



Legislative & Planning Services Department
INTER-OFFICE MEMORANDUM
Planning Services

TO: Doug Corbett, Senior Planner

FROM: Amanda Wong, Planner, Groundwater and Hydrology

DATE: February 19, 2014

RE: **Hydrology Review Comments for Merton Tertiary Plan Area**

Materials Reviewed:

- Geomorphic Assessment Fourteen Mile Creek and Associated Tributaries, Parish Geomorphic (Dec 2013, Rep 01-12-61)
- Appendix E of Area Servicing Study: Fourteen Mile Creek/McCraney Creek Flood Management Alternative Assessment and PCSWMM Model (AMEC, July 17, 2013)
- Hydrogeological Study, RJ Burnside (Dec, 2013, Report No: 300031495.0)
- Sections 1.0 through 4.2 of Phase 2 Environmental Impact Study, Beacon Environmental (Dec 2013, Project 212091)

I have done a preliminary review the above-noted materials and am providing the following comments for consideration.

General Comments

1. Hydrologic Modeling: Surface water
 - a. The hydrologic modeling for 14 Mile Creek includes only event data using design storms. It would be preferred to see actual observed gauged flow and precipitation data used for both event and continuous simulations. The approach of using gauged data for the local area is more applicable in hydrologic simulations to allow for better calibration and for verification with measured data, resulting in a more robust model of the local hydrology.
 - b. There should be some sensitivity analysis completed for the calibrated model to account for uncertainty in the modeling. Sensitivity analysis should determine whether parameters are contributing to uncertainty; to check uncertainties and assumptions of model inputs; check sensitivities of model results and to account for natural variability. This will help with the decision-making later for stormwater sizing and other key hydrologic processes.

- c. Region of Halton staff mirror the Peer Review comments (xv on p.7) regarding the lack of continuous modeling and justification for the chosen years (only 6 years of 44 available years) of data used for the hydrologic modeling for the erosion assessment. Annual average precipitation in the area is between 800-900mm/year (Environment Canada climate normals 1971-2000 for Oakville and Burlington), but the water balance reported only 455mm/year for precipitation, which may only account for April-October. Full year data should be used for a minimum 20-year continuous and the non-simulated years should be used for calibration purposes.

2. Stormwater Management

- a. Low Impact Development (LID) measures for the control of water quantity on a lot level scale are encouraged wherever possible. However, quality of water leaving LID systems and into local waterways should consider fish habitat requirements for Redside Dace (temperature of water).

Region of Halton Transportation Department comments:

- b. *At a conceptual level, determine the impact of stormwater drainage from the development area to existing and planned Regional roadways, including potential impact upon existing and planned stormwater drainage systems within a Regional roadway, including mitigation.*
- c. *At a conceptual level, determine the feasibility and benefit of incorporating existing and future drainage from Regional roadways into development area stormwater management infrastructure.*

3. Hydrogeological Study

- a. There is a discrepancy between the Triton GAWSER baseflows and the current study baseflows. Please confirm how these baseflows were derived and whether there have been other methods used to verify (fieldwork, other modeling of streamflow data) the estimates and include monthly baseflow values.
- b. Section 7.7 mentions limited LID measures on low hydraulic conductivity soils. However, recently there have been some studies done by TRCA and Sustainable Technologies Evaluation Program (STEP) on low permeability soils that may provide some additional guidance on how to design infiltration LID measures that should be considered.
- c. Reference List: please update to include all referenced material.