TO:	**GENERAL COMMITTEE**
SUBJECT:	**BEAR CREEK WETLAND – MARTA CRESCENT FLOODING ISSUE**
WARD:	**6**
PREPARED BY AND KEY CONTACT:	**T. REEVE, P.ENG., SENIOR PROJECT MANAGER, WATER/WASTEWATER PLANNING, EXT. 4465**
SUBMITTED BY:	**K. OAKLEY, P. ENG., ASSOCIATE DIRECTOR OF CORPORATE ASSET MANAGEMENT**
GENERAL MANAGER APPROVAL:	**B. ARANIYASUNDARAN, P. ENG., PMP, GENERAL MANAGER OF INFRASTRUCTURE AND GROWTH MANAGEMENT**
CHIEF ADMINISTRATIVE OFFICER APPROVAL:	**M. PROWSE, CHIEF ADMINISTRATIVE OFFICER**

RECOMMENDED MOTION

1. That the funding request outlined in Staff Report CAM001-23 for the capital construction and ongoing maintenance of a dewatering initiative at Marta Crescent and the Bear Creek wetland be approved:

    a) Capital project EN1513 be increased to include an additional amount of $350,000 for 2023 funded from the tax capital reserve; and

    b) The 2024 operating budget to be presented to Council in late 2023, include an additional $400,000 for the Operations Department to fund ongoing operations and maintenance of the dewatering.

PURPOSE & BACKGROUND

2. The purpose of this Staff Report is to request Council approval and funding to implement a solution to address resident concerns on Marta Crescent in the short term.

3. The area in question is north of Summerset Drive, east of Marta Crescent and west of Gore Drive. Appendix A shows the location of the project, some key features and property ownership. The City of Barrie owns the parcel containing a portion of Bear Creek Wetland, a stormwater management facility, and a watercourse (known informally as Henderson Creek). The parcel was dedicated to the City through the subdivision development process about 20 years ago. Other adjacent parcels containing the wetland are in private ownership. The houses on Marta Crescent were constructed about 10 years ago.

4. Property owners on Marta Crescent have been reporting that the water in the wetland has been rising over the years. The elevated water level means there is now standing water in the backyards of some homes on Marta. Residents are concerned with this water from a safety, aesthetic, and enjoyment perspective. Some photos of the standing water are shown in Appendix B.

5. The City has retained a consultant, Aquafor Beech, to study the problem and recommend both short- and long-term solutions.

ANALYSIS

6. Wetlands can change over time both naturally and because of human influence. Assessment by the City's consultant is that the main drivers for the changes in the wetland are the deposition of sediment carried from Ardagh Bluffs which has filled in a portion of Henderson Creek, and the increased prevalence of Phragmites. The build-up of sediment and the Phragmites have prevented water from flowing through Henderson Creek and has inundated the surrounding wetland, causing water levels to rise.

7. Long term solutions are being studied, with the goal of maintaining a healthy wetland, restoring Henderson Creek, and minimizing impact on downstream environments and properties. While this work is in the very early stages, staff estimate these types of solutions will take many years and significant capital investment to implement. With that in mind, the project team investigated interim solutions which could be implemented in the short term to reduce the standing water in the Marta Crescent back yards.

8. The proposed interim solution developed by the consultant is to build a temporary coffer dam to isolate the backyards from the wetland and then pump the water out of that area. An engineering drawing is attached in Appendix C to help Council better visualize the general concepts.

Operations

9. Due to the unknowns around a complex, natural system like a wetland and the unique nature of the solution there are some uncertainties around the performance of this solution. Neither staff nor the consultant can estimate how long the initial pumping to dewater the area will take. Once constructed, this short-term solution will require ongoing operations and maintenance. There will be the need for regular inspection and operation of the pumps to remove water that will continue to infiltrate into the area, and that will accumulate after a rainfall. Staff are unable to predict the frequency or duration of future pumping to maintain water levels below back yards.

10. The operation of the pumps will not take place in the winter due to risk of damage to the equipment. It is anticipated that the equipment will be taken out for the winter as temperatures approach zero. Operation would resume in spring once the risk of freezing has passed.

11. The costs to inspect, operate the pumps, and otherwise maintain the solution could be as high as $50,000 per month, should pumping be required regularly and at high volumes. As the Operations Department doesn't have resources available to conduct this work, the operating costs included in this report assume the work will be contracted out.

Project Risks and Timelines

12. Should Council approve the funding, City staff will work to implement the short-term solution as quickly as possible, but would note that there are a number of risks associated with this project:

    a) Permitting: This project will require permits from the Nottawasaga Valley Conservation Authority (NVCA). Because of the unique nature of this project, there is some uncertainty as to whether the NVCA will approve this approach or request modifications. City staff have pre-consulted with the NVCA, and they are currently reviewing the detailed information.

    b) Private Property: The solution requires the dewatering from behind Marta Crescent to be directed to the remainder of the wetland, which is in private ownership. This requires the agreement from the private property owner. The City has been in contact with this property

owner and are hopeful that an agreement can be reached expeditiously however the City has no means to compel an agreement. Staff are investigating alternative options in the event an agreement can't be reached.

c) Costs: The cost estimate has been prepared using the City's costing procedures in an effort to ensure cost certainty. Staff and the City's consultant have used the latest available information and industry best practice to estimate the upset cost limit but there is still some uncertainty around the capital and operating costs.

d) Availability of Contractors: Due to the time of year of the tender, there is a risk that contractors who might bid on the project are not available to start the work immediately.

e) Nuisance: Property owners may identify that pumping is noisy. Staff are hopeful that after the initial dewatering, pumping will be minimal and take place during daytime hours. Given the uncertainty around frequency/duration of pumping, this will be monitored and alternative solutions, such as quiet pumps, will be implemented as required. The costs in this staff report reflect the costs of the quiet pumps should they be required. Additionally, there is the potential for odour concerns. As the water is pumped out and wetland soils dry out, decomposing plant material may present odour.

f) Service level expectations and duration: Measures which are more sustainable and long term will take many years to implement. Once an interim pumping solution is in place, residents will have the expectation that it continues until longer term solutions can be implemented, resulting in the commitment to maintain the solution for an indefinite period. This staff report reflects the ongoing operating costs required to maintain the solution.

ENVIRONMENTAL AND CLIMATE CHANGE IMPACT MATTERS

13. The following environmental and climate change impact matters have been considered in the development of the recommendation:

a) Wetlands and water courses are important environmental features, and any alterations must consider how to have the least environmental impacts. The City's consultant has had their ecologist visit the site to confirm the interim design is minimizing environmental impacts. The Nottawasaga Valley Conservation Authority has been consulted and will have final say over permitting the work.

ALTERNATIVES

14. The following alternatives are available for consideration by General Committee:

Alternative #1

General Committee could deny the request for capital and operating funding associated with this short-term solution. This alternative is available, although it would result in resident continuing to experience standing water in their backyards. Staff would continue working on a long-term sustainable solution.

Alternative #2

General Committee could direct staff to request funds for the short-term solution in the 2024 capital and operating budgets so that the project may be considered in the context of the larger picture of needs and affordability.

This alternative is available, although it would result in the short-term solution not being implemented until 2024 or at all. Given the time needed to implement, and risks associated with the timing, this alternative may not

result in significant differences than if the funding were approved now. Staff would continue working on a long-term sustainable solution.

FINANCIAL

Capital

15. The capital estimate for implementing the coffer dam/dewatering short term solution and keeping it in place for the remainder of 2023 is $350,000.

16. Project EN1513 (Marta Crescent and SWMF BR09 Drainage Study) is included in the approved 2023 capital plan with approved funding of $150,000 (split evenly between 2023 and 2024). The approved funding is to study the problem and design short- and long-term solutions but is insufficient to implement this short-term solution.

17. To implement the project, EN1513 requires a construction phase (EN1513.23.22) be added with a total approved 2023 budget of $425,000 and no change to the 2024 budget.

18. The current and proposed funding plan for the project are shown in the table below along with the impact of the proposed changes:

EN1513 Funding Source	Current	Proposed	Change
Tax Capital Reserve - 2023	$75,000	$425,000	$350,000
Tax Capital Reserve - 2024	$75,000	$75,000	$0
Total	**$150,000**	**$500,000**	**$350,000**

Operating

19. The ongoing operating cost for this project is estimated at $50,000 per month with the expectation that it would run for 8 months per year beginning in 2024 until such time as a longer-term solution is implemented. This results in an operating impact to the Operations Department of $400,000 beginning in 2024. As noted above there is uncertainty around these costs, and therefore adjustments may be required (up or down) when staff prepare the 2025 operating budget.

LINKAGE TO 2022-2026 STRATEGIC PLAN

20. The recommendation(s) included in this Staff Report are not specifically related to the goals identified in the 2022-2026 Strategic Plan.

APPENDIX "A"

Project Location

APPENDIX "B"

Photos

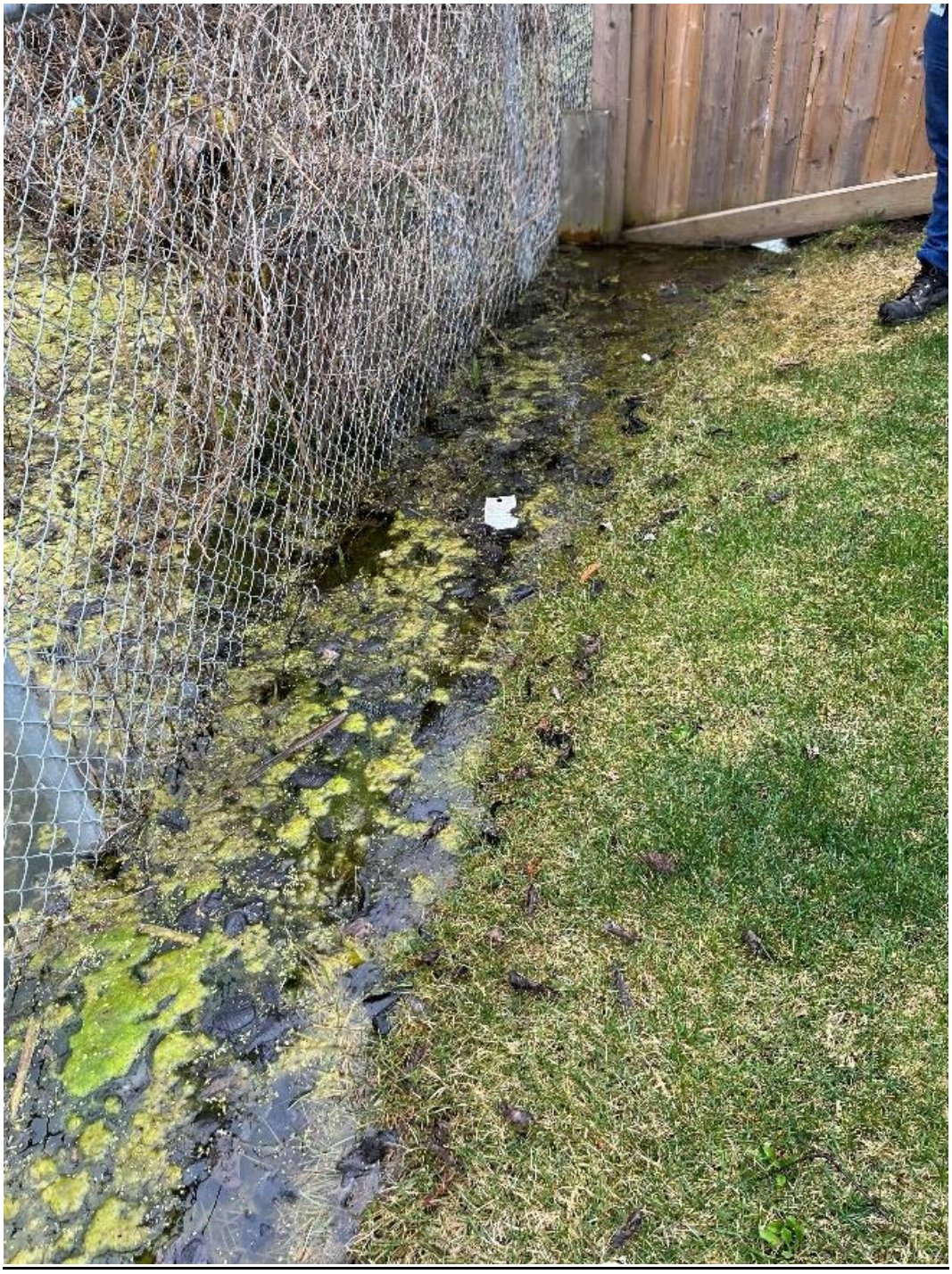

Figure 1 - Flooding of Marta Crescent Backyard

Figure 2 - Flooding of Marta Crescent Backyard

Figure 3 - Flooding of Marta Crescent Backyard

Figure 4 - Flood of Marta Crescent Backyard

APPENDIX "C"

Preliminary Engineering Drawing