

**PUBLIC HEARING AGENDA REQUEST****Sponsor:**

Raymond E. Graham, Cedar Run District Supervisor

**Staff Lead:**

Kimberley P. Fogle, Assistant Director

**Board of Supervisors Meeting Date:**

June 11, 2009

**Department:**

Community Development

**Topic:**

An Ordinance to Amend Chapter 2 of the Design Standards Manual Dealing with Drainage

**Topic Description:**

This proposed amendment reflects a comprehensive review and amendment to Chapter 2 of the Design Standards Manual (DSM), dealing with drainage and stormwater management. Over the last year, Community Development staff worked with a committee on the evaluation and refinement of the design standards within Chapter 2 in order to simplify, clarify and improve the usability of the document, while maintaining good design practices. The DSM Committee consisted of private sector engineering design firms that work in Fauquier County, as well as surrounding counties, and who are current members of the Engineers and Surveyors Institute (ESI). The content of the final document was developed through consensus and received unanimous recommendation from the DSM Committee.

**Requested Action of the Board of Supervisors:**

Conduct a public hearing and consider adoption of the [attached ordinance](#).

**Financial Impact Analysis:**

There is no additional financial impact anticipated.

**Summary Staff Report:**

The most significant change in Chapter 2 is the removal of the Northern Virginia BMP Handbook as one of the design criteria. The Northern Virginia BMP Handbook was originally adopted for use by communities with drainage into the Occoquan Reservoir. (These communities include the Counties of Fairfax, Prince William and Loudoun and the incorporated areas within.) Since approximately 1/3 of Fauquier County drains into the Occoquan, the decision was made with the adoption of the stormwater management (SWM) ordinance in 2002 to apply these standards to the entire county. Thus, they were adopted in conjunction with the Virginia Stormwater Management Handbook (VSMH). With this change, stormwater management ponds will only be designed to the VSMH standards, consistent with the majority of Virginia communities. This eliminates the often confusing application of two diverse sets of standards. In addition, the elimination of the Northern Virginia BMP Handbook standards will now allow the water quality volume in a pond to be credited in the calculation of the required quantity control amount, thus reducing the size (and potential oversizing) of SWM facilities.

In simplifying the DSM, duplicative state standards were removed from Chapter 2, while retaining

references to the applicable state standards. The VSMH Technical Bulletins have also been deleted from this chapter. This eliminates the need to coordinate the content of this chapter with state revisions, thus saving time and housekeeping effort in the future. This change has condensed the chapter thereby making it more user-friendly. (The deleted Technical Bulletins, as well as deleted checklists and worksheets associated with the Northern Virginia BMP Handbook, were located in the Appendix of the DSM and, for the sake of clarity in the presentation of the changes, are not shown as strikethrough pages in the amended Chapter 2 document.)

Due to the large amount of soil having a high water table characteristic in Fauquier County, there is a need to design appropriate SWM facilities when such facilities are located in these soils. Over time, conflicts between theoretical analytical practice and in-field experience have arisen when dry facilities are designed in wet soils. Standards for determining a high water table and permeability testing for SWM facilities using infiltration have been included in the revisions. New section A204.1(24) provides detailed procedures to be followed for determining the seasonal high water table and for the accurate testing for soil permeability necessary for infiltration facilities. This does not add an extra testing requirement as a developer would normally undertake this testing anyway. By outlining and agreeing to an acceptable procedure, we minimize potential interpretive conflicts (as well as time and money for the developer) down the road in the review process. These were added at the encouragement of the DSM Committee to clarify expectations and ensure predictability in the review process.

There was considerable discussion with the DSM Committee on how to prevent in the future the significant drainage problems we are currently experiencing in some subdivisions. As we did not want the added requirement for on-lot grading plans, the consensus was to increase the overland relief standard from the 10-year storm to the 100-year storm for areas located within service districts. The DSM Committee felt this was a valid health, safety, welfare and property value concern. The revised standard is consistent with surrounding areas including Loudoun County, Prince William County, Stafford County and Fairfax County.

To further simplify the DSM document, checklists from the Appendix have been removed and placed on the County website with references to them in the Chapter. This will assist in keeping the latest version of the checklist available to the public and design community while reducing the need for changes to the Design Standards Manual. In addition, terminology used in the chapter has been revised so that it is consistent with the defined terms in the Virginia Stormwater Management Handbook and several new definitions have been added.

As most of the constructed stormwater management ponds are currently maintained by homeowner's associations (unlike many of the surrounding more developed, suburban communities that have assumed public maintenance for these facilities), standards reflecting generally acceptable design practice have been incorporated to help reduce future maintenance problems of SWM/BMP ponds. Standards employed include elimination of gabion weirs for SWM forebays, providing a minimum orifice size for outflow pipes and the inclusion of anti-clogging devices. Having such minimum standards is important because most homeowner's associations have very limited knowledge about the maintenance of these structures, and the potential for problems to arise due to a lack of maintenance is high.

Other changes and refinements to Chapter 2 include:

- Eliminating a specific requirement for gravity flow drains in wet ponds, making it easier to develop appropriately-sized wet ponds;
- Providing consistency in defining drainage channels, as opposed to numerous terms such as drainage swales, drainageways, etc., that imply all depressions in the ground are equal;
- Providing flexibility in the location of drainage easements on larger lots (currently focused towards the edge of the property) and consideration for lots less than ½ acre provided 75% of the available area for building is contiguous and usable as determined by the Zoning Administrator;
- Deleting time lines for the review of SWM plans as such plans are reviewed in conjunction with the

overall site plan or construction plan and would follow the defined time lines for those review processes;

- Eliminating the requirement for a SWM concept plan (with engineering) for rezonings;
- Adding flexibility to the required 2% minimum slope for newly graded areas – down to 1% on commercial, business and industrial sites and to follow accepted industry standards for recreational sports fields and conveyance channels;
- Clarifying the appropriate use of high density polyethylene (HDPE) pipe;
- Requiring inspection and certification of the correct installation of underground stormwater management facilities;
- Incorporating flexibility in the standards for consideration of the use of innovative new technologies for low impact development; and
- Reducing setbacks for ponds with smaller dam embankments.

This DSM Chapter also includes the requirements for Erosion and Sediment (E&S) Control. A comprehensive review of the E&S provisions was made and adopted in December 2006. No substantive changes have been made to the E&S controls within this Chapter.

### Revision Process

Between January 22, 2008 and April 21, 2009, members of the DSM Committee met on a semi-monthly basis to review the provisions of the DSM drainage chapter. Clarifications were proposed by both Community Development staff and the DSM Committee members, often prompting in-depth discussion of appropriate design practices. The Committee expended numerous hours in refining this ordinance and their willingness, expertise, considerable input and patience through the process is greatly appreciated.

The members of the Committee include several private sector engineering and surveying design firms, including: Chris Hritsik with Bohler Engineering P.C.; Jim Carson, Rick Ashley and Paul Bernard (formerly with Bury Partners) with Carson-Ashley and Associates; Dave Hall and John Orr with DRH Design Group, Inc.; Bruce Reese and Mike Webb with The Engineering Groupe, Inc. and Fred Ameen with Patton Harris Rust and Associates, P.C. Also participating in the Committee from Fauquier County were Kimberley Fogle, Assistant Director of Community Development; Christer Carshult, County Engineer and Sandra O'Connell, Senior Planner. Jim Sawyer, County Soil Scientist, provided significant input into the sections dealing with seasonal high water tables and soil testing.

### **Identify any other Departments, Organizations or Individuals that would be affected by this request:**

Department of Economic Development  
Department of Community Development

### **Attachment:**

Design Standards Manual, Chapter 2: Drainage, [Working Revisions Through June 1, 2009](#)

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