

## Water Balances for Planning Applications

### County of Wellington Source Protection Policy – Water Balance

The Grand River Source Protection Plan (approved version: February 9, 2022) includes Policies Addressing Prescribed Drinking Water Threats to municipal water supply sources (County of Wellington, Section 7.4). Under the heading; 20. An Activity that Reduces the Recharge of an Aquifer, Policy Number WC-MC-23.5, as it applies to Future Land Use Planning relative to a Municipal Wellhead Protection Area – Quantity (WHPA-Q), is as follows:

*To ensure that any Recharge Reducing Activity never becomes a significant drinking water threat, where this activity would be a significant drinking water threat as prescribed by the CWA, the Planning Approval Authority shall require that all site plan, subdivision and vacant land condominium applications to facilitate Major Development\* for new residential, commercial, industrial and institutional uses provide a water balance assessment for the proposed development which addresses each of the following requirements:*

- a. maintain pre-development recharge to the greatest extent feasible through best management practices such as LID, minimizing impervious surfaces, and lot level infiltration;*
- b. where pre-development recharge cannot be maintained on site, implement and maximize off-site recharge enhancement (within the same WHPA-Q) to compensate for any predicted loss of recharge from the development; and*
- c. within a WHPA-Q in a Chloride, Sodium, or Nitrate Issue Contributing Area (ICA), the water balance assessment must consider water quality when recommending best management practices and address how recharge will be maintained and water quality will be protected including consideration of how water quality will be protected from application and storage of winter maintenance materials including Salt.*

*The Planning Approval Authority shall use its discretion to implement the requirements of this policy to the extent feasible and practicable given the nature of the proposed development, specific circumstances of a site and off-site recharge opportunities.*

*\* Major Development – means development consisting of:*

- a. the creation of four or more lots;*
- b. the construction of a building or buildings with a ground floor area of 500 m<sup>2</sup> or more;*

*or*

- c. the establishment of a Major Recreational Use.*

### Water Balance Guidelines

A guideline for preparation of a water balance for a proposed land development site is recommended: [Hydrogeological Assessment Submissions Conservation Authority Guidelines for Development Applications, June 2013](#). Sub-section 3.2.4 Water Balance Analysis in this document provides specific guidance for estimating the monthly pre- and post-development

recharge and runoff. Within this section, the following are required, at a minimum, when conducting a water balance analysis:

1. Obtain precipitation values from a reliable source such as Environment Canada Meteorological Services for the area (utilize closest station with adequate data, including monthly normal precipitation).
2. Estimate of local values for major water balance components (evapotranspiration, surplus, runoff, and infiltration) for pre-development, post-development, and post-development with mitigation conditions (e.g. proponents are to describe what mitigation measures (if any) are attainable/feasible to offset fluctuations of both water balance and stormwater runoff from the development property(s).
3. Calculations of impervious areas that reflect actual conditions based on the proposed site plan, or a reasonable range of impervious areas used in those cases where only a conceptual development plan is provided.
4. Runoff coefficients consistent with generally accepted numbers (e.g. MECP guidelines\*).
5. The water balance is required to account for changes to grading/topography and land cover.
6. Grain size analysis for both the fill material and on-site soils to confirm fill material is similar to existing soil conditions (may be recommended).
7. Appropriate catchments should be used within the analysis (i.e. delineate catchments based on drainage, grades, vegetation, soils and explain how infiltration and runoff will change within these zones for both pre- and post-development).
8. Figure of catchments used within the pre- and post-development water balance.
9. All calculations should be provided in a table format to demonstrate inputs are equal to outputs.
10. As per policy WC-MC-23.5, sub section c., the report shall specifically account for how water quality will be protected, with respect to the appropriate [Issue Contributing Area](#). If a significant Drinking Water Threat(s) is required to be managed with a legally binding risk management plan (RMP) pursuant to the *Clean Water Act* and Grand River Source Protection Plan, the Risk Management Office will forward this documentation for review. If a Salt Management Plan is requested, the review of [Wellington County specific guidance](#) is recommended.

\* [Low Impact Development Stormwater Management Guidance Manual, Draft For Consultation, Ministry of the Environment, Conservation and Parks, January 2022.](#)

An example Water Budget Analysis is provided in Appendix A of the Hydrogeological Assessment Submissions Conservation Authority Guidelines for Development Applications.

Both the [Credit Valley Conservation Authority and Toronto and Region Conservation Authority's Low Impact Development Stormwater Management Planning and Design Guide, 2010](#), and the [MECP's Low Impact Development Stormwater Management Guidance Manual](#), can be used as tools to assist in developing more sustainable stormwater management practices. Please refer to these document draft, or as amended.