



JAMES CITY COUNTY ENVIRONMENTAL DIVISION

Chesapeake Bay Ordinance Submission Requirements for Single Family Site Plans

Plan of Development

Prior to the issuance of a building permit for construction of a single family residential structure, an addition to an existing residential structure, an accessory structure, or prior to any clearing or grading of a lot, a site plan must be submitted with the building permit application. This site plan shall contain the information required in the Environmental Division's *Requirements for Single Family Plan Submittal*, which can be obtained from either the Division of Code Compliance or the Environmental Division, and an environmental inventory.

Environmental Inventory

An environmental inventory shall be submitted along with the plat plan, be drawn to scale, and clearly delineate the following components:

1. tidal wetlands;
2. tidal shores;
3. nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow (Resource Protection Area (RPA) wetlands);
4. a 100-foot buffer area located adjacent to and landward of the components listed in items 1 through 3 above, and along both sides of any water body with perennial flow;
5. nontidal wetlands not included in item 3 (Resource Management Area (RMA) wetlands);
6. 100-year floodplains as designated by Chapter 24 of the County Code (Zoning Ordinance);
7. slopes of 25 percent or greater; and
8. water bodies with perennial flow.

Water body with perennial flow. A water body that flows in a natural or man-made channel year round during a year of normal precipitation. It includes but is not limited to streams, estuaries, tidal embayments, and may include drainage ditches or channels constructed in wetlands or from former natural drainageways, which convey perennial flow. Lakes and ponds through which a perennial stream flows are part of the perennial stream.

The determination of a water body with perennial flow shall be accomplished through the use of a reliable, site-specific evaluation of in-field indicators of perennial flow. This site-specific evaluation shall be accomplished using one of the County or state approved methods presented below unless the County has already made a field determination of perennial flow for the site. The site-specific determinations shall be confirmed by the Environmental Division and shall be used to establish the boundaries of the RPA. The Division's target for confirming delineations for single family projects is 7 days from receipt of all information necessary to substantiate the perennial flow determination.

Approved methods of perennial flow determination

There are five methods approved for perennial flow determination in James City County. These methods are:

1. North Carolina Field Indicator Method;
2. Fairfax County Field Indicator Method;
3. Groundwater Monitoring;
4. Surface Water Monitoring;
5. Documented Observation.

A discussion of these methods is contained in a guidance document entitled *Determinations of Water Bodies with Perennial Flow* adopted by the state Chesapeake Bay Local Assistance Board in September, 2003. The guidance document presents an overview of the various determination methods and the general requirements for each method. In addition, the County has prepared a separate document entitled *Chesapeake Bay Ordinance Guidance for Determining Water Bodies with Perennial Flow* that provides more information on utilizing the field indicator methods. Therefore, the remainder of this document will provide guidance regarding the Documented Observation method.

Documented Observation

It is anticipated that the majority of applications for single-family projects will use the Documented Observation method. This method involves the use of photo-documentation of stream conditions regarding the presence or absence of surface flow. The following information needs to be submitted to the County to document the perennial flow determination for the Documented Observation Method:

1. A minimum of two photographs showing the stream flow with a visible date stamp or certification of the date the photographs were taken.
2. Precipitation data, which documents climatic conditions at the time the photographs were taken.
3. A map showing the location and view direction of the photographs.
4. A report presenting the findings of the photo-documentation conducted in accordance with the methodology presented in the state guidance document indicating the presence or absence of water in a stream and the interpretation of the data.

A more detailed explanation of the method is presented on page 5 taken from the state's guidance document.

Additional Corroborative Information

Regardless of the method used for determining stream flow, the determination should always be made in the context of the current weather conditions and precipitation trends. Therefore, the following information shall also be submitted along with the stream flow determination:

1. Stream flow determinations should be made at least 48 hours after the last known rainfall. Therefore, along with the date of the observation, submit information which documents

the amount of recorded rainfall and the number of days that have lapsed since the last precipitation event prior to the date of the observations.

2. The month-to-date and year-to-date precipitation should also be submitted to evaluate whether the conditions at the time of observation are above, below, or near normal for the season or year. This information is available from the National Weather Service websites, the National Climatic Data Center, the Virginia Climatology Office, and the local daily newspapers. Also WAVY News 10, on its website www.wavy.com - Weathernet – has a rain gauge at Lafayette High School which has daily, 72 hour, weekly and monthly rainfall information.
3. The Palmer Drought Severity Index at the time of the observation. The correct Palmer Index to use is the long-term drought index. A website that has information on the Paimer Index is www.drought.noaa.gov/index.html
4. Any historical information based on discussions with long-term residents, and local professionals such as hydrologists, foresters, extension agents, VDOT personnel, Colonial Soil and Water District personnel, and NRCS technicians. However, this information should be considered as supplemental to one of the determination methods discussed earlier.

More detailed information on what is needed and how to find corroborative information is presented on pages 5, 6, and 7 taken from the state's guidance document.

Inability to Collect Field Data

All methods approved for making site-specific determinations of perennial flow require that information on the water body be collected in the field. There may be some situations where a water body that needs to be evaluated is not located on property owned by the applicant for a development project. In the event that the person conducting the evaluation is not able to obtain permission from a landowner to access the water body in question for the purpose of collecting data necessary to make a site-specific evaluation, then the best available information from other sources can be substituted for evaluation purposes. Other data sources that contain valuable information are the *Soil Survey of James City and York Counties and the City of Williamsburg, Virginia* (1985), *National Wetlands Inventory* maps, geographic information and aerial photography available from James City County, and data collected upstream and downstream of the location that cannot be accessed. This information will then be used by the Environmental Division to make the decision regarding a water body's perennial flow status.

Identification of Resource Protection Areas for Single Family Applications

If it is determined as a result of the process described above that a perennial stream is located on the property, it will be necessary to establish a 100-foot wide RPA buffer around the stream. This buffer is measured from the edge of the stream or from the limit of any wetland areas adjacent and connected to the stream. This RPA buffer will then need to be shown on the plan submitted with the building permit application before the permit can be approved by the Environmental Division. It will not be required to re-record the plat for the lot to identify the

RPA location. However, if there is a need to amend the plat for any reason, the RPA will need to be shown on the amended plat.

Following approval, the Environmental Division will send a certified letter to the property owner with a map of the property showing the location of the RPA buffer. The letter is an official notification from the County that an RPA buffer is present on the property and the owner is obligated to disclose this fact to any prospective purchaser of the property. In addition, it will be the property owner's responsibility to install at least two signs on the property marking the landward limit of the RPA. The signs are available at cost from the Environmental Division. These signs will need to be installed prior to issuance of a certificate of occupancy or final inspection whichever is applicable.

Notification of Affected Properties

In the event a water body is determined to have perennial flow, the County will notify other property owners who are affected by the determination. This notification will be made to any person with property adjacent to or downstream from the point of determination. The notification will state that a perennial water body has been determined to exist on or adjacent to their property and that a 100 foot RPA buffer is in effect from the edge of that water body and any adjacent, connected wetlands. A notification will not be necessary for those properties where a stream was determined to be perennial based on the definition in effect prior to January 1, 2004, which was based on its designation as a solid blue line on the USGS quadrangle maps. These streams and water bodies have been protected with an RPA buffer and shown on the County's Chesapeake Bay Preservation Area maps since the Ordinance was first adopted in 1990.

Documented Observation

Photographs of stream flow conditions should always be taken when making a determination of whether a stream conveys perennial or intermittent flow. The use of photo-documentation of stream flow conditions as the only means of making a stream flow determination may be appropriate in certain circumstances. For example, photographs documenting dry channel conditions during the wetter seasons of the year or in some cases following a rainfall event in a normal rainfall year may be sufficient to document intermittent or ephemeral flow conditions. Conversely, photographs of wet channel conditions during drier seasons of the year or during periods of drought would strongly indicate perennial flow conditions. However, if photo-documentation alone is used for purposes of documenting stream flow or lack of stream flow, it should always be corroborated with precipitation data (see section on climate data), which documents climatic conditions at the time the photograph was taken. Photographs should not be taken within two (or preferably three) days following a substantial rainfall. An exception to this might be if the channel is dry following a substantial rainfall event in a normal precipitation year. Documented observations of no flow when the Palmer Drought Severity Index is wetter than a classification of -2.0 (moderate drought) should be considered definitive confirmation that the stream is not perennial.

Photographs used for purposes of documenting stream flow must have a visible date stamp or certification (by landowner/applicant or his/her designated representative) of the date the photograph(s) were taken. The date stamp feature is available with most digital cameras and some battery-operated cameras. Care should be taken to obtain photographs that are close enough to see the channel characteristics (i.e., banks, substrate) and that are unobstructed by vegetation (vegetation may need to be clipped to obtain a clear view). Photographs of the channel should include identifiable stationary landmarks in the field, so that the point of observation can be later verified, if necessary. Identifiable landmarks might include survey flagging (marked with some identification) or structural objects (i.e., culverts, bridges, nearby buildings, unique natural features, etc.).

The location and view direction of the photographs should be marked on a map or plat. A minimum of two photographs should be provided (upstream and downstream view). However, stream segments greater than 200 feet in length should include additional photographs (upstream/downstream views for each 200-foot length segment).

This method is applicable for use as a "reliable site-specific evaluation" pursuant to 9 VAC 10-20-105. If this method were used to evaluate all streams within a jurisdiction, this method can be used as the basis of definitive mapping of RPAs pursuant to 9 VAC 10-20-80 D.

Additional Corroborative Information

Regardless of which method is used for determining stream flow, the determination should always be made in the context of the current weather conditions and precipitation trends. Other information may be useful as well, but should be used cautiously depending on the source(s).

Stream flow determinations should be made at least 48 hours after the last known rainfall. This will ensure that observations are made of conditions more representative of base flow conditions that are not influenced by recent precipitation events. However, monitoring soon after a rainfall, particularly when the channel exhibits dry conditions, may present compelling evidence that the stream does not convey perennial flow, provided that this does not occur during extreme drought conditions. The occurrence of recent precipitation events prior to site investigation should be taken into consideration (i.e., the amount of rainfall, the number of days lapsed since the last precipitation event occurred). The month-to-date and year-to-date precipitation data is helpful in evaluating whether the conditions at the time of observation are above, below, or near normal for the season or year. This information is readily available from a variety of sources including the National Weather Service websites, the Nation Climatic Data Center, the Virginia Climatology Office, and daily newspapers. Similarly, the lack of rainfall should be noted both for recent conditions and over the previous year or more. Because the underlying soils and geology are, in a sense, the reservoirs of ground water that is slowly released to streams, a sense of whether these reserves are expected to be normal or are experiencing a deficit is valuable in putting the current conditions in context. The following sources of data should be consulted for recent and longer-range climatic data:

Dulles airport <http://weather.noaa.gov/weather/current/KIAD.html>
Reagan National Airport <http://weather.noaa.gov/weather/current/KDCA.html>
Virginia State Climatology Office <http://climate.virginia.edu/>
Virginia DEQ Drought Monitor: <http://www.deq.state.va.us/info/drought.html>
U.S. Drought Monitor <http://www.drought.unl.edu/dm/index.html>
The National Weather Service <http://205.156.54.206/er/lwx/index.htm>

Evaluating field observations in the context of prevailing weather conditions and trends requires a basic understanding of the terms "normal precipitation" and "drought". Normal precipitation is typically considered to be a 30-year mean. Prevailing climate conditions of the preceding two to three months as well as the preceding 12 months should be compared to the normal precipitation for the corresponding periods of time over the period of record. Deviations exceeding 20% normal precipitation should be considered noteworthy. Of the various measures of drought that have been developed, the most frequently used indicators are those developed by Wayne Palmer in the 1960s. Palmer defined drought as a prolonged and abnormal moisture deficiency. The Palmer Drought Severity Index (PDSI), standardized to local climates, is a tool for evaluating the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather. It takes into account several factors including precipitation totals, temperature,

evapotranspiration, soil runoff and soil recharge. The PDSI varies between -6.0 and +6.0 and from these values, 11 categories of wet and dry conditions have been defined and are shown in the table below. Conditions drier than a Palmer Classification of -2.0 (moderate drought) or wetter than 2.0 (moderately wet) should be considered particularly noteworthy in evaluating stream data in the context of prevailing climate conditions.

Palmer Classifications	
4.0 or more	extremely wet
3.0 to 3.99	very wet
2.0 to 2.99	moderately wet
1.0 to 1.99	slightly wet
0.5 to 0.99	incipient wet spell
0.49 to -0.49	near normal
-0.5 to -0.99	incipient dry spell
-1.0 to -1.99	mild drought
-2.0 to -2.99	moderate drought
-3.0 to -3.99	severe drought
-4.0 or less	extreme drought

Discussions with long-term residents and local professionals (hydrologists, VDOT staff, county extension agents, NRCS technicians, surveyors, foresters, field engineers) may reveal further information about the permanence of flow in a particular stream channel. However, caution should be exercised with respect to the reliability of anecdotal information. This information is strictly supplemental and final stream determinations should not rely solely on anecdotal information.

Expertise Required for Making Determinations

Professional disciplines required for making field determinations of stream perenniality may vary depending on the protocol or method used. Those using an ecologically based method should have an educational background, training and experience in stream ecology or the appropriate training and experience in the particular protocol employed. Experience and training in civil engineering, particularly river mechanics or hydrology/hydraulics is more applicable for techniques that employ the measurement and calculation of surface water flow through a weir or flume. Persons holding professional geologist (P.G.) certifications or those with considerable experience and training in hydrogeology would be more knowledgeable or better trained in using groundwater-monitoring techniques. No particular experience is required for people who use simple photographic documentation corroborated with meteorological data.