

CITY OF CHARLOTTESVILLE

"A World Class City"

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February 1, 2012

Mr. David Johnson, Director
Department of Conservation and Recreation
203 Governor Street
Richmond, Virginia 23219-2010

Dear Mr. Johnson,

Enclosed please find the City of Charlottesville's input for Virginia's Chesapeake Bay TMDL Phase II Watershed Implementation Plan. This serves as the Community Conservation Information submittal requested by the Virginia Department of Conservation and Recreation in letters dated July 8 and November 9, 2011. Like many communities in this important watershed, Charlottesville wants to see the health of the Bay improve and we recognize the importance of actions at both local and regional scales. We are pleased to provide this submittal as part of our ongoing commitment to supporting the Bay TMDL process and appreciate the opportunity to provide more specific information on our approach and to outline our intended actions in support of the Bay TMDL and local water quality.

The enclosed information supports the Virginia WIP and we expect that Charlottesville's understanding of the Bay TMDL and our locality's role and responsibility in its implementation will contribute to the Commonwealth's demonstration of reasonable assurance of Bay TMDL compliance.

If you have any questions regarding this submittal, please contact Kristel Riddervold, the City's Environmental Administrator, at 434-970-3631 or riddervold@charlottesville.org.

Sincerely,

Maurice Jones
City Manager

CITY OF CHARLOTTESVILLE, VIRGINIA
INPUT FOR VIRGINIA'S PHASE II WATERSHED IMPLEMENTATION PLAN
2/1/12

LOCALITY OVERVIEW

The City of Charlottesville is a 10.4 square mile urban community with a population of just over 40,000 people. Charlottesville is situated within the 750 square mile Rivanna River watershed. The Rivanna River watershed is part of the larger James River watershed, the largest watershed in Virginia; the James River is a major tributary of the Chesapeake Bay. Originating from springs in the foothills of the Blue Ridge Mountains, the Rivanna River flows along the eastern portion of Charlottesville and forms a boundary with neighboring Albemarle County.

In accordance with EPA's Phase 2 Stormwater Regulation of 2000, Charlottesville was designated as a small municipal separate storm sewer system (MS4 Phase II) community and has been operating under a General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems since 2003. Charlottesville has demonstrated ongoing compliance with permit requirements.

The City's 10.4 square miles contain approximately 35 miles of open waterways, with approximately 13 additional miles of waterways that flow inside of the stormwater infrastructure system. Charlottesville consists of three main drainage areas. Approximately 1.3 square miles of the eastern portion of the city drain via small tributaries or directly into the Rivanna River. The remainder of the City is divided into two other drainage areas, the Meadow Creek and Moores Creek watersheds, both of which drain into the Rivanna River. The Meadow Creek watershed spans the northern portion of the city and has a highly urbanized drainage area of approximately 8 square miles, about 70 percent of which is located within the city limits. Moores Creek, which has its headwaters in Albemarle County, forms the southern boundary of much of the City; approximately 3.8 square miles of the city drain into the creek. The 35 square mile Moores Creek watershed encompasses diverse land uses including highly urbanized, suburban and rural, agricultural, as well as open space areas within Charlottesville and Albemarle County. Approximately 20 percent of the University of Virginia's property is located within the City's corporate limits. In addition, approximately 27 acres are occupied by federal facilities.

The City has a reputation of environmental commitment and action that includes, but is not limited to:

- An Environmental Sustainability Policy issued in 2003
- A City Council 2025 Vision that includes a "*Green City*" component addressing a range of environmental goals, including "healthy rivers and streams", "clean water", and "minimizing stormwater runoff"
- Zoning Ordinance and Comprehensive Plan that support environmental protection
- Active green building program for municipal projects (numerous LEED certified projects completed and underway)
- Designation as a Tree City USA, development and implementation of an Urban Forest Management Plan, voluntary designation of 100-foot stream buffers on major waterways

- Completion of a comprehensive assessment and inventory of stormwater retrofit opportunities on public lands
- Installation of various voluntary municipal stormwater retrofits, including rain gardens and bioretention filters, rainwater harvesting systems, pervious pavements, and a vegetated roof
- Ongoing stream restoration efforts based on natural channel design principles
- Conveyance of permanent conservation easements on municipal land (over 68 acres to date)
- Participation in ongoing public education and outreach initiatives on the topic of preventing water pollution and other environmental stewardship principles
- Offering rebates for residential rain barrels
- Facilitating storm drain placarding and stream cleanups

CHARLOTTESVILLE'S PROCESS FOR DEVELOPMENT OF WIP INPUT

The City has made participation in the Chesapeake Bay TMDL a high priority and has afforded its staff time to attend and participate in a variety of Bay TMDL and Watershed Implementation Plan (WIP) educational and planning meetings. These have included EPA-hosted webinars, conferences and meetings of regional professional associations, and tailored discussions with our local Thomas Jefferson Planning District Commission (TJPDC) and the Rivanna River Basin Commission (RRBC). The City also participated in the Piedmont Regional Pilot Project, an effort coordinated by the RRBC which focused on identifying strategies for local engagement during the Phase II WIP process. Staff has participated in several Virginia Assessment Scenario Tool (VAST) related training sessions and has tracked updates and guidance disseminated through the Virginia Department of Conservation and Recreation (DCR).

In addition, staff members from various City Departments were identified to work together as an internal team to evaluate and establish the most appropriate and relevant local approach for the Phase II WIP process. A series of meetings to present and discuss information as it became available took place starting in early 2011. By late September 2011, the team developed a plan of action to respond to the request from DCR for local participation in and input to the development of Virginia's Chesapeake Bay TMDL Phase II WIP and submitted a letter summarizing this plan to DCR.

The ongoing process undertaken by the staff team consists of:

- Collecting additional data, assessing, and updating the City's current BMP inventory
- Evaluating the Bay Model land use/land cover information and comparing it to local data
- Reviewing the 2017 and 2025 BMP Scenarios provided by DCR
- Assessing various strategies from regulatory, financial, effectiveness, and practicability perspectives
- Examining local strategies to implement potential local BMP scenarios
- Identifying resource needs to implement the strategies and potential local BMP scenarios

The outputs of this process to date are provided in the following sections of this memo.

WIP ELEMENT #1 – BMP INVENTORY / IMPLEMENTATION PROGRESS

The City of Charlottesville recognizes DCR's interest in updating the Bay Model to account for all existing BMPs and appreciates the opportunity to provide an updated, accurate BMP inventory that will contribute to critical refinement of the Bay Model. The exercise of cross-checking the model data with our local data has confirmed that there are inconsistencies.

Data submitted via VAST on February 1, 2012, and included as Attachment 1, provides the City of Charlottesville's most up-to-date inventory of acres treated in the City of Charlottesville by BMPs installed from January 1, 2006 through December 31, 2011. We expect that credit for acres treated by BMPs installed post-July 1, 2009, which would not have been accounted for in the 2009 Progress BMPs, will count towards meeting the City's local Bay goals.

We have been required to submit BMP inventory updates to DCR as part of the annual MS4 reporting requirements and will continue to do so, with the expectation that these will be used to demonstrate ongoing local progress.

WIP ELEMENT #2 – LAND USE / LAND COVER CORRECTIONS

The City of Charlottesville similarly appreciates the opportunity to provide DCR with more accurate land cover data so that the Bay model can be improved to better reflect reality at the local level. Charlottesville, along with several neighboring communities, invested in the development of a high resolution (one foot) land cover map based on 2009 aerial photography (*Rivanna Watershed and Vicinity Land Use/Land Cover Map, 2009*). The GIS based tool identified impervious and hydrologic features, deciduous and evergreen tree cover, open land, pine plantation, forest harvest, orchard/vineyard, bare earth, and golf courses. In addition, using tools and support from the Virginia Department of Forestry and Virginia Tech, in 2009 the City developed an urban tree canopy assessment and associated GIS data layer, which indicated that the City had a 46.6 percent urban tree canopy coverage. Both of these local data sets show that the City has a much higher level of forest cover than the Bay Model portrays. The City also maintains an impervious area data layer in GIS. Most recently, in Fall 2011, a delineation of regulated and unregulated acreage in the City of Charlottesville was initiated. Refinement of this database is ongoing, but initial analysis shows that the amount of unregulated acreage (both pervious and impervious) in the City is undercounted by the Bay Model. The data from these recent and locally-focused sources clearly highlight significant inaccuracies with the Bay Model for the City of Charlottesville, most specifically with respect to forest cover and regulated pervious and impervious acreage.

Data submitted via VAST on February 1, 2012, and included as Attachment 2, provides updated City of Charlottesville land use and land cover information, as depicted in the *Rivanna Watershed and Vicinity Land Use/Land Cover Map*. Although we are unclear as to the process for updating the Bay model with these corrected local data, we request that these more accurate local data be used to inform future model revisions.

WIP ELEMENT #3 – BMP SCENARIOS

City staff initially received land use/land cover data and nitrogen, phosphorous, and sediment loads and reduction goals generated from the Bay model version 5.3, as well as 2009 Progress BMPs and 2017 and 2025 Proposed BMP Scenarios in late June 2011. Revised land use/land cover and loading and reduction goals from the Bay model version 5.3.2 were delivered to the City in late September 2011. At that time, staff evaluated notable changes in the data, including significantly higher pollutant loads and reduction goals, and correspondingly higher BMP implementation rates in the 2017 and 2025 Proposed BMP Scenarios developed for the City of Charlottesville by DCR. Changes to these data and scenarios appear predicated by changes to the land use, most notably a shift of a large percentage of land from forest to

regulated urban pervious. It must be noted that the first round of land use data generated from the Bay Model version 5.3 more accurately reflected local land use, particularly in regards to forest cover. Charlottesville appreciated DCR's indication that localities were not obligated to accept the proposed BMP scenarios and had the opportunity to develop and submit preferred local BMP scenarios. It is our understanding that a preferred local BMP scenario would be accepted if it achieves a similar level of effort as the Phase I WIP mix of BMPs.

Initially, the development of preferred local scenarios appeared to be the appropriate approach for the City of Charlottesville. However, after significant time and effort has gone into evaluating these data and working with VAST, it has proved difficult to develop a preferred, alternate 2017 or 2025 scenario at this time. A variety of reasons contribute to the concerns with submitting a preferred, alternate scenario, including:

- The use of data generated from a model that, with EPA's acknowledgement, is not appropriate for use at the local level to accurately determine pollutant loads and corresponding pollutant reduction requirements and, by extension, the uncertainty associated with gauging the true effectiveness of BMP substitutions on load reductions.
- The use of land use and land cover data that conflicts with more accurate local data and the inability to substitute the local data into VAST or other tools to understand implications on loads, loading rates, and reduction percentages across sub-sources.
- The difficulty of working through this process with the limited guidance that was provided and which required frequent requests for clarifications. There is associated concern that the varied approaches taken by different localities to calculate the VAST input data will result in outcomes that are not comparable among and between other localities, further contributing to uncertainty.
- Major concerns associated with the BMP efficiency rates assigned in the Bay model and VAST to urban stream restoration. Until very recently, the efficiencies available via VAST were extremely low. Various technical sources have suggested that higher rates would be more appropriate. The City understands that EPA has established an expert panel to assess available data and to develop a more representative accounting of the practice's effectiveness. On January 20, 2012, we received an update to this issue via a forwarded DCR email stating that *"The interim BMPs for stream restoration with the higher efficiencies are now available in VAST as "Urban Stream Restoration – interim" and "Non-Urban Stream Restoration – interim." These interim BMPs have about 10 times more reduction than the original BMP."* The City is encouraged that this BMP is being reviewed and supports the use of more appropriate rates that reflect the value and effectiveness of stream restoration. Subsequent caution regarding the use of the interim numbers, however, was also received, and provides further uncertainty about how much confidence can, at this point in the process, be placed on the newly issued interim values. The City of Charlottesville is about to begin the construction phase of a major urban stream restoration project that will involve over 9,000 linear feet of stream restoration and riparian buffer enhancement. As such, the potential influence of this practice has a tremendous effect on the overall suite of practices that would make up an alternate, locally-preferred scenario. This is a fully funded environmental restoration project whose "treatment" in the model has a major influence on the scope and scale of other costly (and currently unfunded) BMPs necessary to work towards the target goals.
- The reality that within the window of time provided, it has been impossible to fully assess the range of technical, financial, and logistical implications of various scenarios. As such, there are significant concerns regarding how a locality will be held to the scope and scale of a proposed alternative scenario, as well as concerns regarding MS4 permit implications. All efforts

completed to date are considered analyses or internal assessments, not qualified to be viewed as a plan or a commitment.

- General uncertainty regarding how the determination would be made by DCR that the alternate scenario “achieves a similar level of effort”, since the criteria have not been made clear.

As such, the City of Charlottesville will not be submitting a preferred local BMP scenario, but does offer a set of strategies that will contribute to pollutant reductions at the local level. Charlottesville has a track record of active participation in water quality improvement initiatives and plans to continue in this role. A portion of our local progress is anticipated to occur as a result of (re)development in our dense urban community that will be required to meet the revised Virginia Stormwater Management Regulations. We also anticipate that over the next several years BMPs that are less expensive, have increased effectiveness, and are more practicable to implement will become available.

We understand that DCR intends to use the WIP I default scenario for Charlottesville as a placeholder, and while we cannot commit to implementation of that exact scenario or endorse it as presented, we are committed to participating in local level pollutant removal efforts and implementing practicable and cost-effective BMPs in the time window associated with the Bay TMDL WIPs. It must be pointed out that the default scenario utilizes a BMP (infiltration) that has limited applications in this area. Staff will continue to assess alternative BMPs that can achieve comparable pollutant reductions but wants to ensure that the inappropriateness of the extent to which infiltration BMPs are relied upon in the default scenario is clearly conveyed in this response.

As a Phase II MS4 locality, the City of Charlottesville reserves the right to review and revise the Phase I WIP default scenario for land contained within the MS4 service area of our permit as part of any TMDL implementation planning that may be required or performed pursuant to the permit. It is the City's understanding that as a MS4 permit holder, the implementation of the water quality goals of the Bay TMDL and other TMDLs is governed by the “maximum extent practicable” standard.

We look forward to future opportunities which will allow for the appropriate, practicable, and technically viable local strategies that have been seriously examined as part of this Phase II WIP process to be integrated.

WIP ELEMENT #4 – IMPLEMENTATION STRATEGIES FOR BMP SCENARIOS

As an accompanying submittal to the VAST scenario containing updated BMPs and land use/land cover data, Charlottesville has compiled a set of implementation strategies that are supportive of the target reduction goals. These strategies are also provided in the summary table in Attachment 3.

In general, implementation strategies are concentrated on the urban source sector (given the characteristics of the community) and consist of both BMP implementation and capacity building. Many of the implementation strategies are based on programs and policies that the City has already put in place and expects to continue. That said, it must be noted that given the number of unknowns and questions surrounding the delivered data, the target goals, the default scenario, and the variations of preferred local scenarios that were explored, neither the suite of strategies nor the associated costs have been approved by Charlottesville's local governing body.

Ongoing strategies include:

- Integrating low-impact development (LID) stormwater management techniques and other similar practices that reduce the impact of urban impervious and pervious surfaces on publically-owned lands to achieve water quality improvements and to demonstrate the efficiency and increase awareness of these practices.
- Implementing the City of Charlottesville Urban Forest Management Plan (UFMP) which addresses the benefits of trees and forests in urban areas, presents the state of the City's forests, identifies the people and programs that manage them, and contains goals and actions to protect, enhance, and expand the urban forest. CIP funding for the UFMP is pursued annually.
- Implementing nutrient management on appropriate city-owned lands.
- Investigating and pursuing grant opportunities to fund water quality improvement initiatives including, but not limited to, retrofitting existing stormwater facilities.
- Maintaining the designation of a 100 foot riparian buffer on the City's three main waterways (Meadow Creek, Moores Creek, Rivanna River) and continuing to make the locally produced *Stream Buffer Mitigation Manual* available as a tool for evaluating proposed impacts to the buffer.
- Maintaining locally established zoning requirements for infill development. In order to obtain a special use permit allowing increased density an approved LID strategy must be implemented on the site.
- Encouraging the use of LID in private (re)development.
- Administering local Erosion and Sediment Control and Stormwater Management Programs.
- Maintaining established no-mow zones in public parks.
- Managing nearly 70 acres of public land according to the parameters of permanent conservation easements that limit increases in impervious surfaces and restricts the removal of trees.
- Participating in the development of Implementation Plans for local impaired streams with TMDLs.
- Running an Illicit Discharge Detection and Elimination (IDDE) program which aims to protect water quality by preventing, locating, and removing the source of illicit discharges to the MS4.
- Contributing to the development and maintenance of consolidated watershed inventories to include impervious/pervious land cover, stream corridor condition, identification of healthy watersheds, spatial location of BMPs, and land area treated.
- Maintaining an urban structural BMP tracking and inspection program.
- Conducting a rigorous street sweeping program.
- Conducting storm drain cleanouts along with infrastructure rehabilitation and maintenance.
- Managing an annual leaf collection program which prevents this high-nutrient vegetative debris from entering the stormwater drainage system and receiving waterways.
- Participating in and collaborating with community partners involved with protection and enhancement of water quality and natural resources (including the Rivanna River Basin Commission, the Thomas Jefferson Soil and Water District, the Thomas Jefferson Planning District Commission, neighboring localities and nongovernmental entities, and other stakeholders).
- Providing pollution prevention training for City staff.
- Conducting public education and outreach that addresses topics such as nutrient management, pet waste, and residential best practices.

- Supporting stream cleanups and continuing local Adopt-a-Stream and Adopt-A-Street programs.
- Maintaining pet waste disposal stations.

Additional strategies may include:

- Developing a sustainable funding mechanism proposal to support enhanced local water resources program goals and advance WIP implementation.
- Evaluating opportunities to pursue innovative stormwater retrofits on school and park properties that were identified through a systematic evaluation called the *Stormwater Stewardship on Public Lands Study*.
- Examining existing resources/capacity to implement new state requirements for local stormwater management programs.
- Investigating the use of DCR's Better Site Design Manual to mitigate the impact of stormwater runoff from developed lands.
- Evaluating programmatic needs for the development of an effective combined Stormwater Management/Erosion and Sediment Control program consistent with revised state requirements.
- Reviewing/revising codes and ordinances, as appropriate, to advance water quality goals.
- Participating in a focused pet waste campaign to reduce bacteria and nutrient loading to local streams.
- Evaluating opportunities for and appropriateness of participating in an expanded nutrient credit trading program that includes MS4s and other sectors as a means of reducing costs for WIP implementation.

WIP ELEMENT #5 – RESOURCE NEEDS

The City of Charlottesville has determined that, at this particular time, developing cost estimates for the DCR default BMP scenario is inappropriate. The inappropriateness of certain default scenario elements, the unresolved efficiency (interim BMP status) of urban stream restoration, and the myriad of concerns associated with the submittal of a locally preferred scenario all informed this determination.

One of the key resources that will be needed in order to effectively participate in the implementation of the WIP is funding. Staff has been tracking many reports and studies related to TMDL implementation costs and are clearly concerned by the magnitude of some of the cost estimates that have circulated (such as in the November 2011 VA Senate Finance Committee report). The City also has local experience with the implementation of various BMPs. However it must be clarified that several of these recent local experiences have qualifications to take into consideration, including the reality of grant funding support, public land ownership, and opportunities to integrate BMPs in new construction. It will be critically important for federal and state financial support to be available at an enhanced level in order to achieve the level of WIP implementation that has been established.

Another key resource that will be needed in order to effectively participate in the implementation of the WIP is adequate time. The 2025 deadline associated with the Bay TMDL presents serious uncertainty with respect to the level of water quality improvements that are anticipated to be achieved through the redevelopment process (which is subject to new, more stringent standards under the VSMP Regulations) and may unnecessarily require the implementation of more costly retrofit BMPs on pre-redevelopment properties. It is certainly worth noting that the City cannot force water quality improvements to be

made on private property outside of the regulated (re)development process. It is critical that EPA and Virginia recognize the limits of local government's authority over existing development. In addition, the next 13 years may be insufficient to accomplish land acquisitions that may be necessary and ramp up the pace of project design, construction, and maintenance achievable with limited staffing and funding.

In addition to the resource needs described above, the City requests that additional practices be further evaluated and included in VAST and/or the Bay Model, as appropriate, to enable accurate accounting of effective urban practices such as urban tree planting, catch basin cleaning/vacuumping, air emission reduction practices to reduce air deposition of nitrogen (such as reducing vehicle miles traveled or switching a fleet to alternatively fueled vehicles), and land conservation efforts. Furthermore, consistency regarding the promotion of and requirements associated with rainwater harvesting as a stormwater management practice is needed. Finally, the City encourages the exploration of an urban BMP cost-share program to provide funding for nutrient and sediment reductions from the urban/suburban stormwater sector. Adequate and steady funding for the Virginia Water Quality Improvement Fund (WQIF) that is dedicated to urban and suburban stormwater is also encouraged.

Staff will continue to track and evaluate if and how a nutrient trading program may be utilized as a viable option for decreasing overall implementation costs. Charlottesville encourages the expansion of the State's nutrient credit trading program.

GENERAL PROVISIONS

While the information provided above has been done so in a manner intended to be responsive to DCR's request, the City of Charlottesville will be approaching this implementation process with an adaptive management approach. As such, the City reserves the right to substantially change our scenarios and strategies at any time in the future as part of our adaptive management process to adjust to relevant factors such as local preferences, cost estimates, new technical information, new or enhanced technologies, etc. Similarly, the City reserves the right to reconsider and amend any of the above information in any future regulatory proceeding such as MS4 permit reissuance or compliance under such a permit.

The City of Charlottesville hopes that this information assists DCR in the development of a Chesapeake Bay TMDL Phase II WIP for the Commonwealth that effectively demonstrates Virginia's appreciation for this vital regional resource and Virginia's commitment to its restoration.

Attachment 1

Scenario Name: City of Charlottesville, VA Post 2006 BMPs

Description: This scenario includes acres treated in the City of Charlottesville by BMPs installed from 1/1/2006 through 12/31/11, which would not have been included in the last calibration of the Chesapeake Bay Watershed Model.

BMP	Land Use	Geography	Unit	Amount	Notes
Bioretention/raingardens	Regulated impervious developed	Charlottesville City, VA	Percent	2.78	41.03 acres
Bioretention/raingardens	Regulated pervious developed	Charlottesville City, VA	Percent	1.49	65.98 acres
Dry Extended Detention Ponds	Regulated impervious developed	Charlottesville City, VA	Percent	3.19	47.06 acres
Dry Extended Detention Ponds	Regulated pervious developed	Charlottesville City, VA	Percent	1.01	44.5 acres
Erosion and Sediment Control	Regulated construction	Charlottesville City, VA	Percent	100	22.7 acres
Street Sweeping Mechanical Monthly	Regulated impervious developed	Charlottesville City, VA	Percent	26.3	4,804 curb miles swept annually (those swept on a weekly or monthly schedule) converted to acres and divided by 12 to obtain a monthly average of 388.2 acres
Urban Filtering Practices	Regulated impervious developed	Charlottesville City, VA	Percent	0.63	9.23 acres
Urban Filtering Practices	Regulated pervious developed	Charlottesville City, VA	Percent	0.18	8 acres
Urban Infiltration Practices – no sand/veg no underdrain	Regulated impervious developed	Charlottesville City, VA	Percent	0.2	2.97 acres
Urban Infiltration Practices – no sand/veg no underdrain	Regulated pervious developed	Charlottesville City, VA	Percent	0.13	5.58 acres

BMP	Land Use	Geography	Unit	Amount	Notes
Urban Nutrient Management	Regulated pervious developed	Charlottesville City, VA	Percent	3.8	168 acres
Urban Stream Restoration (interim)	Regulated impervious developed	Charlottesville City, VA	Feet	336	
Urban Stream Restoration (interim)	Regulated pervious developed	Charlottesville City, VA	Feet	520	
Wet Ponds and Wetlands	Regulated impervious developed	Charlottesville City, VA	Percent	3.17	46.8 acres
Wet Ponds and Wetlands	Regulated pervious developed	Charlottesville City, VA	Percent	1.67	74.01 acres

Attachment 2

Scenario Name: City of Charlottesville, VA Land Use/Land Cover Information

Description: Local land use/land cover information for the City of Charlottesville, VA. These data were derived from a high resolution (one foot pixel size) land cover map based on 2009 aerial photography (*Rivanna Watershed and Vicinity Land Use/Land Cover Map, 2009*).

Land Use	Geography	Unit	Amount	Notes
Construction	Charlottesville City, VA	acres	22	
Forest	Charlottesville City, VA	acres	2,947	
Regulated Urban Impervious	Charlottesville City, VA	acres	2,061	The map didn't differentiate b/tw regulated and unregulated impervious. The City is undertaking an effort to do so and expects this acreage to decrease. 1 acre has been subtracted from the map's impervious category as a placeholder for the 1 unregulated impervious acre in the Bay Model v5.3.2.
Regulated Urban Pervious	Charlottesville City, VA	acres	1,482	The map didn't differentiate b/tw regulated and unregulated pervious. The City is undertaking an effort to do so and expects this acreage to decrease. 4 acres have been subtracted from the map's pervious categories as a placeholder for the 4 unregulated pervious acres in the Bay Model v5.3.2.
Unregulated Urban Impervious	Charlottesville City, VA	acres	1	The map didn't differentiate b/tw regulated and unregulated impervious. The City is undertaking an effort to do so and expects this acreage to increase. The Bay Model v5.3.2 allocates 1 unregulated impervious acre, which is being used as a placeholder here.
Unregulated Urban Pervious	Charlottesville City, VA	acres	4	The map didn't differentiate b/tw regulated and unregulated pervious. The City is undertaking an effort to do so and expect this acreage to increase. The Bay Model v5.3.2 allocates 4 unregulated pervious acres, which is being used as a placeholder here.

Attachment 3

Virginia Phase II WIP Strategies Document

Introduction

EPA is requesting that states develop a Phase II Watershed Implementation Plan (WIP) that further articulates the Phase I WIP strategies employed locally to meet local implementation scenario for 2025. As Virginia and local stakeholders move forward in Phase II this document has been developed to provide examples of acceptable strategies for BMP implementation and capacity building efforts that may be considered for submission by localities. The strategies presented in this document are examples, not requirements, and provide a format for building and submitting local Phase II strategies. Localities, PDCs and SWCDs will meet submission requests for revised or enhanced BMP data and scenarios through the Virginia Assessment and Scenario Tool (VAST). Strategies and resources, like the examples provided, will be submitted through the DCR local engagement team staff using this formatted spreadsheet. While scenarios and strategies will not be shared with EPA on a locality-by-locality basis, it is important that they are provided to DCR in order to develop a Phase II plan showing local involvement and input.

The table below provides a format for selecting the "Type" of strategy being developed, "Implementation", "Capacity" building, or "New BMP", the "Source" sector this BMP strategy can be applied on, the "BMP", and a field for entering the "Strategy" for implementing the BMP. The final column is for entering "Resource Needs" to successfully implement the proposed strategy. There is a drop down menu in each cell except for "Strategy" and "Resource Needs". Please select the appropriate item in each cell and then enter in a brief sentence describing the "Strategy" and "Resources needed". A couple of examples have been entered in the green shaded cells below.

Strategy and Resources Reporting Template				
STRATEGY TYPE	SOURCE	BMP	STRATEGY	RESOURCE NEEDS
BMP Implementation	Urban	Impervious Urban Surface Reduction	Locality will continue to integrate low-impact development (LID) stormwater management techniques and other similar practices that reduce the impact of urban impervious and pervious surfaces on publically-owned lands to achieve water quality improvements and to demonstrate the efficiency and increase awareness of these practices.	
BMP Implementation	Urban	Urban Tree Planting; Urban Tree Canopy	Locality will continue to implement the City of Charlottesville Urban Forest Management Plan (UFMP) which addresses the benefits of trees and forests in urban areas, presents the state of the City's forests, identifies the people and programs that manage them, and contains goals and actions to protect, enhance, and expand the urban forest. CIP funding for the UFMP is pursued annually.	
BMP Implementation	Urban	Urban Nutrient Management	Locality will continue to implement nutrient management on appropriate city-owned lands	
BMP Implementation	Urban	Multiple	Locality will continue to investigate and pursue grant opportunities to fund water quality improvement initiatives including, but not limited to, retrofitting existing stormwater facilities.	
BMP Implementation	Urban	Urban Forest Buffers	Locality will continue maintaining the designation of a 100 foot riparian buffer on the City's three main waterways (Meadow Creek, Moores Creek, Rivanna River) and continuing to make the locally produced Stream Buffer Mitigation Manual available as a tool for evaluating proposed impacts to the buffer.	
BMP Implementation	Urban	Multiple	Locality will continue maintaining locally established zoning requirements for infill development. In order to obtain a special use permit allowing increased density an approved LID strategy must be implemented on the site.	
BMP Implementation	Urban	Multiple	Locality will continue encouraging the use of LID in private (re)development.	
BMP Implementation	Urban	Erosion and Sediment Control	Locality will continue administering local Erosion and Sediment Control and Stormwater Management Programs.	
BMP Implementation	Urban	Urban Grass Buffers	Locality will continue maintaining established no-mow zones in public parks.	

Attachment 3

Strategy and Resources Reporting Template				
STRATEGY TYPE	SOURCE	BMP	STRATEGY	RESOURCE NEEDS
BMP Implementation	Urban	Urban Tree Planting; Urban Tree Canopy	Locality will manage nearly 70 acres of public land according to the parameters of permanent conservation easements that limit increases in impervious surfaces and restricts the removal of trees.	
BMP Implementation	Urban	Multiple	Locality will continue participating in the development of Implementation Plans for local impaired streams with TMDLs.	
BMP Implementation	Urban	Multiple	Locality will continue running an Illicit Discharge Detection and Elimination (IDDE) program which aims to protect water quality by preventing, locating, and removing the source of illicit discharges to the MS4.	
BMP Implementation	Urban	Multiple	Locality will continue maintaining an urban structural BMP tracking and inspection program.	
BMP Implementation	Urban	Street Sweeping Mechanical Monthly	Locality will continue conducting a rigorous street sweeping program.	
BMP Implementation	Urban	Multiple	Locality will continue conducting storm drain cleanouts along with infrastructure rehabilitation and maintenance.	
BMP Implementation	Urban	Multiple	Locality will continue managing an annual leaf collection program which prevents this high-nutrient vegetative debris from entering the stormwater drainage system and receiving waterways.	
BMP Implementation	Urban	Multiple	Locality will continue providing pollution prevention training for City staff.	
BMP Implementation	Urban	Multiple	Locality will continue conducting public education and outreach that addresses topics such as nutrient management, pet waste, and other residential best practices.	
BMP Implementation	Urban	Multiple	Locality will continue to support stream cleanups and continue the local Adopt-a-Stream and Adopt-A-Street programs.	
BMP Implementation	Urban	Multiple	Locality will continue to maintain pet waste disposal stations.	
BMP Implementation	Urban	Multiple	Locality will be participating in an upcoming, focused pet waste campaign to reduce bacteria and nutrient loading to local streams.	
Capacity Building	Urban	Multiple	Locality will revisit development of a sustainable funding mechanism proposal to support enhanced local water resources program goals and advance WIP implementation.	
Capacity Building	Urban	Multiple	Locality will continue contributing to the development and maintenance of consolidated watershed inventories to include impervious/pervious land cover, stream corridor condition, identification of healthy watersheds, spatial location of BMPs, and land area treated.	
Capacity Building	Urban	Multiple	Locality will continue participating in and collaborating with community partners involved with protection and enhancement of water quality and natural resources (including the Rivanna River Basin Commission, the Thomas Jefferson Soil and Water District, the Thomas Jefferson Planning District Commission, neighboring localities and nongovernmental entities, and other stakeholders).	
Capacity Building	Urban	Multiple	Locality will evaluate opportunities to pursue innovative stormwater retrofits on school and park properties that were identified through a systematic evaluation called the <i>Stormwater Stewardship on Public Lands Study</i> .	

Attachment 3

Strategy and Resources Reporting Template				
STRATEGY TYPE	SOURCE	BMP	STRATEGY	RESOURCE NEEDS
Capacity Building	Urban	Multiple	Locality will examine existing resources/capacity to implement new state requirements for local stormwater management programs.	
Capacity Building	Urban	Multiple	Locality will investigate the use of DCR's Better Site Design Manual to mitigate the impact of stormwater runoff from developed lands.	
Capacity Building	Urban	Multiple	Locality will evaluate programmatic needs for the development of an effective combined Stormwater Management/Erosion and Sediment Control program consistent with revised state requirements.	
Capacity Building	Urban	Multiple	Locality will review and revise codes and ordinances, as appropriate, to advance water quality goals.	
Capacity Building	Urban	Multiple	Locality will evaluate opportunities for and appropriateness of participating in an expanded nutrient credit trading program that includes MS4s and other sectors as a means of reducing costs for WIP implementation.	