Virginia Stormwater Best Management Practice (BMP) Clearinghouse
Stakeholder Meeting
Twin Hickory Area Library (Meeting Room)
5001 Twin Hickory Rd.
Glen Allen, VA 23059-2509
November 29, 2018

Meeting minutes by Jane Walker – Additional information pertinent to the meeting discussion but not provided during the meeting is included within brackets, [ ].

Virginia Department of Environmental Quality (DEQ) Personnel Present
Robert Cooper, DEQ-Central Office
Melanie Davenport, DEQ-Central Office
Jaime Robb, DEQ-Central Office

Virginia Water Resources Research Center (VWRRC) Personnel Present
Jane Walker, VWRRC

Stakeholders Present
Chris Allen, Oldcastle Stormwater
Derek Berg, Contech Engineered Solutions, LLC
Ranee Buck, Lane Enterprises
Sandy Camargo, ADS
Scott Crafton, Virginia Department of Transportation (VDOT)
Jacob Dorman, Contech Engineered Solutions, LLC
Travis Dorman, ADS/BaySaver
Chris French, Bioclean Environmental
Matt Hart, Oldcastle Stormwater
Jay Holtz, Oldcastle Stormwater
Whitney Katchmark, Hampton Roads Planning District Commission (HRPDC)
David Lockledge, Albemarle County
Doug Moseley, GKY Associates
John Rotondo, Rotondo Environmental Solutions
David Sample, Virginia Tech
David Scott, HydroInternational
Kateri Shreve, Luck Ecosystems
Corey Simonpietri, ACF Environmental
Terry Siviter, Lane Enterprises
Ginny Snead, AMT
Diana St. John, City of Virginia Beach
Kevin Utt, City of Fredericksburg
Jeff Waldon, Concrete Specialties, Inc.
Joe Wood, Chesapeake Bay Foundation
John Woodburn, Goochland County
Matt Zubey, Harbor Dredge & Dock

Call to Order and Introductions

Jaime Robb of DEQ called the meeting to order. A meeting agenda was distributed (Appendix A). Everyone introduced herself or himself.

Minutes from May 2, 2018 Meeting

There were no additions or corrections to the minutes of the previous meeting. DEQ will post the final version of the minutes on the Virginia Regulatory Town Hall website: http://townhall.virginia.gov/.

Update: DEQ Stormwater Program

Melanie Davenport stated that public hearings occurred this fall on proposed amendments and reissuance of General VPDES (Virginia Pollutant Discharge Elimination System) permits for stormwater from construction activities, stormwater from industrial activities, and nonmetallic mineral mining. The public comment period for all three proposed permits closes at 5 p.m. on December 28, 2018. [More information is available on the Virginia Regulatory Town Hall website.]

Ms. Davenport reported on efforts associated with the consolidation of the Stormwater Management, Erosion and Sediment Control, and Chesapeake Bay Area programs. The statute will go into effect 30 days after DEQ develops regulations. Development of the regulations can follow a truncated APA (Administrative Process Act) process if changes are only associated with the consolidation of these three programs. DEQ plans to follow the truncated APA process and expects to have a NOIRA (Notice of Intended Regulatory Action) out in February 2019. DEQ invited interested individuals to nominate themselves for selection on the Regulatory Advisory Panel (RAP).

DEQ recently filled the position Manager – Office of Water Permits, which oversees the VPDES, VSMP (Virginia Stormwater Management Program), and land-application permit programs. This position became vacant following Fred Cunningham's retirement in February 2018. DEQ hired Drew Hammond to fill the position.

Ms. Davenport reported that planning district commissions (PDCs) and localities have been holding public meetings regarding the Chesapeake Bay TMDL (total maximum daily load) Phase III watershed implementation plans (WIPs). Stakeholders at these meetings have expressed interest in unregulated urban pollution.

The next meeting of the State Water Control Board is December 13, 2018 in Richmond, Va. The meeting will focus on pipeline issues. [For more information about the meeting, see http://townhall.virginia.gov/L/Viewmeeting.cfm?meetingid=28544]. A stakeholder asked how the court's decision in West Virginia is affecting construction of pipelines in Virginia. Ms. Davenport provided background information and replied that activities in Virginia under Nationwide Permit 12 are on hold. Ms. Davenport also explained that construction of the Mountain Valley Pipeline (MVP) within the Jefferson National Forest is on hold. Additionally, the Atlantic Coast Pipeline (ACP) applied for a permit to build a compressor station in Buckingham County; a decision on the permit is expected soon. Ms. Davenport added that MVP

has also applied for a permit to build the Southgate route to carry natural gas through 16-to-24-inch pipes through the southern part of Virginia; this application is also pending.

Brainstorming Session: Evaluation of Manufactured Treatment Devices (MTDs)

Ms. Davenport stated that the interim guidance developed for evaluating MTDs [Guidance 14-2009] has been in use for more than four years. When written, some stakeholders had wanted it to have a time limit. Ms. Davenport added that DEQ has been hoping to be able to use regional or national protocols, but they have not yet been developed. She offered that DEQ has learned from its experience evaluating MTDs under the interim guidance and believes it is time to establish more permanent evaluation protocols.

Ms. Davenport explained that a bill passed in 2018 [HB 297] states that guidance developed by agencies must undergo a public comment period to ensure that the publication meets the criteria of guidance and is not regulation. Thus, the public will have a chance to review any developed document. Ms. Davenport requested that stakeholders bring it to DEQ's attention early in the process if they believe the document should be regulations instead of guidance.

David Sample provided an update to the Bay Program's MTD Expert Group. He explained that their efforts would be applicable for MTD evaluation across the Bay watershed. The Bay Program's document is an amended version of the Virginia Technology Assessment Protocol (VTAP) and is about 90% complete. To date, the Expert Group's efforts have been focused on developing a technical document. The Expert Group is considering two program management options: 1) development and administration of a Bay-wide evaluation program, through a Bay-wide organization such as the Chesapeake Research Consortium, and 2) joining the national STEPP (Stormwater Testing and Evaluation for Products and Practices) program. Several individuals involved in the Expert Group are part of the STEPP effort. With this program, manufacturers conduct testing according to the protocol, and states are responsible for certification.

A stakeholder asked who would evaluate MTDs for use with the Bay Program. Dr. Sample offered that this would depend upon which program management option is selected; he expressed his personal preference for a national program, like STEPP, for consistency. Dr. Sample explained that the University of Washington, Center for Urban Watersheds would likely be administering the STEPP program, at least initially. This is the same group administering Washington State's TAPE (Technology Assessment Protocol – Ecology) program. NJCAT (New Jersey Corporation for Advanced Technology), which administers a lab testing program for sediment, will also be involved as needed.

A stakeholder added that the Bay Program's efforts aim at having a product that can be used with the Bay model.

A representative of a local government offered that she hopes Virginia will follow the Bay protocol. She does not want a Bay protocol and a Virginia protocol. Ms. Davenport offered that the Bay Program could be a driver, but that Virginia's efforts must apply statewide (both inside and outside the Chesapeake Bay watershed).

A representative of a MTD manufacturer offered that STEPP's approach is to standardize the technical protocols. Each of the 50 states could then use it so it aligns with their regulations. The stakeholder added that ASTM is working on a memorandum of understanding with STEPP to evaluate MTD testing. A different stakeholder offered that ITRC (Interstate Technology and Regulatory Council) may develop guidance to help states interpret the standardized data package produced through the ASTM protocol. Another representative of a MTD manufacturer offered that states need a policy for how to interpret data, e.g., will it accept 50% removal or 80% removal. Ms. Davenport noted that Virginia law says DEQ must grant reciprocity.

Another representative of a MTD manufacturer offered that the STEPP protocol is designed to be a living document because ASTM will review the protocols every seven years. It can then add missing pieces and update as needed. He offered that STEPP will help manufacturers because they won't need to test everywhere, and it should help open markets for MTDs since some jurisdictions find evaluating MTDs too difficult. He further stated that STEPP would encourage innovation by making it easier to test products.

A different representative of a MTD manufacturer offered that stormwater managers need new technology. The STEPP program has several goals: to foster innovation and to test products in less than a year and for less than $100,000. This testing would be well below what it costs when following TAPE, about a third of the time and expense of testing through TAPE. He offered that following TAPE and VTAP protocols leads to good data but makes it difficult and expensive to get data. He suggested that following STEPP should make it easier for manufacturers to get approval. It would then encourage technology innovations by making it easier to get approval.

Mr. Cooper stated that the VSMP focuses on total phosphorus (TP), which is different from other state programs. Based on DEQ's experiences evaluating MTDs under the interim guidance, the agency developed a list of issues to be discussed at today's meeting. Mr. Cooper suggested discussing each proposal described in the handout (Appendix B).

<u>Discontinue Approving Hydrodynamic Devices as Stand-alone BMPs (Agenda Item 5a)</u>
DEQ proposes approving hydrodynamic devices for pretreatment purposes only and not assigning TP removal efficiencies to them.

Several stakeholders offered that coastal areas in particular need hydrodynamic devices in order to meet TP removal requirements. They voiced concerns that DEQ may create a hardship if they remove the hydrodynamic devices from the BMP Clearinghouse website.

A representative of a MTD manufacturer recommended that if DEQ removes hydrodynamics from the BMP Clearinghouse, it should mandate the use of pretreatment within the updated specifications for non-proprietary BMPs. He cautioned that people will not spend money for hydrodynamic devices if they are not granted credit. Another representative of a MTD manufacturer recommended that hydrodynamic devices stay on the BMP Clearinghouse website, but reevaluate the TP removal credit granted. He further suggested that DEQ could specify that hydrodynamic devices could only be allowed as stand-alone devices at specific sites. A third representative of a MTD manufacturer stated that 20% TP removal is likely too generous so suggested that DEQ develop a policy that revisits the rating and data criteria. Another

representative of a MTD manufacturer agreed that a practice (hydrodynamics) should not be completely eliminated from the BMP Clearinghouse. He asked if anyone knows the basis for the 20% credit. He suggested considering reducing the credit by half (10%) unless there is a scientific basis for keeping it at 20%.

A representative of a different MTD manufacturer offered that the 20% credit is somewhat based on academic work by Robert Pitt. Dr. Pitt found that hydrodynamics could remove 50% of inflow TSS. It is assumed that half of the phosphorus is in the dissolved form (and half is in the particulate form).

In response to a question, Mr. Cooper explained that most hydrodynamic devices listed on the BMP Clearinghouse were tested following New Jersey's laboratory protocol (which tests for removal of total suspended solids, TSS). Thus, Virginia does not know if the tested hydrodynamic devices are truly removing TP. He questioned if the devices remove the smaller particles that tend to be associated with TP. He added that some are abusing the use of hydrodynamic devices by not maintaining them or by using them incorrectly within the Runoff Reduction spreadsheet or within treatment trains. A representative of a MTD manufacturer added that abuses with the spreadsheet are not limited to hydrodynamic devices.

Mr. Cooper offered that if stakeholders want to keep hydrodynamics on the BMP Clearinghouse website to remove TP, Virginia needs a protocol that shows that they remove TP. If tested in New Jersey to show 50% TSS removal and this removal is accepted through reciprocity, Virginia would need a way to convert TSS removal to TP removal. Ms. Robb offered that Virginia could develop a policy on the particle size removed.

A representative of a locality asked how DEQ plans to handle installed hydrodynamic devices that have already been approved at 20% TP removal. Ms. Robb explained that DEQ likely could write a grandfather clause for them. DEQ would not require that installed hydrodynamic devices be removed.

A stakeholder offered that from his perspective, phosphorus is simply an indicator of pollution. If the phosphorus is removed, other pollutants will be removed. He offered that hydrodynamic separators are good at removing oil, brake dust, and other pollutants. Plus, they can fit in small places. If hydrodynamic devices are not allowed, the alternative is to use nutrient credit trading. A brief discussion of nutrient credit trading ensued. Ms. Davenport noted that the consolidation regulation addresses many of the issues of concern. She believes that once the regulation is finalized there will likely be more nutrient bank proposals.

<u>Reciprocity (Initial Discussion; Agenda Item 5f)</u>
A representative of a MTD manufacturer complained that DEQ accepts all data. DEQ personnel explained that it is working under regulations requiring reciprocity. The stakeholder offered that many issues would be cleared up if DEQ could limit reciprocity by saying, "We only give reciprocity if the testing meets X, Y, and Z."

Ms. Davenport explained that DEQ's authority comes from the General Assembly. Reciprocity is not defined within the regulations. Virginia law (§ 62.1-44.15:28.A.9) states:

A. The Board is authorized to adopt regulations that specify minimum technical criteria and administrative procedures for Virginia Stormwater Management Programs. The regulations shall:

9. Provide for reciprocity with programs in other states for the certification of proprietary best management practices

Mr. Cooper explained that New Jersey and Washington are not the only states to evaluate MTDs. North Carolina, Georgia, Maine, and others award approvals, not certifications. So, should DEQ only accept certifications under reciprocity? Some noted that certifications indicate the data have been verified, but approvals do not.

Ms. Davenport offered that if DEQ could define reciprocity in guidance so that all are in agreement with the definition, they could try it.

Discontinue the use of TSS as a Surrogate for TP (Agenda Item 5b)

Mr. Cooper offered that if DEQ discontinues the use of TSS as a surrogate for TP, it will knock out accepting data from many programs. He added that DEQ initially accepted TSS data because it could see that more programs test for TSS removal than TP removal. There have been studies and papers about the relationship between TSS and TP.

A stakeholder offered that the TSS-TP relationship is dependent on the percentage of particulate phosphorus in the runoff and the particle size of sediment. Another stakeholder explained that Dr. John Sansalone found that phosphorus readily goes on and off sediment. Phosphorus does not just stay attached to the sediment; it attaches and releases from sediment in equilibrium.

A representative of a locality offered that localities want options but not ones that do not work. If the science shows that TSS removal is not good at predicting TP removal, it should not be used.

A representative of a MTD manufacturer requested that DEQ develop policy on acceptable data. He offered that without additional policy, the agency will face similar issues when reviewing TP data even if TSS data is not accepted. He wants DEQ to accept verified data only.

Summary of Discussion for Items: 5a, 5b, and 5f

Mr. Cooper summarized the consensus of the discussion thus far:

- Leave hydrodynamic devices on the BMP Clearinghouse.
- Reduce the percent TP credit awarded to hydrodynamic devices.
- Develop policy for what DEQ wants to see (acceptable data) to get credit.
- Disallow the use of TSS data as a surrogate for TP data.

A representative of a MTD manufacturer offered that TSS data could be used to "get in the door" but that higher credit should be awarded for testing that uses TP data.

Another representative of a MTD manufacturer requested that DEQ lift the 50% TP removal cap on MTDs. Other representatives of MTD manufacturers supported this suggestion, citing that the cap limits the incentive to improve devices.

Ms. Robb offered that DEQ would consider the discussion from the meeting and then draft language that the stakeholders could review. A stakeholder requested that the guidance developed by DEQ explain why the agency chose it. Another stakeholder offered that he found today's handout [Appendix B] to be helpful because it gave insight into DEQ's reasoning.

A representative of a MTD manufacturer stated that he hoped there would be some ground rules for what is meant by consensus. He does not want to see one or two individuals hold up the process. DEQ personnel offered that during regulation development, DEQ checks for consensus, but this process would be guidance development. While DEQ will listen to stakeholders and consider their input, the agency develops the document.

A stakeholder requested information about the new public input requirement for guidance development. Ms. Davenport explained that newly developed guidance documents would be subject to a 30-day public comment period. If a comment received during the public comment period asserts that the guidance document is contrary to state law or regulation or that it should be regulation, the effective date of the guidance is to be delayed by 30 days. During the delay period, the agency is to address the comments in writing. The regulation does not specify a next step beyond the written response. The stakeholder offered his view that the comment period makes the guidance more credible and is an improvement for Virginia. [For more information, see HB 297 (2018) -- https://lis.virginia.gov/cgi-bin/legp604.exe?181+sum+HB297.]

Prescriptions for Data Acceptance (Agenda Items 5c and 5d)

Mr. Cooper offered that items 5c and 5d on the agenda can be discussed at the same time because they both pertain to data that DEQ is willing to accept (Item 5c: Prescribe a range of inflow TP concentrations acceptable for review; Item 5d: Prescribe a minimum quantity of TP data pairs needed for review.). Ms. Robb asked what stakeholders want to see in Virginia for DEQ to be able to certify devices.

A representative of a MTD manufacturer stated that Washington's TAPE is the "gold standard" in the U.S. for evaluating field-tested assessments. TAPE's program requires 50 percent total phosphorus removal for an influent concentration range of 0.1 to 0.5 mg/L. TAPE will evaluate devices if the TP concentration is outside this range. The stakeholder mentioned that if the TP concentrations of inflow and outflow are higher than the typical range, it is a "red flag." In response to a question, several stakeholders stated that there are no other ranges listed by other states for testing. However, Maine allows for a lower threshold; if the TP concentration in stormwater is less than 0.1 mg/L, the device does not need to hit the 50% removal target.

Another representative of a MTD manufacturer suggested that DEQ just specify it will accept data that meets X protocol(s) and not get into details. Ms. Robb asked if Virginia accepts TAPE data, should it accept the data for the different TAPE levels. A representative of a MTD manufacturer suggested that DEQ develop policy that states it will only accept TAPE GULD (general use level designation) certifications or will look at submitted data. Another representative of a MTD manufacturer offered that the lab testing for PULD (pilot use level designation) is designed to get a device in the door. Mr. Cooper commented that he has noticed that manufacturers are not doing additional testing after getting the CULD (conditional use level

designation); they use the same testing for the CULD to get the GULD certification. Ms. Robb offered that she is generally uncomfortable with wholesale acceptance of a protocol from elsewhere; she would prefer to take what Virginia likes from the developed protocol and incorporate it into a protocol for Virginia. If the other state's protocol is changed, Virginia can review the changes and update as needed.

A stakeholder added that if DEQ tweaks the protocol or evaluates the data, it is repeating the work of TAPE. He asked if DEQ has the time and resources to be in the business of reviewing data. If not, DEQ should just accept certifications from other states. DEQ personnel indicated that they prefer not being in the business of reviewing data but are forced into it when the agency receives submissions of data without certifications, e.g., data submitted to TAPE but not approved by TAPE or from manufacturers who do not want to go through TAPE's process. Because there are no regulations in Virginia pertaining to MTD data evaluations, DEQ must review data on a case-by-case basis.

A stakeholder recommended that DEQ's policy should state its acceptance of TAPE's GULD certification or data that meets X, Y, and Z, and make X, Y, and Z the same as TAPE's GULD certification requirements. That way, manufacturers would have an incentive to get the GULD.

Ms. Davenport offered that regulation is likely unavoidable and preferable, but Virginia doesn't want to start from scratch and recreate things. DEQ would like to incorporate a protocol by an accepted national program, but that does not yet exist. In the interim, Virginia needs guidance. Virginia has used the current guidance document for four years, and DEQ has learned much in that time.

Ms. Davenport asked for a show of hands of who thinks Virginia should start a regulatory process, knowing that the process is likely to take 24 months or more. Only a few people raised their hands. A stakeholder stated that no one "wants" regulation, but it is likely needed eventually so we should start it. Some commented that they could not answer such a question at this time. Ms. Davenport offered that if the national and regional programs are not ripe enough to include in Virginia's regulatory program, she does not think Virginia should kick off its regulatory process. Even if it did, what would Virginia do for the 2-3 year period of regulation development? A stakeholder stated that if regulations are the only way to have a precise process, he is in support of them; a second stakeholder agreed. The second stakeholder also offered that something is needed in the interim and added there is a need for updated guidance because the current one is not working.

Ms. Davenport explained that once DEQ submits a NOIRA, it solicits volunteers for a RAP. Then, DEQ has to decide who makes up the RAP. They like to use as many volunteers as possible, but a 50-person RAP will not work. The agency attempts to have a balanced RAP that represents the different stakeholders. The director of the agency makes the final call on RAP membership.

A stakeholder offered that when DCR (Virginia Department of Conservation and Recreation) revised the stormwater regulations, they had the Center for Watershed Protection (CWP) conduct a study to determine the typical event mean concentration (EMC) for stormwater in urbanized

and unurbanized areas. The number used in the Runoff Reduction Method, 0.26 mg/L for TP, was based on the CWP study.

+ + + + + +

The meeting broke for lunch.

+ + + + + +

Following lunch, Ms. Robb checked that for agenda items 5c and 5d, the consensus is to either accept Washington's TAPE protocols wholesale and/or repeat them in Virginia-specific protocols. A stakeholder confirmed his support for this approach. Mr. Cooper noted that these are just two specific items; there are numerous others.

Reciprocity (Additional Discussion: Agenda Item 5f)

Ms. Davenport offered clarification on earlier comments regarding reciprocity. She stated that if we develop regulations, we could add a definition of reciprocity to those regulations. Absent regulation development, we cannot define reciprocity. A stakeholder asked if a definition of reciprocity could be included within the guidance to be developed. Ms. Davenport offered that DEQ could add the definition to the guidance document, but because guidance is not required, it does not carry weight. Guidance provides clarity, but it is not binding. Thus, DEQ must review submissions on a case-by-case basis.

A stakeholder asked DEQ how it makes decisions now on a case-by-case basis. Ms. Robb offered an example of a recent submission of a device with CULD approval in Washington. Based on reciprocity, Virginia is granting conditional approval that mirrors the conditions established in Washington and is allowing for the installation of 10 units that can be credited for TP removal. If the device does not receive a GULD in Washington, it will be limited to 10 units in Virginia. If Washington Ecology awards a GULD to the device, the manufacturer can apply for full approval in Virginia.

A representative of a MTD manufacturer asked if DEQ would track the installations of the device with conditional approval. DEQ personnel replied that they plan to track the installations; the manufacturer is to contact DEQ once an installation occurs. DEQ is still working on the language to put the conditional approval in context on the BMP Clearinghouse website. A representative of a MTD manufacturer recommended that DEQ close the gap of relying upon the manufacturer to self-report. He cautioned that self-reporting is ripe for abuse since it puts the responsibility back on the manufacturer. He suggested that DEQ incorporate the tracking into the plan review process. That way, once a product is proposed for installation, the tracking process begins. The manufacturer could report later to DEQ whether or not it was installed. This process puts the responsibility on the front end, rather than the back end of the process and serves as a way that everyone can look at it.

Mr. Cooper stated that DEQ also has reciprocity issues with testing conducted in New Jersey. He explained that some products on the BMP Clearinghouse only have NJCAT verification, not NJDEP (New Jersey Department of Environmental Protection) certification. Representatives of

MTD manufacturers recommended that DEQ also close that gap. Someone offered that NJCAT only verifies the data. Someone could test a product using gravel, and NJCAT could verify the results, but those results do not mean the testing meets NJDEP's requirements.

A stakeholder requested that DEQ raise the bar in its guidance document by accepting devices through reciprocity only if they receive approval through a TAPE GULD certification or NJDEP certification. Otherwise, DEQ needs to evaluate the submitted application on a case-by-case basis. Mr. Cooper summarized that the recommendation is to define reciprocity within the guidance document. Then, DEQ will need to evaluate on a case-by-case basis only submissions that do not meet the definition of reciprocity stated within the guidance document. Mr. Cooper added there would still be gray areas with approvals through Maryland and Maine, etc. that would need to be examined on a case-by-case basis. A stakeholder proposed that DEQ work on specifying a definition of reciprocity within the guidance, and the public could comment on it during the 30-day public comment period.

Volume-based Sizing of MTDs (Agenda Item 5e)

Mr. Cooper stated he has seen other places consider BMPs that store and treat runoff; if Virginia followed this approach, there would be no more systems based on flow-through. For Virginia, the MTDs would need to store the treatment volume and treat it. A stakeholder asked Mr. Cooper for the reasoning behind the proposed change. Mr. Cooper explained that he envisions better performance through a store-and-treat process because there would not be bypass. A stakeholder added that bypass is an issue for all BMPs, not just MTDs. If Virginia does not believe its design storm is large enough, it could change it.

Several stakeholders commented that such a move would remove many BMPs as options. For example, it would be impossible to configure biofiltration systems with storage so the change would effectively remove these systems from the BMP Clearinghouse. Someone added that such a change would particularly hurt the beach area. A representative of a MTD manufacturer added that we just spent two years developing guidance on how to convert volume into flow rate so should not just abandon it; instead, we should use it. Another stakeholder added that some retrofit sites and other sites might not have the space to store the treatment volume. That would leave nutrient trading as the only option and would cause local impairments.

Another representative of a MTD manufacturer added that MTD performance is based on the hydraulic loading rate. If DEQ's goal is to improve performance, it should regulate the hydraulic loading rate to a reasonable number based on testing.

Mr. Cooper asked a question about a related topic. He has noticed that New Jersey certifications tend to specify off-line systems. A representative of a MTD manufacturer explained that New Jersey specifies the use of MTDs off line unless the manufacturer shows successful results of on-line testing. If they pass a scour test, the MTDs can be approved for on-line use. New Jersey approves many hydrodynamic devices for on-line use and most filters for off-line use. Another stakeholder noted that the City of Knoxville, Tennessee requires that all MTDs be used off line, but that is the only place he knows of with such a requirement.

A stakeholder asked what benefits Virginia would gain by differentiating between off-line and on-line BMPs. A representative of a MTD manufacturer noted there could be a performance gain theoretically because you could avoid posting something on the BMP Clearinghouse that should not be posted. It is a BMP issue, not just a MTD issue. The first stakeholder commented that he would like to see more off-line systems in Virginia to treat for volume.

Other items (Agenda Item 5g)

Reducing Flows
Ms. Davenport requested that stakeholders start thinking about ways to get to reduced flows, e.g., the tools and mechanisms. Representatives of MTD manufacturers offered that people typically meet this goal by not developing the entire site. One of the stakeholders noted that urban areas tend to have many sites with issues that preclude infiltration. A different stakeholder noted that the Runoff Reduction Method provides credit for volume reduction to encourage green infrastructure, but green infrastructure is not mandated. Ms. Davenport requested that stakeholders let DEQ know of anything in the agency's policy that is an impediment to the use of green infrastructure.

50% TP Removal Cap for MTDs
Mr. Cooper proposed to continue the discussion of the cap on MTDs at 50% TP removal. He offered that the cap is based on TAPE, which caps MTDs at 50%, even though testing may show higher removal rates. DEQ selected this cap in part because of the data variability. Additionally, monitoring usually involves one MTD installed in a different state with different rainfall characteristics than Virginia for only 10-15 storm events (data pairs), which statistically is not valid. Furthermore, Virginia uses the results from the testing of one device and extrapolates them for use across the entire state.

A representative of a MTD manufacturer stated that Washington State limits all BMPs at 50% TP removal because that is good enough for them. Most states have a pass-or-fail bar like Washington's TAPE. Manufacturers must show that their device removes at least 50% TP in order to pass. Virginia is different in that it bases its program on load removal, and it awards TP removals higher than 50% for many non-proprietary practices. When designers want to use MTDs, they frequently need to use treatment trains to get to the regulatory compliance needed. Thus, they sometimes do things that are functionally wrong just to meet a compliance number.

The stakeholder continued that Virginia's cap on MTDs makes little disparity between devices with lots of field testing and those without it. Furthermore, MTDs get almost as much credit without TP removal data (based on TSS removal) as with it. Moreover, there is no incentive for manufacturers to aim for higher than 50% removal because MTDs cannot be awarded credit higher than 50%.

Another representative of a MTD manufacturer noted that Washington allows localities to award TP removal rates higher than 50% in phosphorus sensitive waters. They are not capping the removal rate at 50%; they are requiring a minimum of 50% TP removal.

Another representative of a MTD manufacturer commented that all stormwater data is extremely variable. He offered that the review by the CWP showed bioretention removal studies that ranged from 20% to 99% TP removal, yet they selected a TP removal rate higher than 50% for bioretention. He explained that field test results from the same MTD device installed in different locations would yield very different results because of the differences in rain, drainage area, time of concentration, etc. There is no way around the variability. He stated that many believe that the nonproprietary BMPs are "over credited" while the MTDs are "under credited."

A representative of a MTD manufacturer stated that there has been more testing of MTDs than of non-proprietary BMPs. A second representative of a MTD manufacturer stated that data from the International Stormwater BMP Database shows that bioretention is a net exporter of TP. A third representative of a MTD manufacturer offered that Teresa Culver at UVA (University of Virginia) conducted a bioretention study [in Charlottesville, Va.] both immediately after installation and six years after installation and found that it is exporting TP. This stakeholder further stated that although DEQ may be concerned with the limited number of samples obtained, the Washington TAPE protocol does a good job of taking limited data sets and applying robust statistics to the analysis such as bootstrapping methodologies. DEQ and the EPA Chesapeake Bay Program use these same statistical methods to fill in water quality data gaps in the Chesapeake Bay model. He added that stormwater data from field studies are not normalized so nonparametric statistics are needed.

Ms. Robb questioned whether ten data points really represent what is happening in the real world. The stakeholder noted that many MTD studies collect data on around 30 storms. Only 10-12 storms may meet the influent concentration range required by TAPE, but many data sets have 20-30 storms (or more). If the TP influent is less than 0.1 mg/L but shows adequate removal (50%), the Washington Department of Ecology will allow the use of the storm on a case-by-case determination. He stated that the science is showing that Tom Schueler's issue of irreducible concentrations is not valid. He suggested it would be a good project for ITRC to work with water resources agency staff throughout the U.S. to provide statistical analyses training regarding stormwater BMP evaluations. [After the meeting, the stakeholder explained that he was, until recently, a member of the TAPE Board of External Reviewers (BER) so he has direct experience with Washington's process from the perspective of an independent study reviewer.]

Information Transfer

A representative of a MTD manufacturer suggested providing information on the BMP Clearinghouse that will help make the plan review process efficient for localities that are using MTDs. DEQ personnel offered they could also get information out through their Plan Review Training. Several stakeholders added that site designers and engineers, as well as plan reviewers, need to have more information easily accessible. Mr. Cooper offered that he developed a review summary spreadsheet to see if anything was consistent between approved devices. There was no consensus for whether or not to put it on the BMP Clearinghouse website so it has fallen by the wayside. The purpose of the spreadsheet was to provide comparable information so site designers, engineers, and reviewers could easily compare approved devices. A representative of a locality asked if the Runoff Reduction spreadsheets would incorporate all of the approved MTDs in the near future; DEQ personnel explained that the spreadsheets are

able to accept the use of MTDs. They have a generic MTD input whereby the user manually enters the percent TP removal awarded for the device.

A stakeholder noted that the lack of knowledge is primarily at the designer level; they may not know stormwater regulations if they do not work with them all the time. A representative of a MTD manufacturer commented that designers tend to be more focused on time and permits than great designs. They want something they know can get permits without having to jump through a lot of different hoops. Some localities are more stringent than are others; if the designer is able to get a project approved at a locality, they are likely to do the same for the next project whether or not it is the best design for the site. This is an issue across the country and is not limited to Virginia.

Runoff Reduction Credits and MTDs
A representative of a MTD manufacturer commented that at the last meeting, there was some discussion about the possibility of providing runoff reduction credits to MTDs. He asked if it is still in the works or part of this process. Mr. Cooper replied that because some MTDs have a soil media as part of the overall MTD package that question has come to light, but DEQ does not yet have an answer for it. The stakeholder added that looking at mass loadings (instead of EMCs) would take into account runoff reduction, which would be preferable in his perspective. Mr. Cooper noted that he has seen instances where there is more flow coming out of the device than going into it so it gets at how well people can measure flow.

Next Steps
DEQ personnel requested that stakeholders provide suggestions to help clean up the interim guidance as a first step. They also welcome suggestions for what do beyond interim guidance.

Ms. Robb set a goal for DEQ to develop draft guidance based on the current guidance and today's discussion before the next meeting. The next meeting is typically in February or March.

Adjourn
With no further comments, Ms. Robb adjourned the meeting.

Appendix A

Virginia Stormwater BMP Clearinghouse
Stakeholder Meeting

November 29, 2018 (10:00 a.m.)
Twin Hickory Area Library (Meeting Room)
5001 Twin Hickory Rd.
Glen Allen, VA 23059-2509

1. Call to Order – Jaime Robb, DEQ

2. Introductions

3. Draft Minutes from May 2, 2018 Meeting

4. Update: DEQ Stormwater Program – Melanie Davenport, Jaime Robb and Robert Cooper, DEQ

5. MTD Evaluation Brainstorming Session* – Jaime Robb and Robert Cooper, DEQ
    a. Discontinue approving hydrodynamic devices as stand-alone BMPs
    b. Discontinue the use of TSS as a surrogate for TP
    c. Prescribe a range of inflow TP concentrations acceptable for review
    d. Prescribe a minimum quantity of TP data pairs needed for review
    e. Move to a volume-based sizing approach that is based on the treatment volume calculated from the Virginia Runoff Reduction Method
    f. Reciprocity
    g. Other items

6. General Comments

7. Adjourn – Jaime Robb, DEQ

* At an appropriate time, we will break for lunch.

Appendix B

Background

The Virginia Stormwater Management Program (VSMP) prior to July 1, 2014 permitted local governments the right to use innovative stormwater management practices at their own discretion. These particular practices were used to comply with the water quality requirements of the VSMP. Effective July 1, 2014, the VSMP regulations were amended to require the use of practices posted on the Virginia Stormwater Best Management Practice Clearinghouse (BMP Clearinghouse) to meet the new water quality design requirements (Part IIB).

The BMP Clearinghouse contains two categories of BMPs: proprietary and non-proprietary. Total phosphorus (TP) removal efficiencies and design specifications for 15 non-proprietary BMPs were available on the BMP Clearinghouse when the amended regulations became effective. In preparation for the new regulations, DEQ published guidance on May 15, 2014 for use in approving proprietary BMPs (**Guidance Memo No. 14-2009**). This guidance document – "Interim Use of Stormwater Manufactured Treatment Devices (MTDs) To Meet The New Virginia Stormwater Management Program (VSMP) Technical Criteria, Part IIB Water Quality Design Requirements" – describes information required by DEQ to make a determination of the device's ability to reduce TP concentrations. After review of submitted information, DEQ can do either of the following: (1) approve the MTD and assign a TP removal efficiency, or (2) reject the MTD for use in Virginia.

The released guidance document was designed as a temporary procedure to allow MTD use in Virginia to meet the amended water quality requirements. This guidance document has been in place for more than four years. During this time, DEQ has listed more than 30 MTDs on the BMP Clearinghouse website and has gained knowledge on

how to improve the process of qualifying devices and assigning TP removal efficiencies.

MTD Approvals

DEQ has approved two different types of MTDs: hydrodynamic devices and filtering devices. MTDs are defined based on the process the device uses to remove pollutants. Hydrodynamic devices mainly remove pollutants through separation and settling, whereas filtering devices use a filter that is either made from synthetic or natural materials. As of September 1, 2018, DEQ has approved 18 hydrodynamic devices and 15 filtering devices. The majority of the hydrodynamic devices have been approved based on reciprocity, meaning the device has been approved for use in another state. Filtering devices have typically been approved based on submitted performance reports. To date, only one filtering device has been approved based solely on reciprocity.

The interim guidance document provides a table that lists potential TP removal efficiencies based on either the reduction of TP or total suspended solids (TSS). TSS is used as a surrogate constitute for TP and can be used to assign a maximum TP removal efficiency of 40 percent. The reasons TSS was used as a surrogate for TP were as follows:

1) Correlation between TSS and TP concentrations found in stormwater.
2) The Technology Acceptance Reciprocity Partnership (TARP) protocol tests mainly TSS.
3) Most laboratory testing for hydrodynamic devices is based on TSS.

Input Sought

Given the knowledge gained through approval experiences during the past four years, DEQ intends to develop more permanent guidance.

The agency is seeking input from the public on the following proposed changes to the guidance:

- **Discontinue approving hydrodynamic devices as stand-alone BMPs** – Reason for consideration: Many hydrodynamic devices work well to remove debris and large diameter sediment from stormwater but may not remove TP effectively. Including these types of devices as pretreatment devices for other BMPs would appear to be a more appropriate use of hydrodynamic devices. As an alternative to approving hydrodynamic devices as stand-alone BMPs, DEQ could consider approving their use for pretreatment purposes only and not assign TP removal efficiencies for hydrodynamic devices.
- **Discontinue the use of TSS as a surrogate for TP** – Require performance of all devices be field-tested using TP concentrations. Reason for consideration: The correlation between TSS and TP concentrations found in stormwater depends on many factors. Some of these factors are the particle size distribution of suspended sediment, velocity of inflow to the device, rainfall characteristics, and watershed characteristics. Because of these factors and others, it is inappropriate to apply a TP removal efficiency universally based on results of TSS removal rates. In addition, most TSS data submitted to DEQ is based on laboratory results with no corresponding field data.
- **Prescribe a range of inflow TP concentrations acceptable for review** – Reason for considerations: Inflow concentrations can greatly affect test results, thereby biasing the performance evaluation of the device. Additionally, DEQ is looking for data with TP concentrations that are representative of actual storm event concentrations received from actual watersheds. Specifying acceptable inflow TP concentrations levels the playing field for all testing.

- **Prescribe a minimum quantity of TP data pairs needed for review** – Reason for consideration: From a statistical perspective, the number of data pairs submitted for most devices has not typically been large enough to be considered statistically significant. Large data sets provide more confidence in the estimate of long-term performance. Establishing a minimum number of data pairs (not previously specified) provides applicants clear direction in conducting testing and preparing registration documentation.
- **Move to a volume-based sizing approach that is based on the treatment volume calculated from the Virginia Runoff Reduction Method.** – Reason for consideration: The topic of sizing for MTDs has been an ongoing discussion for years. The issue revolves around the design flow rate that is assigned to a device. In addition, DEQ has concerns about the quantity of the treatment volume that is actually treated. DEQ would like to explore a storage-and-treat approach that would improve overall performance in load reduction.
- **Reciprocity** – The more permanent guidance needs to be established to clarify how applications for reciprocity are evaluated by DEQ.

The above bullet items are topics that DEQ would like to discuss during this meeting. Other items to discuss, if time allows, are:

- Testing procedures being created by other agencies.
- Testing at more than one field site.
- The possible return of the Virginia Technology Assessment Protocol (VTAP), in whole or in part.
- Any topics overlooked.