

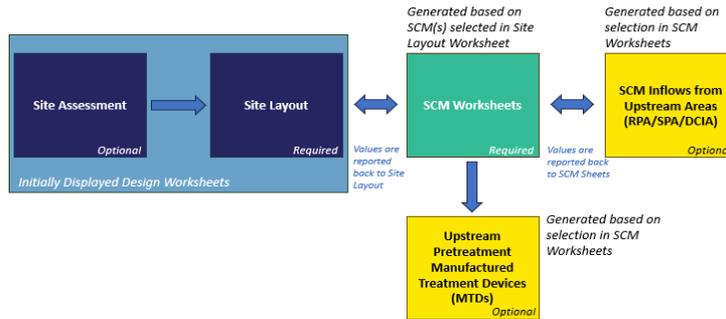


MILE HIGH FLOOD DISTRICT
STORMWATER CONTROL MEASURE (SCM) DESIGN WORKBOOK

SCM Design, Version 4.01 (December 2024)
 Mile High Flood District
 Denver, Colorado
 www.mhfd.org

- Purpose:** This workbook is used as a preliminary SCM site design aid and a tool to demonstrate the proper use of MHFD criteria and the achievement of specific treatment thresholds as laid out in the design standards of the MS4 permit. This workbook is not intended to determine compliance with MS4 design standards and exclusions, that is the responsibility of the Engineer and Reviewing Permittee.
- Function:** This workbook provides the designer with tools to incorporate MHFD Volume 3 Chapter 4 SCM criteria and sizing into the site assessment, site layout, and preliminary design; and to calculate the downstream benefits of runoff reduction on WQCV requirements.
- Compatibility:** This SCM Design workbook is intended to be compatible with MHFD-Detention, which allows the user to develop SCM basin geometries (depth, area, and volume), calculate orifice opening dimensions and other outlet structure components for the WQCV event and larger storms, and route storm hydrographs through SCMs. User input cells are provided in this workbook for areas, volumes, and outlet dimensions when incorporation of MHFD-Detention results is appropriate.

Content: The workbook consists of the following worksheets (see flow chart below which describes worksheet interaction):



- Site Assessment** The Site Assessment worksheet (optional) evaluates an entire site with respect to physical characteristics, opportunities for runoff reduction, and suitability for infiltration-based SCMs.
- Site Layout** The Site Layout worksheet (required) is the primary hub for evaluating a site and serves as the gateway to all other worksheets listed below. The user can define multiple outfalls from the site and then evaluate different MS4 Standards and SCM Types for each outfall. When a user selects an SCM type, a new worksheet of that type will be created with the corresponding Outfall ID (*ID#*). Water quality results from the SCM worksheet will then be carried back to the Site Layout worksheet for that Outfall ID column. At the bottom of the Site Layout worksheet, all outfalls will be summed to provide water quality results for the entire site.
- SCM Worksheets** New SCM worksheets (*SCM_ID#*), generated from the Site Layout worksheet, allow the user to develop a preliminary design in accordance with MHFD criteria provided in Chapter 4 of the USDCM. Two additional worksheets can be generated from within most SCM worksheets to design and account for runoff reduction through RPA treatment upstream of the SCM and/or a pretreatment Sedimentation MTD.
- Example Site** The Example Site worksheet includes a demonstration of how the Site Layout worksheet can be applied to a project site. The example includes 10 different outfalls with various paired SCM worksheets including RPA, Rooftop Systems, BR, SF, and EDB. The example further demonstrates how the RPA worksheet can be paired with an EDB worksheet to define upstream runoff reduction for inflows to the EDB.

Worksheet Naming Convention		SCM Worksheet Title	Fact Sheet
Upstream Treatment SCMs			
<i>SCM ID#</i> Inflows	SCM Inflows from Upstream Receiving Pervious Areas (RPA) Including Grass Buffers and Grass Swales		T-1
<i>SCM ID#</i> HDS Inflow#	Sedimentation Manufactured Treatment Device (Sedimentation MTD) - Hydrodynamic Separator (HDS)		T-8
SCMs			
<i>RPA ID#</i>	Receiving Pervious Areas (RPA) Including Grass Buffers and Grass Swales		T-1
<i>GreenRoof ID#</i>	Green Roof Systems (GreenRoof)		T-2
<i>BlueRoof ID#</i>	Blue Roof Systems (BlueRoof)		T-2
<i>BR ID#</i>	Bioretention Systems (BR)		T-3
<i>SF ID#</i>	Sand Filters (SF)		T-4
<i>PPS ID#</i>	Permeable Pavement Systems (PPS)		T-5
<i>EDB ID#</i>	Extended Detention Basins (EDB)		T-6
<i>RP ID#</i>	Retention Ponds (RP)		T-7
<i>CWP ID#</i>	Constructed Wetland Ponds (CWP)		T-7
<i>HRMF ID#</i>	Filtration Manufactured Treatment Device (Filtration MTD) - High Rate Media Filtration (HRMF)		T-8
<i>HRBF ID#</i>	Filtration Manufactured Treatment Device (Filtration MTD) - High Rate Biofiltration (HRBF)		T-8

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