

# STORMWATER MANAGEMENT

## Three or More Units

All new development in the City of North Vancouver must provide on property (on-site) stormwater source controls to meet requirements from Metro Vancouver and the Ministry of Environment. The stormwater source controls are “green infrastructure” designed to reduce the effect of development on natural water systems, including our streams and ocean. Any developments will require a qualified professional to submit a stormwater management plan that includes:

- characterization and quantification of pervious and impervious areas on the building site.
- design of stormwater source controls for both volumetric reduction and water quality treatment for both on-site and neighbouring street areas.
- provision of a source control-based stormwater management plan (e.g. drawing) with sufficient detail to support construction. Works should be preferably be detailed in a single drawing set, rather than over several disciplines.

Stormwater source controls that are acceptable to the City include:

- deeper infiltration facilities (e.g. rock pits, dry wells, underground chambers);
- street side infiltration and treatment facilities (e.g. silva cells or equivalent);
- shallower infiltration facilities (e.g. raingardens, bioswales);
- absorbent landscaped areas;
- intensive and extensive green roofs; and
- rainwater harvesting (also subject to Building Code and Vancouver Coastal Health guidelines).

Metro Vancouver developed a series of guidelines available at the following web location:

Metro Vancouver's *Stormwater Source Control Design Guidelines, 2012*

<http://www.metrovancouver.org/services/wastewater/sources/Pages/StormwaterManagement.aspx>

### Plan Submission

All plans shall include:

- infiltration testing for any infiltrative approaches (i.e. not including green roofs or rainwater harvesting) provided in mm/hour in addition to any other units.
- tabulation of major pervious (or semi-pervious) and impervious areas on the project.
- tabulation of areas, depths and volumes for any source controls.
- tabulation of peak runoff with and without source controls for: 2-year 24 hour event, 2-year 30-minute event, and 10-year 24-hour event, and 10-year 30-minute return period events.
- quantification of local drainage reporting to catchbasins on any side of the development.

- submission of an appropriately scaled (not greater than 1:500) drawing(s) detailing the works to a sufficient level for construction.

All of the foregoing information may be included on drawings or in a separate document.

### **Stormwater Management Source Control Design Criteria**

1. Stormwater source controls shall consume (i.e. not release to the receiving water) 56 mm of rain over a 24 hour period from all impervious building surfaces (e.g. roofs, decks, etc.). In areas discharging directly to intertidal areas, where drainage system capacity is sufficient, lower volume targets may be permitted subject to more detailed review.
2. All surrounding impervious areas (e.g. concrete) shall be directed to pervious vegetated areas or a source control for treatment and attenuation.
3. All roadways reporting to catchbasins at the property edge shall be treated and attenuated or consumed with source controls potentially located in the City road right-of-way.
4. All source controls should provide the means to monitor performance (e.g. inspection chamber for water levels, flow monitoring manhole for large discharges, green roofs, etc).
5. All residential development at FSR 1.0 or greater and any other Land Use Designations (e.g. Commercial, Industrial, Institutional, etc.) shall include a performance monitoring component where source controls are monitored for a period of two years by the proponent. This would generally include:
  - continuous water level measurement in the primary source control;
  - continuous discharge measurement for large roof areas with either green roof or rainwater harvesting approaches; and
  - water quality monitoring two times annually at the downstream end of any water quality source controls.

Monitoring would be limited to continuous data sources and two water quality monitoring locations per site, with data being reported to the City at the end of each calendar year.

The City may require maintenance or retrofit of any stormwater source controls that perform substantially poorer than the design criteria.

### **Other Tools and Resources:**

#### References:

GVRD's *Stormwater Source Control Design Guidelines, 2012*

<http://www.metrovancouver.org/services/wastewater/sources/Pages/StormwaterManagement.aspx>

Province of British Columbia *Stormwater Planning: A Guidebook for British Columbia.*

<http://www.env.gov.bc.ca/epd/mun-waste/waste-liquid/stormwater/index.htm>