# Virginia Soil and Water Conservation Board
# Stormwater Management Technical Advisory Committee
# Subcommittee on Part II
# Thursday, September 21, 2006
# New Kent Forestry Center
# Providence Forge, Virginia

## Stormwater Management TAC Subcommittee Members Present

Michelle Brickner, Fairfax County
Pat O'Hare, Home Builders Association of Virginia
Lee Hill, Stormwater Programs Manager
Bob Kerr, Kerr Environmental
Joe Lerch. Chesapeake Bay Foundation
Wade Malhotra, City of Newport News
Roy Mills, VDOT
Reggie Parrish, Environmental Protection Agency
Bill Street, James River Association

## Facilitator

Judy Burtner, J. Burtner and Associates

## DCR Staff

David C. Dowling, Director of Policy, Planning and Budget
Joan Salvati, Director, Division of Chesapeake Bay Local Assistance
Eric R. Capps, E&S Control and Construction Permitting Manager
Michael R. Fletcher, Director of Development
Kevin Landry, Stormwater Compliance Specialist
Christine Watlington, Policy, Planning and Budget Analyst
Ryan Brown, Office of the Attorney General

## Observers

Bill Johnson, City of Virginia Beach (TAC Member)
Joe Battiata, Contech Stormwater Solutions
Barbara Brumbaugh, City of Chesapeake
Michelle Virts, Timmons Group
Laura Wheeling, Hampton Roads PDC

Ms. Burtner called the meeting to order and asked Mr. Dowling to give highlights of the progress since the last meeting.

Mr. Dowling noted that from the last meeting staff had taken specific suggestions, including those presented in the alternate approach by Mr. Street and Mr. Tippett, and had attempted to incorporate those into the document.

Mr. Dowling said that with the language regarding either the trading or fee in lieu of scenario, the key elements had been worked in. He said there were still some questions regarding the karst area that had been brought to staff attention.

Mr. Dowling said that staff had not gone beyond the direction received from the subcommittee at the last meeting.

The Working Draft for Part II of the Stormwater Regulations dated September 21, 2006 is included as Attachment #1.

Ms. Burtner reviewed the coding. She noted that the language in black had been previously approved. Those sections coded in red or yellow were based on input from the last meeting.

Ms. Burtner walked the committee through the document.

**4VAC50-60-40. Authority and applicability.**

A member noted that while the term "no unreasonable degradation" is straight from the law, EPA is concerned with a lack of a definition.

Mr. Dowling said that the TAC had not spent a lot of time working on definitions but that staff would welcome suggested language.

A member asked how this related to the anti-degradation of the Clean Water Act.

Mr. Parrish agreed to provide language to the DCR staff with regard to the definition of unreasonable degradation. The language would be more subjective, and not tied to numbers.

**4VAC50-60-50. General.** Repeal.

There were no comments.

**4VAC50-60-56. Applicability of other laws and regulations.**

A member noted approval of the inclusion of the phrase "maximum extent practicable."

A member noted concern over the public perception of degradation vs. unmanaged stormwater. Concern is that the public does not understand that even with stormwater management there will still be degradation.

**4VAC50-60-46 Applicability of other laws and regulations**

There was no comment regarding this section.

**4VAC50-60-60. Water quality.** Repeal.

**4VAC-60-63. Water Quality.**

A member posed a question for DCR staff regarding what the Board will review and what the TAC will review. Will the TAC review the design criteria?

Mr. Hill said the regulations would go before the Board, but that the handbook will be presented for review and comment.

A member said that if a certain set of criteria is to be developed that the TAC should have a chance to review and understand the methods.

Mr. Hill said there would be a separate TAC for the handbook.

A member said there would likely be concern with regard to the numbers in Section A.1 during the public comment period.

A member said that under A.1 he would like to specify that undeveloped land refers to both residential and commercial.

A member said that this tied to the Tributary Strategies to meet load reductions. There is obviously a compliance tool to get there. The member said that it was important that the TAC understand the criteria. For example in A.3 with regard to the total nitrogen load, the TAC needs to understand the method.

A member noted that stormwater management plans do not calculate pollutant loads.

A member gave the example of Fairfax County and noted that the county has a requirement of 40% but that none of the facilities can meet that.

A member said that there is an ongoing discussion in Tidewater with regard to using stormwater retention facilities in a series. If the goals cannot be achieved through single BMPs then the locality would use them in a series.

Mr. Hill said that DCR does not encourage the use of BMPs in a series.

Mr. Hill said that new development can meet these standards.

A member said that the concern is that while they might be able to meet the standards there are no ground rules to determine how it is achieved. The goal is being created, but the playing rules are unknown.

A member said this was basically a Chesapeake Bay goal from a stormwater management manual. There is no way to translate from one to the other.

Mr. Hill said the handbook would determine how this would be translated. There would be different loading rates for different types of development.

A member said that for the committee to be comfortable in putting this to the full TAC there should be a meeting of some experts to deal with the statewide issue and to say what are specific methods related to these criteria. This could be a guidance document or an addendum to the handbook. The member asked how each local program would determine meeting goals on site.

A member said that to meet the Chesapeake Bay standards the regulations, projects have to go farther than they do now. He said this provides a clear picture of what needs to be accomplished on the stormwater side, but that it is necessary to understand how this would translate and be implemented.

A member noted would be helpful to know how other states that have stormwater programs have addressed phosphorus.

A member expressed concern about the methodologies and tools available.

Another member said the big picture issue should come before the details. The state stormwater regulations are about reducing velocity to storms of certain frequencies.

A member said that the regulations are creating an entirely new system. This is a new toolbox that does not exist other than in the Chesapeake Bay methodology. The member said this is really about building a system analogous to the Chesapeake Bay program from the stormwater management perspective.

A member said that the state stormwater program is a derivative of the Clean Water Act. The pollutant loads and water quality portions are required for the stormwater program.

A member said water quality is a key component of meeting the goals.

A member said that these issues are so site specific that the ground rules may not apply in every situation.

Mr. Hill said if these regulations are adopted, they handbook will need to address exactly what is intended. He said the current handbook would be discarded and that a new handbook would have to be compiled.

Mr. Hill said the separate TAC would work on the handbook issues.

Ms. Salvati said that the simple method calculation procedure was adopted in conjunction with the Chesapeake Bay Act stormwater requirements. She said these are based on a study of eight suburban areas outside of Washington, DC.

Ms. Salvati said from the data an equation was developed to correlate different levels of impervious cover and load. There is a method where the data is empirically based.

A member said that the sooner a number was established the sooner methods could be addressed. He suggested setting goals in the regulations and have the handbook address actually achieving. If it was possible to come up with .3 and 2.7 reduction set that as a goal in the regulations with the handbook giving the final amount to be achieved.

Mr. Dowling said that the number would not necessarily be set prior to the development of the handbook. He said that DCR's intention was to start working on the handbook very soon. He said that the hope is to have the technical information worked out before the final regs are released.

A member asked if that meant the handbook would be developed before the regulations are put out for the 60 day public comment period.

Mr. Dowling reviewed the process. First there was the NOIRA, then the establishment of the TAC. He said the proposed regulation would hopefully be done by the end of October. That would go to the Board for consideration in November.

At the end of November or in early December the proposed regulation would be submitted to the Administration. DPB has 45 days to review. That time would also include a review by the Governor and the Secretary of Natural Resources.

Mr. Dowling said it would likely be January or February before the regulations were out for public comment.

A member asked the appropriate time to comment on the proposed regulations.

Mr. Dowling said that at the end of the public comment period, DCR has 6-12 months to work on the final regulations.

A member said that before the next TAC meeting, it would be helpful to run through an exercise with a particular scenario. He said there would be a greater level of impact once the process is started.

A member said that when the alternative approach was presented it was with the goal of meeting the water quality goals through a tiered system.

This section will be moved forward to the TAC.

Mr. Dowling said that before the TAC meeting DCR staff would have a more concrete discussion with regard to the handbook.

Section A.2.

A member asked how the tendency to discourage brownfield development should be addressed.

Mr. Hill said that he didn't believe the regulation discouraged brownfield development, but noted that there are problems inherent in brownfield development.

Section A.3.

DCR staff will address before the next meeting.

A member recommended that this section be written to say the total nitrogen and phosphorus load should be calculated using methods in the stormwater management handbook.

A member said that the handbook would not be easy to change. He said it would be easier to provide a guidance memo that is an appendix.

A member said that was a good point but that it needed to be a vetted process.

Another member said that the Department has been very cautious about providing new guidelines without going back to public comment.

A member said the simpler this is made, the better.

Ms. Burtner said the department would look at this language based on the discussion.

Section A.4.

It was noted that the EPA has a concern with the inclusion of "maximum extent practicable." If there is a TMDL there will be an assigned load that must be met.

Mr. Hill said that it also has implications for other things with MS4s. They can look at alternative BMPs and how they can move forward. They are to try for the maximum extent possible, but that does not tie their hands.

A member said there needs to be a recognition that there will be an assigned load. He suggested saying "to the best of their ability."

It was noted that the EPA will submit written comments with regard to this section.

Mr. Dowling noted that EPA will in the end have to approve the regulations and make sure they meet the Clean Water Act Standards.

At this time the committee took a break.

Page 2, Section B.

Ms. Burtner noted there was a significant amount of new language.

A member asked if these numbers were offsite controls.

Mr. Hill said if that .28 lbs. per acre per year and 2.68 lbs. of N per acre per year cannot be reached on site, the site must get to at least 0.37 lbs. of phosphorus and 3.5 lbs. of nitrogen.

A member said that he thought the fund was to be created and managed by localities.

A member said that it takes a long time for the money to build up for the localities to actually be able to do something. There is a lag time with projects being developed.

A locality member said that each developer contributes their share, but that the locality must wait for several projects because each project only pays a portion of the cost.

A member asked if the concern was that localities wouldn't have enough money for the projects needed.

A member noted that the localities that did not adopt would be relying on DCR to spend the money on their jurisdiction.

A member asked why if 100% reduction could be achieved off site there was any reason to do anything on site.

A member said that with regard to doing 100% offsite he would have a concern if there were no requirements for development to implement practices that would reduce the load onsite.

A member noted concerns about the trading provision.

Mr. Dowling said that it has not been determined if this issue has legal standing.

A member asked why it would be restricted, but noted that one would not want deficits in credits in the Bay area.

A member said that he did not believe this would be allowed.

Mr. Dowling said that was a concern, but that it was a gray area. Staff is still discussing the issue.

A member said he thought the concept was worth considering.

A member asked about the language "such fees shall be based on project" and how DCR envisioned the fee being calculated.

Mr. Hill said that would vary from project to project based on what it would cost to control the load from that project.

Mr. Dowling said that was a discussion point where DCR would like to hear the committee comment whether this was the right approach or whether a set amount per pound was more appropriate. Should there be a set fee or a fee per site?

A member said he would prefer a per lb. rate with a fee established by the state or locality. He suggested this could potentially tie into another effort that DCR needs for a trading program. He said that he did no see how the fee could be project by project for practices that would not be on site.

A member suggested trying to make this analogous to the pro-rata sharing. What is the target amount and how is enough accumulated to achieve the project? There should be a target amount for each project.

Ms. Salvati said there are quite a number of pro-rata share programs already in place. For example in Chesterfield County, the fee is $5,000 per impervious acre. Henrico County does pollutant removal calculations per each site and assesses a given amount per lb. She said there is already a precedent for the mechanism.

A member said it would address locality concerns if this were optional.

Another member noted that if a developer cannot achieve the reduction on site the only option is the credit.

A member expressed concern about forcing localities to have the in lieu of fee because of the difficulties in planning. Either the project is stopped or a waiver is granted. Collecting the money is a burden on the jurisdiction.

A member said that with a waiver there is pollution and the water quality standards may not be achieved. He said there needs to be a mechanism at the state level for jurisdictions who may not be able to do the projects. If this is not from the water quality improvement fund, then what would it be?

A member said that the water quality improvement fund is under funded.

Mr. Dowling said that staff would review this issue and noted that there may be limitations on how the funds can be expended.

A member asked if there as a separate stormwater fund.

It was noted that was for the cost associated with DCR managing the program.

A member asked if DCR was willing to do those projects when administering the program.

Mr. Hill said that was part of the discussion with the drafting of Part III. It may be that the Department will not allow that.

A member expressed support for the credits. He said it was cumbersome for DCR to have to create separate accounts and to monitor those funds.

The member said credit trading, however narrowly done, is a wonderful opportunity to address the water quality problem in the Chesapeake Bay. He said there are entrepreneurs out there are willing to assume the risk. He noted that this was happening with air trading and with wetlands.

A member said that for the purposes of the exercise it would be helpful to understand what the cost per lb. will be.

**<u>4 VAC 50-60-66 Water Quality</u>**

A member asked how this would affect MS19.

Mr. Hill said that the MS19 regulations would need to be modified.

A member said he had concern that this would not fully address some of the impacts that cause downstream erosion.

A member gave the example of a locality where every downstream channel in the locality has eroded to 6-8 ft. deep. He said this was a fallacy of MS19.

Mr. Hill acknowledged that was why the Department wants to modify the MS19 regulations.

A member said that, to be serious about encouraging the use of LID, it should be addressed in the regulations or the handbooks.

A member said that there was a need to be careful not to make the regulations so arduous that a developer or landowner will not install a rain garden because of the difficulty in meeting the criteria. It is important to be careful that an incentive for one thing does not create a disincentive for another.

A member said there should be numbers assigned to the runoff characteristics.

Mr. Hill said that staff was still working on the definition of runoff characteristics.

**4VAC50-60-73. Frequency**

Mr. Dowling referenced comments sent in by email by Mr. Hertzler who was unable to attend the meeting.

> **4 VAC 50-60-73**
> The wording for the Modified Rational Method comes across as too permissive and supportive. There should at least be some conditions or restrictions. The current Virginia Stormwater Management Handbook states in section 5-4.3 in bold, "the rational and modified rational methods should normally be used in homogeneous drainage areas of less than 20 acres, with a tc of less than 20 minutes." It also states in section 5-4.3 that the receding limb of the trapezoidal hydrograph should be set equal to 1.5Tc.

A member asked if this would be a problem without the particular wording.

Another member said that if the wording is not there the method cannot be used.

Mr. Hill said the way to do that this could be a part of the package VDOT submits.

A member asked if there was a way to separate the issues so that it does not become permissive.

A member noted that if the wording was not specfic, there may be a different interpretation.

Mr. Hill said that if Mr. Hertzer's wording was incorporated and then the phrase "may allow" was included that would give the option.

Ms. Burton said that DCR would do some rewriting based on Mr. Hill's and Mr. Hertzler's comments.

**4VAC50-60-76. Linear development projects**

A member asked if the TAC was considering the minimum standards set forth in this section.

Mr. Hill said the stormwater management plan would be specific for the site.

A member agreed to draft language with regard to how this applies to stream restoration projects and to submit that language to DCR for review and consideration.

The member said the concern was having to develop a stormwater management plan around a stream restoration project.

A member asked if there had been a change the previous year that specified that a natural channel design should meet MS19.

Mr. Hill said that was not in the channel design but it meets the components of MS19.

It was noted that natural channel design is not defined.

A member said if someone is doing a channel restoration that is a water quality improvement project, a stormwater management plan would not be needed.

Mr. Hill said that would be considered a water quality improvement project.

A member suggested that linear project be defined in the definitions.

At this time the committee recessed for lunch.

**4VAC50-60-80. Flooding.** Repeal.

There were no comments on this section.

**4VAC50-60-83 – Stormwater management impoundment structures or facilities**.

A member asked, if the program is going to be delegated to a locality, what would the state's role be in determining when it is appropriate to include these structures or facilities.

Mr. Hill said there would still be a permitting requirement.

Mr. Dowling said that at a previous TAC meeting it was suggested that the drafting team bring in DEQ's decision process.

A member suggested adding a reference to the Tennessee Valley Authority.

**4VAC50-60-86. Riparian Buffers**

A member said that with regard to the 35-ft. buffer the sentence should read "such plans shall require a 35 ft. buffer."

Mr. Hill said the riparian buffer is defined as 35 ft.

A member said that there was no reference to how including a buffer helps a devloper in obtaining the required water quality benefit.

Mr. Hill said the handbook would address the credit.

A member asked if a buffer had to be included around a detention pond. The member said the term state waters is too broad.

Mr. Dowling said the intent was not to buffer the BMPs. Staff thought that by moving to state waters that BMPs had been excluded.

A member said the definitions of perennial and intermittent should be clearly defined.

Mr. Hill said that unless there are land disturbing activities, the buffers do not have to be reestablished.

Ms. Burtner said that any suggested guidance or language should be directed to the drafting team.

Mr. Dowling said that the maximum extent practicable was built in and he noted that the section refers to undeveloped and redeveloped sites.

A member said that exclusions, such as no need for riparian buffers around farm ponds, should be written in.

A member asked how long a jurisdiction would have to develop a plan.

Mr. Hill said the plan must be submitted as part of the program delegation. The buffer plan will have to be part of the program if approved.

A member asked if DCR would establish a buffer plan when administering the program.

Mr. Hill said DCR would require 35-ft. buffers.

**4VAC50-60-90. Regional (watershed-wide) stormwater management plans.** Repeal.

**4VAC50-60-93. Stormwater Management Plan Development.**

A member asked why a stormwater management plan is necessary if there is already an Erosion and Sediment plan.

**4VAC50-60-96. Comprehensive stormwater management plans**

Regarding the comprehensive SWMP, a member asked if when this is delegated there would be a guidance or a requirement regarding what defines a SWMP.

Ms. Salvati suggested the criteria be established during the development of the updated handbook.

**4VAC50-60-76. Linear development projects.**

Mr. Hill noted that this was not in the definitions and asked if members thought this should be in the definitions or in the guidance.

This completed the review of the document.

Mr. Hill said he would like more discussion with regard to the water quality section.

A member said that the goal was clear, but there needs to be a practical way to reach the goal.

Members expressed unease with using specific numbers.

A member asked if the reduction amounts were taken from the Tributary Strategies.

Mr. Hill said that the numbers were from the 2002 Annual Model Assessment for Tributary Strategies and the 2004 Tributary Strategy evaluation.

A member said the 2010 target would be a 28% reduction in nitrogen over all.

A member said that he understood the source of the numbers and suggested working with municipalities to see if it would work.

Mr. Capps said the numbers were taken from the discussions at the last subcommittee meeting and that the language was developed based on subcommittee recommendations.

He said that staff had gone through the assumptions but that the burden for working through the scenarios needs to go back to the TAC.

A member agreed that the TAC members should develop the scenarios but stated that DCR should also be at the discussion table.

Ms. Salvati said that in Chesterfield new standards for phosphorus were developed atnd there was an exercise to actually look at applications for a commercial site and a residential site. She suggested the possibility of looking at actual sites.

A member asked about the process from this point and noted that it was clear that some members would like additional information. He asked the time frame.

Mr. Dowling said there was not a clear answer. He said one approach would be to stay the course, noting that there were three TAC meetings scheduled. He said that Part II could move forward to the TAC or that Part II could be held back while other sections are moving forward.

A member agreed that the issue could go to the full TAC, but that in the meantime the TAC should begin contacting experts with regard to how this should be accomplished.

Mr. Hill said that DCR would look at what other states were doing with regards to what they are using as inputs to the model.

A member said the experts could determine how the goals are to be achieved and recommend language for the handbook.
Mr. Hill said the handbook could not be developed until the regulations are completed. He noted that the regulations would not be complete for approximately a year.

Mr. Dowling said that DCR would do additional research particularly on the fee in lieu of option.

Mr. Dowling asked if members of the subcommittee were comfortable moving Part II to the full TAC on October 3.

Members expressed a concern about moving forward to the TAC until there was more resolution, but noted that it would be helpful for the TAC to be made aware of the discussions.

Ms. Burtner thanked members and reminded them to get additional comments and language to Ms. Watlington.

The meeting was adjourned.

Attachment #1

# Part II Stormwater Management Program Technical Criteria

**4VAC50-60-40. Authority and applicability**.

~~This part specifies technical criteria for every stormwater management program and land-disturbing activity.~~

Pursuant to the Virginia Stormwater Management Law, § 10.1-603.2 et seq. of the Code of Virginia, the Board is required to take actions ensuring the general health, safety and welfare of the citizens of the Commonwealth as well as protecting the quality and quantity of state waters from the potential harm of unmanaged stormwater. In addition to other authority granted to the Board under the Stormwater Management Law, the Board is authorized pursuant to §§ 10.1-603.2:1 and 10.1-603.4 to adopt regulations that specify minimum technical criteria for stormwater management programs in Virginia, to establish statewide standards for stormwater management from land disturbing activities, and to ensure that there will be no unreasonable degradation of properties, water quality, stream channels, and other natural resources.

In accordance with the Board's authority, this part establishes the minimum technical criteria and stormwater management standards that shall be employed by a delegated or state-administered local stormwater management program to protect the quality and quantity of state waters from the potential harm of unmanaged stormwater runoff resulting from land disturbing activities.

**4VAC50-60-50. General**. Repeal

**4VAC50-60-53. General Requirements**

The natural, physical, chemical, biological and hydrologic characteristics and the water quality and quantity of the receiving state waters shall be maintained, protected, or improved to the maximum extent practicable. Purposes include but are not limited to supporting state designated uses and water quality standards.

**4VAC50-60-56. Applicability of other laws and regulations**

Land disturbing activities shall comply with all applicable laws and regulations related to stormwater management, including but not limited to the Virginia Stormwater Management Law, Virginia Erosion and Sediment Control Law and the Chesapeake Bay Preservation Act except as provided in § 10.1-603.3 subsection I and all applicable regulations adopted in accordance with those laws. Nothing in this chapter shall be construed as limiting the rights of other federal and state agencies from imposing stricter technical criteria or other requirements as allowed by law.

**4VAC50-60-60. Water quality**. Repeal

**4VAC50-60-63. Water Quality**

In order to protect the quality of state waters and to control nonpoint source pollution, a local program shall apply the following minimum technical criteria and statewide standards for stormwater management to land disturbing activities:

A. Pursuant to §10.1-603.4, the Board is authorized to establish minimum design criteria for measures to control nonpoint source pollution. In order to address periodic modifications due to continuing advances in types of control measures and engineering methods, such design criteria guidance is provided in the Virginia Stormwater Management Handbook. In requiring the implementation of such control measures on the development site of the land disturbing activity, a local program shall, at a minimum, incorporate the following technical criteria and stormwater management standards:

1. A local program shall require new development ~~for residential uses~~ on undeveloped land to implement control measures with minimum design criteria such that the post-development pollutant load of the development site shall not exceed ~~0.22~~ 0.28 pounds of total phosphorus per acre per year and 2.68 pounds of total nitrogen per acre per year.

~~2. A local program shall require new development for non-residential uses to implement control measures with minimum design criteria such that the post-development pollutant load of the development site shall not exceed 0.45 pounds of phosphorus per acre per year.~~

~~3~~ 2. A local program shall require that projects occurring on prior developed lands achieve a 44% reduction in total phosphorous load and 28% reduction in total nitrogen load from pre-existing conditions. The post-development pollutant load for projects occurring on prior developed lands shall not be required to be less than 0.28 pounds of total phosphorous per acre per year and 2.68 pounds of total nitrogen per acre per year. ~~For redevelopment projects, a local program shall require that:~~

~~a. Projects occurring on prior developed lands that will result in impervious areas of less than or equal to 50% shall implement control measures with minimum design criteria such that the post-development pollutant load of the land disturbing site shall not exceed 0.45 pounds of phosphorus per acre per year;~~

~~b. Projects occurring on prior developed lands that will result in impervious areas of greater than 50% and less than or equal to 75% shall implement control measures with minimum design criteria such that the post-development pollutant load of the land disturbing site shall not exceed 0.60 pounds of phosphorus per acre per year; and~~

~~c. Projects occurring on prior developed lands that will result in impervious areas of greater than 75% shall implement control measures with minimum design criteria such that the post-development pollutant load of the land disturbing site shall not exceed 0.90 pounds of phosphorus per acre per year.~~

3. Total nitrogen load and total phosphorus load shall be calculated using a method approved by the Department.

4. In addition to the above requirements, if a land disturbing activity discharges stormwater to a segment of a state water that has been designated as impaired by the 303(d) Impaired Waters List and a TMDL for that segment has been established and approved by the United States Environmental Protection Agency, a local program shall require that additional control measures be implemented such that post-development

conditions are targeted toward the improvement of water quality for the listed impairment to the maximum extent practicable.

B. If the applicant demonstrates to the satisfaction of the local program authority that post-development pollutant load water quality technical criteria setout in subsection A cannot be achieved onsite, offsite controls and in lieu fees may be considered to achieve the necessary reduction per the following:

1. New development pollutant loads shall not exceed 0.37 pounds of total phosphorus per acre per year and 3.5 pounds of total nitrogen per acre per year through onsite controls. Projects occurring on prior developed lands shall at a minimum achieve a 33% reduction in total phosphorous load and 21% reduction in total nitrogen load from pre-existing conditions through onsite controls.

2. Once the minimum onsite phosphorus and nitrogen load and reduction criteria setout in subsection B1 have been met, offsite practices acceptable to the local program authority shall be utilized to meet the remaining required pollutant load reductions for the development or redevelopment project. The offsite reductions shall be achieved within the same HUC or the adjacent downstream HUC per guidance provided in the Virginia Stormwater Management Handbook.

3. If the applicant has demonstrated to the satisfaction of the local program authority that the criteria setout in subsection B2 can not be met offsite, then the remaining load reductions shall be achieved by:

a. The purchase of nitrogen or phosphorus credits in accordance with the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9 VAC 25-820). This option shall only be available within the Chesapeake Bay Watershed;

b. The payment of a fee deposited in a non-reverting Stormwater Mitigation fund established by the local program for the restricted purpose of achieving the required load reductions pursuant to a Board approved plan and schedule. Such fees shall be based on the project cost per pound of reduction per onsite controls used in subsection A and the fee shall be approved by the local program authority; or

c. A combination of the reduction strategies setout in subsections 3a and 3b.

~~B~~ C. The utilization of nonpoint source pollution control measures, including best management practices (BMPs), not included in the Virginia Stormwater Management Handbook which target appropriate nonpoint source pollutants or address water quality standards or goals may be utilized in meeting the technical criteria and stormwater management standards of subsection A at the discretion of the local program authority provided calculations and scientific studies verify pollutant reductions.

~~C~~ D. A local stormwater management program shall encourage the reduction of impervious cover and the implementation of LID in achieving the technical criteria set forth in subsection A. The reductions achieved by LID measures shall be calculated per the guidance provided in the Virginia Stormwater Management Handbook.

~~D E. In an effort to reduce degradation or to achieve water quality standards, additional control measures may be required on a case-by-case basis to maintain and protect water quality.~~

**4VAC 50-60-66 Water Quantity**

In order to protect state waters from the potential harms of unmanaged quantities of stormwater runoff, the following technical criteria and statewide standards for stormwater management shall apply to land disturbing activities:

A. Properties and ~~receiving~~ state waters ~~downstream of~~ receiving stormwater runoff from any land-disturbing activity shall be protected from sediment deposition, erosion and damage due to changes in runoff rate of flow and hydrologic characteristics, including but not limited to, changes in volume, velocity, frequency, duration, and peak flow rate of stormwater runoff in accordance with the minimum water quantity standards set out in this section and the guidance found in the Virginia Stormwater Management Handbook.

B. Pursuant to §10.1-603.4:7, a local program shall require that land disturbing activities:

1. Maintain post-development runoff rate of flow and runoff characteristics that replicate, as nearly as practicable, the existing predevelopment runoff characteristics and site hydrology, or

2. If stream channel erosion or localized flooding is an existing predevelopment condition, improve upon the contributing share of the existing predevelopment runoff characteristics and site hydrology per design methodology and calculations guidance found in the Virginia Stormwater Management Handbook.

C. Any land disturbing activity shall satisfy the requirements of subsection B above if the practices implemented on the site are designed to:

1. Detain the water quality volume and to release it over 48 hours;

2. Detain and release over a 24-hour period the expected rainfall resulting from the one year, 24 hour storm; and

3. Reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming that it was in good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition.

Such land disturbing activity shall further be exempt from any flow rate capacity and velocity requirements for natural or manmade channels as defined in any other section of this regulation.

D. For the purposes of determining compliance with subsection B, a local program shall require the following:

1. Pre-development stream characteristics shall be verified by physical surveys and calculations that are consistent with good engineering practices that are acceptable to the local program authority.

2. Flooding and channel erosion impacts to receiving streams due to land-disturbing activities shall be calculated for each point of discharge from the land disturbance and such calculations shall include any runoff from the balance of the watershed which also contributes to that point of discharge. Flooding and channel erosion impacts shall be

evaluated taking the entire upstream watershed into account, including the modifications from the planned land disturbance. Good engineering practices and calculations shall be used to demonstrate post development stream characteristics, flooding and channel erosion impacts.

3. For purposes of computing predevelopment runoff, all pervious lands in the site shall be assumed prior to development to be in good condition (if the lands are pastures, lawns, or parks), with good cover (if the lands are woods), or with conservation treatment (if the lands are cultivated); regardless of conditions existing at the time of computation. Predevelopment runoff calculations utilizing other land cover values may be utilized provided that it is demonstrated to and approved by the local program authority that actual site conditions warrant such considerations.

E. A local stormwater management program shall encourage the reduction of impervious cover and the implementation of LID in achieving water quantity reductions. The reductions achieved by LID measures shall be calculated per the guidance provided in Virginia Stormwater Management Handbook.

**4VAC50-60-70. Stream channel erosion**. Repeal

**4VAC50-60-73. Frequency**

The specified design storms shall be defined as a 2 and 10-year 24-hour storm using the site specific rainfall distribution recommended by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). The permit issuing authority may allow for the use of the Modified Rational (critical storm duration) Method for pond designs with a maximum drainage area of 200 acres.

**4VAC50-60-76. Linear development projects**

Linear development projects shall control post-development stormwater runoff in accordance with a stormwater management plan or a ~~watershed or regional~~ comprehensive stormwater management plan approved in accordance with these regulations.

**4VAC50-60-80. Flooding**. Repeal

**4VAC50-60-83. Stormwater management impoundment structures or facilities**

A. Construction of stormwater management impoundment structures or facilities within tidal or nontidal wetlands and perennial streams shall be avoided to the maximum extent practicable. ~~and should only be considered in situations where the following criteria have been met:~~

~~1. An alternative analysis has been performed and no practicable alternative exists;~~

~~2. The alternative analysis has demonstrated that the adverse environmental impacts caused by the impoundment are less damaging than the harm caused by uncontrolled stormwater or the benefits of the impoundment are in the public interest and~~

~~such interests exceed the adverse environmental impacts expected from its construction and maintenance;~~

~~3. The alternative analysis has demonstrated that the permittee will take all reasonable steps to: (i) avoid adverse environmental impacts, (ii) minimize the adverse impact where avoidance is impractical and, (iii) provide mitigation of the adverse impact on an in kind basis where applicable;~~

~~4. A demonstration that the siting of the facility, its operation and maintenance will not adversely impact the instream beneficial uses or result in substantive degradation of water quality; and~~

~~5. A comprehensive operation and maintenance plan has been developed.~~

B. Construction of stormwater management impoundment structures or facilities within a Federal Emergency Management Agency (FEMA) designated 100-year floodplain shall be avoided to the maximum extent practicable. When this is demonstrated to be unavoidable, all stormwater management facility construction shall be in compliance with all applicable requirements under the National Flood Insurance Program, 44 CFR Part 59 and local floodplain ordinances. [add TVA??]

C. Stormwater management impoundment structures that are not covered by the Impounding Structure Regulations (4VAC50-20) shall be engineered for structural integrity for the 100-year storm event. In no case shall the design standard be less than the 100-year storm event for any stormwater management impoundment structure.

D. Construction of stormwater management impoundment structures or facilities may occur in karst areas only after a thorough geological study of the area has been conducted in accordance with guidelines setout in the Virginia Stormwater Management Handbook.

E. No adverse environmental impacts shall occur to any identified karst features and ~~no~~ permanent stormwater management impoundment structures or facilities ~~will~~ shall only be constructed in karst features in accordance with guidelines setout in the Stormwater Management Handbook. Discharge of stormwater ~~directly~~ into a karst feature without quantity and quality controls shall not occur unless otherwise allowed by law.

**4VAC50-60-86. Riparian Buffers**

A local program shall develop a riparian buffer plan that includes riparian protection strategies for the maintenance of existing buffers and the establishment of new buffers. To the maximum extent practicable, such a plan shall require that riparian buffers adjacent to state waters on development and redevelopment sites be maintained during and following the land disturbing activity. If no such riparian buffers are existing at the time of the land disturbing activity, then such plan shall require that riparian buffers be established. The local program riparian buffer plan shall be approved by the Board. The Board may grant an exception to the 35-foot width requirement provided that the local program demonstrates to the satisfaction of the Board that the reduced width will satisfactorily protect water quality and quantity.

**4VAC50-60-90. Regional (watershed-wide) stormwater management plans**. Repeal

**4VAC50-60-93. Stormwater Management Plan Development**

A. A stormwater management plan for a ~~regulated~~ land disturbing activity shall apply these stormwater management technical criteria to the entire land disturbing activity.

B. Individual lots or planned phases of developments shall not be considered separate land-disturbing activities, but rather the entire development shall be considered a single land disturbing activity.

C. The stormwater management plan shall consider all sources of surface runoff and all sources of subsurface and groundwater flows converted to surface runoff.

**4VAC50-60-96. Comprehensive stormwater management plans**

A. Localities are encouraged to develop comprehensive stormwater management plans which meet the water quality and quantity requirements of this chapter on a watershed-wide basis. State and federal agencies intending to develop large tracts of land are encouraged to develop or participate in comprehensive stormwater management plans where practicable.

B. The objective of a comprehensive stormwater management plan is to address the stormwater management concerns in a given watershed ~~with optimal economy and efficiency~~ and to better integrate stormwater management facilities and practices. The implementation of comprehensive stormwater management plans shall mitigate the impacts of new development, and provide for the remediation of erosion, flooding or water quality problems caused by existing development within the given watershed.