Stormwater Management Update

Jay Hoskins, P.E.
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Overview

• Activities at MSD
  – MEP Spreadsheets
  – Pervious Pavement
  – Landscape Seeding Guide
  – Green Infrastructure CSO Pilot Program
  – Next (2013-2018) Phase II Permit Planning

• Activities at the State Level
  – Missouri Guide to Green Infrastructure
  – Stormwater (Bacteria) TMDLs

• Activities at the National Level
  – Proposed Rulemaking
Activities at MSD: MEP Spreadsheets

- Updated 5/18/12
- Changes
  - Annual Runoff
  - Pre-development runoff factor
  - Design & Site Specific Modeling
  - Instructions

Calculation and Report Preparation Tools

Stormwater Management Facilities Report
All development and redevelopment projects with BMPs are required to provide a Stormwater Management Facilities Report (SMFR). An outline of items that the SMFR should address is available.

Calculation Spreadsheets
MSD developed the Maximum Extent Practicable (MEP) tool, sometimes referred to as the "MEP Spreadsheets." Instructions on how to use the MEP Spreadsheets are provided here. (Spreadsheets were updated on May 18, 2012.)
Annual Runoff

- Local Water Balance Assessment
- Continuous Simulation Modeling
- Runoff volume as % of Annual Precip.
- Henceforth...
- Runoff volume is evaluated on an annual basis
(Annual) Pre-Development Runoff Factor

- Silt or Clay Soil over Limestone Bedrock
  - $R_{v,\text{pre}}$ was 0.05
  - $R_{v,\text{pre}}$ is 0.42
- Silt or Clay Soil over Alluvium (rivers)
  - $R_{v,\text{pre}}$ remains 0.05

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Annual Avg. Runoff (cm)</th>
<th>Runoff as % of Annual Precipitation</th>
<th>Runoff as % of Quarterly Precipitation</th>
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</thead>
<tbody>
<tr>
<td>Total</td>
<td>42</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>January–March</td>
<td>12</td>
<td>12</td>
<td>60</td>
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<td>April–June</td>
<td>16</td>
<td>16</td>
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<td>July–September</td>
<td>5</td>
<td>5</td>
<td>19</td>
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<tr>
<td>October–December</td>
<td>9</td>
<td>9</td>
<td>40</td>
</tr>
</tbody>
</table>
Design & Site Specific Modeling

For new and redevelopment sites, to be considered an effective stand-alone water quality BMP, BMP designs shall be capable of the following.\(^1\)

1. Capture and treat the required water quality volume (WQ\(_v\)). (This is equivalent to capturing and treating 90% of annual rainfall.)
2. Remove 80% of the TSS.
3. Have an acceptable longevity rate in the field.

Additionally, on new development sites, BMPs performance includes “mimicking the pre-construction runoff condition”, to the maximum extent practicable. One objective of this criterion is to utilize BMPs that help reduce runoff volume to its pre-development condition.\(^2\)

And...

Designers will note that the worksheets that evaluated enhancing bioretention for volume reduction have been removed. BMPs may still be enhanced to achieve additional volume reduction; however, their assessment should be based on site specific continuous simulation modeling.
Design & Site Specific Modeling

- **Helpful Links**
  - Models
    - RECARGA
    - SWMM
  - Data Files
    - Natives
    - More coming...

**RECARGA**
Wisconsin DNR and the University of Wisconsin-Madison developed RECARGA, a rain garden and bioretention modeling tool that MSD frequently uses. A data file with representative area hourly rainfall and Missouri native plant evapotranspiration rates is available for use in developing annual runoff reduction estimates using continuous simulation modeling.

**SWMM v.5**
EPA’s SWMM (version 5) can be used to model a variety of BMPs, including bioretention, pervious pavement, and rainwater harvesting.
May 18, 2012

RE: Notice of Updated Volume Reduction Calculator Spreadsheet

To Whom It May Concern:

The purpose of this letter is to convey Metropolitan St. Louis Sewer District to use of the "MVP Spreadsheets", which are used to assess volume via construction best management practice (BMP) performance. The changes to these spreadsheets include instructions on how to use the revised spreadsheets.

Change Summary

Immediately following this letter, MSD will utilize runoff volume reduction based on precipitation.

Also, for local vegetated areas located on soil or clay soil over limestone approximately 20% of annual precipitation results in discharge. The basis on this calculation, Localized Water Balance Method to Evaluate BMP Reduction in St. Louis, Missouri. Where applicable, MSD will use this approach and/or other techniques.

The purpose of the MVP spreadsheets is to document expected BMP performance and conditions, and to determine if the BMP strategies utilized meet requirements. The revised MVP spreadsheets provide the following information to BMP performance:

- BMP performance requirements and design goals.
- Additional information on the applicability of the reduction factors in the spreadsheets is available on MSD's website.

Revised MVP Spreadsheet Instructions

The revised MVP spreadsheets are available on the MSD website.

- http://www.msd.org/engineering/bestpractices/bmp/index.cfm

This spreadsheet, which can be individually viewed by clicking on the tabs at the bottom, is available in a workbook. Spreadsheet input should be provided in the cells that are shaded gray to maximize calculation accuracy. The workbook contains comprehensive guidance on how to use the MVP spreadsheet.

1. Pre-Construction Runoff

This workbook determines whether the site is considered new or remodeled and uses the pre-development annual runoff volume (V_pdv) for the site's drainage area.

2. The BMP Tool box website is located at http://www.msd.org/engineering/programs/bmpbox.
3. The Chateaugay Stormwater Network website is located at http://chateaugaystormwater.net/engage/publication/designspecifications/
Activities at MSD: Pervious Pavement

- Updated 3/16/12
- Changes
  - Standalone BMP
  - CSM Based Performance Criteria
  - More from Jason...
Activities at MSD: Landscape Seeding Guide

- Updated 5/18/12
- Changes
  - Seeding Guide for Detention Basins and Buffer Areas
  - Bioretention Typical Section
  - Bioretention Soil Media
  - More from John...
Activities at MSD: GI (CSO Reduction) Pilot Program

- $3M Green Infrastructure Pilot
  - $1.5M for demolition of impervious area
  - $1.5M for test sites
- Bioretention, Pervious Pavement, Amended Soil
- More from Sue...
Activities at MSD: Phase II Permit Planning

- Phase II Permit expires July 2013
- Exploring goals for 2013-2018 term
  - Permittees
  - Stakeholders
- Anticipate Draft SWMP Early 2013
Activities at Missouri DNR: MO Guide to GI

- To find it, “Google” the title...
- A Guide, not a regulation...
Activities at Missouri DNR: Stormwater TMDLs (Bacteria)

- Draft TMDLs for Public Notice
  - Watkins
  - Gravois
  - Creve Coeur (?)
- Waste Load Allocation: all to MS4 stormwater
Activities at US EPA: Proposed Stormwater Rulemaking

Rulemaking Considerations

The proposed national rulemaking is considering the following key rulemaking actions:

- Develop performance standards from newly developed and redeveloped sites to better address stormwater management as projects are built;
- Explore options for expanding the protections of the municipal separate storm sewer systems (MS4) program;
- Evaluate options for establishing and implementing a municipal program to reduce discharges from existing development;
- Evaluate establishing a single set of minimum measures requirements for regulated MS4s. However, industrial requirements may only apply to regulated MS4s serving populations of 100,000 or more;
- Explore options for establishing specific requirements for transportation facilities; and
- Evaluating additional provisions specific to the Chesapeake Bay watershed.

Additional Rulemaking Activities

- Information Collection Request (ICR) for Proposed Rulemaking
- December 28, 2009 FRN: Stakeholder Input on Proposed Rulemaking and National Listening Sessions
- Stakeholder Input on Stormwater Rulemaking Related to the Chesapeake Bay

Rulemaking Schedule

A revised proposal date for the stormwater rulemaking and a final action deadline will be posted shortly.

December 2012?
Questions