

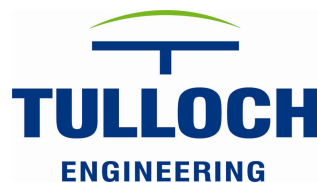
10 YEAR WATER & SANITARY SYSTEMS IMPROVEMENT PLAN

TOWNSHIP OF MACDONALD, MEREDITH & ABERDEEN ADDITIONAL

PROJECT NO. 13-2017



PREPARED BY:



1 INTRODUCTION

The following document was prepared by Tulloch Engineering in conjunction with the Township of Macdonald, Meredith and Aberdeen Additional and is supplemented with information provided by PUC Services Inc. (PUC). It is intended to act as a 10 Year Water and Sanitary Systems Improvement Plan and attempts to identify water and sanitary system components in need of repair or replacement. The anticipated improvements outlined herein are based on installation date, material type and knowledge of system provided by the Township and their agents. Municipal services including drinking water supply and wastewater collection are provided to approximately 242 homes and businesses in the Village of Echo Bay. Detailed inspections of in ground infrastructure were not completed and condition assessments were based on infrastructure age and materials alone. Projections posed in this document are meant to aid with long range financial planning and outline needs for special project funding.

2 DRINKING WATER SYSTEM

The Village's water supply is drawn from Lake George on Lake Huron and delivered to the Echo Bay Environmental Centre where it is treated and stored in a 545 cubic metre underground clear well. Additional storage of treated water is provided at a 682 cubic metre elevated water tower. Treated drinking water is distributed throughout the Village by a network of approximately 8.7 km of municipal watermains.

The Township currently has an agreement in place with the PUC for the management, operation and maintenance of the water supply system. As part of these services the PUC has provided a capital operating plan outlining equipment age, forecasted replacement cost and timing of expected replacement over the next 10 years. Attached in Appendix A is the Echo Bay WTP Capital Expenditures spreadsheet completed by the PUC. This spreadsheet summarizes and outlines projected expenditures (including inflation) related to the municipal water system. It is assumed that the existing conditions and timing of expected replacements of the water treatment facility components is assessed during the development of this this document as PUC staff have the greatest understanding of the systems and their capacities.

Condition assessments and timing of expected replacement of the distribution network is not included within the PUC's capital projections. Projected watermain replacements were estimated based on installation date and material type. A detailed inventory of the water distribution network was compiled by Tulloch Engineering as part of the preparation of this plan. The Village's system is comprised of varying diameter Polyvinylchloride (PVC) watermain which were installed in 1995 and 1996. A spreadsheet containing the detailed inventory and estimated replacement costs can be found on the CD-ROM disc attached in Appendix B.

Review of the Municipality's Public Sector Accounting Board (PSAB) databases showed that a useful life of 50 years was assumed for PVC watermain. Observation of similar systems has proven that the actual expected lifespan of these types of installations, when completed properly and regularly maintained is closer to 75 years. Assuming the conservative 50 year lifespan would suggest that the early installations would be nearing the end of their useful lives in the mid 2040's. Although major replacements are not anticipated at that time, it is recommended that detailed inspections and studies be conducted when the infrastructure nears 50 years in age to determine if another 20 to 25 years of service life is feasible. A total 2013 valuation of the watermain network was estimated at approximately \$5.2 million. It is not anticipated that any significant capital expenditures will be required for the replacement the Village's watermains within this plan's 10 year study period.

3 SANITARY SYSTEM

The Township's agreement with the PUC discussed earlier also covers the management, operation and maintenance of the sewage system. A detailed projection of capital expenditures similar to the spreadsheet created for the drinking water system was not completed by the PUC however they are in the process of compiling a list of significant anticipated capital expenditures for inclusion in this plan. At the time of writing information from the PUC was not available but will be amended to this plan when completed.

A detailed inventory of the sanitary sewer collection network was compiled by Tulloch Engineering as part of the preparation of this plan. The Village's system is comprised of varying diameter Polyvinylchloride (PVC) gravity sewers and forcemains which were installed in 1995 and 1996. A spreadsheet containing the detailed inventory and estimated replacement costs can be found on the CD-ROM disc attached in Appendix B.

Similar to the water distribution system a recommended lifespan of 50 years was used for the preparation of the PSAB amortization period. Again, similar systems have proven that the actual expected lifespan of these installations can be as much as 75 years. A conservative 50 year lifespan assumption would suggest that the installations would be nearing the end of their useful lives in the mid 2040's. Detailed inspections of representative sanitary sewer sections throughout the Village should be conducted when the infrastructure nears 50 years in age to determine if another 20 to 25 years of service life is feasible. A total 2013 valuation of all the sanitary sewers was estimated at approximately \$5.4 million. It is not anticipated that any significant capital expenditures will be required for the replacement the Village's sanitary sewers within the 10 year study period of this plan.

4 10 YEAR RECOMMENDED IMPROVEMENT PLAN

The improvements outlined by the Echo Bay WTP Capital Expenditures spreadsheet found in Appendix A should act as an outline for projected expenditures relating to the Township's water system and should be reviewed as updated by PUC Services. This document shall be amended to include anticipated expenditures with regards to the sanitary system once the information is received from the PUC. Major replacements of existing water distribution lines and sanitary collection sewers are not anticipated within the next 10 years but installations will begin reaching the end of their anticipated useful lives (PSAB) in the mid 2040's.

As nearly all of the sewer and water infrastructure was installed in the same time period, its expected replacement will result in the need for substantial capital expenditures over a short duration. This situation should be considered and budgeted for in future water and sanitary improvement plans. A possible scenario for the replacement of the aging sewer and water infrastructure could involve the phased assessment and replacement of watermains and sanitary sewers over an extended period, completing the work in small sections over a

15-20 year period. Other options such as replacing the majority of the aging infrastructure once it is deemed to have reached the end of its useful life over a shorter period such as 5 years could be considered. This option would likely require substantial amounts of outside funding should adequate reserves not be in place. In any case, planning for the replacement of these systems should be a key consideration in future financial and infrastructure plans.

Respectively Submitted,

A handwritten signature in black ink, appearing to read "Drew MacDonald". The signature is fluid and cursive, with the first name "Drew" being more prominent than the last name "MacDonald".

Drew MacDonald, E.I.T.
Tulloch Engineering Inc.

APPENDIX A

ECHO BAY WTP CAPITAL EXPENDITURES

APPENDIX B

**VILLAGE OF ECHO BAY'S SANITARY COLLECTION AND
WATER DISTRIBUTION NETWORK INVENTORIES**

(CD-ROM)