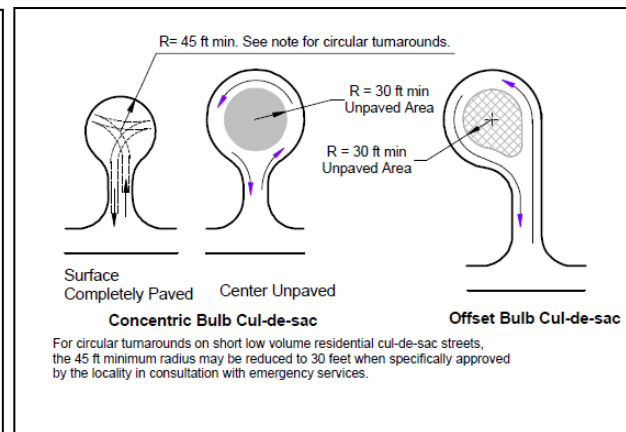


Examples of Code and Ordinance Language for Better Site Design



9 South 12th Street, 4th Floor
Richmond, Virginia 23219
www.JamesRiverAssociation.org

This document provides example language for local code and ordinance reviews that focus on water quality protection practices for new and re-development activities.

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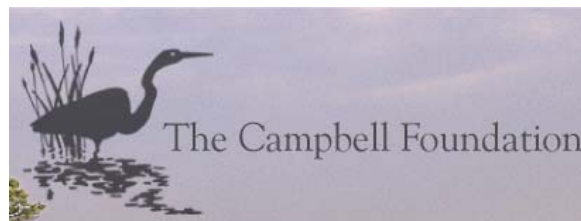
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Acknowledgements

The staff of the James River Association would like to express their appreciation for the opportunity to provide this manual for potential code and ordinance revisions that have the potential to improve water quality within the James River watershed and beyond. Special thanks to our funding partners, the Keith Campbell Foundation for the Environment, Philip Morris USA, and the Alcoa Foundation. We would also like to thank the Center for Watershed Protection and the Environmental Law and Conservation Clinic at the University of Virginia for their technical support.

This project was built upon the foundation of the first phase of JRA's *Building a Cleaner James River* that was completed in January 2007. This phase evaluated codes and ordinances for 45 counties and cities within the James River watershed for flexibility to incorporate environmentally sensitive design practices, otherwise known as Better Site Design. The first phase of the project was completed with the help of graduate and undergraduate students from Virginia Commonwealth University, Virginia Tech, and University of Virginia. For more information, on this and other water quality improvement projects underway, please visit the James River Association web site at www.jamesriverassociation.org.



PhilipMorrisUSA



Prepared by
Greener Results Consulting



2010

Images on cover:

Photograph: James River Association

Cul-de-sac drawing: Virginia Department of Transportation, (2009) Appendix B(1) – Subdivision Street Design Guide.

Introduction

The greatest threat to the future of the James River can be seen after any major rain event as plumes of brown, sediment-laden runoff engulf its waterways. Polluted runoff occurs from the headwaters to the mouth, reducing clarity and burying critical habitat. Rainwater runoff can also carry an invisible toxic mix of bacteria, heavy metals, fertilizers, and pesticides that cause also create varied and widespread human health and ecological problems.

Impacts of Impervious Cover

The greatest contributing factor to the amount of rain water runoff is the amount of impervious area in a given watershed. "Impervious" area is any part of the landscape that does not allow rainfall to soak into the ground, for example, paved roads, sidewalks, rooftops, parking lots and driveways. Current research indicates that as impervious area increases within a watershed, there is a direct impact on stream quality. When a site is developed, it loses its natural storage potential for rainfall. Whether an individual lot, a subdivision, shopping center, industrial facility, barren land, and in some cases, compacted turf, impervious surfaces alter the natural hydrology of a given site. The precipitation that previously infiltrated into the ground, evaporated, transpired, or was temporarily stored in depressions and tree canopies, now rapidly runs off the site across these hardened surfaces, picking up and concentrating pollutants, until it enters the storm drain or flows directly into a stream or creek (See Diagram 1).

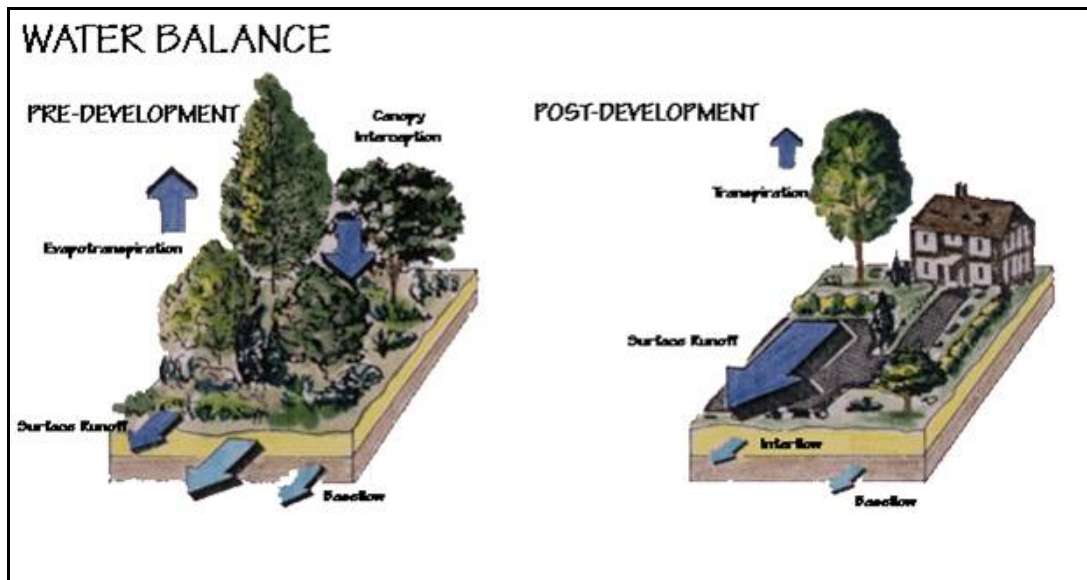


Diagram 1. The effects of development on the water balance. Increased amounts of impervious cover result in more rainfall being converted into surface runoff. In the post-development setting, the amount of water running off the site is dramatically increased, creating pollution and erosion problems for streams and creeks that receive this runoff. Courtesy of the Center for Watershed Protection. © 2002 STORMCENTER COMMUNICATONS, INC. - ALL RIGHTS RESERVED.

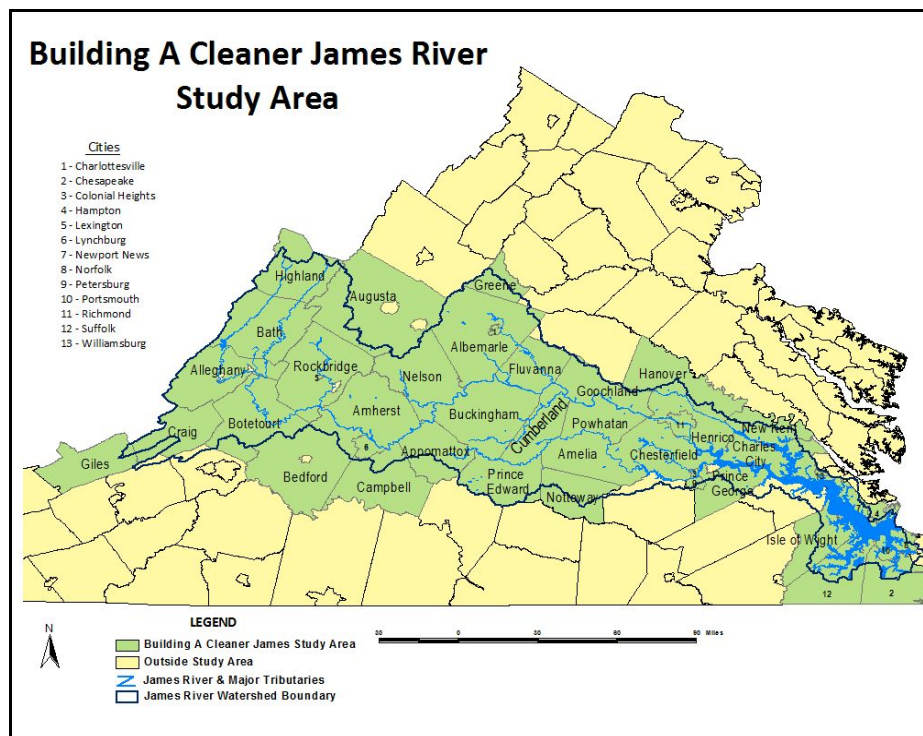
In an effort to prevent further degradation of local and downstream waterways, scientists and engineers have developed alternative development methods that decrease the amount of impervious area and increases on-site infiltration of rain water runoff. Such practices fall under different names, including Better Site Design (BSD), Environmental Site Design (ESD), Low Impact Development (LID), and Conservation Design. Although each has its own individual goals, the common themes shared by all include flexible lot design, conservation of natural landscape and drainage systems, the reduction of impervious surfaces, and sustainable stormwater management techniques. *Virginia Fact Sheets and Case Study Findings* (2007), a report prepared by the Alliance for the Chesapeake Bay and Center for Watershed Protection, provides examples of Virginia localities that adopted innovative stormwater management programs, development incentives and better site

design-oriented ordinances. The issues of tree preservation, conservation of open space, stormwater management and other relevant topics are discussed in this paper.

Project Background

The James River Association (JRA), in partnership with Center for Watershed Protection, Virginia Tech, University of Virginia and Virginia Commonwealth University, evaluated forty-five jurisdictions within the James River watershed to assess the degree to which local codes protect water quality while accommodating future growth (See Map 1). The results of this study, *Building a Cleaner James River: Improving Local Building Codes & Ordinances to Protect the James River & Its Tributaries*, are available through the James River Association website, www.jamesriverassociation.org.

Study Area: James River Watershed (Map 1)



The study conducted by JRA and its partners utilized two documents prepared by the Center for Watershed Protection: the *Code and Ordinance Worksheet* (COW) and the *Erosion Control, Stormwater and other Resource Issues, Addendum A*, to analyze each of the forty-five localities. The two worksheets were divided into four categories: 1) Residential Streets and Parking Lots; 2) Lot Development; 3) Conservation of Natural Areas; and 4) Stormwater and Erosion Controls.

Due to the size of the watershed, it was no surprise that the researchers found a wide range of “readiness” when it came to protecting environmental resources from new development. On one end of the spectrum there is a locality characterized as very rural with low development pressure, minimal population growth projections, and in some cases, much of the locality’s acreage was under some form of local, state, or federal protection. These localities had very few, if any, references in their codes and ordinances related to natural resource protection other than what was mandated by state and federal laws.

On the end of the spectrum, there were very urban, impacted localities that tended to show a decrease in population but still maintained a significant amount of existing or new (re)development. In many cases these localities, such as Richmond, Norfolk, Hampton, and Charlottesville have codes and ordinances with guidance to protect natural resources, much of which is the result of the enactment of the Virginia *Chesapeake Bay Preservation Act*.

For this project, we focused on the rapidly urbanizing localities that we need to work with in order to protect the James River and its resources. These are counties surrounding the major cities in Virginia, quickly becoming or already known as the “suburbs.” These

suburbs are characterized as localities that gained the most in population figures between 2000 and 2004, with increases in population greater than 10% and/or greater population gain between 2000 - 2004 than 1990 – 2000. Localities falling under this scenario include the counties of Fluvanna, Goochland, James City, Powhatan, Prince George and Suffolk.

Why Better Site Design?

Why should local governments and other stakeholders bother to review and update their codes and ordinances to expand the options available to landowners and increase opportunities for conserving land through the development process? Because there is only one opportunity to truly minimize the impacts of development. Once a site is developed, it is very difficult and very expensive to correct the associated watershed and water quality problems. The “business as usual approach” results in “checkerboards” of rural and suburbanizing areas into a seamless blanket of “wall-to-wall” subdivisions and strip malls, with no open space, aside from a few remnant areas that are too wet or steep to build on, or are located within the floodplain¹.

Local codes often discourage the use of BSD because they are outdated and not written to protect the environment. The outdated development codes often limit innovation and inadvertently encourage the creation of excess impervious cover. The unintended result is that community and/or Homeowner Associations are then left with the challenge of managing impervious cover and associated stormwater runoff.

Better Site Design works to reduce the surface area of parking lots and other impervious areas, and use that space to incorporate functional landscaping and better stormwater

¹ Arendt, Randall, *Growing Greener: Putting Conservation into Local Plans and Ordinances* (1999). Island Press: Washington, D.C.

treatment within the site. This reduces the impact on local waterways, and can result in savings in reduced infrastructure costs.

How To Use This Document

The purpose of this document is to provide general guidance and suggestions for communities revising or establishing water quality protection measures related to site design and layout, open space, and stormwater management. It is the intent that communities complete a Code and Ordinance Worksheet (COW) to identify areas in local code that could be revised to better protect water quality. The COW is contained in this document as Appendix 3 and can be downloaded for free from www.cwp.org. The example code language from communities around the country contained in this document can serve as a framework to guide a community through such a process, by promoting the principles of natural resource conservation and the prevention of stormwater pollution as integral components of new and re-development. The codes in this guide may not always fit the exact needs of a community, as they represent rural, suburban, and urban communities, but they can serve as a starting point to make code changes.

The following pages provide example language to address the questions asked in the *Code and Ordinance Worksheet* (COW) and the *Erosion Control, Stormwater and other Resources Issues, Addendum A*. The example code can serve as a framework for communities to change local codes. Much of the language is from Virginia localities, that consist of adopted language and some pending approval by local boards and commissions. Other examples come from around the country including California, Connecticut, Maryland, Michigan, Ohio, Oregon, Washington and Washington, D.C.

Section 1. Code and Ordinance Worksheet (COW)

1. Street Width

- a. *What is the minimum pavement width allowed for streets in low density residential developments that have less than 500 average daily trips (ADT)?*

The minimum pavement widths required by the Virginia Department of Transportation (VDOT), provides the following standards for residential street widths for projected traffic volumes of up to 2000 average daily trips (ADT) (Source: Tables 1, 2 & 3 in VDOT Road Design Manual, Appendix B, Subdivision Street Design Guide (2009):

RESIDENTIAL & MIXED USE SUBDIVISION STREETS*	MINIMUM ROAD WIDTH		
	No Parking	Parking One Side	Parking Both Sides
Up to 2000 Average Daily Trips (ADT)			
Curb & Gutter	24'	24'	29'
Shoulder & Ditch	24'	24'	24'
One-Lane, One-Way Subdivision (Shoulder & Ditch and Curb & Gutter)	15'	N/A	N/A
*Lower design speeds (and street widths) may be utilized provided they are designed in accordance with the AASHTO Green Book or AASHTO's Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT<400). The designer should coordinate with VDOT in advance of design (e.g. sketch plan stage) if this alternative criteria is being utilized.			

Better site design principles recommend a minimum pavement width of 18 to 22 feet for low density (less than 500 ADT or 50 homes) residential developments. VDOT standards are not categorized to specifically address 500 ADT -- the cutoff in the Road Design Manual is "Up to 2000" ADT and "2001 – 4000". For this principle, the VDOT required road width fits into the BSD requirements for one-lane, one-way subdivision streets at the "Up to 2000 ADT, (15 feet wide)". A reduction of street width is allowed for subdivision and mixed use subdivision streets with less than 400 ADT if the designer follows guidelines of AASHTO and coordinates with the VDOT residential engineer.

Example language from New Kent County, VA Code:

Chapter 91. Subdivisions. Article IV. Design Standards. Division 2. Street, Roads and Access. Sec. 91-91. Street and road classifications. (1) *Traffic volume classification and description.* New streets shall be classified according to the following table based on the total traffic projected for the street at full development, including full development of adjoining properties which reasonably may be expected to produce or attract traffic which will utilize the street:

TABLE INSET:

Street Classification	Minimum ADT	Maximum ADT
Access	--	450
Sub-collector	451	1,000
Minor Collector	1,001	4,000
Major Collector	4,001	8,000
Minor Arterial	8,001	12,000
Major Arterial	Over 12,000	

Sec. 91-94. Geometric standards.

(a) It is the intent of the county that the least pavement width necessary to provide safe use be utilized in residential subdivisions.

(b) Geometric standards for streets *without* curb and gutter are as follows:

TABLE INSET:

Classification	Minimum Design Speed (miles per hour)	Minimum R-O-W Width	Residential Pavement Width	Residential Lot Access Permitted
Access	20	40'	16'	YES
Sub-collector	20	50'	18'	YES
Minor Collector	25	50'	22'	YES
Major Collector	30	60'	22'	NO
Minor Arterial	40	60'	24'	NO
Major Arterial	60	variable		NO

...

(d) Geometric Standards for streets with curb and gutter shall be as prescribed by the department of transportation provided that the minimum pavement width possible shall be utilized for all residential streets for which residential lot access is permitted....

(g) On all residential streets and along all streets and roadways having, or designated to have in the comprehensive plan or other county plans, pedestrian facilities, intersections shall have the shortest intersection or curb radii permissible under department of transportation standards while still accommodating the turning requirements of the appropriate design vehicle.

b. At higher densities are parking lanes allowed to also serve as traffic lanes (i.e., queuing streets)?

Queuing streets are narrower street types that contain one parallel parking lane and a travel lane sufficiently wide to accommodate the passage of larger emergency and service vehicles. In instances where cars park along the roadway, queuing streets require one car to wait temporarily in “queue” until the oncoming car passes. Traditionally used in older, suburban neighborhoods, queuing streets range between 20 and 26 feet wide, with a 12- to 13-foot travel lane and a seven-foot parallel parking lane. Compared to a typical 36-foot-wide street, queuing streets can reduce planning and design costs as well as other infrastructure costs, such as those associated with storm water management. It has been estimated that the elimination of parking on one side of the street can reduce storm water runoff by 25 percent (U.S. Department of Housing and Urban Development, 2003).

Example Language from the City of Gresham, OR:

Development Code (As amended through 1/15/09) – Appendix 5. A5.500 - Transportation System Description and Function.

(F) Local Streets

The local street system is used throughout the city to provide local circulation and direct property access. It provides mobility within neighborhoods and other homogeneous land uses, and comprises the largest percentage of total street mileage.

(1) Queuing Street

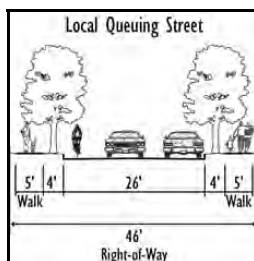
Queuing streets are through streets intended for two way travel. They include one travel lane and two parking lanes. When two vehicles meet on a queuing street, one vehicle must yield by pulling over into a vacant segment of the adjacent parking lane.

(a) Limits: The 26 feet pavement width local queuing street standard is most appropriate for use in single-family residential districts.

(b) Pavement: Queuing streets consist of a 26 feet pavement width consisting of one 10 feet travel lane and two 8 feet parking lanes. 46 feet of right-of-way also includes 5 feet sidewalks, 6 inches survey monument area between the sidewalk and the abutting property line, 4 feet tree planter strips and 6 inches curbs. Note: An applicant may increase the right-of-way width up to 50 feet in order to increase the tree planter strip or sidewalk width(s).

(c) Maximum Block Length: The maximum block length for a queuing street is 400 feet. A queuing street may not terminate in a cul-de-sac, but may temporarily dead end with a planned future street extension.

(d) Parking: "No Parking" shall be posted within 30 feet of curb return.



Graphic Source: City of Gresham, OR Development Code (2009).

2. Street Length

a. Do street standards promote the most efficient street layouts that reduce overall street length?

In this case, total street length is a function of the distance between house lots and overall site layout. There is no one street layout that is guaranteed to minimize total street length in residential developments. Instead, site designers are encouraged to actively look for opportunities to reduce street length. A more compact street network can be achieved by reducing frontage distances and side yard setbacks and allowing for narrower lots. The objective is to have as many homes as possible accessible from the main streets (Center for Watershed Protection, 1998).

Careful attention to the layout of a neighborhood's streets may not only enhance the livability of a neighborhood, but also reduce the costs of the developer significantly. Streets and associated infrastructure (i.e., storm, sewer and water pipes) are a major component of the total development cost of a neighborhood. Streets that are excessively wide or inefficiently designed will add unnecessary costs that will eventually be passed on to the homebuyer (Greater Minnesota Housing Fund, 2001).

Site designs that lend themselves to reduced street length include the "traditional neighborhood development" and "open space development." Examples of traditional neighborhood developments include:

Arlington Square, Arlington arlingtonsquare.com, tortigallas.com,
Belmont Greene, Ashburn dpz.com, waterforddevelopmentllc.com
Cameron Station, Alexandria cameronstation.org/
City Center at Oyster Point, Newport News oysterpointonline.com, cmssarchitects.com
Clarendon Sector Plan, Arlington County arlingtonva.us, [Market Common](http://MarketCommon.com)
Columbia Pike, Arlington County arlingtonva.us, arlingtonvirginiausa.com, doverkohl.com
Diggs Town, Norfolk urbandesignassociates.com
East Beach, Norfolk eastbeachnorfolk.com
Eisenhower East Plan, Alexandria alexandriava.gov, [Design Guidelines](http://DesignGuidelines.com)
Ladysmith Village, Ladysmith ladysmithva.com, dpz.com

Suggested Potential Language Subject to Local Approval:

This principle does not have an exact example from which to draw. The concept of the principle is made up of several other principles including frontage, side setbacks (Principle #12) and clustered homes (Principle #11). While more of a policy issue than a code issue, this principle focuses on achieving 'smart streets' grids that achieve a more 'walkable' and connected street pattern.

3. Right-of-Way Width

a. What is the minimum right of way (ROW) width for a residential street?

Localities receive 3 points if they adhere to the guidelines set in the VDOT Road Design Manual, Appendix B, Subdivision Street Design Guide, pg. B-39 (see text below).

L. RIGHT-OF-WAY

1. Width

The minimum width of right of way shall be sufficient to accommodate all roadway elements, including pedestrians, multiuse trails, bicyclist, shared use paths and the clear zone and extend at least one (1) foot behind any feature intended to be maintained by VDOT as part of the roadway. However, the minimum width of right of way shall be no less than 30 feet. As indicated in the Secondary Street Acceptance Requirements, easements may be used in lieu of dedicated right of way to accommodate slopes and sight distances (VDOT, 2009).

b. Does the code allow utilities to be placed under the paved section of the ROW?

According to the Virginia Department of Transportation *Road Design Manual, Appendix B Subdivision Street Design Guide*, utilities are allowed to be placed underground within the dedicated right-of-way of streets:

H. Utilities

a. Underground utilities

The Department allows the placement of underground utilities within the dedicated right of way of streets.

Underground utilities should normally be located outside of the travel lanes and desirably beyond the pavement. However, if the governing body has established adequate requirements for the design, location, and construction of underground utilities within the right-of-way of subdivision streets, including provisions that ensure adequate testing and inspection is performed to minimize future settlement,

those requirements shall become the Department's requirements and govern unless those requirements conflict with a requirement of the Department.

When location of the utilities outside of the pavement area is not practical such as in high density developments incorporating the principles of new urbanism as described in 15.2-2223.1 of the Code of Virginia, such installations:

- 1) Are acceptable within the parking area and the shoulders along the street.
- 2) May be acceptable beneath the travel lanes of the street when provisions are made to ensure adequate inspection and compaction tests and
 - a) Longitudinal installations and manholes are located outside of the normal travel lanes, or
 - b) Longitudinal installations and manholes are placed in the center of an undivided roadway out of the wheel path.

Example language from Albemarle County, VA Code

Chapter 14. Subdivision of Land

Division 3. Water, Sewers and Other Improvements

14-420 Location of utilities above- and underground.

All utilities, including but not limited to wires, cables, pipes, conduits and appurtenant equipment for electricity, gas, water, sewer, telephone or similar service, shall be located within a subdivision as follows:

A. Each utility shall be located, to the extent practicable, in a manner that conforms to the natural topography, minimizes the disturbance of critical slopes and natural drainage areas, and allows vehicular and pedestrian interconnections within the subdivision and existing or future development on adjoining lands.

B. All new utilities shall be located underground except the following, which may be located above-ground: (i) electric transmission lines and facilities; (ii) equipment, including electric distribution transformers, switch gear, meter pedestals, telephone pedestals, outdoor lighting poles or standards, radio antennae and associated equipment, which is, under accepted utility practices, normally installed aboveground; (iii) meters, service connections, and similar equipment normally attached to the outside wall of a utility customer's premises; and (iv) satellite dishes.

C. If it is necessary to locate a new or existing public utility within the right-of-way of a public street, the subdivider shall first obtain a permit from the Virginia Department of Transportation.

4. Cul-de-Sacs

- a. What is the minimum radius allowed for cul-de-sacs?*
- b. Can a landscaped island be created within the cul-de-sac?*
- c. Are alternative turnarounds such as “hammerheads” allowed on short streets in low density residential developments?*

When localities default to the guidelines set in the VDOT Road Design Manual, Appendix B, Subdivision Street Design Guide, pg. B(1)-24, criteria for Better Site Design can be met:

F. CUL-DE-SACS AND TURNAROUNDS

1. To afford the greatest flexibility in design, various types of turnaround designs may be used on subdivision streets. Additional right-of-way shall be provided as required by the turnaround design to continue the right of way limits around the perimeter of the turnaround. Acceptable Cul-de-sac designs include:

a. Circular Type Turnarounds

For circular turnarounds, a well-defined identifiable street segment, equal to the normal lot width along the intersected street that serves the cul-de-sac or 50 feet whichever is greater, shall extend from the intersected street to the turning area. A minimum radius of 45 feet, measured to the edge of pavement or face of curb, shall be used for circular turnarounds on residential cul-de-sac streets serving more than 25 dwellings and greater than 0.25 mile in length. A 45 foot radius should also be used if standard 65 passenger school buses are expected to use the cul de sac, or for any nonresidential use. For circular turnarounds on short low volume residential cul-de-sac streets, this minimum radius may be reduced to 30 feet when specifically approved by the locality in consultation with emergency services.

b. Cul de sacs with unpaved centers (Islands)

When a circular turnaround is proposed with an unpaved area in the center, the roadway around the center should be considered a one-way street and designed according to (Table 3 for) Roadway Section Criteria. Pavement widths may be increased by the District Administrator’s Designee to accommodate turning radii of single unit truck design vehicle. Parking should be restricted to the outside of the curve. Cul de sacs with curb and gutter should have a raised curb along the circumference of the island, unless the cul de sac is being developed to accommodate low impact development techniques.

The unpaved area should have a minimum radius 30 feet and maximum radius of 120 feet. Unpaved center areas should have a ten-foot clear zone around the circumference

of the circle. Any non-travel areas included within turnarounds should be included in the dedicated right-of-way of the facility.

If the center radius is greater than 120 feet, the street will be considered a loop street and should be designed in accordance with tables 1 and 2 for two-way traffic.

c. Alternative Turnarounds (for Residential streets only) (*aka 'Hammerheads'*)
"T and Branch" type turnarounds may be considered for short streets less than 0.25 miles in length. Other proposals must be judged on their merits. However, when proposed, the ability of single unit truck design vehicles to reverse direction on these alternative types of turnarounds, without leaving the pavement area should be proven (VDOT, 2009).

5. Vegetated Open Channels

a. Are curb and gutters required for most residential street sections?

VDOT Road Design Manual, Appendix B, Subdivision Street Design Guide Section B(1)-4-Elements of Typical Section.

G. CURB AND GUTTER DESIGNS (p. B(1)-26)

The Department does not require the use of curb and gutter on subdivision streets but recognizes that it is an acceptable design alternative and preferred in high density developments. Curb and gutter designs shown in Figure 5 (p. B(1)-26) are appropriate for Subdivision streets (VDOT, 2009).

Example language from Hampton, VA Code:

Sec. 35-78. Curbs, gutters and sidewalks.

Curbs and gutters shall be provided for all streets within a subdivision and sidewalks shall be provided on both sides of all arterial, collector and minor collector streets, and on such other streets as the administrative authority may require, which requirement shall be based on the health, safety and welfare of the inhabitants and sound planning. The developer may provide sidewalks on other streets; however, subdivisions in the R-22 and R-33 zoning districts may, upon the approval of the director of public works, delete the sidewalk requirement and replace the curb and gutter with an open drainage system, as described in section 35-66. Curbs, gutters and sidewalks shall be constructed in accordance with specification and design standards established by the director of public works, in accordance with section 35-101.

b. Are there established design criteria for swales that can provide stormwater quality treatment (i.e., dry swales, biofilters, or grass swales)?

VDOT Road Design Manual, Appendix B, Subdivision Street Design Guide Section B(1)–4–Elements of Typical Section.

K. ROADWAY DRAINAGE (p. B(1)-38)

1. Policy and Procedures

All drainage facilities shall be designed in accordance with VDOT’s Drainage Manual and supplemental directives as amended. VDOT’s Location and Design Division Instructional and Informational Memorandum IIM-LD-121 Pipe Criteria and Drainage Instructions, located at <http://www.virginiadot.org/business/locdes/rd-ii-memoranda-index.asp> and the Virginia Erosion and Sediment Control Handbook, located at www.dcr.virginia.gov shall also be used in designing drainage systems.

Low Impact Development (LID) Techniques such as Buffers Strips, Bioretention, Rain Gardens, Vegetated Swales, and Tree Preservation should also be considered. The use of LID practices offers both economical and environmental benefits. LID measures result in less disturbance of the development area, conservation of natural features and can be less cost intensive than traditional stormwater control mechanisms. Cost savings for control mechanisms are not only for construction, but also for long-term maintenance and life cycle cost considerations.

For additional information on LID techniques see DCR’s Virginia Stormwater Management Program website at: http://www.dcr.virginia.gov/soil_and_water/stormwat.shtml, U.S. EPA’s Low Impact Development website at: <http://www.epa.gov/nps/lid/> and The National Resource Defense Council website at <http://www.nrdc.org/water/pollution/storm/chap12.asp> (VDOT, 2009).

Example language from New Kent County, VA Code:

Chapter 91. Subdivisions. Division 1. General Layout and Design. Sec. 91-76. Drainage. Standards for drainage within subdivisions are as follows:

- (1) *Improvements.* Drainage and stormwater management facilities shall be provided, either on-site or off-site, to reduce drainage flows, pollutants, and sediment loading from the subdivision to a level not exceeding the conditions prior to development, or to a lesser level if deemed necessary to comply with the provisions governing pollutant and sediment discharges within the Chesapeake Bay preservation area. The agent shall approve, or approve with modifications, only those stormwater management facilities which comply with adopted overall drainage plans and policies, if any. In this regard, in drainage basins with planned regional stormwater management systems the agent shall not approve, except as a temporary measure, on-site stormwater management facilities as an alternative to contributing (in

accordance with the provisions of subsection (3) below) to watershed-wide or other regional solutions encompassing areas outside of the boundaries of the subdivision.

(2) *Construction standards.*

a. All management facilities shall be designed and constructed in accordance with chapter 82 of this Code as supplemented by the latest editions of the Virginia Erosion and Sediment Control Handbook, Virginia Stormwater Control Manual and the Department of Transportation Drainage Manual as well as those laws, ordinances, criteria, regulations, or policies adopted by the Commonwealth or the county pursuant to the Chesapeake Bay Preservation Act.

b. The drainage improvement(s) chosen shall provide positive drainage however shall be the least intensive necessary and most likely to provide infiltration. Shallow grass-lined swales are preferred to deeper impervious material-lined channels or fully piped systems. Maintaining low velocity sheet flow is preferred over higher velocity concentrated flows wherever possible.

c. Roadway and parking area drainage shall be designed to trap petroleum and other pollutants from being carried into surface water and ground water resources. Oil-water separators shall be the preferred method, however other measures including but not limited to the use of source controls, "dry operations", and/or containment may be used. *Off site drainage costs.* The subdivider shall be required to pay a pro rata share of the cost of providing reasonable and necessary drainage facilities and improvements located outside of the property limits of land owned or controlled by him in accordance with the provisions of Section 15.2-2243, Code of Virginia.

Example language from Greene County, VA Code:

Chapter 38. Environment. Article III. Erosion and Sediment Control and Stormwater Management. Sec. 38-75. Stormwater management plans; local standards.

- (a) All developments with disturbed areas equal to or greater than one acre (residential development) or 10,000 square feet (non-residential and mixed use development) shall meet the requirements of this section.
- (b) All stormwater management plans, submitted for permit review and construction, shall be required and designed in accordance with the current edition of the Virginia Stormwater Management Handbook, except as noted in this article.
- (c) For the purposes of the water quality requirements, the stormwater management plans shall be deemed adequate, without performing engineering calculations of pollutants removal, if two of the three following measures are indicated on the plans (one facility may perform as two or more measures):
 - (1) Minimal use of paved channels, curb and gutter and underground pipe, along with maximum use of vegetated channels, planting beds, level spreaders and other measures designed to promote on-site infiltration of stormwater into the ground.

- (2) Conveyance of all impervious surface runoff through either on-site stormwater management pond(s) containing permanent pool(s) of water (whose volume and surface area equals at least two-thirds of the 10-year storage volume and surface area), or approved infiltration trench(es).
- (3) Twenty-four-hour extended detention of the one-year frequency, 24-hour duration, design storm.

6. Parking Ratios

- a. What is the minimum parking ratio for a professional office building (per 1000 ft² of gross floor area)?** (Better Site Design recommends less than 3.0 spaces.)

Example language from Charlottesville, VA Code:

Chapter 34. Zoning. Article IX. Generally Applicable Regulations. Division 2. Off-Street Parking. Sec. 34-984. Off-street parking requirements--Specific uses.

The City of Charlottesville lists parking ratios in a table within the City Code. According to the table, the number of spaces required for "General Office Use" is one space per 500 square feet of gross floor area (GFA).

- b. What is the minimum required parking ratio for shopping centers (per 1,000 ft² gross floor area)?** (Better Site Design recommends 4.5 spaces or less.)

Example language from Charlottesville, VA Code:

Chapter 34. Zoning. Article IX. Generally Applicable Regulations. Division 2. Off-Street Parking. Sec. 34-984. Off-street parking requirements--Specific uses.

The City of Charlottesville lists parking ratios in a table within the City Code. According to the table, the number of spaces required for various "Retail Commercial" classifications is as follows:

Use	Size or Type	Required Spaces
Retail Commercial		
Antique shop		1 space/600 sq. ft. of GFA
Bakery	Without tables/seating	1 space/350 sq. ft. of GFA
	With tables/seating	1 space/250 sq. ft. of seating area
Communications equipment sales (mobile/wireless telephones, satellite television dishes, computers, etc.)		1 space/500 sq. ft. of GFA, plus 1 space/employee, based on largest shift
Convenience store		1 space/400 sq. ft. of GFA. Storage space may be deducted from GFA

Fuel sales, service stations	Without convenience store; no servicing of vehicles	1 space per 400 sq. ft. of office space
	With convenience stores; no servicing of vehicles	1 space/400 sq. ft. of GFA
Furniture sales	Without storage/stockroom	1 space/1,000 sq. ft. of GFA of showroom
General, retail sales (applicable where no other specific standard is set forth)		3.5 spaces/1,000 sq. ft. of GFA. Storage space may be deducted from square footage.
Grocery stores and pharmacies		1 space/250 sq. ft. of GFA. Storage space may be deducted from GFA
Hardware, paint store		1 space/1,000 sq. ft. of GFA. Storage may be deducted from gross floor area.
Home improvement center		1 space/1,000 sq. ft. of GFA; plus 1 space for every 2 employees, based on largest shift, minimum 2 spaces

c. What is the minimum required parking ratio for single family homes (per home)? (Better Site Design recommends ≤ 2.0 spaces.)

Example language from Newport News, VA Code:

Sec. 45-3004. Parking requirements for specific uses.

(b) *Dwelling and related living facilities uses.*

(1) *Single-family dwelling:* One (1) parking space for each dwelling unit.

Example language from Charlottesville, VA Code

Chapter 34. Zoning. Article IX. Generally Applicable Regulations. Division 2. Off-Street Parking. Sec. 34-984. Off-street parking requirements--Specific uses.

The City of Charlottesville lists parking ratios in a table within the City Code. According to the table, the number of spaces required for various “Residential Uses” classifications is as follows:

Use	Size or Type	Required Spaces
Residential uses		
Single-family (attached or detached)		1 space/dwelling unit

and two-family dwellings		
Townhouse dwellings		
	1--3 bedrooms	1 space/dwelling unit
	4+ bedrooms	1 space/dwelling unit
Multifamily dwellings (See special provisions of section 34-353(d)(2))		
	Efficiency; 1 bedroom unit	1 space/unit
	2 bedroom unit	1 space/unit
	3 bedroom unit	2 spaces/unit
	4 bedroom unit	2 spaces/unit
	Each bedroom in excess of 4	1 additional space per bedroom for each 10 units with more than 4 bedrooms

d. Are your parking requirements set as maximum or median (rather than minimum) requirements?

Example language from Suffolk, VA Code:

Article 6. Design and Improvement Standards. Sec. 31-606 Parking and Loading Standards.
Table 606-2: Off-street Parking Requirements
The table (see excerpt below) lists both a minimum and a maximum number of parking spaces:

Use Categories	Specific uses	Minimum and Maximum Number of Spaces (See Subsection (a)(9) Measurement Standards)	
		Minimum Vehicle Spaces	Maximum Vehicle Spaces
RESIDENTIAL:			
Group Living	Assisted Living Facilities; Treatment Facility	0.3 per room	1 per room
	Other Group Living	0.3 per room	1 per room
Household Living	Bed and Breakfast	1 per guest room plus 2 spaces for owner's portion	N/A
	Rooming/Board House	1 per room	2 per room
	Dormitories/Fraternities/Sororities	1 per 2 beds	1 per bed

	Single-Family and Duplex	2 accessible spaces per dwelling unit	N/A
	Multi-Family	1 per unit	1.9 per unit
	Elderly housing	1 per three units	1.5 per unit
	All Other Dwelling Units	1 per unit	2.0 per unit
INSTITUTIONAL:			
Colleges	All	1 per 4 students	1 per 2 students
Community Services	All	1 per 250 sf GFA	1 per 200 sf GFA

7. Parking Codes

a. Is the use of shared parking arrangements promoted?

A jurisdiction may require that a shared parking plan be submitted. This could be included in the site plan and landscaping plan information most jurisdictions already require for parking areas or as a separate document. If so, this shared parking plan could include one or more of the following:

- A. Site plan of parking spaces intended for shared parking and their proximity to land uses that they will serve.
- B. A signage plan that directs drivers to the most convenient parking areas for each particular use or group of uses (if such distinctions can be made).
- C. A pedestrian circulation plan that shows connections and walkways between parking areas and land uses. These paths should be as direct and short as possible.
- D. A safety and security plan that addresses lighting and maintenance of the parking areas (Capital Region Council of Governments, 2006).

Example language from Suffolk, VA Code:

Unified Development Ordinance. Article 6. Design and Improvement Standards. Sec. 31-606 Parking and Loading Standards. a) Off-street Parking.

(4) Shared Parking Facilities.

A. Cooperative parking.

(i) Parking spaces required under the provisions of this Subsection may be provided cooperatively for two or more uses in a development or for two or more individual uses, subject to arrangements that will assure the permanent availability of such space as such arrangements are approved by the Zoning Administrator.

(ii) The amount of such combined space shall be equal to the sum of the amounts required for the separate uses, provided that the Administrator may reduce the amount of space required for a church or other similar place of

worship or for a meeting place of a civic, fraternal or similar organization or for other uses approved by the Administrator, where the Administrator finds that the cooperating uses have different hours of normal activity. The Administrator, at his discretion, may make its approval of a cooperative parking arrangement subject to certain conditions, may impose a specific time limit on its approval of such arrangement or may otherwise make the arrangement subject to further review and revocation.

Example language from Newport News, VA Code:

Chapter 45. Zoning Ordinance. Article XXX. Off-Street Parking and Loading Regulations. Sec. 45-3004.2. Requirements and procedures for parking reductions using on-premises shared parking plans.

- (a) The zoning administrator shall allow a reduction of required or permitted on-premises parking spaces when an applicant proposes an on-premises shared parking plan subject to the following:
 - (1) No action shall be taken on any application for such a reduction until the applicant shall have paid a filing fee to the City of Newport News in the amount of one hundred fifty dollars (\$150.00) which shall not be refundable.
 - (2) Applications for parking space reductions using on-premises shared parking plans shall meet the following criteria:
 - a. The proposed development of premises shall be for commercial and related uses listed in section 45-3004(d), community facilities or recreational services and shall involve two (2) or more uses. The application shall include a parking plan for the combination of uses proposed for the premises.
 - b. The application shall include data reflecting the actual peak demand for each individual land use proposed for the premises.
 - c. The on-premises shared parking facility shall contain at least the minimum required spaces of the largest individual use that will be sharing the facility and shall be developed in accordance with the standards of the city's site regulations.
 - d. The applicant shall demonstrate that the on-premises shared parking plan shall be long-term, i.e., not less than twenty (20) years in length.

Example language taken from the City of Marlborough, MA:

Zoning By-Law, §200-25 Off-Street Parking.

B. Application of Parking Requirements.

- (3) Common Parking Areas and Mixed Uses. Parking required for two (2) or more buildings or uses may be provided in combined parking facilities where such facilities will continue to be available for the several buildings or uses and provided that the total number of spaces is not less than the sum of the spaces required for each use individually, except that said number of spaces may be reduced by up to

one-half (1/2) such sum if it can be demonstrated that the hours or days of peak parking need for the uses are so different that a lower total will provide adequately for all uses served by the facility. The following requirements shall be met:

- (a) Evidence of reduced parking needs shall be documented and based on accepted planning and engineering practice satisfactory to the City Planner and Engineer.
- (b) If a lower total is approved, no change in any use shall thereafter be permitted without further evidence that the parking will remain adequate in the future, and if said evidence is not satisfactory, then additional parking shall be provided before a change in use is authorized.
- (c) Evidence of continued availability of common or shared parking areas shall be provided satisfactory to the City Solicitor and shall be documented and filed with the Site Plan.
- (d) The determination of how a combined or multiuse facility shall be broken down into its constituent components shall be made by the Planning Department.
- (e) If any reduction in the total number of parking spaces is allowed as a result of this subsection, then one hundred fifty (150) square feet of open space (per parking space reduced) shall be provided in addition to that required by lot coverage provisions of this Chapter (MAPC, 2007)

b. Are model shared parking agreements provided?

Example language from Albemarle County, VA Code:

Chapter 18. Zoning, Section 4, General Regulations. 4.12.10 Shared Parking.
(<http://www.albemarle.org/departments.asp?department=cityatt&relpage=2784>)

Shared parking allows parking spaces to be shared among two (2) or more uses that typically experience peak parking demands at different times and is located on the same lot or on nearby lots. Because parking spaces are shared, the total number of parking spaces that would otherwise be required may be reduced. In addition to all other applicable requirements of this section, the following requirements shall apply to shared parking:

- a. Authority to reduce aggregate number of parking spaces. The zoning administrator may reduce the aggregate minimum number of required parking spaces, provided that each use participating in the shared parking experiences peak parking demands at different times. The zoning administrator shall base this decision on the particular circumstances of the application.
- b. Parking study. Before making the decision to allow shared parking and to reduce the aggregate number of parking spaces, the zoning administrator may require the applicant to submit a parking study to determine the peak parking demand periods

or other information needed to determine the viability of shared parking under the particular circumstances of the application.

c. Effect of reserved parking spaces. Parking spaces reserved for specific individuals or classes of individuals shall not be counted toward the parking spaces that could be shared, except for those spaces designated and marked for use only by handicapped persons.

d. Maximum reduction. The aggregate number of parking spaces required for all uses participating in the shared parking shall not be reduced by more than thirty-five (35) percent. (§ 4.12.4, 12-10-80; Ord. 03-18(1), 2-5-03)

Also see Appendix 1 for model code language.

c. Are parking ratios reduced if shared parking arrangements are in place?

Example language from Charlottesville, VA Code:

Chapter 34. Zoning. Article IX. Generally Applicable Regulations. Division 2. Off-street Parking. Sec. 34-974. Cooperative parking arrangements.

(a) With the approval of the director of neighborhood development services, required off-street parking may be provided cooperatively for two (2) or more uses of the same or different types, provided that arrangements are made (a long-term lease, recorded easement, etc.) such as will assure the availability of such space for the duration of the use to be served, and provided further that, unless reduced by the director as set forth below, the number of spaces provided shall not be less than the sum of the individual requirements.

(b) The combined parking requirements for two (2) or more uses participating in a cooperative parking arrangement may be partially reduced by the director of neighborhood development services, provided that the uses will not conflict in time of operation or need for the parking spaces and provided that the parking needs of each use at a given time of day may be adequately met through the parking arrangements.

d. If mass transit is provided nearby, is the parking ratio reduced?

Example language from Charlottesville, VA Code:

Sec. 34-985. Rules for computing required spaces.

(b) Certain reductions in the number of required parking spaces for a particular use shall be allowed, under the following circumstances:

(1) When cooperative parking arrangements are shared by two (2) or more uses, as set forth within section 34-974 (cooperative parking arrangements).

- (2) Where a use is located within three hundred (300) feet of a bus stop on an existing city bus route, the number of parking spaces required for such use shall be reduced by: (i) four (4) spaces for uses located within the Downtown North, Downtown South, High Street, Central City, Neighborhood, and Cherry Avenue Corridor Mixed Use Districts, and within the McIntire/Fifth Street Residential Corridor District; or (ii) two (2) spaces for uses located within any other zoning districts. Where a use is located within three hundred one (301) to six hundred (600) feet of a bus stop on an existing city bus route, a similar reduction of spaces shall be granted, in an amount equal to one-half (1/2) of the number(s) specified in clauses (i) and (ii), above. Upon finding that a use is more than three hundred (300) feet away from a bus stop in an existing bus route, but that such use is located on the same block as the bus stop, the director of neighborhood development services may grant the reduction specified within clause (i), above.

Example language from Fairfax County, VA Code:

PART 1 11-100 OFF-STREET PARKING
1-102 General Provisions

5. Within the area in proximity to a mass transit station, which station either exists or is programmed for completion within the same time frame as the completion of the subject development, or along a corridor served by a mass transit facility, which facility is conveniently accessible to the proposed use and offers a regular scheduled service, the Board may, subject to conditions it deems appropriate, reduce the number of off-street parking spaces otherwise required by the strict application of the provisions of this Part. Such reduction may be approved when the applicant has demonstrated to the Board's satisfaction that the spaces proposed to be eliminated are unnecessary based on the projected reduction in the parking demand resulting from the proximity of the transit station or mass transit facility and such reduction in parking spaces will not adversely affect the site or the adjacent area.

8. Parking Lots

a. What is the minimum stall width for a standard parking space? (Better Site Design recommends ≤ 9 feet.)

Example language from Charlottesville, VA Code:

Chapter 34. Zoning. Article IX. Generally Applicable Regulations. Sec. 34-977. Parking space dimensions.

(a)The dimensions for each individual parking space shall conform to the following requirements:

Type of space	Min. Width	Hatched Apron	Min. Length
Parallel	8 feet	N/A	20 feet
Compact car	8 feet	N/A	16 feet
Handicapped (car)	8 feet	5 feet	18 feet
Handicapped (van)	8 feet	8 feet	18 feet
Standard	8.5 feet	N/A	18 feet

(b) All required off-street parking spaces shall be designed to the dimensions of a standard parking space, or of a parallel space (when such spaces are located at a zero (0) degree angle to an adjacent curb), except that:

(1) Required handicapped spaces shall be designed to the dimensions indicated in paragraph (a), above, for car- or van-accessible spaces;

(2) When located within parking lots with ten (10) or more parking spaces, the director or the planning commission may allow up to thirty (30) percent of the required off-street parking spaces to be designed to the dimensions indicated in paragraph (a), above, for compact cars. All compact spaces shall be clearly marked as such; and

(3) The director or planning commission may permit a reduction of up to three (3) feet in the paved length of required spaces, where such spaces are adjacent to a planting island or other physical separation (but not a sidewalk) that permits the overhanging of vehicles parked in such spaces.

(c) Of any spaces required to be handicapped-accessible, not less than one (1) such space shall be van-accessible. Two (2) adjacent handicapped-accessible parking spaces may share a common apron area. Required spaces for persons with disabilities shall be identified with signs and markings identifying such spaces as being reserved for the handicapped. Handicapped accessible parking spaces and associated apron areas shall be level, with surface slopes not exceeding 1:50 (2%) in any direction.

Example language from Powhatan, VA Code:

Zoning Ordinance. Article 26 – Parking & Loading

26.3 Design Standards. All uses other than single-family detached residential and agricultural shall prepare and present for approval complete parking and loading plans which must meet the following standards as a minimum. Additional requirements may be imposed if it is determined that the proposed use would adversely impact the general public health, safety, or welfare without design modification.

1. Parking space dimensions – All parking spaces shall be a minimum of eighteen (18) feet in length and nine (9) feet in width.

b. What is the minimum stall length for a standard parking space?(Better Site Design recommends ≤ 18 feet.)

Example language from Charlottesville, VA Code:

Chapter 34. Zoning. Article IX. Generally Applicable Regulations. Sec. 34-977. Parking space dimensions. See table above, used to answer Question 8a.

Example language from Powhatan, VA Code:

Zoning Ordinance. Article 26 – Parking & Loading

26.3 Design Standards. All uses other than single-family detached residential and agricultural shall prepare and present for approval complete parking and loading plans which must meet the following standards as a minimum. Additional requirements may be imposed if it is determined that the proposed use would adversely impact the general public health, safety, or welfare without design modification.

1. Parking space dimensions – All parking spaces shall be a minimum of eighteen (18) feet in length and nine (9) feet in width.

c. Are at least 30% of the spaces at larger commercial parking lots required to have smaller dimensions for compact cars?

Example language from Charlottesville, VA Code:

Chapter 34. Zoning. Article IX. Generally Applicable Regulations. Sec. 34-977. Parking space dimensions.

See example language in Question 8a, (b) (2)

Example language from Arlington County, VA:

Zoning Ordinance (As amended through 1/1/2009) Section 33. Automobile Parking, Standing and Loading Space. A. General Requirements (Note: this example does not meet the 30% minimum as recommended, however, the language is provided for 15% and can be modified as necessary.)

TABLE II. COMPACT CAR SPACES

Parking Angle	Stall Width (Feet)	Depth of Stalls Perpendicular To Aisle (Feet)	One-Way Aisle Width (Feet)	Two-Way Aisle Width (Feet)
45 degrees	8	16.0	12.0	Not Permitted
60 degrees	8	16.7	15.0	Not Permitted
90 degrees	8	15.0	21.0	21.0

Parallel	20.0	8.0	10.0	20.0
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7. *Compact Car Spaces:* Any parking area may include up to fifteen (15) percent of the parking spaces for compact cars. In parking areas for office uses containing more than one-hundred (100) spaces, up to fifteen (15) percent of the spaces may be compact spaces. The spaces shall be grouped together and visibly marked for "compact cars only." Aisle size shall not be reduced unless an entire aisle is providing access and maneuvering space for only compact cars. No compact parking spaces are permitted for hospitals or hospital-related medical and health care facilities, medical offices, physician, surgeon or dentist offices, nursing homes, convalescent homes and intermediate care facilities, and related housing for the elderly. In addition, no compact parking spaces are permitted for retail uses, and required guest and visitor parking.

d. Can pervious materials be used for spillover parking areas?

Example language from Norfolk, VA Code:

Chapter 15: Off-Street Parking and Loading

15-5.1 General requirements.

(m) Design and maintenance.

Surfacing: Surfacing of parking areas and driveways may be of a material designed to encourage infiltration and shall be subject to approval by the director of public works for material approval, design and proper drainage provisions.

Example language from Virginia Beach, VA Code:

Appendix A. Zoning Ordinance. Article 19. Old Beach Overlay District. Sec. 1905. Desired design incentives.

(k) *Parking area paving.* For structures satisfying the criteria of the design guidelines, parking spaces with pervious paving material, such as brick runners and open pavers, may be used to satisfy on-site parking requirements.

9. Structured Parking (*i.e., parking garages*)

a. Are there any incentives to developers to provide parking within garages rather than surface parking lots?

Example Language from the City of Suffolk, VA Code:

Unified Development Ordinances, Article IV, Zoning. SEC. 31-409. Incentive Zoning, Table 409-2: Bonus Density Chart.

Incentive Item: "Redevelopment - For each 100 spaces of surface parking converted to structured parking on an area not exceeding 20% of the site area, an additional 20,000 feet of non-residential space may be constructed."

Other incentives to consider from Albemarle County, VA Code:

Excerpts from “The Neighborhood Model: Building Block for the Development Areas: Relegated Parking” (<http://www.albemarle.org/departments.asp?department=planning&relpage=2480>)

- Exemption from calculation of total gross floor area of the parking structure
- The calculation of structured parking as an improvement that is equal in value to surface parking for purposes of tax assessment
- Tax credits
- Establishment of a public parking authority to finance, operate, and profit from the construction of garages
- County being responsible for the construction of parking structures, site acquisition, and operation of parking facilities

Example language from Milwaukie, OR:

Milwaukie Municipal Code. Title 19. Zoning. Chapter 19.500 Off-street Parking and Loading. 19.507.4 Incentives for Provision of Structured Parking.

- A. An applicant shall be allowed an additional 0.5 square feet of development for every one (1) square foot of structured parking provided. The applicant shall meet the other requirements of the zoning ordinance.
- B. If structured parking is underground, the applicant shall be relieved from providing the required off-street parking landscaping and can locate the underground structure within any part of the setback and yard area.

10. Parking Lot Runoff

a. Is a minimum percentage of a parking lot required to be landscaped?

b. Is the use of bioretention islands and other stormwater practices within landscaped areas or setbacks allowed?

Example language from Chesterfield County, VA Code (Questions 10a & 10b):

Chapter 19. Zoning. Article VII. Development Standards Manual. Sec. 19-519. Landscaping standards for surface parking areas.

- (a) *Quantity:* Any paved parking area shall have at least 30 square feet of interior landscaping for each space. Each required landscaped area for large deciduous trees shall contain a minimum of 250 square feet and have a minimum dimension of at least 15 feet at the location of a tree. Each required landscaped area for small deciduous trees shall contain a minimum of 150 square feet and have a minimum dimension of at least nine feet at the location of a tree. Continuous planting islands for large or small deciduous trees of at least 600 square feet in size shall have a minimum dimension of nine feet. A maximum of ten percent of the required area may be in smaller areas if approved through site or schematic plan review.

- (b) *Materials:* The primary landscaping material used in parking areas shall be trees that provide shade or are capable of providing shade at maturity. Except as required by section 19-608(b), at least 50 percent of required trees in the parking areas shall be large maturing shade trees. The total number of trees shall not be less than one for each 200 square feet, or fraction thereof, of required interior landscaped area. The remaining area shall be landscaped with shrubs and other vegetative material as may be approved at the time of site plan approval compatible with the tree landscaping. Under no circumstances shall plantings block the sight line of motorists at driveway intersections.
- (c) *Design:* Landscaped areas shall be reasonably dispersed, located so as to divide the expanse of paving. The county encourages the use of continuous planting islands wherever possible to minimize individual planting islands. Continuous planting islands shall be used to define entrance driveways, and within parking areas, walkways. No areas within the required setbacks shall be included as part of the required parking area or landscaping area. *Landscaping in best management practice bio-retention islands located within parking areas shall count towards required parking lot landscaping.*

Example language taken from Fluvanna County, VA Code (Questions 10a & 10b):

Sec. 22-24-6. Parking lot landscaping.

- A. The intent, in addition to those stated for landscaping in general, is to achieve a minimum of 50% screening of parking areas from public streets and adjacent properties.
- B. All development subject to site plan approval shall include the following required landscaping for parking lots consisting of five (5) spaces or more.
- C. Minimum planting areas are to be provided as follows:
1. One 9'x 18' planting island for every twenty-five (25) parking spaces in a row and at both ends of a parking bay.
 2. A nine- (9) foot planting strip between each adjacent area of parking of four (4) bays. Where parking bays are adjacent to the nine- (9) foot planting strip, no planting islands are required.
 3. A nine- (9) foot planting strip shall be provided between access roadways and adjacent properties' parking areas and adjacent property of the same use.
 4. A twenty-five (25) foot planting area shall be provided between parking and adjacent properties of a different use and public streets and rights-of-way. The area shall be measured from the closest parking space to the adjacent property or right-of-way line.
- D. Large shade trees shall be planted as follows:
- a. One (1) large shade tree in each 9'x 19' planting island.
 - b. Large shade trees shall be arranged so that the canopy at maturity will cover thirty-five (35) percent of the parking area placed mainly around the perimeter of the parking area and at the end of parking bays.

- c. Medium shade trees may be substituted for large shade trees at a ratio of two (2) to one (1), if appropriately spaced and meeting all other canopy criteria. Medium shade trees shall not exceed forty (40) percent of the total number of shade trees.
- E. Internal planting strips shall be planted with large shade trees every thirty-five (35) feet, or medium shade trees as specified in the forgoing section. In addition, ornamental trees, small evergreen trees, evergreen shrubs, deciduous shrubs, and ground covers shall be planted to soften the visual impact of parked cars, create visual relief from expanses of pavement, help direct traffic, and create an aesthetically pleasing environment. The selection and arrangement of plant materials in these strips shall be to achieve these goals while avoiding conflict with sight distance, traffic safety standards, and handicapped accessibility. As a guideline, projecting plants sizes to maturity, thirty (30) percent of the strip should be covered by the canopy of ornamental trees, forty (40) percent by small, evergreen trees and shrubs, ten percent (10) covered by deciduous shrubs, and the remainder in ground cover, grass, or mulch.

11. Open Space Design

a. Are open space or cluster development designs allowed in the community?

b. Is land conservation or impervious cover reduction a major goal or objective of the open space design ordinance?

Example language from Amelia County, VA Code (Questions 11a and 11b):

Article XXV. Rural Cluster Development Option.

25.1 Intent

The Cluster Option is intended to help preserve open space, agricultural land, environmental resources and the rural character of the County.

Example language taken from Isle of White County, VA (Questions 11a and 11b):

Sec. 4-3005. Density bonus for cluster development in the Rural Residential (RR) District.

(a) General description. Cluster development in the Rural Residential (RR) District is encouraged to protect rural character and to preserve open space and productive farm and timber lands while permitting limited development in rural areas of the county. It is intended to encourage innovative and creative design of residential development; to preserve agricultural lands and enhance the rural atmosphere and visual character of the county; and, to encourage a more efficient use of land and services in order to reduce construction costs, reflect changes in the technology of land development and minimize maintenance costs of service delivery and utility systems.

c. Are the submittal or review requirements for open space design greater than those for conventional development?

Example language from Williamsburg, VA Code:

Sec. 21-144. Regulations for cluster subdivisions.

(d) *Application procedures.* Cluster subdivisions shall follow the application procedures outlined in chapter 16, Subdivisions.

d. Is open space or cluster design a by-right form of development?

Open space development can be: 1) by special approval; or 2) by right. In most communities, open space development requires a special approval process. This requirement discourages the use of open space development because of the time required for approval compared with conventional development. When open space development is by right, an open space plan that meets the requirements of the ordinance will go through the same permit and approval process as a conventional development. The by right form of development prohibits denial of an open space plan in favor of a conventional plan assuming the plan meets the provisions of the ordinance (stormwatercenter.net, no date).

Example language from Open Space Model Ordinance:

Section III. Application

A. The provisions of this ordinance (*density requirements may vary with each locality*) apply to all residential zones with a density less than or equal to eight dwelling units per acre.

B. The minimum size of an open space development shall be five acres.

C. Open space is a by-right form of development, and shall not require a special exception or additional review.

Example language from Albemarle County, VA Code:

Albemarle County specifies Cluster Development as a By Right option in the Village Residential – VR, Residential – R-1, Residential – R-2, Residential R-4, Residential R-6, Residential – R-10, Residential – R-15 zoning classifications. The County also allows for high overall gross density in the Planned Residential Development – PRD and Planned Unit Development zoning, with approval from the Board of Supervisors. In no event shall the number of dwelling units exceed thirty-five per acre in a PRD and PUD. Below is an example language from the Village Residential zoning classification.

Chapter 18. Zoning

Section 12. Village Residential – VR

12.2.1 BY RIGHT

The following uses shall be permitted subject to requirements and limitations of this ordinance:

1. Detached single-family dwellings.
2. Side-by-side duplexes provided that density is maintained and provided further that buildings are located so that each unit could be provided with a lot meeting all other requirements for detached single-family dwellings except for side yards at the common wall. Other two-family dwellings shall be permitted provided density is maintained.
3. Cluster development of permitted residential uses.....

Chapter 18. Zoning

Section 12. Village Residential

12.3 Area and Bulk Regulations

REQUIREMENTS	STANDARD LEVEL		BONUS LEVEL	
	CONVENTIONAL DEVELOPMENT	CLUSTER DEVELOPMENT	CONVENTIONAL DEVELOPMENT	CLUSTER DEVELOPMENT
Gross density	0.7 du/acre	0.7 du/acre	1.09 du/acre	1.09 du/acre
Minimum Lot Size	60,000 sq ft	40,000 sq ft	40,000 sq ft.	25,000 sq ft
Minimum frontage: public, private	130 feet	110 feet	110 feet	90 feet
Yards, minimum:				
Front	25 feet	25 feet	25 feet	25 feet
Side	15 feet	15 feet	15 feet	15 feet
Rear	20 feet	20 feet	20 feet	20 feet
Maximum Structure height	35 feet	35 feet	35 feet	35 feet

e. Are flexible site design criteria available for developers that utilize open space or cluster design options (e.g., setbacks, road widths, lot sizes)?

Example language from Isle of White County, VA Code:

Sec. 4-3005. Density bonus for cluster development in the Rural Residential (RR) District.

(a) General description. Cluster development in the Rural Residential (RR) District is encouraged to protect rural character and to preserve open space and productive farm and timber lands while permitting limited development in rural areas of the county. It is intended to encourage innovative and creative design of residential development; to preserve agricultural lands and enhance the rural atmosphere and visual character of the county; and, to encourage a more efficient use of land and services in order to reduce construction costs, reflect changes in the technology of land development and minimize maintenance costs of service delivery and utility systems.

(b) Applicability. The following provisions establish minimum performance standards associated with three (3) optional density increases which may be exercised by landowners in the RR District at the time of rezoning of the property. The density options available shall be one (1) dwelling unit per ten (10) acres, but may be increased to one (1) dwelling unit per eight (8) acres or one (1) dwelling per five (5) acres, if certain development standards are met as conditions of density increase. These development standards are outlined in subsection (d) of this section.

- (c) General standards. The following general standards shall apply to all cluster developments in the RR District:
- (1) The applicant shall have legal or equitable title to the property or shall otherwise have a legally documented financial interest in the real property, which is the subject of the application.
 - (2) The proposed development shall contain a minimum of twenty (20) contiguous acres located within the RR District.
 - (3) All lots created through the act of subdivision shall be served by no more than one
 - (1) point of access to an existing public road. The internal street serving the subdivision shall be constructed in accordance with the applicable minimum standards of and dedicated to the Virginia Department of Transportation.
 - (4) In no case shall residential structures be located within one hundred (100) feet of an existing public road right-of-way. Fifty (50) feet of the one hundred (100) foot buffer yard between the lots and the public road right-of-way shall be landscaped to maintain or enhance the rural image or left in a natural setting, as prescribed in section 8-1004.
 - (5) Dedication of additional public road right-of-way adjacent to an existing public road for future widening when the highway level of service in the area necessitates widening shall be a condition of development at each of the three (3) optional densities contained in subsection (b) of this section.
- (d) Density options.
- (1) The base density of one (1) dwelling unit per ten (10) acres may be permitted provided:
 - (A) Clustering at a density of one (1) dwelling unit per ten (10) acres so that no more than fifty percent (50%) of the total base site area is to be included in the subdivision, including lots, road right-of-way, and other required public improvements.
 - (B) Fifty percent (50%) of the site shall be permanently established in open space including farm or forest use and restricted from further development.
 - (C) The minimum lot shall be forty thousand (40,000) square feet and the maximum lot size shall be five (5) acres, provided the health department standards for use of on-site septic systems are met.
 - (2) The base density may be increased to one (1) dwelling unit per eight (8) acres if the following conditions are met:
 - (A) Clustering at a density of one (1) dwelling unit per eight (8) acres so that no more than forty percent (40%) of the base site area is included in the subdivision, including lots, road rights-of-way and other required public improvements.
 - (B) Sixty percent (60%) of the site shall be permanently established in open space including farm or forest use and is restricted from further development.
 - (C) The minimum lot size shall be forty thousand (40,000) square feet and the maximum lot size shall be three and one-half (3 1/2) acres in size, provided the health department standards for on-site septic systems are met.

- (3) The base density may be increased to one (1) dwelling unit per five (5) acres, provided:
 - (A) Clustering at a density of one (1) dwelling unit per five (5) acres so that no more than thirty percent (30%) of the base site area is to be included in the subdivision, including lots, rights-of-way and other required public improvements.
 - (B) Seventy percent (70%) of the site shall remain in open space including farm or forest use and restricted from further development.
 - (C) The minimum lot size shall be forty thousand (40,000) square feet and the maximum lot size shall be one and one-half (1 1/2) acres, provided the health department standards for on-site septic systems are met.
- (e) Open space requirements. Regardless of which of the three (3) density options is exercised, the following standards shall apply to any open space which may be included within and made part of the cluster development and so designated on the subdivision plat:
 - (1) All open spaces shall be preserved for their intended purpose.
 - (2) There shall be established a nonprofit association, corporation, trust or foundation of all individuals or corporations owning the residential property within the development to insure the satisfactory maintenance of any required open space.
 - (3) When the development is to administer open space or other facilities through an association, nonprofit corporation, trust or foundation, said organization shall conform to the following requirements:
 - (A) The property owner or developer must establish the organization prior to the sale of any lots within the subdivision.
 - (B) Membership in the organization shall be mandatory for all residential property owners, present or future, within the subdivision.
 - (C) The organization shall manage all common and open spaces, and recreational and cultural facilities shall provide for the maintenance, administration and operation of said land and improvements and any other land within the development and shall secure adequate liability insurance on the land.
 - (D) The organization shall conform to the Property Owners Association Act, Code of Virginia, effective July 1, 2004, as amended, and/or to any other laws and regulations of the Commonwealth of Virginia as may be applicable.

The foregoing standards for open space shall not apply to any residue acreage of the parent tract of land which is not included as part of the cluster development as lots or the required open space. (7-7-05.)

Sec. 4-3006. Lot size requirements.

- (a) Minimum lot area: forty thousand (40,000) square feet.
- (b) Minimum lot width: one hundred fifty (150) feet.
- (c) Minimum lot frontage: one hundred twenty (120) feet.
- (d) Minimum frontage on cul-de-sac: seventy-five (75) feet.
- (e) Maximum lot size: ten (10) acres.

Sec. 4-3007. Bulk regulations for lots recorded after July 1, 1997.

(a) Maximum building height.

(1) All buildings thirty-five (35) feet or three (3) stories, whichever is lesser.

(b) Minimum front yard setback.

(1) Where right-of-way is greater than fifty (50) feet, the minimum front yard setback is sixty (60) feet from property line.

(2) Where right-of-way is less than fifty (50) feet, the minimum front yard setback is eighty-five (85) feet from center line of road.

(c) Minimum side yard setback.

(1) Principle structures: twenty-five (25) feet.

(2) Accessory structures: twenty-five (25) feet (See section 5-2000(a), Supplementary density and dimensional requirements, accessory building requirements).

(d) Minimum rear yard setback.

(1) Principle structures: fifty (50) feet.

(2) Accessory structures: five (5) feet.

****Note – many counties encourage/allow cluster development in rurally zoned areas, but not in other areas. It would be worth discussing the expansion of this allowance to areas zoned other than rural.****

Example language from Albemarle County, VA Code:

Chapter 18. Zoning

Section 12. Village Residential – VR

12.4 BONUS FACTORS (REFERENCE 2.4)

12.4.1 ENVIRONMENTAL STANDARDS

For maintenance of existing wooded areas equal to: ten (10) percent to nineteen (19) percent of the site, a density increase of five (5) percent shall be granted; twenty (20) percent or greater of the site, a density increase of ten (10) percent shall be granted.

In order to qualify for this bonus, a conservation plan as specified in section 32.7.9 shall be required. (Amended 9-9-92)

For provision of significant landscaping in the form of street trees as specified in section 32.7.9, a density increase of five (5) percent shall be granted. This bonus shall not be granted if existing trees along road frontages have been needlessly removed (Amended 8-14-85; 9-9-92).

12. Setbacks and Frontages

a. Are irregular lot shapes (e.g., pie-shaped, flag lots) allowed in the community?

Example Language Elmore County, ID:

<http://www.elmorecounty.org/pdfs/Adopted%20Ordinance%20051309/CHAPTER%2035%20Adopted%20051309.pdf>

Title 6, Zoning and Development Ordinance.

Section 6-35-3: Process:

A. Applications for common driveways and flag lots shall be reviewed as an administrative approval or as part of the subdivision review process. If reviewed through the subdivision process no administrative application shall be required. However, the design and dimensional requirements as required by this Chapter shall apply.

...

Section 6-35-4: Requirements And Use Standards:

A. Common driveways and flag lots shall meet the following requirements:

1. The common driveway provides access to no less than two (2) lots, and no more than eight (8) lots, which are principally occupied with a structure that contains no more than one (1) single-family or townhouse dwelling unit per lot; and
2. The length of the common driveway shall not exceed one hundred and fifty (150') feet, and shall not be less than twenty-five (25') feet wide for the entire length of the common driveway; and

...

Section 6-35-5: Findings:

1. The design of the common driveway and flag lots meet the requirements of this Chapter; and
2. The use of the common driveway and flag lots benefits the design of the development and reduces the number of accesses onto the public street; and
3. The proposed common driveway and flag lots are not detrimental to the public health, safety, or welfare; and
4. The proposed common driveway and flag lots do not adversely affect or conflicts with abutting uses or impede the normal development of surrounding property.

b. What is the minimum requirement for front setbacks for a one half (½) acre residential lot? (Better Site Design recommends 20 feet or less.)

Suggested potential language subject to local approval:

For a half (1/2) acre residential lot, front setbacks of buildings or other structures shall allow a minimum of fifteen (15) feet distance from the right-of-way line of any other public or private street.

c. What is the minimum requirement for rear setbacks for a one half (½) acre residential lot? (Better Site Design recommends 25 feet or less.)

Example language from Augusta County, VA Code:

Chapter 25. Zoning.

Division C. Single Residential Dwelling Districts (minimum lot size 0.20 acre)

Article XIII. Single Family Residential (SF) Districts.

§ 25-138. Yard and setback requirements.

B. Rear lot lines.

1. No principal building or structure shall be erected, altered, located, reconstructed or enlarged nearer to any rear lot line than twenty-five feet (25').
2. Accessory buildings and structures not exceeding fifteen feet (15') in height and with a total aggregate area of no more than seven hundred square feet (700 sq. ft.) may be erected in rear yards. Accessory buildings and structures shall not be nearer than five feet (5') to any rear lot line.

d. What is the minimum requirement for side setbacks for a one half (½) acre residential lot? (Looking for 8 feet or less.)

Example language from Augusta County, VA Code:

Chapter 25. Zoning.

Division C. Single Residential Dwelling Districts

Article XIII. Single Family Residential (SF) Districts.

C. Side lot lines.

1. A principal building or structure shall not be erected, altered, located, reconstructed or enlarged nearer to any side lot line than:
 - (a) Eight Feet (8') where:
 - (i) Curb and gutter and sidewalks are provided to the applicable standards of the Virginia Department of Transportation (VDOT), or
 - (ii) Curb and gutter are provided to the applicable standards of VDOT and internal pedestrian pathways or trails approved by the Augusta County Parks and Recreation Commission are provided. Adequate provisions shall be made for the perpetual maintenance of such pathways or trails.

e. What is the minimum frontage distance for a one half (½) acre residential lot? (Looking for 80 feet or less.)

Example language from Augusta County, VA Code:

Chapter 25. Zoning.

Division C. Single Residential Dwelling Districts (minimum lot size 0.20 acre)

Article XIII. Single Family Residential (SF) Districts.

§25-137. Lot width.

- A. Every lot shall have at least forty feet (40') of frontage on a public street.
- B. The minimum lot width at the minimum front setback line shall be:
 - 1. Seventy-five feet (75') where:
 - (a) Curb and gutter and sidewalks are provided to the applicable standards of the Virginia Department of Transportation (VDOT), or
 - (b) Curb and gutter are provided to the applicable standards of VDOT and internal pedestrian pathways or trails approved by the Augusta County Parks and Recreation Commission are provided. Adequate provisions shall be made for the perpetual maintenance of such pathways or trails.

13. Sidewalks

- a. What is the minimum sidewalk width allowed in the community?* (Better Site Design recommends four feet or less.)

Example language from Fluvanna County, VA Code:

Chapter 19

Subdivisions

Article 1. General Provisions

Sec. 19-8-8. Sidewalks.

For all major subdivisions within the R-1, R-2, R-3, R-4 & R-10 zoning districts, sidewalks shall be provided (along both sides of all proposed public roads) with a sidewalk pavement or asphalt width of not less than four (4) feet in width.

- b. Are sidewalks always required on both sides of residential streets?*

Example language from James City County, VA Code:

Chapter 24

Article II. Special Regulations

Division 1. In General

Sec. 24-35. Sidewalks.

- (4) Sidewalks shall be provided for one block commencing at the entrance(s) on at least one side of all entrance roads serving residential developments which shall or would be expected to serve more than 500 vehicles per day based on the application of the Institute of Transportation Engineers' traffic generation rates to a projected density assigned to undeveloped land remaining within a proposed subdivision. Sidewalks shall be provided on one side of all roads which shall serve or would be expected to serve more than 1,000 vehicles per day based on the method listed above.

- c. Are sidewalks generally sloped so they drain to the front yard rather than the street?***

Suggested potential language subject to local approval:

Where practical, sidewalks shall be sloped in a manner that allows them to drain to a pervious surface such as a yard, bioretention cell, grass swale, etc., to allow stormwater runoff to infiltrate into the ground.

- d. Can alternate pedestrian networks be substituted for sidewalks (e.g., trails through common areas)?***

Example language from Bedford County, VA Code:

Appendix B Subdivision Ordinance.

Article 6 Street and Sidewalks. Division 5 Curb, Gutter and Sidewalks. 6.27 Pedestrian way. The subdivision agent may approve the location of a pedestrian way other than in a street right-of-way in a subdivision where such pedestrian way shall be maintained by a homeowners association. The pedestrian way shall be located in a permanent easement at least eight (8) feet in width and all parts of such pedestrian way shall be visible from streets or other public areas.

14. Driveways

- a. What is the minimum driveway width specified in the community?*** (Better Site Design recommends 9 feet or less (one lane) or 18 feet (two lanes).)

Suggested potential language subject to local approval:

Access connection and driveway design.

1. Driveway width shall meet the following guidelines:
 - a. If the driveway is a one-way in or one-way out drive, then the driveway shall be a maximum width of nine (9) feet with an additional two (2) feet of clearance, and shall have appropriate signage designating the drive as a one-way connection.
 - b. For two-way access, each lane shall have a width of nine (9) feet with two (2) feet of clearance on each side.
- b. Can pervious materials be used for single family home driveways (e.g., grass, gravel, porous pavers, etc)?***

See response to Question 14c. below.

c. Can a “two track” design be used at single family driveways?

Suggested potential language subject to local approval:

1. All driveways and off-street parking areas shall be covered with one (1) or more of the following materials: All weather surface materials approved by the County Engineer for parking surfaces, including bituminous surface treatment, bituminous concrete, concrete, porous concrete, gravel, porous pavers, and where appropriate, grass. For single family, off-street parking, a two-track design may be used.

d. Are shared driveways permitted in residential developments?

Example language from James City County, VA Code:

County Code. Chapter 19, Subdivisions

Article III Requirements for Design and Minimum Improvements.

Sec. 19-71. Shared driveway requirements for minor subdivisions.

- (a) For all minor subdivisions of three or more lots, unless exempted below, direct access from all lots to an existing arterial road shall be limited to one shared driveway. Such driveway shall be approved by the county engineer, however, at a minimum, said driveway shall be constructed of a paved surface at least ten feet wide and three inches deep. No such subdivision shall be recorded until appropriate documents in a form approved by the county attorney have been executed. Such documents shall set forth the following:
 - (1) The provisions made for permanent care and maintenance of the shared driveway and any associated easement, including bonds when required by the county; and
 - (2) The method of assessing the individual property for its share of the cost of adequately administering, maintaining and replacing such shared driveway.
- (b) The requirements in (a) above shall apply only to undeveloped lots with a proposed minor subdivision and shall not apply to any proposed lot that is greater than five acres in size.

Example language from Pierce County, WA Code:

10.5.4.5 Driveways

Driveways are typically constructed with impervious surfaces and as such should be considered in the total stormwater runoff reduction strategy. The following are methods to reduce the amount of impervious surface associated with driveways:

Driveways serving up to two single family residences shall be limited to a maximum of 18 feet in width or 24 feet for a three car garage bay, however, when 18 feet of width is

exceeded driveways shall be constructed with a pervious material. Driveways serving as shared access facilities shall follow the widths outlined in Title 17B, PCC Road Standards Manual.

Driveway length should be reduced as much as possible. This may be achieved by locating the house closer to the road or by using alley access directly into a garage, however driveway length shall be designed to accommodate the entire length of an average sized passenger vehicle (e.g. SUVs, pick-up trucks, sedans, vans) for parking. A minimum length of 22 feet as measured from the face of the garage to the back of the sidewalk, back of the concrete curb (no sidewalk), or back of the roadway vegetated open channel and or bioretention area or residential stormwater rain gardens.

When possible, design clusters of homes to utilize shared driveways. On lots that accommodate multiple family dwellings, such as townhouses, the courtyard between garages and the stem of the driveway can be shared space. A shared driveway shall serve no more than 4 dwelling units unless a greater number of units is considered acceptable to the Department. The length of the shared driveway shall be a maximum length of 50 feet.

Example Language from Milwaukee, WI:

4. SITE STANDARDS.

c. Access Drives.

c-4. Shared Drives. For any single-family or 2-family dwelling, an access drive to the abutting public street may be shared with an adjoining single-family or 2-family dwelling provided there exists a recorded legal instrument which guarantees access to the drive for occupants of each dwelling served by the shared drive and which assigns responsibility for maintenance of the drive.

15. Open Space Management

a. Does the community have enforceable requirements to establish associations that can effectively manage open space?

Suggested potential language subject to local approval:

ARTICLE 12. RESIDENTIAL PLANNED UNIT DEVELOPMENT, DISTRICT RPUD

Section 8. Homeowners' association (HOA) or property owners association (POA).

1. Residential planned unit developments must be subject to the submission and approval of a legal instrument or instruments encompassing bylaws and restrictive covenants setting forth a plan or manner of permanent care and maintenance of open spaces, recreational areas, private streets and other common facilities. No such

instrument shall be acceptable unless and until approved in writing by the county attorney as to legal form and effect, and the planning commission as to suitability for the proposed use of the common land.

2. All common property shall be deeded to a HOA or POA. The developer shall file a declaration of covenants and restrictions that will govern the HOA or POA with the application for tentative plat approval.
3. The home owners association or property owners association, including bylaws, covenants and restrictions and articles of incorporation must be set up and legally constituted prior to the sale of any lot, dwelling unit or other structure located within the RPUD.
4. Such HOA or POA must be effectual prior to the sale of fifteen (15) percent of said lots or dwelling units.
5. All covenants and restrictions must be permanent, run with the land and must encompass the following provisions:
 - a. The HOA or POA must be responsible for liability insurance, local property taxes, and the maintenance of all streets, land and other commonly owned facilities.
 - b. Homeowners must pay their pro rata share of the cost of the above through an assessment levied by the HOA or POA which must become a lien on each homeowner's property.
 - c. The HOA or POA must be able to adjust assessments to meet changing needs.
 - d. The HOA or POA must be organized as a nonprofit corporation and shall be managed by a trained professional.
 - e. Lots or dwelling units assessed by the HOA or POA shall only be those indicated on the final plat approval by the planning commission.
 - f. Provisions must be made to gradually turn over full control of the RPUD to the HOA or POA. (Ord. of 10-3-06(3))

Example language from Albemarle County, VA Code:

4.7.4 OWNERSHIP OF OPEN SPACE

Open space in private ownership shall be protected by legal arrangements sufficient to ensure its maintenance and preservation for purposes for which it is intended. Such arrangements shall be subject to commission approval as a part of the site development plan and/or subdivision plat approval process.

Open space may be dedicated to public use subject to approval and acceptance by separate resolution of the board of supervisors. Open space so dedicated shall be counted as a part of the minimum required open space.

b. Are open space areas required to be consolidated into larger units?

Example language from Goochland County, VA Code:

ARTICLE 5. FORESTAL-CONSERVATION-OPEN SPACE DISTRICT (F-C)

Section 5. Area regulations.

The minimum lot area for permitted uses shall be twenty-five (25) acres for all parcels in the conservation district. The minimum lot area stated shall be exclusive of all road rights-of-way. The parcels created within this district are not subject to the rules of division governing parent tracts as described in the zoning and subdivision ordinance. Each parcel in this district is entitled under the zoning district to as many twenty-five-acre parcels or cluster lots as spelled out in this section pertaining to the acreage of the parcel being divided.

1. *Cluster.* If the applicant elects to cluster the lots, then there is a requirement to set aside either fifty (50) percent or seventy-five (75) percent in a conservation lot as spelled out below:
 - a. The applicant is required to set aside at least fifty (50) percent of the land (original parcel) in a single parcel known as the conservation lot. The applicant is entitled to the same allocation of lots as cited above under the conventional method (density of twenty-five (25)). Under this method the land set aside in the conservation lot is required to be placed under a publicly held conservation easement or a similar document to prevent further subdivision and development. Also, the conservation lot is required to be along the pre-existing road frontage, if any, unless topography, unique vegetation, slopes or unique soils justify another location on the property. The cluster lots under this program have to be a minimum of three (3) acres. The individual cluster lots may not directly access the pre-existing road.
 - b. If the applicant elects to set aside at least seventy-five (75) percent of the land in a single parcel then as such the applicant is entitled to the same allocation of lots as cited in a. above, plus another additional lot. All other requirements are the same as cited for the fifty (50) percent set aside as stated above.

c. Does a minimum percentage of open space have to be managed in a natural condition?

Example language from Albemarle County, VA Code:

Chapter 18. Zoning

Section 4. General Regulations

4.7 Open Space

Open space shall be established, used, designed and maintained as follows:

a. *Intent.* Open space is intended to provide active and passive recreation, protect areas sensitive to development, buffer dissimilar uses from one another and preserve agricultural activities. The commission and the board of supervisors shall consider the establishment, use, design and maintenance of open space in their review and approval of zoning map amendments. The subdivision agent and the site plan agent (hereinafter, collectively referred to as the “agent”) shall apply the following principles when reviewing open space provided on a subdivision plat or site plan.

b. *Uses permitted.* Open space shall be maintained in a natural state and shall not be developed with any improvements, provided that the agent may authorize the open space to be used and improved for the following purposes: (i) agriculture, forestry and fisheries, including appropriate structures; (ii) game preserves, wildlife sanctuaries and similar uses; (iii) noncommercial recreational uses and structures; (iv) public utilities; (v) individual wells and treatment works with subsurface drain fields (reference section 4.1.7); and (vi) stormwater management facilities and flood control devices.

d. Are allowable and unallowable uses for open space in residential developments defined?

Example language from Albemarle County, VA Code:

Refer to language from Albemarle County in preceding answer for Question 15c.

e. Can open space be managed by a third party using land trusts or conservation easements?

Example language from Goochland County, VA Code:

ARTICLE 7. RURAL PRESERVATION DISTRICT R-P

Section 6. Minimum acreage of (preservation tract) open space/natural area.

The minimum acreage is related to the number of lots that are created.

- a. A minimum of fifty (50) percent of the acreage of a district shall be in one (1) parcel preserved as open space/natural area (preservation tract) as determined by Section 8. The area in roads and existing utility rights-of-way shall not be included in the required open space/natural area; however, the area determined as acceptable open space/natural area in lakes, ponds and floodplains shall not exceed fifty (50) percent of the required open space/natural area. Staff is granted administrative authority to negotiate and determine compliance with the spirit and intent of the open space/natural area.
- b. Open space easements or conservation easements shall be required to qualify for

open space/natural area in this Rural Preservation District. Open space easements shall be held by a public recreational facility authority created by the board of supervisors pursuant to the Open-Space Land Act (Code of Virginia § 10.1-1700 et seq.) (the "authority"). Conservation easements shall be held by the authority as permitted by the Virginia Conservation Easement Act (Code of Virginia § 10.1-1009 et seq.) and the Open-Space Land Act.

- c. All of the preservation tract shall be owned by a homeowners' or property owners' association for the residential development, or the County of Goochland. The preservation tract shall be established as a usable passive recreational area for the residents of the development contiguous to the residential lots. This area could contain trails for biking, walking, or horse riding.

Example language from Albemarle County, VA Code:

APPENDIX A.1

ACQUISITION OF CONSERVATION EASEMENTS PROGRAM

Sec. A.1-101. Purpose.

The board of supervisors finds that between 1974 and 1992, twenty-five thousand (25,000) acres of farmland in the county were lost to development; that at present, almost one-third of the acres of forest land in the county is considered by the Virginia Department of Forestry to be too densely populated for timber production; that regulatory land-use planning tools acceptable to date have not been able to stem the conversion of farm and forest land to other uses; and that farm and forest land, clean water and airsheds, biological diversity, scenic vistas and rural character have a public value as well as a private value.

Therefore, the specific purposes of the ACE program include, but are not limited to:

1. Establishing a program by which the county can acquire conservation easements voluntarily offered by owners to serve as one means of assuring that the county's resources are protected and efficiently used;
2. Establishing and preserving open-space and preserving the rural character of Albemarle County;
3. Preserving farm and forest lands;
4. Conserving and protecting water resources and environmentally sensitive lands, waters and other natural resources;
5. Conserving and protecting biodiversity and wildlife and aquatic habitat;
6. Assisting in shaping the character and direction of the development of the community;
7. Improving the quality of life for the inhabitants of the county; and
8. Promoting tourism through the preservation of scenic resources.

(Ord. 00-A.1(1), 7-5-00; Ord. 02-A.1(1), 12-11-02)

See also

Sec. A.1-103. Definitions and construction.

A. The following definitions shall apply in the interpretation and implementation of the ACE program:

(1) *Conservation easement*. The term “conservation easement” means a non-possessory interest in one or more parcels of one or more qualified easement holders under section A.1-109(E) acquired under the Open-Space Land Act (Virginia Code § 10.1-1700 *et seq.*), whether the easement is appurtenant or in gross, voluntarily offered by an owner and acquired by purchase pursuant to the ACE program, imposing limitations or affirmative obligations for the purpose of retaining or protecting natural or open-space values of the parcel or parcels, assuring availability for agricultural, forestal, recreational or open-space use, protecting natural resources, maintaining or enhancing air or water quality, or preserving the historical, architectural or archaeological aspects of the parcel or parcels.

16. Rooftop Runoff

a. Can rooftop runoff be discharged to yard areas?

Example language from Carroll County, MD:

Chapter 191 of the Carroll County Code of Public Laws and Ordinances (Code) states that nonstructural stormwater management measures, such as disconnection of rooftop runoff, must be implemented to the maximum extent possible to minimize reliance on structural BMPs at development sites (§191-11). Only after all feasible nonstructural stormwater management measures have been applied at a development site, can a developer use structural BMPs to satisfy the County’s minimum stormwater control requirements (§191-11.B), which include groundwater recharge, water quality and channel protection.

In addition to the requirements established in the Code, the Carroll County Supplement to the Maryland Stormwater Design Manual states that the rooftops of all new houses must be disconnected either by grading or by the use of drywells (pp. 24):

Grading - To receive the rooftop disconnection credit, sites must be designed in accordance with the design criteria presented in the Maryland Stormwater Design Manual (§5.2). The credit assumes that rooftop runoff spread evenly on the lawn, where it is filtered and may infiltrate into the ground, and that the entire lawn is graded to meet the requirements outlined in the Maryland Stormwater Design Manual (pp. 25).

Dry wells - Dry wells are generally used on sites where disconnection through grading cannot be accomplished. To receive the rooftop disconnection credit, dry wells must be designed in accordance with the details provided in the Carroll County Supplement to the Maryland Stormwater Design Manual (pp. 26-31).

Example language from Milwaukee, WI:

225-4. Drainage of Yard Areas and Roofs.

2. ROOF RAINWATER LEADERS (CONDUCTORS).

a. Discharge to Finished Grade; When Permitted. All buildings, including accessory buildings, may discharge roof rainwater leaders, conductors or downspouts to finished grade provided the discharge to finished grade meets all of the following provisions:

a-1. The point of discharge shall be a minimum of 2 feet from a basement or a foundation wall of alley property line and 5 feet from all other property lines.

a-2. The discharge shall flow parallel to or away from the nearest property line.

a-3. The discharge water shall not discharge to a street, alley or other public way.

a-4. The discharge water shall not create an icy condition on any pedestrian walkways within or adjacent to the subject premises lot lines.

a-5. The downspout hub shall be sealed with a 1" concrete cap or in a manner approved by the commissioner.

b. Connection to Sewer Required. Whenever discharge to finished grade from the roof rainwater leaders, conductors or downspouts of any building, including any accessory building, cannot meet the provisions of par. a, all roof rainwater leaders, conductors or downspouts shall be mechanically connected to the storm sewer or combined sewer, or to an approved storm sewer facility when they are available and abutting the property. This shall include parcels that have access by easement or private roads when the storm sewer is available at the point of access.

b. Do current grading or drainage requirements allow for temporary ponding of stormwater on front yards or rooftops?

Example language adapted from *Model Development Principles for the Central Rappahannock* and Stafford County, VA Code:

Where practical, rooftop runoff should be directed to pervious areas such as yards, open channels, or bioretention cells, or other vegetated areas. Avoid routing rooftop runoff to impervious driveways, roads, and/or the stormwater conveyance system. Provide infiltration and filtration in a manner that ensures adequate drainage while utilizing the landscape to diffuse, filter, and infiltrate stormwater runoff. Temporary ponding of water may be allowed to accommodate stormwater management as long as it does not present a health hazard or mosquito issue. Infiltration rates should meet standards of one inch per hour. Soil conditions and water tables shall be evaluated prior to design. Drainage plans shall be consistent with local and regional drainage plans. These best management practices shall be designed to prevent the discharge of excess runoff onto adjacent properties.

17. Buffer Systems

- a. Is there a stream buffer ordinance in the community?*
- b. If so, what is the minimum buffer width?* (Looking for 75 feet or more.)
- c. Is expansion of the buffer to include freshwater wetlands, steep slopes or the 100-year floodplain required?*

Example language from Powhatan County, VA Code:

Zoning Ordinance

Article 25, Supplementary District Regulations

Additional Buffers and Setbacks Along Streams and Wetlands. A one hundred (100) foot natural vegetative buffer shall be maintained along all perennial streams. A fifty (50) foot natural vegetative buffer shall be maintained along all intermittent streams. Best management practices may be substituted in whole or in part for such buffers.

A. Buffers from Streams. A one hundred (100) foot buffer shall be maintained along all perennial streams. A fifty (50) foot buffer shall be maintained along all intermittent streams.

B. Buffers from Wetlands. A fifty (50) foot buffer shall be maintained from the upland boundary of all jurisdictional wetlands as determined by Federal law that are contiguous to intermittent or perennial streams.

C. Best management practices may be substituted in part for such buffers, provided that no buffer shall be reduced by more than 50%....

Example language from Portsmouth, VA Code: (Questions 17 a, b, and c):

Chapter 9.1 CHESAPEAKE BAY PRESERVATION AREA OVERLAY DISTRICT

Sec. 9.1-10. Performance standards.

- (a) *Purpose and intent.* The performance standards establish the means to minimize erosion and sedimentation potential, reduce land application of nutrients and toxics, and maximize rainwater infiltration. Natural groundcover, especially woody vegetation, is most effective in holding soil in place and preventing site erosion. Indigenous vegetation, with its adaptability to local conditions without the use of harmful fertilizers or pesticides, filters stormwater runoff. Minimizing impervious cover enhances rainwater infiltration and effectively reduces stormwater runoff potential. The purpose and intent of these requirements are also to implement the following objectives: prevent a net increase in nonpoint source pollution from new development; achieve a ten percent reduction in nonpoint source pollution from development on previously developed land where the runoff was not treated by one or more water quality best management practices; and achieve a 40 percent reduction in nonpoint source pollution from agricultural uses.

(c) *Development criteria for resource protection areas.*

(3) *Buffer area requirements.* To minimize the adverse effects of human activities on the other components of resource protection areas, state waters, and aquatic life, a 100-foot buffer area of vegetation that is effective in retarding runoff, preventing erosion, and filtering nonpoint source pollution from runoff shall be retained if present and established where it does not exist.

The buffer area shall be located adjacent to and landward of other RPA components and along both sides of any water bodies with perennial flow. The full buffer area shall be designated as the landward component of the RPA, in accordance with sections 9.1-4 and 9.1-11. Notwithstanding permitted uses, encroachments, and vegetation clearing as set forth in this section, the 100-foot wide buffer area is not reduced in width. The 100-foot buffer area shall be deemed to achieve a 75 percent reduction of sediments and a 40 percent reduction of nutrients.

Example language from New Kent County, VA Code: (Questions 17a, b and c) :

ARTICLE II. CHESAPEAKE BAY PRESERVATION AREAS

Sec. 94-35. Designation of resource protection areas (RPA)

(a) At minimum, resource protection areas shall consist of lands adjacent to water bodies with perennial flow that have either an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may cause significant degradation to the quality of state waters. In their natural condition, these lands provide for the removal, reduction or assimilation of sediments, nutrients and potentially harmful or toxic substances in runoff entering the bay and its tributaries, RPAs shall include:

(1) Tidal wetlands;

(2) Non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;

(3) Tidal shores;

(4) A 100-foot vegetated buffer area located adjacent to and landward of the components listed in subsections (a)(1) through (a)(3) of this section, and along both sides of any water body with perennial flow. The full buffer area shall be designated as the landward component of the RPA notwithstanding the presence of permitted uses, encroachments, and permitted vegetation clearing compliance with section 94-40; and

(5) Such other lands considered by the board to meet the provisions of subsection (a) of this section and to be necessary to protect the quality of state waters.

Example language from Albemarle County, VA Code:

http://www.albemarle.org/upload/images/forms_center/departments/county_attorney/forms/Albemarle_County_Code_Ch17_Water_Protection.pdf.

Article III. Stormwater Management and Water Quality
Division 2. Plan Requirements: Water Quality and Water Quality Protection
Sec. 17-317 Duty to retain or establish stream buffer.

Except as provided in section 17-319, any land subject to this article and each stormwater management/BMP plan shall provide for stream buffers for the purposes of retarding runoff, preventing erosion, filtering nonpoint source pollution from runoff, moderating stream temperature, and providing for the ecological integrity of stream corridors and networks, as provided herein:

- A. If the development is located within a development area or an area of infill and redevelopment, stream buffers shall be retained if present and established where they do not exist on any lands subject to this article containing perennial streams, and/or non-tidal wetlands contiguous to these streams. The stream buffer shall be no less than one hundred (100) feet wide on each side of such perennial streams and contiguous non-tidal wetlands, measured horizontally from the edge of the non-tidal wetlands, or the top of the stream bank if no wetlands exist.
- B. If the development is located within a water supply protection area or other rural land, stream buffers shall be retained if present and established where they do not exist on any lands subject to this article containing perennial or intermittent streams, non-tidal wetlands contiguous to these streams, and flood plains. The stream buffer shall extend to whichever of the following is wider: (i) one hundred (100) feet on each side of perennial or intermittent streams and contiguous non-tidal wetlands, measured horizontally from the edge of the non-tidal wetlands, or the top of the stream bank if no wetlands exist; or (ii) the limits of the flood plain. The stream buffer shall be no less than two hundred (200) horizontal feet wide from the flood plain of any public water supply impoundment.
- C. On agricultural lands used for crop land, whether located in a development area, an area of infill and redevelopment, a water supply protection area or other rural land, the stream buffer shall include all perennial streams, non-tidal wetlands contiguous with these streams, and a twenty-five (25) foot buffer, measured horizontally from the edge of contiguous non-tidal wetlands, or the top of the stream bank if no wetlands exist. On these lands, the stream buffer shall be managed to prevent concentrated flows of surface water from breaching the buffer area. Each owner of crop land with a stream buffer shall have developed by the Thomas Jefferson Soil and Water Conservation District a soil and water conservation plan, or a component thereof, which, shall be based on an assessment of existing conservation practices of the crop land. ...

18. Buffer Maintenance

a. Does the stream buffer ordinance specify that at least part of the stream buffer be maintained with native vegetation?

Example language taken from City of Staunton, VA Code:

Chapter 13.12

RIPARIAN BUFFERS

13.12.030 Management of a riparian buffer.

Each riparian buffer required to be established or maintained pursuant to Division I of this title shall be managed as part of the stormwater facility management agreement and as provided herein:

- (1) The target vegetative cover in a riparian buffer area shall be an indigenous riparian forest with ground cover, shrub and tree canopy layers.
- (2) Within 25 feet of the top of the state waters bank and on land classified as wetlands:
 - (a) Indigenous riparian vegetation shall be preserved, or, where it does not exist, it shall be restored or allowed to evolve by natural succession;
 - (b) Dead, diseased, and dying trees may be removed;
 - (c) Fallen trees that are blocking stream channels, or trees with undermined root systems in imminent danger of falling, may be removed where stream bank erosion is a current or potential problem that outweighs any positive effects the fallen tree or trees may have on the stream ecosystem;
 - (d) Removal or pruning of invasive shrub and vine species is allowed; provided, that such removal or pruning is done in a manner that prevents erosion;
 - (e) Unpaved pathways and trails may be constructed and maintained in a manner that will effectively control erosion and minimize adverse impacts to the buffer, subject to applicable provisions of SCC [13.12.050](#); and
 - (f) Stormwater channels may be constructed and maintained in a manner that will prevent erosion and minimize adverse impacts to the buffer.

Example language from Albemarle County, VA Code:

http://www.albemarle.org/upload/images/forms_center/departments/county_attorney/forms/Albemarle_County_Code_Ch17_Water_Protection.pdf

Sec. 17-318 Management of stream buffer.

Each stream buffer required to be retained or established pursuant to section 17-317 shall be managed as provided herein:

A. In order to maintain the runoff, erosion, nonpoint source pollution control, stream temperature, and ecological values of the stream buffer, indigenous vegetation shall be preserved to the maximum extent possible. The target vegetative cover in the stream buffer shall be an indigenous riparian forest with ground cover,

shrub, and tree canopy layers. Removal of vegetation in the stream buffer shall be allowed only as provided in paragraphs (B) and (C).

B. Within twenty-five (25) feet of the top of the stream bank and on land classified as non-tidal wetland:

1. Indigenous riparian vegetation shall be preserved or allowed to evolve by natural succession where it does not exist;...

b. Does the stream buffer ordinance outline allowable uses?

Example language from Albemarle County, VA Code:

http://www.albemarle.org/upload/images/forms_center/departments/county_attorney/forms/Albemarle_County_Code_Ch17_Water_Protection.pdf.

Sec. 17-320 Types of development authorized in stream buffer.

If otherwise authorized by the applicable regulations of the zoning ordinance, the following types of development shall be allowed in a stream buffer, provided that the requirements of this section are satisfied:

A. A building or structure which existed on the date of adoption of this chapter may continue at such location. However, nothing in this section authorizes the continuance, repair, replacement, expansion or enlargement of such building or structure except as provided in sections 6.0 and 30.3 of the zoning ordinance.

B. On-site or regional stormwater management facilities and temporary erosion and sediment control measures, provided that:

1. To the extent practical, as determined by the program authority, the location of such facilities shall be outside of the stream buffer;
2. No more land shall be disturbed than is necessary to provide for construction and maintenance of the facility, as determined by the program authority;
3. The facilities are designed and constructed so as to minimize impacts to the functional value of the stream buffer and to protect water quality; and
4. Facilities located within a flood plain adhere to flood plain regulations of the county and are designed and located, to the extent practical, to maintain their water quantity and/or water quality control value, according to the standards of this article, during flood conditions.

C. Water-dependent facilities; water wells; passive recreation access, such as pedestrian trails and bicycle paths; historic preservation; archaeological activities; provided that all applicable federal, state and local permits are obtained.

D. Stream crossings of perennial and intermittent streams for roads, streets or driveways, provided the following requirements are addressed to the satisfaction of the program authority:...

... Sec. 17-321 Types of development which may be allowed in stream buffer by program authority.

Development in a stream buffer may be authorized by the program authority in the circumstances described below, provided that a mitigation plan is submitted to, and approved, by the program authority pursuant to section 17-322:

1. on a lot which is located within a development area but is not within a water supply protection area: within the fifty (50) horizontal feet of stream buffer that is the most landward (furthest from the stream);
2. on a lot which is located within a water supply protection area or other rural land: within the fifty (50) horizontal feet of stream buffer that is the most landward, but only for stormwater conveyance channels or other necessary infrastructure, and only if such development is determined by the program authority to be necessary to allow a reasonable use of the lot. In all cases under this paragraph, the building site and the sewage disposal system shall be located outside of the stream buffer;
3. on a lot on which the development in the stream buffer will consist of a lake, pond, or ecological/wetland restoration project;
4. on a lot on which the development in the stream buffer will consist of the construction and maintenance of a road, street or driveway that would not satisfy the requirements of section 17-320(D) and the program authority determines that the stream buffer would prohibit access to the lot necessary for the lot to be used and developed as permitted in the underlying zoning district and under the applicable regulations of the subdivision ordinance, or to establish more than one stream crossing;
5. on a lot which was of record prior to the date of adoption of this chapter, on which the development in the stream buffer will consist of the construction, installation and maintenance of water and sewer facilities or sewage disposal systems, and the program authority determines that the stream buffer would prohibit the practicable development of such facilities or systems. Any such sewage disposal system must comply with all applicable state laws; and
6. on a lot which was of record prior to the date of adoption of this chapter, if the stream buffer would result in the loss of a building site, and there are no other available building sites outside the stream buffer on the lot, or to allow redevelopment as permitted in the underlying zoning district.

State law reference--Va. Code § 10.1-2108.

Example language from Charlottesville, VA Code:

Sec. 10-73. Development exempt from stream buffer requirements.

The following types of development shall not be required to retain, establish or manage a stream buffer, provided that the requirements of this section are satisfied:

- (1) The construction, installation, operation and maintenance of electric, gas and telephone transmission lines, railroads, and activities of the Virginia Department of Transportation, and their appurtenant structures, which are accomplished in compliance with the Erosion and Sediment Control Law (Virginia Code § 10.1-560 et

seq.) or an erosion and sediment control plan approved by the Virginia Soil and Water Conservation Board.

- (2) The construction, installation and maintenance by public agencies of water, sewer, electric and gas lines, including lines constructed by private entities for dedication to public agencies, provided that:
- a. To the extent practical, the location of such lines shall be outside required stream buffer areas;
 - b. No more land shall be disturbed than is necessary to construct, install and maintain the water or sewer lines; and
 - c. Construction, installation and maintenance of such lines shall comply with applicable federal, state and local requirements and permits and be conducted in a manner that protects water quality.

Sec. 10-74. Development authorized in a stream buffer.

If otherwise authorized by applicable regulations of the city's zoning ordinance, the following land development activities shall be allowed in a stream buffer area, provided that the requirements of this section are satisfied and performance standards established by the program authority are met:

- (1) A building or structure which existed on the date of adoption of this chapter may continue at such location. However, nothing in this section authorizes the continuance, repair, replacement, expansion or enlargement of such building or structure except as authorized by the city's zoning ordinance.
- (2) On-site or regional stormwater management facilities, and temporary erosion and sediment control measures, provided that:
- a. To the extent practical the location of such facilities shall be outside the stream buffer;
 - b. No more land shall be disturbed than is necessary to provide for construction and maintenance of the facility;
 - c. The facilities are designed and constructed so as to minimize impacts to the functional value of the stream buffer and to protect water quality; and
 - d. Facilities located within a floodplain adhere to floodplain regulations and are designed and located, to the extent practical, to maintain their water quantity and/or water quality control value during flood conditions.
- (3) Water dependent facilities, passive recreation access (such as unpaved pathways and trails), historic preservation, and archaeological activities, provided that all applicable federal, state, and local permits are obtained.

(4) Development in a stream buffer, where authorized by the program authority in the circumstances described below, may be allowed if a mitigation plan is submitted to and approved by the program authority pursuant to section 10-75:

- a. On a lot which was of record prior to the date of adoption of this chapter, if (i) establishment or preservation of the stream buffer would result in the loss of a building site, and there are no other available building sites outside the stream buffer on the lot, or (ii) the proposed development consists of redevelopment not exceeding the current level of encroachment resulting from existing improvements, or (iii) the proposed development is for construction of an accessory building or structure (including, without limitation, an accessory apartment) permitted by the city's zoning ordinance, provided that such accessory building or structure must be located within the first fifty (50) landward feet of the buffer and provided further that the footprint of any such accessory building or structure shall not exceed four hundred (400) square feet.
- b. On a lot on which development within the stream buffer will consist of an ecological/wetland restoration project;
- c. On a lot on which the development in the stream buffer will consist of the construction and maintenance of a driveway or roadway, and the program authority determines that the stream buffer would prohibit reasonable access to a portion of the lot which is necessary for the owner to have a reasonable use of the lot;
- d. On a lot on which the development in the stream buffer will consist of the construction and maintenance of a paved pathway or trail exceeding three (3) feet in width;
- e. On a lot which was of record prior to the date of adoption of this chapter, on which development within the stream buffer will consist of the construction, installation and maintenance of water and sewer facilities or sewage disposal systems, and the program authority determines that the stream buffer would prohibit the practicable development of such facilities or systems.

c. Does the ordinance specify enforcement and education mechanisms?

Example language from Albemarle County, VA Code:

Sec. 17-326 Penalties and remedies.

This article may be enforced as follows:

- A. Any person who violates any provision of this article shall be guilty of a misdemeanor and shall be subject to a fine not exceeding one thousand dollars (\$1000.00) or up to thirty (30) days imprisonment for each violation, or both.

- B. The county may apply to the circuit court in any jurisdiction wherein the land lies to enjoin a violation or a threatened violation of the provisions of this article without the necessity of showing that an adequate remedy at law exists.
- C. Without limiting the remedies that may be obtained pursuant to this section, the county may bring a civil action against any person for violation of any provision of this article or any term or condition of a permit or plan. The action may seek the imposition of a civil penalty of not more than two thousand dollars (\$2000.00) against the person for each violation.
- D. With the consent of any person who has violated or failed, neglected or refused to obey any condition of a permit, obligation of a plan or agreement, or any provision of this article, the program authority may provide, in an order issued by the program authority against such person, for the payment of civil charges for violations in specific sums, not to exceed the limit specified in paragraph (C). Such civil charges shall be instead of any appropriate civil penalty which could be imposed under paragraph (C).

Example language from Charlottesville, VA Code:

Sec. 10-76. Penalties and remedies.

- (a) Any person who violates any provision of this article shall be guilty of a misdemeanor and shall be subject to a fine not exceeding one thousand dollars (\$1,000.00) or up to thirty (30) days imprisonment, or both, for each violation.
- (b) The city may apply to the circuit court for the City of Charlottesville, to enjoin a violation or a threatened violation of the provisions of this article, without the necessity of showing that an adequate remedy at law exists.
- (c) Without limiting the remedies that may be obtained pursuant to this section, the city may bring a civil action against any person for violation of this article. The action may seek the imposition of a civil penalty of not more than two thousand dollars (\$2,000.00) against the person for each violation.
- (d) With the consent of any person who has violated or failed, neglected or refused to obey any provision of this article, the program authority may provide, in an order issued by the program authority against such person, for the payment of a civil charge for any violation, in a specific sum, not to exceed two thousand dollars (\$2,000.00) per violation. Such civil charge shall be in lieu of any civil penalty which could be imposed under paragraph (c).

19. Clearing and Grading

- a. Is there any ordinance that requires or encourages the preservation of natural vegetation at residential development sites?***

Example language adapted from Henrico County, VA Code:

ARTICLE XXII. SUPPLEMENTARY REGULATIONS

Sec. 24-106.2. Landscaping, tree cover, screen and buffer requirements, transitional buffering and design standards.

(c) General standards

- (3) *Tree preservation.* Preservation of existing trees and shrubs shall be maximized wherever practicable. Except when otherwise necessary to provide access or when exempted by this section, any tree six inches or greater in caliper located within the setback from a public right-of-way shall be retained. Tree removal may be approved where site design modification is not feasible. If any preserved tree or shrub that has been preserved at a given site dies within three years of construction, trees or shrubs shall be planted to meet the minimum tree cover canopy* density.

ARTICLE VIII. URBAN MIXED USE DISTRICT; USES

Sec. 24-34. Development standards.

(f) Landscaping and buffering.

- (4) *Preservation of existing trees:* Preservation of existing trees and shrubs shall be maximized to provide for continuity and improved buffering ability. Existing trees within 50 feet of existing water bodies such as lakes, rivers, streams, and wetlands, shall be preserved. Except for tree canopy* requirements, trees retained for compliance with this section shall not be less than six feet in height, shall be noted on the landscape plan, and shall comply with the following:
- Prior to landscape plan approval, the property owner shall sign a statement stating protective measures to be taken and agreeing to replace trees or shrubs that die or are removed during or after construction;
 - The landscape plan shall identify the protection area and method of protection for retained trees. The minimum radius of the protection area shall be determined by multiplying the tree diameter in inches at four feet in height by one foot or by delineation of the drip line of the tree, whichever is greater;
 - The protection area shall be identified during construction with high visibility fencing. There shall be no encroachment including, but not limited to, earth disturbing activities such as grading or stockpiling of soil or materials within the protection area;
 - Any vegetation removed before, during or after construction shall be replaced with new vegetation which meets the minimum requirements of this section.

* Henrico County has a minimum 15 percent tree canopy requirement for all sites.

b. Do reserve septic field areas need to be cleared of trees at the time of development?

Example text adapted from Fluvanna County, VA Code:

Sec. 22-17-10. Sewerage system required.

In the case of any septic disposal system, the applicant shall demonstrate, to the reasonable satisfaction of the Fluvanna County Health Department and to the zoning administrator, that the parcel of land to be used for such use, structure or building is capable of supporting a primary septic disposal system as well as a full reserve septic system adequate to serve the use proposed. *The reserve septic field does not need to be cleared at the time of development.*

20. Tree Conservation

a. If forests or specimen trees are present at residential development sites, does some of the stand have to be preserved?

b. Are the limits of disturbance shown on construction plans adequate for preventing clearing of natural vegetative cover during construction?

Example language from New Kent County, VA Code: (Questions 20a and 20b):

Sec. 91-66. Preservation of natural features and cultural resources.

- (a) It is the policy of the county to maintain the rural character of the county throughout the development process. As such, the natural terrain and features of the land, including heritage, memorial, significant and specimen trees, natural watercourses and other water areas, historic and archaeological sites, scenic areas and other features and resources worthy of preservation located within the area encompassed by any proposed subdivision of property in the county shall be preserved and protected during the development process to the extent possible while enabling reasonable development of property. In this regard, no more land disturbance than absolutely necessary to accommodate reasonable development shall occur and extensive cut and fill of the natural topography shall not be allowed.
- (b) Areas that are designated Chesapeake Bay Resource Protection Areas shall generally not be platted into individual lots and, in no case shall such areas be utilized to meet minimum area requirements for lots.
- (c) The removal of trees or the clearing and grading of land by the subdivider shall be generally permitted only to accommodate the construction and installation of those improvements required by this chapter or other portions of this Code or on those lots for which a valid building permit has been issued. Mature trees throughout the remainder of the area encompassed by any proposed subdivision of property shall be

protected in accordance with the Virginia Erosion and Sediment Control Manual, 1992 Edition, as amended, or other generally accepted tree protection measure during construction and installation of subdivision improvements. In any case, limits of clearing and grading shall be clearly shown on development plans.
(Ord. No. 0-03-05(R), 3-14-2005)

Example language from Chesapeake, VA Code:

<http://www.municode.com/resources/gateway.asp?pid=10529&sid=46>

Land Use Code, Zoning Ordinance. Section 19-416.

Reduction in number of parking spaces and parking setbacks in exchange for tree preservation.

The planning director may approve preliminary site plans, which provide for the preservation of mature trees existing on the site in exchange for a reduction in the number of parking spaces required under this ordinance or a reduction in required parking area setbacks. The reduction in the number of parking spaces shall not exceed twenty-five (25) percent of the overall number required. The reduction in parking area setbacks shall not exceed fifty (50) percent of the required setback.

Sec. 19-602. Tree preservation and canopy requirements.

The landscape plan for every site shall contain the tree preservation and canopy requirements set out below.

A. Tree preservation areas. Tree preservation areas which are marked on the plan shall be clearly delineated on the site. These areas are to be protected from traffic, equipment, excavation, stockpiles and staged materials. Areas set forth as tree preservation areas must remain marked and protected during construction in order to be included in the calculation of the required canopy.

B. Tree canopy requirement--Nonresidential development. Each plan for nonresidential development shall provide a landscaping plan that, at tree maturity, provides a minimum canopy of ten percent (10%) of the calculation area.

C. Tree canopy requirement--Residential development. Each residential plan shall provide a landscaping plan that, at tree maturity, provides minimum tree canopy as set out below.

1. Tree canopy totaling fifteen percent (15%) of the calculation area for a residential site zoned for multifamily or townhouse use.

2. Tree canopy totaling twenty percent (20%) of the calculation area for all residential sites other than property zoned for multifamily or townhouse use, provided that no more than eleven (11) large trees or twenty-one (21) small trees, or combination thereof approved

D. Requirements for preservation and replacement. The canopy requirements set out above shall be met by preservation or replacement methods as indicated in the Chesapeake Landscape Specification Manual. Where final site conditions will make the successful preservation of existing plants unlikely, the City of Chesapeake may direct the owner or

developer to provide new, appropriate species and locations to ensure canopy coverage as set forth by the ordinance.

E. Incentives for preservation of trees. A credit toward canopy requirements will be given for the preservation of an outstanding tree, as defined in the Chesapeake Landscape Specifications Manual, or for the preservation of a cluster of trees, approved by the city arborist, pursuant to the following:

1. The credit provided per outstanding tree will be 2.0 multiplied by the area defined by the boundaries of the existing drip line of the tree.
2. The credit provided for a cluster of trees will be 1.25 multiplied by the area defined by the boundaries of the existing drip line of the cluster.
3. Credit shall only be given under this subsection if the entire area under the drip line of the outstanding tree or cluster of trees is preserved in a manner satisfactory to the city arborist.
4. In the event one or more trees to be preserved under this subsection is destroyed or, in the opinion of the city arborist, is significantly damaged during clearing or construction activities, or is willfully destroyed, injured or removed, the person responsible for such destruction, injury or removal shall replace such trees by planting or preserving one (1) large tree of four (4) inch caliper and one (1) small tree six (6) to eight (8) feet in height within every 300 square feet of area in which the damaged or destroyed tree or trees stood.

F. Placement of newly provided landscaping for certain residential districts. A minimum of one large or two small trees, as specified in the Chesapeake Landscape Specifications Manual, shall be planted in the front yard of each residential lot for residential districts allowing ten or fewer dwelling units per acre.

21. Land Conservation Incentives

a. Are there any incentives to developers or landowners to conserve non-regulated land (open space design, density bonuses, stormwater credits or lower property tax rates)?

Example language from Milwaukee, WI Code:

304-25. Dedicated Green Space Fund. 1. PURPOSE. The purpose of this section is to promote the creation and preservation of open space.

2. SPECIAL FUND. A special purpose fund for the creation and preservation of open space, to be known as the dedicated green space fund, shall be created at the earliest appropriate time at the discretion of the city comptroller. Amounts equal to all revenues derived from contributions by developers or property owners to allow more parking spaces for general retail establishments than permitted by the zoning code, pursuant to s. 295-403-2-d-4, shall be entered into the special purpose fund. Expenditures from this special fund shall be made in accordance with sub. 3.

3. EXPENDITURES. The dedicated green space fund shall be under the control of the common council. Expenditures from the special fund shall be authorized by resolution from time to time as appropriate. Expenditures shall promote the creation and preservation of open space in the city. Specific permitted uses of the fund shall include, but not be limited to:

- a. Acquisition of land to be preserved as open space.
- b. Improving existing open space.
- c. Funding storm water best management practice projects.

b. Is flexibility to meet regulatory or conservation restrictions (density compensation, buffer averaging, transferable development rights, off-site mitigation) offered to developers?

Example language from Chesapeake, VA Code: (Transfer of Development Rights)

Chapter 26. Environment

ARTICLE XI. Open Space and Agriculture Preservation Program (OSAP)

Sec. 26-575. Establishment of the OSAP Program.

There is hereby established the open space and agriculture preservation (OSAP) program of the city, which shall be a voluntary program by which the city acquires, in accordance with the provisions of this article and to the extent of available funding, the development rights of qualifying parcels in the areas of the city described in section 26-245 below. The acquisition of development rights shall be entirely voluntary on the part of the landowner and shall be accomplished generally by the purchase of preservation easements upon selected property. In conjunction with the program, the city manager is hereby authorized and directed to establish, subject to the approval of city council and applicable requirements of law, methods of payment for such easements, including, but not limited to, incurring long-term obligations in the nature of installment purchase agreements pursuant to which the city pays to the landowner interest only on an annual basis for a period of years and principal at the expiration of such period. The method of payment and other details of the program shall be set out in the OSAP Manual, which may be amended from time to time by the city manager. The city manager may delegate this function to the program administrator. Notwithstanding the OSAP Manual, city council retains the final authority to approve the purchase of development rights, including the method of payment.

Sec. 26-576. Applicability.

The OSAP program shall apply to the entire city. Nothing in this article shall be construed as a limitation upon the authority of the city, or its boards, commissions, authorities and agencies, to acquire land for other public purposes and by other lawful means in addition to those set forth in this article.

Sec. 26-577. Eligibility criteria.

Development rights, including the acquisition of preservation easements, may only be purchased if the property under consideration meets all of the following criteria:

- (a) The property shall be no less than ten (10) acres in area for agricultural lands and no less than three (3) acres in area for open space preservation, or be included in a batch in which the combined area of contiguous parcels is no less than ten (10) acres in area for agricultural lands and no less than three (3) acres for open space.

- (b) The property shall not contain any land required to be reserved or set aside for open space, recreation, preservation or similar purposes pursuant to the provisions of any city ordinance, regulation or policy, including without limitation, requirements imposed under a conditional use permit, conditional rezoning, PUD zoning, subdivision approval, site plan approval, variance, or other action by the city council, the planning commission, the board of zoning appeals, or other authorized approval agent;
- (c) No uses, buildings, or structures, other than those expressly permitted under the preservation easement, shall be conducted or located upon the property; and
- (d) In order to qualify for eligibility for preservation of agricultural lands, no portion of the agricultural lands shall contain any of the following soil types:
 - (1) Mixed Alluvial Land;
 - (2) Mucky Peat;
 - (3) Mucky Peat, shallow over loams;
 - (4) Mucky Peat, shallow over sands; and
 - (5) Tidal Marsh.

These limitations on soil types shall not apply to open space preservation or to property located wholly or partially in the Fentress Airfield overlay district, as established by the city zoning ordinance.

- (e) Soil types shall be determined on the basis of the most current U.S. Department of Agriculture soil survey. A soil determination of those soils in listed in subsection (d) may be challenged if the accuracy of the current soil survey is in question. In order to challenge a soil survey, the applicant must provide a more recent soil survey conducted by a qualified soil scientist. However, the right to challenge a soil survey shall not apply after the U.S. Department of Agriculture conducts an updated city soil survey, scheduled to be completed in 2005.

Sec. 26-578. Application; evaluation by program administrator.

- (a) Applications to sell development rights shall be on a form prescribed by the city and shall be signed by the landowner and submitted to the program administrator. The program administrator may require supporting documentation, including without limitation, deeds, surveys, plats, plans and or other instruments, to be submitted with the application. Landowners may submit an application for each parcel or may submit a single application for more than one contiguous parcel (batch). Applications for a batch of parcels shall be signed by all landowners.
- (b) The program administrator shall review each application to determine whether all of the eligibility criteria set forth in section 26-246 of this article are met and all required information is provided, and shall notify the landowner of his initial determination. Incomplete or otherwise deficient applications may be returned to the landowner with a statement of reasons for the returned application. Incomplete or deficient applications may be revised or corrected and resubmitted for reconsideration.

- (c) In the event a parcel, or portion thereof, fails to meet one or more of the eligibility criteria set forth in section 26-246 above, such parcel, or portion thereof, shall not be considered for inclusion in the program. In the event the ineligibility of a parcel, or portion thereof, renders the remaining property which is the subject of the application ineligible, none of the property shall be considered for inclusion.
- (d) In the event available funding is insufficient to purchase the development rights on all eligible properties that are the subject of pending applications under this article, the program administrator shall evaluate each such application, using the criteria of the OSAP ranking system set forth in OSAP Manual, and shall ascertain all necessary facts and information for ranking the priority of acquisition of the lands included in the application. In performing such evaluation, the program administrator may request the assistance of such other city departments and agencies as may be appropriate and beneficial. The evaluation shall include a recommendation for the number of OSAP ranking system points to be assigned to the application. No later than 90 days after receipt of a complete application, the program administrator shall forward a copy of the evaluation to the commission, the city manager and the landowner.
- (e) The submission of an application shall not be deemed to constitute a binding contractual offer to convey any interest in the landowner's property, but shall be revocable at will by the landowner prior to the execution of a purchase agreement, without penalty.
- (f) The city is not bound by the submission or acceptance of an application to extend an offer to purchase any interest in the landowner's property. Any evaluation, finding or purchase offer is revocable at will by the city prior to the execution of a purchase agreement, without penalty. In no event shall the acceptance of an application, a finding of eligibility, or any other act by the city, its employees, agents, boards, commissions or council, other than the authorized execution of a purchase agreement, be deemed a binding offer to purchase or give rise to a property interest, right or entitlement.

Sec. 26-579. Review of applications by commission.

- (a) Where funding appears to be sufficient to purchase the development rights of a property, the commission shall, at a regular or special meeting called for such purpose, review the application to confirm eligibility and to make recommendations to the city manager based on public welfare and convenience.
- (b) In the event available funding is insufficient to purchase the development rights on all properties which are the subject of pending applications, the commission shall, at a regular or special meeting called for such purpose, review applications and evaluations provided by the program administrator and shall make a determination of OSAP ranking system points to be assigned to each application. Findings and recommendations of the commission shall be final and un-appealable.

- (c) In the event of disagreement among the members of the commission as to the number of points to be assigned to a given application, each member shall state the number of points he or she believes should be assigned and the average number of points so obtained, rounded upwards to the nearest point, shall constitute the decision of the commission. The commission shall promptly transmit a report of its findings and recommendations to the city manager.
- (d) In the event of a tie ranking, the commission shall re-evaluate the tying applications, giving consideration to the following:
 - (1) Preference shall be given to land under immediate threat of development.
 - (2) Preference shall be given to land located wholly or partially in the Fentress Airfield overly district, as established in the city zoning ordinance.
 - (3) Preference shall be given the land located wholly or partially in the Northwest River watershed protection district, as established in this chapter.If the tie is not resolved, the chairman of the agricultural advisory committee shall cast the deciding vote.
- (e) The commission shall promptly transmit a report of its findings and recommendations to the city manager.
- (f) If the commission finds that an application is not to be recommended for purchase of development rights due to insufficient ranking system points or other reason, nothing herein shall prohibit the landowner from resubmitting the application for consideration at a future time.
- (g) All discussion and deliberations concerning the evaluation of applications and assignment of points shall be conducted in an open meeting, notwithstanding allowable exemptions for property acquisitions in the Virginia Freedom of Information Act. All other exemptions from the open meeting requirements of the Virginia Freedom of Information Act shall continue to apply.
(Ord. No. 03-0-023, 2-25-03; Ord. No. 05-0-153, 11-22-05)

Sec. 26-580. Procedure for acquisition of development rights.

- (a) Upon reviewing the findings and recommendations of the commission, the city manager may ascertain the value of the development rights of the property, which value shall be equal to the difference between the value of the property without encumbrance by a preservation easement and the value of the property so encumbered. In all cases, the fair market value of each lot reserved for a future single-family dwelling, as permitted under the definition of "agricultural use" in section 26-574, shall be deducted from the overall value of development rights
- (b) The city manager shall contract with a qualified, independent appraiser ascertaining the value of the development rights, using the premises stated in subsection 26-579(c). Based on the independent appraisal, the city manager may make a written offer to purchase the development rights of the property. Prior to communicating any such

offer, however, the city manager may first elect to seek city council's preliminary approval of the offer. In no event shall the offer be binding on the city or the applicant.

- (c) All offers shall be subject to available funding, final approval of city council, and such terms and conditions as the city council or the city manager may deem appropriate. The offer shall also be conditioned upon the absence of any defects in title or other restrictions or encumbrances which may, in the opinion of the city attorney, adversely affect the city's interests in accomplishing the purposes of this article.
- (d) All written offers made to a landowner shall clearly state that:
 - (1) The offer is contingent on city council approval, funding and appropriation;
 - (2) The funds used to purchase development rights may include federal and state monies subject to restrictions on use;
 - (3) The offer is revocable by the city at any time prior to the authorized execution of a purchase agreement;
 - (4) The offer is contingent on the landowner's execution of a purchase agreement and preservation easement acceptable to the city attorney;
 - (5) The acceptance of the offer by the landowner may be revoked at any time prior to execution of the purchase agreement; and
 - (6) The preservation easement will be perpetual and non-revocable.
- (e) In the event the offer is accepted by the landowner, the city manager shall place the matter before the city council for approval. The city council may approve the purchase of development rights only with respect to such applications for which there is available funding, in a priority determined by points assigned under the OSAP ranking system, and only upon finding that the proposed terms and conditions of purchase, including the purchase price and manner of payment, are fair and reasonable and in furtherance of the purposes of this article. In the event there is sufficient available funding for the purchase of only a portion of the development rights included in the application, the landowner shall be given the opportunity to submit a revised application for a lesser amount of development rights equivalent in value to the amount of funding deemed available.
- (f) Consideration of applications for eligible properties, but for which there is insufficient funding in the then-current fiscal year, shall be deferred to the next fiscal year or until such other time as available funding is sufficient, unless the landowner withdraws the application. No preference shall be given to deferred or resubmitted applications except as indicated by the OSAP ranking system.
- (g) Within ten days of the landowner's execution of a perpetual preservation easement, the zoning administrator shall make a notation on the official zoning map to indicate the city's acquisition of development rights and the date thereof. No building permits shall be issued for such areas unless the zoning administrator verifies with the city attorney that the proposed building or structure is permitted under the preservation easement.

Sec. 26-581. Rights acquired; repurchases; exchanges.

- (a) No interest in land other than a perpetual preservation easement shall be acquired by the city pursuant to the provisions of this article. The city shall not exercise the power of eminent domain to acquire any preservation easement being offered to the city under this program.
- (b) The acquisition of a preservation easement by the city shall not extinguish any rights of the landowner except for the right to develop, improve or use the property for any purpose other than open space or agricultural uses, and shall not by right confer upon the public any right of entry or access, or any other rights, express or implied, unless expressly stated in the preservation easement signed by the landowner.
- (c) The preservation easement shall be perpetual; however, the landowner or successor in interest to the property that is subject to the easement may petition the city council to repurchase the development rights on such property upon the expiration of a minimum of 25 years from the date on which the preservation easement is recorded. The city council may, by vote of no less than three-fourths of all its members, and in accordance with all other procedural requirements then governing the sale of municipal interests in land, authorize the sale of such development rights to the petitioning party at the then-current fair market value of such development rights and upon such terms and conditions as deemed by city council to be fair and reasonable. No such sale shall be authorized, however, unless the city council determines by ordinance that:
 - (1) The sale of such development rights is essential to the orderly development and growth of the city; and
 - (2) The development of the property for nonagricultural uses would not be in conflict with the city zoning ordinance or the comprehensive plan in effect at the time of sale.
- (d) In each instance in which development rights to property are sold by the city back to the landowner or successor in interest, the purchaser shall dedicate to the city preservation easements that are:
 - (1) At least equal in fair market value to the development rights conveyed by the city;
 - (2) Of greater value as permanent open space or agricultural lands; and
 - (3) Of equivalent usefulness and location for use as permanent open space or agricultural lands as the property for which development rights are being conveyed.
- (e) The requirement for new preservation easements in subsection (d) may be waived by a three-fourths vote of city council, provided city council determines by ordinance that:
 - (1) The preservation easement upon the property that is the subject of the petition to repurchase development rights is no longer needed;
 - (2) Substitution of other preservation easements is not feasible; and
 - (3) No state or federal funds were used in connection with the acquisition of the development rights upon the property.

Example Language from Stevens County, WA:

CHAPTER 13.20

BUFFERS, MITIGATION, NONCONFORMING STRUCTURES AND REASONABLE USE
EXCEPTION

13.20.010 BUFFERS

The term "buffer" in the most general sense refers to a vegetated area that separates land uses. Buffers may surround wetlands or be adjacent to riparian areas with the intent of protecting these areas from adverse impacts. Fish and wildlife take advantage of the diversity of resources provided by buffers for habitat, breeding and movement. Healthy buffers typically consist of:

1. A moist microclimate (warmer in the winter and cooler in the summer) when compared to adjacent uplands.
2. Signs of disturbance due to natural events such as flooding, broken trees, snags, etc.
3. Structural diversity consisting of:
 - a. A canopy layer with a variety of coniferous and deciduous trees
 - b. A shrub/brush understory
 - c. A grass/herb ground cover
 - d. Higher vegetation productivity than the adjacent uplands.
 - e. The goal of this Title is to provide adequate buffers to maintain the functions and values of wetlands and/or riparian areas, using the best site-specific science rather than to rely on large buffer widths. Categorically requiring large buffer widths may needlessly encumber large quantities of private property, when it may be that buffers of smaller size and high quality would offer adequate protection. A buffer width should take into account both the sensitivity of the critical area being buffered, and the level of intensity of the adjacent land use.

13.20.012 GENERAL BUFFER REQUIREMENTS

(Amended by BOCC Res. #80-2004, July 6, 2004)

Wetland and riparian buffers (hereinafter referred to as 'buffers') and/or development setbacks shall be required for all regulated new development proposals in or adjacent to designated wetlands or water bodies. The following criteria shall apply to all buffers:

1. Buffers shall be measured on a horizontal plane in a landward direction from the wetland edge and/or the Ordinary High Water Mark (OHWM) as delineated in the field.
2. Required buffers shall retain existing vegetation in a natural condition, provided that an applicant may submit a vegetation management plan prepared by a qualified professional that allows ongoing maintenance and re-vegetation, particularly when enhancement of the buffer with native species is proposed.
3. Fertilizer, pesticides and herbicides should be used in required buffers only according to appropriate and specific labeling and directions, as provided by state and federal law, and in conjunction with a vegetation management plan.
4. Where buffer disturbance has or will occur in conjunction with regulated activities, re-vegetation with native plants, shrubbery or trees which will maintain the functions and values of the buffer area shall be required as mitigation.
5. Any wetland created, restored, or enhanced as compensation for approved wetland alterations shall also include as part of mitigation, a buffer appropriate to the category of the wetland being created, restored or enhanced.

6. An applicant may be required to record a notice or deed restriction of the presence of the critical area or associated buffer.
7. The applicant may be required to install permanent edge markers or signs along the boundary of the critical area or associated buffer. These markers may be made of a variety of materials such as fences, rocks, trees, hedgerows or other permanent vegetation.

13.20.014 BUFFER ALTERNATIVES

(Amended by BOCC Resolution #80-2004, July 6, 2004)

(1) Increasing Buffer Area

Standard buffer widths *shall* be increased on a site-by-site basis when the Administrator determines that a larger buffer is necessary to protect the functions and values of a wetland or riparian area. This determination shall be supported by appropriate documentation prepared by a qualified professional, showing that an increase is necessary based on *one* or more of the following:

- A. A larger buffer is needed to maintain critical habitat for existing, documented federal or state listed endangered, threatened or sensitive species or a species of local importance, or
- B. The buffer area or adjacent land is susceptible to severe erosion and standard erosion control measures will not effectively prevent adverse impacts, or
- C. The buffer area has minimal vegetative cover or slopes greater than 15 percent, or
- D. The proposed development has a density of greater than 1 dwelling unit per five acres.

(2) Averaging Buffer Area

Averaging buffer widths may modify standard buffer widths. Averaging may be allowed by the Administrator where the applicant successfully demonstrates through a report prepared by a qualified professional, that either:

- A. Averaging is necessary to avoid an extraordinary hardship caused by circumstances peculiar to the property; or
- B. The character of the buffer varies in slope, soils or vegetation and it would benefit from a wider buffer in places and would not be adversely impacted by a narrower buffer in other places.
- C. In addition to meeting the standard described in subsection A or B above, all of the following shall be met:
 - (i) Averaging will not adversely impact the riparian or wetland functions and values, and
 - (ii) The total area contained within the buffer after averaging is not less than that contained within the buffer prior to averaging. In no instance shall the buffer width be reduced by more than 50% of the standard buffer or be less than 50 feet, and
 - (iii) That low intensity land uses would be located adjacent to areas where the buffer width is reduced, and
 - (iv) The presence of a critical area and associated buffer has been documented by the recordation of a notice or deed restriction of the presence of a buffer area, and
 - (v) Permanent edge markers along the boundary of the buffer area have been installed,

- and
- (vi) A mitigation plan has been prepared by a qualified professional, approved by the Administrator, and incorporated into the proposal.

22. Stormwater Outfalls

At the time of compiling this document, the Virginia Department of Conservation and Recreation (DCR) was in the process of revising the Virginia Stormwater Management Program (VSMP) Permit Regulations to specify the minimum technical criteria for a stormwater management program and to establish statewide standards for stormwater management from land-disturbing activities. As a result, JRA recommends waiting for the revisions to be completed before making changes to or implementing stormwater ordinances. However, examples of code language have been provided for selected principles within this category for reference.

a. Is stormwater required to be treated for quality before it is discharged?

Example language from Fluvanna County, VA DRAFT Ordinance:

An Ordinance for the Control of Post Construction Stormwater Runoff

5.2 Structural Stormwater Management Practices

4. Pretreatment Requirements

Every stormwater treatment practice shall have an acceptable form of water quality pretreatment, in accordance with the pretreatment requirements found in the current (Virginia Stormwater Management) Handbook.

b. Are there effective design criteria for stormwater best management practices (BMPs)?

Example language from Fluvanna County, VA DRAFT Ordinance:

An Ordinance for the Control of Post Construction Stormwater Runoff

Section 1. General Provisions.

1.3. Applicability

..., decisions on permitting and on-site stormwater requirements shall be governed by the stormwater sizing criteria found in the current Virginia Stormwater Management Handbook. This criteria is dependent on the amount of impervious area created by the redevelopment and its impact on water quality. Final authorization of all redevelopment projects will be determined after a review by the County.

c. Can stormwater be directly discharged into a jurisdictional wetland without pretreatment?

Example language from Fluvanna County, VA DRAFT Ordinance:

An Ordinance for the Control of Post Construction Stormwater Runoff

5.3 Water Quality

Unless judged by the County for a project to be exempt, the following criteria shall be addressed for stormwater management at all sites:

1. All stormwater runoff generated from land development and land use conversion activities shall not discharge untreated stormwater runoff directly into a jurisdictional wetland or local water body without adequate treatment. Where such discharges are proposed, the impact of the proposal on wetland functions shall be assessed using a method acceptable to the County. In no case shall the impact on functions be any less than allowed by the Army Corp of Engineers (ACE) or the Department of Environmental Quality.

Example language from StormwaterCenter.net *Model Ordinance for the Control of Post Construction Stormwater Runoff*:

<http://www.stormwatercenter.net/Model%20Ordinances/Post%20Construction%20Stormwater%20Management/Final%20Model%20Stormwater%20Control.htm>

Section 5. General Performance Criteria for Stormwater Management

- (B) All stormwater runoff generated from new development shall not discharge untreated stormwater directly into a jurisdictional wetland or local water body without adequate treatment. Where such discharges are proposed, the impact of the proposal on wetland functional values shall be assessed using a method acceptable to the (*jurisdictional stormwater authority*). In no case shall the impact on functional values be any less than allowed by the Army Corp of Engineers (ACE) or the (*Appropriate State Agency*) responsible for natural resources.”

d. Does a floodplain management ordinance that restricts or prohibits development within the 100-year floodplain exist?

Example language from Powhatan County, VA Code:

Powhatan County Zoning Ordinance
Article 19. Flood Plain District (FP)

19.1 Statement of Intent

The intent of this Article is to establish a Flood Plain District requiring the issuance of permits for development, providing for certain minimum standards for development, and providing factors and conditions for variances to the terms of this District.

19.2 Purpose

The purpose of these provisions is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

1. Regulating uses, activities, and development which, acting alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood height, velocities and frequencies.
2. Restricting or prohibiting certain uses, activities, and development from locating within areas subject to flooding.
3. Requiring all those uses, activities, and developments that do occur in flood prone areas to be protected and/or flood-proofed against flooding and flood damage.
4. Protecting individuals from buying lands and structures which are unsuited for intended purposes because of flood hazards.

19.3 Applicability

These provisions shall apply to all lands within the jurisdiction of Powhatan County and identified as being in the one hundred (100) year flood plain by the Federal Insurance Administration.

19.4 Definitions

For the purposes of this Article, the following words and terms shall have the meanings ascribed to them in this section:

1. **BASE FLOOD/ONE-HUNDRED YEAR FLOOD:** A flood that, on the average, is likely to occur once every one hundred (100) years (i.e. that has a one (1) percent chance of occurring each year, although the flood may occur in any year).
2. **BASE FLOOD ELEVATION (BFE):** The Federal Emergency Management Agency designated one hundred (100) year water surface elevation.
3. **BASEMENT:** Any area of the building having its floor subgrade (below ground level) on all sides.
4. **BOARD OF ZONING APPEALS:** The Board appointed to review appeals made by individuals with regard to decisions of the Zoning Administrator in the interpretation of this Article.
5. **DEVELOPMENT:** Any man-made change to improved or unimproved real estate including but not limited to buildings or other structures, the placement of mobile or manufactured homes, streets and other paving, utilities, filling, grading, excavation, mining, dredging or drilling operations or the storage of equipment or materials.
6. **FLOOD PLAIN:** Any land area susceptible to being inundated by water from any source.

7. FLOODWAY: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
8. RECREATIONAL VEHICLE: A vehicle which is (A) built on a single chassis; (B) four hundred (400) square feet or less when measured at the largest horizontal projection; (C) designed to be self-propelled or permanently towable by a light duty truck; and (D) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.
9. SUBSTANTIAL DAMAGE: Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.
10. SUBSTANTIAL IMPROVEMENT: Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the "start of construction" of the improvement. The term includes structures which have incurred "substantial damage" regardless of the actual repair work performed. The term does not, however, include either: (1) any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, or (2) any alteration of an "historic structure", provided that the alteration will not preclude the structure's continued designation as an "historic structure".

19.5 Permitted Uses

1. Agricultural uses, including crop, nursery stock and tree farming, truck gardening, livestock grazing and other similar uses.
2. Hunting, fishing and wildlife preserves, and boat landings.
3. Railroads, streets, bridges, and public utility transmission and distribution lines.
4. Public parks and playgrounds, sports areas, nature areas and outdoor private clubs.
5. No principal structures may be erected in this District, however, structures incidental to the permitted uses are permitted, e.g. picnic shelter, etc.

19.6 Compliance and Liability

1. No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged or structurally altered except in full compliance with the terms and provisions of this Article and any other applicable Ordinances and regulations which apply to uses within the jurisdiction of this Ordinance.
2. The degree of flood protection sought by the provisions of this Article is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This

Article does not imply that districts outside the Flood plain District or that land uses permitted within such District will be free from flooding or flood damages.

3. This Article shall not create liability on the part of Powhatan County, or any officer or employee thereof, for any flood damages that result from reliance on this Article or any administrative decision lawfully made there under.

19.7 Abrogation and Greater Restrictions

This Article supersedes any Ordinance currently in effect in flood-prone district. However, any underlying Ordinance shall remain in full force and effect to the extent that its provisions are more restrictive than this Article.

19.8 Description of District

1. Basis of District. The Flood Plain District shall include areas subject to inundation by waters of the one hundred (100) year flood. The basis for the delineation of the district shall be the one hundred (100) flood elevations or profiles contained in the Flood Insurance Study (FIS) and the accompanying Flood Boundary and Floodway Maps (FBFMS) and the Flood Insurance Rate Maps (FIRMS) for Powhatan County prepared by the Department of Housing and Urban Development and the Federal Emergency Management Agency, Federal Insurance Administration, dated September 15, 1978, as amended.

a. The Floodway Area is delineated, for the purposes of this Article, using the criterion that certain areas within the flood plain must be capable of carrying the waters of the one hundred (100) year flood without increasing the water surface elevation of that flood more than one (1) foot at any point. The areas included in this area are specifically defined in Table 2 of the above Flood Insurance Study and shown on the accompanying Flood Boundary and Floodway Maps or Flood Insurance Rate Maps.

b. The Flood-Fringe Area shall be that area of the one hundred (1) year flood plain not included in the Floodway Area. The basis for the outermost boundary of the area shall be the one hundred (100) year flood elevations contained in the flood profiles of the above-referenced Flood Insurance Study and as shown on the accompanying Flood Boundary and Floodway Maps or Flood Insurance Rate Maps.

c. The Approximated Flood Plain District shall be that flood plain area for which no detailed flood profiles or elevations are provided, but where a one-hundred (100) year flood plain boundary has been approximated. Such areas are shown as Zone A on the Flood Boundary and Floodway Maps and the Flood Insurance Rate Maps. For these areas, the one hundred (100) flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one hundred (100) year flood elevation cannot be determined for this area using other sources of data, such as the U.S. Army Corps of Engineers Flood Plain Information Reports, U. S. Geological Survey Flood-prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this elevation in accordance with hydraulic analyses shall be undertaken only by professional engineers or others of technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the governing body.

2. Overlay Concept

- a. The Flood Plain District described above shall be overlays to the existing underlying area as shown on the Official Zoning Ordinance Maps, and as such, the provisions for the Flood Plain District shall serve as a supplement to the underlying district provisions.
- b. Any conflict between the provisions or requirements of the Flood Plain District and those of any underlying district, the more restrictive provisions and/or those pertaining to the Flood Plain District shall apply.
- c. In the event any provisions concerning a Flood Plain District are declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

19.9 Official Flood Plain Map

The boundaries of the Flood Plain District are established as shown on the Flood Boundary and Floodway Maps and the Flood Insurance Rate Maps which is declared to be a part of this Ordinance and which shall be kept on file in the office of the Zoning Administrator of Powhatan County.

19.10 District Boundary Changes

The delineation of the Flood Plain District may be revised by the Board of Supervisors of Powhatan County where natural or man-made changes have occurred and/or more detailed studies have been conducted or undertaken by the U.S. Army Corps of Engineers or other qualified agency, or an individual documents the need for such change. However, prior to any such change, approval must be obtained from the Federal Insurance Administration.

19.11 Interpretation of District Boundaries

Initial interpretations of the boundaries of the Flood Plain District shall be made by the Zoning Administrator.

Should a dispute arise concerning the boundaries of the District, the Board of Zoning Appeals shall make the necessary determination. The person(s) questioning or contesting the location of the district boundaries shall be given a reasonable opportunity to present his/her case to the Board of Zoning Appeals and to submit his/her own technical evidence, if he/she so desires.

19.12 District Provisions

1. Permit Requirements. All development of structures occurring within the Flood Plain District shall be undertaken only upon the issuance of a building permit. Such development shall be undertaken only in strict compliance with the provisions of this Article and with all other applicable codes and Ordinances, such as the Powhatan County Subdivision Ordinance and the Virginia Uniform Statewide Building Code.

Prior to the issuance of any such permit, the Zoning Administrator shall require all applications to include compliance with all applicable state and federal laws. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of

the channels or flood ways of any watercourse, drainage ditch, or any other drainage facility or system.

2. Alteration or Relocation of Watercourse. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc, within Powhatan County, a permit shall be obtained from the U.S. Army Corps of Engineers, the Virginia Department of Environmental Quality and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Further notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Division of Soil and Water Conservation (Department of Conservation and Recreation), and the Federal Insurance Administration.

3. Site Plans and Permit Applications. All applications for development in the Flood Plain District and all building permits issued for the Flood Plain District shall incorporate the following information:

- a. For structures that have been elevated, the elevation of the lowest floor (including basement).
- b. For structures that have been flood-proofed (non-residential only), the elevation to which the structure has been flood-proofed.
- c. The elevation of the one hundred (100) year flood.
- d. Topographic information showing existing and proposed ground elevations.

4. Recreational Vehicles. Recreational vehicles placed on sites shall either: (i) be on the site for fewer than one hundred eighty (180) consecutive days, be fully licensed and ready for highway use, or (ii) meet the permit requirements for placement and the elevation and anchoring requirements for manufactured homes in accordance with the applicable provisions of the Virginia Uniform Statewide Building Code. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices.

19.13 Flood-Fringe Area, Approximated Flood Plain District, Floodway Area and Floodway District

In the Flood-Fringe and Approximated Flood Plain District, the development and/or use of land shall be permitted in accordance with the regulations of the underlying district provided that all such uses, activities, and/or development shall be undertaken in strict compliance with the flood proofing and related provisions contained in the Virginia Uniform Statewide Building Code and all other applicable codes and Ordinances.

Within the Approximated Flood Plain District the applicant shall also delineate a floodway area based on the requirement that all existing and future development not increase the one hundred (100) year flood elevation more than one (1) foot at any one point. The engineering principle-equal reduction of conveyance--shall be used to make the determination of increased flood heights.

In the Floodway Area and Floodway District no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in the one hundred (100) year flood elevation.

19.14 Design Criteria for Utilities and Facilities

1. Sanitary Sewer Facilities. All new or replacement sanitary sewer facilities, and private package sewage treatment plants (including all pumping stations and collector systems) shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into the flood waters. In addition, they should be located and constructed to minimize or eliminate flood damage and impairment.
2. Water Facilities. All new or replacement water facilities shall be designed to minimize or eliminate infiltration of flood waters into the system and be located and constructed to minimize or eliminate flood damages.
3. Drainage Facilities. All storm drainage facilities shall be designed to convey the flow of surface waters without damage to persons or property. The system shall ensure drainage away from buildings and on-site waste disposal sites. The Board of Supervisors of Powhatan County may require a primarily underground system to accommodate frequent floods and a secondary surface system to accommodate larger, less frequent floods. Drainage plans shall be consistent with local and regional drainage plans. The facilities shall be designed to prevent the discharge of excess runoff onto adjacent properties.
4. Utilities. All utilities, such as gas lines, electrical and telephone systems, being placed in flood-prone areas shall be located, elevated (where possible) and constructed to minimize the chance of impairment during a flooding occurrence.
5. Streets and Sidewalks. Streets and sidewalks shall be designed to minimize their potential for increasing and aggravating the levels of flood flows without unduly increasing flood heights.

19.15 Variances: Factors to be Considered

Whenever any person is aggrieved by a decision of the Zoning Administrator with respect to the provisions of this Article, it is the right of that person to appeal to the Board of Zoning Appeals for a variance. Such appeal shall be filed by application subject to the procedures and regulations of Article 34 of this Ordinance. The determination of the Board of Zoning Appeals shall be the final administrative decision in all cases. In passing upon applications for variances, the Board of Zoning Appeals shall satisfy all relevant factors and procedures specified in other sections of this Ordinance and consider the following additional factors:

1. The danger to life and property due to increased flood height and/or to velocity caused by encroachments. No variance shall be granted for any proposed use, development, or activity within any Floodway Area that will cause any increase in the one hundred (100) year flood elevation.
2. The danger that materials may be swept on to other lands or downstream to the injury of others.
3. The proposed water supply and sanitation systems and the ability of these systems to prevent diseases, contamination and unsanitary conditions.
4. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.

5. The importance of the service provided by the proposed facility to the community.
6. The requirements of the facility for a waterfront location.
7. The availability of alternative locations not subject to flooding for the proposed use.
8. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.
9. The relationship of the proposed use to the Comprehensive Plan and the flood plain management program for the area.
10. The safety of access by ordinary and emergency vehicles to the property in time of flood.
11. The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters expected at the site.
12. The repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structures continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
13. Such other factors which are relevant to the purposes of this Article.

The Board of Zoning Appeals may refer any application and accompanying documentation pertaining to any request for a variance to any engineer or other qualified person or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, the adequacy of the plans for flood protection and other related matters.

Variances shall be issued only after the Board of Zoning Appeals has determined that the granting of such will not result in (a) unacceptable or prohibited increases in flood heights, (b) additional threats to public safety, (c) extraordinary public expense, (d) creation of nuisances, and will not (e) cause fraud or victimization of the public, or (f) conflict with local laws or Ordinances.

Variances shall be issued only after the Board of Zoning Appeals has determined that the variance will be the minimum required to provide relief from any hardship to the applicant.

The Board of Zoning Appeals shall notify the applicant for a variance, in writing, that the issuance of a variance to construct a structure below the one hundred (100) year flood elevation (a) increases risks to life and property, and (b) will result in increased premium rates for flood insurance.

A record shall be maintained of the above notification as well as all actions granting the variances, including justification for their issuance. Any variances which are issued shall be noted in the annual or biennial report submitted to the Federal Insurance Administrator.

19.16 Existing Structure in Flood Plain Districts

A structure or use of a structure on premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions, may be continued subject to the following conditions:

1. Existing structures in the Floodway Area shall not be expanded or enlarged unless it has been determined through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed expansion would not result in any increase in the one hundred (100) year flood elevation.
2. Any modification, alteration, repair, reconstruction or improvement of any kind to a structure and/or use located in any Flood Plain District to an extent or amount of less than fifty (50) percent of its market value shall be elevated and/or flood-proofed to the greatest extent possible.
3. The modification, alteration, repair, reconstruction or improvement of any kind to a structure and/or use, regardless of its location in a Flood Plain District, to an extent or amount of fifty (50) percent or more of its market value shall be undertaken only in full compliance with the provisions of this Ordinance and the Virginia Uniform Statewide Building Code.

19.17 Statement of Policy

It is the policy of the County of Powhatan that in enforcing the provisions and regulations of the Flood Plain District of this Ordinance, that it is the intent of the Board of Supervisors to comply with all applicable requirements of the National Flood Insurance Program and the Federal Emergency Management Agency, allowing the citizens of Powhatan County to become eligible for flood insurance.

As a matter of clarification, it is the policy of the Powhatan County Board of Supervisors to require a permit for all permitted development (including but not limited to, the subdivision of land, construction of buildings and structures, fill or any combination of these) in the Flood Plain District. Such permit shall be granted only after necessary permits from the Department of Environmental Quality and all other applicable State and Federal agencies have been obtained.

This Policy Statement shall be a regulation of this (Floodplain) District.

Example language from New Kent County, VA Code:

Chapter 98. Zoning

Article II. General Area, Frontage, Yards, Height, Setback, Performance Requirements and Standards

Sec. 98-57. Floodplain.

(a) *Purpose.* The purpose of the provisions of this section is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

- (1) Regulating uses, activities and development which, alone or in combination with other existing or future uses, activities and development, will cause unacceptable increases in flood heights, velocities and frequencies.

- (2) Restricting or prohibiting certain uses, activities and development from locating with areas subject to flooding.
 - (3) Requiring all those uses, activities and developments that do occur in flood prone areas to be protected and/or flood proofed against flooding and flood damage.
 - (4) Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.
- (b) *Applicability.* The provisions of this section shall apply to all lands within the jurisdiction of the county and identified as being in the 100-year floodplain by the Federal Insurance Administration.
- (c) *Compliance and liability.*
- (1) No land shall be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged or structurally altered except in full compliance with the terms and provisions of this section and any other applicable ordinances and regulations which apply to uses within the jurisdiction of this section.
 - (2) The degree of flood protection sought by the provisions of this section is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur on rare occasions. Flood heights may be increased by manmade or natural causes, such as ice jams and bridge openings restricted by debris. This section does not imply that areas outside the floodplain area or that land uses permitted within such area will be free from flooding or flood damages.
 - (3) This section shall not create liability on the part of the county or any officer of employee thereof for any flood damages that result from reliance on this section or any administrative decision lawfully made there under.
- (d) *Abrogation and greater restrictions.* This section supersedes any ordinance currently in effect in flood prone areas. However, any underlying ordinance shall remain in full force and effect to the extent that its provisions are more restrictive than this section.
(Code 1999, § 9-62; Ord. No. O-15-08(R2), 1-12-2009)

Example language from Fluvanna County, VA Draft Ordinance:

Section 5. General Criteria for Stormwater Management

5.1 General

10. Construction of stormwater management impoundment structures within a Federal Emergency Management Agency (FEMA) designated 100-year floodplain shall be avoided to the extent possible. When this is unavoidable, all stormwater management facility construction shall be in compliance with all applicable regulations under the National Flood Insurance Program, 44 CFR Part 59.

Section 2. Erosion Control, Stormwater, and Other Resource Issues, Addendum A

A1. Erosion and Sediment Control

Has the erosion and sediment control ordinance been updated to incorporate changes to the State Law & Regulations, effective July 2003?

Example language adapted from Chesterfield County, VA Code:

Chapter 8 Erosion and Sediment Control

Sec. 8-1.1. Adoption of state erosion control regulations.

Pursuant to Title 10.1, Chapter 5, Article 4 of the Code of Virginia, as amended by the Virginia General Assembly through 2003, effective July 1, 2003, Chesterfield County adopts the Virginia Erosion and Sediment Control Regulations as the authority that governs the county's local erosion and sediment control program.

Does the local code regulate land disturbing activities that are smaller than the State standard (10,000 sq feet)?

Example language from Blacksburg, VA Code:

ARTICLE I. IN GENERAL

Section 10-102. Definitions.

Land-disturbing activity shall mean any land change that may result in soil erosion from water or wind and the movement of sediments into state water or onto lands in the commonwealth, including, but not limited to, clearing, grading, excavating, transporting and filling of land, except that the term shall not include:

(9) Disturbed land areas of less than five thousand (5,000) square feet in size;

Example language from New Kent County, VA Code:

ARTICLE II. Chesapeake Bay Preservation Areas

Sec. 94-39. Development criteria.

The use, development or redevelopment of land the Chesapeake Bay Preservation Areas must meet or exceed the following performance criteria.

(6) Any land-disturbing activity that exceeds an area of 2,500 square feet (including construction of all single family houses, septic tanks and drain fields, or otherwise as required in Code of Virginia, § 10.1-560) shall comply with the applicable erosion and sediment control requirements of chapter 82, article II of this Code.

Do local codes or procedures provide verification that construction sites of one (1) acre or more have obtained a Virginia Stormwater Management Permit through DCR?

Example language from Hanover County, VA Code:

ARTICLE IV. Municipal Separate Storm Sewer System (MS-4) Management Program
Sec. 10-72. Applicability and additional requirements.

The provisions of this article shall be applicable to the urbanized area of the county as determined by the latest decennial census and as described in the "Urban Area Outline Map (Census 2000)". In addition to other applicable requirements, stormwater pollution prevention plans in conformance with the Virginia Stormwater Management Program (VSMP) Permit regulations and evidence of either a valid state stormwater permit, or of the filing of a permit application, shall be required as a component of plans submitted pursuant to the provisions of article I (Erosion and Sediment Control) and article II (Chesapeake Bay Preservation) of this chapter, for the following:

- (a) Construction activities that result in land disturbance greater than or equal to one (1) acre;
- (b) Construction activities that result in land disturbance greater than or equal to two thousand five hundred (2,500) square feet within a Chesapeake Bay Preservation Area, except for single family residences separately built, disturbing less than one (1) acre and not part of a larger common plan of development, including additions or modifications to existing single family detached residential structures.

Example language from Henrico, VA Code:

ARTICLE II. EROSION AND SEDIMENT CONTROL*
Sec. 10-35. Contents of plan.

The standards contained within the Virginia Erosion and Sediment Control Regulations, the Virginia Erosion and Sediment Control Handbook, the Virginia Stormwater Management Handbook, and the Henrico County Environmental Program Manual are to be used by the applicant in the preparation and submission of an erosion and sediment control plan. The plan-approving authority shall be guided by the same standards, regulations and guidelines in considering the adequacy of a plan submittal. When the standards vary between the publications, the state regulations shall take precedence.

- (a) *Generally.* The erosion and sediment control plan shall detail the methods and techniques to be utilized in the control of erosion, sedimentation and stormwater. The erosion and sediment control plan shall contain the following components:
 - (11) A statement by the permittee acknowledging that a National Pollutant Discharge Elimination System (NPDES) permit application, if required, has been made for land disturbing activities of 2,500 square feet or greater.

A2. Stormwater Management

At the time of compiling this document, the Virginia Department of Conservation and Recreation (DCR) was in the process of revising the Virginia Stormwater Management Program (VSMP) Permit Regulations to specify the minimum technical criteria for a stormwater management program and to establish statewide standards for stormwater management from land-disturbing activities.

The VSMP, which was delegated to DCR in January 2005, mandated management of stormwater quality and quantity for land-disturbing activities of one acre or greater or part of a common plan of development. While DCR currently permits, inspects, and enforces the VSMP on all construction sites meeting these conditions, localities will be delegated this responsibility within 12-18 months after the new regulations have been adopted. Localities covered by an MS4 permit and/or within the Chesapeake Bay Preservation Act area will be required to adopt a local stormwater management program and issue the general stormwater construction permit, while all other localities will be able to opt-in to the program. DCR will implement the local stormwater program and continue to issue the general permit in localities not electing to adopt an approved stormwater management program.

The three components of the VSMP regulations under the revision process include: the minimum technical criteria based on nutrient loadings; local program delegation requirements; and permit fees. In addition, DCR is simultaneously updating the Virginia Stormwater Management Handbook and designing a web-based Stormwater BMP Clearinghouse (<http://www.vwrrc.vt.edu/SWC/index.html>).

The regulations were adopted in December, 2009, and then suspended. The 2010 General Assembly adopted HB 1120 and SB 395 that stipulate that the regulations will become effective within 280 day of establishment by EPA of the Chesapeake Bay TMDL, but no later than December 1, 2011. DCR has convened a regulatory advisory panel (RAP) to make additional modifications to the regulations.

Because the technical criteria revisions were not finalized at the time this document was released, the standards presented herein represent general guidelines (or good standards of practice) for local stormwater ordinances. Once the state regulations are finalized, the particular elements from the state program should be incorporated into the local codes.

In addition, local stormwater managers may want to consult the national post-construction stormwater ordinance developed by the Center for Watershed Protection as part of a national post-construction guidance manual. The model ordinance can be found at the link below at Tool #3.

http://www.cwp.org/documents/cat_view/76-stormwater-management-publications/90-managing-stormwater-in-your-community-a-guide-for-building-an-effective-post-construction-program.html?limit=40&limitstart=0&order=name&dir=ASC

Does the local code contain a stormwater management ordinance, or stormwater criteria in zoning or other ordinances?

Example language from Stafford County, VA Code:

Stormwater Ordinance, Section 21.5-2(e)

(e) Low-impact development sites.

- (1) The use of low-impact development site planning and integrated management practices shall be encouraged to control stormwater runoff at the source and more closely approximate predevelopment runoff conditions.
- (2) Low-impact development stormwater management design plans developed consistent with the requirements of this subsection shall satisfy the water quality and quantity performance criteria of subsections (b), (c) and (d).
- (3) The design criteria, hydrologic analysis and computational procedures for low-impact development stormwater management design plans shall be those of the low-impact development design manuals.
- (4) Low-impact development stormwater management design plans shall not conflict with existing state or Stafford County laws, ordinances, regulations or policies.
- (5) Storm drainage easements shall be recorded to identify the locations of integrated management practices on lots or parcels. The property owner shall not remove or structurally alter integrated management practices without prior written approval from the program administrator.
- (6) Stormwater runoff from parking lots shall utilize stormwater management infiltration facilities and/or stormwater management filtering systems. These shall be placed within or near the parking lot islands.

Example language from New Kent County, VA Code:

Chapter 82. Environment

Article III. Stormwater Management*

*State law references: Stormwater management, Code of Virginia, § 10.1-603.2 et seq.; local regulation of stormwater, Code of Virginia, § 15.2-2114.

Sec. 82-71. Purpose of article.

In addition to an erosion and sediment control plan, a stormwater management plan shall be submitted as part of the plan of development process required by this article and in conjunction with site plan or subdivision plan preliminary approval. The stormwater management plan shall provide adequate water quality protection in accordance with the goals and objectives of chapter 94, article II of this Code.

(Code 1999, § 9-11)

Sec. 82-72. Stormwater management criteria.

- (a) The following stormwater management options shall be considered adequate to control stormwater runoff:

- (1) Incorporation on the site of best management practices that achieve the required control as detailed in section 82-73;
 - (2) Compliance with a locally adopted regional stormwater management program incorporating pro rata share payments pursuant to the authority provided in Code of Virginia, § 15.2-2243 that results in achievement of equivalent water quality protection.
 - (3) For a redevelopment site that is completely impervious as currently developed, restoring a minimum 20 percent of the site to vegetated open space.
- (b) Any maintenance, alteration, use or improvement to an existing structure which does not degrade the quality of surface water discharge, as determined by the county director of planning, may be exempted from the below stormwater management requirements.
- (c) Stormwater management criteria for redevelopment shall apply to any redevelopment, whether or not it is located within an intensely developed area designated by the county.
- (Code 1999, § 9-12)

Sec. 82-73. Minimum requirements.

For any development or redevelopment, stormwater runoff shall be controlled by the use of best management practices that achieve the following:

- (1) The post-development peak runoff rate from a two-year storm and a ten-year storm, considered individually, shall not exceed the predevelopment rates.
- (2) For development, the post-development nonpoint source pollution runoff load shall not exceed the predevelopment load, based on the calculated average land cover conditions as determined by the director of planning. This subsection shall not apply to areas not located within a Chesapeake Bay Preservation Area.
- (3) For redevelopment sites, the existing nonpoint source pollution runoff load shall be reduced by at least ten percent. The county may waive or modify this requirement for redevelopment sites that originally incorporated best management practices for stormwater runoff quality control, provided that the following provisions are satisfied:
 - a. In no case may the post-development nonpoint source pollution runoff load exceed the predevelopment load.
 - b. Runoff pollution loads must have been calculated and the BEST MANAGEMENT PRACTICES selected for the purpose of controlling nonpoint source pollution and to provide adequate quality control.
 - c. If best management practices are structural, evidence shall be provided that facilities are currently in good working order and performing at the design levels of service. The director of planning may require a review of both the original structural design and maintenance plans to verify this subsection. A maintenance agreement will be required to ensure compliance with this article on forms acceptable to the county. This subsection shall not apply to areas not located within a Chesapeake Bay Preservation Area.
- (4) For redevelopment, both the predevelopment and post-development loadings shall be calculated by the same procedure. However, where the design data is available, the

original post-development nonpoint source pollution loadings can be substituted for the existing development loadings.
(Code 1999, § 9-13)

Sec. 82-74. Exemptions and exceptions.

Exemptions and exceptions to the requirements of this article are contained in chapter 94, article II, Chesapeake Bay Preservation Areas, section 94-45 and section 94-46 of this Code.
(Code 1999, § 9-14)

Sec. 82-75. Contents.

- (a) The stormwater management plan shall contain maps, charts, graphs, tables, photographs, narrative descriptions, explanations and citations to supporting references as appropriated to communicate the information required by this article. At a minimum, the stormwater management plan shall contain the following:
- (1) Location and design of stormwater control devices and best management practices.
 - (2) Procedures for implementing nonstructural stormwater control practices and techniques.
 - (3) Predevelopment and post-development and nonpoint source pollution loading with supporting documentation of all utilized coefficients and calculations.
 - (4) Predevelopment and post-development peak runoff rates from the site for both a two-year storm and ten-year storm, considered individually, with supporting documentation of all utilized coefficients and calculations.
 - (5) For facilities, verification of structural soundness, including a professional engineer or class III B surveyor certification.
- (b) The plan shall establish a long-term schedule for inspection and maintenance of stormwater management facilities that includes all maintenance requirements and persons responsible for performing maintenance. A maintenance agreement shall be executed between the responsible party and the county.

Sec. 82-76. Performance assurances.

Performance assurances shall be provided that all best management practices required in plans of development shall be constructed to comply with the performance criteria set forth therein. The form of agreement and type of bond, letter of credit or other security shall be to the satisfaction of and approved by the county attorney. The amount of bond, letter of credit or other security and designated length of completion time shall be set by the director of planning.

Example language from Albemarle County, VA Code:

[http://www.albemarle.org/upload/images/forms_center/departments/county_attorney/forms/Albemarle County Code Ch17 Water Protection.pdf](http://www.albemarle.org/upload/images/forms_center/departments/county_attorney/forms/Albemarle%20County%20Code%20Ch17%20Water%20Protection.pdf).

Chapter 17. Water Protection

Article III. Stormwater Management and Water

Division 1. Plans

Sec. 17-300 Applicability.

Each owner shall comply with the requirements of this article prior to commencing any land development, or allowing any land development to occur, on his property and at all times thereafter.

Sec. 17-301 Designation of water resources areas.

In order to better effectuate the purposes of this article, all of the land within the county is hereby designated as being within one or more of the following water resources areas:

A. *Development areas*: Development areas are those areas of land within the county designated as development areas in the land use element of the comprehensive plan, and as shown on the official map of the land use element.

B. *Areas of infill and redevelopment*: Areas of infill and redevelopment are those areas of land within the county that are: (i) within a development area; and (ii) designated as areas of infill and redevelopment for purposes of this article by the board of supervisors, and as shown on the official map adopted showing such areas. The board of supervisors shall designate such areas based on a finding that existing development has altered severely the natural condition of the area, including the presence of vegetation, and that infill and redevelopment activities would serve other community and comprehensive plan goals.

C. *Water supply protection areas*: Water supply protection areas are those areas of land within the county that are within the watershed of a public water supply reservoir or water supply intake, and such areas shall consist of all land within the county that drains naturally to the South Fork Rivanna Reservoir, Beaver Creek Reservoir, Totier Creek Reservoir, Sugar Hollow Reservoir, Ragged Mountain Reservoir, Chris Greene Lake, the North Fork Rivanna River intake, and to any impoundment or water supply intake designated in the future by the board of supervisors as a public water supply reservoir.

D. *Other rural land*: Other rural land consists of those areas of land that are not within a development area, an area of infill and redevelopment, or a water supply protection area.

Sec. 17-302 Overlapping water resources areas.

If a land development is or will be on land within both a water supply protection area and another type of water resources area, the requirements of the water supply protection area shall apply.

For the remaining text of this code, see

http://www.albemarle.org/upload/images/forms_center/departments/county_attorney/forms/Albemarle_County_Code_Ch17_Water_Protection.pdf.

Does the local stormwater ordinance include reference to the State Stormwater Management Handbook or a local design manual?

Example language from New Kent County, VA Code:

ARTICLE II. Erosion and Sediment Control (could also be incorporated into a SWM ordinance)

Sec. 82-33. Standards.

Pursuant to Code of Virginia, § 10.1-562, the county hereby adopts the regulations, references, guidelines, standards and specifications promulgated by the Virginia Soil and Water Conservation Board for the effective control of soil erosion and sedimentation deposition to prevent the unreasonable degradation of properties, stream channels, waters, and other natural resources. Said regulations, references, guidelines, standards, and specifications for erosion and sedimentation control are included in, but not limited to, the "Virginia Erosion and Sediment Control Regulations," the Virginia Stormwater Management Handbook, and the Virginia Erosion and Sediment Control Handbook, as amended from time to time. (Ord. No. O-12-01, 11-5-2001; Ord. No. O-29-02, 12-9-2002)

Example language from Fluvanna County, VA DRAFT Ordinance:

An Ordinance for the Control of Post Construction Stormwater Runoff

1.6. Stormwater Management Handbook

The County will utilize the policy, criteria and information including specifications and standards of the Handbook, for the proper implementation of the requirements of this ordinance. This Handbook includes a list of acceptable stormwater treatment practices, including the specific design criteria for each stormwater practice. The Handbook may be updated and expanded from time to time, based on improvements in engineering, science, monitoring and local maintenance experience. Stormwater treatment practices that are designed and constructed in accordance with these design and sizing criteria will be presumed to meet the minimum water quality performance standards.

Example language from Nelson County, VA Code:

ARTICLE III. Erosion and Sediment Control

Sec. 9-54. Regulated land-disturbing activities; submission and approval of plans; contents of plans.

(c) All permanent stormwater facilities must be designed by a professional engineer and must meet the specifications of the latest edition of the Virginia Stormwater Management Handbook.

Does the local ordinance or design standards require extended detention of the 1-year, 24 hour storm?*

As pervious surfaces such as fields and forests are converted to impervious surfaces, both the volume of runoff, and the frequency of "channel-forming" events increases substantially. Research suggests that this change in hydrology can cause channels to expand to two to five times their original size. Channel erosion, on average, is estimated to account for 66% to 75% of the sediment load in urban watersheds. Furthermore, available data suggest that the most commonly practiced form of channel protection, 2-year control, does not reduce channel erosion and may actually increase the amount of time the channel is exposed to erosive flows.

Extended detention of the one-year storm event:

In this option, the 1-year, 24-hour storm is detained for between 12 and 24 hours. The premise for this criterion is that runoff would be stored and released in such a gradual manner that critical erosive velocities would seldom be exceeded in downstream channels. The required volume needed for 1-year extended detention is significant; it is roughly equivalent to the required volume needed for peak discharge control of the 5- to 10-year storm. Modeling based on a Maryland site demonstrated that the 1-year 24-hour storm design approximated Distributed Runoff Control well for storms less than two inches in 24 hours (Cappuccitti, 2000). As a result, the erosive velocities for these critical smaller storm events are decreased considerably (stormwatercenter.net, 2008).

**This question is part of the original COW document, however, the revised Virginia Stormwater Management Draft Regulations (2009) addresses channel protection (Water Quantity, 4VAC50-60-66) with an "energy balance" equation, not the 1-year, 24 hour storm. This criteria supersedes those of Minimum Standard 19 of the Virginia Erosion and Sediment Control Regulations (4 VAC 50-30-40.19), which was the previous standard. This criteria requires that "Properties, state waters, and stormwater conveyances within or downstream of a land disturbing activity shall be protected from sediment deposition, erosion and flood damage due to unmanaged quantity of stormwater and changes in runoff characteristics. . . ." The term runoff characteristics is defined in the regulations as follows: "Runoff characteristics include, but are not limited to velocity, peak flow rate, volume, time of concentration, and flow duration, and their influence on channel morphology including sinuosity, channel cross-sectional area, and channel slope" (www.dcr.virginia.gov/documents/swmhndbkdrft_ch12.pdf).*

Example language addressing extended detention of the 1-year, 24-hour storm:

Example language from Fluvanna County, VA DRAFT Ordinance:

An Ordinance for the Control of Post Construction Stormwater Runoff
Section 5. General Criteria for Stormwater Management
5.1 General

2. The specified design storms shall be defined as either a 24-hour storm using the rainfall distribution recommended by the U.S. Soil Conservation Service when using

U.S. Soil Conservation Service methods or as the storm of critical duration that produces the greatest required storage volume at the site when using a design method such as the Modified Rational Method. Pre-development and post-development runoff rates shall be verified by calculations that are consistent with good engineering practices.

5.4 Stream Channel Erosion

3. The plan approving authority may determine that some watersheds or receiving stream systems require enhanced criteria in order to address the increased frequency of bankfull flow conditions brought on by land development projects. Therefore, in lieu of the reduction of the 2-year post-developed peak rate of runoff (as required in subsection 2 of this section), the land development project being considered shall provide 24-hour extended detention of the runoff generated by the 1-year, 24-hour duration storm.

Does the local ordinance, design standards, or procedures manual provide for long-term maintenance of stormwater practices, such as a recorded maintenance agreement, inspection, and right-of-access easements or agreements?

Example language from Albemarle County, VA Code:

Chapter 17. Water Protection

Article III. Stormwater Management and Water Quality

Division 2. Plan Requirements: Water Quality and Water Quality Protection

Sec. 17-323 Duty to comply, maintain and repair; maintenance agreement

Upon approval by the program authority of a stormwater management/BMP plan, each owner shall:

1. comply with all of the terms and conditions of the approved plan;
2. maintain and repair all structural and nonstructural stormwater management measures required by the plan, as provided herein:
 - (a) The owner shall be responsible for the operation and maintenance of such measures and shall pass such responsibility to any successor owner, unless such responsibility is transferred to the county or to another governmental entity as provided in section 17-309.
 - (b) If an approved stormwater management/BMP plan requires structural or nonstructural measures, the owner shall execute a stormwater management/BMP facilities maintenance agreement prior to the program authority granting final approval for any plan of development or other development for which a permit is required. The agreement shall be recorded in the office of the clerk of the circuit court for the county and shall run with the land. If an owner cannot exercise a purchase agreement until a plan of development or other development receives final approval from the

county, the program authority may grant its final approval without a signed agreement, provided that the agreement is signed and recorded as provided herein prior to issuance of any certificate of occupancy for the development project.

(c) The stormwater management/BMP facilities maintenance agreement shall be in a form approved by the county attorney and shall, at a minimum: (i) designate for the land development the owner, governmental agency, or other legally established entity which shall be permanently responsible for maintenance of the structural or non-structural measures required by the plan; (ii) pass the responsibility for such maintenance to successors in title; and (iii) ensure the continued performance of the maintenance obligations required by the plan and this article.

State law reference--Va. Code §§ 10.1-603.3, 10.1-2108.

Example language from Fluvanna County, VA DRAFT Ordinance:

An Ordinance for the Control of Post Construction Stormwater Runoff

Section 3. Stormwater Management Program Permit Procedures and Requirements

3.3 Stormwater Management Plan Required

E. Maintenance Plan - The design and planning of all stormwater management facilities shall include detailed maintenance procedures to ensure their continued function. These plans will identify the parts or components of a stormwater management facility that need to be maintained and the equipment and skills or training necessary. Provisions for the periodic review and evaluation of the effectiveness of the maintenance program and the need for revisions or additional maintenance procedures shall be included in the plan.

G. Maintenance Easements - The applicant must ensure access to all stormwater treatment practices at the site for the purpose of inspection and repair by securing all the maintenance easements needed on a permanent basis. These easements will be recorded with the plan and will remain in effect even with transfer of title to the property.

H. Maintenance Agreement - The applicant must execute an easement and an inspection and maintenance agreement binding on all subsequent owners of land served by an on-site stormwater management measure in accordance with the specifications of this ordinance.

3.4 Stormwater Facility Agreements and Easements

Prior to the issuance of any permit that has a stormwater management facility as one of the requirements of the permit, the applicant or owner of the site shall provide and/or obtain easements that shall be binding on all subsequent owners of land served and/or impacted by the stormwater management facility which easements shall ensure the right of the

applicant and its successors in title to construct and use the drainage, impoundment and other stormwater management facilities necessary for the implementation and operation of such facilities. Such easements shall be in a form approved by the County Attorney.

1. Maintenance Easement Agreement

The Maintenance Easement Agreement shall provide for access to the stormwater management facility at reasonable times for periodic inspection by the County, or its contractor or agent, and for regular or special assessments of property owners to ensure that the facility is maintained in proper working condition to meet design standards and any other provisions established by this ordinance. The easement agreement shall be recorded in the land records of the County at the applicant's expense.

When any new drainage control facility is installed on private property, or when any new connection is made between private property and a public drainage control system, the property owner shall grant, after given notice and the opportunity to accompany the inspection, to the County the right to enter the property at reasonable times and in a reasonable manner for the purpose of inspection. This includes the right to enter a property when it has a reasonable basis to believe that a violation of this ordinance is occurring or has occurred, and to enter when necessary for abatement of a public nuisance or correction of a violation of this ordinance.

2. Maintenance Covenants

Maintenance of all stormwater management facilities shall be ensured through the creation of a formal maintenance covenant that must be approved by the County and recorded into the land record prior to final plan approval. The covenant shall identify by name or official title the person(s) responsible for carrying out the maintenance. Responsibility for the operation and maintenance of stormwater management facilities, unless assumed by a governmental agency, shall remain with the property owner and shall pass to, and be binding upon, every successor in title. If portions of the land are to be sold, legally binding arrangements shall be made to pass the basic responsibility to successors in title. These arrangements shall designate for each property owner, governmental agency, or other legally established entity to be permanently responsible for maintenance. As part of the covenant, a schedule shall be developed for when and how often maintenance will occur to ensure proper function of the stormwater management facility. The covenant shall also include plans for annual inspections to ensure proper performance of the facility between scheduled maintenance and should also include "failure to maintain" provisions. In the event that maintenance or repair is neglected, or the stormwater management facility becomes a danger to public health or safety, the County reserves the authority to perform the work and to

recover the costs from the owner. The County, in lieu of a maintenance covenant, may accept dedication of any existing or future stormwater management facility for maintenance, provided such facility meets all the requirements of this Section and includes adequate and perpetual access and sufficient area, by easement or otherwise, for inspection and regular maintenance.

Do the allowable stormwater treatment practices include low-impact design, better site design, conservation of open space, and/or other non-structural practices?

Example language from Stafford County, VA Code:

Stormwater Ordinance, Section 21.5-2(e)

(e) Low-impact development sites.

- (1) The use of low-impact development site planning and integrated management practices shall be encouraged to control stormwater runoff at the source and more closely approximate predevelopment runoff conditions.
- (2) Low-impact development stormwater management design plans developed consistent with the requirements of this subsection shall satisfy the water quality and quantity performance criteria of subsections (b), (c) and (d).
- (3) The design criteria, hydrologic analysis and computational procedures for low-impact development stormwater management design plans shall be those of the low-impact development design manuals.
- (4) Low-impact development stormwater management design plans shall not conflict with existing state or Stafford County laws, ordinances, regulations or policies.
- (5) Storm drainage easements shall be recorded to identify the locations of integrated management practices on lots or parcels. The property owner shall not remove or structurally alter integrated management practices without prior written approval from the program administrator.
- (6) Stormwater runoff from parking lots shall utilize stormwater management infiltration facilities and/or stormwater management filtering systems. These shall be placed within or near the parking lot islands.

Example language taken from Town of Abingdon, VA

Appendix A. Subdivisions

Article VI. Improvements

Sec. 6.10. Storm drainage.

Adequate facilities shall be provided for the disposal of storm water. The storm drainage system shall be approved by the Town of Abingdon Department of Public Works. All storm water facilities shall be constructed in accordance with the requirements as set forth in the town's erosion and sediment control ordinance. Additionally, the use of low impact development practices should be considered, and is encouraged wherever practical.

Example language from Fluvanna County, VA Draft Ordinance:

An Ordinance for the Control of Post Construction Stormwater Runoff

Section 3. Stormwater Management Program Permit Procedures and Requirements

3.3. Stormwater Management Plan Required.

No application for land development, land use conversion, or land disturbance will be approved unless it includes a stormwater management plan, as required by this ordinance, detailing how runoff and associated water quality impacts resulting from the activity will be controlled or managed. Low impact development techniques shall be encouraged to maintain pervious areas and groundwater recharge to the maximum extent practicable and, when employed, shall be indicated on the stormwater management plan.

A3. Illicit Discharges

Is there a local ordinance that prohibits non-stormwater flows to the storm drain system?

Example language taken from City of Chesapeake, VA

ARTICLE VIII. Stormwater Management

Division 2. Stormwater Pollution Control

Sec. 26-346. Illicit discharges.

All non-stormwater connections to public stormwater management facilities must be approved by the city unless specifically exempted from this article. Any non-stormwater discharge into stormwater management facilities except as authorized under subsection (b) below, shall be illegal unless specifically exempted from this article.

(a) It shall be unlawful and a violation of this article to:

- (1) Discharge, or cause or allow to be discharged, sewage, industrial wastes or other wastes into stormwater management facilities, or any component thereof, or onto driveways, sidewalks, parking lots or other areas draining to stormwater management facilities;
- (2) Connect, or cause or allow to be connected, any sanitary sewer to stormwater management facilities, including any sanitary sewer connected to stormwater management facilities as of the date of adoption of this ordinance;
- (3) Discharge the following in any amount:
 - Sewage;
 - Blowdown;
 - Automotive fluids and/or greases;
 - Fuels;
 - Paints and/or organic solvents;
 - PCBs;
 - Pesticides;
 - Toxic materials;

Waste disposal site leachate;
Radioactive materials;
Vegetative material;
and any other substance of non-stormwater origin unless specifically exempted from this article.

(b) Subject to the provisions of subsection (c) below, the following activities shall not be in violation of this article:

- (1) Water line flushing;
- (2) Landscape irrigation and lawn watering;
- (3) Diverting stream flows or rising groundwater;
- (4) Infiltration of uncontaminated groundwater;
- (5) Pumping of uncontaminated groundwater from potable water sources, foundation drains, irrigation waters, well point discharges, springs or water from crawl spaces or footing drains;
- (6) Individual car washing on properties in residential use;
- (7) De-chlorinated swimming pool discharges;
- (8) Street washing; and,
- (9) Any activity authorized by a valid Virginia Pollutant Discharge Elimination System (VPDES) permit or Virginia Pollution Abatement (VPA) permit.

(c) In the event any of the activities listed in subsection (b) above, are found to cause sewage, industrial wastes or other wastes to be discharged into stormwater management facilities, the administrator shall so notify the person performing such activities and shall order that such activities be stopped or conducted in such manner as to avoid the discharge of sewage, industrial wastes or other wastes into stormwater management facilities. The person or entity causing such discharge shall take immediate action to begin corrective measures to remove all sewage, industrial wastes or other wastes that have been introduced into the stormwater management facility by the activity. The failure to comply with any such order shall be unlawful and constitute a violation of the provisions of this article.

Example language taken from Albemarle County, VA

http://www.albemarle.org/upload/images/forms_center/departments/county_attorney/forms/Albemarle_County_Code_Ch17_Water_Protection.pdf

Chapter 17. Water Protection

ARTICLE V. ILLICIT DISCHARGES AND CONNECTIONS

Sec. 17-501 Illicit discharges prohibited; exempt and authorized discharges.

No person shall throw, drain, or otherwise discharge, cause or allow others under their control to throw, drain, or otherwise discharge into the storm drainage system or state waters any pollutants or waters containing any pollutants, other than stormwater. The commencement, conduct, or continuance of any such illicit discharge to the storm drainage system or state waters is prohibited, subject to the following:...

Does your community have authority to investigate suspected illicit discharges and carry out enforcement actions?

Example language taken from Albemarle County, VA

Chapter 17. Water Protection

ARTICLE V. ILLICIT DISCHARGES AND CONNECTIONS

Sec. 17-505 Inspections and monitoring.

The program authority is authorized to assure compliance with the requirements of this article as follows:

A. Inspections and monitoring, generally. The program authority is authorized to conduct inspections of private property and to conduct monitoring of storm drainage systems, natural streams, and facilities permitted by VPDES permits, in the manner authorized by law to assure compliance with the requirements of this article.

B. Inspection of records of VPDES permittees. Every VPDES permittee shall allow the program authority to examine VPDES application materials, plans, specifications, and other pertinent information as may be necessary to determine the effect of the permittee's discharge on the quality of state waters, such other information as may be necessary to accomplish the purposes of this article, including records required to be kept under the conditions of the permit, and enforcement records such as inspection reports, notices of violation, and documents detailing the nature of any land disturbing activity that may have occurred, or similar documents, that are not exempt from disclosure under Virginia Code § 10.1-603.12:2.

C. Monitoring and sampling equipment on VPDES permitted facilities. The program authority is authorized, either under a condition of the VPDES permit, with the permittee's consent or by court order: (i) to establish on any permitted facility such devices as are necessary in the opinion of the program authority to conduct monitoring and/or sampling of the facility's stormwater discharge; and (ii) to require the permittee to install monitoring equipment as the program authority deems necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the permittee at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.

D. Obligation of VPDES permittee to assure clear access. At the written or oral request of the program authority, every VPDES permittee shall promptly remove any temporary or permanent obstruction to safe and easy access to the permitted facility to be inspected and/or sampled, and such obstructions shall not be replaced. The costs of removing such obstructions shall be borne by the operator.

Sec. 17-507 Penalties and remedies.

The penalties and other remedies for a violation of this article shall be as provided in Virginia Code 10.1-603.14. (See Appendix 2)

Example language taken from Washentaw County, MI
Department of Environment & Infrastructure Services, Environmental Health Division:

ARTICLE VII.

Inspection Notification

Sec. 7:1

If, after reviewing the inspection, the Division determines that the OWSDS is not in substantial conformance as defined, then the property owner shall be subject to enforcement as provided in this Regulation. The Division shall notify in writing the owner and/or purchaser or transferee or other person with a legally recognizable interest in the property. This written notice shall be sent no later than five (5) business days after the determination is made or from the date that the inspection report of the premises is filed and reviewed by the Division. Any party is considered notified if the notice is sent to that party's last known mailing address or to the property address if the party occupies the premises with the non-conforming OWSDS.

ARTICLE VIII.

Corrective Action

Sec. 8:1

Upon receiving written notice from the Division of noncompliance with this Regulation, the owner, buyer or authorized agent shall, within thirty (30) days, submit a proposed corrective action and contract for services in order to bring the affected system into compliance with applicable laws. In addition, the owner, buyer or authorized agent shall place into an escrow account a deposit of a surety or performance bond or cash in an amount equal to one and one-half times the estimated cost of the contract guaranteeing performance of such contract. The Division shall review the proposed corrective action and amend it as required to conform to federal, state and local laws, rules and regulations. All necessary corrective action shall be completed within one hundred eighty (180) days following Division approval of the proposed correction action plan. Once the Division gives final approval of the completed corrective action, the system shall be deemed to be in substantial conformance with this Regulation and any affidavit previously filed with the Registrar of Deeds shall be discharged. If an OWSDS presents an immediate health hazard, the owner or other responsible party shall take such measures, in cooperation with the Division, that will immediately reduce or eliminate the impact of such failure until the full remediation plan can be implemented as described earlier in this Paragraph.

Sec. 8:2

A person who disputes any Division decision concerning the violation of this Regulation shall have the right to a hearing and appeal using the appeals process in Article XI. Any appeal shall not stay an owner=s, buyer=s or authorized agent's obligation to take measures to reduce or eliminate the impact of a failure until a full remediation plan can be determined and implemented.

ARTICLE IX.

Enforcement and Compliance

Sec. 9:1

If, after investigation, the Division believes that a person is violating these Regulations, the Division shall attempt to enter a voluntary agreement with the property owner to resolve the violation. If a voluntary agreement cannot be reached, the Division may issue a violation notice to the owner. A statement of facts upon which the notice is based shall accompany the violation notice.

Sec. 9:2

The Division may, after presenting proper credentials and other documents as may be required by law, and upon stating the authority and purpose for the investigation, enter and inspect any property at reasonable times to ascertain compliance or noncompliance with this Regulation or Rules promulgated under this Regulation. This may include: Inspection at reasonable times of any parcel containing an OWSDS and related systems. Collection of evidence and information for the purpose of determining compliance with this Regulation or Rules promulgated under the Regulation.

Sec. 9:3

If an owner, transferee or purchaser does not comply with the requirements of this Regulation, a Health Officer or his/her duly authorized representative may record an affidavit that details the non-compliance with the Washtenaw County Registrar of Deeds.

ARTICLE X.

Specific Enforcement Options

Violation of the Regulation

Sec. 10:1

After learning that this Regulation has been violated, the HCBA/PHAC or the Health Officer or his/her designated representative may:

Issue a Cease and Desist Order and/or suspend any permit, certificate or other approval issued pursuant to this Regulation to the owner or other party violating this Regulation, and afford the owner or other interested party Notice and Opportunity for Hearing.

Request that Washtenaw County Corporation Counsel file a legal action to enjoin the violation. In addition, the Health Officer may seek to recover any and all costs related to correcting, removing or abating the violation.

Issuance of Monetary Civil Penalties

Sec. 10:2

If a local health department representative or Health Officer believes that a person is violating a provision of this Regulation or an order issued pursuant to this Regulation, the representative may issue a citation within ninety (90) days after the alleged violation is discovered. The citation shall state with particularity the nature of the violation, including reference to the Section of the Regulation alleged to have been violated, the civil penalty established for such violation, if any, and a right to appeal the citation pursuant to MCLA

333.2461 and Article XI of this Regulation. The citation shall be delivered or sent by registered mail to the alleged violator.

Any party issued a citation may, within ten (10) days from the date the citation is issued, request an informal conference at which time the person may indicate why s/he believes that s/he has not violated this Ordinance.

Any party issued a citation may appeal the citation to the HCBA/PHAC or its designated committee within thirty (30) days after the citation is issued. The appeal shall be conducted in accordance with Article XI of this Regulation.

A person aggrieved by a final decision of the Health Officer or the HCBA/PHAC or its designated committee, may petition the Circuit Court of the County where the premises is located for review. The time period for appeal shall begin to run the day after the date of such final decision.

Schedule of Monetary Civil Penalties

Sec. 10:3

Monetary civil penalties may be imposed according to the following schedule:

First violation: Up to: \$ 200.00

Second violation: \$ 500.00

Third and subsequent violations each: \$ 1,000.00

Sec. 10:4

A civil penalty levied under this Section may be assessed for each violation or day that the violation continues. The civil penalty may be for a specified violation of this Ordinance or promulgated Rule, that the Health Officer has the authority and duty to enforce.

Sec. 10:5

A decision by the Health Officer not to issue a citation shall not be construed as a waiver of any other rights or remedies authorized by law or this Regulation.

Conviction of Misdemeanor

Sec. 10:6

Any person who violates this Regulation is guilty of a misdemeanor, punishable by imprisonment for not more than ninety (90) days, or a fine of not more than \$200.00 or both. Conviction by jury, court or voluntary plea and acceptance by court under this provision shall not waive any other claim for fines, costs, injunction or other relief authorized by this Regulation. Each day that a violation of this Regulation exists shall constitute a separate offense.

Assessment against the Property

Sec. 10:7

If an owner does not have his/her property evaluated as specified by this Regulation, the Division shall cause an inspection to be performed and may charge all costs and fees for the evaluation to the owner of the premises.

Sec. 10:8

If the owner or party violating this Regulation refuses on demand to pay such expenses incurred by the Department to abate, correct or remove a violation, unsanitary condition or nuisance, the sum shall be assessed against the property and shall be collected and treated in the same manner as taxes assessed under the general tax laws of this State.

Right to Obtain Samples

Sec. 10:9

An inspection under Sec. 9.2 shall include the right to obtain samples where the Health Officer has reason to believe that there is a likelihood of contamination of surface water, ground water, water supply or other unsanitary conditions. Upon written notice, an owner or occupant of premises from which such inspection is sought shall co-operate with the Health Officer or his/her designated representative.

Example language taken from Monterey, California

Article 2.

Urban Stormwater Quality Management and Discharge Control

Division IV

Inspection and Monitoring.

Section 31.5-23. Authority to Inspect.

Whenever necessary to make an inspection to enforce any provision of this Article, or whenever the Public Works Director has cause to believe that there exists, or potentially exists, in or upon any premises any condition which constitutes a violation of this Article, the Director may enter such premises at all reasonable times to inspect the same and to inspect and copy records related to storm water compliance. In the event the owner or occupant refuses entry after a request to enter and inspect has been made, the City is hereby empowered to seek assistance from any court of competent jurisdiction in obtaining such entry.

Section 31.5-24. Authority to Sample, Establish Sampling Devices, and Test.

During any inspection as provided herein, the Public Works Director may take any samples and perform any testing deemed necessary to aid in the pursuit of the inquiry or to record site activities.

Division 5.

Enforcement.

Section 31.5-25. Notice of Violation.

Whenever the Public Works Director finds that a person has violated a prohibition or failed to meet a requirement of this Article, the Director may order compliance by written notice of violation to the responsible person. Such notice may require without limitation:

- (a) The performance of monitoring, analyses, and reporting;
- (b) The elimination of illicit connections or discharges;
- (c) That violating discharges, practices, or operations shall cease and desist;

- (d) The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property; and
- (e) Payment of a fine to cover administrative and remediation costs; and
- (f) The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by the City or a contractor designated by the Public Works Director and the expense thereof shall be charged to the violator pursuant to Section 31.5-27 below.

Section 31.5-26 Appeal.

Notwithstanding the provisions of Section 31.5-29 below, any person receiving a Notice of Violation under Section 31.5-25 above may appeal the determination of the Public Works Director to the City Manager. The notice of appeal must be received by the City Manager within 5 days from the date of the Notice of Violation. Hearing on the appeal before the City Manager or his/her designee shall take place within 15 days from the date of City's receipt of the notice of appeal. The decision of the City Manager or designee shall be final.

A4. Stream & Wetland Permits

Do the local codes or procedures require verification that all relevant State and Federal permits for impacts to streams and wetlands are obtained prior to issuance of a local grading permit?

Example language adapted from Botetourt County, VA

Chapter 25. Zoning

Article III. Overlay Districts

Division 1. Flood Hazard Overlay District

Sec. 25-413. District provisions.

When applicable, prior to issuance of a local grading permit and any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction, all relevant Federal, State and local permits, including the U.S. Corps of Engineers, the Virginia Marine Resources Commission, and certification from the Virginia State Water Control Board is necessary (a joint permit application is available from any one of these organizations). Further notification of the proposal shall be given to all affected adjacent jurisdictions, the Division of Soil and Water Conservation (Department of Conservation and Recreation), and the Federal Insurance Administration.

Example language taken from New Kent County, VA:

Chapter 9. Building and Development Regulations

Article IV. Site Plans

Division 1. Generally

Sec. 9-141.1. Coordination with other agencies.

The director of public works shall require evidence that the appropriate federal and state agencies, to include at a minimum the Army Corps of Engineers and the Virginia Water Control Board, have been notified of the submission of a preliminary site plan. Such notification shall include a property description and a request that the city be informed of any jurisdictional determinations relative to the property.

(Ord. No. 1098, 8-11-93; Ord. No. 1468, 3-28-07)

A5. Septic Systems

Does the local code or standards require setbacks between septic systems and streams that are greater than the minimum State standard (greater than 50 feet)?

Proposed language: Adapted from Goochland County Code

Chapter 14. Water and Sewers

Article 3. Sewage Disposal Systems

DIVISION 5. SANITARY SEPTIC TANK SYSTEMS

Sec. 14-196. Same--Location.

- (a) Location and installation of the sewage disposal system and each part thereof shall be such that with reasonable maintenance it will function in a sanitary manner and will not create a nuisance nor endanger the safety of any domestic water supply. In determining a suitable location for the system, consideration shall be given to the nature of the soil, size and shape of the lot, slope of natural and finished grade, depth of groundwater table, proximity to streams and existing or future water supplies, and possibility for expansion of the system.
- (b) No part of the system shall be located so that it is nearer to any water supply than ~~fifty~~ (50) seventy-five (75) feet or so the surface drainage from its locations may reach any domestic water supply and /or directly to any impounded or flowing water body.

Does the local code or standards require reserve drain field size in excess of the minimum State standard? (Looking for local reserve drain field requirement of 100%.)

Example language taken from Prince George, VA

Chapter 82. Utilities

Article III. Wastewater Service

Sec. 82-594. Standards.

- (b) For a proposed individual wastewater disposal facility, such facility, in addition to meeting requirements of the state department of health, shall provide the following:
- (1) A reserve land area with a 100-percent replacement ability for the primary subsurface soil absorption system.
 - (2) The entire individual wastewater disposal system will be located on the same lot or parcel of land as the structure to be served by the system.

A6. Open Space & Rural Land Protection

Is there a local program that authorizes Agricultural & Forestal Districts in accordance with State Code?

Example language taken from Loudoun County, VA

New Airmont Agricultural and Forestal District Ordinance

I. PURPOSE

It is hereby declared to be the policy of the County of Loudoun to conserve, protect, and to encourage the development and improvement of its agricultural and forestal lands for the production of food and other agricultural and forestal products. It is also the policy of the County of Loudoun to conserve and protect agricultural and forestal lands as valued natural and ecological resources, which provide essential open spaces for clean air sheds, as well as for aesthetic purposes. It is the purpose of this Ordinance to provide a means by which agricultural and forestal land may be protected and enhanced as a viable segment of the County's economy and as an economic and environmental resource of major importance, pursuant to Title 15.2, Chapter 43 of the Code of Virginia (1950), as amended.

II. CREATION OF DISTRICT

The New Airmont Agricultural and Forestal District (hereinafter referred to as the District) is hereby created for a period of four (4) years, beginning June 2, 2008, in accordance with the provisions of Title 15.2, Chapter 43, Sections 15.2-4300 through 15.2-4314, Code of Virginia (1950) as amended.

The District shall consist of ____ acres more or less and include the following parcels:

PIN	Tax Map	Landowner	Acres
525254868000	/44//17////7	Last name, first name of all owners	38.78

III. EFFECT OF DISTRICT

- A. All provisions of the Loudoun County Zoning and Subdivision Ordinance shall be applicable within the District, but only to the extent that such ordinances are not in conflict with the purposes of Title 15.2, Chapter 43 of the Code of Virginia (1950) as amended. All land use planning decisions, special exceptions, special use permits and variances affecting any parcel of land within or adjacent to the District shall take

into account the existence of the District and purposes and policies of this Ordinance. It is further required that any subdivisions or adjustments to parcels in the district meet the current zoning requirements or a minimum of 20 acres, whichever is greater.

- B. Land used in agricultural and forestal production within the District shall automatically qualify for an agricultural or forestal value assessment on such land pursuant to Sections 15.1-3229 et seq. of the Code of Virginia (1950) as amended, if the requirements for such assessment contained therein are satisfied, whether or not the Loudoun County Land Use Assessment Ordinance is in effect.
- C. All other applicable provisions of Title 15.2, Chapter 436 of the Code of Virginia (1950), as amended, are incorporated in this Ordinance and made a part hereof.

IV. REVIEW OF ORDINANCE

The Board of Supervisors shall initiate review of the District at least 90 days prior to June 2, 2012 in order to determine whether to terminate, modify or continue the District. The Board shall request the recommendations of the Planning Commission and the Agricultural District Advisory Committee in conducting such review.

V. DISCONTINUANCE OF ASSOCIATION IN DISTRICT

Any owner of land lying in the District may request, in writing, termination and withdrawal of his property in accordance with Section 15.2-4314 of the Code of Virginia (1950) as amended. If denied favorable action by the Board of Supervisors the landowner shall have an immediate right of appeal de novo to the circuit court. The termination of any owner's association in the District for any reason shall not in itself serve to terminate the existence of the District. Any heir at law or devisee of any owner of land lying within the District shall as a matter of right, be entitled to withdraw from the District within two years of the date of death of the owner and upon written notice of withdrawal to the Board of Supervisors and the Commissioner of the Revenue.

When the Board of Supervisors reviews the District at the end of the four-year term, land within the District may be withdrawn by filing a written notice before the Board of Supervisors acts to continue, modify or terminate the District.

Is there a local program that authorizes Use Value Taxation for open space in accordance with State Code?

Example language provided by Amherst County, VA

Article II. Real Property Tax

Division 3. Special Assessment for Land Preservation*

Sec. 14-56. Purpose.

The preservation of real estate devoted to agricultural, horticultural, forest and open space uses is in the public interest, and the county has adopted a land-use plan. Such real estate

shall be taxed in accordance with the provisions of Code of Virginia, § 58.1-3229 et seq., and of this division.

Does the locality have a Purchase of Development Rights program?

Example language provided by New Kent County, VA

Chapter 84 Purchase of Development Rights Program

Sec. 84-1. Short title.

This chapter shall be known and may be cited as the "Purchase of Development Rights (PDR) program"

Sec. 84-2. Purpose.

The purposes of this chapter include, but are not limited to:

- (1) Establishing a program enabling the county to acquire conservation easements voluntarily offered by owners to serve as one means of assuring that the county's resources are protected and efficiently used;
- (2) Establishing and preserving open-space and the rural character of the county;
- (3) Preserving farm and forest land;
- (4) Conserving and protecting water resources and environmentally sensitive lands, waters and other natural resources;
- (5) Conserving and protecting biodiversity and wildlife and aquatic habitat;
- (6) Assisting in shaping the character and direction of the development of the community;
- (7) Improving the quality of life for the inhabitants of the county; and
- (8) Promoting recreation and tourism through the preservation of scenic and historical resources.

State law references: Similar provisions, Code of Virginia, § 10.1-1700 et seq.

Sec. 84-3. Applicability.

The PDR program shall be available for all lands in the county, except those lands under the ownership or control of the United States of America, the Commonwealth of Virginia, or an agency or instrumentality thereof. Any conservation easement acquired pursuant to this chapter shall be voluntarily offered by the owner.

Sec. 84-4. Definitions.

Words, terms and phrases not defined in this section shall be interpreted in accordance with their normal dictionary meaning and customary usage.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Board. The term "board" means the Board of Supervisors of New Kent County.

Conservation easement. A non-possessory interest in one or more parcels by one or more qualified easement holders under subsection 84-10(4) acquired under the Open-Space Land Act (Code of Virginia, § 10.1-1700 et seq.), whether the easement is appurtenant or in gross, voluntarily offered by an owner and acquired by purchase or donation pursuant to the PDR program, imposing limitations or affirmative obligations for the purpose of retaining or protecting natural or open-space values of the parcel or parcels, assuring availability for agricultural, forestall, recreational or open-space use, protecting natural resources, maintaining or enhancing air or water quality, or preserving the historical, architectural or archaeological aspects of the parcel or parcels.

Dwelling. Any structure which is designed for use for residential purposes.

Division rights. The number of parcels into which a parcel could be divided under the rural areas zoning district regulations stated in Chapter 98, Zoning, of this Code, where each potential parcel could comply with all applicable subdivision requirements of Chapter 90, Legacy Subdivision Provisions or Chapter 91, Subdivisions.

Immediate family. Any person who is a natural or legally defined offspring, spouse, parent, sibling, grandchild or grandparent of the owner.

Owner. The owner or owners of the freehold interest of the parcel.

Parcel. A lot or tract of land, lawfully recorded in the clerk's office of the circuit court of the county. A conservation easement may contain one or more parcels, for purposes of this chapter, the term "parcel" shall include all parcels covered by, or proposed to be covered by, the conservation easement.

Program administrator. That person or entity placed in a managerial position over the daily operations of the PDR program. The program administrator shall serve as a direct liaison to the program.

Sec. 84-5. Designation of program administrator; powers and duties.

(a) *Designation.* The program administrator shall report to the county administrator.

(b) *Powers and duties.* The program administrator, or his designee, shall administer the PDR program and shall have the powers and duties to:

- (1) Establish reasonable and standard procedures and forms for the proper administration and implementation of the program.
- (2) Promote the program, in cooperation with the PDR committee, by providing educational materials to the public and conducting informational meetings.
- (3) Investigate and pursue, in conjunction with the county, state, federal and other programs available to provide additional public and private resources to fund the program and to maximize private participation.

- (4) Evaluate all applications to determine their eligibility and their ranking score, rank applications based on their ranking score, and make recommendations thereon to the PDR committee.
- (5) Coordinate the preparation of appraisals.
- (6) Provide staff support to the appraisal review committee, the PDR committee and the board of supervisors.
- (7) Provide educational materials regarding other land protection programs to the public.
- (8) For each conservation easement, assure that the terms and conditions of the deed of easement are monitored and complied with by coordinating a monitoring program with each easement holder, and if the other easement holders are either unable or unwilling to do so, monitor and assure compliance with the terms and conditions of the deed of easement.

Sec. 84-6. Purchase of development rights committee established; powers and duties.

(a) *Establishment.* The PDR committee is hereby established, as follows:

- (1) The committee shall consist of seven members appointed by the board of supervisors. Each member shall be a resident of New Kent County. The committee should, but is not required to, be comprised of members who are knowledgeable in the fields of conservation, conservation biology, real estate and/or rural land appraisal, farming and forestry and may also include members of conservation easement holding agencies and conservation organizations.
- (2) The members of the committee shall serve at the pleasure of the board of supervisors. The initial term of two members shall be for one year. The initial term of three members shall be for two years. The initial term for two members shall be for three years. Each term after the initial term shall be for three years.
- (3) The members of the committee shall serve without pay, but the board of supervisors may, in its discretion, reimburse each member for actual and necessary expenses incurred in the performance of his/her duties.
- (4) The committee shall elect a chairman, vice-chairman and secretary at its first meeting each calendar year. The secretary need not be a member of the committee.

(b) *Powers and duties.* The PDR committee shall have the powers and duties to:

- (1) Promote the program, in cooperation with the program administrator, by providing educational materials to the public and conducting informational meetings.
- (2) Review the ranking of applications recommended by the program administrator, and make its recommendation to the board of supervisors as to which conservation easements should be purchased.
- (3) Periodically review the program's regulations, guidelines, administrative procedures and promotion and recommend to the board of supervisors or the program administrator, as appropriate, any changes needed to maintain the program's consistency with the comprehensive plan, or to improve the administration, implementation and effectiveness of the program.

Sec. 84-7. Appraisal review committee established; powers and duties.

(a) *Establishment.* The appraisal review committee is hereby established, as provided herein:

- (1) The committee shall be created as a subcommittee of the PDR committee and operate directly under its supervision.
- (2) The subcommittee shall consist of a minimum of three members. The committee shall be comprised of at least one real estate professional, the county assessor, and a member of the PDR committee.
- (3) The members of the committee shall serve at the pleasure of the PDR committee. Each member, other than the county assessor, shall serve a one-year term. The county assessor shall be a permanent member of the subcommittee.
- (4) The county assessor shall be the chairman of the committee.

(b) *Power and duty.* The appraisal review committee shall have the power and duty to review appraisals to assure they are consistent with appropriate appraisal guidelines and practices, and to make recommendations thereon to the PDR committee, the program administrator.

Sec. 84-8. Eligibility criteria.

In order for a parcel to be eligible for a conservation easement, it must meet the following criteria:

- (1) The use of the parcel subject to the conservation easement must be consistent with the comprehensive plan;
- (2) The proposed terms of the conservation deed of easement must be consistent with the minimum terms and conditions set forth in section 84-10; and
- (3) The parcel must be located in the county.

Sec. 84-9. Ranking criteria.

In order to effectuate the purposes of this chapter, parcels for which conservation easement applications have been received shall be evaluated by utilizing a ranking system. The initial ranking system and changes to the ranking system shall be approved by the county administrator and the director of community development. The ranking system may be used to prioritize the acquisition of conservation easements.

Sec. 84-10. Easement terms and conditions.

Each conservation easement shall conform to the requirements of the Open Space Land Act of 1966 (Code of Virginia, § 10.1-1700 et seq.) and of this chapter. The deed of easement shall be in a form approved by the county attorney, and shall contain, at a minimum, the following provisions:

- (1) *Restriction on new dwellings.* No new dwellings may be constructed on a parcel except as provided hereafter; the deed of easement may allow one new dwelling per 100 acres, with dwelling location specified by plat on or before the conservation easement is established.
- (2) *Conservation easement duration.* A conservation easement acquired under the terms of this chapter shall be perpetual.
- (3) *Other restrictions.* In addition to the foregoing, the parcel shall be subject to standard restrictions contained in conservation easements pertaining to uses and

activities allowed on the parcel. These standard restrictions shall be delineated in the deed of easement and shall include, but not necessarily be limited to, restrictions pertaining to: (i) accumulation of trash and junk; (ii) display of billboards, signs and advertisements; (iii) grading, blasting or earth removal; (iv) conduct of industrial or commercial activities on the parcel; and (v) monitoring of the easement.

(4) *Designation of easement holders.* The county shall be the easement holder, and if designated by the board, one or more other public bodies, as defined in Code of Virginia, § 10.1-1700, or one or more organizations then qualifying as an eligible donor as defined by Section 170(h)(3) of the Internal Revenue Code of 1986, as amended, shall also be an easement holder.

Sec. 84-11. Application and evaluation procedure.

Each application for a conservation easement shall be processed and evaluated as follows:

(1) *Application materials to be provided to owner.* The application materials provided by the program administrator to an owner shall include, at a minimum, a standard application form, a sample deed of easement, and information about the PDR program.

(2) *Application form.* Each application shall be submitted on a standard form prepared by the program administrator. The application form shall require, at a minimum, that the owner: provide the name of all owners of the parcel, the address of each owner, the acreage of the parcel, the county tax map and parcel number, the zoning designation of the parcel, and permission for the program administrator to enter the property after reasonable notice to the owner to evaluate the parcel and for the county assessor or an independent appraiser to appraise the property. The application form shall also include a space for an owner to indicate that he volunteers to have the parcel be subject to greater restrictions than those contained in the standard sample deed of easement, and to delineate those voluntary, additional restrictions.

(3) *Additional application information required by program administrator.* The program administrator may require an owner to provide additional information deemed necessary to determine: (i) whether the proposed easement is eligible for purchase; and (ii) the purchase price of the easement.

(4) *Submittal of application.* Applications shall be submitted to the office of the program administrator. An application fee may be required. An application may be submitted at any time during an open application period. However, applications received after an open application period deadline, shall be held by the program administrator until the next open application period.

(5) *Evaluation by program administrator.* The program administrator shall evaluate each application received and determine within 15 days whether the application is complete. If the application is incomplete, the program administrator shall inform the owner in writing of the information that must be submitted in order for the application to be deemed complete. When an application is deemed complete, the program administrator shall determine whether the parcel satisfies the eligibility criteria set forth in section 84-8 and, if it does, shall determine the number of points to be attributed to the parcel by applying the criteria set forth in section 84-9. The program administrator shall then rank each parcel scoring with the parcel scoring the most

points being the highest ranked and descending there from and submit the list of ranked parcels to the PDR committee after each open application period.

(6) *Evaluation and ranking by PDR committee.* The PDR committee shall review the list of ranked parcels submitted by the program administrator. The PDR committee shall forward to the administrator and the board recommendations of which conservation easements should be purchased.

(7) *Evaluation by board of supervisors.* The board shall review the list of ranked parcels submitted by the PDR committee and identify on which parcels it desires conservation easements. Nothing in this chapter shall obligate the board to purchase a conservation easement on any property that is eligible for purchase.

(8) *Requirements and deadlines may be waived.* Any requirement or deadline set forth in this chapter may be waived by the board of supervisors if, for good cause, it is shown that urgent circumstances exist to warrant consideration of an otherwise untimely application, or it is shown that the requirements unreasonably restrict the purchase of an easement. Under these circumstances, the board may purchase a conservation easement at any time it deems necessary and subject to only those requirements it deems appropriate.

(9) *Reapplication.* An owner whose parcel is not selected for purchase of a conservation easement may reapply in any future open application period.

Sec. 84-12. Purchase of development rights procedure.

Each conservation easement shall be purchased as follows:

(1) *Identification of initial pool.* From the list of applications received under section 84-11, the board shall designate the initial pool of parcels identified for conservation easements to be purchased.

(2) *Determining purchase price.* Negotiations with the property owners regarding the easement terms shall be coordinated by the program administrator. Upon completion of these negotiations, the administrator shall arrange for an appraisal of the properties by the county assessor or an independent appraiser. Each completed appraisal shall be submitted to the program administrator. The results of the appraisal shall be reviewed by the appraisal review committee which shall review and approve each appraisal. Final approved appraisal results shall be provided to the PDR committee and the administrator.

(3) *Invitation to offer to sell.* The county administrator shall invite the owner of each parcel included in the initial pool of parcels to submit an offer to sell to the county a conservation easement on that parcel an amount based upon the appraised value of such conservation easement, subject to the terms and conditions of a proposed deed of easement. The invitation to sell shall be in writing and shall include the purchase price, the proposed deed of easement, and the date by which a written offer must be received by the program administrator in order to be accepted. The invitation may contain a form offer to be returned by the owner if the owner desires to sell a conservation easement.

(4) *Offer to sell.* Each owner who desires to sell and/or donate a conservation easement shall submit a written offer that must be received by the program administrator by the

date contained in the invitation to sell. The offer should include a statement substantially stating the following: "(The owner) offers to sell and/or donate a conservation easement to the county for the sum of (purchase price), subject to the terms and conditions set forth in the proposed deed of easement enclosed with the invitation to offer to sell." Nothing in this chapter shall compel an owner to submit an offer to sell.

(5) *Acceptance.* An offer to sell a conservation easement shall be accepted by the board supervisors only in writing, and only following an action by the board authorizing acceptance. Nothing in this chapter requires the board to accept an offer to sell a conservation easement.

(6) *Easement established.* A conservation easement shall be established when the owner and an authorized representative of the holder of the easement have each signed the deed of easement. The deed shall be recorded in the office of the clerk of the circuit court of the county. A single conservation easement may be established for more than one parcel under the same ownership.

(7) *Offers not made; offers not accepted; invitation to other owners.* If an owner invited to submit an offer elects not to do so, or if his offer to sell is not accepted by the board of supervisors, then the board shall send an invitation to offer to sell to the owner of the next highest ranked parcel remaining on the list of parcels identified in subsection 84-11(7).

(8) *Costs.* If the board of supervisors accepts an offer to sell, the county shall pay all costs, including environmental site assessments, surveys, recording costs, grantor's tax, if any, and other charges associated with closing. Provided, however, the county shall not pay fees incurred for independent appraisals, legal, financial, or other advice, or fees in connection with the release and subordination of liens to the easement purchased by the county.

Sec. 84-13. Restriction on buy-back; extinguishment and exchange of easements.

(a) *Restriction on buy-back.* The owner shall not have the option to reacquire any property rights relinquished under the conservation easement, except as provided hereafter, the deed of easement may allow an exchange of easements as follows:

(1) *Petition to board.* Upon the expiration of 25 years from the date on which a conservation easement was recorded, the owner or successor in interest to the property which is subject to the easement may petition the board for the extinguishment of such easement in exchange for the conveyance to the county of a conservation easement on a different parcel of property meeting all of the eligibility requirements as set forth in section 84-8.

(2) *Requirements.* No such extinguishment and exchange of easement shall be authorized, unless a majority of the board find that:

- a. The extinguishment and exchange is determined to be essential to the orderly development and growth of the county;
- b. The extinguishment and exchange is in accordance with the comprehensive plan for the county in effect at the time of extinguishment and exchange;

- c. The extinguishment and exchange does not adversely affect the county's interests in accomplishing the purposes of this chapter;
 - d. There is substituted other real property which is (a) of at least equal fair market value and at least equal acreage; (b) of greater value as permanent open-space land than the land upon which the easement is extinguished, (c) of as nearly as feasible equivalent usefulness and location for use as permanent open-space land as is the land upon which the easement is extinguished and (d) is in accordance with the Virginia Open Space Land Act, (Code of Virginia, § 10.1-1700 et seq.).
- (3) *Expenses.* The petitioner shall bear all expenses and fees in connection with the exchange, including, but not limited to purchase of the substituted easement, site assessments surveys, closing costs, recording fees and taxes, title search, and title insurance if required.

Example language taken from by James City County, VA

Chapter 16A

Purchase of Development Rights Program

Sec. 16A-1. Short title.

This chapter shall be known and may be cited as the "Purchase of Development Rights ("PDR") Program."

Sec. 16A-2. Purpose.

The purposes of this chapter include, but are not limited to:

- (1) Establishing a program enabling the county to acquire conservation easements voluntarily offered by owners to serve as one means of assuring that James City County's resources are protected and efficiently used;
- (2) Establishing and preserving open-space and the rural character of the county;
- (3) Preserving farm and forest land;
- (4) Conserving and protecting water resources and environmentally sensitive lands, watersand other natural resources;
- (5) Conserving and protecting biodiversity and wildlife and aquatic habitat;
- (6) Assisting in shaping the character and direction of the development of the community;
- (7) Improving the quality of life for the inhabitants of the county; and
- (8) Promoting recreation and tourism through the preservation of scenic and historical resources.

State law reference B Va. Code § 10.1-1700 et seq.

Sec. 16A-3. Applicability.

The PDR program shall be available for all qualifying lands in the county, except those lands under the ownership or control of the United States of America, the Commonwealth of Virginia, or an agency or instrumentality thereof. Any conservation easement acquired pursuant to this chapter shall be voluntarily offered by the owner.

Sec. 16A-4. Definitions.

The following definitions shall apply in the interpretation and implementation of this chapter:

Administrator. Administrator is that person placed in a managerial position over the daily operations of the PDR program. The administrator shall serve as a direct liaison to the program.

Board. The Board of Supervisors of James City County.

Conservation easement. A non-possessory interest in one or more parcels by one or more qualified easement holders under section 16A-10(d) of the Code of the County of James City acquired under the Open-Space Land Act (Virginia Code § 10.1-1700 et seq.), whether the easement is appurtenant or in gross, voluntarily offered by an owner and acquired by purchase or donation pursuant to the PDR program, imposing limitations or affirmative obligations for the purpose of retaining or protecting natural or open-space values of the parcel or parcels, assuring availability for agricultural, forestal, recreational or open-space use, protecting natural resources, maintaining or enhancing air or water quality, or preserving the historical, architectural or archaeological aspects of the parcel or parcels.

Dwelling. Any structure which is designed for use for residential purposes.

Owner. The owner or owners of the freehold interest of the parcel.

Parcel. A lot or tract of land, lawfully recorded in the clerk's office of the circuit court of the City of Williamsburg and County of James City. A conservation easement may contain one or more parcels, for purposes of this chapter the term "parcel" shall include all parcels covered by, or proposed to be covered by, the conservation easement.

Purchase of development rights (PDR) guidelines. The current guidelines document as approved by the purchase of development rights committee, the county administrator, the manager of development management, and the community services manager.

Sec. 16A-5. Designation of program administrator; powers and duties.

(a) *Designation.* The administrator shall report to the assistant manager of community services.

(b) *Powers and duties.* The administrator shall administer the PDR program and shall have powers and duties to:

- (1) Establish reasonable and standard procedures and forms consistent with this chapter for the administration and implementation of the program.
- (2) Promote the program, in cooperation with the PDR committee, by providing educational materials to the public and conducting informational meetings.
- (3) Investigate and pursue, in conjunction with the county, state, federal and other programs available to provide additional public and private resources to fund the program and to maximize private participation.

- (4) Evaluate all applications to determine their eligibility and their ranking score, rank applications based on their ranking score, and make recommendations thereon to the PDR committee.
- (5) Coordinate the preparation of appraisals.
- (6) Negotiate with owner relating to conservation easement terms and value.
- (7) Provide staff support to the board, the PDR committee, and the appraisal review committee.
- (8) For each conservation easement accepted into the program, establish baseline data, and assure that the terms and conditions of the easement are monitored and complied with by coordinating a monitoring program with each easement holder.

Sec. 16A-6. Purchase of development rights committee established; powers and duties.

(a) *Establishment.* The PDR committee is hereby established, as follows:

- (1) The committee shall consist of five members appointed by the board. Each member shall be a property owner in and of James City County. The committee should, but is not required to be, comprised of members who are knowledgeable in the fields of conservation, conservation biology, planning, real estate, land appraisal, farming and forestry and may also include members of conservation easement holding agencies and conservation organizations.
- (2) The members of the committee shall serve at the pleasure of the board. The initial terms of the members shall be as follows: two members shall be for one year; two members shall be for two years; and one member shall be for three years. Each term after the initial term shall be for three years.
- (3) The members of the committee shall serve without pay, but the board may, in its discretion, reimburse members for actual and necessary expenses incurred in the performance of his/her duties.
- (4) The committee shall elect a chairman, vice chairman and secretary at its first meeting each calendar year. The secretary need not be a member of the committee.
- (5) The administrator shall be an ex officio member of the committee.

(b) *Powers and duties.* The PDR committee shall have the powers and duties to:

- (1) Promote the program, in cooperation and under the guidance of the administrator, by providing educational materials to the public and conducting informational meetings.
- (2) Review the ranking of applications recommended by the administrator, and make recommendations to the administrator and the board as to which conservation easements should be purchased.
- (3) Annually review the program's eligibility and ranking criteria and recommend to the administrator any changes needed to maintain the program's consistency with the comprehensive plan, or to improve the administration, implementation and effectiveness of the program.
- (4) A quorum shall consist of three members present and the committee shall operate on a "majority rule" basis.
- (5) Develop and annually update a purchase of development rights guideline document which shall guide the purchase of development rights committee in its review.

(Ord. No. 194, 11-27-01; Ord. No. 194-1, 12-11-07)

Sec. 16A-7. Appraisal review committee established; powers and duties.

(a) *Establishment.* The appraisal review committee is hereby established, as provided herein:

- (1) An appraisal review committee shall be created as a subcommittee of the PDR committee and operate directly under its supervision.
- (2) The subcommittee shall consist of a minimum of three members. The subcommittee shall be comprised of at least one real estate professional, one member of the PDR committee, and the county assessor. The members shall be appointed by the PDR committee.
- (3) The members of the subcommittee shall serve at the pleasure of the PDR committee. Each member, other than the county assessor, shall serve a one year term. The county assessor shall be a permanent member of the subcommittee.
- (4) The county assessor shall be the chairman of the subcommittee.

(b) *Powers and duties.*

The appraisal review committee shall have the power and duty to review appraisals to assure they are consistent with appropriate appraisal guidelines and practices, and to make recommendations thereon to the PDR committee, and provide final approved appraisal results to the PDR committee, and the administrator.

Sec. 16A-8. Eligibility criteria.

In order for a parcel to be eligible for a conservation easement, it must meet the following criteria: (i) the use of the parcel subject to the conservation easement must be consistent with the comprehensive plan; (ii) the proposed terms of the conservation easement must be consistent with the minimum conservation easement terms and conditions set forth in section 16A-10, unless modified by the board; and (iii) the parcel must be located in the County of James City.

Sec. 16A-9. Ranking system.

In order to effectuate the purposes of this chapter, parcels for which conservation easement applications have been received shall be evaluated by utilizing a ranking system. The initial ranking system and changes to the ranking system shall be approved by the county administrator, the manager of development management, and the community services manager. The ranking system may be used to prioritize the acquisition of conservation easements.

Sec. 16A-10. Conservation easement terms and conditions.

Each conservation easement shall conform with the requirements of the Open-Space Land Act of 1966 (Virginia Code § 10.1-1700 et seq.) and this chapter. The deed of easement shall be in a form approved by the county attorney, and shall contain, at a minimum, the following provisions:

- (a) *Restriction on dwellings and subdivision.* The PDR Guidelines shall apply on matters involving dwellings and future subdivision.

- (b) *Conservation easement duration.* A conservation easement acquired under the terms of this chapter shall be perpetual.
- (c) *Other restrictions.* In addition to the foregoing, the parcel shall be subject to standard restrictions contained in conservation easements pertaining to uses and activities allowed on the parcel. These standard restrictions shall be delineated in the deed of easement and shall include, but not necessarily be limited to, restrictions pertaining to: (i) accumulation of trash and junk; (ii) grading, blasting or earth removal; (iii) conduct of industrial or commercial activities on the parcel that would make its use inconsistent with the intent and purposes of this ordinance; and (iv) monitoring of the easement.
- (d) *Designation of easement holders.* The county shall be the easement holder, and if designated by the board, one or more other public bodies, as defined in Virginia Code Section 10.1-1700, or one or more organizations then qualifying as an eligible donee as defined by Section 170(h)(3) of the Internal Revenue Code of 1986, as amended, shall also be an easement holder.

Sec. 16A-11. Application and evaluation procedure.

Each application for a conservation easement shall be processed and evaluated as follows:

- (a) *Application; program materials to be provided to owner.* The application materials provided by the administrator to an owner shall include, at a minimum, a standard application form and information about the PDR program.
- (b) *Application form.* Each application shall be submitted to the administrator on a standard form prepared by the administrator. The application form shall require, at a minimum, that the owner provide: the names of all owners of the parcel, the address and telephone number of each owner, the acreage of the parcel, the James City County tax map and parcel number, the zoning designation of the parcel, and permission for the administrator and an independent appraiser and such other staff as may be appropriate to enter the property after reasonable notice to the owner to evaluate the parcel, and for the county assessor or an independent appraiser to appraise the property. The application form shall also include a space for an owner to indicate whether he/she volunteers to have his parcel be subject to greater restrictions than those contained in the standard deed of easement, and to delineate those voluntary, additional restrictions.
- (c) *Additional application information required by administrator.* The administrator may require an owner to provide additional information deemed necessary to determine: (i) whether the proposed easement is eligible for purchase; (ii) the ranking of the parcel; and (iii) the value of such easement.
- (d) *Submittal of application.* Applications shall be submitted to the administrator. An application fee may be required. An application may be submitted at any time during an open application period. However, applications received after an open application period deadline, shall be held by the administrator until the next open application period.
- (e) *Evaluation by administrator.* The administrator shall evaluate each application received and determine whether the application is complete. If the application is incomplete, the administrator shall inform the owner in writing of the information that must be submitted in order for the application to be deemed complete. When an application is

deemed complete, the administrator shall determine whether the parcel satisfies the eligibility criteria set forth in section 16A-8 and, if it does, shall determine the number of points to be attributed to the parcel by applying the ranking system in accordance with section 16A-9. The administrator shall then rank each parcel with the parcel scoring the most points being the highest ranked and descending there from. The administrator shall submit the list of ranked parcels to the PDR committee after each open application period.

- (f) *Evaluation by PDR committee.* The PDR committee shall review the list of ranked parcels submitted by the administrator. The PDR committee shall forward to the administrator and the board recommendations of which conservation easements should be purchased.
- (g) *Evaluation by board.* The board shall review the list of ranked parcels submitted by the PDR committee and identify on which parcels it desires conservation easements. The board shall then prioritize the parcels on which it will seek to purchase conservation easements. Nothing in this chapter shall obligate the board to purchase a conservation easement on any property that is eligible for purchase.
- (h) *Requirements and deadlines may be waived.* Any requirement or deadline set forth in this chapter may be waived by the board if, for good cause, it is shown that urgent circumstances exist that warrant consideration of an application. Under such circumstances, the board may purchase a conservation easement at any time it deems necessary.
- (i) *Reapplication.* An owner of a parcel not selected by the board for purchase of a conservation easement may reapply in any future open application period.

Sec. 16 A-12. Purchase of development rights procedure.

Each purchase of a conservation easement shall proceed as follows:

- (a) *Identification of initial pool.* From the list of parcels received under section 16A-11, the board shall designate the initial pool of parcels identified for conservation easements to be purchased.
- (b) *Determining purchase price.* Negotiations with the property owners regarding the easement terms shall be coordinated by the administrator. Upon completion of these negotiations, the administrator shall arrange for an appraisal of the properties by the county assessor or an independent appraiser. Each completed appraisal shall be submitted to the administrator. The results of the appraisal shall be reviewed by the appraisal review committee which shall review and approve each appraisal. Final approved appraisal results shall be provided to the PDR committee and the administrator.
- (c) *Invitation to sell.* The county administrator shall invite the owner of each parcel included in the initial pool of parcels to sell to the county a conservation easement on that parcel for an amount based upon the appraised value of such conservation easement, subject to the terms and conditions of a proposed deed of easement. The invitation to sell shall be in writing and shall include the purchase price, the proposed deed of easement, and the date by which a written offer must be received by the

administrator in order to be accepted. The invitation may contain a form offer to be returned by the owner if the owner desires to sell a conservation easement.

- (d) Offer to sell. Each owner who desires to sell and/or donate a conservation easement shall submit a written offer that must be received by the administrator by the date contained in the invitation to sell. The offer should include a statement that substantially states the following: "(The owner) offers to sell and/or donate a conservation easement to the County of James City, Virginia for the sum of (purchase price), subject to the terms and conditions set forth in the proposed deed of easement enclosed with the invitation to sell." Nothing in this chapter shall compel an owner to submit an offer to sell.
- (e) Acceptance. An offer to sell a conservation easement shall be accepted by the board in writing, following an action by the board authorizing acceptance.
- (f) Conservation easement established. A conservation easement shall be established when the owner and an authorized representative of the holder of the easement have each signed the deed of easement. The deed shall be recorded in the office of the clerk of the circuit court of the City of Williamsburg and County of James City. A single conservation easement may be established for more than one parcel under the same ownership.
- (g) Offers not made; offers not accepted; invitation to other owners. If an owner invited to sell elects not to do so, or if the offer to sell is not accepted by the board, then the county administrator may send an invitation to sell to the owner(s) of the next highest prioritized parcel(s) remaining on the list of parcels identified in section 16A-11(g).
- (h) Costs. If the board accepts an offer to sell a conservation easement, the county shall pay the grantors tax, if any, and the county may pay all other costs, including environmental site assessments, surveys, recording costs, if any, and other charges associated with closing. However, the county shall not pay expenses or fees incurred by the property owner for independent appraisals or legal, financial, or other advice, or expenses or fees in connection with the release and subordination of liens to the easement purchased by the county.

Sec. 16A-13. Restriction on buy-back; extinguishment and exchange of easements.

- (a) Restriction on buy-back. The owner shall not have the option to reacquire any property rights relinquished under the conservation easement, except as provided hereafter, the deed of easement may allow an exchange of easements as follows:
 - (1) Petition to board. Upon the expiration of 25 years from the date on which a conservation easement was recorded, the owner or successor in interest to the property which is subject to the easement may petition the board for the extinguishment of such easement in exchange for the conveyance to the county of a conservation easement on a different parcel of property meeting all of the eligibility requirements as set forth in section 16A-8.
 - (2) Requirements. No such extinguishment and exchange of easement shall be authorized, unless a majority of the board find that:
 - (i) The extinguishment and exchange is determined to be essential to the orderly development and growth of the county;

- (ii) The extinguishment and exchange is in accordance with the comprehensive plan for the county in effect at the time of the extinguishment and exchange;
 - (iii) The extinguishment and exchange does not adversely affect the county's interests in accomplishing the purposes of this ordinance;
 - (iv) There is substituted other real property which is (a) of at least equal fair market value and at least equal acreage; (b) of greater value as permanent open-space land than the land upon which the easement is extinguished, (c) of as nearly as feasible equivalent usefulness and location for use as permanent open-space land as is the land upon which the easement is extinguished and (d) is in accordance with the Virginia Open-Space Land Act, (Virginia Code §10.1-1700 et seq.).
- (3) Expenses. The petitioner shall bear all expenses and fees in connection with the exchange, including, but not limited to purchase of the substituted easement, site assessments, surveys, closing costs, recording fees and taxes, title search, and title insurance if required.

Appendix 1: Model Shared Use Agreement for Parking Facilities

Source:

(http://transtoolkit.mapc.org/Parking//Referenced_pdfs/PortlandMetro_SharedParkingModelAgreement.pdf)

Model - Shared Use Agreement for Parking Facilities

Effective: _____

This Shared Use Agreement for Parking Facilities, entered into this ____ day of _____, between _____, hereinafter called lessor and _____, hereinafter called lessee.

In consideration of the covenants herein, lessor agrees to share with lessee certain parking facilities, as is situated in the City of _____, County of _____ and State of _____, hereinafter called the facilities, described as:

[Include legal description of location and spaces to be shared here, and as shown on Attachment 1.]

The facilities shall be shared commencing with the ____ day of _____, _____, and ending at 11:59 PM on the ____ day of _____, _____, for [insert negotiated compensation figures, as appropriate]. [The lessee agrees to pay at [insert payment address] to lessor by the ____ day of each month [or other payment arrangements].]

Lessor hereby represents that it holds legal title to the facilities

The parties agree:

1. USE OF FACILITIES

This section should describe the nature of the shared use (exclusive, joint sections, time(s) and day(s) of week of usage.

-SAMPLE CLAUSE-

[Lessee shall have exclusive use of the facilities. The use shall only be between the hours of 5:30 PM Friday through 5:30 AM Monday and between the hours of 5:30 PM and 5:30 AM Monday through Thursday.]

2. MAINTENANCE

This section should describe responsibility for aspects of maintenance of the facilities. This could include cleaning, striping, seal coating, asphalt repair and more.

-SAMPLE CLAUSE-

[Lessor shall provide, as reasonably necessary asphalt repair work. Lessee and Lessor agree to share striping, seal coating and lot sweeping at a 50%/50% split based upon mutually accepted maintenance contracts with outside vendors. Lessor shall maintain lot and landscaping at or above the current condition, at no additional cost to the lessee.]

3. UTILITIES and TAXES

This section should describe responsibility for utilities and taxes. This could include electrical, water, sewage, and more.

-SAMPLE CLAUSE-

[Lessor shall pay all taxes and utilities associated with the facilities, including maintenance of existing facility lighting as directed by standard safety practices.]

4. SIGNAGE

This section should describe signage allowances and restrictions.

-SAMPLE CLAUSE-

[Lessee may provide signage, meeting with the written approval of lessor, designating usage allowances.]

5. ENFORCEMENT

This section should describe any facility usage enforcement methods.

-SAMPLE CLAUSE-

[Lessee may provide a surveillance officer(s) for parking safety and usage only for the period of its exclusive use. Lessee and lessor reserve the right to tow, at owners expense, vehicles improperly parked or abandoned. All towing shall be with the approval of the lessor.]

6. COOPERATION

This section should describe communication relationship.

-SAMPLE CLAUSE-

[Lessor and lessee agree to cooperate to the best of their abilities to mutually use the facilities without disrupting the other party. The parties agree to meet on occasion to work out any problems that may arise to the shared use.]

7. INSURANCE

This section should describe insurance requirements for the facilities.

-SAMPLE CLAUSE-

[At their own expense, lessor and lessee agree to maintain liability insurance for the facilities as is standard for their own business usage.]

8. INDEMNIFICATION

This section should describe indemnification as applicable and negotiated. This is a very technical section and legal counsel should be consulted for appropriate language to each and every agreement.

-NO SAMPLE CLAUSE PROVIDED-

9. TERMINATION

This section should describe how to or if this agreement can be terminated and post termination responsibilities.

-SAMPLE CLAUSE-

[If lessor transfers ownership, or if part of all of the facilities are condemned, or access to the facilities is changed or limited, lessee may, in its sole discretion terminate this agreement without further liability by giving Lessor not less than 60 days prior written notice.

Upon termination of this agreement, Lessee agrees to remove all signage and repair damage due to excessive use or abuse. Lessor agrees to give lessee the right of first refusal on subsequent renewal of this agreement.]

10. SUPPLEMENTAL COVENANTS

This section should contain any additional covenants, rights, responsibilities and/or agreements.

-NO SAMPLE CLAUSE PROVIDED

IN WITNESS WHEREOF, the parties have executed this Agreement as of the Effective Date Set forth at the outset hereof.

[Signature and notarization as appropriate to a legal document and as appropriate to recording process negotiated between parties.]

Appendix 2. Virginia Code §10.1-603.14.

Reference for local penalties and other remedies for code violations.

§ 10.1-603.14. Penalties, injunctions, and other legal actions.

A. Any person who violates any provision of this article, or of any regulations or ordinances adopted hereunder, including those adopted pursuant to the conditions of an MS4 permit or who fails, neglects or refuses to comply with any order of the permit issuing authority, the Department, Board, or court, issued as herein provided, shall be subject to a civil penalty not to exceed \$32,500 for each violation within the discretion of the court. Each day of violation of each requirement shall constitute a separate offense. The Board shall adopt a regulation establishing a schedule of civil penalties to be utilized by the permit issuing authority in enforcing the provisions of this article. The Board, Department, or permit issuing authority for the locality wherein the land lies may issue a summons for collection of the civil penalty and the action may be prosecuted in the appropriate circuit court. Any civil penalties assessed by a court as a result of a summons issued by a locality shall be paid into the treasury of the locality wherein the land lies, except where the violator is the locality itself, or its agent. When the penalties are assessed by the court as a result of a summons issued by the Board or Department, or where the violator is the locality itself, or its agent, the court shall direct the penalty to be paid into the state treasury and deposited by the State Treasurer into the Virginia Stormwater Management Fund established pursuant to § [10.1-603.4:1](#). Such civil penalties paid into the treasury of the locality in which the violation occurred are to be used for the purpose of minimizing, preventing, managing, or mitigating pollution of the waters of the locality and abating environmental pollution therein in such manner as the court may, by order, direct.

B. Any person who willfully or negligently violates any provision of this article, any regulation or order of the Board, order of the permit issuing authority or the Department, ordinance of any locality, any condition of a permit, or any order of a court shall be guilty of a misdemeanor punishable by confinement in jail for not more than 12 months and a fine of not less than \$2,500 nor more than \$32,500, either or both. Any person who knowingly violates any provision of this article, any regulation or order of the Board, order of the permit issuing authority or the Department, ordinance of any locality, any condition of a permit or any order of a court issued as herein provided, or who knowingly makes any false statement in any form required to be submitted under this article or knowingly renders inaccurate any monitoring device or method required to be maintained under this article, shall be guilty of a felony punishable by a term of imprisonment of not less than one year nor more than three years, or in the discretion of the jury or the court trying the case without a jury, confinement in jail for not more than 12 months and a fine of not less than \$5,000 nor more than \$50,000 for each violation. Any defendant that is not an individual shall, upon conviction of a violation under this subsection, be sentenced to pay a fine of not less than \$10,000. Each day of violation of each requirement shall constitute a separate offense.

C. Any person who knowingly violates any provision of this article, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily harm, shall, upon conviction, be guilty of a felony punishable by a term of imprisonment of

not less than two years nor more than 15 years and a fine of not more than \$250,000, either or both. A defendant that is not an individual shall, upon conviction of a violation under this subsection, be sentenced to pay a fine not exceeding the greater of \$1 million or an amount that is three times the economic benefit realized by the defendant as a result of the offense. The maximum penalty shall be doubled with respect to both fine and imprisonment for any subsequent conviction of the same person under this subsection.

D. Violation of any provision of this article may also include the following sanctions:

1. The Board, Department, or the permit issuing authority may apply to the circuit court in any jurisdiction wherein the land lies to enjoin a violation or a threatened violation of the provisions of this article or of the local ordinance without the necessity of showing that an adequate remedy at law does not exist.

2. With the consent of any person who has violated or failed, neglected or refused to obey any ordinance, any condition of a permit, any regulation or order of the Board, any order of the permit issuing authority or the Department, or any provision of this article, the Board, Department, or permit issuing authority may provide, in an order issued against such person, for the payment of civil charges for violations in specific sums, not to exceed the limit specified in this section. Such civil charges shall be instead of any appropriate civil penalty that could be imposed under this section. Any civil charges collected shall be paid to the locality or state treasury pursuant to subsection A.

(1989, cc. 467, 499; 2004, c. [372](#); 2006, c. [171](#).)

Appendix 3. Code and Ordinance Worksheet

CODE AND ORDINANCE WORKSHEET

The Code and Ordinance Worksheet allows an in-depth review of the standards, ordinances, and codes (i.e., the development rules) that shape how development occurs in your community. You are guided through a systematic comparison of your local development rules against the model development principles. Institutional frameworks, regulatory structures and incentive programs are included in this review. The worksheet consists of a series of questions that correspond to each of the model development principles. Points are assigned based on how well the current development rules agree with the site planning benchmarks derived from the model development principles.

The worksheet is intended to guide you through the first two steps of a local site planning roundtable.

Step 1: Find out what the Development Rules are in your community.

Step 2: See how your rules stack up to the Model Development Principles.

The homework done in these first two steps helps to identify which development rules are potential candidates for change.

PREPARING TO COMPLETE THE CODE AND ORDINANCE WORKSHEET

Two tasks need to be performed before you begin in the worksheet. First, you must identify all the development rules that apply in your community. Second, you must identify the local, state, and federal authorities that actually administer or enforce the development rules within your community. Both tasks require a large investment of time. The development process is usually shaped by a complex labyrinth of regulations, criteria, and authorities. A team approach may be helpful. You may wish to enlist the help of a local plan reviewer, land planner, land use attorney, or civil engineer. Their real-world experience with the development process is often very useful in completing the worksheet.

Identify the Development Rules

Gather the key documents that contain the development rules in your community. A list of potential documents to look for is provided in Table 1. Keep in mind that the information you may want on a particular development rule is not always found in code or regulation, and maybe hidden in supporting design manuals, review checklists, guidance document or construction specifications. In most cases, this will require an extensive search. Few communities include all of their rules in a single document. Be prepared to contact state and federal, as well as local agencies to obtain copies of the needed documents.

Table 1: Key Local Documents that will be Needed to Complete the COW

Zoning Ordinance
Subdivision Codes
Street Standards or Road Design Manual
Parking Requirements
Building and Fire Regulations/Standards
Stormwater Management or Drainage Criteria
Buffer or Floodplain Regulations
Environmental Regulations
Tree Protection or Landscaping Ordinance
Erosion and Sediment Control Ordinances
Public Fire Defense Masterplans
Grading Ordinance

Identify Development Authorities

Once the development rules are located, it is relatively easy to determine which local agencies or authorities are actually responsible for administering and enforcing the rules. Completing this step will provide you with a better understanding of the intricacies of the development review process and helps identify key members of a future local roundtable. Table 2 provides a simple framework for identifying the agencies that influence development in your community. As you will see, space is provided not only for local agencies, but for state and federal agencies as well. In some cases, state and federal agencies may also exercise some authority over the local development process (e.g., wetlands, some road design, and stormwater).

USING THE WORKSHEET: HOW DO YOUR RULES STACK UP TO THE MODEL DEVELOPMENT PRINCIPLES?

Completing the Worksheet

Once you have located the documents that outline your development rules and identified the authorities responsible for development in your community, you are ready for the next step. You can now use the worksheet to compare your development rules to the model development principles. The worksheet is presented at the end of this chapter. The worksheet presents seventy-seven site planning benchmarks. The benchmarks are posed as questions. Each benchmark focuses on a specific site design practice, such as the minimum diameter of cul-de-sacs, the minimum width of streets, or the minimum parking ratio for a certain land use. You should refer to the codes, ordinances, and plans identified in the first step to determine the appropriate development rule. The questions require either a yes or no response or specific numeric criteria. If your development rule agrees with the site planning benchmark, you are awarded points.

Calculating Your Score

A place is provided on each page of the worksheet to keep track of your running score. In addition, the worksheet is subdivided into three categories:

- Residential Streets and Parking Lots (Principles No. 1 - 10)
- Lot Development (Principles No. 11 - 16)
- Conservation of Natural Areas (Principles No. 17 - 22).

For each category, you are asked to subtotal your score. This “**Time to Assess**” allows you to consider which development rules are most in line with the site planning benchmarks and what rules are potential candidates for change.

The total number of points possible for all of the site planning benchmarks is 100. Your overall score provides a general indication of your community's ability to support environmentally sensitive development. As a general rule, if your overall score is lower than 80, then it may be advisable to systematically reform your local development rules. A score sheet is provided at end of the Code and Ordinance Worksheet to assist you in determining where your community's score places in respect to the Model Development Principles. Once you have completed the worksheet, go back and review your responses. Determine if there are specific areas that need improvement (e.g., development rules that govern road design) or if your development rules are generally pretty good. This review is key to implementation of better development: assessment of your current development rules and identification of impediments to innovative site design. This review also directly leads into the next step: a site planning roundtable process conducted at the local government level. The primary tasks of a local roundtable are to systematically review existing development rules and then determine if changes can or should be made. By providing a much-needed framework for overcoming barriers to better development, the site planning roundtable can serve as an important tool for local change.

Table 2: Local, State, and Federal Authorities Responsible for Development in Your Community

Development Responsibility	State/Federal	County	Town
Sets road standards	Agency:		
	Contact Name:		
	Phone No.:		
Review/approves subdivision plans	Agency:		
	Contact Name:		
	Phone No.:		
Establishes zoning ordinances	Agency:		
	Contact Name:		
	Phone No.:		
Establishes subdivision ordinances	Agency:		
	Contact Name:		
	Phone No.:		
Reviews/establishes stormwater management or drainage criteria	Agency:		
	Contact Name:		
	Phone No.:		
Provides fire protection and fire protection code enforcement	Agency:		
	Contact Name:		
	Phone No.:		
Oversees buffer ordinance	Agency:		
	Contact Name:		
	Phone No.:		
Oversees wetland protection	Agency:		
	Contact Name:		
	Phone No.:		
Establishes grading requirements or oversees erosion and sediment control program	Agency:		
	Contact Name:		
	Phone No.:		
Reviews/approves septic systems	Agency:		
	Contact Name:		
	Phone No.:		
Review/approves utility plans (e.g., water and sewer)	Agency:		
	Contact Name:		
	Phone No.:		
Reviews/approves forest conservation/ tree protection plans	Agency:		
	Contact Name:		
	Phone No.:		

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1. Street Width

What is the minimum pavement width allowed for streets in low density residential developments that have less than 500 daily trips (ADT)? _____ feet

If your answer is between **18-22 feet**, give yourself **4 points** Δ

At higher densities are parking lanes allowed to also serve as traffic lanes (i.e., queuing streets)?

YES/ NO

If your answer is **YES**, give yourself **3 points** Δ

Notes on Street Width (include source documentation such as name of document, section and page #):

The Virginia Department of Transportation (VDOT) Subdivision Street Standards will dictate this parameter for most localities with VDOT-maintained roadways (primarily counties). The following questions should be asked of the locality before proceeding with Questions 1 – 4:

- Who is responsible for the design standards that govern streets: VDOT or the locality?
- If it is VDOT, does your locality have any discretion to modify the standards?

2. Street Length

Do street standards promote the most efficient street layouts that reduce overall street length?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Notes on Street Length (include source documentation such as name of document, section and page #):

While VDOT may control street standards, street length will be more a function of subdivision design controlled by the locality, such as whether cluster designs are encouraged or required.

3. Right-of-Way Width

What is the minimum right of way (ROW) width for a residential street? _____ feet

If your answer is **less than 45 feet**, give yourself **3 points** Δ

Does the code allow utilities to be placed under the paved section of the ROW?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Notes on ROW Width (include source documentation such as name of document, section and page #):

See Note with Question 1 about VDOT.

4. Cul-de-Sacs

What is the minimum radius allowed for cul-de-sacs?

_____ feet

If your answer is **less than 35 feet**, give yourself **3 points** Δ

If your answer is **36 feet to 45 feet**, give yourself **1 point** Δ

Can a landscaped island be created within the cul-de-sac?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Are alternative turnarounds such as “hammerheads” allowed on short streets in low density residential developments?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Notes on Cul-de-Sacs (include source documentation such as name of document, section and page #):

See Note with Question 1 about VDOT.

=====

5. Vegetated Open Channels

Are curb and gutters required for most residential street sections?

YES/ NO

If your answer is **NO**, give yourself **2 points** Δ

Are there established design criteria for swales that can provide stormwater quality treatment (i.e., dry swales, biofilters, or grass swales)?

YES/ NO

If your answer is **YES**, give yourself **2 points** Δ

Notes on Vegetated Open Channel (include source documentation such as name of document, section and page #):

This question ascertains whether the locality requires curb & gutter in most cases versus “open section” or “rural section” design. For the question about swales, the swales can be used anywhere within a development project (not just in the road right-of-way), but there have to be specific design criteria or policies that relate swale design to stormwater treatment (not just grass ditches along rural roads).

6. Parking Ratios

What is the minimum parking ratio for a professional office building (per 1000 ft² of gross floor area)?

_____ spaces

If your answer is **less than 3.0 spaces**, give yourself **1 point** Δ

What is the minimum required parking ratio for shopping centers (per 1,000 ft² gross floor area)?

_____ spaces

If your answer is **4.5 spaces or less**, give yourself **1 point** Δ

What is the minimum required parking ratio for single family homes (per home)?

_____ spaces

If your answer is **less than or equal to 2.0 spaces**, give yourself **1 point** Δ

Are your parking requirements set as maximum or median (rather than minimum) requirements?

YES/ NO

If your answer is **YES**, give yourself **2 points** Δ

Notes on Parking Ratios (include source documentation such as name of document, section and page #):

7. Parking Codes

Is the use of shared parking arrangements promoted?

YES/ NO

If your answer is **YES**, give yourself 1 point Δ

Are model shared parking agreements provided?

YES/ NO

If your answer is **YES**, give yourself 1 point Δ

Are parking ratios reduced if shared parking arrangements are in place?

YES/ NO

If your answer is **YES**, give yourself 1 point Δ

If mass transit is provided nearby, is the parking ratio reduced?

YES/ NO

If your answer is **YES**, give yourself 1 point Δ

Notes on Parking Codes (include source documentation such as name of document, section and page #):

8. Parking Lots

What is the minimum stall width for a standard parking space?

_____ feet

If your answer is **9 feet or less**, give yourself 1 point Δ

What is the minimum stall length for a standard parking space?

_____ feet

If your answer is **18 feet or less**, give yourself 1 point Δ

Are at least 30% of the spaces at larger commercial parking lots required to have smaller dimensions for compact cars?

YES/ NO

If your answer is **YES**, give yourself 1 point Δ

Can pervious materials be used for spillover parking areas?

YES/ NO

If your answer is **YES**, give yourself 2 points Δ

Notes on Parking Lots (include source documentation such as name of document, section and page #):

9. Structured Parking

Are there any incentives to developers to provide parking within garages rather than surface parking lots?

YES/ NO

If your answer is **YES**, give yourself 1 point Δ

Notes on Structured Parking (include source documentation such as name of document, section and page #):

10. Parking Lot Runoff

Is a minimum percentage of a parking lot required to be landscaped?

YES/ NO

If your answer is **YES**, give yourself 2 points *Δ*

Is the use of bioretention islands and other stormwater practices within landscaped areas or setbacks allowed?

YES/ NO

If your answer is **YES**, give yourself 2 points *Δ*

Notes on Parking Lot Runoff (include source documentation such as name of document, section and page #):

The second part of this question (bioretention islands) is asking about conflicts between landscape/parking codes and potential use of bioretention. For instance, does the landscape code require that islands be raised and curb & gutter used? Are curb cuts prohibited in parking standards? Most importantly, can areas used to meet landscape requirements also serve as bioretention areas?

≡ **Time to Assess:** Principles 1 - 10 focused on the codes, ordinances, and standards that determine the size, shape, and construction of parking lots, roadways, and driveways in the suburban landscape. There were a total of 40 points available for Principles 1 - 10. What was your total score?

SUBTOTAL FOR QUESTIONS 1 THROUGH 10 =

Where were your codes and ordinances most in line with the principles? What codes and ordinances are potential impediments to better development?

11. Open Space Design

Are open space or cluster development designs allowed in the community?

YES/ NO

If your answer is **YES**, give yourself **3 points** Δ

If your answer is **NO**, skip to question No. 12

Is land conservation or impervious cover reduction a major goal or objective of the open space design ordinance?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Are the submittal or review requirements for open space design greater than those for conventional development?

YES/ NO

If your answer is **NO**, give yourself **1 point** Δ

Is open space or cluster design a by-right form of development?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Are flexible site design criteria available for developers that utilize open space or cluster design options (e.g., setbacks, road widths, lot sizes)?

YES/ NO

If your answer is **YES**, give yourself **2 points** Δ

Notes on Open Space Design (include source documentation such as name of document, section and page #):

The questions about submittal and review requirements and the by-right form of development are pertinent to recent changes in Virginia Code. If a locality has a cluster option in the code, it **MUST** be a by-right option (in other words, not a special or conditional use permit process).

12. Setbacks and Frontages

Are irregular lot shapes (e.g., pie-shaped, flag lots) allowed in the community?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

What is the minimum requirement for front setbacks for a one half (1/2) acre residential lot?

_____ feet

If your answer is **20 feet or less**, give yourself **1 point** Δ

What is the minimum requirement for rear setbacks for a one half (1/2) acre residential lot?

_____ feet

If your answer is **25 feet or less**, give yourself **1 point** Δ

What is the minimum requirement for side setbacks for a one half (1/2) acre residential lot?

_____ feet

If your answer is **8 feet or less**, give yourself **1 points** Δ

What is the minimum frontage distance for a one half (1/2) acre residential lot?

_____ feet

If your answer is **less than 80 feet**, give yourself **2 points** Δ

Notes on Setback and Frontages (include source documentation such as name of document, section and page #):
 These questions suggest that smaller setbacks and tighter design layouts are good. While you should score this question as it is written, also be aware of whether the tighter footprint also has a conservation objective or just leads to more overall development. You should note this in your documentation.

13. Sidewalks

What is the minimum sidewalk width allowed in the community?

_____ feet

If your answer is **4 feet or less**, give yourself **2 points** Δ

Are sidewalks always required on both sides of residential streets?

YES/ NO

If your answer is **NO**, give yourself **2 points** Δ

Are sidewalks generally sloped so they drain to the front yard rather than the street?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Can alternate pedestrian networks be substituted for sidewalks (e.g., trails through common areas)?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Notes on Sidewalks (include source documentation such as name of document, section and page #):

14. Driveways

What is the minimum driveway width specified in the community?

_____ feet

If your answer is **9 feet or less (one lane) or 18 feet (two lanes)**, give yourself **2 points** Δ

Can pervious materials be used for single family home driveways (e.g., grass, gravel, porous pavers, etc)?

YES/ NO

If your answer is **YES**, give yourself **2 points** Δ

Can a "two track" design be used at single family driveways?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Are shared driveways permitted in residential developments?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Notes on Driveways (include source documentation such as name of document, section and page #):

Many localities will not have any standards for private driveways, and therefore the responders may be confused by the question. You may get an answer like "Sure, people can do that if they want." However, you would only assign the points in cases where the locality has a specific design standard or policy that allows or encourages the practice. If the codes and standards are silent on the topic, do not give the points.

15. Open Space Management

Skip to question 16 if open space, cluster, or conservation developments are not allowed in your community.

Does the community have enforceable requirements to establish associations that can effectively manage open space?

YES/ NO

*If your answer is **YES**, give yourself 2 points Δ*

Are open space areas required to be consolidated into larger units?

YES/ NO

*If your answer is **YES**, give yourself 1 point Δ*

Does a minimum percentage of open space have to be managed in a natural condition?

YES/ NO

*If your answer is **YES**, give yourself 1 point Δ*

Are allowable and unallowable uses for open space in residential developments defined?

YES/ NO

*If your answer is **YES**, give yourself 1 point Δ*

Can open space be managed by a third party using land trusts or conservation easements?

YES/ NO

*If your answer is **YES**, give yourself 1 point Δ*

Notes on Open Space Management (include source documentation such as name of document, section and page #):
Often, you will find that even cluster-type subdivisions do not have any commonly managed open space (e.g., the open space parcel is a privately-held development lot that cannot be further divided). The intent of this question is to ascertain whether “good” open space is being created through the standards. Are conservation values required for the open space, or can it be used for any purpose, such as active recreation or intensive farming.

16. Rooftop Runoff

Can rooftop runoff be discharged to yard areas?

YES/ NO

*If your answer is **YES**, give yourself 2 points Δ*

Do current grading or drainage requirements allow for temporary ponding of stormwater on front yards or rooftops?

YES/ NO

*If your answer is **YES**, give yourself 2 points Δ*

Notes on Rooftop Runoff (include source documentation such as name of document, section and page #):
Similar the driveway question (#14), many localities will not have standards for rooftop runoff. In this case, assign the points only if local standards allow or encourage the practice. No points are assigned if codes and standards are silent on the matter.

≡ **Time to Assess:** Principles 11 through 16 focused on the regulations which determine lot size, lot shape, housing density, and the overall design and appearance of our neighborhoods. There were a total of **36** points available for Principles 11 - 16. What was your total score?

SUBTOTAL FOR QUESTIONS 11 THROUGH 16 =

Where were your codes and ordinances most in line with the principles? What codes and ordinances are potential impediments to better development?

17. Buffer Systems

Is there a stream buffer ordinance in the community?

YES/ NO

If your answer is **YES**, give yourself **2 points** Δ

If so, what is the minimum buffer width?

_____ feet

If your answer is **75 feet or more**, give yourself **1 point** Δ

Is expansion of the buffer to include freshwater wetlands, steep slopes or the 100-year floodplain required?

YES/ NO

If your answer is **YES**, give yourself **1 point** Δ

Notes on Buffer Systems (include source documentation such as name of document, section and page #):

In Virginia, there will be a clear delineation in responses to questions 17 and 18 based on whether the locality is subject to the requirements of the Chesapeake Bay Preservation Act and Regulations. Localities in "Tidewater" Virginia must implement the standards, including a buffer ordinance. Other localities may elect to do so, and several have.

18. Buffer Maintenance

If you do not have stream buffer requirements in your community, skip to question No. 19

Does the stream buffer ordinance specify that at least part of the stream buffer be maintained with native vegetation?

YES/ NO

If your answer is **YES**, give yourself **2 points**

Does the stream buffer ordinance outline allowable uses?

YES/ NO

If your answer is **YES**, give yourself **1 point**

Does the ordinance specify enforcement and education mechanisms?

YES/ NO

If your answer is **YES**, give yourself 1 point Δ

Notes on Buffer Systems (include source documentation such as name of document, section and page #):

For the last part of the question, assign the point if the ordinance has enforcement mechanisms. It may be unusual for the ordinance to specify education in the VA context.

19. Clearing and Grading

Is there any ordinance that requires or encourages the preservation of natural vegetation at residential development sites?

YES/ NO

If your answer is **YES**, give yourself 2 points Δ

Do reserve septic field areas need to be cleared of trees at the time of development?

YES/ NO

If your answer is **NO**, give yourself 1 point Δ

Notes on Buffer Maintenance (include source documentation such as name of document, section and page #):

20. Tree Conservation

If forests or specimen trees are present at residential development sites, does some of the stand have to be preserved?

YES/ NO

If your answer is **YES**, give yourself 2 points Δ

Are the limits of disturbance shown on construction plans adequate for preventing clearing of natural vegetative cover during construction?

YES/ NO

If your answer is **YES**, give yourself 1 point Δ

Notes on Tree Conservation (include source documentation such as name of document, section and page #):

For the second part of the question, note that Erosion and Sediment Control plans should show a limit of clearing or limit of disturbance. However, this does not automatically mean that natural vegetation is spared during construction. For the point to be assigned, the limit of disturbance must be drawn in a way that is cognizant of vegetation at the site that should not be disturbed (e.g., significant trees or forest patches, wetlands, riparian buffers, etc.).

21. Land Conservation Incentives

Are there any incentives to developers or landowners to conserve non-regulated land (open space design, density bonuses, stormwater credits or lower property tax rates)?

YES/ NO

If your answer is **YES**, give yourself 2 points Δ

Is flexibility to meet regulatory or conservation restrictions (density compensation, buffer averaging, transferable development rights, off-site mitigation) offered to developers?

YES/ NO

If your answer is **YES**, give yourself 2 points Δ

Notes on Land Cons. Incentives (include source documentation such as name of document, section and page #):
Virginia being a Dillon Rule state, some of the tools listed above are not allowed in the State, particularly TDR. However, many other tools are available that would allow a locality to claim these points – such as density bonuses for conservation, variable width buffers, tax incentives for conservation, non-structural credits for stormwater, etc.

22. Stormwater Outfalls

Is stormwater required to be treated for quality before it is discharged?

YES/ NO

If your answer is **YES**, give yourself **2 points** /1

Are there effective design criteria for stormwater best management practices (BMPs)?

YES/ NO

If your answer is **YES**, give yourself **1 point** /1

Can stormwater be directly discharged into a jurisdictional wetland without pretreatment?

YES/ NO

If your answer is **NO**, give yourself **1 point** /1

Does a floodplain management ordinance that restricts or prohibits development within the 100-year floodplain exist?

YES/ NO

If your answer is **YES**, give yourself **2 points** /1

Notes on Stormwater Outfalls (include source documentation such as name of document, section and page #):
Localities that are subject to NPDES Phase II regulations may have or be in the process of developing a water quality criteria (not all with have it in place). Other localities may elect to adopt water quality criteria for stormwater – many will have a quantity criteria (flood control), but this alone does not get the point. For design criteria, some ordinances will reference the State Stormwater Management Handbook; others will have their own. Finally, localities will likely have a floodplain ordinance, but the ordinance may actually allow development in the floodplain that meets minimum FEMA standards. The 2 points should only be assigned if the floodplain ordinance prohibits development in the entire 100-year floodplain.

≡ **Time to Assess:** Principles 17 through 22 addressed the codes and ordinances that promote (or impede) protection of existing natural areas and incorporation of open spaces into new development. There were a total of 24 points available for Principles 17 - 22. What was your total score?

SUBTOTAL FOR QUESTIONS 17 THROUGH 22 =

Where were your codes and ordinances most in line with the principles? What codes and ordinances are potential impediments to better development?

To determine final score, add up subtotal from each ≡ **Time to Assess**

Principles 1 - 10 (Page 8)

Principles 11 - 16 (Page 12)

Principles 17 - 22 (Page 15)

TOTAL

SCORING (A total of 100 points are available):		
Your Community's Score		
90- 100	Λ	Congratulations! Your community is a real leader in protecting streams, lakes, and estuaries. Keep up the good work.
80 - 89	Λ	Your local development rules are pretty good, but could use some tweaking in some areas.
79 - 70	Λ	Significant opportunities exist to improve your development rules. Consider creating a site planning roundtable.
60 - 69	Λ	Development rules are inadequate to protect your local aquatic resources. A site planning roundtable would be very useful.
less than 60	Λ	Your development rules definitely are not environmentally friendly. Serious reform of the development rules is needed.

Appendix 4: Code and Ordinance Worksheet – Addendum A Erosion Control,
Stormwater, and Other Resource Issues

A1. Erosion & Sediment Control	
Has the erosion & sediment control ordinance been updated to incorporate changes to the State Law & Regulations, effective July 2003?	YES/ NO
<i>If the local code has been amended subsequent to July 2003, assign 1 point</i>	
Does the local code regulate land disturbing activities that are smaller than the State standard?	YES/ NO
<i>If the threshold to obtain an erosion & sediment control plan is less than 10,000 square feet, assign 1 point (see note below)</i>	
Do local codes or procedures provide verification that construction sites of 1 acre or more have obtained a Virginia Storm Water Management Permit through DCR?	YES/ NO
<i>If the answer is YES, assign 1 point</i>	
<p>Notes on Stormwater Treatment (include source documentation such as name of document, section and page #): For land disturbing threshold, there will be a discrepancy in Virginia between localities subject to the Chesapeake Bay Preservation Act and those that are not. For CBPA localities, the erosion control threshold should 2,500 square feet within a Resource Management Area. Outside CBPA localities, the threshold would nominally be 10,000 square feet based on the Erosion & Sediment Control Act; however, localities can elect to have a smaller threshold. Assign the point if the threshold is less than 10,000 square feet outside the CBPA area, OR, within the CBPA area, if the 2,500 square foot limit applies to the entire county.</p> <p>The final question in this section relates to a program currently administered by the Department of Conservation & Recreation. Construction sites of 1 acre or more must obtain a construction discharge permit <u>in addition to</u> local erosion and sediment control plan approval. If the locality does not require verification, then grading permits would conceivably be issued for sites that do not have the State authorization. Legally, it is not the local responsibility to ensure this coordination, but localities that do it are demonstrating a greater degree of motivation.</p>	
A2. Stormwater Management	
Is your locality subject to the VPDES permit program for municipal separate storm sewer systems (MS4s)?	YES/NO
<i>If the answer is YES, do not assign a point, but make note in the documentation.</i>	
Does the local code contain a stormwater management ordinance, or stormwater criteria in zoning or other ordinances	YES/NO
<i>If the answer is YES, assign 1 point</i>	
Does the local stormwater ordinance include reference to the State Stormwater Management Handbook or a local design manual?	YES/NO
<i>If the answer is YES, assign 1 point</i>	
Does the local ordinance or design standards require extended detention of the 1-year, 24-hour storm	YES/NO
<i>If the answer is YES, assign 1 point</i>	
Does the local ordinance, design standards, or procedures manual provide for long-term maintenance of stormwater practices, such as a recorded maintenance agreement, inspection, and right-of-access easements or agreements?	YES/NO
<i>If the answer is YES, assign 1 point</i>	

Do the allowable stormwater treatment practices include low-impact design, better site design, conservation of open space, and other non-structural practices?	YES/NO
<i>If the answer is YES, assign 2 points</i>	
Notes on Stormwater Practices Allowed (include source documentation such as name of document, section and page #) In Virginia, CBPA localities and MS4 localities must adopt stormwater standards. Other localities may elect to adopt these standards to include quantity control, quality control, and/or channel protection (Virginia Stormwater Management Act & Regulations). The 1-year, 24-hour storm standard is not commonly applied, as it is above and beyond the nominal standards of the 2 and 10-year storms. For the low-impact development question, the local ordinance or standards should specifically address these approaches and allow their use in order for the point to be assigned.	
A3. Illicit Discharges	
Is there a local ordinance that prohibits non-stormwater flows to the stormdrain system?	YES/NO
<i>If the answer is YES, assign 1 point</i>	
Does your community have authority to investigate suspected illicit discharges and carry out enforcement actions?	YES/NO
<i>If the answer is YES, assign 1 point</i>	
Notes on Illicit Discharges (include source documentation such as name of document, section and page #) Illicit discharge detection & elimination is a required program element for MS4s. However, not all MS4s will have adopted this element into their ordinances at this point in time.	
A4. Stream & Wetland Permits	
Do the local codes or procedures require verification that all relevant State and Federal permits for impacts to streams and wetlands are obtained prior to issuance of a local grading permit?	YES/ NO
<i>If the answer is YES, assign 1 point</i>	
Notes on Stream & Wetland Permits (include source documentation such as name of document, section and page #): Both the Army Corps of Engineers and VA Department of Environmental Quality require permits for fill and discharge to streams and wetlands in some circumstances (above certain thresholds). In some cases, poor coordination between these agencies and the locality can result in conflicting plans or disturbances to streams and wetlands that have not been authorized.	
A5. Septic Systems	
Does the local code or standards require setbacks between septic systems and streams that are greater than the minimum State standard?	YES/NO
<i>If the local septic setback to streams is greater than 50 feet, assign 1 point.</i>	
Does the local code or standards require reserve drainfield size in excess of the minimum State standard?	YES/NO
<i>If the local reserve drainfield requirement is 100%, assign 1 point.</i>	

Notes on Septic Systems (include source documentation such as name of document, section and page #)
The Virginia Department of Health administers the standards and permits for septic systems and wells. However, Virginia localities are authorized to have more stringent standards.

A6. Open Space & Rural Land Protection

Is there a local program that authorizes Agricultural & Forestal Districts in accordance with State Code?	YES/NO
<i>If the answer is YES, assign 1 point</i>	
Is there a local program that authorizes Use Value Taxation for open space in accordance with State Code?	YES/NO
<i>If the answer is YES, assign 1 point</i>	
If the answer is YES to one or both of the above, does the locality require a soil & water conservation plan as a condition for enrollment in the District or taxation classification?	YES/NO
<i>If the answer is YES, assign 2 points</i>	
Does the locality have a Purchase of Development Rights program?	YES/NO
<i>If the answer is YES, assign 2 points</i>	

Notes on Open Space & Rural Land Protection (include source documentation such as name of document, section and page #)

Virginia Code authorizes localities to have Agriculture & Forestal Districts and Land Value Taxation for open space, and provides certain conditions and standards. Enrolled properties then enjoy breaks on the local property tax. However, the State does not require any conservation standards for property enrolled in one of these programs. Localities can supplement the program by requiring the conservation standards.

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≡ **Time to Assess:** Principles A1 – A6 of the Addendum focused on the codes, ordinances, and standards that address erosion control, stormwater management, and natural resource and open space management. There were a total of **20** points available for Principles A1 – A6. What was your total score?

SUBTOTAL FOR QUESTIONS A1 THROUGH A6 =

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Where were your codes and ordinances most in line with the principles? What codes and ordinances are potential impediments to better development?

Appendix 5: Additional Resources

Albemarle County, VA, *Article III. Stormwater management and water quality, Sec. 17-317 Duty to retain or establish stream buffer.*

http://www.albemarle.org/upload/images/Forms_Center/Departments/Board_of_Supervisors/Forms/Agenda/2008Files/20080123/WPTAOrdinance.htm

Arendt, Randall, *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks* (1996). National Lands Trust. Island Press: Washington, D.C.

Arendt, Randall, *Designing Open Space Subdivisions: A Practical Step-by-Step Approach* (1994). Natural Lands Trust. Hildacy Farm, Media, PA.

Arendt, Randall, *Growing Greener: Putting Conservation into Local Plans and Ordinances* (1999). Natural Lands Trust, American Planning Association, and American Society of Landscape Architects. Island Press: Washington, D.C.

Baltimore County, Maryland, *Buffer Protection and Management Ordinance, Sec. 14-341. Design standards for forest buffers and building setbacks.*

http://www.stormwatercenter.net/Model%20Ordinances/baltimore_buffer_ordinance.htm

Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community* (1998). Ellicott City, MD.

http://www.cwp.org/Resource_Library/Center_Docs/BSD/ELC_BSDpart1.pdf

http://www.cwp.org/Resource_Library/Center_Docs/BSD/ELC_BSDpart2.pdf

Center for Watershed Protection, *The Economic Benefits of Protecting Virginia's Streams, Lakes, and Wetlands and The Economic Benefits of Better Site Design in Virginia* (2001).

http://www.dcr.virginia.gov/soil_&_water/documents/swmecon.pdf

Center for Watershed Protection, *Virginia Better Site Design Case Studies: James City County and Richmond County* (2002). Produced for the Chesapeake Bay Local Assistance Department.

http://www.dcr.virginia.gov/chesapeake_bay_local_assistance/documents/VA%20BSD_Case_Studies.pdf

Charlottesville, City of, *Development Ordinances: Water Protection Ordinance* (2004).

<http://www.charlottesville.org/Modules/ShowDocument.aspx?documentid=3216>

Cronshey, Roger et al., *Urban Hydrology for Small Watersheds: TR-55* (1999). U.S. Department of Agriculture, Natural Resources Conservation Service – Conservation Engineering Division, Washington, D.C.

<http://www.cpesec.org/reference/tr55.pdf>

James City County, *Better Site Design in James City County: Report and Findings from the Better Site Design Implementation Committee* (2007).

http://www.jccegov.com/pdf/planning/betterbusdesign/BSDfinal_report.pdf

James City County, *Better Site Design Project* (2004).

<http://www.jccegov.com/planning/planning-better-site-design.html>

Kloss, Christopher and Calarusse, C., *Rooftops to Rivers: Green Strategies for Controlling Stormwater and Combined Sewer Overflows* (2006). Natural Resources Defense Council.

<http://www.nrdc.org/water/pollution/rooftops/rooftops.pdf>

Lord Fairfax Soil and Water Conservation District, *Urban Nonpoint Source Water Pollution Programs and Ordinances in Virginia, Legal Authority to Address Land Use and Water Quality From Code of Virginia* (p 4 for buffer ordinance example language).

<http://lfsxcd.org/Example%20Programs%20and%20Ordinances.pdf>

Loudoun County, Virginia, *River and Stream Corridor Overlay District* (2000).

<http://inter4.loudoun.gov/controls/speerio/resources/RenderContent.aspx?data=296c649f7e8542a0b4e1a27ee2ac292c&optimize=100&tabid=312&fmpath=%2FBoard+Standing+Committees%2FTransportation-Land+Use%2F2008%2F06-23-08>

Low Impact Development Center, *Low Impact Development Urban Design Tools Website*

(2008). <http://www.lid-stormwater.net/index.html>

McMahon, Edward, Hollberg, S. and Mastran S. *Better Models for Development in Virginia: Ideas for Creating, Maintaining and Enhancing Livable Communities* (2000). The Conservation Fund.

<http://www.conservationfund.org/node/565>

Multiple Code Corporation, *On-line Library Virginia* (2008).

http://www.municode.com/Resources/code_list.asp?stateID=46

New Kent County Community Development, *New Kent County Low Impact Development Manual* (2006).

<http://www.co.new-kent.va.us/COMDEV/LowImpactDev.php>

Pierce County Water Programs, *Pierce County Stormwater Management & Site Development Manual* (2005). University Place, WA.

<http://www.co.pierce.wa.us/xml/services/home/environ/water/cip/swmmanual/CompleteManual.pdf>

Prince George's County, *Low Impact Development: An Integrated Design Approach* (2000).

Department of Environmental Resource Programs and Planning Division.

<http://www.toolbase.org/PDF/DesignGuides/LIDstrategies.pdf>

Rappahannock Roundtable, *Model Development Principles for the Central Rappahannock: A Tri-Jurisdictional Consensus of the Rappahannock Roundtable Including Stafford County, Spotsylvania County, and Fredericksburg Virginia*.

<http://www.riverfriends.org/LinkClick.aspx?fileticket=H3RXCcc1Je8%3D&tabid=86&mid=424>

Stevens County, Washington, *Chapter 13.20: Buffers, Mitigation, Nonconforming Structures and Reasonable Use Exception* (2004).

<http://www.co.stevens.wa.us/landservices/pdfs/ordinances/criticalareas/13.20%20Buffers.%20Mitigation.%20Nonconforming%20Structures%20and%20Reasonable%20Use%20Exception.pdf>

StormwaterCenter.net, *Buffer Model Ordinance*.

http://www.stormwatercenter.net/Model%20Ordinances/buffer_model_ordinance.htm

U.S. Environmental Protection Agency, *Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices* - EPA 841-F-07-006 (2007). Nonpoint Source Control Branch, Washington, DC.

<http://www.epa.gov/owow/nps/lid/costs07/documents/reducingstormwatercosts.pdf>

U.S. Environmental Protection Agency, *Vegetated Roof Cover, Philadelphia, Pennsylvania* - EPA-841-B-00-005D (2000). Office of Water, Low-Impact Development Center.

<http://www.epa.gov/owow/nps/roofcover.pdf>

Virginia Department of Conservation and Recreation, Virginia Stormwater Management Program (2010). http://www.dcr.virginia.gov/soil_and_water/stormwat.shtml#overview

Van Buren County Community Center (Michigan), *Stormwater Management/Impervious Surface Mitigation Standards* (2003).

<http://www.vbco.org/planningeduc0133.asp>

Winogradoff, Derek, *Prince George's County Bioretention Manual* (2002). Prince George's County Department of Environmental Resources, Programs and Planning Division.

<http://www.co.pg.md.us/Government/AgencyIndex/DER/ESD/Bioretention/bioretention.asp>

Appendix 6: References

Albemarle County Attorney's Office, *Albemarle County Code* (2008).

www.albemarle.org/departments.asp?department=ctyatty&relpage=2784

Arlington County, *Zoning Ordinance, Section 36. Administration and Procedures* (p 8)

www.arlingtonva.us/departments/CPHD/planning/zoning/pdfs/Ordinance_Section36.pdf

Botetourt County, Chapter 25. Zoning (2002).

www.co.botetourt.va.us/government/documents/mc/ch025.pdf

Capital Region Council of Governments, *LIVABLE COMMUNITIES TOOLKIT Tools for Towns, Appendix A: Model Shared Parking Ordinance – Provisions* (2006). Hartford, CT.

www.crcog.org/publications/CommDevDocs/TCSP/Ch08_Technical_Part2_Parking.pdf

Center for Watershed Protection & Alliance for the Chesapeake Bay, *Virginia Fact Sheets and Case Study Findings, Better Site Design and Smart Site Practices* (2007).

Chesapeake, City of, *An Ordinance Amending Chapter 26 of the Chesapeake City Code Entitled: "ENVIRONMENT", by Adding Article XI Thereto, To Establish the Open Space and Agriculture Preservation (OSAP) Program* (2003).

www.chesapeake.va.us/SERVICES/depart/planning/pdf/OSAPOrdinance.pdf

Fluvanna County, *Chapter 22 Zoning, Section 22-17-10. Sewerage system required* (p 87).

www.co.fluvanna.va.us/planning/ordupdate/Zoning%20Ordinance.pdf

Goochland County Roundtable, unpublished findings (2007).

James City County, Attorney, *County Code* (2008). www.jccegov.com/attorney/county-code.html

Greater Minnesota Housing Fund Team and Cermak Rhoades Architects Team, *Building Better Neighborhoods* (2001). <http://www.gmhf.com/Publications/bbn.htm>

James City County, *Chapter 16 A Purchase of Development Rights Program* (2007).

www.jccegov.com/pdf/county_code/chp16a.pdf

Loudoun County, *New Airmont Agricultural and Forestal District Ordinance* (2008).

www.loudoun.gov/controls/speerio/resources/RenderContent.aspx?data=c9fddeca6f60472899618a63e60f48e7&tabid=326&fmpath=%2fOrdinances%2fAg+Districts&zoom_highlight=agricultural+and+forestal

Metropolitan Area Planning Council (MAPC), *Sustainable Transportation Toolkit: Parking* (2007).

Milwaukie, Oregon, *Milwaukie Municipal Code, Section 19.507 Structured Parking*.

www.qcode.us/codes/milwaukie/

Multiple Code Corporation, On-line Library Virginia (2008).
www.municode.com/Resources/code_list.asp?stateID=46

Oakland County Planning & Carlisle Wortman & Associates, *'Shiawassee & Huron Headwaters Preservation Project* (2003). <http://www.vbco.org/planningeduc0133.asp>

Ohm, Brian W., James A. LaGro, Jr., & Chuck Strawser, *A Model Ordinance for a Traditional Neighborhood Development* (2001). <http://urpl.wisc.edu/people/ohm/tndord.pdf>

Rappahannock-Rapidan Regional Commission, *Online Newsletter*, Fall 2007, Volume 5, Number 2 (2007). www.rrregion.org/Newsletters/RRRCNewsletter_vol5no2.htm

Stevens County, Washington, *Chapter 13.20: Buffers, Mitigation, Nonconforming Structures and Reasonable Use Exception* (2004).
www.co.stevens.wa.us/landservices/pdfs/ordinances/criticalareas/13.20%20Buffers,%20Mitigation,%20Nonconforming%20Structures%20and%20Reasonable%20Use%20Exception.pdf

StormwaterCenter.net, *Channel Protection Sizing (Cpv)*.
www.stormwatercenter.net/Manual_Builder/Sizing_Criteria/Channel%20Protection/Stream%20Channel%20Protection%20Volume%20Requirements.htm

StormwaterCenter.net, Open Space Model Ordinance.

www.stormwatercenter.net/Model%20Ordinances/open_space_model_ordinance.htm

U.S. Department of Housing and Urban Development, Office of Policy Development and Research, *The Practice of Low Impact Development* (2003).

www.huduser.org/Publications/PDF/practLowImpctDevel.pdf

U.S. Environmental Protection Agency, Protecting Natural Wetlands: *A Guide to Stormwater Best Management Practices* - EPA-843-B-96-001 (1996). Office of Water, Washington, D.C.

www.epa.gov/OWOW/wetlands/pdf/protecti.pdf

Van Buren County Community Center (Michigan), *Stormwater Management/Impervious Surface Mitigation Standards* (2003).

www.vbco.org/planningeduc0133.asp

Virginia Department of Transportation (VDOT), *Road Design Manual Appendix B Subdivision Street Design Guide* (2009). Richmond, Virginia.

<http://www.extranet.vdot.state.va.us/locdes/Electronic%20Pubs/2005%20RDM/appendb.pdf>

Washentaw County, Michigan, *Washentaw County, Michigan Regulation for Inspection of Residential Onsite Disposal Systems at Property Transfer*,

www.stormwatercenter.net/Model%20Ordinances/Final%20Illicit%20Connection%20Ordinances/washtenaw_county.htm

Appendix 7. Glossary

Best Management Practices (BMPs): A structural or non-structural management-based practice used singularly or in combination to reduce non-point source input to receiving waters in order to achieve water quality protection goals.

Non-structural BMPs - Non-engineering methods to control the amount of non-point source pollution. These may include land-use controls and vegetated buffers.

Structural BMPs - Engineered structures that are designed to reduce the delivery of pollutants from their source or to divert contaminants away from the waterbody.

Better Site Design (BSD): At the site level, BSD incorporates non-structural and natural approaches to new and re-development projects to reduce impacts on watersheds by conserving natural areas, reducing impervious cover and better integrating stormwater treatment.

Bioretention: The use of vegetation in retention areas designed to allow infiltration of runoff into the ground and transpiration by plants as well as evaporation. The plants provide additional pollutant removal and filtering functions while infiltration allows the temperature of the runoff to be cooled. Also referred to as a Biofilter or Rain Garden.

Buffer Averaging: A technique for delineating the width of a buffer such that the buffer boundary can be narrower at some points along the stream and wider at others so that its average width meets the minimum criteria.

Cistern: A receptacle for holding water or other liquid (i.e. tank for catching and storing rainwater).

Conveyance: The process of moving water from one place to another.

Curbs: Concrete barriers on the edges of streets used to direct storm water runoff to an inlet or storm drain and to protect lawns and sidewalks from vehicles.

Curve Number: An index that represents the amount of runoff from the combined hydrologic effect of soil, land use, agricultural land treatment class, hydrologic condition, and antecedent soil moisture. Curve numbers have a range of 0 to 100.

Design Storm: A rainfall event of specific depth or intensity (i.e. 3.12 inches or 4.80 inches/hour) and return frequency (e.g., 1- year storm) that is used to calculate runoff volume and peak discharge rate.

Detain: To store and slowly release storm water runoff following precipitation by means of a surface depression or tank and an outlet structure. Detention structures are commonly used for pollutant removal, water storage, and peak flow reduction.

Developed Area: That portion of the site that has been cleared, graded or built-upon.

Dry Pond: A basin with outlets designed to detain stormwater runoff from a water quality "storm" for some minimum duration (e.g., 24 hours) which allow sediment particles and associated pollutants to settle out. Unlike wet ponds, the dry pond does not have a permanent pool.

Dry Well: Small excavated trenches filled with stone to control and infiltrate runoff, usually from rooftops.

Evaporation: The change by which any substance is converted from a liquid state and carried off in vapor.

Evapotranspiration: The combination of evaporation and transpiration of water into the atmosphere from living plants and soil.

Filter Strip: Grass strips along roads or parking lots that remove pollutants from runoff as it passes through, allowing infiltration and velocity reduction.

Floodplain: An area adjacent to a stream or river where water overflows its banks during high flow events.

Ground Water: The supply of fresh water found beneath the earth's surface (usually in aquifers) that provides base flow to streams and rivers and is often used for supplying wells and springs. The inflow to a ground water reservoir is called ground water recharge.

Gutter: The edge of a street (below the curb) designed to drain water runoff from streets, driveways, parking lots, etc. into catch basins and storm drains.

Hydrograph: A graphic plot of changes in the flow of water or in the elevation of water level plotted against time.

Hydrologic Cycle (Water Cycle): The cycle of water movement from the atmosphere to the earth and back to the atmosphere through various processes.

Hydrologic Soil Group (HSG): See Soil Group definition.

Hydrology: The science dealing with the properties, distribution and circulation of water.

Impervious Surface: A surface that cannot be penetrated by water such as pavement or rock and prevents infiltration, thus generating runoff.

Integrated Management Practices (IMP): A LID practice or combination of practices that are the most effective and practicable (including technology, economic, and institutional considerations) means of controlling the pre-development site hydrology.

Level Spreader: An outlet designed to convert concentrated runoff to sheet flow and disperse it uniformly across a slope to prevent erosion.

Low Impact Development (LID): An approach to land development (or re-development) that works with the natural landscape to manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product.

National Pollution Discharge Elimination System (NPDES) Permit: A permit issued pursuant to the federal Clean Water Act for the purpose of controlling discharges of pollutants to surface waters and protecting water quality. In Virginia, NPDES Permits are issued by the Virginia Department of Environmental Quality (VDEQ).

Nonpoint Source (NPS) Pollution: Forms of pollution caused by sediment, nutrients, organic and toxic substances originating from land use activities, which are carried to lakes and streams by surface runoff. Nonpoint source pollution occurs when the rate of materials entering these waterbodies exceeds natural levels.

Permeability: The property of a soil to transmit water under a gradient. It is measured by the quantity of water passing through a unit cross section, in a unit time, under a hydraulic gradient.

Pollutant Load: A calculated quantity that is the result of a flow rate and pollutant concentration applied over a given amount of time.

Rain Barrels: A plastic or wooden container positioned to collect and store 40 to 60 gallons of rainwater, which flows off of a rooftop by way of a gutter downspout. This collected water can be used onsite in a yard or garden. By diverting storm water into rain barrels, users can help reduce stormwater runoff and protect the water quality of local streams and other water bodies.

Receiving Waters - A river, ocean, stream, or other watercourse into which runoff from precipitation is discharged.

Recharge: The addition of water into the ground water via the surface of the ground.

Retain: To capture and hold storm water runoff following precipitation by means of a surface depression allowing the water to infiltrate into the soil, evaporate and possibly transporate thus reducing the hydrologic and pollution impacts downstream. Retention structures are commonly used for pollutant removal, water storage, and peak flow reduction.

Riprap: A facing layer (protective cover) of stones placed to reduce erosion or the sloughing off of a structure or embankment of a waterbody.

Runoff: Water from a precipitation event that flows across the ground surface. Run-off carries nonpoint source pollutants to receiving streams.

Sediment: The layer of soil, sand and minerals at the bottom of surface water, such as streams, lakes, and rivers that may absorb contaminants.

Sedimentation: The removal, transport, and deposition of detached soil particles by flowing water or wind.

Siltation: The deposition of finely divided soil and rock particles upon the bottom of a waterbody.

Site Fingerprinting: A development approach that places land disturbing activities away from environmentally sensitive areas (wetlands, steep slopes, etc.), future open spaces, tree save areas, future restoration areas, and temporary and permanent vegetative forest buffer zones. Ground disturbance is confined to areas where structures, roads, and rights-of-ways will exist after construction is completed.

Soil Group: Hydrologic Soil Groups (HSG) are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four (4) groups on the basis of the intake of water (infiltration) after the soils have been wetted and have received precipitation from long duration storms. Group A soils have a high infiltration rate and usually include coarse sand and gravel. Group B soils have a moderate infiltration rate and include soils with moderately fine to coarse texture. Group C soils have a slow infiltration rate and include soils that have a moderately fine to fine texture. Group D soils have a very slow infiltration rate and include fine textured clays.

Soil Moisture: Water diffused in the soil. It is found in the upper part of the zone of aeration where water is discharged by transpiration from plants or by soil evaporation.

Stormwater: Water that runs across the surface of the ground during and after precipitation events.

Swale: An open depression or wide, shallow ditch that intermittently contains or conveys runoff. Can be used as a best management practice to detain and filter stormwater runoff.

Time of Concentration (Tc): The time required for runoff to travel from the hydraulically most distant point (in time) in the watershed, to the point of interest in the watershed.

Total Phosphorus (TP): A nutrient that is essential to the growth of organisms but when it occurs in high enough concentrations it can negatively impact water quality conditions. Total phosphorus includes both dissolved and suspended forms of reactive phosphorus, acid hydrolyzable phosphorus and organic phosphorus as measured by Standard Method 4500-P.

Total Suspended Solids (TSS): Total suspended matter in water which includes particles collected on a filter with a pore size of 2 microns as measured by Standard Method 2540-D, which is commonly expressed as a concentration in terms of milligrams per liter (mg/l) or parts per million (ppm).

Travel Time (Tt): The time it takes water to travel from one location to another in a watershed. It is a component of the time of concentration (Tc).

Treatment Train: A series of best management practices or natural features, each designated to treat runoff that are implemented together to maximize pollutant removal effectiveness.

Water Table: The upper surface of a zone of saturation or ground water.

Watershed: The area of land that contributes surface runoff to a waterbody.

Wet Pond: A constructed basin that has a permanent pool of water throughout the year (or at least throughout the wet season). Ponds treat incoming stormwater runoff by settling and algal uptake. The primary removal mechanism is settling while stormwater runoff resides in the pool.

Wetlands: An area (including swamp, marsh, bog, prairie pothole, or similar area) that is typically inundated or saturated by surface or groundwater at a frequency and duration sufficient to support the growth and regeneration of vegetation requiring an abundant water source.