DR-05-23

Report

To: **Mayor and Members of Council**

From: **Shawn Stasko, Drainage Superintendent**

Date: **May 18, 2023**

Re: **West Marsh Drainage Scheme Bank Stabilization**

Recommendation:

It is recommended that;

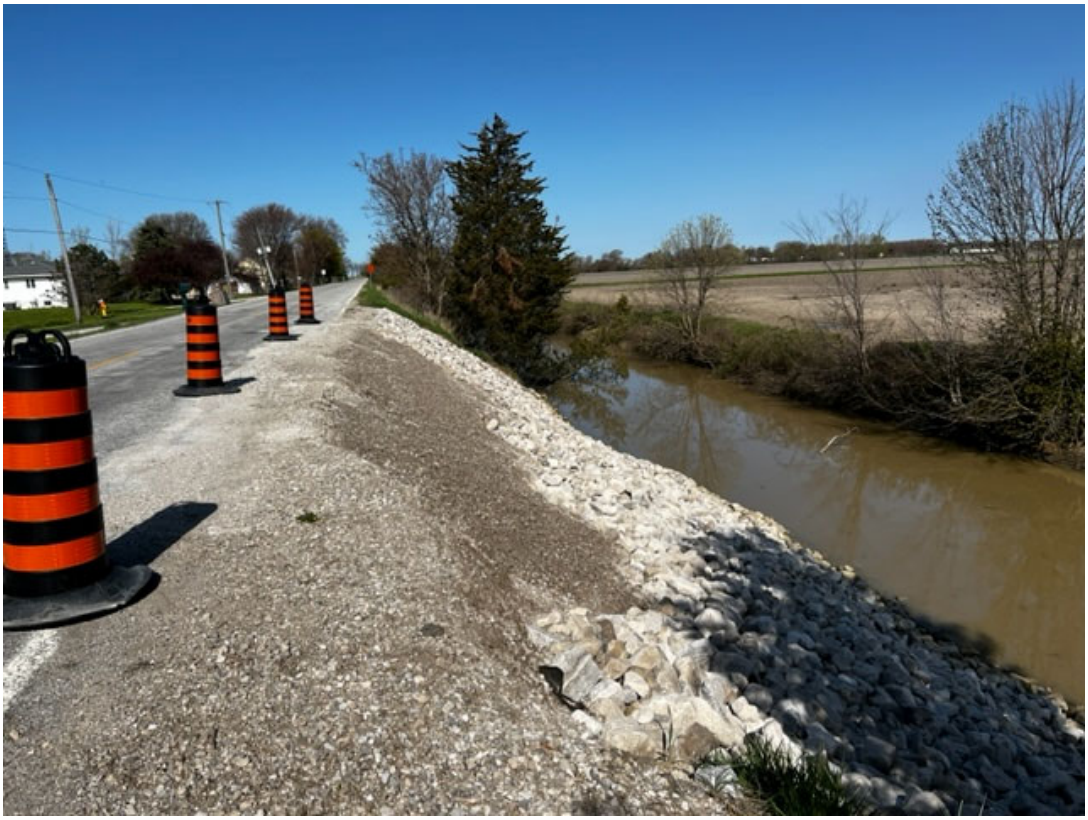
1. N.J. Peralta Engineering be appointed pursuant to Section 78 of the Drainage Act, R.S.O. 1990, for the preparation of an Engineer's Report to create a bank stabilization design for immediate bank repairs and plan for future bank repairs on the West Marsh Drain along Mersea Road D. (DR-05-23)

Background:

The West Marsh Drainage Scheme was developed over 100 years ago and serves approximately 2700 acres of Leamington's Southeast rural area. The West Marsh Drain runs along Mersea Road 19 from Mersea Road 1 to Mersea Road D, where it turns 90 degrees to the West and follows Mersea Road D to County Road 33, where flow is discharged to Lake Erie via the West Marsh Pumping Station.

According to the 1968 engineer's report by CG Russell Armstrong Associates, the open drain was designed and built with a 12' bottom width. However, over time the banks have slowly eroded and the current bottom width of the drain is approximately 25' on average with areas of measuring over 30' in width. This erosion has resulted in the relocation of the southern bank of the West Marsh Drain, such that the top of bank is now located at, or very near to, the edge of pavement on Mersea Road D, leaving little to no shoulder and steeper than designed banks at the road's edge. Moreover, the paved surface of Mersea Road D is in a state of disrepair as a result of the drain bank's encroachment on the pavement's edge and poor underlying soil conditions. These conditions can potentially lead to unsafe driving conditions on Mersea Road D and have precipitated the placement of advisory 30 km/h speed limit signage on the roadway.

In order to assess the most appropriate approach to addressing both the erosion of the West Marsh Drain and the deteriorating conditions of Mersea Road D, the Municipality retained WSP Canada Inc. to provide a geo-technical report regarding the subsurface conditions of the road and to provide a slope stability assessment for the southern bank of the West Marsh Drain. The geo-technical investigation encountered layers of sandy silty clay followed by pockets of heavily saturated peat and fibrous peat beneath the road's pavement structure. The results of the study are intended to support the design of the bank repairs needed to re-establish the West Marsh drain to a condition that closely resembles the original 1968 design and facilitate a more functional interaction between the drain and Mersea Road D.



Current state of West Marsh Drain bank failure – 1424 Mersea Rd. D

Comments:

In accordance with Section 78 of the Drainage Act, Administration is recommending that an engineer be appointed to review the current state of the West Marsh Drain and develop a design to re-establish and stabilize the banks and further protect the roadway. Once a report has been completed and a design has been drafted, the hope is that the Municipality will be able to utilize the construction method to repair those areas of the greatest need at this time, determined as a joint effort between Administration and the engineer, and reuse the same method to address future repairs along Mersea Road D as necessary.

Currently one area measuring approximately 35 m in length, is failing across from 1424 Mersea Road D, as depicted in the picture above. Administration has attempted to repair this area using standard bank repair methods that have proven ineffective, likely due to underlying geotechnical conditions. Administration is of the opinion that this bank failure requires immediate attention and repair and that all costs will be charged in accordance with the proposed report, to be prepared by N.J. Peralta Engineering. Furthermore, Peralta Engineering intends to assist Administration in the preparation of an application to The Ministry of Agriculture, Food and Rural Affairs (OMAFRA) for authorization of the bank repair and stabilization work as emergency work defined under Section 124 of the Drainage Act, allowing for the construction of the proposed repairs in advance of obtaining and adopting an engineer's final report.

Financial Impact:

It is possible that the majority of the cost of the report and the repairs will be assessed to the Municipality, however final determination of this matter will be left to the discretion of the engineer to determine.

The 2023 Drainage Capital budget has allocated $135,000 for engineering associated with the West Marsh Drain Bank Stabilization project. If any monies from this budget are remaining following the completion of the design, administration intends to utilize those funds to support construction of the proposed works. Additionally, there is $200,000.00 in the 2023 Engineering Services budget allocated for costs associated with bank stabilization and repairs on Mersea Road D.

Administration expects to begin repairs in 2023 and to present the engineer's report to Council in 2024, should OMAFRA permit these works to proceed as emergency works defined by the Drainage Act.

Once the report is complete, all costs will be billed out as per the newly designed assessment schedule, forming a part of the same report.

Respectfully submitted,

Shawn Stasko, C.E.T.
Drainage Superintendent

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