

## MEMORANDUM

---

TO: Matthew Munn, P.Eng., EXP

FROM: Trisha Merriman, Triton Environmental Consultants Ltd.

DATE: 26/03/2018

FILE #/NAME: 5549-05/P4289

RE: Walper Bridge (Tupper Creek) Water Quality

---

Triton Environmental Consultants Ltd. (Triton) was retained by the Ministry of Transportation and Infrastructure (MoTI) to assist the design team with environmental services related to the Walper Bridge Replacement Project (the Project).

As part of this Project, pile driving for the west bridge abutment will be required. This area contains groundwater and dewatering of this area is necessary in order to properly install the piles. Prior to any pile driving, a test well was installed in March in order to ascertain how much groundwater will be encountered during pile driving activities, and the associated flow rates. This monitoring well will provide the basis for the dewatering plan that will be provided by EXP. This may involve the drilling of two wells that will be used to pump out the water. A Section 10 WSA permit will be needed for this work; the application has been submitted.

Water quality testing was done in March in order to determine if the water meets the water quality guidelines for the protection of aquatic life, so that it can be directly reintroduced back into Tupper Creek. Two samples were taken: one originated from a Silty Clay and Gravel strata encountered from 7.0 to 8.2 m taken March 7, 2018 and another originated from a 9 m bedrock zone from 9.3 to 18.3m below ground taken on March 8, 2018.

The main parameters sampled included: oil and grease, turbidity (NTU), total suspended solids (TSS), and dissolved metals. Parameters were found to be within acceptable limits for both samples. Prior to releasing water into Tupper Creek, the background NTU or TSS needs to be sampled in order for the Project to meet the guidelines as noted in Table 1. Field testing (in situ of pH and NTU) is also recommended to ensure that the values are similar to those obtained during this sampling session, in case field conditions have changed between now and actual construction.

**Table 1. Summary of water quality guidelines for turbidity, suspended and benthic sediments**

<b>Maximum Induced Turbidity (NTU) or % of Background</b>	<b>Maximum Induced Suspended Sediments or % of Background</b>
Change from background of 8 NTU for a duration of 24 hours during clear flows	Change from background of 25 mg/L for a duration of 24 hours during clear flows
Change from background of 2 NTU for a duration of 30 days during clear flows	Change from background of 5 mg/L for a duration of 30 days during clear flows
Change from background of 5 NTU when background is 8 to 50 NTU	Change from background of 10 mg/L when background is 25 to 100 mg/L
Change from background of 10% NTU when background is >50 NTU	Change from background of 10% NTU when background is >100 mg/L

Depending on the amount of water that needs to be moved, an energy dissipater will likely be installed at the end of the hose, such that water entering the creek does not cause any erosion or sedimentation of the creek. The exact mechanism of this procedure will be outlined in the contractors' CEMP and within the dewatering plan by EXP.

## Closure

Overall, no significant, irreversible effects to sensitive environmental resources are anticipated as a result of releasing this groundwater into Tupper Creek, provided that the background turbidity values are determined prior to works and that the values are conducive to meeting the requirements as noted in Table 1.