

Stormwater Control Measures Verification Programs Meeting Synthesis

June 6, 2017

On June 6, 2017, the Water Environment Federation (WEF) convened a discussion group in Alexandria, Virginia comprised of stormwater sector organizations and individuals who are active in or touch upon stormwater technology testing and evaluation programs. A list of meeting participants is included as an attachment to this document. The focus for discussion was stormwater control measures (SCM) verification programs, and the objectives for the discussion are listed below. This document serves as a synthesis of the discussions that took place at the meeting.

- *Provide an information exchange regarding ongoing efforts of each organization;*
- *Provide updates regarding participant stormwater technology evaluation and verification programs;*
- *Provide brief updates on the current state of U.S. best management practice (BMP) testing, evaluation, verification, and certification programs. Discuss the ongoing needs for such programs throughout the U.S.; and*
- *Identify potential partnership opportunities between participants in order to maximize limited resources, prevent potential duplication of efforts, and meet the regulatory needs of both the public and private sectors.*

STEPP Update & Background on SCM Technology Program Challenges

Chris French (WEF) gave an update on WEF Stormwater Institute activities, the Stormwater Testing and Evaluation for Products and Practices (STEPP) Initiative, and provided a characterization of the current challenges in stormwater management.

- The WEF Stormwater Institute was created in the last two years. It is a center of excellence and innovation within WEF, and it seeks to address the most difficult and needed efforts through collaboration with a variety of stakeholders (e.g. MS4 communities, the transportation sector, researchers, consultants).
- The “Rainfall to Results” report was released by the Stormwater Institute in 2015 – it identifies six critical areas and objectives for stormwater investments:
 - Work at the Watershed Scale
 - Transform Stormwater Governance
 - Support Innovation and Best Practices
 - Manage Assets and Resources
 - Close the Funding Gap
 - Engage the Community
- The current state-by-state piecemeal approach to stormwater management and bringing SCMs to the marketplace creates challenges for technology proponents and states/municipalities seeking to streamline their programs/regulations and implement cost effective stormwater solutions. A lack of collaboration between states also leads to duplicative efforts.
- The STEPP initiative seeks to establish a common framework for testing and evaluating both public domain and proprietary SCMs. In 2014, WEF released a white paper that investigated the need for a national testing and evaluation program for stormwater products and practices. This investigatory phase found that agreement exists on the feasibility and need for a national program.

- With support from EPA to move beyond the investigatory phase, a STEPP Advisory Committee was assembled in 2015. A report from this phase was released in 2016 that focused on both the general programmatic and individual program elements.

State Perspectives

Julia Anastasio (ACWA) provided a summary of anticipated and observed state perspectives around the concept of a national stormwater SCM testing/verification program. ACWA is an association that represents the directors of state water programs across the U.S. Below is a summary of that discussion with the group:

- State directors were surveyed recently about the potential impacts of the new administration's proposed budget. Expected impacts to state programs include: reduced monitoring; reduced analysis of monitoring; and slow-downs to permitting processes.
- In the reduced budget context, states are expected to focus on high priority items such as those that fall under consent decrees (e.g., NPDES permitting).
- A regional approach to a stormwater SCM testing/verification program may be more viable from a state perspective than a national approach, reflecting differences in state needs on a regional basis.
- Creating templates for states to use in building their own programs may also be a good approach; similar resources were developed recently for water quality trading programs and were met with positive feedback from states.
- Certain states (e.g., WA, NJ) represent strong marketplaces for manufacturers and have specific regulatory contexts that support this kind of stormwater program. These could be candidates for case examples or "anchor tenants" for a program of this type.

Updates on Existing Stormwater SCM Programs and New/ Emerging Programs

Meeting participants provided updates on the stormwater programs being conducted or under development by their organizations. Participants also shared other relevant resources/initiatives that they were aware of.

American Society of Civil Engineers - Jim Lenhart

- ASCE has a set of certification guidelines for manufactured stormwater SCMs under development, which will be released in November 2017. These guidelines reference ASTM standards.
- The guidelines were developed by a group of manufacturers, members of the academic community, and consultants. The document includes sections on: laboratory testing and analysis; scaling relations; field testing; data reporting; data analysis and performance evaluation; inspection and maintenance; and other verification and certification programs throughout the U.S.
- Jim noted the Great Lakes Commission, through their Stormwater Technology Transfer Collaborative, conducted a [Stormwater Technology Transfer Survey of stakeholders throughout the Great Lakes region in the U.S. and Canada](#). The survey confirmed many of the SCM barriers other efforts have previously identified.
- The ASCE Urban Water Resources Research Council can tap into a range of academic and technical resources that would be supportive in developing a national program.

American Section for the International Association for Testing Materials (ASTM) – Joe Hugo

- ASTM International (ASTM) currently has three approved standards for stormwater management. These standards are test methods and 1-page summaries of each are available at www.ASTM.org.
- The ASTM standards are “living standards,” which are refined regularly through a consensus-based process. Updating standards regularly helps to spur innovation in the industry.
- ASTM is developing test standards that has the potential to cover all 50 states that could be leveraged for the STEPP program.
- ASTM is reviewing an additional standard for approval, which would define testing parameters for the verification of removal efficiencies for stormwater treatment devices for total suspended solids (TSS).

Environmental Protection Agency (EPA) – Todd Doley, Jason Berner, Maggie Theroux

- Office of Water (OW)
 - The Water Infrastructure Resiliency Finance Center (WIRFC) is now fully functional. WIRFC can help consumers utilize State Revolving Funds for stormwater and green infrastructure.
 - OW is working to publish research on stormwater BMPs for new homes in a journal article in 2018.
- Office of Research and Development (ORD)
 - A new version of the National Stormwater Calculator was released this year; the new version includes a module on construction and annual maintenance costs for stormwater infrastructure.
 - ORD is collaborating with WE&RF on a lifecycle cost project – ‘CLASIC,’ the Community-enabled Lifecycle Analysis of Stormwater Infrastructure Costs.
 - The Advanced Septic System Nitrogen Sensor Challenge is underway. The challenge is a partnership between EPA, The Nature Conservancy, and the U.S. Geological Survey. The challenge received eighteen sensor design submissions during Phase I. A testing phase for the finalists will begin in March 2018.

Water Environment & Reuse Foundation (WE&RF) – Jeff Moeller, Harry Zhang

- WE&RF Stormwater Program
 - The Sustainable Integrated Water Management (SIWM) research program is underway, and covers integrated water; stormwater and stormwater reuse; decentralized systems; watershed management; and climate change/extreme events and their impacts on water quantity and quality.
 - WE&RF’s current stormwater and green infrastructure research focuses on performance and maintenance information; life cycle cost analysis, green infrastructure co-benefits analysis; and stream restoration crediting guidance.
 - The International Stormwater BMP database has existed for 20+ years (since 1996) and is the largest database of its kind for information on stormwater BMP performance and data analysis. A recent update is that National Stormwater Quality Database (NSQD) has been moved into the [BMP Database](#), and will include urban stormwater runoff characterizations.
- Leaders Innovation Forum for Technology (LIFT)
 - LIFT’s mission is to accelerate water innovation and new technology into practice.
 - Three major areas of focus for LIFT are highly relevant in this context:
 - *Technology Scans* include a technical review and assessment for emerging, pre-commercial, and newly commercialized technologies. Accepted technologies are added to the LIFT Link platform.

- *LIFT Link* is an online platform to discover and engage with new technologies for wastewater, stormwater, and water reuse.
- *The FAST Water Network* is a national “test bed” network for water innovators, researchers, and test facilities.

Interstate Technology Regulatory Council (ITRC) – Allison Dunaway, Rebecca Higgins, Patricia Reyes

- ITRC has a 91-member Stormwater BMP Performance Verification Team, which is creating a free technical guidance document. A draft version of this document will have a 45-day review and comment period starting June 1, 2018. A final version will be completed by September 30, 2018. The document objective is to provide a technical reference for evaluation of post-construction stormwater BMP performance, including national testing and certification program connection, data evaluation, a tool for narrowing BMP choices, as well as installation and operations guidance. This effort, funded by industry and the EPA Office of Research and Development, will not delve into the topic of certification. Following the completion of this document, training videos centralized around the state regulatory community needs will be compiled.
- The primary audience for ITRC’s stormwater BMP work is regulators who are working with BMPs that they are unfamiliar with.
- ITRC is also developing an interactive online tool, which allows users to develop a list of potential BMPs for their projects, based on a variety of screening criteria; the tool is designed as a BMP repository, not a BMP selection tool.

Amec Foster Wheeler – Jeff Heath

- The Department of Defense (DoD) undertakes a range of unique activities that lead to specific environmental challenges. Lack of national consensus on stormwater BMP evaluation makes it challenging for DoD to implement a set of streamlined stormwater solutions for its national-scale operations.
- The Strategic Environmental Research and Development Program (SERDEP) is a DoD requirements-driven program that identifies high environmental science and technology priorities for DoD.
- The Environmental Security Technology Certification Program (ESTCP) demonstrates technology and promotes innovation through field-based, full-scale demonstrations.
- A recent pre-proposal for stormwater activities was not successfully selected for funding. Activities under this proposal would have included an ESTCP demonstration plan, evaluation of test protocols, and the development of DoD-specific guidance and training materials, among other activities.

American Association of State Highway and Transportation Officials, National Transportation Product Evaluation Program (AASHTO, NTPEP) – Ryan Fragapane

- NTPEP’s mission is to simplify the product evaluation process for states and manufacturers.
- NTPEP is not an evaluator of new products, a certification program, an acceptance program, or a replacement for the Quality Assurance activities of manufacturers or state DOTs.
- All states are represented in NTPEP, and every state is allowed one voting member for its consensus-based standards establishment process.
- DataMine is a secure website where all NTPEP data are housed for registered state users to access.

Questions to Address

The questions listed below were identified throughout the discussion by group members as key questions to answer as part of the pre-development for a national stormwater testing and verification program.

- What is the “total market universe” for potential major and minor fee-paying members, as defined in the National STEPP Program Business Plan Framework?
- Who are the key “anchor tenant” members that would need to be pursued for a successful first-phase roll-out of a program of this type? (e.g., Leading states in stormwater management, key manufacturers)
- What protocols are most needed/highest priority? (Suggest developing a matrix of existing state requirements to help answer this question.)
- How has the projected program operating context/stormwater management landscape evolved since the development of the 2016 Final STEPP Report and Business Plan Framework (e.g., shifts in state priorities resulting from new Federal budget and program priorities)? Do assumptions in these documents need to be adjusted to account for these shifts?
- Could EPA’s WaterSense program serve as a model for a national verification program? Should be noted that WaterSense may not have sustainable federal funding, so the ability to utilize this program as a model should include that context.
- Are there other concurrent industry needs that could be satisfied by a national program of this type? (Program co-benefits?)
- Will the initial program focus on verification lead to selecting/developing an institutional approach that would limit or preclude the addition of a certification function in the future?
- What could be elements/metrics of success for a program of this type?

Group Coordination Discussion

Meeting participants held an open, facilitated discussion around the questions listed below.

- Is there a need for a national testing protocol program?
- What opportunities are there for coordination/collaboration among stormwater technology efforts?
- What options are there for advancing unmet sector needs?
- What actions are needed to move ahead on unmet needs?
- What organizations/programs hold potential for advancing these actions?
- Are there current initiatives that can be leveraged to advance these actions?
- What need to be the high priority, immediate next steps?

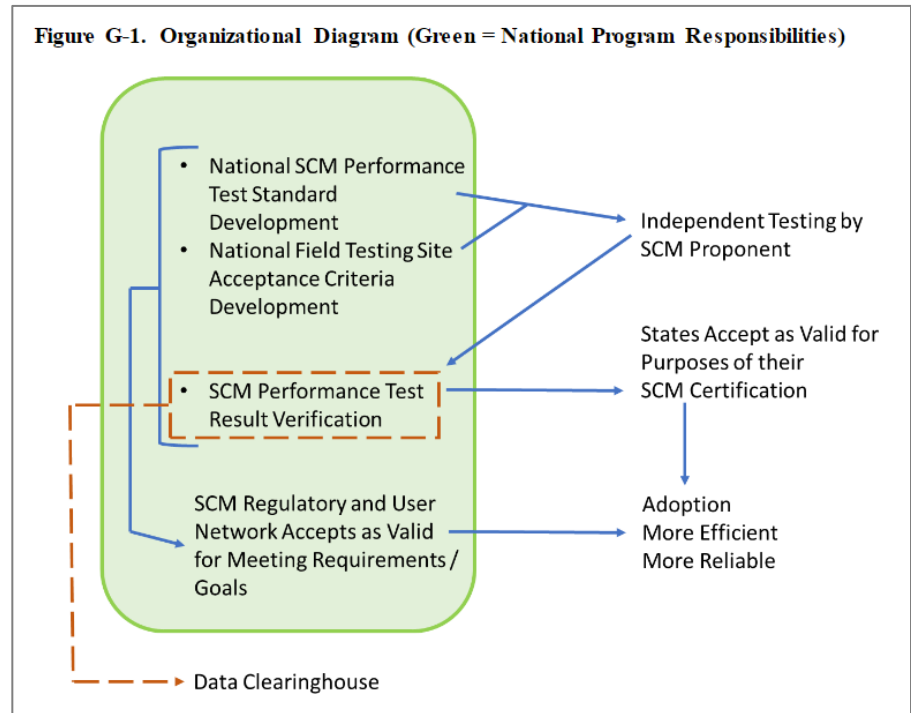
The Organizational Diagram (see Figure G-1 on the following page) was developed during the February 2016 Stormwater Control Measures Verification Programs meeting. This diagram was used as a discussion framework for the functions that could be supported by a national stormwater testing and verification program.

Consortium Approach

Discussion participants conveyed a sense that a consortium-style approach to a national SCM testing, evaluation, and verification program would be an effective way to tap the networks, areas of strength, and current initiatives

being undertaken by the range of partners. Potential opportunities for a division of labor around the different national program areas in the Organizational Diagram emerged as follows:

- WEF would continue its role in leading the establishment of the consortium and its governance structure. This would include facilitating, convening, as well as helping to develop and implement policies that govern the consortium body.
- ASTM expressed a willingness and ability to support standards development (SCM performance testing protocols), as well as providing a verification function. ASTM indicated that external funding contributions would be minimal or not be needed for this effort. ASTM also volunteered to administer a certification program as well as other services, as these services may benefit the consortium.
- Other participants, including WE&RF and ITRC, also expressed an interest in supporting verification and standards development.
- The International Stormwater BMP Database (<http://www.bmpdatabase.org/>) was identified as a potential repository for verified SCM performance data that would emerge from a testing and verification program.
- Overall, discussion reflected general agreement from participants on the need for a national testing protocol program while the goal of a national certification program was seen as a potential secondary step in the future. Additionally, there was a sense of an opportunity for moving forward in the near-term with a stormwater testing, evaluation, and verification program and that each of the participating organizations could contribute experience and expertise, if not actual direct support to the needed functions, of a program.



Program Audience

Discussion indicated that there is a continuum of potential consumers at the state/local level for a program of this type. Some states/municipalities have highly developed stormwater regulatory frameworks and programs in place. These jurisdictions are the best equipped to benefit from an SCM testing, evaluation, and verification program. Other jurisdictions with less developed programs may be less inclined to use, or see the benefits from, such a program. In light of these differences, meeting participants identified key strategy elements for moving forward.

- The need to identify a core group of “anchor tenant” program users. These users should reflect jurisdictions, or groupings of jurisdictions, that have sufficiently developed stormwater programs to 1) be attractive to SCM proponents that would have their products tested/verified, and 2) have sufficiently developed programs to readily see a benefit from SCM verification results. Examples of such tenants may

include municipalities who provide regional leadership in the area of stormwater product and practice testing, such as the City of Indianapolis, or regional groups who have an interest in stormwater product and practice testing and evaluation, such as the Great Lakes Stormwater Collaborative and the Chesapeake Bay Program's Scientific and Technical Advisory Committee.

- Recognize and leverage the networks of potential consumers (e.g., State DOTs and EPAs, DoD facilities, municipalities) maintained by the participating organizations to assist with both establishing the initial consumer network and expanding the network as the testing/verification program matures. The initial network is likely to consist of those identified anchor tenants.

Immediate Next Steps

- Complete and circulate the meeting synthesis.
- Organizational representatives to confirm interest and willingness on the part of the organizations for further engagement in potentially developing and launching an SCM testing, evaluation, and verification program.
- Organizational representatives to think further about how their networks could be leveraged to generate broader support for launching the program.

Attachment: Participant List

NAME	ORGANIZATION	TITLE
Anastasio, Julia	Association of Clean Water Administrators	Executive Director & General Counsel
Arvin-Colon, Rebecca	Water Environment Federation	Project Manager
Belan, Gary	American Rivers	Senior Director, Clean Water Supply Program
Berner, Jason	EPA, Office of Research and Development	Landscape Architect
Doley, Todd	EPA, Office of Water	Economist
Dunaway, Allison	ITRC/Virginia Department of Environmental Quality – Piedmont Regional Office	Virginia Water Protection Program Manager
Fragapane, Ryan	AASHTO – NTPEP	Associate Program Manager, NTPEP
French, Chris	Water Environment Federation	Director, Stormwater Programs
Greenwood, Rob	Ross Strategic	Principal, Meeting Facilitator
Heath, Jeff	AMEC Foster Wheeler	Senior Project Manager
Higgins, Rebecca	ITRC/Minnesota Pollution Control Agency	Hydrogeologist, Petroleum Remediation Program
Holtz, Jay	Stormwater Equipment Manufacturers Association	Government Affairs, Regulatory Committee Chair
Houle, James	University of New Hampshire Stormwater Center	Program Director
Hugo, Joe	ASTM International	Manager
Katchmark, Whitney	Hampton Roads Planning District Commission	Principal Water Resources Planner
Lenhart, Jim	ASCE Urban Water Resources Council	Vice Chair
Moeller, Jeff	Water Environment & Reuse Foundation	Director of Water Technologies
Reyes, Patricia	Interstate Technology Regulatory Council	Director
Ternieden, Claudio	Water Environment Federation	Senior Director, Government Affairs
Theroux, Maggie	EPA, Office of Research and Development	Senior Cluster Development Specialist
Torres, Morgan	Ross Strategic	Associate, Project Manager
Zhang, Harry	Water Environment & Reuse Foundation	Program Director