
Subject: Councillor Information Request – Niagara-on-the-Lake Wastewater Treatment Plant Update

Report to: Corporate Services Committee

Report date: Wednesday, July 14, 2021

Recommendations

1. That Report CSD 48-2021 **BE RECEIVED** for information.

Key Facts

- The purpose of this report is to respond to a request from Councillor Gale at the May 10, 2021, Audit Committee to provide a report analyzing the Niagara-on-the-Lake Wastewater Treatment Plant (NOTL WWTP) projects' schedule and budget adherence to inform future project management practices.
- Through the course of construction on Contract 2014-T-114 (RN14-14), a number of issues resulted in delays and an additional level of effort to successfully complete the project.
- The sewage flows from the existing plant were redirected to the new NOTL Wastewater Treatment plant on June 25, 2019. The new plant has been in operation and treating sewage since that time.
- The Water and Wastewater Division have used experience gained on this project to implement various practice improvements, and to develop modified standard documentation.
- There is litigation ongoing between the parties regarding this project, which is the subject of confidential update report CSD 38-2021 dated July 14, 2021.

Financial Considerations

The total project expenditures and funding sources to date are shown in the Total Project Budget Summary in Appendix 1 to Report CSD 48-2021. As outlined in the chart, there is an overall approved budget of \$51,179,573 across the two projects (10SW0807 Plant Upgrades/ 10SW1407 SPS Upgrades) for the construction of the new NOTL WWTP and related facilities including the outfall extension and upgrades to the existing sewage pumping stations. There is no anticipated surplus associated with both of the projects.

The projects are funded with a combination of federal and provincial funding, reserves, federal gas tax, development charges and cost sharing as outlined in Appendix 1 of Report CSD 48-2021. The funding from the Government of Canada and the Province of Ontario was budgeted in the amount of \$28,666,666, which represents 2/3 of an upset limit of \$43,000,000. The limit of \$43,000,000, excluded budgets previously approved prior to the funding application in the amount of \$3,781,800, as expenses already incurred were ineligible for future funding. A full outline of the budget approvals over the life of both projects can be found in Appendix 2 to Report CSD 48-2021.

There were two material budget adjustments made following the construction estimate of \$43,000,000 across the two projects. The first, approved through report CSD 116-2013, established a budget of \$3,667,453 for sustainability upgrades for the Lakeshore Road, Garrison Village and William Street Sewage Pumping Stations. The second material budget adjustment was approved through PWC 5-2019 in the amount of \$763,200, in order to accommodate schedule extensions, additional contract work and internal costs required to carry the project to completion.

For Contracts 2014-T-114 (RN14-14) and 2014-T-113 (RN14-13), there has been \$40,955,079 expended & committed to Varcon Construction Corporation as of May 13, 2021. This amount includes holdbacks pursuant to the Construction Act. Project costs as outlined in Appendix 1 to Report CSD 48-2021 do not include any financial impacts related to the litigation. The litigation is addressed in Confidential Report CSD 38-2021.

Analysis

Background

The Northeast Area Wastewater Study identified the need for an upgraded or expanded wastewater treatment plant (WWTP) for the Town of Niagara-on-the-Lake, as the existing plant was anticipated to reach capacity in 2017. The Town of Niagara-on-the-Lake Wastewater Servicing Municipal Schedule 'C' Class EA, evaluated alternatives that would increase capacity and enhance wastewater services for the residents of Town of Niagara-on-the-Lake. It also looked at addressing wastewater flows occurring during wet weather events and operating issues (e.g. odour) at the existing WWTP.

Report PWC-C 19-2015 provided an overall project description and delineated the four distinct phases / contracts required for the execution of the project. Cole Engineering Group was retained in 2013, as the consultant for the design and contract administration of the project under 2012-RFP-57.

A public tender process was initiated in 2014 for Contract 2014-T-113 (RN14-13). This contract for the upgrades of the three pumping stations that feed the Niagara-on-the-Lake Wastewater Treatment Plant and the associated linear works received a total of seven (7) bids. The lowest bid of \$7,460,092 (including 13% HST) was submitted by Varcon Construction Corporation (Varcon). The next lowest was submitted by V. Gibbons Contracting and was valued at \$7,473,312.40 (including HST).

Varcon was awarded Contract 2014-T-113 (RN14-13) as per PW 67-2014, dated June 3, 2014. A contingency amount of \$1,110,824 was added to Varcon's contract to cover unforeseen construction costs due to the complexity of the project. With this contingency in place the revised contract amount totaled \$8,715,322 (including 13% HST). The project commencement date was June 20, 2014. This project was deemed to be substantially completed on January 31, 2017.

A public tender process was also initiated in 2014 for Contract 2014-T-114 (RN14-14), which was the replacement of the existing lagoon treatment facility with a new secondary Wastewater Treatment Plant. The Region received bids from six (6) of the eight (8) pre-qualified general contractors, with the lowest bid being \$36,062,679 (including 13% HST) submitted by Varcon. The next lowest was submitted by Graham Construction and Engineering LP and was valued at \$37,775,900 (including 13% HST).

Varcon was awarded Contract 2014-T-114 (RN14-14) as per PW 100-2014, dated November 6, 2014. The project commencement date was December 9, 2014. The completion date specified in the contract was December 31, 2016. Substantial completion was obtained on January 17, 2020.

Coordination for the decommissioning of the existing plant is ongoing.

(RN14-14) NOTL Wastewater Treatment Plant Project Delays

Throughout construction, delays were experienced because of various factors including existing site conditions, additional scope changes, deficiencies, contractor performance and consultant design errors. Some of the schedule delays were associated with change orders to the contract. There were 187 change orders issued. They total just under \$3.48 million of the \$3.5 million (including non-refundable HST) in contingency available under this contract.

Litigation is now ongoing between the parties (Region, Varcon and Cole) regarding the project, including responsibility for delay, which is the subject of confidential report CSD 38-2021; therefore the level of detail in this report has been adjusted accordingly.

The sewage flows from the existing plant were redirected to the new plant on June 25, 2019, commencing the 30-day commissioning timeline. The plant has been in operation and treating sewage since that time.

Although the plant was treating sewage, due to some critical deficiencies, substantial completion was delayed until January 17, 2020. As of February 2020, the Plant met the Environmental Compliance Approval and the effluent was redirected to Lake Ontario.

There are remaining outstanding deficiencies that delay the final completion of the project.

Water/Wastewater Standard Practice Improvements

Since the start of this project, the Public Works Water-Wastewater division has introduced many new and improved standard practices for managing capital projects. A new W-WW Project Design Manual was created in 2018, as a guide for staff and consulting engineers involved in the implementation of W-WW capital projects. The manual provides minimum requirements for design preferences and guidelines. In addition, the manual ensures all applicable legislations, codes, by-laws and standards are met within the provided design requirements. Any deviation to this manual must be discussed and approved by Niagara Region staff prior to implementation.

A comprehensive document management system was introduced to help staff organize and itemize project files consistently across our division to support project management.

Over the past several years, staff have improved the utilization of Region design standards and are continuing to make improvements to the development and maintenance of the Approved Product Equipment List (APEL). During design submission reviews, staff refer to the Project Design Manual and APEL to confirm design guidelines to be followed by consultants.

Risk workshops are conducted during the design phase of all projects. This helps staff identify the likelihood and severity of risks associated with the project in design, approval and construction phases. Mitigation measures are implemented, where possible, to reduce the likelihood or severity of risks. Staff can then assess and identify

provisional contingency in the contract to account for the remaining risks prior to construction.

Peer reviews are conducted on large or complex capital projects to provide a fulsome review of technical submissions. Peer reviews identify any design errors or conflicting information between specifications and drawings prior to completion of the design and tender documents. This helps prevent and reduce additional costs and delays to the construction contract because of design error and omissions.

Other enhancements to the Water-Wastewater practices include prequalification of general contractors for large complex capital projects, and increased minimum standards for site inspection and contract administration qualifications and minimum hours.

Staff continue to make improvements to our practices. Scope of work and deliverable requirements for consultants are reviewed annually and revised, as necessary.

This report has been prepared as an update for the construction contract. Several challenges have been faced through the course the project. Staff will continue to ensure that all outstanding deficiencies are addressed in accordance with the terms of the contracts.

Alternatives Reviewed

Not applicable.

Relationship to Council Strategic Priorities

This report relates to the Fostering Growth strategic priority since planned rehabilitation will ensure reliable infrastructure to support growth and economic development within the Niagara Region.

Other Pertinent Reports

PW 67-2014	Award of Tender 2014-T-113 (Contract RN 14-13) Lakeshore Road, Garrison Village and William Street Sewage Pumping Stations Upgrade & Linear Works in the Town of Niagara- on-the-Lake
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PW 69-2014	General, Mechanical and Electrical Contractor Pre-Qualification for Construction of the New Niagara-on-the-Lake Wastewater Treatment Plant in the Town of Niagara-on-the-Lake
PW 93-2014	Status of the Construction of Niagara-on-the-Lake Wastewater Treatment Plant project in the Town of Niagara-on-the-Lake
PW 100-2014	Award of Tender 2014-T-114 (Contract RN 14-14) Niagara-on-the-Lake Wastewater Treatment Plant in the Town of Niagara-on-the-Lake
PWC-C 19-2015	Status update on the Construction of the new Niagara-on-the-Lake Wastewater Treatment Plant and related linear infrastructure in the Town of Niagara-on-the-Lake
PW 47-2016	2017 Wastewater Operating Budget Program Change Niagara-on-the-Lake Wastewater Treatment Plant
PW 16-2017	Contract 2014-T-114 (RN 14-14) Niagara-on-the-Lake Wastewater Treatment Plant and Contract 2014-T-113 (RN 14-13) Lakeshore Road, Garrison Village and William Street Pumping Station Upgrades and Linear Works – Project Status Report
PW 17-2017	Confidential Report A Matter of Litigation or Potential Litigation, Including Matters Before Administrative Tribunals, Affecting the Municipality – Contract 2015-T-109 (RN 15-09) – Welland WWTP Phase I Upgrades – Project Status Report
PWC-C 19-2017	Confidential Memo A Matter involving Litigation or Potential Litigation against the Niagara Region – Contract 2014-T-114 (RN 14-14) – Niagara-on-the-Lake Wastewater Treatment Plant
PW 33-2017	Contract 2014-T-114 (RN 14-14) Niagara-on-the-Lake Wastewater Treatment Plant and Contract 2014-T-113 (RN 14-13) Lakeshore Road, Garrison Village and William Street Pumping Station Upgrades and Linear Works
PW 7-2018	Budget Adjustment and Status Update for Contract 2014-T-114 (RN 14-14) Niagara-on-the-Lake Wastewater Treatment Plant and Contract 2014-T-113 (RN 14-13) Lakeshore Road, Garrison Village and William Street Pumping Station Upgrades and Linear Works
PW 5-2019	Contract 2014-T-114 (RN14-14) NOTL Wastewater Treatment Plant and Contract 2014-T-113 (RN14-13) Lakeshore Road,

Garrison Village and William Street Pumping Station Upgrades and Linear Works – Project Status Update

PW 31-2020 Contract 2014-T-114 (RN14-14) NOTL Wastewater Treatment Plant and Contract 2014-T-113 (RN14-13) Lakeshore Road, Garrison Village and William Street Pumping Station Upgrades and Linear Works – Project Status Update

CSD 38-2021 ***Confidential Report*** A Matter Respecting Litigation and A Matter of Advice that is Subject to Solicitor-Client Privilege under s.239 (2) of the Municipal Act 2001- Update Regarding Niagara-On-the- Lake Wastewater Treatment Plant (“NOTL WWTP”), Niagara-On-The-Lake Sewage Pumping Station (“NOTL SPS”), and Welland Wastewater Treatment Plant Upgrades (“Welland WWTP”)

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This report was prepared in consultation with Pamela Hamilton, Program Financial Specialist, and reviewed by Joe Tonellato, Director, W-WW Services, Tony Cimino, Associate Director W-WW Engineering and by Donna Gibbs, Director, Legal and Court Services.

Appendices

Appendix 1 Total Project Budget Summary – Niagara-on-the-Lake WWTP Upgrade

Appendix 2 Funding Breakdown – Niagara-on-the-Lake WWTP Upgrade

CSD 48-2021 Appendix 1 - Total Project Summary

**Contract 2014-T-113 (RN 14-13) Lakeshore Road, Garrison Village and William Street Pumping Station Upgrades and Linear Works &
Contract 2014-T-114 (RN 14-14) Niagara-on-the-Lake Wastewater Treatment Plant**

Total Estimated Project Cost (10SW0807 & 10SW1407) *	Total Council Approved Budget	Budget Revisions	Revised Project Budget	Expended & Committed as of May 13, 2021 **	Forecast	Budget Remaining
Project Element	(A)	(B)	(C) = (A) + (B)	(D)	(E)	(F) = (C)-(D)-(E)
(a) Construction (includes contract contingency)	40,934,538	20,541	40,955,079	40,955,079	-	-
(b) Project Contingency	173,183	-	173,183	-	173,183	-
(c) Consulting Engineering Services (Design, Contract Administration, & Inspection)	2,263,342	435,891	2,699,233	2,699,233	-	-
(d) Project Management & Internal Costs	380,006	93,521	473,527	473,527	-	-
(f) Other Project Costs	6,665,304	213,247	6,878,551	6,541,618	336,933	-
Total Estimated Project Cost	50,416,373	763,200	51,179,573	50,669,457	510,116	-

Project Funding Sources						
Regional Reserves & Debt (includes Federal Gas Tax funding)	(15,944,948)	-	(15,944,948)	(15,944,948)	-	-
Development Charges ***	(5,705,838)	(343,440)	(6,049,278)	(5,972,034)	20,862	(98,106)
Provincial Grants	(14,333,333)	-	(14,333,333)	(14,430,000)	-	96,667
Federal Grants	(14,333,334)	-	(14,333,334)	(12,984,002)	(1,349,332)	-
Other Costing Sharing / External	(98,920)	-	(98,920)	(100,359)	-	1,439
Capital Variance Project WW ***	-	(419,760)	(419,760)	(419,760)	-	-
Total Funding Sources	(50,416,373)	(763,200)	(51,179,573)	(49,851,103)	(1,328,470)	-

* All costs above include the non-refundable 1.76% portion of HST.

** Includes holdbacks

*** In year budget revision was funded from capital variance project WW and development charges as approved in Report PW5-2019 in the amount of \$763,200

Appendix 2 - Budget Timeline

NOTL WWTP Project 10SW0807 Lakeshore, Garrison, William St. Sewage Pumping Station Upgrades Project 10SW1407

Project: 10SW0807 Plant					
Year	Project Phase	Budget Adjustment +/-(-)	Total Budget	Budget Source	Budget Approval
2008	Pre-Design	\$ 100,000	\$ 100,000	In Year Transfer	Transfer of funds from 10SW0206 (Innovation, Research & Implementation of New Technology)
2008	Pre-Design	\$ 300,000	\$ 400,000	Annual Capital Budget	BRCOTW 4-2008 / CSD 21-2008 - Project Initiation and Approval
2011	Pre-Design	\$ 1,800,000	\$ 2,200,000	Annual Capital Budget	By-law No 110-2009/By-law No 129-2009/CSD 05-2011 - Project Initiation and Approval Water and WW Capital Projects
2011	Pre-Design	\$ 1,500,000	\$ 3,700,000	Annual Capital Budget	CSD 46-2011 - 2011 Budget/CSD 67-2011 - Initiation of 2011 Capital Budget
2011	Pre-Design	\$ 81,800	\$ 3,781,800	Gross Budget Adjustment: Cost Sharing	CSD 28-2011 - Gross Budget Adjustments for Capital Projects, Cost Sharing Arrangement with Canada Parks
2014	90% Design	\$ 43,000,000	\$ 46,781,800	Annual Capital Budget	CSD 116-2013 - 2014 Capital Budget/CSD 12-2014 Initiation
2015	Construction	\$ (300,000)	\$ 46,481,800	In Year Transfer	Transfer of funds to 10SW1528 (Decommissioning Project)
2016	Construction	\$ 250,000	\$ 46,731,800	In Year Transfer	Transfer of funds from 10SW1340 (Plant Design)
2018	Construction	\$ 400,000	\$ 47,131,800	Budget Adjustment (Transfer)	PW 7-2018 - Budget Adjustment from 10SW1407 to 10SW0807
2019	Construction	\$ 763,200	\$ 47,895,000	In Year Budget Revision: Capital Variance Project WW & DCs	PW 5-2019 - Gross Budget Adjustment and Status Update for Contract 2014-T-114 (RN14-14) NOTL WWTP

Appendix 2 - Budget Timeline

NOTL WWTP Project 10SW0807 Lakeshore, Garrison, William St. Sewage Pumping Station Upgrades Project 10SW1407

Project:10SW1407 SPS					
Year	Project Phase	Budget Adjustment +/-(-)	Total Budget	Budget Source	Budget Approval
2014	90% Design	\$ 3,667,453	\$ 3,667,453	Annual Capital Budget	CSD 116-2013 - 2014 Capital Budget/CSD 05-2014 Initiation; Project 10SW1407 was a subset of the PS Improvement Program Project 10SW1406 with a total approved budget of \$13,000,000
2017	Construction	\$ 17,120	\$ 3,684,573	Gross Budget Adjustment: Other External Funding	Gross Budget Adjustment Form due to Rebate Received from NOTL Hydro
2018	Construction	\$ (400,000)	\$ 3,284,573	Budget Adjustment (Transfer)	PW 7-2018 - Budget Adjustment from 10SW1407 to 10SW0807

Total Budget for Projects 10SW0807 & 10SW1407: \$51,179,573