

**Chesapeake Bay Phase III Watershed Implementation Plan
George Washington Regional Commission (#16)
December 14, 2018**

The George Washington Regional Commission (GWRC) worked with its consultant, the Berkley Group on the Phase III Watershed Implementation Plan (WIP) efforts. The Berkley Group also coordinated our work with the concurrent Septic System Study supported by a grant from the National Fish and Wildlife Foundation (performed by Conservation Concepts and Regional Decision Systems).

The George Washington Regional Commission is the “planning district commission” established by the General Assembly for the region comprising the City of Fredericksburg and the counties of Caroline, King George, Spotsylvania and Stafford, known collectively as “Planning District 16.” Caroline County includes the incorporated towns of Bowling Green and Port Royal. Established in 1961, GWRC is currently home to 347,000 residents. Planning District 16 is the fourth-largest and fastest-growing of the Commonwealth’s 21 planning districts. GWRC land drains to the Potomac River to the north and the Rappahannock River in the center.

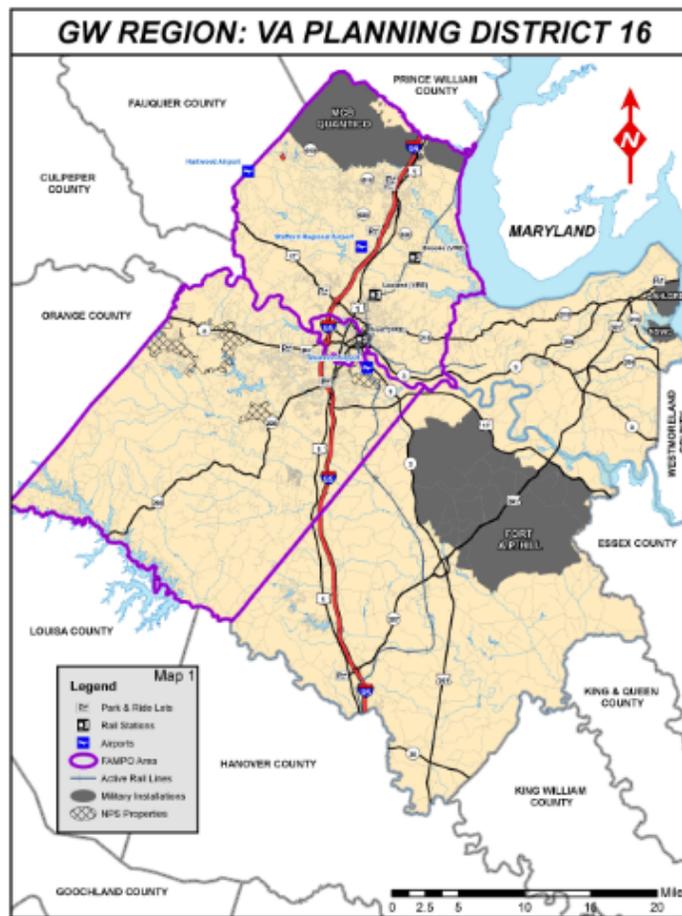


Figure 1. George Washington Regional Commission

GWRC followed the Project Methodologies provided by Virginia Department of Environmental Quality (DEQ) in the contract to conduct the work and develop the deliverables. The scope included three activities: facilitating four meetings with localities and other stakeholders, revising the Best Management Practices (BMPs) input deck, and identifying programmatic actions to support BMP implementation. The required deliverables included letters of participation from all localities, the updated BMP workbook, and an interim and final activity report.

Data Inventory

DEQ distributed the BMP workbook (an Excel file) providing the Local Area Planning Goal (LAPG) targets, WIP Phase II BMP types and amounts, BMP types and amounts as of June 30, 2017, and maximum BMP amounts. The George Washington Regional Commission LAPG targets are 35,301 lbs. nitrogen and 4,666 lbs. phosphorus. DEQ indicated that the WIP II BMP types and amounts meet the projected 2025 LAPG targets. They also provided resources and references for our use.

Throughout the three project activities, GWRC investigated, collected, and analyzed data relevant to the existing and planned BMPs, programs, partners, and co-benefits. We contacted the localities, state agencies, and local non-governmental partners to request data on local conditions and knowledge. Key information is referenced here.

The City of Fredericksburg is an MS4 locality that has adopted a VSMP. For WIP II, the city provided an Excel file listing 50+ VAR permitted BMPs from approximately 2008-2011 with street addresses and notes on inspections. They included "[A Report on Fredericksburg's Existing and Possible Urban Tree Canopy](#)" (2010). For the WIP III effort, the Virginia Department of Forestry provided data indicating that Fredericksburg is registered for Tree City Status, had 44% tree canopy in 2009, and has a target of 49% tree canopy. The Berkley Group did not receive an updated BMP inventory or an estimate of the amount of future BMPs to 2025 based on projected development.

Stafford County is an MS4 locality that has adopted a VSMP. For WIP II, they provided a summary table of the types and amounts of BMPs. The Berkley Group learned that they now have a GIS layer with around 2,000 BMPs, but we did not receive an updated BMP inventory or an estimate of the amount of future BMPs to 2025 based on projected development. Stafford County recently conserved 1,089 acres in the state's newest state park, Widewater.

King George County is a non-MS4 locality that has adopted a VSMP. From WIP II, they provided an Excel file listing 140+ BMPs with addresses. For this WIP III, they provided an updated excel file listing 203+ BMPs with GPS coordinates. Approximately 35 BMPs (mostly dry extended detention ponds) treating a combined 200 acres were installed after 2017. The Berkley Group did not receive an estimate of the amount of future BMPs to 2025 based on projected development.

Spotsylvania County is a non-MS4 locality that has adopted a VSMP. From WIP II, they provided an Excel file listing 320+ BMPs with notes on inspections. The Berkley Group learned that they now have a GIS layer with around 2,000 BMPs, but we did not receive an updated BMP inventory or an estimate of the amount of future BMPs to 2025 based on projected development.

Caroline County is a non-MS4 locality that defers VSMP permit authority to the state. As noted previously, we did not receive data from the DEQ VSMP office. From WIP II, they provided an Excel file listing 30+ BMPs on private property with GPS coordinates. The Berkley Group did not receive an updated BMP inventory or an estimate of the amount of future BMPs to 2025 based on projected development.

Caroline County has approximately 337,920 acres of land. According to the CAST GIS data, a good majority of that is U.S. Army Fort A.P. Hill, cropland, forest, pasture, tree canopy, and water. There is very little growth planned for the county.

The Berkley Group was not able to access the BMP Warehouse to investigate the amounts and types of BMPs reported. However, we learned from DEQ that reporting BMP to the Warehouse is not required, even for MS4 permittees, so we were not confident getting access to this data would help this project.

The Berkley Group and GWRC heard concerns from the localities that estimating future development through 2025 future is hugely speculative. Based on the recent development trends and the economy, they feel comfortable estimate development through the next two years. One exception is theorizing increased development in Caroline County in the future resulting from the extension of I-95 HOV lanes.

GWRC utilized a NFWF grant to commission consultants to investigate the prevalence and quality of septic systems and data on those septic systems. The team worked with the Virginia Department of Health (VDH) and the localities to investigate the accurate amounts of septic systems by type and the frequency of maintenance. They were not able to acquire complete data on the septic system types and maintenance in the area. The Septic System Study report and results from a Regional Onsite Wastewater Contractor Survey are provided in Appendix A.

Several of our other recent studies provided data to support the project:

1. PD 16 Green Infrastructure Plan: 2016 Update (2016)
2. PD 16 Green Infrastructure Retention Prioritization Strategy (2017)
3. Revisiting the 2011 George Washington Regional Commission Green Infrastructure Regional Plan (2017)
4. Hazard Mitigation Plan (2018)

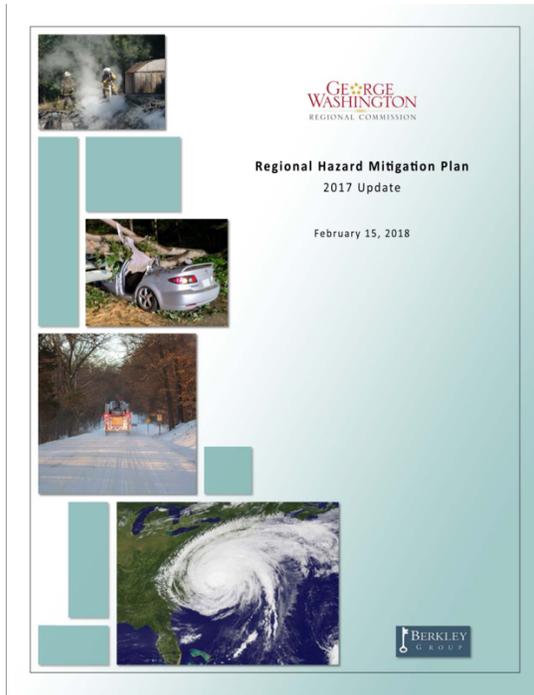


Figure 2. Hazard Mitigation Plan (2018)

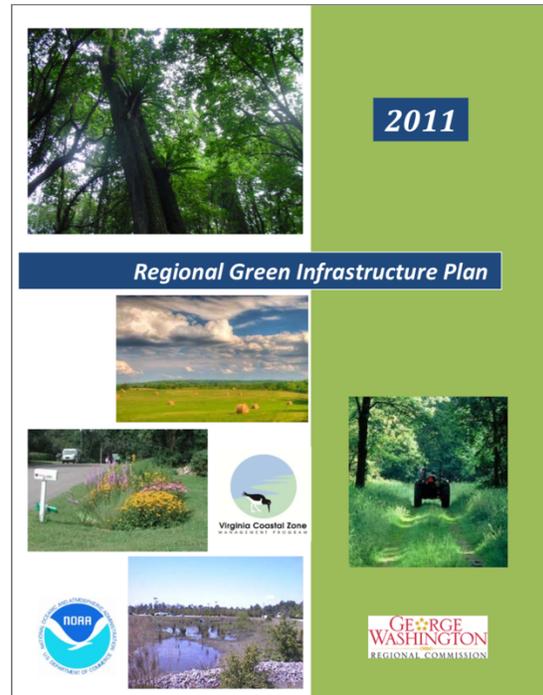


Figure 3. Green Infrastructure Plan (2011)

In addition, GWRC's regional partners provided additional resources:

1. The Association of Soil and Water Conservation Districts provided information on the Virginia Conservation Assistance Program.
2. The Friends of the Rappahannock provided the *Rappahannock River Report Card* (2018)
3. The Land Trust Alliance provided the *Chesapeake Bay Watershed Land Trust Assessment: Accelerating Land Conservation To Protect And Improve Water Quality* (2015).

Unfortunately, the Berkley Group did not receive all the data requested. We received notice from the Virginia Department of Transportation (VDOT) that they would be reporting directly to DEQ to avoid duplication. We did not receive a reply from the DEQ Virginia Stormwater Management Program office as the permit authority for Caroline County. We believe that incorporation of this data and collaboration with those state agencies are essential to developing a complete and accurate plan.

Given the duration of the project and availability of data, our general approach to achieving success in meeting WIP III goals by 2025 includes these strategies:

- Retrofit and upgrade existing BMPs and developed sites,
- Implement water quality-oriented land use planning, and
- Utilize VDOT stormwater drainage infrastructure for water quality.

Activity 1: Facilitate Meetings

GWRC developed a list of stakeholders including locality staff, state department staff, non-governmental organization staff, and others. We invited the stakeholders to the four meetings and advertised the meetings on Virginia's Regulatory Town Hall website. We had good attendance and active engagement from the localities, the Hanover-Caroline and Tri-County/City SWCDs, DEQ, VDOT, VDH, VDOF, U.S. Army Fort A.P. Hill, the Friends of the Rappahannock, the Land Trust Alliance, and the Virginia Forestry Association. We scheduled the meetings for two hours to start a discussion and then followed up with stakeholders via email and, at times, individual phone calls to discuss the concepts and specific data requests.

GWRC held its first stakeholder meeting on August 16, 2018 (see minutes in Appendix B). The first meeting included background information on the Chesapeake Bay TMDL/WIP III process, overview of the BMP workbook, discussion of current regulatory/capacity barriers to implementing the WIP, and discussion of innovative, non-traditional BMPs that can improve water quality while also spurring economic development. Following, we incorporated the feedback into the BMP workbook (BMP input deck and programmatic tab).

GWRC held its second stakeholder meeting on September 20, 2018 (see minutes in Appendix C). This meeting focused on discussing the BMP table and associated programmatic actions. Following, we incorporated the feedback into the BMP workbook.

GWRC held its third stakeholder meeting on November 9, 2018 (see minutes in Appendix D). This meeting topic was revisiting the updated BMP table and programmatic actions. Following, we incorporated the feedback into the BMP workbook.

GWRC participated in its fourth stakeholder meeting hosted by DEQ and DCR on November 28, 2018. This meeting included presentations on proposed actions from regional SWCDs and PDCs. Following, we incorporated the feedback into the BMP workbook.

This process created a strong network localities, companies, and individuals knowledgeable of the Chesapeake Bay requirements and goals. The series of meetings provided the forum for educating stakeholders on the current model and BMPs options, creating a unique local plan, and garnering support for implementation.

Activity 2: BMP Input Deck

The BMP input deck developed by the GWRC for the DEQ Local Area Planning effort solely represents a theoretical implementation of BMPs by 2025, strictly for the unregulated developed (non-MS4), natural, and septic sectors, based upon information supplied to the PDC by the DEQ as of June 2018. This theoretical scenario is just one of hundreds of possibilities that may, or may not, occur between now and 2025 in the unregulated developed (non-MS4), natural, and septic sectors. Furthermore, this submittal does not represent any commitment, by any of the member local governments of the GWRC, to implement or fund the BMPs, Programmatic Actions, or Strategies.

In the LAPG BMPs tab, we based the WIP 3 amount on the WIP 2 value unless we had convincing evidence to justify a revision. All revisions are highlighted in yellow. Revisions included:

- Used the 2017 value instead of the lower WIP II value for bioswales, bioretention, vegetated open channels, permeable pavement, urban shoreline management, and four septic BMPs.
- Moved the amount of VSMP ESC proposed in WIP II from ESC1 to ESC2.
- Revised the amounts for septic pumping and septic denitrification-conventional based on available data.

Although we received detailed BMP data from King George County, we did not revise the types or amounts of BMPs based on this data since the LAPG BMPs tab lists cumulative data for GWRC, and we didn't have detailed information from the other localities.

The Berkley Group submitted the interim draft workbook on behalf of the George Washington Regional Commission on September 14, 2018 and again on October 19, 2018 upon request by DEQ. We did not receive a response from DEQ regarding the revisions or impact on the model either time. Considering our revisions increased the amount of BMPs above WIP II amounts, this plan should still meet the planning target goals.

Activity 3: Programmatic Recommendations

GWRC worked with the local and regional representatives to identify gaps in capacity and funding, local strategies or actions, local co-benefits, revisions to state code, regulation, or guidance, and policy or programmatic recommendations for meeting our local area planning goals.

The Programmatic tab was provided blank, so all the information is new. We have organized the recommendations into the following categories:

- Program Administration
- BMPs
- Funding
- Septic System Topics

The details of these recommendations are available in the workbook.

The George Washington Regional Commission concluded that, for our region, developing a collaborative approach based on green infrastructure will be the best method to achieving success with voluntary actions. We have a strong network of localities, consultants, and non-governmental organizations interested in implementing green infrastructure practices for water quality and to provide additional co-benefits: job creation, ecosystem services, native species, and flood control. While we have suggested numerous programmatic actions, we anticipate a major factor in successful implementation of voluntary actions is the continued engagement of the local network.

Appendix A. Draft Septic Report

(See separate file)

Appendix B

Phase III WIP Stakeholder Meeting

GWRC Conference Room
406 Princess Anne St. Fredericksburg, VA
August 16, 2018
1 pm – 3 pm

MEETING NOTES

Attendees in person: David Nunnally (Caroline County), Daniel Moore (DEQ), Joan Salvati (DEQ), Sarah Kamme (Virginia Forestry Association), Ashley Hall (Stantec on behalf of VDOT), John Saunders (City of Fredericksburg), Kathy Harrigan (Friends of the Rappahannock), Chantz Ballard (Spotsylvania County), Jennifer Miller Herzog (Land Trust Alliance), Tom Faha (DEQ), Diane Beyer (City of Fredericksburg), Terry Lasher (VDOT), Scott Rae (Stafford County), Ben Foster (Stafford County), Joseph Fiorello (Stafford County), David Evans (DEQ/NRO), and Drew Williams, Shaina Schaffer, Denise Nelson, and Starla Couso (The Berkley Group)

Attendees by phone: Eldon James (RRBC), Doug Pickford (Conservation Concepts), Ross Pickford (Conservation Concepts), Kevin Byrnes (Regional Decision Solutions), Heather Hall (King George County), and Bret McCord (VDH)

1. Welcome and Introductions

2. State of the Chesapeake Bay – 2017 Progress and 2025 Goals

- A. The Chesapeake Bay Total Maximum Daily Load (TMDL) is designed to ensure that all pollution control measures required to fully restore the Bay and its tidal rivers are in place by 2025.
- B. Watershed Implementation Plans (WIPs) were developed in 2010 (Phase I) and 2012 (Phase II) focusing on the interim targets for 2017 as well as 2025 goals.
- C. Water quality in the Bay has improved significantly, and now Virginia needs to be realistic about the actions that can be taken by 2025 to meet the goals.

3. Phase III WIP Timeline and Expectations

- A. EPA and DEQ have provided funding to develop the WIP Phase III which revises WIP Phase II actions.
- B. The state has identified Planning District Commissions (PDCs) to lead the WIP Phase III development process to collaborate with the localities and stakeholders to determine Best Management Practices (BMPs), programmatic needs, metrics, funding and capacity needs, co-benefits, and gaps in statutory/regulatory authority. This effort will focus on natural, developed, and septic BMPs (non-permitted, non-agricultural, and non-forested).

- C. GWRC will be holding three additional stakeholder meetings to develop the WIP Phase II for submittal to DEQ on December 14, 2018.
- D. The Soil and Water Conservation Districts (SWCDs) are performing a parallel effort for agricultural and forest sectors. The last stakeholder meeting will be a joint meeting with the SWCDs to compare notes on their efforts.
- E. The Chesapeake Bay Program has provided the Chesapeake Assessment Scenario Tool (CAST) which can be used to run the Bay Watershed model to determine if assigned pollutant reduction targets will be met. The CAST model is calibrated against data from monitoring stations throughout the Bay. Technical questions about the model data should be directed to James Davis-Martin at DEQ.
- F. Upon submission of local data at the PDC and SWCD level, the state will review and finalize development of the WIP Phase III with anticipation of new pollutant reduction targets released in the summer of 2019.

4. Best Management Practices (BMPs) Discussion

Caroline County

- A. The County has a BMP inventory list, but it may not be complete. It is used to plan for maintenance and retrofits.
- B. Caroline is not a MS4 jurisdiction, so they are not required to implement the WIP. Since implementation is not required, there are concerns about how to get local officials on-board to voluntarily implement practices without funding from the State.
- C. The County is looking for partnerships with other counties, state agencies, or others to secure funding and create opportunity for co-benefits.
- D. Two subdivisions along the Rappahannock are suffering from shoreline erosion. One community is interested in streambank restoration to prevent further erosion, and the other does not currently show interest but may be responsive to a more robust plan.
- E. The Bass Anglers of Virginia are concerned about the lack of appropriate habitat for largemouth bass along the Rappahannock. They could be a partner in habitat restoration associated with a shoreline stabilization project.

Stafford County

- A. The County has a BMP inventory which includes around 2,000 BMPs and is maintained as a GIS layer.
- B. Stafford is interested in conducting a stream restoration project near Brooks Park to specifically target phosphorous levels. They would like to use SLAF money for the project. The County is looking for partners that may be interested in this project. A representative of Friends of the Rappahannock, Brian Hoffman, is interested in this project.

City of Fredericksburg

- A. An inventory of the City's BMPs was conducted in 2015; however, another inventory is recommended to ensure they have complete and accurate data. An updated inventory would improve the CAST model as well as support asset management and maintenance efforts. The City is limited in capacity and funding to conduct another inventory.
- B. Fredericksburg inspects public and private BMPs on a five year cycle.
- C. The City of Fredericksburg is diverse and includes larger urban areas as well as rural/agrarian areas. Due to the City being an MS4 jurisdiction, Fredericksburg is mandated to implement BMPs to meet assigned pollutant reduction targets for the

Chesapeake Bay. Per the MS4 regulations, the City's MS4 service area consists of the Census designated urbanized areas. They are concerned that implementing BMPs outside the MS4 area does not receive the same amount of credit as implementing BMPs within the MS4 area. They would also like to know how to designate the BMPs in CAST (under MS4 or not).

Questions arose during the discussion of MS4 permits and how baseline load reductions are incorporated into Virginia's progress to meet Chesapeake Bay pollutant reduction targets.

- A. *Does the achievement of pollutant reduction credits to meet baseline requirements within a MS4 jurisdiction go towards the waste load allocation requirement (targets for regulated lands) or towards the load allocation requirements (targets for unregulated lands)?*
- B. A MS4 locality implement BMPs outside of the MS4 service area/urbanized area, but in order to get credit to meet MS4 permit requirements, baseline must first be met for the project. This could include BMPs on agriculture land or developed land outside of the MS4 service area.
- C. There was mention that DEQ may come out with a fact sheet to clarify questions about baseline requirements.

ACTION: Joan Salvati (DEQ) will investigate the credit related to the location of BMPs outside of an MS4 service area and the baseline requirement and report back to the group. Joan will also provide clarification on how BMPs installed as part of an MS4 permit outside the MS4 area are classified in CAST.

Spotsylvania County

- A. The County's BMP Inventory is in an asset management program and includes approximately 2,000 BMPs.

King George County

- A. The County has BMP Inventory in the form of an Excel spreadsheet. King George is currently creating GIS data.
- B. King George inspects commercial BMPs twice a year and all others every five years.

VDOT

- A. VDOT does not specifically report Chesapeake Bay water quality offset best management practices.
- B. VDOT does report BMPs as required by its MS4 program. VDOT representatives expressed concerns in over counting BMPs areas and double counting post-development stormwater mitigation efforts.
- C. The BMP Inventory consists of strongly documented BMPs, GIS access, and a strong maintenance program and strategy.
- D. VDOT expressed interest in looking for opportunities for land limited Counties by going outside of the urbanized areas.
- E. Requirements to meet baseline sometimes discourages localities from undertaking projects within unregulated areas.
- F. Opportunity for collaboration on stormwater projects between state, county, and other partners.

Department of Forestry (VDOT)

- A. There are grants available to treat stormwater by creating forest buffers or planting certain species. It was noted that these grants could be around \$10,000, which could cover a planting/replanting project. These grants are passed down to VDOF from the U.S. Forest Service (USFS).
- B. VDOF has staff and the capacity to write planting plans with specialized teams consisting arborists, urban foresters, etc. that can address urban and rural needs depending on the project needs.
- C. There is concern over double counting BMPs since the reporting mechanisms for VDOF and VDEQ are different.

Land Trust Alliance

- A. The Land Trust Alliance recognizes that many of the localities and state agencies are land limited. They noted that there are local land trust partners that would be interested in collaborating. There are opportunities for land limited localities to collaborate with private land owners to implement projects.
- B. There are also potential partners that have not been around for Phase I and Phase II that could be interested in the Phase III efforts especially since land conservation is now a BMP.

Floodplain (National Flood Insurance Plan)

- A. Floodplain regulations present another opportunity to incorporate WIP Phase III goals. There is overlap between BMPs such as tree planting to restore streambanks, reduce sediment loads, etc. that also improve the quality of the Chesapeake Bay.
- B. It was noted that other efforts such as MS4 and the National Flood Insurance Plan have been more widely implemented because these efforts are mandated and are enforceable.

Concerns about BMP Inventories

- A. Not all BMPs have been verified to ensure they are functioning according to design
- B. Some BMPs have not been properly maintained and may not be operational
- C. BMP Inventories needs to be reassessed
- D. BMPs need to be spatially identified and database created to maintain information

Questions arose during discussion of how and where BMPs are being reported.

- A. The BMP Cleaning House includes the standards and specifications for BMPs while the BMP Warehouse is an online tool that localities can use to report BMPs.
- B. DEQ encourages utilizing the BMP warehouse to record information and report on BMPs.

Septic BMPs

- A. There needs to be an inventory of septic tanks. Numerous discrepancies have been noted regarding data/location for septic tanks. Additionally, there are issues pertaining to data entry of septic tanks and systems.
- B. It would be advantageous to create a septic tank inventory which could be used to evaluate strategies complimentary to WIP III efforts
- C. Currently, localities are not tracking septic tank pump outs as efficiently as they could be. A method for identifying and tracking these pump outs is suggested.
 - a. There are a few localities where jurisdiction-wide notification programs are required. These notifications occur every five years.

- b. There needs to be ways to educate property owners to report pump outs and create easier mechanisms for reporting. Better education strategies could influence and increase the response rates.
- D. An assessment of the location of septic systems in relation to existing sewer systems would be useful in determining opportunities for connection to public sewer.
- E. DEQ does have data and compliance reviews from the localities pertaining to septic tanks pump outs for Chesapeake Bay Program compliance. However, DEQ does not have spatial information for this data.

BMPs In Use

- A. The BMPs work well for development, but it is difficult for localities to finance voluntary implementation of BMPs. Most localities simply do not have the funds to maintain or implement voluntary best management practices without funding assistance.
 - a. Maintenance problems associated with permeable pavement were noted:
 - i. Clogging and build up are hard to maintain.
 - ii. Reduction for impervious surfaces is more tailored to urban areas
- B. There is a current push to building capacity at a construction level and planning level to implement MS4 requirements. Significant capacity and funding needs to implement WIP goals.

BMP Opportunities

- A. While storm drain cleaning may be an opportunity to reduce loads, it was pointed out that not everything captured in storm drain cleaning is directly attributable to a reduction of sediment loads. We would like to better understand how reductions for storm drain cleaning are calculated.
- B. Localities are generally unsure whether street sweeping in non-MS4 areas is occurring. Fredericksburg is already claiming credit for street sweeping for its MS4 program. Localities are proactively looking into opportunities to street sweep if funding is provided.
- C. There are interested property owners in the Wetland Reserve Program that would like to restore wetland systems. While the area has been previously reverted to forested areas, they are still not providing the traditional wetland function that was once in existence. Funding is needed to fully revert these areas back to wetlands. There is an opportunity to identify areas of collaboration or co-benefit.
- D. Forest Conservation (PDR and TDR) policies can be used to help arrange growth to or aid growth in jurisdiction. By providing a development incentive to manage as forest conservation or wetland areas, these policies could have positive impacts for localities. There is a need to assess the ranking system to determine how the PDR will occur or be approved for land conservation BMP. Adjustments to the ranking criteria might be necessary to get closer to 2025 goals. Additionally, there could be a creation of an entirely different program that incentivizes land conservation.
- E. Fredericksburg was the only GW locality that has conducted a tree canopy analysis and assessment.

5. Wrap-up & Next Steps

- A. The planning team will distribute meeting minutes, the DEQ workbook, a link to Lewie's table, and other resources.

- a. [“National 303d/TMDL Webinar Series: Examples of TMDL Tracking and Reporting”](#) is an archived video that includes two presentations. The first presentation “Making Progress Count: An Overview of the Chesapeake Bay Program’s Efforts to Estimate Pollution Reductions” (40 min) was recorded in September 2017 and provides an easy to understand history and methodology for the Chesapeake Bay TMDL.
 - b. [“Using CAST to Develop an Environmental Control Plan for Nitrogen, Phosphorus and Sediment”](#) is an archived video (60 min) recorded in June 2018 as an introduction to using the CAST model software online.
- B. The Berkley Group will compile all of these WIP III ideas into the deliverable formats that DEQ requested. This will be shared with the local stakeholders prior to the next meeting.
 - C. Next meeting will be Sept. 20, 10-12pm (406 Princess Anne St. Fredericksburg, VA 22401)
 - D. DEQ is hosting a webinar on the WIP Phase III program Sept. 5. Find details and register here: <https://register.gotowebinar.com/register/5161409239764379650>

Appendix C

Phase III WIP Stakeholder Meeting II

GWRC Conference Room
406 Princess Anne St. Fredericksburg, VA
September 20, 2018
10 am – 12 pm

MEETING NOTES

Attendees in person: David Nunnally (Caroline County), David Evans (DEQ), Ashley Hall (Stantec on behalf of VDOT), Ibrahima Timbo Diallo (VDOT), Kathleen Harrigan (Friends of the Rappahannock), Kevin Utt and John Saunders (City of Fredericksburg), Scott Rae and Joseph Fiorello (Stafford County), Kevin Byrnes (Regional Decision Solutions), Heather Hall and Michael Newchok (King George County), Lynne Keenan (NSF Dahlgren), Marta Perry (TCC SWCD), Joseph Stepp, III (HC SWCD), and Darren Coffey, Denise Nelson, and Starla Couso (The Berkley Group)

Attendees by phone: Ross Pickford (Conservation Concepts)

1. Welcome and Introductions

The meeting was conducted as a group discussion to revise the Excel workbook provided by DEQ. Many of the recommendations by the group were captured in the workbook; therefore, the workbook is a vital component of the minutes.

2. Discuss Best Management Practices (LAPG BMP tab in workbook)

General

A. The GWRC workbook represents the entire planning district area. Following up on the request from the localities, The Berkley Group will ask DEQ for locality specific workbooks.

Following the meeting, DEQ provided an additional workbook tab "County BMPs" that indicates the number of BMPs for each County for 2017, WIP 2, and 2025 Available.

B. Stakeholder are concerned about the accuracy and extent of data on existing BMPs in the workbook.

- a. We recommend supporting localities in performing a BMP inventory and hiring staff for tracking future BMPs.

C. Synergies with VPDES.

- a. We would like DEQ to clarify if BMPs required per VSMP on new parcels of developed land larger than 1 ac may qualify as BMP ESC2 in CAST.

Following the meeting, DEQ provided this information:

The ESC controls or temporary BMPs in VSMP would qualify for ESC level 2. However, the long term BMPs are reported separately for progress and if they can estimate the types and number of these that might be implemented via VSMP that can include those BMPs such as bioretention in the amounts they project for 2025.

Alternately, long term stormwater controls may be projected using either the Runoff Reduction or Stormwater Treatment performance standard BMPs. It is important to note that, to avoid double-counting, the same development area cannot have both a performance measure BMP and individual stormwater management practices, like bioretention, included in WIP III target.

- b. We recommend DEQ prioritize the VSMP BMP menu based on nutrient removal, cost-effectiveness, and co-benefits.

Developed BMPs

D. Forest Buffers

- a. The workbook lists 0 acres for 2017 and 288 acres for WIP II. There is concern that the WIP II number is higher than possible.
- b. The definition calls for creating buffers with a 35 foot minimum width, and does not include commitments to conserve the buffers for a period of time or in perpetuity. We would like clarity on the requirements to properly inform public and private landowners.
- c. The Tree Planting Program in VCAP (Virginia Conservation Assistance Program) has a voluntary 10-year conservation agreement. We recommend adopting this stipulation and providing more funding to VCAP to engage landowners in the incentive the program.

Following the meeting, DEQ provided this information:

The majority of these BMPs have been implemented via cost share programs which require the installer to commit to a practice maintenance timeframe. However, after that period it is possible for a land owner to remove trees. In terms of modeling, the reductions assumed are for mature tree growth (~15 yrs). If there is no cost share requirement, trees planted and credited toward one of the BMPs noted could be removed before the 15 year assumed growth.

However, if the tree-planting BMP were reported by DEQ as progress toward Virginia's CBP goals, the installer would need to inform DEQ that the buffer or tree planting had been removed before the lifespan or credit duration period so DEQ could remove it from its BMP progress report. Currently, the lifespan/credit duration period is 10 years for buffers and 15 years for urban forest planting.

- d. We recommend providing more funding to Virginia Department of Forest to support their forest buffer incentives.

- E. Advanced Grey Infrastructure Nutrient Discovery Program. Localities have had difficulty claiming credit for this BMP since one violation makes them ineligible. Although it is a cost-effective measure, a few localities do not recommend this BMP to their peers.
- F. Tree Planting – Canopy.
 - a. Similar to forest buffers, this definition does not include commitments to conserve the trees for a period of time or in perpetuity. We would like clarity on the requirements to properly inform public and private landowners.
 - b. We suggest the development and funding of a cost-share program that encourages tree planting. We may need support with a Comprehensive Plan Amendment.
- G. Street Cleaning. It is doubtful that we will meet its goal of 561 acres as projected by WIP Phase II. As of June 2017, there have been no acres recorded.
- H. Wet Ponds and Wetlands. The City of Fredericksburg has found constructed wetlands to be most cost-effective and to provide the greatest return on investment. They have also had success with converting dry ponds to wetlands. They recommend their peers consider installing wetlands or converting other BMPs to wetlands.
- I. Conserved open space. The City of Fredericksburg has found maintaining sheet flow to conserved open space to be a cost-effective approach to stormwater quantity and quality management.
- J. Dry Extended Detention Ponds.
 - a. We suggest legislation to allow for a simplified VPDES permit and ESC plan or exempt the permit requirement for small projects on private land. This might encourage the use of dry extended detention ponds as a best management practice.
 - b. VCAP has funding for small detention, bio-retention, and rain gardens on private property. Again, we recommend increasing funding for VCAP.

Septic BMPs

- K. Septic Pumping.
 - a. GWRC utilized a NFWF grant to commission consultants to investigate the prevalence and quality of septic systems and data on those septic systems. The team estimate the number of septic system pump outs for 2017 to be 4,886, much higher than the 118 noted in the workbook. The team also estimate the total number of septic systems in 2025 to be 76,085, up from 56,043 in the workbook. Based on those numbers, we are increasing the number of septic system pump outs in WIP III.
 - b. We recommend developing a pilot program that would help local governments and VDH better coordinate their respective efforts to monitor and maintain septic systems in the GWRC region. This pilot program would establish a more robust marketing campaign to educate local residents in the importance of maintaining their respective septic systems, while also exploring mechanisms in which both local governments and VDH can better monitor the maintenance of these systems.

- c. We recommend exploring mechanisms in which the Commonwealth, either through legislative or administrative means, can assist lower income residents in maintaining their respective septic systems.
- d. We recommend tracking of maintenance of septic systems be transferred to the local Health Department. Localities are working to capture septic pump out numbers, while the Health Department is issuing permits, making it difficult for localities to tract the actual number.
- e. We recommend a state-wide maintenance program for failing septic systems.
- f. DEQ has grants for septic work under the Water Quality Improvement Fund. This program is utilized by Culpeper who established, a cost share program for septic maintenance.

Natural BMPs

- L. We suggest providing funding for a grant or cost share program to incentivize property owners to implement natural BMPs.
- M. We recommend encouraging and supporting VDOT in partnering with localities on natural BMPs. Opportunities may arise as synergies with VDOT projects or when VDOT BMPs need inspections or maintenance.
- N. There are opportunities for partnerships with the Soil and Water Conservation Districts because of the overlap in natural BMPs.
- O. Urban Shoreline Management.
 - a. The definition refers to improvements “along” shorelines and requires measurement in linear feet. Some urban shorelines are vertical banks or cliffs that require vertical erosion control measures. Should these use Urban Shoreline Erosion Control Non-Vegetated which is reported in feet and acres?

Following the meeting, DEQ provided this information:

Since this is a planning effort, DEQ recommends using the Urban Shoreline Management BMP, as it only requires the length restored to be estimated. The Urban Shoreline Non-Vegetated BMP has 2 measures: length restored and Protocol 1 TSS. The vegetated version of the BMP has Acres Planted, Length Restored, and Protocol 1 TSS. Estimates for Protocol 1 TSS, based on area or length restored, are derived from applying the expert panel report on shoreline erosion BMPs. It is worth noting that DEQ is not sure the BMP is meant for cliff faces and it would be important to review the panel’s report before deciding to use this BMP.

3. Discuss Programmatic Table

- A. Programmatic Actions, Metrics, Funding and Capacity Needs, Co-benefits, and/or Gaps in Authority are noted in item 2 above in terms of each relevant BMP.

4. Wrap-up and Next Steps

- A. Wrap up. We have completed the second of four meetings designed to create a peer network for fine tuning the WIP II recommendations according to local criteria. We are scheduled to have two more meetings prior to submitting the new WIP III recommendations to DEQ on Dec. 14. In 2019, DEQ will be compiling, analyzing, and preparing state-wide WIP III recommendations. These will be available for public comment in the spring prior to being sent to EPA.
- B. Homework.
- a. We are sending you files for your review:
 - i. These meeting minutes
 - ii. The Excel workbook
 - iii. The septic system study
 - b. Please review the following and return comments to Denise Nelson at The Berkley Group (denise@bgllc.net) by Oct. 12.
 - i. Excel workbook, LAPG BMPs tab. Review the amounts in the WIP 3 column. Confirm these BMPs and amounts are feasible or suggest revisions.
 - ii. Excel workbook, Programmatic Table tab. Review the entire tab. Confirm the information is accurate and complete or suggest revisions.
- C. Next meeting date. The dates for meetings 3 and 4 will be announced in mid-October.
- D. Resources:
- a. Chesapeake Bay Program:
<https://www.chesapeakebay.net/what/programs/modeling>.
 - b. CAST model: <https://cast.chesapeakebay.net>.
 - c. EPA: www.epa.gov/chesapeake-bay-tmdl
 - d. DEQ:
www.deq.virginia.gov/Programs/Water/ChesapeakeBay/ChesapeakeBayTMDL.aspx
 - e. Chesapeake Bay Preservation Act
<https://www.deq.virginia.gov/Programs/Water/ChesapeakeBay/ChesapeakeBayPreservationAct.aspx>

Attachments:

1. Excel workbook
2. The septic system study

Appendix D

Phase III WIP Stakeholder Meeting III

GWRC Conference Room
406 Princess Anne St. Fredericksburg, VA
November 9, 2018
10 am – 12 pm

MEETING NOTES

Attendees in person: Daniel Moore and David Evans (DEQ), Ashley Hall (Stantec on behalf of VDOT), John Saunders (City of Fredericksburg), Scott Rae (Stafford County), Marta Perry (TCC SWCD), Rachelle Knight (Naval District Washington), Chantz Bollard and Joe Gassaway (Spotsylvania County), Jennifer Miller Herzog (Land Trust Alliance), Patrick Coady (Northern Virginia Conservation Trust), Doug Pickford and Ross Pickford (Conservation Concepts), and Drew Williams, Denise Nelson, and Starla Couso (The Berkley Group)

Attendees calling in: David Nunnally (Caroline County)

*Action items are noted in **bold**.*

1. Welcome and Introductions

A. Update on Data Gathering:

- Information and data gathered by the Virginia Department of Transportation (VDOT), Virginia Department of Forestry (VDOF), and the Virginia Department of Health (VDH) will be sent directly to the Virginia Department of Environmental Quality (VDEQ).
- **King George County will send septic data to the Berkley Group by the end of the week.**

B. Request for Data:

- The Virginia Outdoor Foundation, a quasi-governmental organization under the Department of Conservation and Recreation (DCR), suggests identifying conservation easements through the DCR's website.
- The Land Trust of Virginia knows there is an aggregation of DCR data that could be helpful in identifying conservation land.
- The Northern Virginia Conservation Trust suggests reading the George Washington Regional Commission Green Infrastructure Report.
- The DOD Conservation Department will follow up with any pertinent information.

2. County BMPs (see third tab in workbook)

Caroline County

- A. The County installs BMPs as required by MS4 stormwater permit. If there are additional funds provided by the Commonwealth, Caroline County is willing to invest in the Watershed Implementation Project and non-mandated best management practices.
- There needs to be more information and analysis completed before the County can move forward. At this time, no estimates can be made due to certain constraints of funding and capacity and the lack of information on best management practices county-wide.
 - There are certain assumptions about available land for BMPs worked into the CAST model for non-regulated MS4 jurisdictions, but these available lands might be constrained for other reasons that the model cannot account for.

City of Fredericksburg

- A. **The City of Fredericksburg will respond to the Berkley Group's data request.**
- B. Any commitment to new BMPs will be addressed in the TMDL Action Plan. Non-MS4 areas within the jurisdictions are difficult to commit to because of funding and capacity constraints.
- C. In the BMP Warehouse, adjustments need to be made to more accurately reflect the BMPs on the ground. City staff will not have capacity to make these adjustments until after January 1, 2019.
- D. There is a Storm Drain Cleaning Program in Fredericksburg. The cleaning schedule follows a cycle or is conducted on a complaint-based schedule.
- E. The Street Sweeping also occurs on a regular basis, but there are no areas outside of the MS4 boundary that are being swept. The non-MS4 areas are not public roadways.

Stafford County

- A. The County has data on BMPs inside and outside the MS4 service area.
- B. Is that information—outlining the non-MS4 areas—captured in the BMP Warehouse?
- No, this information needs to be better assessed to see what is in the BMP Warehouse and then, its completeness can be determined.
 - The County has specific staff designated to conduct post-BMP inspections and entry into the BMP warehouse.
- C. **The Berkley Group will follow-up with Stafford County staff.**

Spotsylvania County

- A. The County has a BMP Inventory of areas outside of the MS4. Up to the year 2000, the BMP Inventory is relatively complete. To date, there are at least 20,000 BMPs on the ground. However, this data is not captured in the BMP Warehouse. **The Berkley Group will contact Richard Street, Environmental Engineer, about the BMP Inventory.**
- B. The Green Infrastructure Report has economic projections that maybe to useful to reference the numbers recorded in the CAST model.

- Consider reading the Healthy Water and Forest Study, which outlines the application of Forest BMP retention.

Conversations about Credits and CAST

- A. Instead of on-the-ground BMP installments, purchasing nutrient credits from elsewhere can be an additional way to achieve installed BMP credit. The nutrient credit will be counted for purchasing jurisdiction rather than the jurisdiction that houses the installed BMP to ensure the BMP will not be double counted. These practices of trading nutrient credits are not counted in CAST.
- B. In this WIP III Plan, the model has already projected the 2025 reductions necessary to achieve the 2025 goals. The traditional TMDL Action Plans use a starting point and try to make up for previous non-compliance. This WIP III effort is to offset development in 2025 that potentially has not occurred yet. What is the starting point?
 - Additionally, the CAST model makes the assumption that there are not regulations currently in place to hold the jurisdictions at its baseline compliance level.
 - There is confusion because the MS4 permit attempts to offset past developmental actions and bring jurisdictions back to neutral or net zero; whereas, WIP attempts to project target goals outside of areas that are MS4 compliant.
 - This difference between MS4 and non-MS4 need to be addressed. New development—per MS4 requirement—will not meet the goals of 2025.
- C. Phase II of WIP has not been implemented yet because of the lack of capacity. There are concerns that there has not been enough time to see the true impacts and further implications of WIP Phase II yet. Therefore, it is hard for jurisdictions to make determinations and assumptions about their numbers for Phase III and planning for 2025.

4. LAPG BMP (see second tab in workbook)

- A. Forest Buffer, Forest Planting, and Tree Planting - Canopy
 - Virginia Section 319(h) TMDL Implementation Program could provide grant funding to support this BMP effort.
 - The largest areas within this Regional Commission for forest planning are attributed to Spotsylvania County. In the City of Fredericksburg, the City is using GIS to model Tree Canopy, while utilizing the guidance from the Urban Tree Canopy Analysis to assess its ability to create forest buffers and tree canopies.
- B. Street Cleaning
 - Is the unit for measuring the BMP in acres or lane-miles? Both units are acceptable in the definition. See definitions on BMP Definitions (non-ag) Tab.
- C. Dry Pond to Wet Pond Conversion
 - The City of Fredericksburg has expressed interest in converting their Dry Ponds to Wet Ponds for credit. It has shown to be a cost-effective.
- D. Nutrient Management Plan

- Nutrient Management Plans should be implemented by the appropriate authority, whether that is at federal, state, or local level.

E. Impervious Surface Reduction

- Under VSMP standards, converting development to a previous condition that is “better” (by removing the development), creates a more pervious surface or condition. Consequently, when that area is redeveloped, the area is converted to an impervious surface. Redevelopments get some incentive to meet quantity requirements, but those initiatives are not taken before redevelopment occurs.
- In this model, impervious reduction numbers are projected based on existing impervious surfaces.
- There may be more opportunities on City-owned property to reduce impervious surfaces.

F. Urban Stream Restoration

- There is interest and concern about stream restoration from homeowners. Ideally, there would be a program to address nutrient management for homeowners that want to implement stream restoration BMPs; however, there is no support to help homeowners to do this.
 - If there is a community that is interested, reaching out to or educating homeowners might be plausible. There is certainly potential.
 - First, the number of homes needed to cause a reduction in nitrogen, phosphorus or sediment needs to be calculated. This could be a recommendation under the Programmatic Actions tab.
- VCAP has data for implemented projects through the VCAP area. Similar programs:
 - Stafford has a Healthy Lawns Programs.
 - Turf Love Program

G. Septic BMPs

- **Conservation Concepts will have a meeting with the Virginia Department of Health and the report back to The Berkley Group and the George Washington Regional Commission when the information becomes available.**

5. Programmatic Table (see fifth tab in workbook)

A. Allow for Regional BMPs

- The old nutrient credit bank programs faded away after the MS4 program and private investors got into the market.
 - Allowing for regional BMPs could be an additional incentive for development if goals are not being met. Currently, it is not credited as an allowable BMP due to constraints to trade within the applicable watershed.

- Jurisdictions used to be able to establish regional programs and facilities where developers could pay to develop and not treat waste on site. Localities had control over what kinds of facilities and where these facilities were installed. In this way, there is was a tangible, local benefit as opposed to a non-local benefit that would occur from buying nutrient credits from other watersheds.
- Clarify two separate Programmatic Action recommendations:
 - 1) Localities should still have the ability to establish a regional program. Potentially reword the BMP to capture the wishes of the Regional Commission and the represented jurisdictions. The rewording might include how localities should concentrate on BMPs that meet the TMDL requirement as opposed to a BMP for development purposes.
 - 2) Focus on the technical aspects of BMPs and how the definition might be applicable in a local context as opposed to a regional context to make it easier to measure and asses the requirements, costs, or needs.
- For additional guidance, look into the D.C. stormwater credit program. If jurisdictions go above and beyond the target goals, they can sell the left-over nutrient credits on the market.

B. Tax Credit Program

- Tax Administrators are concerned about creating a tax credit program because the program could severely or adversely impact the budget.
 - There should be more grants available for BMP implementation or there should be a stormwater fee. There could be a program in place to get tax reductions or have a separate tax.
- Financial incentives could be in the form of tax credits, break on utilities, etc.
 - SLAF Grants are based off of numbers that can actually be accomplished and that are economically viable.
- The fee could be based on the impervious area of the property or be implemented through an income tax.
 - If added to the Programmatic Actions Table, make sure to differentiate between a fee and income tax. There are certain legal differences.

C. Enable MS4 to purchase nutrient credit from areas outside of their basin

- Local water quality is an important issue but enabling nutrient trading program could be the last step in achieving the final 2025 goals of WIP.
- The current way—without a credit program that is cross-watershed—is good enough. Local officials want to see the benefit in their own localities, not down in other areas of the watershed.
 - There are concerns that certain localized-political issues might get in the way of implementing the suggested nutrient trading program.
- Is it better to treat the pollution at the source or to do it down the stream?
 - While the mandate is to delist the Bay, creating a nutrient trading program across watersheds might not be desired in this area.

- From a conservation point of view, there might be no beneficial conservation outcome if the sole focus is to trade nutrient credits and fulfil the mandate any way possible.

D. Forest Buffers

- Creating a Forest Loss Program that is similar to the Wetland Loss Program.
- Consider reading the Healthy Forest Retention Report, which discusses the possibility of the Forest Loss Program and its beneficial impacts.

E. General thoughts

- Combined with other BMPs that are relate to cost-share programs.
- If the cost-share involved the federal government, who would get the credit for a structural BMP?
 - Based on the way the nutrient trading program works, the BMP should count by the purchasing jurisdiction or entity.
- To incentivize the federal government to get involved and continue to fund projects, the federal government should also receive part of the benefit from the cost-share. The concept would be to provide nutrient credits to the funding source, so they would have a greater interest in providing funding to local governments. This way, an there is an incentive for both parties.
 - The benefit does not have be monetary. It could be land acquisition.

6. New Programmatic Actions:

A. Shift the money invested in point sources to be allocated to non-point sources.

- Add to the Programmatic Actions.

B. Local Stormwater Plan Review

- Planning District Commissions and Regional Commissions should partner with Soil and Water Conservation Districts to review Local Stormwater Plans in addition to DEQ.

C. Investment in Grey Infrastructure

- These jurisdictions need to see the level of and projection of investment in grey infrastructure across the Regional Commission. It would be especially beneficial when attempting to get other local government officials on board.

D. Continue to provide funding and grant money for VCAP.

- This would include additional staff, additional or increased funding, identifying ways to institutionalize a program, and expand the program.

E. Homeowners that have Stormwater Problems

- There are no protections from the seller to tell potential buyers about stormwater issues and there is no support for the homeowner if a stormwater issue is found on the property.

- There needs to be an institutional mechanism to enforce disclaimers and disclaimers for home buyers should be given before the sale is made. Additionally, there could be funding support to the seller to fix the problem before the house goes on the market.
- Consider as a a co-benefit.

7. Wrap-up and Next Steps

A. There will be other opportunities for public input and engagement in WIP Phase III even after the Final Report for this PDC is submitted to DEQ. The final report will be open to public comment in the spring of 2019.

B. Localities and stakeholders will send remaining data by November 15th.

C. As this PDC progresses, keep in mind that planning targets for 2025 goals are what the localities want to pursue based on the knowledge that each locality has regardless of the funding or capacity issues that each locality faces. The task of the PDCs is to determine what they need (more funding, larger capacity, etc.) in order to purpose their desired best management practices.

D. Project schedule:

- November 15: Localities check warehouse and 2017 and 2025 WIP III numbers.
- November 26: Berkley Group sends draft report and meeting 4 materials
- November 28: Meeting 4 (joint)
- December 10: Berkley Group sends draft report for last review
- December 14: GWRC submits workbook and report to DEQ

E. Next meeting

- Our last meeting is **Wednesday, Nov. 28 from 1-4pm at Germanna Community College**, Sealy Auditorium/Room 134, 10000 Germanna Point Dr, Fredericksburg, VA 22408, United States.
- This will be a public meeting for GW, Commonwealth, Middle Penninsula, Hampton Roads, and Northern Neck PDCs/RCs and DEQ to share highlights of the PDC/RC recommendations, SWCD Area III staff and DCR to share highlights of the agriculture and forest land recommendations, and all stakeholders to engage in a discussion on potential coordination and collaboration to implement practices and policies to improve water quality.