



# INFORMATION REPORT

<b>TO:</b>	Chair and Members Public Works Committee
<b>COMMITTEE DATE:</b>	August 10, 2022
<b>SUBJECT/REPORT NO:</b>	Woodward Upgrades Construction Update (PW20043(c)) (City Wide)
<b>WARD(S) AFFECTED:</b>	City Wide
<b>PREPARED BY:</b>	John Helka (905) 546-2424 Ext. 2826
<b>SUBMITTED BY:</b>	John Helka Director, Woodward Upgrades Public Works Department
<b>SIGNATURE:</b>	

## COUNCIL DIRECTION

N/A

## INFORMATION

Further to Report PW20043(b) presented to Public Works Committee July 7, 2021, the purpose of this report is to provide Council with an update on the Woodward Upgrade Project (WUP) which is an integral part of the Clean Harbour Program. The program is being delivered through three (3) construction projects, which together form the Phase 1 Woodward Wastewater Treatment Plant (WWTP) water quality upgrades:

- Contract 1 – Main Pumping Station Project (MPS);
- Contract 2 – Electrical and Chlorination Project (ELU); and,
- Contract 3 – Tertiary Treatment Upgrade Project (TTU).

Construction photos of each contract are attached to Report PW20043(c) as Appendix “A”.

Contract 1 - Main Pumping Station Project:

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Beginning May 2017, Maple Ball Joint Venture began constructing a new \$88M main wastewater pumping station to replace the existing pumping station. This project includes the installation of 12 - 700 Hp pumps for a total firm capacity of 1700 million litres per day. Since inception of construction, approximately 97% of work has been performed with the following key activities completed to date:

- Complete start-up, testing, commissioning, and full operation of the new pump station allowing the existing pumping station to be fully decommissioned in October 2021 after 57 years of continuous service;
- Permanently tied in both the west and east conveyance channels from the new pump station into the headworks facility and fully disconnecting the existing MPS from the rest of the treatment plant; and
- Demolition and backfilling of the existing pumping station.

Although there have been many challenges throughout the construction period that has resulted in construction delays, the project will be reaching the major milestone of Substantial Performance in July, with some minor finishing works and restoration activities remaining to be completed.

**Contract 2 - Electrical and Chlorination Project:**

Since October 2017, Alberici Constructors has been constructing the Electrical and Chlorination upgrades project. This \$61M contract replaces the two (2) existing electrical substations and existing standby power building with a new Electrical Power Centre (EPC). More specifically, dual 13.8 kilo-volt underground distribution loop duct banks around the Wastewater and Water treatment plants and four (4) - three (3) Mega Watt diesel generators providing a total of 12 Mega Watts of emergency standby power are included in the project. Additionally, the chlorination system is being upgraded to increase chlorination capacity during wet weather flows to provide full disinfection. This project has approximately 98% of work performed, with the following key activities completed to date:

- Complete start-up, testing and commissioning of the new electrical distribution system was completed, allowing all remaining facilities in both the Water and Wastewater treatment plants to be connected to the new electrical distribution system and for the demolition of the existing Water and Wastewater electrical substations which was completed in 2021;
- Transferred all remaining Alectra utility service feeders into the new Electrical Power Centre; and
- Commissioning and operation of the new chlorine tank car air padding system including the installation of the chlorine rail car weigh scales. The weigh scales enable chemical consumption monitoring required for operations.

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Similar to the MPS project, although there have been many challenges throughout the construction period that has resulted in construction delays, the project will be reaching the major milestone of Substantial Performance in July, with some minor finishing works and restoration activities remaining to be completed.

**Contract 3 - Tertiary Treatment Project:**

The Tertiary Treatment Project upgrades (TTU) will result in significant benefits to water quality in Hamilton Harbour. The project adds a higher level of treatment (tertiary) to the wastewater treatment process using Disc Filtration technology. In addition, the project includes an increase in the capacity of the south plant secondary treatment system by doubling the size of the aeration tanks and constructing two (2) new secondary clarifiers, a new chlorine contact tank (CCT) and outfall and making Red Hill Creek modifications. This project will allow the City to meet the Hamilton Harbour Remediation Action Plan targets for the WWTP, including the provision of full nitrification for more complete ammonia removal, advanced levels of phosphorus removal, and will require the WWTP to operate under new environmental compliance limits.

The TTU project is a \$165M construction contract that was awarded to North American Construction. Construction started in April 2019 and has recently passed three (3) year anniversary, with approximately 93% of work performed to date. The following key activities have been completed to date:

- With Stage 1 expansion of the South Plant completed in 2021, Stage 2 expansion is nearing completion which also includes the construction of a new 22,000 cubic meter aeration tank (AT10), addition of a new secondary clarifier tank (#14), and modifications to two (2) existing secondary clarifiers;
- Structural concrete works of the new tertiary treatment facility were completed, and mechanical/electrical works continued in the facility along with the start-up activities of the disk filters and sedimentation / flocculation tanks; and
- The new WWTP effluent outfall channel and headwall construction is complete, as well as, excavation and structural concrete activities for the new CCT.

As previously reported in Report PW20043(b), budgetary challenges associated with the discovery of polychlorinated biphenyl (PCB) contaminated and hazardous soil were experienced. Most of the impacted soils have now been removed and safely disposed of off-site and the extra costs exceeded the original project contingency and have had a significant impact on the overall project budget.

To assist with managing these additional costs, in 2021, the project team worked with the City's Procurement Section to expand the existing purchase order and the project

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budget was increased through the 2022 Water, Wastewater, and Storm Rate Budget process. However, based on a recent assessment completed in June 2022, and as a result of the overall additional costs associated with the contaminated soils, the project is once again forecasted to be underfunded. The project team will continue to proactively assess the budget health and any potential funding gaps will be referred to the 2023 Water, Wastewater, and Storm Rate Budget process.

As a result of the delays in the project schedule associated with the management of the contaminated and hazardous soils, along with other unforeseen project challenges, the project is currently estimated to reach Substantial Performance in December 2022.

#### Green Infrastructure Fund Program

As identified in Report PW20043(b), the City has been able to secure an approved extension to the Green Infrastructure Fund completion timeline to January 31, 2027. This amended agreement was signed in October 2021 and ensures the continued financial commitment of the funding partners.

#### Next Steps:

With both the MPS and ELU projects reaching Substantial Performance in July, there remains a significant amount of work in closing-out these projects that the WUP team will be focused on throughout 2022. In addition, there is a tremendous amount of effort remaining on the TTU project as we move towards the start-up and commissioning phase, finalize construction, and transition of the new system to the Plant Operations Section.

Staff are very proud of the collaboration and professionalism amongst all the contractors working on the WWTP site amounting to over 1.8M person-hours worked to date and want to recognize that there have been no recorded lost time injuries resulting from any of the WUP projects.

#### **APPENDICES AND SCHEDULES ATTACHED**

Appendix "A" to Report PW20043(c) - Construction Photos