

## Stormwater Management in James City County, Virginia

Under the provisions of the Chapter 8, Erosion & Sediment Control and Chapter 23, Chesapeake Bay Preservation ordinances of the Code of James City County, Virginia and by subsequent adoption of the ***James City County Guidelines for Design and Construction of Stormwater Management BMP's*** (County BMP manual), a stormwater management plan review program was effectively established in James City County.

### ***The Erosion and Sediment Control Ordinance (Chapter 8 of the Code of James City County)***

This ordinance contains County requirements for reducing the discharge of sediment and reducing stream channel erosion downstream of development sites. Much of the County's topography consists of water features bordered by adjacent steep slopes. This fragile environment is important to the quality of life in the County. The effects and impact of urbanization on many of the waterways of the County is evident. Therefore, most new development and redevelopment projects in the County are required to provide an erosion and sediment control plan with structural best management practices (BMPs) to reduce erosion to downstream channels.

### ***The Chesapeake Bay Preservation Ordinance (Chapter 23 of the Code of James City County)***

This ordinance contains County requirements for reducing non-point source pollution associated with stormwater runoff from new impervious surfaces such as buildings, homes, parking lots, roads, roofs, streets and any asphalt, concrete and compacted aggregate surfaces. Since almost all soils in the County are considered highly erodible and the entire County is designated as Chesapeake Bay Preservation Area (Resource Management Area), most new development and redevelopment projects in the County are required to provide a stormwater management plan with structural BMPs to control and treat stormwater runoff. To control stormwater runoff, structural BMPs are required for site plans with impervious cover exceeding 10 percent of the site and for subdivisions with more than one-half dwelling unit per acre.

### ***County BMP Manual***

Most plans of development which increase impervious cover on a site are required to submit a Stormwater Management Plan with acceptable Best Management Practices (BMPs). Single family lots, not part of a larger subdivision plan or land development project as a whole, are generally not required to provide for stormwater management and BMP control. The ***James City County Guidelines for Design and Construction of Stormwater Management BMPs*** (or County BMP manual for short) was implemented January 1<sup>st</sup> 2000. The manual is a guidance document which sets the framework for and provides detailed technical guidance for selection, design and construction of stormwater management and best management practices (BMPs) as allowed in James City County. The latest edition of the Virginia Stormwater Management Handbook (VSMH) and all related technical bulletins fully supplement the County BMP manual. The County BMP manual is available in bound hard copy format for \$25 plus tax or electronically on CD-ROM for \$10 plus tax. Contact the Environmental Division at 757-253-6670 to order. The Virginia Stormwater Management Handbook can be ordered by contacting the Virginia Department of Conservation and Recreation, Soil & Water Conservation.

The ordinances designate the Environmental Division as plan-approving authority for Chesapeake Bay Preservation, drainage, erosion and sediment control and stormwater management plan purposes. By use of these regulatory tools, our program has developed minimum criteria for design, construction and maintenance of stormwater management and drainage facilities. The Environmental Division performs compliance inspections during the course of land-disturbing activities to ensure proper construction and maintenance of erosion and sediment control measures. The Environmental Division, in conjunction with the new Stormwater Division, will also perform compliance inspections on storm drainage and stormwater management facilities as well as perform a review record drawing and construction certification information.

Key Elements of the Stormwater Management Program of James City County include:

### **Stormwater Management Plans**

In accordance with Section 23-10 of the Chesapeake Bay Preservation ordinance, any development or redevelopment project exceeding 2,500 square feet of land-disturbance in Chesapeake Bay Preservation area shall be accomplished through the plan of development process prior to any clearing or grading of the site or issuance of any building permit. The plan of development shall contain a site or subdivision plan in accordance with the provisions of Chapter 24 and Chapter 19 of the County Code, an erosion and sediment control plan, an environmental inventory, a clearing plan, a stormwater management plan and the current version of the ***James City County Environmental Division, Standard Erosion and Sediment Control Plan Notes***. Contact the Environmental Division at 757-253-6670 if you need a copy of the notes.

At a minimum, *Stormwater Management Plans* shall contain the location and design of stormwater control devices and BMPs, procedures for implementing non-structural stormwater control practices and establishment of a long-term schedule for inspection and maintenance of stormwater management facilities. This generally includes the submission of drainage, erosion and sediment control and stormwater management plan drawings, details, narratives, sequences of construction and maintenance plans as well as applicable design hydrologic, hydraulic and storm drainage computations as prepared by a qualified professional. A stormwater management plan is not required for existing single family lots.

A design plan checklist has been developed to assist the plan preparer with administrative and technical submittal requirements for erosion and sediment control and stormwater drainage and management plans. The ***James City County, Environmental Division, Erosion and Sediment Control and Stormwater Management Design Plan Checklist*** can be obtained by contacting the Environmental Division at 757-253-6670 or by visiting the Planning Division website.

### **Water Quality**

Currently in James City County, compliance with non-point source pollution control requirements for Chesapeake Bay Preservation areas is based on use of the BMP Point System, a technology-based approach, rather than performance-based Chesapeake Bay pollutant load computations. The point system is a unique tool developed by James City County for screening BMPs to ensure that development sites are adequately covered by preferred BMPs. The points assigned to each BMP are weighted by the proportion of the site served by the BMP. To achieve compliance, a Stormwater Management Plan for a site must attain at least ten (10) BMP Points using the standard County worksheet. Compliance may be achieved by a combination of structural or non-structural BMPs and/or treatment of offsite drainage area. BMP selection, design and construction must be in accordance with the ***James City County Guidelines for Design and***

***Construction of Stormwater Management BMP's*** (County BMP manual), the Virginia Erosion and Sediment Control Handbook (VESCH) and the Virginia Stormwater Management Handbook (VSMH). Currently over 20 structural BMP types are allowed in the County including wet ponds, wetland systems, infiltration practices, filtering systems, open channel systems and extended dry detention facilities, including timber crib walls. Timber crib walls are used where wetland or forest conservation, regulations or requirements prevent the use of regular wet or dry pond BMPs and can only be used in intermittent stream areas only.

Non-structural BMP types include the preservation of natural open space. Additional point credits are offered for open spaces which accept or treat stormwater runoff from the development site and for conservation areas directly adjacent to targeted environmentally sensitive areas such as wetlands, mature forests or Resource Protection Area. Natural open space preservation is restricted to perpetually undisturbed areas and must be preserved by use of dedicated conservation easement; therefore, landscaped areas normally associated with private property (commercial, business, industrial, etc.) such as parking lot islands are typically not eligible for BMP point credit.

### ***Stream Channel Protection***

Current stream channel protection criteria for James City County is 24-hour extended detention of runoff from the postdeveloped 1-year, 24 hour frequency storm instead of reduction of the 2-year postdeveloped peak rate of runoff as required by MS-19 of the Virginia Erosion and Sediment Control regulations. Offsite areas may be considered in their pre-developed condition and the SCS or Modified Rational, Critical Storm Duration approaches shall be utilized for computation of the 1-year, 24-hour storm runoff volumes. The Modified Rational, Critical Storm Duration method is only acceptable for BMP designs with less than 20 acres of drainage area. The SCS Type II, 24-hour storm duration rainfall depth for the 1-year storm event in James City County is 2.8 inches.

### ***Stormwater Drainage Conveyance Systems***

Private stormwater conveyance drainage systems including open channels, inlets, storm drains, culverts, energy dissipators and associated easements for drainage systems which are private or outside Virginia Department of Transportation (VDOT) rights-of-way shall be designed and constructed in accordance with the ***James City County Environmental Division, Stormwater Drainage Conveyance Systems (Non-BMP related), General Design and Construction Guidelines***. These County drainage standards can be obtained by contacting the Environmental Division at 757-253-6670.

### ***Inspection/Maintenance Agreements***

Prior to issuance of a land-disturbing permit for any project which involves the construction of stormwater management or drainage facilities or systems, an executed Declaration of Covenants - Inspection/Maintenance of Drainage System is required. This document is recorded in the County land records and binds all present and subsequent owners of property served by the facility or system.

### **Maintenance Plans**

Long-term inspection and maintenance plans are required to be shown on the stormwater management plan for all designed stormwater management/BMP facilities consistent with the Section 23-10(4)(b) of the County's Chesapeake Bay Preservation Ordinance. The inspection/maintenance plan should be specific for the selected BMP facility type.

### **Pond Buffers/Setbacks**

Pond buffers/setbacks are encouraged per the County BMP manual. A pond buffer should be provided that extends a minimum of 25 feet outward from the maximum design high water surface elevation of the pond, which is usually based on the 100-year design storm. The pond buffer should be contiguous with other buffer areas that are required by existing regulations and an additional setback may be provided to permanent structures. Existing trees should be preserved in the buffer area during construction. It is desirable to locate forest conservation areas adjacent to ponds. To discourage resident geese populations, trees, shrubs and native ground covers should be planted in non-forested areas of the buffer. Annual mowing of the pond buffer is only required along maintenance rights-of-way. The remaining buffer can be managed as meadow or forest cover.

### **Record Drawing and Construction Certifications**

Record drawings (asbuilts) and construction certifications are both required for newly constructed or modified stormwater management/BMP facilities. Certification activities shall be adequately coordinated and performed before, during and following construction by the applicant, owner, developer or contractor. Refer to the current version of the ***James City County Environmental Division, Stormwater Management/BMP Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions*** for additional detailed information. These documents can be obtained by contacting the Environmental Division at 757-253-6670.

### **Other Principles of Practices**

The use of the eight (8) tools for watershed protection are generally encouraged during site layout and design. The eight tools include watershed land-use planning, land conservation, aquatic buffering, better site design, erosion and sediment control, stormwater best management practices, non-stormwater discharge control and watershed stewardship.

For difficult sites or sites with distinct limitations, alternative site design procedures may be explored if warranted. Alternatives may include use of better site design or low-impact development techniques which include use of specific measures such as bioretention, dry swales, managed alternative paving systems, stream bank stabilization, turf-reinforcement matting for slope and channel applications, stormwater pollution prevention, preventative maintenance, good housekeeping, watershed and BMP maintenance education and long-term monitoring and inspection programs. Use of these practices are generally encouraged by the Environmental Division if consistent with the Erosion and Sediment Control and Chesapeake Bay Preservation ordinances. Pre-application meetings with staff are encouraged prior to plan submission if any of these techniques are to be implemented as primary site design features.

### **Waivers or Exceptions**

Certain provisions of the Chapter 8 ordinance, the Virginia Erosion and Sediment Control or Stormwater Management Handbooks and administrative/technical documents of the Environmental Division, including the County BMP manual and the ten (10) Point System, may be waived or modified if deemed inappropriate or too restrictive for site conditions. Waiver requests are required, in writing, to the Environmental Division. Any variance request must reference the minimum standard, design criteria or feature desired to be excepted and adequate information must be submitted to support, justify or substantiate the waiver. Variance requests shall be reviewed judiciously, keeping in mind both the needs of the applicant and the need to provide for proper erosion and sediment control and stormwater management. Exceptions, waivers and exemptions to the County's Chesapeake Bay Preservation ordinance must follow procedures as set forth and outlined in that particular ordinance.

### **Watershed Management Plans**

The County has eleven (11) subwatersheds which drain to the James, York and Chickahominy Rivers. These subwatersheds include Chickahominy River (direct), College Creek, Diascund Creek, Gordon Creek, James River (direct), Mill Creek, Powhatan Creek, Skiffes Creek, Ware Creek, Yarmouth Creek and York River (direct). Several watershed management plans have been approved or are currently under study for these watersheds. These include the Powhatan Creek, Yarmouth Creek, Lower Skiffes Creek and Gordon Creek subwatersheds. Each of the studies are at different stages in the preparation, development, review, approval and implementation processes. For further information, refer to the watershed management portion of the Environmental Division web site or contact Development Management, Environmental Division or Stormwater Division staff at 253-6671, 253-6670 or 757-259-1460, respectively.

### **Special Stormwater Criteria**

*Special Stormwater Criteria (SSC)* was adopted on December 14, 2004 and may apply to project sites situated in specific approved watershed management plan areas. Special Stormwater Criteria (SSC) is a layer of stormwater criteria above and beyond the County's 10-point water quality and stream channel protection (quantity control) stormwater management criteria.

Special Stormwater Criteria is a step-by-step process in which existing erosion and sediment control, clearing plan and environmental inventory information is used to determine the presence of HSG A & B soil groups on the site, whether or not they are impacted and if saved in their entirety, the criteria is achieved. If HSG A&B soils are not present or saved in their entirety, then a required number of special stormwater criteria practices (SSCP's) must be applied to a site based on the site's disturbed area amount. Currently over 39 SSCP's are available to choose including on- and offsite design practices, structural and non-structural practices, slope/grading practices, on-lot stormwater management practices, BMP enhancement and stream restoration measures. Contact the Environmental Division at 757-253-6670 if you need a copy of the Special Stormwater Criteria.

### **Municipal Separate Storm Sewer System Permit**

Due to population and the location of urbanized areas as defined by the Bureau of Census, James City County is designated as one of several local communities in the Hampton Roads area which is regulated by the EPA and Virginia Department of Conservation & Recreation as a small Municipal Separate Storm Sewer System (MS4) owner or operator under the Virginia Stormwater Management Program (VSMP) Phase II stormwater regulations. A regulated small MS4 operator must develop, implement and enforce a stormwater management program to reduce the discharge of pollutants from their MS4 to the “maximum extent practical” to protect water quality. A small MS4 stormwater management program must identify selection of Best Management Practices and measurable goals for each of the six minimum control measures associated with the VSMP Phase 2 stormwater permit. The six minimum control measures include: public education and outreach, public participation and involvement, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control and pollution prevention/good housekeeping for municipally-owned facilities.

James City County received coverage under MS4 General Permit, VAR040037, on March 21, 2003. The County is participating with other Hampton Roads MS4 communities in a regional stormwater management program coordinated through the Hampton Roads Planning District Commission to implement the permit requirements.

### **Stormwater Division**

Please note that on April 24, 2007, the Board of Supervisors adopted Chapter 18A of the County Code establishing a stormwater management program. Contact the Stormwater Division at 757-259-1460 to obtain information about their programs including BMP education, inspection and inventory, capital and drainage improvement projects and water quality monitoring.

### **Pre-Application Meetings**

Pre-application meetings are encouraged by our Division. A concept plan roundtable process is available to present early project renderings and to discuss specific questions or topics prior to final plan of development submittal. Contact the Planning Division at 757-253-6685 to learn more about the concept plan roundtable process.

### **List of Design Tools & Aids**

- Virginia Erosion & Sediment Control Handbook (VESCH), latest edition.
- Virginia Stormwater Management Handbook (VSMH), latest edition.
- Chapter 8, Erosion and Sediment Control ordinance of James City County.
- Chapter 23, Chesapeake Bay Preservation ordinance of James City County.
- Chapter 18A, Stormwater Management ordinance of James City County.
- James City County Guidelines for Design and Construction of Stormwater Management BMPs.
- Special Stormwater Task Group, Special Stormwater Criteria in James City County

- ❑ James City County Erosion and Sediment Control and Stormwater Management Design Plan Checklist.
- ❑ James City County Environmental Division Stormwater Management/BMP Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions.
- ❑ James City County Environmental Division, Stormwater Drainage Conveyance Systems (Non-BMP related), General Design and Construction Guidelines.
- ❑ James City County standard Erosion and Sediment Control Notes.
- ❑ Land-Disturbing Permit Application.

**Helpful Stormwater Management Website Links**

Virginia Department of Conservation & Recreation, Soil & Water Conservation:  
[http://www.dcr.virginia.gov/soil\\_&\\_water/index.shtml](http://www.dcr.virginia.gov/soil_&_water/index.shtml)

Virginia Department of Conservation & Recreation, Dam Safety and Floodplain Management:  
[http://www.dcr.virginia.gov/dam\\_safety\\_and\\_floodplains/index.shtml](http://www.dcr.virginia.gov/dam_safety_and_floodplains/index.shtml)

EPA Menu of BMPs: <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>

Stormwater Manager's Resource Center, Stormwater Center: [www.stormwatercenter.net/](http://www.stormwatercenter.net/)

HR Storm, [www.hrstorm.org](http://www.hrstorm.org)