



The City of Richmond
Chesapeake Bay Preservation Program
Public Information Manual

Stormwater Management Division
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City of Richmond Chesapeake Bay Preservation Program Public Information Manual

Purpose/Organization

The purpose of this manual is to guide both property owners and City administrative personnel through the land development review process within designated preservation areas where proposed development could potentially affect the Chesapeake Bay.

This manual also establishes procedures and requirements necessary for implementation of the program with a level of specificity beyond what is described in the ordinance. While the ordinance adopted by Richmond City Council meet the minimal requirements of the Chesapeake Bay Preservation Act and the Chesapeake Bay Preservation Area Designation and Management Regulations, this Public Information Manual expands upon the City's ordinance and provides both guidance and specific techniques to provide flexibility, yet ensure compliance with both the letter and intent of the State and City requirements.

The manual is organized into four chapters:

1. Introduction and Program Overview

This section will be used by the applicant to understand the relationship of Chesapeake Bay Preservation Act goals and objectives established by the City's program and to help determine its applicability to a specific project. A flow diagram of the Chesapeake Bay Preservation Program review process (Figure 1, page 12)

2. Chesapeake Bay Site Plan submission/review procedures

Once an applicant determines that a project is subject to Chesapeake Bay Site Plan review, this section will provide the detailed procedures to follow, including a checklist of Site Plan requirements.

3. Performance Criteria

The applicant must comply with performance criteria outlined in this section when preparing a Chesapeake Bay Site Plan.

4. Program Mechanics

The appendices include calculation worksheets and additional information which is helpful in addressing program requirements.

Chapter I - Introduction and Program Overview

Purpose of the Chesapeake Bay Preservation Act

The Virginia Chesapeake Bay Preservation Act

In 1989 the Virginia General Assembly enacted the Chesapeake Bay Preservation Act (the "Act") (Chapter 21, Title 10.1 of the Code of Virginia) for the express purpose. . .

to protect and improve the water quality of the Chesapeake Bay, its tributaries, and other state waters by minimizing the effects of human activity upon these waters and implementing the Act, which provides for the definition and protection of certain lands called Chesapeake Bay Preservation Areas, which if improperly used or developed may result in substantial damage to the water quality of the Chesapeake Bay and its tributaries.

Authority of Chesapeake Bay Local Assistance Board

The Act places authority with the Chesapeake Bay Local Assistance Board (CBLAB) for developing specific criteria to implement the general requirements of the Act. The Act states:

The criteria shall incorporate measures such as performance standards, best management practices, and various planning and zoning concepts to protect the quality of state waters while allowing use and development of land. . . (the) criteria adopted by the Board, operating in conjunction with other state water quality programs, shall encourage and promote: (i) protection of existing high quality state waters and restoration of all other state waters to a condition or quality that will permit all reasonable public uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them; (ii) safeguarding the clean waters of the Commonwealth from pollution; (iii) prevention of any increase in pollution; (iv) reduction of existing pollution; and (v) promotion of water resource conservation in order to provide for the health, safety and welfare of the present and future citizens of the Commonwealth.

9 VAC-10-20-10 et seq

The Chesapeake Bay Preservation Area Designation and Management Regulations promulgated in October 1989 by the CBLAB and revised in 2001, establish criteria to be used by counties, cities and towns in determining the extent of

Chesapeake Bay Preservation Areas within their jurisdictions, and for "granting, denying, or modifying requests to rezone, subdivide, or to use and develop land in [such designated] areas". The regulations set forth guidelines for local governments to implement the Act through their comprehensive plans, zoning ordinances and subdivision ordinances to protect the quality of state waters.

City of Richmond Chesapeake Bay Program Overview

In response to the adoption by the Commonwealth of Virginia of the Chesapeake Bay Preservation Act and Regulations, the City has adopted a program which both meets the objectives of the Act and Regulations and addresses the complexities of an urban environment. The objective of the program as outlined in the ordinance adopted by the City of Richmond in implementing the Act and the Regulations is to "*prevent a net increase in nonpoint source pollution from new development and development on previously developed land...*" The City is an urban community within which approximately 85 percent of the land area is currently developed. Richmond also has an urbanized waterfront, and yet, it has developed over the past 200 years in a manner which has retained much of the scenic qualities and natural features of the James River and its tributaries.

Sec 50-330(a)

Devising achievable means to ensure improved water quality is a challenge for urban areas, particularly with the focus of the Act on rural and suburban conditions and mechanisms for the protection of water quality through the appropriate development of land from a natural to a built environment. The City of Richmond is an urban environment with conditions such as structured stormwater drainage systems, large amounts of impervious cover, artificially enhanced green space, man-made tributary streams, and other elements not specifically addressed or provided for in the Act.

*City of Richmond Ordinance --
Chapter 50, Article IV
Chesapeake Bay Preservation
Areas*

The City's program consists of (1) Chapter 50 (Floodplain Management) of the Code of the City of Richmond, 2004, as amended (referred to as "Ordinance"), (2) preservation area designations shown as a layer in the City's Geographic Information System (GIS) mapping system, (3) and a written set of administrative guidelines, policies, and procedures, contained herein. This manual provides a program overview within the context of implementation, concentrating on procedures and reasonable results rather than on the details of how the program

Program Administrator

was developed. The program is administered by an appointee of the Director of Community Development, referred to as the Program Administrator. The Program Administrator may be consulted for additional information not contained in this manual.

Chesapeake Bay Preservation Areas

In implementing the requirements of the Act and Regulations, the City of Richmond has designated and mapped Chesapeake Bay Preservation Areas that cover approximately thirty five percent (35%) of the City's land area. The three types of areas designated are: Resource Protection Areas, Resource Management Areas, and Intensely Developed Areas.

Sec. 50-321(b)

Resource Protection Area (RPA):

- (1) tidal wetlands*
- (2) non-tidal wetlands connected by surface flow to water bodies with perennial flow*
- (3) tidal shores*
- (4) other lands considered necessary to protect state waters*
- (5) buffer of 100 feet landward of water bodies with perennial flow and any of the above.*

Resource Protection Area (RPA). This area is designated in accordance with the provisions of Section 50-321 of the Ordinance and include *"lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or [lands that] are sensitive to impacts which may cause significant degradation to the quality of state waters."* In delineating the RPA the City has included: (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) other lands considered by the City to be necessary to protect the quality of State waters; and (5) buffer areas 100 feet in width landward of, and adjacent to, those components listed in items (1) through (4) above. The land area within the designated RPA makes up approximately three percent (3%) of the City's land area.

Sec. 50-332(a)

Permitted uses in the RPA:

- (1) water-dependent development*
- (2) redevelopment*
- (3) development, if located in an Intensely Developed Area*
- (4) road and driveway crossings*
- (5) flood control and stormwater management facilities*

Land within the RPA may be developed only if the proposed use is water-dependent; constitutes a redevelopment project or is located within an Intensely Developed Area (IDA); or is a road, driveway crossing, flood control facility, or stormwater management facility satisfying specific conditions of the ordinance; and the proposed use complies with performance criteria established by the Ordinance.

Sec. 50-323

Intensely Developed Areas (IDA) as overlay to RPA-

- (1) Downtown Richmond*
- (2) Port of Richmond*

Intensely Developed Areas (IDA). Designated as an overlay to the Resource Protection Area, this category includes *"areas of existing development and infill sites where little of the natural environment remains."* The City's program limits IDA designation to the downtown area and the Port of Richmond property as the only areas where further non-water dependent waterfront development should occur. Development in an IDA

is treated as redevelopment, in which case, the performance requirement is for a ten percent (10%) reduction in nonpoint source pollution where runoff is not already treated by a BMP.

Resource Management Area (RMA). This area consists of the land area contained within the limits of the 100-year floodplain, non-tidal wetlands that are not included in the RPA, a 500-foot wide setback from the landward edge of the RPA, and a 600 foot buffer from the landward edge of a stream or where water body is not determined. Development within the RMA is to be regulated in accordance with the Performance Criteria (see page 19) in order to lessen negative impacts to water quality and retain the functional value of the RPA. The land area within the designated RMA constitutes approximately sixteen percent (16%) of the City's land area.

The areas designated RPA, IDA or RMA are shown on the Chesapeake Bay Preservation Areas Map, consisting of a layer in the City's GIS mapping system, and adopted as such by City Council.

Sec. 50-322

Resource Management Area (RMA):

- (1) limits of 100-year floodplain*
- (2) highly erodible soils*
- (3) highly permeable soils*
- (4) non-tidal wetlands, not included in the RPA*
- (5) 500 foot buffer from the edge of any RPA or 600 feet from the landward edge of a stream or water body where perennality has not been determined.*
- (6) other lands considered by the City to be necessary to protect the quality of State waters.*

Chapter II - The Chesapeake Bay Site Plan submission and review process

In addition to the customary permitting process of the City (basic requirements shown in Figure 1, page 12), the Chesapeake Bay site planning process will add one layer of coordinated site plan review for any development of land determined to be within a designated RPA, IDA or RMA (also referred to collectively as Chesapeake Bay Preservation Areas). The following 7 steps describe the process and requirements for preparation and submission of the required Chesapeake Bay Site Plan. This process is also summarized in the flow diagram, Figure 1 on page 12.

Step 1: Determination of a site's location in relation to Chesapeake Bay Preservation Areas

Any application for one of the following -

- **Building permit**
- **Land disturbing permit**
- **Preliminary subdivision plat**
- **Plan of development**

See the Code of Ordinances City of Richmond, Virginia for specifics on when these permits are required

- will initiate a separate determination by the Program Administrator of the site's location in relationship to designated preservation areas. The location determination will be made by the Program Administrator based on the examination of Chesapeake Bay Preservation Area maps or other City maps, as necessary. Additionally, the Program Administrator has the authority to request additional information from the applicant to make this determination. In accordance with Section 50-324 of the Ordinance, site specific boundaries of the RPA and RMA shall be established by the Program Administrator during the Chesapeake Bay Site Plan review process. The applicant may be required to supply additional technical and field data to assist the Program Administrator in the determination of site specific boundaries.

In the case of an application for a special use permit, a community plan or a rezoning/conditional rezoning, the Program Administrator shall inform the applicant of potential impact to a Preservation Area. For these applications, a Chesapeake Bay Site Plan may not be required.

If a site is determined to be within a preservation area, the Program Administrator will request the submission of a Chesapeake Bay Site Plan (see Appendix A for Checklist of Submission Items). If a site is determined to be within a preservation area, the site's location within a particular watershed will also be determined at this step of the process.

Sec. 50-191 (determinations)
Sec. 50-192

Step 2: Determine development, redevelopment, or exempt activity

A project which requires any one of the permits or approvals listed in Step 1 will be classified as either development or redevelopment. Development is defined in Sec. 50-302 of the Ordinance as *"the construction or substantial alteration of residential, commercial, industrial, institutional, recreation, transportation or utility facilities or structures that results in a net increase in impervious area within the Chesapeake Bay preservation Area."* Redevelopment is defined as *"the process of developing land that is or has been previously developed"*

In accordance with Sec. 50-340 of the Ordinance, certain types of development may be exempt from the requirements of the ordinance. These uses may include: public utilities, railroads, public roads and facilities, and water, sewer, natural gas, and

underground telecommunication lines.

Only a limited number of uses are permitted within Resource Protection Areas (RPA's). These include: water dependent uses (such as marinas), redevelopment, and specific exempt uses. If that portion of the RPA is also classified as an IDA, additional uses are also permitted.

Step 3: Submission of Chesapeake Bay Site Plan:

The submission of a Chesapeake Bay Site Plan is required by Ordinance Section 50-331(j) for approval of any development or activity in a RMA or RPA. A Chesapeake Bay Site Plan also incorporates much of what is required by the other land permitting processes. The relationship between Chesapeake Bay Site Plan submission items and those required for other related City permits are shown on Figure 1, on page 12.

"A Chesapeake Bay Site Plan shall be required from any land disturbance, development, or redevelopment within a designated Chesapeake Bay Preservation Area"
Richmond City Code Section 50-331(j).

The submission and review of a Chesapeake Bay Site plan will meet the requirement of "Plan of Development review" described in the Ordinance. The Chesapeake Bay Site Plan is the one document that best enables the Program Administrator to evaluate the conditions on the site to be developed and determine if the requirements of the program are being met. The following list outlines the requirements for a Chesapeake Bay Site Plan:

A. Site Plan

A site plan showing the following on multiple plan sheets or a single plan sheet for smaller, residential projects

- Existing physical site characteristics, including the location of all Chesapeake Bay Preservation Area components
- Proposed improvements and/or any impervious cover
- Erosion and Sediment Control Plan
- Landscape Plan

B. Checklist Items

A complete checklist of items required on a Chesapeake Bay Site Plan is provided in Appendix A. All of the indicated items should be shown on the site plan, and a copy of the checklist submitted with the plan.

C. Copies of wetlands permits

Wetlands permits required by law, i.e. Army Corps of Engineers permits, which are required for a host of activities affecting wetlands, shore-lines and navigable waters.

Evidence of a determination that wetlands permits are not required may also be required by the Program Administrator.

D. Water Quality Impact Assessment (WQIA)

In addition to the basic Chesapeake Bay Site Plan submission items, any development in a Resource Protection Area or in a Resource Management Area if determined necessary by the Program Administrator, will require additional information in the form of a *Water Quality Impact Assessment* concentrating on hydrological system impacts. The Program Administrator may request a Water Quality Impact Assessment in a Resource Management Area.

*Sec. 50-332(a)(1); 332(f)
Water Quality Impact
Assessment required for
Development in RPA and in an
RMA if determined necessary by
the Program Administrator*

As described in the Ordinance, the purpose of a Water Quality Impact Assessment is to: *“identify the impacts of proposed development on water quality and lands in the resource protection areas consistent with the goals and objectives of the Act, this article, and the city's programs, and to determine specific measures for mitigation of those impacts”*

Sec 50-332(f)(1)

Using plan sheet #5 (see description under Checklist, Appendix A), the WQIA must demonstrate the absence of significant adverse impacts of nonpoint source pollution (NPS) on topography, soils, environmentally sensitive areas, hydrology and the quality of State waters and mitigation of any unavoidable adverse impacts.

Step 4: Determine stormwater management requirements for proposed project

Stormwater management requirements for development will vary depending upon whether or not the project is considered "redevelopment", and the amount of impervious cover that will result from the project. The City of Richmond reviews stormwater management strategies utilizing the approach described in the *Virginia Stormwater Management Handbook*. The City requires that for any development that is not redevelopment, the post development non-point source pollutant load from the site is not to exceed the pollutant load that would be generated from that site if it were developed at a percent of imperviousness for the site based on the average land cover.

New development on a site should not have impervious cover greater than the 16% percentage of impervious cover for the watershed in which the development is to be located. Otherwise, adequate pollutant removal must be provided.

Determine whether the project is considered "development" or "redevelopment" Use the appropriate worksheet in Appendix 5D of the Virginia Stormwater Management Handbook, VSMH, Volume II.

Step 4-A. Development Projects**Use Worksheet 1:**

Complete Step 1 of Worksheet 1 to determine the percentage of impervious cover associated with the development average land cover.

If the Chesapeake Bay default value of the watershed impervious (I) area of sixteen percent (16%) exceeds the development imperviousness (Appendix 5D of VSMH, Volume II), STOP and submit analysis. It is likely that no additional BMP will be required and all relevant permits can be issued.

If the development imperviousness exceeds the watershed imperviousness, complete Worksheet 2 of VSMH, Volume II, Appendix 5D, to calculate the NPS pollutant removal requirement and efficiency requirements for Best Management Practices to be developed for the site. (If a BMP is the selected strategy - See Step 5)

Step 4-B. Redevelopment Projects**Use Worksheet 3:**

Complete step 4 through step 7 of Worksheet 3.

- Calculate the existing load of nonpoint source pollution from the site.
- Calculate the post-development NPS pollutant load anticipated as a result of the proposed project.
- Compare results to see if the phosphorus load determined under existing load condition is less than or equal to 90% of the phosphorus load determined under post-development condition.

If site is currently served by an existing BMP or if existing site results above are less than ninety percent (90%) of post-development site results above, STOP; analysis is complete. Otherwise, proceed to Step 4 of Worksheet 4.

Complete Steps 2 and 3 of Worksheet 4 to calculate the NPS pollutant removal requirements.

- Calculate the predevelopment NPS pollutant load (Step 2)
- Calculate the predevelopment NPS pollutant load (Step 3)

Complete Step 4 of Worksheet 4 to calculate the pollutant load removal requirement, and if needed, the overall BMP

Sec. 50-330(a)***Objectives:***

- *No net increase in NPS pollution from new development or redevelopment with existing water quality BMP*
- *10% reduction in NPS pollution from redevelopment.*

efficiency requirement.

Step 5: Develop improvement options to meet calculated NPS pollutant removal requirements

The amount of NPS pollutant removal required resulting from either a proposed development or redevelopment project will dictate the level of stormwater management improvements to be required. In accordance with the Ordinance, effective stormwater management can be achieved through three options, the most common of which is the implementation of what are referred to as Best Management Practices (BMPs).

Sec. 50-302

A Best Management Practice is defined as "a practice or combination of practices, that is determined by a [Virginia] State agency or the City to be the most effective practical means for preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals."

Water quality goals in terms of the required pollutant removal are determined for both development and redevelopment projects under Step 4. The Ordinance specifies that effective stormwater management requirements may be achieved for sites through one of the following options:

- A. Compliance with a Site-specific VSMP permit issued by the Virginia Soil and Water Conservation Board provided that the City specifically determines that the permit requires measures that collectively achieve water quality protection equivalent to that required by the Ordinance.
- B. Compliance with a locally adopted regional stormwater management program that meets the conditions described in the Ordinance.
- C. Incorporation of Best Management Practices (BMPs) that achieve the required control. Examples of different types of BMPs which may be considered by the Administrator to achieve NPS pollution reduction from the site include:
 - 1. **Non-structural (vegetative) BMPs**, including grassed swales, filter strips or buffers and incorporation of urban forestry practices, are preferred over structural BMPs in locations where their use is proved to be effective. This is due to a preference for vegetative versus constructed solutions, lowered construction costs and lowered

maintenance costs.

2. **Structural BMPs**, including extended detention (dry ponds), wet ponds, infiltration trenches and grassed swales with check dams, or alternate designs proposed by the applicant and acceptable to the Program Administrator (See VSMH, Volume II, Chapter 5, Table 5-14 to compare alternative BMP options).

The selection of the appropriate BMP for a particular site will be primarily guided by performance criteria discussed in the Virginia Stormwater Management Handbook which provide for site considerations in selecting a BMP. If the selected BMP is in the Virginia Stormwater Management Handbook, it is generally deemed acceptable upon review. For other BMP designs, adequate documentation will need to be provided showing the effectiveness.

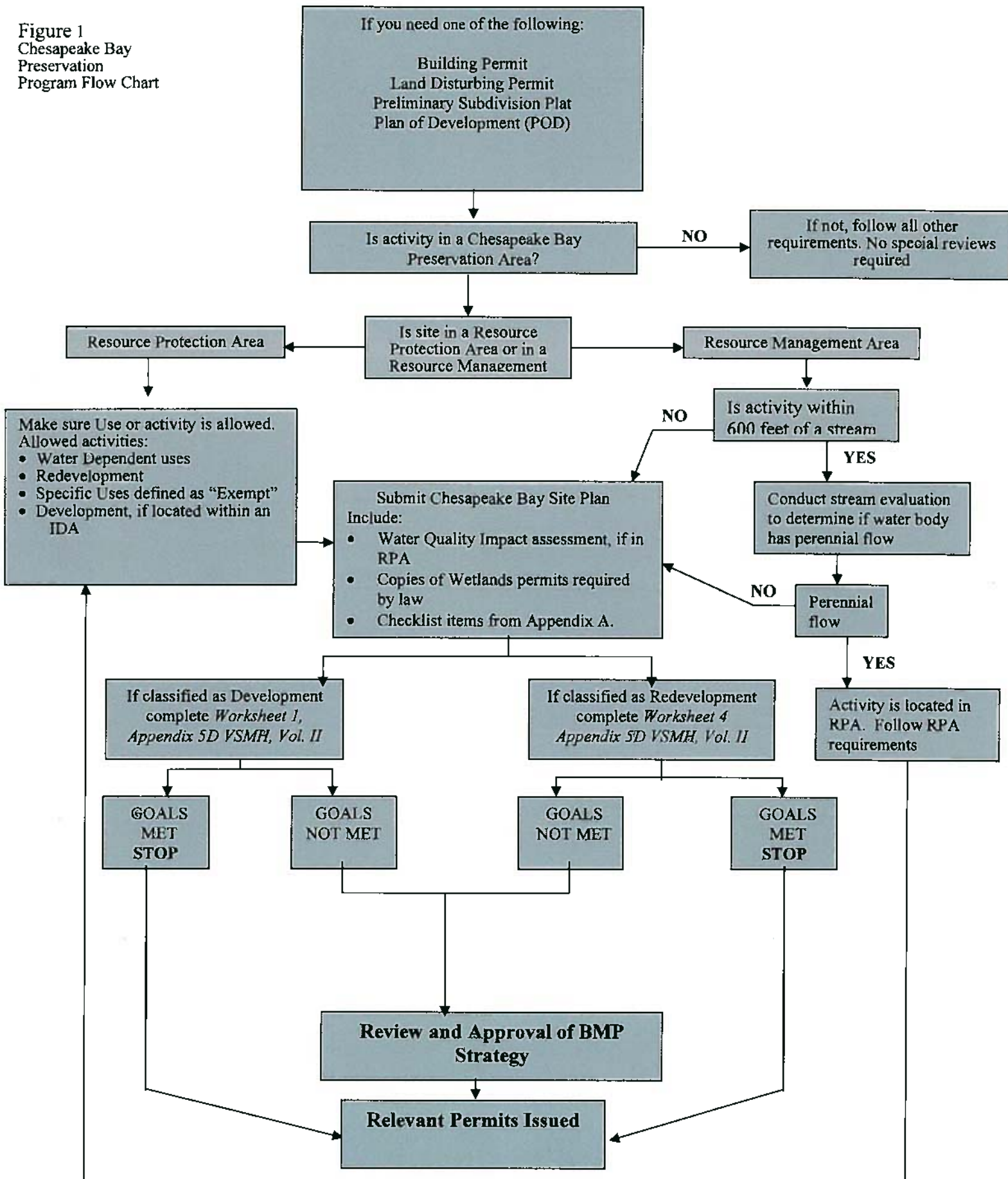
Step 6: Maintenance of Best Management Practice improvements

In compliance with Sec. 50-331(c) of the Ordinance, the applicant will be required to enter into a maintenance agreement (See Appendix B) with the City when Best Management Practices, which require periodic maintenance, are installed to meet the performance criteria outlined by the following section. The agreement outlines appropriate responsibilities for the long-term maintenance of the facility and includes general specifications for construction. Such an agreement will be recorded with the deed on the property as a matter of general public record, not as a deed restriction, and as such will transfer with the property as it is sold.

*Sec. 50-331(c)
BMP maintenance agreements*

For BMPs which serve more than one lot, the agreement shall also include a requirement for a performance bond or other security approved by the City Attorney which is designed to ensure the maintenance agreement is carried out to the satisfaction of both parties.

Figure 1
 Chesapeake Bay
 Preservation
 Program Flow Chart



Step 7: Adjustments to the program requirements

The following opportunities exist for the revision of program requirements as they pertain to a specific site:

A. Establishment of site specific boundaries

In accordance with the Chesapeake Bay Preservation Act and Regulations, the City used the best available mapping resources to determine approximate boundaries of the Resource Protection Area and the Resource Management Area. These boundaries are shown on the Chesapeake Bay Preservation Areas layer of the City's GIS mapping system.

The applicant may be in a position to provide more detailed information and additional technical data that provides greater accuracy than the City's mapping, particularly when applied to the individual site. Upon submission of technical and field data which is acceptable to the Program Administrator, site specific boundaries shall be established for the RPA and RMA. (See Step 1, page 6).

*Sec. 50-324
Establishment of site specific
boundaries of the RPA and the RMA*

As the Program Administrator becomes aware of RPA or RMA features, they will be identified on the appropriate layer in the City's GIS mapping system and identified as "determined eligible, but not adopted." The Program Administrator will treat these areas as Chesapeake Bay Preservation Areas (or excluded from) until such time as City Council formally amends the map.

B. Waiver for nonconforming use

For structures in existence prior to November 11, 1991, and which have been determined by the Program Administrator to not conform to the current requirements of this Division, the Administrator may waive the requirements of the Ordinance, provided that:

- there will be no net increase in nonpoint source pollutant load;
- any development or land disturbance exceeding an area of 2,500 square feet complies with all erosion and sediment control requirements.

*"Request for Exception" Form is
used for requesting both
exceptions and waivers for
nonconforming uses.*

The reconstruction of existing structures destroyed by casualty loss within Chesapeake Bay Preservation areas is permitted providing that they are not otherwise restricted by City ordinance.

Property owners requesting waivers for nonconforming

structures or uses should complete the “Application for Relief from Requirements of the Chesapeake Bay preservation Program” form.

C. Exemptions to Program Requirements

Certain public utilities, railroads, public roads, and facilities are exempt from the requirements of this program. All such construction, installations operation and maintenance must however meet the requirements of: (1) regulations promulgated and ordinances enacted pursuant to the Erosion and Sediment Control Law and the Stormwater Management Act, or (2) an erosion and sediment control plan and stormwater management plan approved by the Virginia Department of Conservation and Recreation. Exemptions for public roads is further conditioned on the optimization of the road alignment and design to prevent or minimize encroachment in the RPA and adverse effects on water quality, and otherwise meet the definition of public roads.

Construction, installation, and maintenance of underground utilities are exempt provided that:

- they are located to the maximum degree possible outside RPA's;
- no more land is disturbed than is necessary for the utility installation;
- it is done in compliance with all applicable state and federal permits and designed and conducted in a manner that protects water quality;
- land disturbance in excess of 2,500 square feet complies with all City erosion and sediment control requirements.

Upon reviewing the Chesapeake Bay Site Plan, the Program Administrator will determine if the use or any features of the use meet the conditions required for an exemption and may require the completion of an application for an exemption. The Program Administrator will note on the approved Chesapeake Bay Site Plan those features or activities that are exempt, and will condition any other permit approvals to ensure that all applicable code requirements are met and any other conditions he/she determines necessary to protect water quality.

D. Exceptions

Property owners may find in rare circumstance that a desired use or development of a property that is otherwise in conformance with all other City and State requirements cannot meet all requirements of this program. To

accommodate these situations, the City's ordinance allows the property owner to apply for an exception to the program requirements.

Request for exceptions to the program requirements may be granted by the Program Administrator or in certain situations only by the City Planning Commission, following adequate public notice and a public hearing. Exceptions to the criteria outlined in the Ordinance may be granted by the Administrator or City Planning Commission if the following conditions are met:

1. The degree of the exception requested is the minimum necessary to afford relief;
2. Granting the exception will not confer upon the applicant any special privileges denied to other property owners subject to the requirements and are similarly situated;
3. The exception is in harmony with the purpose and intent of the Chesapeake Bay Preservation Act, and is not of substantial detriment to water quality;
4. The exception request is not based upon conditions or circumstances that are self-created or self-imposed;
5. Reasonable and appropriate conditions are imposed, as warranted, that will prevent the allowed activity from causing a degradation of water quality;
6. Reasonable and appropriate conditions upon any exception granted shall be imposed as necessary so that the purpose and intent of the Chesapeake Bay Preservation Act is preserved.

Specific conditions must be met in order for exceptions to be granted.

*Conditions for Exceptions
Sec. 50-332(d)*

Property owners requesting exceptions will need to submit a "Request for Exception" as provided in Appendix B and submit the required fee.

Requests for exceptions in CBPA's are submitted to the Program Administrator. Upon reviewing the application package for completeness, the Program Administrator will determine if the exception can be approved administratively, or must be approved by the City Planning Commission. Exceptions to the performance criteria in Section 50-331 of the Ordinance for development in Resource Management Areas may be approved by the Program Administrator. Exceptions in Resource Protection Areas may only be approved by the City Planning Commission.

For exceptions to be considered by the City Planning Commission the following process will apply:

- Submission and review of application
- Scheduling of City Planning Commission meeting date

- Notice by US mail to abutting property owners (including those across the street) no less than 5 days and not more than 21 days prior to the City Planning Commission meeting. The notice will specify the time and place of the hearing.
- The City Planning Commission will conduct a public hearing before voting on the requested exception. The decision of the City Planning Commission is final.
- The Planning Commission can take any of the following actions on the request: approve as submitted, deny, or approve with conditions.
- Upon approval by the City Planning Commission, the Administrator will approve the Chesapeake Bay Site Plan.

Sec. 50-340(c)(2) and 340(c)(3)

E. Permitted Encroachments into the RPA buffer

The Program Administrator can approve development proposals that would result in the encroachment into the RPA buffer area when the application of the buffer area would otherwise render a lot unbuildable. This authority can be applied to lots or parcels recorded prior to October 1, 1989 and also for certain lots recorded between October 1, 1989 and March 1, 2002.

Encroachments into the buffer must also meet the following criteria:

1. The encroachment is the minimum necessary to achieve a reasonable buildable area for a principal structure and necessary utilities.
2. Where practical, a vegetated area that will maximize water quality protection, mitigate the effects of the buffer encroachment, and is equal to the area of encroachment into the buffer area shall be established elsewhere on the lot or parcel.
3. The encroachment does not extend “seaward” into the buffer area by more than 50 feet.

Sec. 50-332(d)

For lots or parcels recorded between October 1, 1989 and March 1, 2002, the following additional criteria for encroachments must be met:

1. The lot or parcel was created as a result of a legal process conducted in conformity with the City’s subdivision ordinance.
2. Conditions or mitigation measures imposed through a previously approved exception.
3. If the use of BMP’s was previously required, the BMP shall be evaluated to determine if it continued to

function effectively and if necessary the BMP shall be reestablished or repaired and maintained as required.

Property owners meeting the criteria described above may request authorization for the encroachment by completing the application for an "Exception to the Requirements of the Chesapeake Bay preservation Program" provided in Appendix C. Such encroachments can be approved by the Program Administrator and require neither City Planning Commission approval nor public notice.

Revisions to approved plan

Any revisions to an approved plan will require review and approval by the Program Administrator.

Appeals of Decisions of the Program Administrator

An applicant may appeal a decision of the Program Administrator pertaining to any ruling or decision regarding a denial of a request for use or development within a Chesapeake Bay Preservation area as described on the submitted Chesapeake Bay Site Plan. An appeal is submitted by filing a written request with the Secretary to the City Planning Commission, outlining the specific errors made in the decision of the Program Administrator. A fee as set forth by in Chapter 50, Article IV of the City Code shall accompany each petition. A request for an appeal of the decision of the Program Administrator must be received within 60 days of the decision of the Administrator.

Sec 50-342 (a)

The Secretary to the City Planning Commission will schedule a hearing on the appeal petition with the City Planning Commission within 60 days of receipt of the appeal. The Secretary to the Planning Commission may also require additional copies of information necessary to process the appeal to the Planning Commission.

Consideration of the Appeal by the City Planning Commission will follow the same notification process used for considering exceptions to the Chesapeake Bay Preservation Program Requirements.

Procedures for Review of Chesapeake Bay Site Plans

Sec. 50-312

The Program Administrator shall review the Site Plan and associated materials submitted by the applicant in relation to the performance criteria outlined by this manual and the ordinance and the elements required for a Chesapeake Bay Site Plan as outlined in Appendix A. The Program Administrator will have 45 days from the receipt of the plan and all requested documentation, or revisions thereof, to approve or reject the plan submission. No action by the Program Administrator within 45 days shall constitute approval.

Chapter III - Performance Criteria

Section 50-331 and 50-332 of the City's Ordinance provides a concise list of performance criteria with which all development within the designated preservation areas must comply. Expansion and interpretation of these criteria forms the basis for the following guidelines to be followed when preparing a Chesapeake Bay Site Plan:

A. Define the limits of land disturbance

Basic site planning considerations to reduce the amount and degree of land disturbance:

No more land shall be disturbed than is necessary for the proposed use (Sec. 50-331(a)).

1. Work with the existing topography

The existing topographic conditions of the site will aid substantially in the placement of uses and features on a site. For example, when laying out a subdivision, new streets should follow the natural contours whenever possible. In other types of development, buildings should be sited to take advantage of the natural topography. Large industrial buildings should be built only where the land is flat enough (3-5% slope) to permit construction with minimal grading. Likewise, large parking lots should be reserved for the flatter areas of a site. In areas where the topography becomes steeper (15% or greater), building sizes should be minimized, tucking smaller structures into the topography and terracing the slope to accommodate separate buildings.



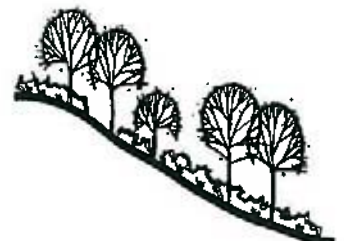
Work with existing topography



Limit grading operations

2. All efforts should be made to limit grading operations

Retaining walls can be used in order to maintain more closely the conditions of existing grades, thus protecting more vegetation and minimizing disruptive grading activity. Terracing of buildings down steeper slopes will have the same effect. This is achieved by splitting floor levels with access from opposite sides of the building at existing grade, minimizing the amount of grading and land disturbance.



Preserve existing vegetation

3. Existing vegetation, especially on steep slopes, should be preserved

(See Preservation of existing vegetation, page 20).

4. Limits of clearing should be clearly marked in the field as well as on plans so that equipment operators do not

disturb vegetation to be preserved.

5. Development should take place in staged increments whenever possible, thereby reducing the period of time that soil is exposed and diminishing the possibility of serious damage by erosion.

6. Temporary vegetation shall be applied within 7 days to areas: (a) at final grade, or (b) which will be inactive for longer than 30 days.

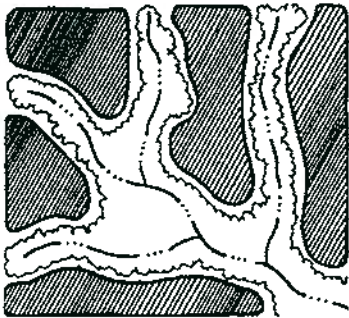
7. Define a reasonable building "envelope" by concentrating the building and its support facilities within as small an area as possible and avoiding any natural or environmentally sensitive areas. The Chesapeake Bay Preservation program requires that impervious cover be minimized, defining impervious cover as *"a surface composed of any material that significantly impedes or prevents the natural infiltration of water into the soil."* This definition includes parking areas, driveways, sidewalks and patios. The building envelope, and consequently impervious cover, can be minimized via careful site design and layout. Design techniques which are effective in integrating the natural and the built environment include efficient layout of parking areas, minimizing the size and extent of driveways and designing multi-story buildings or parking decks where appropriate.

8. Development should be concentrated in upland zones, as a general rule, leaving steeper slopes, lowlands and natural drainage systems undisturbed. Environmentally sensitive areas—wetlands, 100-year floodplains, slopes exceeding fifteen percent (15%), forested areas, wildlife habitats, and natural drainage ways—should be avoided.

B. Preservation of existing vegetation

Existing vegetation is to be preserved and a buffer established wherever possible when it does not exist. The following provisions describe methods to be used when protecting existing vegetation. Should it be necessary to remove vegetation, such vegetation shall be replaced with plant material deemed by the Program Administrator to be equally effective in retarding runoff, preventing erosion and filtering NPS pollution.

Development shall minimize impervious cover consistent with the proposed use or development (Sec 50-331(e))



Development zones

Indigenous vegetation shall be preserved to the maximum extent practical consistent with the use or development proposed. Indigenous vegetation may be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and filtering nonpoint source pollution. (Sec. 50-331(b)).

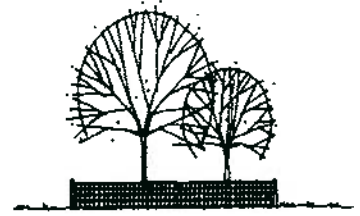
1. Define existing vegetation, especially tree groupings or individual trees for preservation in the field and on the site plan.

All trees to be retained within the limits of disturbance shall be field marked, root pruned and protected by physical devices installed prior to clearing or grading to ensure protection. Protection measures shall remain in place until construction is complete. Considerations for preservation:

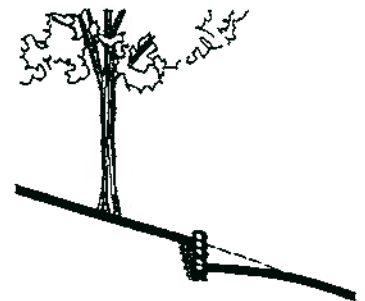
- All tree elements include tops, trunks and roots.
- Devices such as fencing shall be installed along the limits of clearing before clearing, construction work or movement of machinery occurs within 50 feet of the protected areas.
- Heavy equipment, vehicular traffic, stockpiling of materials, or deposition of sediment will not be permitted within the drip line of trees to be retained.
- Trees to be removed shall not be felled, pushed or pulled onto trees being retained.
- No toxic materials--such as paint, acid, nails, gypsum board, wire, chemicals, fuels and lubricants--shall be stored or disposed of within 100 feet of the protected vegetation areas.
- Controlled fires shall not be permitted within 100 feet of the protected areas.

2. Protection measures to employ when lowering the grade:

- Grade cuts of 3-inches or more within the drip line of the retained vegetation which, in the determination of the Program Administrator, are harmful to trees shall be reduced or eliminated by construction of a tree wall within two (2) weeks of the grading work.
- Tree roots exposed and/or damaged when excavating shall be trimmed cleanly and covered temporarily with moist peat moss, burlap, or other material to keep them from drying out.
- Backfill shall consist of topsoil to retain moisture and aid root development; fertilizer should be mixed with soil.



Tree protection

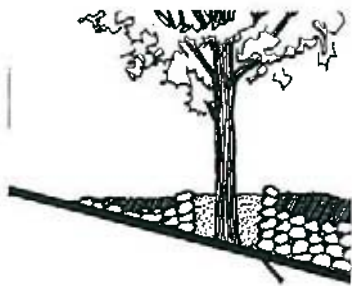


Lowering the grade

- Retaining walls shall be constructed in accordance with the Virginia Uniform Statewide Building Code, including drain holes as appropriate.

3. Protection measures to employ when raising the grade:

- Fill of three inches or more within the drip line of a retained tree may necessitate a tree well.
- The tree well shall be constructed to allow for tree trunk diameter growth, allowing adequate growth clearance for a younger tree.
- The well shall be constructed of large stones, brick, building tile, concrete blocks or cinder blocks and should be built high enough to extend above the level of the proposed fill.
- One or more drain lines shall begin at the lowest point inside the well and extend down and outward from the tree trunk.
- A layer of stone shall be placed under the tree from the well to at least the drip line; this layer will vary in depth according to the depth of the fill.
- To prevent accumulation of leaves and debris, the area between the trunk and the well wall may either be covered by an iron grate or filled with crushed charcoal and sand.



Raising the grade

C. Reduction of impervious cover

"Impervious cover" is defined as *"a surface composed of any material that significantly impedes or prevents natural infiltration of water into the soil. Impervious surfaces include, but are not limited to roofs, buildings, streets, parking areas, and any concrete, asphalt or compacted gravel surface."* (Sec. 50-302).

Zoning requirements specify by district certain lot coverage standards, as well as open space ratios, floor-area ratios, building setbacks, height restrictions and off-street parking requirements which, together will dictate a maximum building envelope. Many different options for the arrangement of buildings and supporting space (i.e. parking, open space) may exist depending on the size and configuration of the site and proposed use(s). The mapping

of natural features and limits of disturbance developed through the Chesapeake Bay site planning process should work in tandem with the identification of the maximum building envelope for a particular site to ultimately limit the impervious surface.

Specific site planning guidelines to consider which will aid in the reduction of impervious surface on the site include the following:

1. Recognition of open space in site plan

Through an efficient site layout, efforts should be made to achieve the correct allowable proportion of building square footage while satisfying the parking requirements and retaining a reasonable proportion of the site in open space; this proportion will vary from a high of 75 percent in the less dense residential subdivisions to almost 0 in the highly developed city center. Bonus provisions in the Zoning Ordinance allow for additional floor area in a building if lot coverage is reduced in the B-4 District.



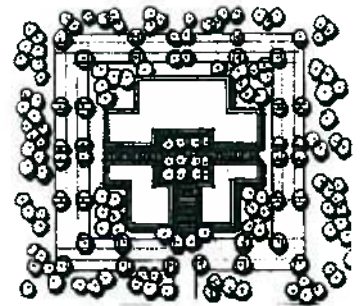
Parking Structure

2. Parking structure options

Structured parking to replace surface lots should be considered. Additionally, the Zoning Ordinance provides for bonuses allowing for additional floor area in the B-4 District when enclosed parking is provided within a main building.

3. Arrangement of buildings

Buildings should be clustered in groups instead of being spread over the entire site; such clustering can reduce the amount of grading, impervious surface, and allow for efficient treatment of parking.



Layout plan

4. Parking lot layout

Parking lots should always be arranged with double-loaded aisles if possible. The most efficient layout of parking is with stalls at 90 degrees to the collector aisles. Pavement techniques which promote infiltration are encouraged for any parking areas or other low traffic driveways. This could be porous paving materials, paving stones or other techniques. Any such application must be approved by the Program Administrator.

D. Compliance with erosion and sediment control regulations

An erosion and sediment control plan is a document which

"Any land disturbing activity that exceeds an area of 2,500 square feet ... shall comply with the requirements of the City's erosion and sediment control ordinance" (Sec. 50-331(f))

describes the potential for erosion and sediment problems on a site during construction and explains and illustrates the measures which are to be taken to control the problems. Important considerations when developing such an element of the site plan include:

1. The potential for soil erosion

should be an ongoing consideration when deciding upon the layout of buildings, parking lots, roads and other facilities.

2. The size of the site, topography, and soil type

will largely dictate the complexity of the plan; plans will be more involved for large sites having steeper slopes and highly erodible soils.

3. "Rules of thumb" in selecting vegetation

to aid in reducing soil erosion (See the publication *Riparian Buffers Modification and Mitigation Guidance Manual* published by the Department of Conservation and Recreation, Division of Chesapeake Bay Local Assistance for planting guidance. A suggested Plant List, from that document is reprinted in Appendix C:

- Appropriateness for the time of year, soil conditions of the site and environmental conditions of the area
- Resistance to heat, cold, insects and diseases
- Potential for rapid growth
- Capacity for compact growth
- Potential for nitrogen fixation
- Maintenance requirements
- Drought resistance
- Indigenous vegetation

4. Use of mulch

(i.e. straw, wood chips, asphalt emulsions, jute netting) is one of the most effective temporary erosion control measures because it holds seed and fertilizer in place, retains soil moisture and helps to maintain temperatures conducive to germination.

5. Surface roughening of a graded slope

by the vertical movement of a clefted bulldozer creates horizontal grooves that spread the runoff and slows its

movement, thereby aiding in erosion control.

6. Existing BMP facilities on site should be protected

from the addition of sediment from construction activity. Filters placed around inlet drains or constructed as berms on slopes will protect the drains from infiltration by coarser sediment.

7. Establishment and maintenance of vegetation

Along stream banks should be a first consideration to control erosion. Existing stream channel erosion will occur when increased demands are placed by increased urban runoff. When upstream runoff cannot be held to pre-development levels, a protective layer of rip-rap along the banks may prove effective. If the slopes are too steep or the stream is swift moving, more rigid structures made of concrete or metal may be necessary.

E. Stormwater quality requirements

For both new developments with low imperviousness and redevelopment sites not served by existing BMPs, construction of a BMP will most likely be needed to accomplish the reduction in NPS pollutants. For the calculation of required pollutant removal and design of BMPs, refer to the Virginia Stormwater Management Handbook available through the Department of Conservation and Recreation, Basic standards guiding the selection and design of appropriate BMPs taken from the Metropolitan Washington Council of Governments publication *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs* are outlined as follows:

1. Reproduce pre-development stream hydrology

Potential downstream impacts of proposed development should be recognized and planned for. As part of the Land Disturbing Permit process (Sec.50-193) of the City Code), the City requires that sufficient engineering calculations be performed to verify discharge of stormwater runoff into an adequate channel. If an existing receiving channel is not an adequate channel the owner must choose one of the following options:

- obtain written permission from downstream property owners, unless channel is in an existing City-owned drainage easement, to improve the channel to an adequate channel condition;

- develop a site design that will not cause the predevelopment peak runoff rate from a ten year storm to increase; or
- provide stormwater detention storage and/or channel improvements and/or other measures satisfactory to the Director of Community Development.

2. Provide moderate pollutant removal capability

By increasing the volume of runoff that has been effectively treated or by adding design features, removal rates may be enhanced. For purposes of the Act and the City's Ordinance, phosphorous is the "keystone" pollutant which is to be measured for reduction through the calculation procedures. A keystone pollutant shares the general characteristics of most other pollutants. By removing or reducing the keystone pollutant, other important pollutants which have a negative effect on the Bay will also be removed.

Keystone pollutant - phosphorous

3. To be effective, the BMP must be feasible for the site

The Virginia Stormwater Management Handbook includes a thorough discussion of BMP selection and should be referred to when deciding on a BMP for a particular site.

4. Cost effectiveness

Due to the wide range of costs for constructing BMPs, costs should be a consideration along with other site development costs; the designer should perform cost analyses to determine ultimate expense to be passed on to the end users of the development.

5. Acceptable future maintenance burden

Depending on the BMP selected, maintenance requirements include low cost, routine tasks and more expensive non-routine tasks such as rehabilitation, sediment removal, or removal and replacement of the BMP. The Ordinance requires the execution of a maintenance agreement (see Appendix B) between the owner and the City to ensure continued viability of the BMP constructed. Such agreement provides for a vesting of responsibility for ongoing maintenance: how and when specified maintenance will be performed, who will pay for the routine and non-routine tasks, and who will inspect and how regularly inspections will be made. Maintenance requirements and related costs can largely be pre-determined at the design stage; this should be built

into the design process.

6. Develop BMPs which have a neutral impact on the site and its surroundings

Consideration should be given to the aesthetic impact of a BMP on the environment (see related discussion on pages 19-22). If an existing BMP is utilized to reduce the transport of pollutants from the site, the following information shall be provided:

- An "as-built" design of the existing BMP;
- Calculations showing that the existing BMP will accommodate the increased NPS load and/or proposed BMP design improvements required to provide adequate pollutant removal;
- A maintenance inspection report; inspection to be made during wet weather;
- A maintenance agreement.

A variety of urban BMPs have been developed and refined over the years to mitigate the adverse impacts associated with development. Five types of structural BMPs commonly used are:

- (1) extended dry ponds,
- (2) wet ponds,
- (3) infiltration trenches and basins, and
- (4) grassed swales with check dams.
- (5) manufactured structures.

Design guidelines for sizing and constructing these structures are outlined in Chapters 2 and 3 of the Virginia Stormwater Management Handbook. The applicant may propose alternate BMPs other than those described in the Virginia Stormwater Management Handbook if proper design documentation and removal efficiency justification is provided. Alternative BMP designs will be reviewed for approval by the Program Administrator.

F. Standards governing the selection of a new structural BMP

Several factors must be considered in selecting appropriate BMPs for a particular development site. Aside from providing adequate pollutant removal a BMP must be suitable for a site, given the site's physical condition and development status. Each BMP option has unique capabilities and definite limitations. Maintenance problems

or nuisance conditions may arise if a BMP which is not suitable for the site is constructed, causing the BMP to improperly function or requiring expensive alterations and replacement.

Chapters 2 and 3 of the Virginia Stormwater Management Handbook include a thorough discussion of the siting and design considerations for BMPs. The Handbook is available through the Department of Conservation and Recreation's web site at <http://www.dcr.virginia.gov>

G. Stormwater Management Calculations

The standard calculation worksheets for calculating the required water quality removals can be found in the "Performance Based Water Quality Calculations" in Appendix 5D of the Virginia Stormwater Management Handbook. These calculations should be used when determining the required pollutant removal for a particular project. Chapter 6 of the Handbook includes example problems.

Appendix A: Department of Community Development
 Stormwater Management Division
 900 East Broad Street-Room 500
 Richmond, Virginia 23219
 804 646-7586/ (fax) 804 646-5789

CHECKLIST FOR CHESAPEAKE BAY

Chesapeake Bay Site Plan - Requirements and Submission Checklist

Address of Project: _____

Application/Permit Number: _____

IMPORTANT: This checklist is to be completed by the plan preparer and submitted with the permit application package; in time, submittals will be rejected without it. All items must be fully addressed and indicated so by checking the box for that item or entering a comment as to why it has not been addressed (upon review, the plan reviewer may still require the item to be addressed). The comments "N/A" or "not applicable" are not acceptable responses.

Note that plan sheets may be combined as long as all required information is legible.

A. Submission

- Provide 4 copies of all plan sheets
- All plan sheets must be certified by the appropriate professional

B. Basic information required to appear on each sheet:

- Name of project, developer, preparer of plan (Name, address, phone, fax, and email.)
- Engineer's/Architect's stamp (seal).
- North arrow
- Scale (suitable scale for base/plan information)
- Plan date/revision dates
- Property lines with dimensions and bearings taken from deed or survey
- Limits of Chesapeake Bay Preservation Areas
- Area of site
- Vicinity map (to show location of site in relation to nearby landmarks)

C. Existing physical site characteristics (*sheet #1*)

- Existing topography, depending on the scale of the base sheet, contour intervals should be no greater than 5-feet; intervals of 2-feet or 1-foot are desirable.
- Location of Mean High Water Line (MHWL) of the shores on which the site is located as determined by the best available information acceptable to the Program Administrator. If such line is not within the confines of the property, a locator map at a scale of 1"=200' shall be required to show its proximity to the site.
- Location of tributary streams, as shown on the most recent USGS 7 1/2 minute quadrangle sheets (note revision date).
- Limits of 100-year floodplain, taken from the latest edition of the Flood Insurance Rate Maps of the City (available from the Division of Permits and Engineering Services) or other available sources and site specific studies.
- Location and boundaries of tidal and non-tidal wetlands, as delineated on the National Wetland Inventory (NWI) Maps prepared by the U.S. Department of the Interior (available from the Program Administrator). In cases of either direct or indirect impact on NWI identified wetlands, the Program Administrator may require a delineation of wetlands to be performed by a technical professional acceptable to the Administrator in the field by type, following the classification system found in the *Classification of Wetlands and Deep Water Habitats of the United States*, U.S. Department of the Interior, Fish and Wildlife Service.
- Limits of the boundary line for the established buffers for the RPA and/or RMA.
- Location of all significant plant material, including all trees on site six inches or greater in diameter at breast height; groupings of trees or significant vegetation may be outlined.
- Physical features, including streets, alleys (including all improved and unimproved rights-of-way), parking areas and existing site improvements to remain, such as structures and their use, parking areas, driveways and all areas of impervious cover.
- Existing utilities, including storm sewer, curb and gutter, sewer (including existing septic drainfields), water, electrical, gas, and easements or other improved or unimproved rights-of-way for utilities.
- Land uses immediately adjacent to the site.

D. Proposed improvements (sheet #2)

- Areas of proposed impervious surface, including:
- Streets, alleys, easements or other rights-of-way, including proposed improvements to existing rights-of-way
- New sidewalks, curbs and gutters, driveways and access, loading and other paved areas, including location and materials to be used.
- Proposed structures, including building footprint, dimensions, and use.
- The location of any sewage disposal system or reserve drainfields.

E. Preliminary grading plan and/or cross-section drawings (if necessary to evaluate site drainage and conservation of natural features).

F. Limits of the proposed area of disturbance based on all anticipated improvements, including buildings, driveways, parking spaces, utilities, etc.

G. Proposed location and basic layout of planned structural Best Management Practice (BMP) facilities.

H. Additional supporting information including calculations shown in a table format on plan sheet #2

- Total gross square footage area
- Total land area covered by buildings
- Amount of open space on site
- Amount of paved or graveled area (impervious surface) on the site (acreage and percent of site coverage)
- Number of parking spaces
- Number of residential units of each type
- Pre and Post-development runoff rate from 2 and 10 design year storms
- Pollutant load calculations (See App. 5D of VA. Stormwater Management Handbook, Vol. 2)
- BMP design calculations (See VA Stormwater Management Handbook

I. Erosion and Sediment Control Plan (sheet #3)

Requirements in accordance with Chapters 3, through 6 of the *Virginia Erosion and Sediment Control Handbook*:

- Erosion and Sediment Control Checklist with required E & S plans as per the Virginia Erosion & Sediment Control Handbook, 1992 Third Ed.
- Detailed narrative and notes on all E & S measures used including but not limited to any stream crossings or wetland disturbance.
- Assessment of existing shoreline conditions and a determination of required erosion control measures.
- Directional arrows of drainage flow to the planned sediment control measures (if applicable).
- Existing and proposed grades.
- Existing natural and/or developed features on site or directly adjacent to the site.
- Pre- and post-development drainage (including off-site) for all permanent and temporary sediment control measures for the 10-year storm.
- 100-year floodplain under proposed channel conditions.
- Means proposed to preserve any existing vegetation during construction and retention as part of completed project in accordance with guidelines established in the following section (see Performance Criteria, page 19).
- Phasing and sequencing of development, and provisions for handling surface water throughout the stages of development.

J. Landscape Plan (sheet #4)

- Major landscaping features, including existing vegetation, to be retained.
- Clear delineation of all trees proposed for removal.
- Description of plant species to be disturbed or removed.
- Treatment of the RPA buffer, indicating proposed landscaping and vegetation to be retained by type and quantity.
- Replanting schedule for trees and other significant vegetation removed for construction, including list of trees and plants to be used.
- Demonstration that the design will preserve to the greatest extent possible any significant trees and vegetation on site and provide maximum erosion control and overland flow benefits.
- Demonstration that indigenous plants (See Plant List, Appendix C) are to be used to the greatest extent possible.

K. Narrative

- Accompanying sheets 1 through 4 shall be a narrative that describes the following:
- A description of the impact the development will have on existing vegetation
- A description, including location and design, of all measures to be taken to meet the performance criteria outlined in the ordinance

L. Water Quality Impact Assessment (WQIA) (sheet #5)

- Required for all development proposed in an RPA or any other area warranted as determined by the Program Administrator. The WQIA consists of the following elements in addition to information contained on previous sheets:
 - Hydrological element**
 - Describe existing topography, soils, hydrology and geology of the site and immediately adjacent lands.
 - Describe impacts of the proposed development on topography, soils, hydrology and geology on site and adjacent lands.

In addition to the information shown on the CBSP, the WQIA plan sheet must show:

1. Disturbance/destruction of wetlands and justification for such action;
 2. Disruption/reduction in supply of water to wetlands, streams, lakes, rivers or other water bodies;
 3. Disruption to existing hydrology, including wetland and stream circulation patterns;
 4. Source, location and description of proposed fill material;
 5. Location of dredge material and location of dumping area for such material;
 6. Location of, and impacts on, shellfish beds, submerged aquatic vegetation, and fish spawning areas;
- Provide evidence of required permits in addition to wetlands permits from all applicable agencies necessary to develop the project.
 - Describe proposed mitigation measures for the potential hydrological impacts. Potential mitigation measures include:
 1. Proposed erosion and sediment control concepts which may include minimizing the extent of the cleared area, perimeter controls, reduction of runoff velocities, measures to stabilize disturbed areas, schedule and personnel for site inspection;
 2. Proposed stormwater management system;
 3. Creation of wetlands to replace those lost;
 4. Minimizing cut and fill.

Landscape Element

- The standard requirements of the Landscape Plan (sheet #4), satisfy this section. At the discretion of the Program Administrator, the applicant may be required to provide additional information, particularly in support of significant mitigation requirements for a project that disturbs more than 50,000 square feet of area.

 Wastewater Element

- Include calculations and locations of anticipated changes which affect existing septic drainfield or wastewater irrigation areas;
- Provide justification for sewer line locations in environmentally sensitive areas and describe construction techniques and standards;
- Discuss any proposed on-site collection and treatment systems, their treatment levels and impacts on receiving water courses.
- Describe the potential impacts of any proposed wastewater systems, including the proposed mitigative measures for these impacts.

M. Additional documentation that must be provided

- A copy of any stream perennial flow determination
- A copy of any US Army Corps of Engineer wetland delineation approval
- A copy of all required Federal permits
- A copy of all State permits

Signature of preparer: _____

Date of signature: _____

Preparer's professional seal:

Appendix B: Forms and Instructions

BMP Easement and Maintenance Agreement

Application Instructions for Exceptions, Waivers, Exemptions, and Buffer Encroachments

Application for Relief from Requirements of the Chesapeake Bay Preservation Program Exceptions, Waivers, Exemptions, and Buffer Encroachments



EASEMENT AND MAINTENANCE AGREEMENT

THIS EASEMENT AND MAINTENANCE AGREEMENT is made as of the _____ day of _____, 20 _____ by _____ (the "Owner") and the CITY OF RICHMOND, VIRGINIA (the "City").

RECITALS

WHEREAS, _____ is the Owner of that _____ acre parcel of land located at _____ in Richmond, Virginia, and described as _____ in the deed recorded at the Richmond Circuit Court Clerks Office in Deed Book _____ at Page, _____ and/or as instrument # _____ (the "Property"); and

WHEREAS, a Site Plan/Subdivision Plat prepared by _____, dated _____ and entitled _____ has been approved or submitted for approval by the City (the "Plan"); and

WHEREAS, said Site Plan/Subdivision Plat provides for a detention/retention facility and other drainage or permanent erosion and sediment control measures and improvements within the confines of the property (the "Facilities"); and

WHEREAS, the City requires that the Facilities as shown on the Plan prepared by _____, dated _____ and designated _____ be constructed and adequately maintained by the Owner;

NOW THEREFORE, in consideration of the obligations mutually undertaken herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

AGREEMENT

1. This Agreement shall be binding on the parties, their administrators, executors, successors, heirs, assigns and agents.
2. Indefinitely and at all times, the Facilities as shown on the Plan shall be maintained in good working order acceptable to the City.
3. The maintenance of detention/retention ponds shall include but not be limited to: (1) planting and maintaining a vegetative cover on the slopes surrounding the pond, (2) maintaining all outflow devices in good working order and repairing and replacing them when necessary, (3) removing silt and other debris so as to maintain the elevation of the bottom of the facility as shown on the approved plans, and (4) to maintain the slopes of the Facilities sides as shown on the approved plans.
4. The Owner hereby grants, bargains and conveys to the City an easement over the Property to take whatever steps it deems necessary to maintain the Facilities. This easement may only be exercised by the City in the event that the Owner fails to correct defects or does not commence action necessary to correct any defects to the good working order of the Facilities within fourteen (14) days after written notice of such defects to Owner.
5. In the event Owner fails to correct any defects or commence the correction of such defects to the good working order of the Facilities within fourteen (14) days after written notice of such defects to Owner, the City may enter upon the Property and take whatever steps it deems necessary to maintain said Facilities. It is

expressly understood and agreed that the City is under no obligation to maintain or repair the Facilities and in no event shall this Agreement be construed to impose any such obligation on the City.

6. In the event of an emergency involving the Facilities, as determined by the Director of Public Works, the City, at its option, may enter immediately upon the property and take whatever steps it deems necessary to meet the emergency. Alternatively, the City may notify the owner by phone at _____, to take whatever action is necessary within a specified period of time. Should the Owner fail to respond, or should the owner inform the City that it intends not to respond within the specified period of time, the City may, at its option, enter immediately upon the land and take whatever steps it deems necessary to meet the emergency.

7. The City shall not pay any compensation at any time for its use of the Property in any way necessary for the inspection and maintenance of the facility, including access to the facility.

8. In the event the City, pursuant to this Agreement performs work or expends any funds necessary for the maintenance of the Facilities, including labor, equipment, supplies and materials, the Owner shall reimburse the City, within ten (10) days after the City gives the Owner written notice of such expenditures.

9. The Owner, its executors, administrator, assigns and any other successors in interest, shall indemnify and hold harmless the City and its agents and employees for any and all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the City arising out of or resulting from the construction, presence, existence or maintenance of the Facilities by the Owner or the City.

10. In the event a claim is asserted against the City, its agents or employees, the City shall promptly notify the Owner and the Owner shall defend at its own expense any suit based on such claim. If any judgment or claim against the City, its agents or employees shall be allowed, the Owner shall pay all costs and expenses immediately.

11. This Agreement shall be recorded in the Richmond Circuit Court Clerks office, shall constitute a covenant running with the land, and shall be binding upon its administrators, executors, assigns, heirs and any other successors in interest.

12. All notices herein shall be in writing and shall be hand delivered to the parties or sent by registered or certified mail, return receipt requested, postage paid, addressed to the parties as follows:

To the City: Director of Public Works
900 East Broad Street
7th floor
Richmond, VA 23219

With copy to: City Attorney
900 East Broad Street
3rd floor
Richmond, VA 23219

To Owner: _____

With copy to: _____

Such notice shall be deemed to have been given upon hand delivery or upon deposit in the mail as aforesaid. Any change of persons or addresses shall be provided in the aforesaid manner.

13. Any amounts owed to the City and not paid within ten (10) days of the date of notification shall be the joint and several obligations of all the successors in interest of the Owner. The full amounts owed shall be liens on the Property and on each and every portion of the Property. Liens shall be recorded by the City Assessor in the Lien Book, which shall be maintained in a location designated by the City Assessor and accessible to the public.

WITNESS the following signatures and seals.

By: _____

Name Title

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF _____, to wit

The foregoing instrument was acknowledged before me, the undersigned notary public by _____ on this ____ day of _____, 20____.

Notary Public

My commission expires: _____

The foregoing deed of easement from _____ is hereby accepted the _____ day of _____, 20____, pursuant to authority granted by Section 26-42 of the 2005 Richmond City Code.

CITY OF RICHMOND

By _____
Christopher Beschler,
Acting Chief Administrative Officer

Prepared and approved as to form:

Jan T. Reid, Assistant City Attorney

GRANTEE ADDRESS:
City of Richmond
Real Estate Services
900 East Broad Street, Room 1105
Richmond, Virginia 23219



CHESAPEAKE BAY PRESERVATION PROGRAM

Application Instructions

EXCEPTIONS, WAIVERS, EXEMPTIONS AND BUFFER ENCROACHMENTS

PURPOSE

The Chesapeake Bay Preservation Program as defined in city code Chapter 50, Article IV, implements the requirements of the Virginia Chesapeake Bay Preservation Act and the Chesapeake Bay Preservation Area Designation and Management Regulations. As an element of the program, there are four opportunities for property owners to seek partial relief from specific requirements of the requirements. Some of this relief can be provided administratively by the City's Program Administrator; other relief can only be granted by the City Planning Commission, following public notice and a public hearing. Property owners requesting relief from requirements of the program must complete the application form for "Relief from Requirements of the Chesapeake Bay Preservation Program." In consultation with the program Administrator, the most appropriate avenue of relief can be determined.

EXCEPTIONS TO THE PROGRAM REQUIREMENTS

When the application of the Chesapeake Bay Preservation Area Ordinance to a lot or parcel located within a Chesapeake Bay Preservation Area would unreasonably restrict the utilization of the property under its current zoning, a CBPA **Exception** can be requested. Submission of the Exception Application is required for approval of any activity or use in the Resource Protection Area not specifically permitted by ordinance. Activities include grading, filling, building, paving, removal of vegetation, and any other disturbances.

Exceptions to the program requirements can only be granted by the City Planning Commission. There are no specific deadlines for the filing of an application for an exception. In general, however, the staff review and public notice period mandated by the City Code combine to result in an approval process of approximately 30 to 60 days. The City Planning Commission considers approval of Chesapeake Bay Program Exceptions at its regular meetings on the first and third Monday of each month. Incomplete submissions or major changes to the plans during the review process may cause delays in this schedule.

WAIVERS FOR NONCONFORMING USES

Under specific circumstances, for structures that existed prior to November 11, 1991, the City's Chesapeake Bay Program Administrator may waive the requirements of the ordinance. There is no fee to request a waiver, nor are there specific deadlines for the application or review process.

EXEMPTIONS TO PROGRAM REQUIREMENTS

Specific uses and development processes are identified in the Ordinance as exempt from the requirements of the program. Property owners should complete the "Relief from Requirements of the Chesapeake Bay Preservation Program" form in order to provide documentation of the necessity of the uses in the locations identified on the submitted plans. Exemptions are granted by the Program Administrator and do not require additional approval or review.

ENCROACHMENTS

Encroachments into the Resource Protection Area buffer may be approved by the Program Administrator, for lots recorded prior to the effective date of the program, provided they meet the conditions described in Section 50-332(d) of the Richmond City Code

FILING

Applications for all forms of relief are filed with the:

Bureau of Permits and Inspections
Department of Community Development
900 E. Broad Street, Room 5110
Richmond, Virginia 23219
Phone: (804) 646-6440 Fax: (804) 646-6348
Attn: Chesapeake Bay Program Administrator

Requests for Exceptions will be forwarded to the Secretary to the City Planning Commission to schedule a hearing and provide public notice.

DEADLINES

There are no specific deadlines for the filing of an application. Applications for **Exceptions** must be approved by the City Planning Commission, which requires public notice, generally resulting in an approval process of approximately 30 to 60 days. All other requested forms of relief are generally responded to within 15 days upon receipt of a completed application.

PRE-APPLICATION CONFERENCE

Applicants **must** schedule a pre-application conference with the Program Administrator or his/her designee prior to submittal to review the request and other permitting issues that may be involved. **Staff may reject any request without a pre-application conference.** Staff will review submitted applications to ensure all required materials and information are provided. If the application is not acceptable, the required information must be provided prior to formal staff review.

SUBMITTAL REQUIREMENTS

Applications must include the following elements: 1) completed request form; 2) Chesapeake Bay Site Plan; 3) Chesapeake Bay Water Quality Impact assessment; and 5) application fee (required for exceptions only).

Applications for **Exceptions** will be forwarded to the City Planning Commission for their consideration and available for public review.

1) Application Form:

The application form for relief from the Requirements of the Chesapeake Bay Preservation Program is available in the Bureau of Permits and Inspections and from the City's web site at www.richmondgov.com. It must be signed by all the owners of the property. If a legal representative signs for a property owner, a copy of the executed power of attorney is required.

2) Chesapeake Bay Site Plan

Applicants should submit four (4) copies of a Chesapeake Bay Site Plan with all required elements as described in the *City of Richmond Chesapeake Bay Preservation Program Public Information Manual* and any additional information required by the Program Administrator. Depending on the type of relief requested, additional documentation as described in the Public Information Manual may also be required.

3) Chesapeake Bay Water Quality Impact Assessment

As part of the Chesapeake Bay Site Plan, the submission of a Water Quality Impact Assessment is required. The submission requirements are described in the *City of Richmond Chesapeake Bay Preservation Program Public Information Manual* which may be supplemented by any other information determined necessary by the Program Administrator for evaluation of the Application.

4) **Application Fee:**

An application fee in the amount of \$_____ must accompany applications for **exceptions** to the program requirements to cover the required advertising and notification costs. Checks should be made payable to the "**City of Richmond.**"

CITY PLANNING COMMISSION APPROVAL PROCESS for requests for exceptions

Exceptions to the Chesapeake Bay Program requirements can only be approved by the City Planning Commission. Scheduling of the hearing by the Planning Commission will be undertaken by the Planning Commission Secretary. Prior to consideration by the Planning Commission, notice of the hearing is posted on the property and is advertised in a daily newspaper, and mailed to nearby property owners. The Planning Commission will receive a report from the staff and conduct a public- hearing prior to considering and voting on the request. The decision of the City Planning Commission is final.

An applicant who requests more than one continuation of the scheduled date of the hearing by the Planning Commission will be charged a fee of \$150.00 for the second and any subsequent continuation.



**APPLICATION
FOR RELIEF FROM REQUIREMENTS OF THE
CHESPEAKE BAY PRESERVATION PROGRAM
EXCEPTIONS, WAIVERS, EXEMPTIONS AND
BUFFER ENCROACHMENTS**

To:

The Bureau of Permits and Inspections
Department of Community Development
900 E. Broad Street, Room 110
Richmond, Virginia 23219
Phone (804) 646-6440 Fax (804) 646-6948

Date: _____

Type of Relief Requested (check one)

- Exception Waiver Encroachment Exemption

Please attach required documents.

Requests for exceptions also require an application fee payable to "City of Richmond".

Property Address(es): _____

Tax Parcel No(s): _____

Brief Description of Exception: _____

Applicant/Contact Person: _____

Mailing Address: _____

_____ Telephone: (_____) _____ Fax: (_____) _____

Email address: _____

Property Owner: _____

Mailing Address: _____

_____ Telephone: (_____) _____ Fax: (_____) _____

Property Owner's Signature: _____

The signatures of all owners of the property are required. Please attach additional sheets as required. If a legal representative signs for a property owner, please attach an executed power of attorney.

Project Information (check appropriate boxes)

Current Use of Property (check one)–

- | | |
|--|---|
| <input type="checkbox"/> Vacant Land to be developed | <input type="checkbox"/> Commercial/Office/Industrial |
| <input type="checkbox"/> Single Family Residential | <input type="checkbox"/> Parking or other paved surface |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Multi-family residential |

Subdivision Name, Lot and Section Number: _____

Lot was last recorded:

- Prior to October 1989
- Between October 1989 and February 2002
- After February 2002

Area of Property (square footage)

Within RPA: _____ Outside RPA: _____ Total: _____

Activity requiring relief is located in (check all that apply)

- Resource Protection Area Buffer land ward 50 feet
- Resource Protection Area Buffer seaward 50 feet
- Slopes greater than ___ percent
- Wetlands
- Resource Management Area

Activity requiring relief involves (check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Construction of New principal structure | <input type="checkbox"/> Paved pathways |
| <input type="checkbox"/> Accessory (detached) structure | <input type="checkbox"/> Tree/vegetation removal |
| <input type="checkbox"/> Addition to principal structure | <input type="checkbox"/> Utilities |
| <input type="checkbox"/> Parking area, or driveway, or roadway | <input type="checkbox"/> Other: _____ |

Total square footage of RPA impacted: _____

Are there any additional approvals or permits from local, state, or federal agencies required for any portion of this project (zoning variances, wetland permits, etc)?

- No
- Yes, Please describe: _____

Description of the Activity and reason for the request:

For **Exceptions**, Please complete the following

APPLICANT'S JUSTIFICATION FOR THE REQUESTED EXCEPTION

In accordance with Section 50-340(c) (1) of the Richmond City code, An exception cannot be granted unless specific findings are made. Please describe how the particular CBPA exception request would meet these six findings:

1. The requested exception to the criteria is the minimum necessary to afford relief;
2. Granting the exception will not confer upon the applicant any special privileges that are denied by the ordinance to other property owners who are subject to its provisions and who are similarly situated;
3. The exception request is in harmony with the purpose and intent of the Ordinance and is not of substantial detriment to water quality;
4. The exception request is not based upon conditions or circumstances that are self-created or self-imposed;
5. Reasonable and appropriate conditions are imposed, as warranted, to prevent the proposed activity from causing degradation of water quality;
6. Other findings and conditions, required by the City have been met.

For **EXCEPTIONS** and **ENROACHMENTS**, please complete the following.

Describe all mitigation measures, including BMPs and vegetation enhancement*,

- Note: all vegetation enhancement should be in accordance with the Riparian Buffers Modification and Mitigation Manual available at www.dcr.virginia.gov/chesapeake_bay_local_assistance/publica.shtml#Anchor-18776

Do not mark below this line

Fee Required \$ _____

Approvals

Program Administrator _____ Date _____

City Planning Commission _____ Date _____

Comments: _____

Appendix C:

List of Plants Recommended for Riparian Buffers
and Vegetative Replacement Standards

Reprinted from
Riparian Buffers Modification and Mitigation Guidance Manual,
Chesapeake Bay Local Assistance Department,
September 2003.

PLANT LISTS

These lists are suggestions for recommended plants and are not to be construed as exclusive lists. There are many other suitable plants for riparian buffer planting. These lists are a place to start.

MEDIUM TO LARGE DECIDUOUS CANOPY TREES	SMALL CANOPY/UNDERSTORY TREES
<p>Red maple <i>Acer rubrum</i> Acer saccharum Silver maple Betula lenta Black birch River birch <i>Betula nigr</i> Shagbark hickory <i>Carya ovata</i> Mockernut hickory <i>Carya tomentosa</i> Hackberry <i>Celtis occidentalis</i> Washington hawthorn <i>Craetagus phaenopynitm</i> Persimmon <i>Diospyros virginiana</i> American Beech <i>Fagus grandifoha</i> White ash <i>Fraxinus americana</i> Green ash <i>Fraxinus pennsylvanica</i> Water locust <i>Gleditsia aquatica</i> Black walnut <i>Juglans nigr</i> Sweetgum <i>Liquidamber sfracitlua</i> Tulip poplar <i>Liriodendron tulipifera</i> Water tupelo <i>Nyssa aquatica</i> Black gum <i>Nyssa sylvatica</i> Sourwood <i>Oxydendron arboreum</i> Sycamore <i>Platanus occidentalis</i> Cottonwood poplar <i>Populus deltoids</i> Swamp cottonwood <i>Populus heterophylla</i> Black cheny <i>Prunis serotina</i> Swamp white oak <i>Quercus bicolor</i> Shingle oak <i>Quercus imbricata</i> Laurel oak <i>Quercus laurifolia</i> Overcup oak <i>Quercus lyrata</i> Swamp chestnut oak <i>Quercus michauxii</i> Water oak <i>Quercus nigra</i> Pin oak <i>Quercus palustris</i> Willow oak <i>Quercus phellos</i> Shumard oak <i>Quercus shumardii</i> Swamp willow, Black willow <i>Salix nigra</i> Weeping willow <i>Salix babylonica</i> American basswood <i>Tilia Americana</i></p>	<p>Red buckeye <i>Aesculus pavia</i> Smooth alder <i>Alnus serrulata</i> Serviceberry <i>Amelanchier canadensis</i> Devil's walkingstick <i>Aralia spinosa</i> Pawpaw <i>Asimia triloba</i> American hornbeam- <i>Carpinus caroliniana</i> Sugar hackbeny <i>Celtis laevigata</i> Redbud, Judas tree <i>Cercis canadensis</i> Fringetree <i>Chionanthus virginicus</i> Dogwood <i>Cornus florida</i> Cockspur hawthorn <i>Crataegus crus-galli</i> Green hawthorn <i>Cmtaegus viridis</i> Parsley hawthorne <i>Crataegus marshalli</i> Swamp cyrilla <i>Cyrilla racemosa</i> Two-winged Silverbell <i>Halesia diptera</i> American holly flex <i>opaca</i> Possumhaw <i>Ilex deciduas</i> Spicebush <i>Lindera benzom</i> Sweetbay <i>Magnolia Magnolia virginiana</i> Eastern hophornbeam <i>Ostrya virginiana</i> Sourwood <i>Oxydendron arboreum</i> Elderberry <i>Sambucus canadensis</i> Sassafras <i>Sassafras albidum</i> Sparkleberry <i>Vaccinium arboreum</i> Nannyberry <i>Viburnum lentago</i></p>

EVERGREEN TREES	LARGE SHRUBS
<p>American holly <i>Ilex opaca</i> Eastern red cedar <i>Juniperus virginiana</i> Southern magnolia <i>Magnolia grandiflora</i> Shortleaf pine <i>Pinus echinata</i> Pitch pine <i>Pinus rigida</i> Eastern white pine <i>Pinus strobus</i> Loblolly pine <i>Pinus taeda</i> Virginia pine <i>Pinus virginiana</i> Darlington oak <i>Quercus laurifolia</i> <i>Darlingtonia</i> Live oak <i>Quercus virginiana</i></p>	<p>Alder <i>Alnus serrulata</i> False indigo <i>Amorpha fruticosa</i> Red chokeberry <i>Aronia arbutifolia</i> American beautyberry <i>Callicarpa americana</i> Eastern sweetshrub <i>Calycanthus floridus</i> Buttonbush <i>Cephalanthus occidentalis</i> Silky dogwood <i>Cornus amomum</i> Greystem dogwood <i>Cornus racemosa</i> Red twig dogwood <i>Cornus stolonifera</i> Witch hazel <i>Hammamelis virginiana</i> Wild hydrangea <i>Hydrangea arborescens</i> Oakleaf hydrangea <i>Hydrangea quercifolia</i> Winterberry holly <i>Ilex verticillata</i> Yaupon holly <i>Ilex vomitoria</i> Virginia sweetspire <i>Itea virginica</i> Fetterbush/Sweetbells <i>Leucothoe racemosa</i> Fetterbush <i>Lyonia lucida</i> Male-berry <i>Lyonia ligustrina</i> Southern wax myrtle <i>Myrica cerifera</i> Bayberry <i>Myrica pennsylvanica</i> Common ninebark <i>Physocarpus opulifolius</i> Choke cherry <i>Prunus virginiana</i> Swamp azalea <i>Rhododendron viscosum</i> Smooth sumac <i>Rhus glabra</i> Allegheny blackberry <i>Rubus allegheniensis</i> Pussy willow <i>Salix discolor</i> Silky willow <i>Salix sericea</i> Elderberry <i>Sambucus canadensis</i> American snowbell <i>Styrax americanus</i> Highbush blueberry <i>Vaccinium corybosum</i> Arrowwood viburnum <i>Viburnum dentatum</i> Swamp haw <i>Viburnum nudum</i> Blackhaw viburnum <i>Viburnum prunifolium</i></p>
<p>EVERGREEN SHRUBS</p>	
<p>Inkberry holly <i>Ilex glabra</i> Common juniper <i>Juniperus communis</i> Shore juniper <i>Juniperus conferta</i> Southern wax myrtle <i>Myrica cerifera</i> Bayberry <i>Myrica pennsylvanica</i> Swamp azalea <i>Rhododendron viscosum</i> Huckleberry <i>Vaccinium arboreum</i></p>	

SMALL SHRUBS	HERBACEOUS PLANTS
<p>Obovate serviceberry <i>Amelanchier obovalis</i> Black chokecherry <i>Aroma melanocarpa</i> Sweet pepperbush <i>Clethra alnifolia</i> Sweet fern <i>Comptonia peregrina</i> Strawberry bush <i>Euonymus americanus</i> Fothergilla <i>Fothergilla gardenii</i> Black huckleberry <i>Gaylussacia baccata</i> Dangleberry <i>Gaylussacia frondosa</i> Wild hydrangea <i>Hydrangea arborescens</i> Oakleaf hydrangea <i>Hydrangea quercifolia</i> Mountain laurel <i>Kiiimia latifolia</i> Staggerbush <i>Lyonia mariana</i> Scrubby cinquefoil <i>Potentilla fruticosa</i> Beach plum <i>Prunus maritime</i> Sand blackberry <i>Rubus cuneifolius</i> Bankers willow <i>Salix cottettii</i> White meadowsweet <i>Spiraea alba</i> Meadowsweet <i>Spiraea latifolia</i> Steeplebush <i>Spiraea tomentosa</i> Common snowbeny Coralberry <i>Symphocarpos orbiculatus</i> Lowbush blueberry <i>Vaccinium angustifolium</i> Maple-leaved viburnum <i>Vaccinum acerifolium</i> Adam's needle <i>Yucca filamentosa</i></p>	<p>Black-eyed Susan <i>Rudbeckia fimlgida</i> Cardinal Flower <i>Lobelia cardinalis</i> Coralbells <i>Heuchera Americana</i> Creeping Phlox <i>Phlox stolonifera</i> Crested Iris <i>Iris cristata</i> Foamflower <i>Tiarella cordifolia</i> Goldenrod <i>Solidago Canadensis</i> Great Blue Lobelia <i>Lobelia siphilitica</i> Green and Gold <i>Crysogonum virginianum</i> Ironweed <i>Vernonia noveboracensis</i> Jack-in-the-Pulpit <i>Arisaema triphyllum</i> Joe-Pye Weed <i>Eupatorium purpureum</i> Mayapple <i>Podophyllum peltatum</i> Mistflower <i>Eupatorium coelestinum</i> Mouse-ear Coreopsis <i>Coreopsis auriculata</i> New York Aster <i>Aster novi-belgii</i> Pink Turtlehead <i>Chelone lyonii</i> Purple Coneflower <i>Echinacea purpurea</i> Small Solomon's Seal <i>Polygonatum biflorum</i> Swamp Milkweed <i>Asclepias incarnata</i> Sweet Flag <i>Acorns americanus</i> Tall Gayfeather <i>Liatris scanos</i> Three-toothed Cinquefoil <i>Potentilla tridentata</i> Tickseed <i>Coreopsis grandiflora</i> Virginia Bluebells <i>Metensia virginica</i> Virginia Blue flag <i>his virginica</i> Wild Columbine <i>Aquilegia Canadensts</i> Woodland Phlox <i>Phlox divaricata</i></p>
<p>NATIVE GRASSES</p>	
<p>Big Bluestem <i>Andropogon gerardi</i> Broomsedge <i>Andropogon virglnicus</i> Indian woodoats <i>Chasmanthum latifolium</i> Coastal panic grass <i>Panicum amarum</i> Switch grass <i>Panicum virgatum</i> Little bluestem <i>Schizachyrium scoparium</i> Indian grass <i>Sorghastrum nutans</i> Easternn gama grass <i>Tripsacum dactyloides</i></p>	

SHADE TOLERANT PLANTS	PART SUN (semi-shade intolerant)
<p><u>Trees</u> Red maple Sugar maple Serviceberry, Shadbush Pawpaw Yellow birch Hornbeam American beech White ash Sweetbay magnolia Hop hornbeam American basswood Canada hemlock</p> <p><u>Small Trees & Shrubs</u> Dogwood Redbud Fringetree Sweet pepperbush Gray dogwood American hazelnut Witchhazel Inkberry Mountain laurel Spicebush Staghorn sumac Elderberry Highbush blueberry Witherod Southern arrowwood Highbush cranberry Virginia sweetspire</p>	<p><u>Trees</u> Silver maple Sweet birch Bitternut hickory Shagbark hickory Hackberry Tulip poplar Easter white pine Sycamore White oak Swamp white oak Chestnut oak Willow oak Northern red oak Slippery elm</p> <p><u>Small Trees & Shrubs</u> Red chokeberry Black choke berry Black huckleberry Winterberry Swamp azalea Meadowsweet Nannyberry Smooth alder Pinxterbloom azalea</p>

FULL SUN (Shade intolerant)

Trees

Persimmon
Black ash
Red ash
Honey-locust
Kentucky coffee-tree
Black walnut
Sweet gum
Black gum
Eastern cottonwood
Black cherry
Pin oak
Black willow
Sassafras

Small Trees & Shrubs

Groundsel bush
Buttonbush
Silky dogwood
Red-osier dogwood
Bayberry
Wax myrtle
Ninebark
Rosebay rhododendron
Blackhaw viburnum

FLOOD TOLERANT

Trees

Red maple
Shadbush
Yellow birch
Black Ash
Red ash
Sweet gum
Sweetbay magnolia
Eastern cottonwood
Swamp white oak
Willow oak
Black willow
Slippery elm

Small Trees & Shrubs

Smooth alder
Red chokeberry
Black chokeberry
Groundsel bush
Buttonbush
Silky Dogwood
Red-osier dogwood
Inkberry
Winterberry
Bayberry
Ninebark
Rosebay rhododendron
Swamp azalea
Swamp rose
Meadowsweet
Highbush blueberry
Witherod
Southern arrowwood
Northern arrowwood
Highbush cranberry

SEMI-FLOOD TOLERANT (good for wet sites)

Trees

Atlantic white cedar
Allegheny serviceberry
Bald cypress
Black gum
Bitternut hickory
Eldebeny
Grey birch
Green ash
Hackberry
Persimmon
White ash
Honey-locust
Kentucky coffee-tree
Black walnut
Tulip poplar
Black gum
Sycamore
Northern red oak
River birch

Shrubs

Serviceberry
Fringe tree
American hazelnut
Black huckleberry
Grey dogwood
Spicebush
Witchhazel
Mountain laurel
Staghorn sumac
Nannyberry viburnum
Blackhaw viburnum

SALT TOLERANT SPECIES

Trees

Serviceberry, Shadblow
Groundsel tree
Hackberry
American holly
Eastern red cedar
Sweetbay magnolia
Black gum
Pitch pine
Elderberry

Shrubs

Bearberry
Red chokeberry
Black chokeberry
Buttonbush
Sweet pepperbush
Inkberry
Spicebush
Southern wax myrtle
Bayberry
High tide bush
Beach plum
Winged sumac
Smooth sumac
Staghorn sumac
Rugosa rose
Arrowwood viburnum
Blackhaw viburnum
Highbush blueberry

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