Charlotte-Mecklenburg Storm Water Services

Pilot SCM Program

March 2017

MISSION:

The mission of the Pilot SCM Program is to provide Charlotte-Mecklenburg citizens with the most technically-advanced, proven, and cost-effective stormwater treatment options designed to protect water quality and meet the requirements of the Post-Construction Stormwater Ordinance, while also offering developers a range of innovative practices that, if shown successful, may be added to the Charlotte-Mecklenburg BMP Design Manual.

PURPOSE:

Charlotte-Mecklenburg Storm Water Services; hereafter referred to as "CMSWS", implements a proactive Pilot Stormwater Control Measure Program. The purpose of the program is to evaluate various types of structural stormwater control measures (SCMs) within different land uses to determine their best use and effectiveness within Charlotte-Mecklenburg's overall stormwater management program. Specifically, the program strives to determine the cost benefit and acceptability of various SCMs for potential inclusion in the Charlotte-Mecklenburg BMP Design Manual by evaluating:

- capital cost of SCMs
- operation and maintenance requirements and costs for SCMs
- pollutant removal efficiency and effluent quality of SCMs
- stormwater quantity control capabilities of various SCMs

Where possible, CMSWS utilizes information gained under the Pilot Program to support water quality management efforts and the development and refinement of local SCM standards for land development projects.

CMSWS seeks opportunities to evaluate pilot SCMs within public or private projects in cases where such opportunities support the goals of the program. While most evaluations are conducted within public projects, opportunities may also be available within private development projects on a case-by-case basis and as allowed by the Charlotte-Mecklenburg BMP Design Manual. Pilot SCM evaluations conducted within private projects will be developed through contractual agreement with project property owners and/or developers who, in most cases, are required to meet stormwater treatment requirements in the City of Charlotte Post-Construction Stormwater Ordinance (PCSO).

PILOT SCM PROGRAM PROJECTS:

Over the past 17 years, the Pilot Program has conducted over 30 SCM evaluations of both public and private projects including; wetlands, wet ponds, bioretention, sand filters, and proprietary SCMs. The program is currently focused on the following SCM categories:

- proprietary filter SCMs
- infiltration SCMs
- wet detention ponds
- floating wetland cells
- regenerative stream conveyance (RSC)

The program has previously studied the following SCM categories and is not considering any further studies of these at this time:

- proprietary hydrodynamic SCMs
- bioretention
- stormwater wetlands
- dry detention basins

See **Appendix A** for a list of study SCMs and availability.

DETERMINATION OF ELIGIBILITY FOR THE PILOT SCM PROGRAM:

CMSWS is responsible for determining whether or not a proposed project is eligible for inclusion within the Pilot SCM Program. CMSWS is under no obligation to approve any project as a Pilot SCM project. Upon request, CMSWS will review individually proposed Pilot SCM projects for potential inclusion in the Pilot Program. The following criteria will be used to determine eligibility:

1. Whether the proposed project fits the needs of the program and provides clear, meaningful benefit to achieve program goals.

2. Whether the project's stormwater system, detention structures and pilot SCM will be designed, constructed and/or installed in such a manner to allow proper gravity free flow of stormwater throughout the system, with no back water conditions that would adversely affect monitoring at the detention system inflow and SCM outflow monitoring locations.

3. Whether the system will be designed and constructed with the required monitoring structures and appurtenances per CMSWS specifications. For proposed projects utilizing proprietary SCMs, the water quality runoff volume (WQv) must be captured and detained upstream of the proprietary SCM prior to treatment.

4. Whether the proposed project logically fits the type and location of the pilot SCM proposed within the project land use and the stormwater constituents/pollutants to be

treated. (i.e., a bioretention area may not be the best SCM for treating a land use with a large watershed area or a high sediment load).

5. Whether the proposed project is in an early enough stage of design to make design modifications that will be required by CWSWS to allow for project stormwater monitoring, and meet all other requirements of the Pilot SCM Program. Note: A minimum of three (3) months lead time prior to the projected construction start date is required for project review and approval by CMSWS within the Pilot SCM Program.

6. Whether the proposed project falls within one of the eligible and available SCM categories as shown in **Appendix A**.

REQUIREMENTS FOR USE OF PROPRIETARY SCM PRODUCTS AND/OR INNOVATIVE SCM DESIGNS WITHIN PROPOSED PRIVATE DEVELOPMENT PROJECTS TO SUPPORT THE PILOT SCM PROGRAM

Currently, Charlotte-Mecklenburg land development regulations and design manuals do not approve the general use of proprietary structural SCMs and/or innovative SCM designs to meet stormwater quality and quantity treatment requirements. However, CMSWS in cooperation with the City of Charlotte – PCSO Administrator and the City Land Development Division may elect on a limited case-by-case basis to allow the use of proprietary SCMs and/or innovative SCM designs within proposed projects to support the Pilot SCM Program. Proprietary SCMs and/or innovative SCM designs may be allowed in lieu of approved conventional SCMs or designs to meet stormwater quality and quantity treatment requirements if the proposed project and SCM meet the requirements of the Pilot SCM Program and the Charlotte-Mecklenburg BMP Design Manual, as applicable. In order for a proposed project to be considered for inclusion in the Pilot SCM Program, the following additional requirements and conditions must be met:

1. The property owner and/or developer proposing the Pilot SCM project must first apply to the City of Charlotte – PCSO Administrator to have the project reviewed and considered for inclusion in the Pilot SCM Program. Applications must be submitted at least three (3) months in advance of the projected construction start date for the project. The application form is available from CMSWS, upon request.

2. The proposed project must be located within either the City of Charlotte corporate limits or the City of Charlotte Extra Territorial Jurisdiction (ETJ) area.

3. Utilizing the determination criteria stated in the preceding section, the proposed project must be reviewed and determined by CMSWS and the City PCSO Administrator to be eligible, necessary, beneficial, and supportive to the Pilot SCM Program.

4. Upon approval of the Pilot SCM project application, the property owner and/or developer of the project must enter into a contractual agreement with the City, in a form and term specified by the City, that specifies the requirements of the program and specific Pilot SCM project. A sample copy of the agreement is available from CMSWS upon request.

5. As part of the agreement noted above, the property owner and/or developer must pay to the City of Charlotte the amount of **$60,000** for the administrative and monitoring project costs associated with the specific Pilot SCM project. The funds will be used to cover the City's administrative, labor, equipment, and laboratory analysis costs to evaluate the Pilot SCM project.

6. Upon execution of the contractual agreement, the property owner and/or developer must plan, design, construct, operate, and maintain the Pilot SCM project per the requirements of the Pilot SCM Program, the contractual agreement, and the City's Post-Construction Stormwater Ordinance. See **Appendix B** for specific Pilot SCM Program design requirements.

For questions or additional information, contact:

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APPENDIX A

CHARLOTTE-MECKLENBURG STORM WATER SERVICES
PILOT SCM PROGRAM

Monitoring Study Program SCM List

(Blank rows indicate available program test study slots)

Wet Ponds
Shade Valley
Pierson Pond
Wet Detention Ponds
Shade Valley
LSC Hidden Valley
CMS South Park
Doral Cavalier
Floating Wetlands Studies
CMS South Park
Doral Cavalier
Wetlands
Bruns Ave School
Edwards Branch
LSC Westfield
Wellingford
Evergreen Cemetery
Doral Cavalier
Dry Detention
University Exec Park
Morehead Place
Dry Detention w/Sand Filter
FS 39
CMS South Park
Johnston Oehler
Bioretention
Hal Marshall
Bruns Ave School
Shops on Freedom

Park Rd. Park
CMS South Park Site 1
Sand Filters
Level Spreaders
LSC Westfield
Infiltration Trench
Wilmore Walk
CMS South Park
Harris Teeter 401
Harris Teeter 412
Enhanced Grass Swale
CMS South Park
Pervious Pavements
Wilmore Walk
Green Roofs
Stormwater Re-use
Queens University
Regenerative Stream (RSC)
Linda Lake
Hydrodynamic Separators
Park Rd Shop StormCeptor
CATS TMOC StormCeptor
CATS BMOF BaySaver
CATS BMOF Crystal Stream
CATS BMOF Downstream Defender
CATS BMOF CDS Technologies
CDOT Storm Trooper
CDOT StormCeptor
Lion's Gate Vortechnics
Lion's Gate Vort Sentry
Lowe's South Blvd. Crystal Stream
Lowe's South Blvd. BaySaver
Ashley Park FloGard

In-Line Filters
ADS Bay Filter
Aqua Shield - Aqua Filter
Bio Clean Kraken
Contech Jelly Fish
Contech Storm Filter
QuikTrip 1065
Providence Prep School Phase 1
Crystal Stream Technologies – Crystal Combo Hybrid Polisher
Kristar Perk Filter
Colonial Ayrsley
Providence Prep School Phase 2
Suntree Technologies SkimBoss Upflow Filter
Catch Basin Bio Filter
Contech Filterra
Modular Wetlands Systems Bio Filter
Hybrid Filter/Infiltration
ADS Storm Tech
Cherry Gardens

APPENDIX B

CHARLOTTE-MECKLENBURG STORM WATER SERVICES
PILOT SCM PROGRAM

DESIGN REQUIREMENTS

The Pilot SCM test study project must meet all specifications and design requirements of the City of Charlotte Post-Construction Stormwater Ordinance and the Charlotte-Mecklenburg BMP Design Manual, as applicable. In addition, the following design specifications are required:

1. The proprietary and/or innovative SCM must be designed and sized to achieve a minimum of 85% average annual removal for total suspended solids (TSS).

2. The proprietary and/or innovative SCM must be designed and sized to treat the entire runoff volume generated from the first one inch of rainfall from the watershed area draining to the SCM [the water quality volume (WQv)]. The SCM must be designed and sized to completely treat the entire WQv within 52 hours. This is typically accomplished by capturing and holding the WQv in a detention structure upstream of the SCM.

3. The proprietary and/or innovative SCM must be designed to allow for proper access and monitoring of stormwater runoff as it flows into, through and out of the detention system and SCM, per CMSWS specifications.

4. The proprietary and/or innovative SCM must be designed to allow for proper gravity free-flow of stormwater runoff as it flows into, through and out of the detention system and SCM, with no back water conditions that would adversely affect monitoring at the detention system inflow and SCM outflow monitoring locations.

5. The proprietary and/or innovative SCM must be designed to include a separate 110/120 volt, 20 ampere AC power supply via ground fault (GFCI) protected receptacles at each monitoring location within the detention system and SCM project design.

6. For proprietary and/or innovative SCM projects utilizing infiltration for treatment of the WQv, the project design must follow the requirements of the BMP Design Manual for geotechnical analysis of the subsurface soils within the project site where the infiltration practice is proposed, prior to approval of the SCM as a Pilot project.

7. In addition to the requirements specified in paragraph #6 above, all proprietary and/or innovative SCM projects utilizing infiltration shall be designed to include a minimum of two (2) separate monitoring access wells and ports consisting of 2-inch Schedule 40 solid PVC pipe with cap and monitoring well manhole cover/lid structures per CMSWS specifications. The monitoring wells shall be located within the foot print of the

proposed SCM infiltration zone with the bottom of the wells placed at the elevation of the bottom of the excavated infiltration trench.

8. In addition to the requirements specified in paragraph #6 above, all proprietary and/or innovative SCM projects utilizing infiltration shall have the sub-surface soil in the bottom of the infiltration trench scarified after excavation to a depth of three (3) inches per CMSWS specifications to promote infiltration of stormwater into the sub-surface soils.