurement of Goods and Services Policy;
- b) AECOM **BE APPOINTED** Consulting Engineers in the amount of \$206,639.40, including 10% contingency, excluding HST, in accordance with 15.1 (b) and 15.2 (g) of the City of London's Procurement of Goods and Services Policy;
- c) the financing for the project **BE APPROVED** in accordance with the "Sources of Financing Report" attached hereto as Appendix 'A';
- d) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this project;
- e) the approvals given herein **BE CONDITIONAL** upon the Corporation entering into a formal contract; and
- f) the Mayor and City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

Executive Summary

Purpose

This report recommends approving the purchase of new ultraviolet water (UV) treatment equipment for Greenway Wastewater Treatment Plant from Trojan Technologies and awarding a contract for consulting engineering services to AECOM to design and administer the contract.

Context

The Greenway Wastewater Treatment Plant employs ultraviolet disinfection to disinfect treated wastewater prior to discharge to the Thames River. The current system is at its end of life and requires replacement. Trojan Technologies and the City have historically enjoyed a mutually beneficial arrangement for supply and maintenance of UV equipment, and the new technology proposed by Trojan will significantly reduce power consumption and maintenance costs at Greenway. AECOM recently completed a feasibility study for this upgrade, in addition to experience gained in other assignments at Greenway, and is uniquely qualified to continue this assignment. In both cases the approval for single source procurement is requested and recommended.

Linkage to the Corporate Strategic Plan

This project supports the 2019-2023 Strategic Plan through:

- Growing our Economy: increase partnerships that promote collaboration, innovation, and investment;
- Building a Sustainable City: build infrastructure to support future development and protect the environment; and, manage the infrastructure gap for all assets.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

Agreement Extension with Trojan Technologies for the use of the decommissioned Westminster Wastewater Treatment Plant. Civic Works Committee. September 24, 2019.

1.2 Context

Greenway Wastewater Treatment Plant is the City's largest plant, treating 60% of the City's wastewater. In 2020 it reliably treated an average of almost 120 million litres per day of wastewater. An important part of the treatment process is disinfection of the treated wastewater prior to discharging to the Thames River.

The City of London began transitioning to ultraviolet (UV) treatment as its preferred method for disinfecting water before it leaves the plant in the 1990s. This technology replaced chlorination, which fell out of favour due to contamination of the environment through residual chlorine in the effluent as well as concerns over the safe handling of liquid or gaseous chlorine. Trojan Technologies was an early market leader in this field. As a result, all City treatment plants currently employ Trojan Technologies equipment for disinfection.

Since Greenway treats such a large amount of flow, the ultraviolet system is large and consumes high amounts of electricity. The current ultraviolet system at Greenway, also supplied by Trojan Technologies, is over 22 years old and is at the end of its expected life. Ultraviolet disinfection technology has advanced significantly in terms of control and efficiency, so the replacement of this equipment represents both a significant investment and an important opportunity to reduce power consumption.

2.0 Discussion and Considerations

2.1 Design and Coordination with other Projects

The City was recently awarded funding under the Disaster Mitigation and Adaptation Fund to construct flood protection at the Greenway and Adelaide Wastewater Treatment Plants. Flood protection includes the construction of a physical barrier, to protect the plant from rising river levels, and an effluent pumping station to eliminate the potential for river water to back up into the plant interrupting the treatment process.

As the flood protection infrastructure will be located in the same general area as the current ultraviolet disinfection process, AECOM was retained to complete a feasibility study to ensure that a new ultraviolet system would complement the upcoming flood protection work. In order to construct the new works and be in a position to commission prior to April 1, 2022, staff are requesting approval to forego the competitive process and issue a purchase order directly to Trojan Technologies for the purchase of the ultraviolet equipment and to award AECOM the detailed design and contract administration services.

2.2 Selection of Trojan Technologies as a Single Source Supplier

The procurement policy includes a provision to allow a project to be single sourced to a specific supplier under a predefined set of criteria. Trojan Technologies has been recommended as a single source supplier for the reasons noted in sections 14.4 d) and 14.4 e) of the Procurement of Goods and Services Policy:

- 14.4 d. There is a need for compatibility with goods and/or services previously acquired or the required goods and/or services will be additional to similar goods and/or services being supplied under an existing contract (i.e. contract extension or renewal);
- 14.4 e. The required goods and/or services are to be supplied by a particular supplier(s) having special knowledge, skills, expertise or experience;

Trojan is a London-based world leader in ultraviolet disinfection technology for the water and wastewater industries. At the time that the City was converting its disinfection processes to ultraviolet technology, Trojan was the clear leader in North America. As a result, all City facilities employ various models of Trojan Technologies equipment. As it relates to clause 14.4 d., a common provider of UV treatment products ensures consistent product support, a shared inventory of spare parts, coordination of service, and consistency of staff training requirements. Maintaining Trojan as London's UV equipment supplier will help maintain this system wide consistency and efficiency.

With respect to clause 14.4 e., The ultraviolet system proposed for Greenway, the TrojanUVSigna, represents the state of the art of ultraviolet disinfection, providing effective disinfection while significantly decreasing electrical consumption as compared with previous technologies. Trojan's familiarity with the City's system and installations brings significant value to the City and provides further support for the recommendation to approve a single source procurement.

2.3 AECOM as Recommended Consultant

An extension to AECOM's current contract has been recommended in accordance with the following sections of the Procurement of Goods and Services Policy:

- 15.1 b. Under no circumstances shall an extension or expansion of a consulting engagement preclude the required approvals. This includes splitting the project or scope of work into multiple phases or sections. City Council has sole authority to approve and award contracts greater than \$100,000.
- 15.2 g. A consulting firm which has satisfactorily partially completed a project may be recommended for award of the balance of a project without competition subject to satisfying all financial, reporting and other conditions contained within this Policy. This should be to the financial advantage of the City due to the fact that such a consultant has specific knowledge of the project and has undertaken work for which duplication would be required if another firm were to be selected.

AECOM completed the feasibility study for the Greenway UV project and has a substantial amount of expertise and experience in this field of wastewater treatment. A suitable conceptual design has been completed by AECOM that will allow for construction of a new disinfection system without significantly impacting existing operations. Assigning this work to an alternative firm would result in duplication and cause significant project schedule delays. It is for these reasons that section 15.2 g. applies. AECOM is uniquely positioned to provide high-value service on this project and meet the tight project timelines. If Committee and Council approves this request, AECOM would commence the design immediately ensuring that the new ultraviolet disinfection system would be installed prior to construction of the flood protection works.

Staff have reviewed AECOM's fee submission, including the time allocated to each project task, along with hourly rates provided by each of the consultant's staff members. The qualifications of assigned personnel, time per project task, and hourly rates were consistent with other assignments of similar complexity and scope. The continued use of AECOM is of financial advantage to the City because the firm has specific knowledge of the project and has undertaken work for which duplication would be required if another firm were to be selected.

2.4 Addressing the Need for Action on Climate Change

On April 23, 2019, Municipal Council declared a climate emergency in the City of London. The ultraviolet disinfection systems used at all City wastewater treatment plants are an environmentally friendly form of wastewater treatment that does not leave residual chemicals in the water returned to the Thames River. Increasing the efficiency of Greenway's UV system through higher efficiency UV bulbs is expected to reduce that consumption by 60% or more, resulting in a reduction of 532,000 kWh of electrical consumption per year. Installation of this system will provide a more cost-effective wastewater treatment system while simultaneously lowering greenhouse gas emissions.

3.0 Financial Impact/Considerations

3.1 Activity Planned and Budget Available

Replacement of the ultraviolet disinfection system at Greenway was anticipated and accounted for under the current approved multi-year capital budget. The proposed prices for both the ultraviolet equipment and engineering services align with previous estimates used to develop that budget. Energy savings projected as a result of the planned upgrade could provide a payback period of 14.4 years considering the purchase price of the ultraviolet disinfection system.

A secondary financial benefit of installing a Trojan UV system at the Greenway Wastewater Treatment Plant is the spare parts discount provided by Trojan for UV systems owned by the City of London. This discount was negotiated as part of the City's agreement with Trojan to use the former Westminster Wastewater Treatment Plant for research purposes.

Conclusion

The ultraviolet disinfection system at Greenway wastewater treatment plant is an essential component of the City's obligations for the protection of human health and the environment. By purchasing the latest technology from Trojan Technologies, the City will be able to construct the new facility prior by April 2022 and will save significant amounts of electricity every year thereafter. AECOM has demonstrated a strong understanding of the project and is in the best position to efficiently deliver detailed design and construction administration services. Administration is therefore recommending single source procurement for both the purchase of ultraviolet disinfection equipment from Trojan Technologies and the award of the related engineering services contract to AECOM.

Prepared by: Kirby Oudekerk, P.Eng., Division Manager, Wastewater Treatment Operations

Submitted by: Scott Mathers, MPA, P. Eng., Director, Water And Wastewater

Recommended by: Kelly Scherr, P. Eng., MBA, FEC
Managing Director, Environmental and Engineering Services and City Engineer

cc: John Freeman, Manager III, Purchasing and Supply
Chris Ginty, Procurement Officer, Purchasing and Supply

Alan Dunbar, Manager III, Financial Planning and Policy
Zeina Nsair, Financial Business Administrator, Finance and Corporate Services

Appendix "A"

#21053

April 20, 2021
(Award Contract)

Chair and Members
Civic Works Committee

RE: Greenway Wastewater Treatment Plant UV Disinfection Equipment Single Source
(Subledger FS21GW02)

Capital Project ES3098 - Greenway WWTP Capacity Improvements for Bypass Reduction and Flood Protection

Trojan Technologies - \$1,154,700.00 (excluding HST)

AECOM - \$206,639.40 (excluding HST)

Finance and Corporate Services Report on the Sources of Financing:

Finance and Corporate Services confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Managing Director, Environmental and Engineering Services and City Engineer, the detailed source of financing for this project is:

Estimated Expenditures	Approved Budget	Committed To This Date	Submission	Balance for Future Work
Engineering	1,150,000	128,167	210,276	811,557
Construction	8,458,437	781,603	0	7,676,834
Replace Vehicles & Equipment	1,175,023	0	1,175,023	0
City Related Expenses	100,000	8,861	0	91,139
Total Expenditures	\$10,883,460	\$918,631	\$1,385,299	\$8,579,530
Sources of Financing				
Drawdown from Sewage Works Reserve Fund	10,883,460	918,631	1,385,299	8,579,530
Total Financing	\$10,883,460	\$918,631	\$1,385,299	\$8,579,530

Financial Note:

	Trojan	AECOM	Total
Contract Price	\$1,154,700	\$206,639	\$1,361,339
Add: HST @13%	150,111	26,863	176,974
Total Contract Price Including Taxes	1,304,811	233,502	1,538,313
Less: HST Rebate	-129,788	-23,226	-153,014
Net Contract Price	\$1,175,023	\$210,276	\$1,385,299

Jason Davies
Manager of Financial Planning & Policy

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