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WASHINGTON STATE UNIVERSITY
JEFFERSON COUNTY EXTENSION

Monitoring Protocols for Community-Based Rain Gardens

Revised December 2015

Field Instruments:

Aluminum weirs sized for the inflow and outflow at the site

- 40" wide
- 20" tall
- 12"x12" 90 degree V weir cutout

Two Solinst automated water level loggers

One Solinst automated barometric pressure logger

Protocols

1. Measure inflow volume (IFV) and relate to measured rainfall amounts and duration.

   - Establish a weir at the inflow
   - Install an automated water level logger that correlates depth of water flowing over the weir to time
   - Correlate the time/depth measurements to depth/flow correlation of the weir over the flow period
   - Determine volume of water flowing into the rain garden during a precipitation event

2. Measure overflow volume (OFV) and relate to measured rainfall amount and duration.

   - Establish a weir at the outflow
   - Install a water level logger that correlates depth of water flowing over the weir to time
   - Install a Solinst barometric pressure logger nearby
   - Utilizing Solinst level logger software, using barometric pressure corrections, correlate the time/depth measurements to depth/flow correlation of the weir over flow period

- Determine volume of water flowing out the rain garden during a precipitation event

3. Determine volume of water actually captured and treated by rain garden:

    Treated Volume = IFV – OFV.

4. Use accepted residential runoff stormwater contaminant values for copper, fecal coliform, and total suspended sediment found in "*Western Washington NPDES Phase I Stormwater Permit Final S8.D Data Characterization 2009-2013*", (WA Dept of Ecology Publication No. 15-03-001, February 2015), along with accepted treatment values for rain gardens found in "*Stormwater Best Management Practices (BMP) Performance Analysis*, (Tetra Tech for USEPA, March 2010) to estimate amount of contaminants removed from stormwater outflow into Port Townsend Bay.

Protocols developed by

Bob Simmons, Associate Professor, WSU Extension Water Quality Faculty in consultation with Ani Jayakaran, WSU Low Impact Development Faculty at the WA Stormwater Center.

NOTE: WSU Extension faculty (above) are hoping to create a WSU Extension Fact Sheet with illustrations and instructions for duplicating this protocol, after another season of field testing.