

SECTION 7 FLOODPLAIN MANAGEMENT

7.1 STATEMENT OF INTENT

The purpose of the *floodplain* management section is to provide a unified, comprehensive approach to *floodplain* management which addresses the natural *floodplain* functions and encourages the use of appropriate construction practices that prevent or minimize *flood* damage. In combination with the *floodplain* design standards found in Article V of this Ordinance, these *regulations* address the requirements of the Federal and State programs concerned with *floodplain* management; namely: the National Flood Insurance Program (44CRF59 -79), the Maryland Waterway Construction Permit Program for Non-tidal Floodplains, the Maryland Tidal and Non-tidal Wetlands Permit Programs, the U.S. Army Corps of Engineers' Section 10 and 404 Permit Programs, and the Maryland Coastal Zone Management Program.

7.2 ESTABLISHMENT OF FLOODPLAIN DISTRICT

1. Identification of *flood zones*. The regulatory *floodplain* shall be those areas of Kent County, Maryland, which are subject to the 100-year *flood* as delineated on the most recent revision of the community's *Floodway Maps* and *Flood Insurance Rate Maps (FIRM)* and described in the Flood Insurance Study (FIS) prepared by the Federal Emergency Management Agency (FEMA). *Floodway Maps* and the FIS, if available for the community, must be used. Areas along non-tidal streams that do not have FEMA delineations as described above are subject to regulation by this Ordinance and the State.
2. The *Flood Insurance Rate Maps (FIRM)* and Flood Insurance Studies (FIS), and all notations, dimensions, references, and symbols thereon, shall be considered a part of this Ordinance and shall be filed as a part of this Ordinance with the Kent County Department of Planning and Zoning. Copies of the *FIRM* and FIS shall be available for inspection in the Department of Planning and Zoning.
3. The *floodplain* shall be comprised of the following subdivisions:
 - a. *Non-tidal floodplains*: These consist of the *floodway* and *floodway fringe*. *Non-tidal floodplains* may have detailed engineering study data, profiles, and water surface elevations or may have approximate delineations only.
 - b. *Tidal floodplains*: Those areas subject to coastal or tidal flooding by the 100-year *flood*. These areas are flooded due to high tides, hurricanes, tropical storms and steady on-shore winds.
 - c. *Coastal high hazard areas*: Those areas subject to coastal or tidal flooding with the addition of high velocity water and wind action. These areas are designated as V-Zones on the *Flood Insurance Rate Maps*.
4. *Floodplain Zone Determination*. The Department of Planning and Zoning will determine the *floodplain* zone in which the *development* activity is proposed using the *Floodway Maps* and FIS if available, or if not, by using the *FIRM*. Without prior approval from FEMA, the community shall use no other data to enforce *floodplain* management *regulations*. Where map boundaries and elevations disagree, elevations prevail, with no approval from FEMA required.

5. *Approximate Floodplain Determination.* For *development* proposed in the approximate *floodplain* (no water surface elevations or *floodway* data provided), the applicant must use the best available information to determine the elevation of the 100-year *flood* and the extent of the *floodway*, and must delineate these on the *site plan* submitted for approval. For new subdivisions, the applicant must have the 100-year *flood* elevations certified by a registered professional *engineer* based on hydrologic and hydraulic analyses which include a *floodway* analysis. For construction or *fill* on existing property, if no data are available, the point-on-the boundary method may be used. In this method, the distance is scaled from a reference point at the *site* to the edge of the 100-year *floodplain* boundary indicated on the *FIRM*. An elevation of the 100-year *flood* is determined at the point by survey.
6. *Unmapped Streams.* In cases in which *development* is proposed in the vicinity of unmapped streams which have no delineated 100-year *floodplain*, a 100-foot *flood* protection setback from the banks of the stream shall be used. State permits may be required and applicants are advised to seek a determination from the State.

7.3 DEVELOPMENT REGULATIONS

1. General

In order to prevent excessive *flood* damage and to allow for the protection of the natural and beneficial *floodplain* functions, all *development*, *new construction*, and *substantial improvements* to existing *structures* in all *floodplain* zones shall comply with the requirements of Article VI, Section 7 and those found in Article V of this Ordinance. In the event that a *structure* is in more than one (1) zone, the more stringent provision shall apply to the entire *structure*.

2. *Watercourses*

In all *floodplain* zones, any *development* which proposes to alter a *watercourse* shall obtain a *variance*. All conditions for encroachment in the *floodway* shall be met and *adverse impacts* to aquatic resources shall be minimized. Adjacent communities and property owners, FEMA, and the Maryland Water Resources Administration shall be notified by the applicant prior to any modification of a *watercourse*. The Water Resources Administration of the Maryland Department of the Environment may require a *waterway* construction permit.

3. *Non-tidal* and *Tidal Floodplains*

- a. *General development* shall not occur in the *floodplain* where alternative locations exist. Before a permit is issued, the applicant shall demonstrate that new *structures* cannot be located out of the *floodplain* and that encroachments onto the *floodplain* are minimized
- b. *Elevation Requirements, Residential Structures.*
 - i. *Basements* are prohibited. Enclosures below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*) shall be constructed with water equalizing vents to meet the specification found in Article VI, Section 7.4 of this Ordinance.
 - ii. The elevation of the *lowest floor* of all new or substantially improved *structures*, including *manufactured homes*, shall be elevated to or above the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*). In *non-tidal floodplains*, horizontal expansions which increase the footprint and that are less than substantial shall also have the *lowest floor* elevated to or above the *Flood Protection Elevation*. A registered surveyor or professional *engineer* shall certify elevation of the *lowest floor* on the *Elevation Certificate* after the *lowest floor* is in place.

- iii. Improvements in tidal *floodplains* which are less than substantial shall be constructed to minimize damage during flooding or shall be elevated to the greatest extent possible.
- c. Elevation Requirements, Non-residential *Structures*.
 - i. All new or substantially improved non-residential *structures* shall either be elevated as required for residential *structures* or shall be floodproofed. *Basements* are prohibited. Enclosures below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*) shall be constructed with water equalizing vents to meet the specification found in Article VI, Section 7.4 of this Ordinance.
 - ii. Horizontal expansions in the *non-tidal floodplain* which increase the footprint and that are less than substantial shall also have the *lowest floor* elevated to one foot above the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*).
 - iii. In *non-tidal floodplains*, *basements* and *floodproofing* are prohibited.
 - iv. *Floodproofing* designs must insure that areas below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*) are watertight with walls substantially impermeable to the passage of water and with structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
 - v. When the *floodproofing* option is chosen, a *Floodproofing Certificate* must be completed by a registered professional *engineer* or *architect*. If a *Floodproofing Certificate* is not provided, then an *Elevation Certificate* must be completed by a registered *surveyor* or professional *engineer*.
- d. *Fill*
 - i. The placement of more than six hundred (600) cubic yards of *fill* per parcel in the *floodplain* is prohibited. Elevating *buildings* by other methods shall be considered unless six hundred (600) cubic yards of *fill* or less is required. An applicant shall demonstrate that *fill* is the only alternative to raising the *structure* and that the *fill* will not affect the *flood* storage capacity or increase flooding onto neighboring properties.
 - ii. In the event that *structures* on adjacent properties are known or determined to be subject to flooding under current conditions, the Department of Planning and Zoning may require submission of hydrologic and hydraulic analysis of the affects of the proposed *fill*. All *fill* shall meet the standards set forth in this Ordinance.
- e. Subdivisions
 - i. *Non-tidal floodplains*. To avoid *flood* damage and to protect the natural and beneficial *floodplain* functions, new floodprone building *sites* shall not be permitted in *non-tidal floodplains*. Each new *lot* shall have a suitable building *site* outside the *floodplain*. Whenever possible, *development* should be located outside the *floodplain*. An access road, constructed above the elevation of the 100-year *floodplain* shall be provided.
 - ii. The applicant shall submit a plan which demonstrates that all building *sites* located outside of the 100- year *floodplain*, and that the *floodplain* areas are protected in their natural state.
 - iii. Tidal floodplains. New subdivisions in tidal floodplains shall be designed to develop land outside the *floodplain* whenever possible. An access road constructed above the elevation of the 100-year *flood* shall be provided whenever possible.

4. *Floodway*
 - a. *Floodways* shall be preserved to carry the discharge of the 100-year *flood*. *Floodways* present increased risks to human life and property because of their relatively faster and deeper flowing waters.
 - b. *Fill* shall not be permitted.
 - c. New *structures* shall not be permitted.
 - d. New *development* shall not be permitted where alternatives exist elsewhere or if any increase in the water surface elevations of the 100-year *flood* will occur.
 - e. *Development* in the *floodway* which may result in any increase in water surface elevations or change to the *floodway* shall be submitted to FEMA for a conditional letter of map revision. Hydrologic and hydraulic analysis on existing *floodway* models and performed in accordance with standard engineering practices and certified by a registered professional *engineer* must be submitted. Failure to receive this conditional letter of map revision shall be grounds for denial of a permit.
 - f. Alternative analysis requirement. An alternative analysis shall be submitted to the Department of Planning and Zoning before a permit shall be issued. The alternative analysis shall demonstrate that:
 - i. No reasonable alternative exists outside the *floodway*.
 - ii. Encroachment in the *floodway* is the minimum necessary.
 - iii. The *development* will withstand the 100-year *flood* without significant damage.
 - iv. The *development* will not increase downstream or upstream flooding or *erosion*.
 - g. Existing *structures*. Existing *structures* in the *floodway* shall be substantially improved only by *variance* and if they can be brought into conformance with this Ordinance without increasing the footprint. Minor additions (less than substantial) must be elevated to the *Flood Protection Elevation* (one foot above the *flood* elevation) on pilings or columns. In the event of *substantial damage* or replacement, the applicant shall submit an alternative analysis to determine if the *structure* can be relocated to a less hazardous *site*. Where replacement *structures* cannot be relocated, they shall be limited to the footprint of the previous *structure* and must comply with the elevation requirements of this Ordinance. Permits for incremental improvements and additions shall be tracked by the Department of Planning and Zoning, and if cumulative improvements constitute *substantial improvement*, no further permits may be issued unless the *structure* conforms to the provisions of this Ordinance.
 - h. Maintenance of natural *channel*. The natural *watercourse* shall be maintained for protection of aquatic resources. A *variance* is required for alteration of *watercourses*. Any *variance* issued must assure that the conditions for encroachment in the *floodway* are met, *adverse impacts* to aquatic resources are minimized, and the public good outweighs the *adverse impacts*. The provisions of Article VI, Section 7.3.2 of this Ordinance pertaining to altering a *watercourse* must be met.
 - i. Obstructions. *Structures* or *fill* which may impede, retard, or change the direction of the flow of floodwaters, or any materials that may be carried downstream to cause damage shall not be placed in the *floodway*. Fences, except two wire fences, shall not be placed in the *floodway*.
5. *Coastal high hazard areas (V-Zones)*
 - a. New *development* shall not be permitted in the Coastal High Hazard Area where the action of wind and waves, in addition to tidal flooding, is a factor unless the applicant demonstrates that:
 - i. No reasonable alternative exists outside the Coastal High Hazard Area;
 - ii. The encroachment into the Coastal High Hazard Area is the minimum necessary;

- iii. The *development* will withstand the 100-year wind and water loads without damage;
 - iv. The *development* will not create an additional hazard to existing *structures*; and
 - v. Any natural dune system will not be disturbed.
- b. New and substantially improved *structures*.
- i. All new or substantially improved *structures* shall be elevated on adequately anchored pilings or columns to resist flotation, collapse, and lateral movement due to the effects of the one-hundred-year water loads and wind loads acting simultaneously on all building components. Water loading values shall be those associated with the *base flood*, and wind loading values shall be those required by local building standards. The bottom of the lowest horizontal structural member supporting the *lowest floor* shall be elevated to one foot above the *base flood* Elevation. A registered professional *engineer* or *architect* must certify that building designs, elevations and anchoring have been designed to withstand the water and wind loads. The use of slabs or other at grade foundation systems shall be prohibited.
 - ii. The space below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*) shall be free of obstruction or may be enclosed with open wood lattice, insert screening or *breakaway walls*.
 - iii. *Breakaway walls* shall be designed to collapse under a wind and water load less than would occur during the 100-year *flood*, and have a design safe loading resistance of not less than ten pounds and no more than twenty pounds (20) per square foot. Glass walls shall not be considered *breakaway walls*. Enclosed areas below the *Flood Protection Elevation* shall be used solely for the parking of vehicles, limited storage, and building access. If such areas are enclosed, a *Non-conversion Agreement* shall be signed.
- c. *Manufactured homes* and *recreational vehicles*. *Manufactured homes* shall not be permitted in the Coastal High Hazard Area. *Recreational vehicles* shall meet the requirements of Article VI, Section 7.5.6 of this Ordinance.
- d. *Fill* and *excavation*. *Fill* shall not be used for the structural support of *buildings*. *Excavation* under existing *structures* or *excavation* within any enclosed space shall be prohibited.
- e. Location of *structures*. *New construction* within the reach of mean high tide is prohibited. Alteration of the dune system is prohibited.
- f. Existing *structures*. Existing *structures* shall not be substantially improved or expanded vertically or horizontally unless the entire foundation system is certified by a professional *engineer* or *architect* as capable of supporting the existing *building* and the proposed improvement during the one-hundred-year storm as specified in Article VI, Section 7.3.5b of this Ordinance. Permits for incremental improvements shall be tracked, and when cumulative improvements constitute *substantial improvement*, the entire *building* shall comply with Article VI, Section 7.3.4b of this Ordinance.

7.4 DESIGN STANDARDS

1. Placement of Buildings and Materials – In general, *buildings* and *accessory structures* should be located entirely out of the *floodplain*, out of the *flood* protection setback, or on land that is least susceptible to flooding. All *structures* permitted in the *floodplain* shall be oriented so as to offer the least resistance to the flow of floodwaters. Materials which are buoyant, flammable, explosive, hazardous to health, or which at times of flooding may be injurious to human, animal, or plant life, shall not be stored below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*).

2. Enclosures below Lowest floor – Buildings which have been elevated and have fully enclosed areas below the *Flood Protection Elevation* (one foot above the elevation of the 100-year flood), as well as garages and *accessory structures* which are not elevated shall be constructed with water equalizing vents which meet or exceed the following standards:
 - a. A minimum of two (2) openings on different walls having a total net area of not less than one square (1) inch for every square foot of enclosed area subject to flooding;
 - b. The bottom of all openings shall be no higher than one foot above *grade*; and
 - c. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters to equalize hydrostatic forces on the walls.
 - d. Fully enclosed areas below the *Flood Protection Elevation* (one foot above the elevation of the 100-year flood) shall be used solely for parking of vehicles, access to the *building*, or limited storage. If such areas are enclosed, a *Non-conversion Agreement* shall be signed by the applicant.
 - e. In *coastal high hazard areas*, enclosures below the *Flood Protection Elevation* (one foot above the elevation of the 100-year flood) shall comply with the provisions of Article VI, Section 7.3 of this Ordinance.

3. Manufactured homes and Manufactured Home Parks – New *manufactured homes* and *manufactured home parks* shall be prohibited in the Coastal High Hazard Area and in the *floodway*. In other *floodplain* zones, all new, replacement, or substantially improved *manufactured homes*, whether in a *manufactured home park* or not, shall comply with Article VI, Section 7.3 of this Ordinance.
 - a. Methods of anchoring shall include the use of over the top and frame ties to ground anchors. Pilings or columns shall be used to maintain the storage capacity of the *floodplain*. Concrete block support pilings shall be reinforced by placing reinforcing bars inside and extending them into the footing, filling the hollows with cement, and using mortar to cement the blocks together. FEMA Publication 85, “*Manufactured Home Installation in Flood Hazard Areas*,” should be consulted for specific recommendations.
 - b. *Manufactured homes* repaired or replaced due to substantial flooding or other causes shall be considered new *structures* and shall fully comply with Article VI, Section 7.3 of this Ordinance.
 - c. Owners of *manufactured home parks* or subdivisions that are partially or fully within the *floodplain* shall file an evacuation plan with the Director of Emergency Management. New *manufactured home parks* shall provide an access road elevated to the *Flood Protection Elevation* (one foot above the elevation of the 100-year flood).

4. Anchoring – All *structures* shall be firmly anchored in accordance with acceptable engineering practices to prevent flotation, collapse, and lateral movement during flooding. All air ducts, large pipes and storage tanks located below the *Flood Protection Elevation* (one foot above the elevation of the 100-year flood) shall be firmly anchored to resist flotation.

5. Utilities
 - a. Electric. Distribution panel boxes shall be installed at least two (2) feet above the *Flood Protection Elevation*. All outlets and electrical installations, such as heat pumps, air conditioners, water heaters, furnaces, generators, and distribution systems shall be installed at or above the *Flood Protection Elevation* (one foot above the elevation of the 100-year flood).

- b. Plumbing. Toilets, sinks, showers, water heaters, pressure tanks, furnaces, and other permanent plumbing installations shall be installed at or above the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*).
- c. Gas. Gas meters and gas appliances shall be installed at or above the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*).
- d. Water supply and sanitary facilities. Water supply distribution and sanitary disposal collection systems shall be designed to minimize or eliminate the *infiltration* of floodwaters into the systems or discharges from the systems into floodwaters and shall be located and constructed so as to minimize or eliminate *flood* damage. *On-site* sewage disposal systems shall meet these same standards.

7.5 ACCESSORY STRUCTURES

1. Where feasible, *accessory structures* and garages shall be located out of the *floodplain* or elevated to or above the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*). When these measures are not feasible the following shall apply:
 - a. The floor of the *structure* shall be at or above *grade*;
 - b. The *structures* shall be located, oriented, and constructed so as to minimize *flood* damage; and
 - c. The *structure* shall be firmly anchored to prevent flotation.
2. *Accessory structures* or detached garages, if less than three hundred (300) square feet in size, and used solely for the parking of vehicles and limited storage are exempt from the elevation requirements. No machinery, electric devices, or appliances shall be located below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*). All interior walls, ceilings and floors located below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*) shall remain unfinished. A Declaration of Land Restriction and *Non-Conversion Agreement* shall be signed by the property owner and recorded with the Kent County Clerk of Court. A copy of the recorded documents shall be attached to the building permit.
3. *Accessory structures* or detached garages between three hundred (300) square feet and six hundred (600) feet in size may be constructed below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*) under the conditions of Article VI, Section 7.8 of this Ordinance
4. An *accessory structure* or garage larger than six hundred (600) square feet in size shall be elevated to the proper *Flood Protection Elevation* (one foot above the elevation of the 100-year *floodplain*).
5. Attached Garages.
 - a. Attached garages, used solely for the parking of vehicles, storage or building access and no more than six hundred (600) square feet in size, are exempt from the elevation requirement but shall be elevated to the greatest extent possible. Attached garages shall meet the venting requirements found in Article VI, Section 7.4.2 of this Ordinance. All interior walls, ceilings, and floors below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*) shall be unfinished.
 - b. No machinery, electrical devices, or appliances shall be located below the *Flood Protection Elevation* (one foot above the elevation of the 100-year *flood*). A Declaration of Land Restriction and *Non-Conversion Agreement* shall be signed by the property owner and recorded with the Kent County Clerk of Court. A copy of the recorded documents shall be attached to the building permit.

6. *Recreational vehicles*
 - a. *Recreational vehicles* located within the *floodplain* may be exempt from the elevation and anchoring requirements provided they are:
 - i. Located on the *site* less than one-hundred eighty (180) consecutive days per year;
 - ii. Fully licensed and ready for highway use; and
 - iii. Properly permitted.
 - b. A *recreational vehicle* is ready for highway use if it is on its wheels and jacking system, is attached to the *site* only by quick disconnect type utilities and securing devices, and has no permanently attached additions. If it cannot meet all of these criteria, the *recreational vehicle* shall be considered a *manufactured home* and is subject to the elevation and construction standards of this Ordinance.

7. *Fill*
 - a. *Fill* shall not be placed in the *floodway*. *Fill* shall not be used for structural support in the Coastal High Hazard Area.
 - b. The placement of more than six hundred (600) cubic yards of *fill* per parcel in the *floodplain* is prohibited. Elevating *buildings* by other methods shall be considered unless six hundred (600) cubic yards of *fill* or less is required. An applicant shall demonstrate that *fill* is the only alternative to raising the *structure* and that the *fill* will not affect the *flood* storage capacity or increase flooding onto neighboring properties.
 - c. *Fill* shall consist of *soil* and rock materials only. Dredge material shall be used as *fill* only upon *certification* of suitability by a registered professional geo-technical *engineer*. Landfills, rubble fills, dumps, and sanitary fills shall not be permitted in the *floodplain*.
 - d. *Fill* used to support *structures* shall be compacted to 95% of the maximum density obtainable by the Standard Proctor Test (*ASTM* Standard D-698), and its suitability to support *structures* certified by a registered professional *engineer*. *Fill slopes* shall be no greater than two horizontal to one vertical. Flatter *slopes* may be required where velocities may result in *erosion*.
 - e. The use of *fill* shall not increase flooding onto or interfere with drainage from neighboring properties.
 - f. In the event that *structures* on adjacent properties are known or determined to be subject to flooding under current conditions, the Department of Planning and Zoning may require submission of hydrologic and hydraulic analysis of the affects of the proposed *fill*. All *fill* shall meet the standards set forth in this Ordinance.

7.6 PERMITS

1. No *development* shall occur without first obtaining a permit form the Department of Planning and Zoning. This permit shall not be valid until all applicable federal or state permits are obtained.
2. Application for a permit shall contain, at a minimum, the following information.
 - a. Name, address, and phone number of the applicant
 - b. Name, address, and phone number of the property owner, if different from that of the applicant
 - c. Name, address, and phone number of the contractor
 - d. Legal description of the *site*
 - e. Proposed use of the *site*
 - f. Type, dimensions, and estimated cost of the improvement
 - g. *Site* characteristics and improvements

- h. *Site plan* drawn to scale which shows:
 - i. Dimensions of the *site*
 - ii. Size and location of existing and proposed *structures* or *alterations*
 - iii. Setbacks
 - iv. Elevation contours in mean sea level (*NGVD*)
 - v. Delineation of the 100-year *flood* boundary.
 - vi. Proposed elevation of the *lowest floor* and method of elevation, if applicable.
 - i. A signed agreement stating that the applicant will supply an *Elevation Certificate*.
 - j. For additions or improvements, market value or assessed value of *structures* before improvement.
 - k. *Non-conversion Agreement* where applicable.
3. General permits shall be granted only after determining that the proposed *development* will be in compliance with this Ordinance.
 4. After approval of a permit, no changes of any kind shall be made to the application, permit, plans, specifications, or other documents submitted with the application without the written approval of the applicable county official. A copy of the permit shall be displayed at the construction *site*.
 5. During construction, the building inspector will inspect the *site* to determine that work is in compliance with the permit. Any work not in compliance with the permit shall be corrected before any additional work is undertaken.
 6. A record of all *floodplain* permits shall be maintained and be available upon request by the Federal Emergency Management Agency or its authorized agent during periodic assessments of the County's participation in the National Flood Insurance Program. All documents needed to support permit action, such as *Elevation Certificates*, map amendments or revisions, or *variance* actions shall be available for review during these assessments.

7.7 DAM SAFETY

The condition design criteria, hazard class and danger reach of the dam shall be considered when reviewing *development* downstream of existing or proposed dams. *Development* within the dam break *flood* wave shall be denied unless the dam meets the standards for a high hazard dam.

7.8 CONDITIONAL PERMITS

A conditional permit may be issued for garages and *accessory structures* less than six hundred (600) square feet in size, provided:

- a. The *structure* is incidental to the primary *structure*.
- b. It is used solely for limited storage and parking of vehicles.
- c. The floor of the *structure* is constructed at or above *grade*.
- d. The *structure* is located, oriented, and constructed so as to minimize *flood* damage.
- e. The *structure* is firmly anchored to prevent flotation.
- f. The *structure* meets the requirements of Article VI, Section 7.4 of this Ordinance.
- g. A Declaration of Land Restriction and *Non-conversion Agreement* are recorded with the Kent County Clerk of Court. A copy of the recorded documents shall be attached to the building permit.

7.9 ENFORCEMENT

1. It shall be the duty of the Department of Planning and Zoning to enforce the provisions of this Ordinance and to refuse to issue any permit or approve any *development* that would violate the provisions of this Ordinance. It shall be the duty of all officers and employees of Kent County to assist in the enforcement of this Ordinance by reporting seeming violations.
2. The Department of Planning and Zoning is authorized and directed to institute any appropriate action to correct violations of this Ordinance.
3. Any violation of Article VI, Section 7 of this Ordinance shall be subject to the fines and penalties established in Article XII of this Ordinance.
4. The Federal Insurance Administrator and the State of Maryland shall be notified immediately in writing of any *structure* or property in violation of Article VI, Section 7 of this Ordinance.
5. New or renewal of national flood insurance shall be denied for any *structure* remaining in violation or situated on property in violation of Article VI, Section 7 of this Ordinance.

7.10 LIABILITY

The degree of *flood* protection provided by this chapter is considered reasonable for regulatory purposes and is based on engineering experience and scientific methods of study. Floods of greater magnitude may occur or *flood* heights may be increased by man-made or natural causes. This section does not imply that flooding will not occur outside of delineated *floodplain* zones, nor that the permitted *development* and land uses within the *floodplain* will be free of flooding and associated *flood* damage. This section does not create liability on the part of the County, any officer, or employee thereof for any damage which may result from reliance on this Section.

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SECTION 8 FOREST CONSERVATION

8.1 STATEMENT OF INTENT

The purpose of this Section is to conserve the forests of Kent County. Forests and individual trees greatly contribute to the quality of life in Kent County, the health of the natural *ecosystem*, and the health and welfare of the citizens of Kent County. The County's economic health depends heavily on its natural resources of which forests are a major component. It is not the intent of the law to place unreasonable restrictions on *development*. Rather it aims to maximize the benefits of *forest* in a cooperative effort with *development*, thereby limiting the loss of forested land in Kent County and improving the environment of both developed and undeveloped areas.

8.2 APPLICABILITY

This Section applies to *minor* and *major site plans*, subdivisions, *public utilities* not exempt under this section and all *grading* permits for a disturbed area over 40,000 square feet excluding those areas governed by the Chesapeake Bay *Critical Area* Protection Law (Natural Resources Article, Section 8-1801-1816, Annotated Code of Maryland). This Section also does not apply to the following:

1. Highway construction activities under Natural Resources Article, Section 5-103, Annotated Code of Maryland.
2. *Commercial logging* and *timber harvesting operations*, including harvesting conducted subject to the *Forest Conservation* and Management Program under Tax Property Article, Section 8-211, Annotated Code of Maryland, that are completed after July 1, 1991 on property which:
 - a. Has not been the subject of application for a *grading* permit for *development* within five years after the logging or harvesting operation; and
 - b. Is the subject of a *Declaration of Intent* as provided for in Section 8.3 of this Ordinance.
3. Agricultural activities, not resulting in a change in land use category, including agricultural support *buildings* and other related activities constructed using *best management practices* provided that no more than 40,000 square feet of *forest* is cleared within a one year period. A *person clearing* 40,000 square feet or greater of *forest* within a one year period may not receive an exemption unless the *person* files a *Declaration of Intent* which includes:
 - a. A statement that the landowner or the landowner's agent will practice *agriculture* on that portion of the property for five years from the date of the declaration; and
 - b. A sketch of the property which shows the area to be cleared.
4. The cutting or *clearing* of a public utility *right of way* licensed under Article 78, Section 54A and 54B or 54I, Annotated Code of Maryland, or land for electric generating stations licensed under Article 78, Section 54A and 54B or 54I Annotated Code of Maryland, provided:
 - a. Certificates of public conveniences and necessity have been issued in accordance with Natural Resources Article 78, Section 5-1603(f), Annotated Code of Maryland; and
 - b. Cutting or *clearing* of the *forest* is conducted to minimize the loss of *forest*.
5. Routine maintenance or emergency repairs of the public utility *right of way* licensed under Article 78, Section 54A or 54 -I of the Annotated Code of Maryland.

6. Routine maintenance or emergency repairs of public utility *right of way* not subject to Section 8.2 (4) of this Ordinance, provided:
 - a. The *right of way* existed prior to January 5, 1993; or
 - b. The *right of way's* initial construction was approved after January 5, 1993.
7. Non-coal surfacing mining regulated under Natural Resources Article, Title 7, Subtitle 6A, Annotated Code of Maryland.
8. An activity required for the purpose of constructing a dwelling intended for the use of the owner, or a child or a grandchild of the owner, if the activity:
 - a. Does not result in the cutting, *clearing*, or *grading* of more than 40,000 square feet of *forest*; and
 - b. Is the subject of a *Declaration of Intent* filed in the Department of Planning and Zoning which states that a transfer in ownership may result in the loss of the exemption.
9. A real estate transfer to provide a security, leasehold, or other legal or equitable interest, including a transfer of title, of a portion of a *lot* or parcel if:
 - a. The transfer does not involve a change in land use, or new *development* or redevelopment with associated land disturbing activities.
 - b. Both the grantor and grantee file a *Declaration of Intent*.
10. An activity on a property that has more than 50% of its acreage within the Chesapeake Bay *Critical Area*.

8.3 GENERAL REQUIREMENTS

A. Declaration of Intent

1. A *person* seeking an exemption under Section 8.2 of this Ordinance shall file a *Declaration of Intent* with the Kent County Department of Planning and Zoning.
2. A *Declaration of Intent* is effective for five years.
3. The existence of a *Declaration of Intent* does not preclude:
 - a. An exempted activity on a property subject to a *Declaration of Intent* if the activity:
 - i. Does not conflict with the purpose of any existing *Declaration of Intent*, and
 - ii. Complies with the applicable requirements for an exempted activity.
 - b. A *regulated activity* on the area covered by the *Declaration of Intent*. However, if the activity occurs within five years of the effective date of the *Declaration of Intent*:
 - i. There shall be an immediate loss of exemption, or
 - ii. There may be a non-compliance action take by the Department of Planning and Zoning, as appropriate, under this Ordinance, or
 - c. A *regulated activity* on that area of the property not covered under the *Declaration of Intent* if the requirements of this Ordinance are satisfied.

B. Forest Stand Delineation

1. Simplified *Forest Stand Delineation*

- a. A simplified *Forest Stand Delineation* (SFSD) may be submitted when *forest cover* is not disturbed during a construction activity and the area is under a long-term protective agreement.
- b. A simplified *Forest Stand Delineation* shall be submitted at the time of concept *site plan* and concept *subdivision* review. A SFSD shall be used to determine the most suitable and practical areas for conservation.
- c. The delineation shall be prepared by a registered surveyor, licensed forester, licensed landscape architect, or other qualified professional who meets the requirements of COMAR 08.19.06.01B. A simplified *Forest Stand Delineation* shall meet the requirements found in Article VI, Section 8.4 of this Ordinance. The Planning Director may permit the *Forest Stand Delineation* to be combined with the *site* or *subdivision* plan.

2. *Forest Stand Delineation*

- a. A *Forest Stand Delineation* (FSD) shall be submitted at preliminary *site plan* or *subdivision* review, and before application for a *grading* or *sediment control permit* unless Section 8.3.B.1 applies. A FSD shall be submitted with the application for *minor site plan* or *minor subdivision* approval unless Article VI, Section 8.3.B.1 of this Ordinance applies.
- b. The delineation shall be prepared by a licensed forester, licensed landscape architect or other qualified professional who meets the requirements of COMAR 08.19.06.01B and shall meet the requirements of Article VI, Section 8.4 of this Ordinance.
- c. The delineation shall be used to determine the most suitable and practical areas for *forest conservation*.

C. Forest Conservation Plans

1. At the time of application for preliminary *subdivision* and *site plan* review, the applicant shall submit a preliminary *Forest Conservation Plan*. The review of the *Forest Conservation Plan* shall be concurrent with the review of the preliminary *subdivision* or *site plan*.
2. A final conservation plan shall be submitted with:
 - a. Minor and final *subdivision* plan
 - b. *Minor* and final *site plan*
 - c. Application for a *grading* and *sediment control permit*
3. Both preliminary and final *Forest Conservation Plans* shall be prepared by a licensed forester, licensed landscape architect or other qualified professional who meets the requirements of COMAR 08.19.06.01B. If *forest* is not going to be disturbed, a registered surveyor may prepare preliminary and final *Forest Conservation Plans*. Preliminary and final *Forest Conservation Plans* shall meet the requirements of Article VI, Section 8.4 of this Ordinance.
4. The preliminary *Forest Conservation Plan* may be modified during the review process.
5. Where deemed appropriate by the Planning Director, the preliminary and final conservation plans may be incorporated into other plans and plats required by this Ordinance.

6. If existing *forest* on the *site* subject to a *Forest Conservation Plan* can not be retained, the applicant shall demonstrate to the satisfaction of the Department of Planning and Zoning:
 - a. How techniques for *forest retention* have been exhausted;
 - b. Why the priority forests and priority areas specified in the design standards of the zoning districts cannot be left in an undisturbed condition.
7. If the applicant proposes to make a payment into the local *forest conservation* fund instead of *afforestation* or *reforestation*, the applicant shall demonstrate to the satisfaction of the Department of Planning and Zoning that the requirements for *afforestation* or *reforestation on-site* or *off-site* cannot be reasonably accomplished

8.4 PLAN REQUIREMENTS

A. Simplified Forest Stand Delineation

A simplified *Forest Stand Delineation* shall include:

1. Topographic map delineating *intermittent* and *perennial streams* and *steep slopes* over twenty-five percent (25%).
2. *Soils* map delineating *soils* with structural limitations, such as, *hydric soils*, or *soils* with a *soil K Value* greater than 0.35 on *slopes* of fifteen percent (15%), or more.
3. Location of 100-year *non-tidal floodplains*.
4. Property boundaries
5. Map showing existing *forest cover* verified by field inspection.
6. Other information that the Department of Planning and Zoning determines is necessary to implement *forest conservation*.

B. Forest Stand Delineation

A *Forest Stand Delineation* shall include the following:

1. Stand summary sheets that include a summary of the data collected at individual sampling *sites* including the following:
 - a. Dominant species and *forest* association
 - b. *Site* class of dominant *tree*
 - c. Total number of *tree* species
 - d. Number of trees per acre
 - e. Common understory species
 - f. *Forest structure* rating
2. A *Forest Stand Delineation Map*
 - a. North arrow
 - b. Property boundaries
 - c. *Perennial* and *intermittent streams* and their required *stream protection corridors*
 - d. *Topography*

- e. *Soils*, highlighting hydric and *soils* with a *K Value* over 0.35 on *slopes* of fifteen percent (15%) or more.
 - f. Current *forest* and unforested areas, including species, location, size of trees and showing dominant and co-dominant *forest* types
 - g. *Forest* stand locations
 - h. *Tree* lines extending *off-site*
 - i. *Steep slopes*
 - j. Field sampling points
 - k. Prime agricultural *soils*
 - l. Critical habitats
 - m. Adjacent land uses
 - n. Cultural features
 - o. Historic *sites*
 - p. *Non-tidal 100-year floodplain*
 - q. *Non-tidal wetlands*
 - r. Vicinity Map at a scale of 1:2000 which indicates major *roads*, land uses, and *forest cover* within one square mile of the *site*.
3. A written summary of *forest* stand conditions
- a. Stand Condition
 - i. Stand *structure* (dominant species and understory species)
 - ii. *Forest structure*
 - iii. *Retention* potential
 - iv. Comments on evidence of past management
 - b. Environmental Features
 - i. *Non-tidal floodplains*
 - ii. *Hydric soils*
 - iii. *Non-tidal wetlands*
 - iv. *Stream protection corridors*
 - v. Critical habitats
 - vi. *Steep slopes* and *soils* with a *K Value* which exceeds 0.35 on *slopes* of fifteen percent (15%) or more
 - vii. Cultural features
 - viii. Historic *sites*
 - ix. Adjacent land uses
 - x. Specimen trees and *champion trees*
4. Other information may be required if the Department of Planning and Zoning determines it is necessary to implement this Ordinance.

C. Preliminary *Forest Conservation Plan*

A preliminary *Forest Conservation Plan* shall include the following:

- 1. The approved *Forest Stand Delineation*
- 2. A table listing:
 - a. *Net tract area*
 - b. Area of *forest conservation* required
 - c. Area of *forest conservation*, both on- and *off-site* provided by the *developer*
 - d. *Afforestation* and *reforestation* plan

- e. Plat, drawn at the same scale as the preliminary plan which indicates:
 - i. Areas designated for *forest retention*
 - ii. Areas designated for *reforestation*
 - iii. Areas designated for *afforestation*
 - iv. Limits of disturbance
 - v. Stockpile areas
- f. Construction schedule, showing the sequence of *forest conservation*
- g. Two-year *maintenance agreement*
- h. A narrative on how the requirements for *forest conservation* have been addressed
- i. *Forest Conservation Worksheet*
- j. Other information the Department of Planning and Zoning determines is necessary to implement *forest conservation*.

D. Final Forest Conservation Plan

A final *Forest Conservation Plan* shall include the following:

1. The approved *Forest Stand Delineation*
2. A *Forest Conservation Worksheet*. A worksheet and instructions for its completion may be found in the *Forest Conservation Technical Manual*.
3. A *Forest Conservation Map* which clearly indicates the following:
 - a. *Forest retention* areas (with priority rating)
 - b. *Reforestation* areas
 - c. *Afforestation* areas
 - d. Protective devices, including specifications
 - e. Limits of disturbance
 - f. Stockpile areas
4. Construction Schedule, including the sequence of *reforestation* areas, *afforestation* areas, maintenance and protective measures to be employed at the *site*.
5. *Forest Protection Plan* that addresses:
 - a. Pre-construction activities including stress reduction and temporary and permanent protective devices.
 - b. Future protection measures
6. *Reforestation and Afforestation Plans*, which include:
 - a. Narrative evaluation of sequential analysis of *reforestation* and *afforestation* methods.
 - b. Planting plan which includes:
 - i. Summary of *site* assessment and preparation
 - ii. Target species for *reforestation*
 - iii. Plant materials table including plant material source, species, number of plants, size of plants. Methods found in the *Forest Conservation Technical Manual* shall be used to determine species selection and *site* stocking.

7. A 2-year *maintenance agreement* which includes:
 - a. Watering plans
 - b. Fertilizing plans
 - c. Control of competing vegetation
 - d. Protection from disease, pest, and mechanical injury
 - e. Replanting provisions when survival goal falls below acceptable levels
 - f. Name of company or individual responsible for *tree care*

8. Long term binding protective agreement, that:
 - a. Provides protection for areas of *forest conservation*, including areas of *afforestation*, *reforestation*, and *retention*, and
 - b. Limits uses in areas of *forest conservation* to those uses designated and consistent with *forest conservation* including recreational activities and *forest management* practices used to preserve *forest*.
 - c. A narrative on how the general provisions of *forest conservation* found in this Ordinance have been addressed.

9. Table listing:
 - a. *Net tract area*
 - b. Area of *forest conservation* required
 - c. Area of *forest conservation* provided both on and *off-site*

10. Other information that the Department of Planning and Zoning determines is necessary to implement *forest conservation*.

E. Forest Conservation Fund

1. A *forest conservation* fund is established.
2. When the Kent County Department of Planning and Zoning determines that the requirements for *reforestation* or *afforestation on-site* or *off-site* cannot be reasonably accomplished, the applicant shall contribute money into the *forest conservation* fund.
3. Money contributed to this fund instead of *afforestation* or *reforestation* shall be paid at a rate of 10 cents per square foot of required planting area.
4. The money shall be paid prior to final approval.
5. Money deposited in the local *forest conservation* fund:
 - a. May be spent on the costs directly related to *reforestation* and *afforestation*, including *site* identification, acquisition, and preparation.
 - b. Shall be deposited in a separate *forest conservation* fund; and
 - c. May not revert to the general fund
6. The County shall accomplish the *reforestation*, *afforestation*, or *forest land acquisition* for which the money is deposited within two years or four *growing seasons*, whichever is the greater time period after receipt of the money.
7. *Reforestation*, *afforestation*, *forest easement* purchase, or *forest land acquisition* paid for by this fund shall occur in Kent County or its municipalities and in the same *watershed* in which the project is located.

8. If the *reforestation, afforestation, forest easement* purchase, or *forest* land acquisition cannot be reasonably accomplished in the same *watershed* in which the project is located, the *reforestation, afforestation, forest easement* purchase, or *forest* land acquisition shall occur within the same county or *watershed* in the state in which the project is located.

F. Forest Protective Devices

1. Before cutting, *clearing, grading*, or construction begins on a *site*, the applicant shall demonstrate to the Department of Planning and Zoning that protective devices have been established.
2. Protective device standards are found in the *Forest Conservation Technical Manual*.

G. Bonds

1. A *person* required to conduct *afforestation* or *reforestation* shall furnish financial security in the form of a bond, an irrevocable letter of credit, or other security approved by the County Commissioners of Kent County. The surety shall:
 - a. Assure that the *afforestation, reforestation*, and the associated *maintenance agreement* are conducted and maintained in accordance with the approved *Forest Conservation Plan*.
 - b. Be in an amount that is 125% of the estimated cost of *reforestation* or *afforestation* as determined by the Department of Planning and Zoning.
 - c. Be in a form and content approved by the Department of Planning and Zoning.
2. After one *growing season*, an applicant may request reduction of the amount of the bond or other financial security by submitting a written request to the Department of Planning and Zoning with a justification for reducing the bond or other financial surety amount, including estimated or actual costs to ensure *afforestation* or *reforestation* requirements are met.
3. The Department of Planning and Zoning shall determine whether a lesser amount is sufficient to cover the cost of *afforestation* or *reforestation*, taking into account such factors as the number of acres, proposed method of *afforestation* or *reforestation*, cost of planting materials, and maintenance costs.
4. If after two *growing seasons* the plantings associated with the *afforestation* or *reforestation* meet or exceed the standards of the Kent County *Forest Conservation Technical Manual*, the amount of the bond, letter of credit, surety bond, or other security shall be returned or released.

H. Non-tidal wetlands

A *regulated activity* is subject to the following requirements:

1. For the purposes of delineation, permitting, and mitigation, areas determined to be *non-tidal wetlands* under COMAR 08.05.04 shall be regulated under COMAR 08.05.04 or this ordinance, whichever is more stringent.
2. For the purposes of calculating *reforestation* mitigation under this Ordinance, a forested *non-tidal wetland* permitted to be cut or cleared and required to be mitigated under COMAR 08.05.04 shall be shown on the *Forest Conservation Plan* and subtracted on an acre for acre basis from the total amount of *forest* to be cut or cleared as part of a *regulated activity*.

3. *Non-tidal wetlands* shall be considered priority areas for *retention* and replacement.
 4. Forested *non-tidal wetland* identification and delineation should be included at the earliest stage of planning to assist the applicant in avoidance and reduction of impacts to the *non-tidal wetlands* and to avoid delay in the approval process.
- I. State Funds
1. A local agency or *persons* using state funds making application to conduct a *regulated activity* shall submit the *subdivision*, construction, *grading*, or sediment control plan to the Department of Planning and Zoning who shall notify the Department of Natural Resources within fifteen (15) days of receipt of the plan or project.
 2. Within fifteen (15) days of receipt of notice from the Department of Planning and Zoning, the Department of Natural Resources shall:
 - a. Determine whether the project has impact on significant *forest* resources; and
 - b. Notify the Department of Planning and Zoning whether the project is subject to the State Program.
 3. If the Department of Natural Resources determines that the project is subject to the State program:
 - a. The time limit for approval of the *Forest Stand Delineation* and preliminary and final *Forest Conservation Plan* shall begin when the Department of Natural Resources receives the necessary documents from the Department of Planning and Zoning;
 - b. The Department of Planning and Zoning may not approve a *subdivision* or *site plan* or issue the *grading* or *sediment control permit* until the Maryland Department of Natural Resources notifies the county that the standards and requirements of the State program have been satisfied.
 4. If the Department of Natural Resources determines the project need not be reviewed under the state program, the time limit for approval of the *Forest Stand Delineation* and *Forest Conservation Plan* under the Kent County Plan begins when the Department of Planning and Zoning receives notice from the Department of Natural Resources.

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SECTION 9 EROSION AND SEDIMENT CONTROL

9.1 STATEMENT OF INTENT

It is the intent and purpose of this section to safeguard life, limb, property and public welfare by establishing minimum requirements for *stripping*, excavating, and filling of land; for control of *soil erosion* and sediment; and to establish procedures by which these requirements are to be administered.

9.2 APPLICABILITY

1. A permit shall be obtained for any *grading*, *clearing*, *stripping*, excavating, filling of land, or *forest* harvesting. A permit shall also be obtained for the creation of borrow pits, spoil areas, quarries, material processing facilities, or any other facilities.
2. A permit shall not be required for the following, subject to compliance with the requirements of the Department of the Environment, relating to sediment control plans approved by the Kent Soil and Water Conservation District:
 - a. Outside the Chesapeake Bay *Critical Area*, *agricultural land management* operating according to *best management practices* in Maryland.
 - b. In the Chesapeake Bay *Critical Area*, *agricultural land management* operating according to an approved *soil* and water conservation plan approved by the Kent Soil and Water Conservation District. Landowners who have signed up as conservation district cooperators but do not have a conservation plan developed for them by the District shall be exempt from the requirements of this Section if *best management practices* are used.
 - c. *Clearing* or *grading* of land, provided that:
 - i. The aggregate of area(s) affected or bared at any one time does not exceed five thousand (5,000) square feet; and
 - ii. The *grading* does not involve a quantity of materials in excess of one hundred (100) cubic yards.
 - d. State and federal projects that are reviewed and enforced by the Maryland Department of the Environment.

9.3 PROCEDURES

A *person* making an application for a *Sediment Control Permit* shall submit to the Department of Planning and Zoning the following:

1. Application
2. One original and five copies of the plan, including specifications and timing schedules.
3. Fee
4. A bond if required under Article VI, Section 9.9 of this Ordinance.

9.4 GENERAL REQUIREMENTS

1. Permits issued under this Section do not relieve the owner of responsibility for securing required permits for work to be done which is regulated by any other applicable code, act, or County ordinance. This Section shall not preclude the inclusion in other permits of more stringent *regulations* or requirements concerning sediment control.

2. Standard sediment control plans and provisions may be approved for *single family dwellings* and other minor projects. A plan shall be approved prior to the issuance of a *grading* or building permit.
3. The Kent County Soil and Water Conservation District may prepare sediment control plans for agricultural projects such as barns, chicken houses, dairy operations or other agricultural *buildings*.
4. A copy of the current approved plan shall be kept at the construction *site*.
5. Prior to the issuance of a *grading* permit, copies of the plan shall be referred by the Department of Planning and Zoning to the Kent Soil and Water Conservation District for approval. Where applicable, the Maryland Department of the Environment may also review any plans that may require a water resources permit. Where deemed necessary, the Maryland Department of the Environment may also serve Kent County and the Kent Soil and Water Conservation District as a technical authority in *erosion* and sediment control. The Soil and Water Conservation District shall notify the Department of Planning and Zoning of its recommendations and/or approval.
6. Major modifications of the approved *grading* plans shall be submitted to the Department of Planning and Zoning and reprocessed in the same manner as the original plan. Field modifications of a minor nature may be authorized by the Department of Planning and Zoning provided that written authorization is given to the applicant performing work pursuant to this Section, with copies forwarded in a timely manner to the Kent Soil and Water Conservation District.
7. The permit and inspection fee shall be paid to the Department of Planning and Zoning and shall be determined by the *Sediment Control Officer* after consultation with the Kent Soil and Water Conservation District. The fee for a permit authorizing additional work shall be the difference between the fee paid for the original permit and the fee required for the entire sediment control project.
8. If the land area for which the *grading* is proposed lies within the *floodway* of any stream or *watercourse*, the Kent County Department of Planning and Zoning shall deny a *sediment control permit*, unless such *grading* is authorized or permitted by the Maryland Department of the Environment in accordance with its rules and *regulations*.
9. In granting any permit pursuant to this Section, the Kent County Department of Planning and Zoning may impose conditions that may be reasonably necessary to prevent the creation of a nuisance or unreasonable hazard to *persons* or to public or private property. Such conditions include but are not limited to:
 - a. Improvement of any existing *grading* to meet the standards required under this Section for new *grading* and for sediment control.
 - b. Designation of *easements* for drainage facilities and for the maintenance of *slopes*, *erosion* control facilities, and storm water management *structures* or devices.
 - c. Adequate control of dust by watering or other control methods acceptable to the Kent County Department of Planning and Zoning and in conformance with applicable air pollution ordinances.
10. The Department of Planning and Zoning shall have the right to deny issuance of a *grading* permit when the proposed *grading* would cause hazards adverse to the public safety and welfare.

11. For steep banks along the shorelines that are actively eroding and ten feet in height or more, the Kent County Department of Planning and Zoning may elect not to issue a permit for the construction of a dwelling or any other substantial *building*.
12. *Sediment control permits* expire after one year unless construction of the project has begun.
13. Sediment control plans expire after two years.
14. Following initial disturbance or redisturbance, permanent or temporary *stabilization* shall be completed within:
 - a. Seven calendar days as to the surface of all perimeter dikes, swales, ditches, perimeter *slopes*, and all *slopes* greater than three horizontal to one vertical (3:1).
 - b. Fourteen days as to other disturbed or graded areas on the project *site*.
15. The *permittee* shall fully perform and complete all of the work required to be done pursuant to the *grading* within the time limit specified in the *grading* permit. If an applicant is unable to complete the work in the specified time, the applicant shall submit a written request for an extension to the Department of Planning and Zoning that explains the need for the requested extension.
16. All permits issued for sand, gravel, or clay pits and rock quarries or any other mining or material processing operations involving *excavation* and/or stockpiling of *soil*, rock, or other materials shall lapse one year after termination of active, productive (i.e. actually removing material whether at a profit or not and whether stockpiled or sold) and continuous operations as determined by the Department of Planning and Zoning. Said permits shall be reviewed annually by the Department of Planning and Zoning for compliance in accordance with the approved *grading* plan.
17. Neither the issuance of a permit under the provisions of this Section nor the compliance with the provisions hereto or with any condition imposed by the Department of Planning and Zoning shall relieve any *person* from any responsibility for damage to *persons* and/or property.
18. During *grading* control operations the *permittee* shall be responsible for the prevention of damage to any *public utilities* or services within the limits of *grading* and along any routes of travel of equipment. No *person* shall grade on land so close to property lines as to endanger any adjoining public *street*, sidewalk, *alley*, or any other public or private property without supporting and protecting such property from settling, cracking, or other damage. *Grading* can occur on adjacent property if *grading* rights are secured from the property owner. Storm drains must terminate in an *acceptable outfall*. Kent County, Maryland shall not be responsible for any drainage damage to downstream properties for failure of any work to be done pursuant to this Section.
19. No *soil*, miscellaneous debris, or other spilled or dumped material is to be deposited in floodplains, *watercourses*, public *streets*, highways, sidewalks, or other public thoroughfares during transit or operation.
20. The owner of any property on which *grading* or other work has been done under the provisions of this Section shall maintain and/or promptly repair or restore all graded surfaces, *erosion* control measures, vegetative covers and/or other protective measures if disturbed or destroyed during the course of operations. Repair and restoration shall be in conformance with the approved plans until permanent measures are accepted by the Department of Planning and Zoning.

9.5 STEEP SLOPE REQUIREMENTS

1. *Development* may occur within steep slope areas provided that a minimum of 30% of the *lot* or parcel upon which the principal *structure* is to be situated is less than 10% grade and is contiguous to a road meeting Kent County design standards. The extent of cutting and filling that will be permitted on any *lot* will be based on the *soil* conditions at the *site* and as determined by the Department of Planning and Zoning upon recommendation of the Kent Soil and Water Conservation District. Construction on piling and/or supports shall be permitted.
2. All *roads* and *streets* shall be placed as close to the contour as possible, to minimize cutting and filling.
3. The construction of all *structures* shall be preceded by the installation of storm drainage system(s) and *stabilization* measures.
4. In the case of a single *lot development* within such areas where no central storm drainage system exists, runoff from driveways, roofs, and other improved surfaces shall be diverted and carried to an acceptable outlet by one or a combination of the following methods: filtration beds, subsurface dry wells, storm drainage systems and/or underground conduit systems or other adequate or protected outlets.

9.6 VEGETATIVE REQUIREMENTS

Vegetative *erosion* and sediment control measures shall include, but not be limited to, the following:

1. Following initial *soil* disturbance or redisturbance, permanent or temporary *stabilization* shall be completed within:
 - a. Seven (7) calendar days as to the surface of all perimeter dykes, swales, ditches, perimeter *slopes*, and all *slopes* greater than three to one (3:1)
 - b. Fourteen (14) days as to all other disturbed or graded areas on the project *site*.
2. Temporary Vegetative *Stabilization*. Areas where *grading* of cutting and filling operations are carried out in several stages that expose *soil* to *erosion* for one year shall be temporarily stabilized by seeding. The necessary steps to be followed to attain adequate *erosion* control coverage with temporary seeding shall be as follows:
 - a. Necessary *erosion* control practices
 - b. Seedbed preparation
 - c. Lime and fertilizer as required
 - d. Seeding
 - e. Mulching and mulch anchoring as required
3. Temporary Mulch *Stabilization*. The necessary steps to attain effective *erosion* control with mulch for short periods of time (less than six months) shall be as follows:
 - a. Necessary *erosion* control practices
 - b. Mulching placed on a friable *soil*
 - c. Mulch anchoring as required

4. Mulching Final Grade. The necessary steps to protect *soil* from *erosion* after final *grading* where permanent seeding is delayed until the next season shall be as follows:
 - a. Installation of *erosion* control practices as previously provided or required.
 - b. Application of required lime or fertilizer.
 - c. Preparation of final seedbed.
 - d. Mulching as required.
 - e. Mulch anchoring as required.
 - f. Secondary seeding shall be established during the first season following mulching.

5. Permanent Vegetative *Stabilization*. Adapted grasses, legumes, and other plants are available for stabilizing exposed areas. The final choice of species should be determined by considering such factors as adaptability to climate, *soils* and terrain and degree of maintenance. Steps necessary to establish permanent vegetative *stabilization* are as follows:
 - a. Install required *erosion* control practices.
 - b. Apply required lime and fertilizer
 - c. Prepare adequate seedbed.
 - d. Seed or sod.
 - e. Apply mulch and anchor for seed and sod.

9.7 STRUCTURAL REQUIREMENTS

Structural *erosion* and sediment control measures shall include, but not be limited to, those described and depicted in the “Standards and Specifications for Soil Erosion and Sediment Control” booklet as approved, adopted, and as may be amended by the Maryland Department of the Environment.

1. Fills and Classifications. The *grading* plans and specifications shall specify and delineate the use and extent of fills in accordance with the following classifications:
 - a. Type I *Fill*. *Load-bearing fills* proposed for support of *buildings*, walls, and other *structures*, the function thereof which would not be especially impaired by moderate settlement.
 - b. Type II *Fill*. *Load-bearing fills* proposed for support of *roadways*, pavements, utility lines and *structures* that would not be especially impaired by moderate settlement.
 - c. Type III *Fill*. Common fills proposed for landscaping or for other non-load bearing usage.

2. Materials. All *load-bearing fills* shall meet the following requirements:
 - a. No inclusions of organic or other deleterious materials which may be subject to decay shall be permitted. All fills shall also be free of inclusions of ice or snow.
 - b. No rock or similar irreducible material with a maximum dimension greater than eight inches shall be buried or placed in any *load-bearing fill* within two feet of *finished grade* or within two feet of foundation base elevation. When such material is placed in fills, it shall be done under the direction and supervision of an *engineer*.

3. Preparation of Ground. The natural ground surface shall be prepared to receive *fill* by removing all organic surface materials, non-complying *fill* and unsuitable *soils* in accordance with the following provisions, except as otherwise approved by the Department of Planning and Zoning:
 - a. Prior to placing Type I and Type II fills, the ground surface, if within five feet of *finished grade* or foundation base, elevations shall be compacted so as to achieve a density of not less than 90% of maximum density as defined under Article VI, Section 9.6.4 of this Ordinance within the top six inches.
 - b. No Type I and Type II *fill* shall be placed on frozen ground.

4. *Compaction.* All fills will be compacted in accordance with the following provisions:
 - a. All Type I and Type II fills shall be compacted to a minimum of 95% and 90%, respectively, and maximum density as determined in the laboratory of *ASTM* Test Method D1557-66T, also known as the proctor test. Type III *fill* shall be compacted sufficiently so as to be stable and to prevent an *erosion* hazard.
 - b. In place (field) density shall be determined by *ASTM* Test of American Society of Highway Officials Equivalent Test Method D1556-64 or by an equivalent test approved by the Kent County Department of Planning and Zoning.
 - c. Fills shall be placed in approximately horizontal layers, each layer having a loose thickness of not more than eight inches.
5. *Structural Rock.* Fills constructed predominately of large rock (such as sandstone and iron concretions) will be permitted only if the specifications for such *fill* are prepared by and construction done under the direction and supervision of an *engineer*.
6. *Maximum Slope for Fills.*
 - a. No *fill* shall be made which creates an exposed surface steeper in *slope* than two horizontal to one vertical (2 to 1), unless special approval is granted by the Kent County Soil and Water Conservation District.
 - b. The Department of Planning and Zoning may require that the *fill* be constructed with an exposed surface with a grade flatter than 2 to 1 or may require such other measures it deems necessary for stability, vegetative establishment and maintenance, and safety.
 - c. Fills toeing out on natural *slopes* at a grade steeper than three horizontal to one vertical (3 to 1) shall not be made unless approved by the Department of Planning and Zoning.
7. *Maximum Slope for Cuts.*
 - a. Cuts shall not be made with a *slope* steeper than 2 to 1.
 - b. The Department of Planning and Zoning shall require at any time that the *excavation* be made with a *cut* face with a grade flatter than 2 to 1 or may require other such measures for stability, vegetative establishments, and safety.
8. *Cut and Fill Slopes - Bench terraces.*
 - a. *Cut* and *fill slopes* in excess of 30 feet but not more than 40 feet in vertical height shall be terraced at approximate mid-height. Terraces in *slopes* with a vertical height greater than 40 feet shall be made at equal vertical intervals not more than 20 feet apart. Depending upon *soil* conditions, terraces may be required of closer intervals by the Department of Planning and Zoning as it deems necessary for stability, vegetative establishment and maintenance, and safety. *Bench terraces* shall be a minimum of 6 feet wide with an absolute minimum invert gradient between 2 and 3%, with a six to one, or flatter, lateral *slope* towards the toe of the upper bank, and must convey water with minimum six inch free-board to an acceptable outlet.
 - b. Cuts and fills shall be set back from property lines and *buildings* shall be set back from *cut* or *fill slopes* in accordance with the diagrams entitled “*Slope Setback From Property Line*” and a certified copy of which shall permanently be kept on file with the Department of Planning and Zoning.
 - c. *Fill* placed above the top of an existing or proposed surface with a *slope* steeper than three horizontal to one vertical shall be set back from the top of the *slope* a minimum distance of six feet.

- d. The setbacks established by Article VI, Section 9.7.8 of this Ordinance are minimum and, depending on *soil* conditions, may be increased by the Department of Planning and Zoning if deemed necessary for safety or stability or to prevent damage from water, *soil*, or debris.
 - e. Notwithstanding anything to the contrary, the Department of Planning and Zoning may reduce the required setback where the necessity for the setback may be eliminated or reduced by the construction of retaining walls or if the owner has a letter of authorization to extend *slopes* onto the adjacent property.
9. Existing natural and man-made features, such as *streets*, *watercourses*, falls, beaches, vistas, historic or architecturally significant *buildings*, and similar irreplaceable assets, should be preserved through harmonious and careful *development*, insofar as possible.
10. Drainage. The following provisions apply to the conveyance and disposal of surface water runoff:
- a. Disposal - all drainage facilities shall be designed to convey surface water in such a manner as to prevent *erosion*, overflow or ponding. Said water shall be conveyed to an acceptable outlet in accordance with such applicable design, criteria standards and procedures as required by the Department of Planning and Zoning. The ponding of water shall not be permitted above the *cut* and *fill slopes* or on drainage terraces. Adequate drainage facilities shall be provided to prevent such ponding.
 - b. *Erosion Prevention* - The *permittee* and the owner shall make adequate provisions to prevent any surface and/or groundwater from materially damaging the face of any *cut* or *fill*. All *slopes* shall be protected from surface runoff from above by *berms*, swales, or brow ditches.
 - c. *Grading Around Buildings* - All areas shall be graded to provide for positive drainage away from the *building* toward the approved disposal area.
 - d. Retention and *Infiltration* - Subject to the requirements and recommendations of the Kent County Soil and Water Conservation District and the Department of the Environment, measures such as *infiltration* beds, dry walls, and retention ponds may be used to allow storm water runoff to percolate into the *soil*.

9.8 SEDIMENT CONTROL PLAN

1. A Sediment Control Plan shall contain the following:
- a. Vicinity Map
 - b. North Arrow
 - c. Scale at 1 inch = 100 feet or showing greater detail.
 - d. Boundary line survey
 - e. Name, address, phone number of owner, *developer*, and applicant
 - f. Existing and proposed *topography*, including a one hundred foot adjacent peripheral strip as follows:
 - i. *Slope* of three percent (3%) or less: one-foot contour intervals.
 - ii. *Slope* greater than three percent (3%) up to fifteen percent (15%): two-foot intervals.
 - iii. *Slope* greater than fifteen percent (15%): five-foot intervals.
 - g. Timing and sequence scheduled for the following activities:
 - i. *Clearing* and grubbing of perimeter control areas.
 - ii. Construction of perimeter controls.
 - iii. Remaining *clearing* and grubbing.
 - iv. Special *structure grading* (i.e. *roads*, ponds, *berms*).

- v. *Grading* for the remainder of the *site*.
- vi. Utility installation and whether storm drains will be used or blocked after construction.
- vii. Final *grading*, landscaping, or *stabilization*.
- viii. Removal of controls and maintenance.
- h. Location of any *buildings* or *structures*, utilities, sewers, water and storm drains on the *site*.
- i. Location of any *buildings* or *structures* on land of adjacent property owners which is within one hundred feet of the *site*.
- j. Elevations, dimensions, locations, extent and the *slope* of all proposed *grading* (including *building* and driveway grades, utilities, sewer, water and storm drains) all clearly indicated with finished contours at the same interval as required or used for existing *topography*.
- k. A *certification* by an *engineer*, *architect*, or *land surveyor* of the quantity of *excavation* and *fill* involved.
- l. Adequate plans of:
 - i. All drainage provisions, retaining walls, cribbing, vegetative practices, *erosion* and sediment control measures, or other protective devices to be constructed in connection with or as part of the proposed work.
 - ii. A map showing the *drainage area* of land tributary to the *site*.
 - iii. Velocities and quantities of flow at outfalls.
 - iv. Complete storm drain studies shall be submitted for the *site*.
- m. A *grading* plan for borrow pits, quarries and material processing facilities will be based on the findings and evaluations of the *soil* investigation report.
- n. *Certification* by the owner or *developer* that work will proceed pursuant to the approved plan and that responsible personnel will have a certificate of training (green card) from a Department of the Environment approved training program for the control of sediment and *erosion*.
- o. *Certification* by the owner or *developer* that an inspection will be requested three days prior to:
 - i. Completion of installation of perimeter controls.
 - ii. Final *stabilization* of the *site*.
 - iii. Other inspections as required by the *Sediment Control Officer*.
- p. Design details of temporary and permanent structural controls.
- q. Placement of the following statement on the plat: "Following initial disturbance or redisturbance, permanent or temporary *stabilization* shall be completed within:
 - i. Seven calendar days as to the surface of all perimeter dikes, swales, ditches, perimeter *slopes*, and all *slopes* greater than three horizontal to one vertical, (3:1).
 - ii. Fourteen days as to other disturbed or graded areas on the project *site*."
- r. The estimated total cost of the intended construction, together with the estimated cost of the *grading* and/or filling and the cost of required controls. Such estimated costs shall be reviewed and verified by the Department of Planning and Zoning.
- s. Supplemental reports, data and/or additional information as the Department of Planning and Zoning may require to insure the adequacy of the proposed plan. The Department of Planning and Zoning may require such reports, data and/or additional information be prepared by an *engineer*, *architect*, or *land surveyor* employed by or under contract with the *permittee*.
- t. The approval of the Department of the Environment, where applicable.

2. All plans shall conform to the following terms and conditions:
 - a. The *development* shall be fitted to the *topography* and *soils* so as to create the least *erosion* potential.
 - b. *Natural vegetation* shall be retained and protected wherever possible.
 - c. Only the smallest practical area shall be exposed for the shortest practical period of time.
 - d. *Erosion* control practices (such as interceptor ditches, *berms*, terraces, contour ripping, *soil erosion* checks and sediment basins) shall be installed to minimize *soil* and water losses.
 - e. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during the time of *development*.
 - f. During and after *development*, provisions shall be made to effectively accommodate the increased runoff caused by changeable *soil* and surface conditions and not cause siltation, destruction, or deterioration of the receiving stream.
 - g. Permanent vegetation and *structures* shall be installed in the *development* as soon as the season permits.

9.9 SECURITIES

1. Bonds.
 - a. A *grading* permit shall not be issued for *grading* involving the movement of more than 1,000 cubic yards of *soils* unless the *permittee* shall post with the Department of Planning and Zoning a performance bond, letter of credit or other surety. The bond, irrevocable letter of credit or other surety shall be in a form approved by the County Attorney and in an amount not less than the total estimated cost of the *erosion* control and *stabilization* of the *site*. Said estimated cost shall be that which is approved by the Department of Planning and Zoning or in consultation with the Kent Soil and Water Conservation District after reviewing the cost estimates proposed by the applicant's acceptable *engineer, land surveyor, or architect* and submitted with the *grading* permit application.
 - b. The bond, irrevocable letter of credit or other surety shall include the following provisions:
 - i. The applicant shall comply with all of the provisions of this Ordinance and all other applicable laws and ordinances.
 - ii. The applicant shall comply with all of the terms and conditions of the *grading* permit.
 - iii. Any extension of completion time under Article VI, Section 9.4.15 of this Ordinance shall not release the applicant or surety on the bond, irrevocable letter of credit, or other surety.
 - iv. Upon default, the applicant and surety shall continue to be firmly bound under a continuing obligation for payment of one of the following at the election of the surety:
 - a) All costs and expenses necessary to complete the work in accordance with the approved plans and specifications (or any approved modification thereof).
 - b) All necessary costs and expenses or liabilities which may be incurred to stabilize in accordance with a *stabilization* plan for *erosion* control presented by the surety and approved by Kent County.
 - c) Payment of the full amount of the bond to Kent County to perform the work necessary. If the cost for restoration of the *site* to meet the minimum requirements of this Section (with particular emphases on stability, safety, drainage, and *erosion* control) exceeds the amount of the bond, the *permittee* shall continue to be firmly bound under a continuing

obligation for payment of all excess cost and expenses incurred by the county.

- c. The bond, irrevocable letter of credit or other surety shall remain in full force and effect until the completion of the work to the specifications required. If all work of the permit is not completed within the time specified therein, or as otherwise provided for in Article VI, Section 9.4.15 of this Ordinance or violates any other term or condition, payment in full to Kent County may be ordered. The funds so received shall be used by the County for defraying the cost of restoration of the *site*. Upon approval of a certificate of completion, the bond, irrevocable letter of credit or other surety shall be released.

9.10 HAZARDOUS CONDITIONS

1. If the Department of Planning and Zoning determines that an *excavation, embankment, or a fill* endangers or adversely affects the safety or stability of any public or private property, as determined from the guidelines of this Ordinance, the Planning Director, or the Planning Director's designee, shall promptly notify in writing the owner (or other *persons* in control) of the property upon which the condition exists.
2. If the correction is not commenced in accordance with the provisions of the Ordinance within the period of time specified in the notice, the owners (or other *persons* in control) shall be subject to the penalties set forth in Article XII of this Ordinance.

9.11 INSPECTIONS

1. All work shall be inspected by the Department of Planning and Zoning according to the following schedule.
 - a. *Clearing* and grubbing for those areas necessary for installation of perimeter controls.
 - b. Completion of perimeter controls.
 - c. Remaining *clearing* and grubbing.
 - d. Road *grading*
 - e. *Grading* for remainder of the *site*.
 - f. Utility and storm drain installation.
 - g. Final *grading, landscaping, or stabilization*.
 - h. Removal of controls and maintenance.
 - i. At other times determined by the Department of Planning and Zoning.
 - j. Every two weeks, for compliance with approved sediment control plans.
2. It shall be a condition of every *grading* or building permit that the inspection agency has the right to enter the property periodically to inspect for compliance with the approved erosion and sediment control plan and this Ordinance.
3. Inspection Procedure. Work approved shall not proceed until the Department of Planning and Zoning inspects the *site* and approves the work previously completed or notifies the *permittee* otherwise. Upon notification from the *permittee*, the Department of Planning and Zoning shall inspect the *site* and notify the *permittee* of its approval or rejection within forty-eight (48) hours (exclusive of Saturdays, Sundays, and Holidays). If the inspector does not make an inspection within the specified time period, work may proceed without presumption of approval at the risk of the *permittee*. The Department of Planning and Zoning shall have the right to waive inspections except final inspection as necessary.

4. Inspection Reports.
 - a. Written reports: Structural *erosion* and sediment control measures shall include, but not be limited to, those described and depicted in the booklet entitled “Standards and Specifications for Soil Erosion Control” as approved by the Maryland Department of the Environment. This booklet, as currently amended, is readily available at offices of the Kent County Department of Planning and Zoning, 400 High Street, Chestertown, Maryland; Kent County Soil and Water Conservation District, Chestertown, Maryland; Natural Resources Conservation Service, Chestertown, Maryland; and the Maryland Department of the Environment.
 - b. Written inspection reports shall be completed by the inspector for all inspections. The reports shall include, at minimum:
 - i. Date and location of *site* inspection
 - ii. Degree of plan implementation
 - iii. Deficiencies of plan or practice
 - iv. Enforcement action taken, if any
 - v. A time frame for corrective measures
5. When required by the Kent County Department of Planning and Zoning, inspections and testing shall be performed under the direction of an *engineer*, *land surveyor* or *architect* who shall certify all inspection reports and tests results. Such reports shall include *certification* by an *engineer* for the adequacy of:
 - a. Cleared areas and benched or keyed surfaces prepared to receive fills.
 - b. Removal of unsuitable materials.
 - c. Construction of *erosion* control or drainage devices, buttress fills, under-drains, retaining walls, and other *grading* appurtenances.
 - d. The degree of *compaction* where tests are performed.
6. All certified inspection reports and certified test results shall be periodically submitted to the Department of Planning and Zoning, during the performance of the work.
7. Final Reports. The Department of Planning and Zoning shall maintain permanent files on their respective inspections. Upon completion of permitted work, the Department of Planning and Zoning shall require the following for these files and shall also require copies for the Kent County Soil and Water Conservation District.
 - a. An as-built original plan by a *land surveyor* or *engineer* and showing all improvements and final grades with red line alterations allowed.
 - b. *Certification* by the owner that all *grading*, drainage, *erosion* control measures, and facilities and vegetative measures have been completed in conformance with the approved plans and specifications.
 - c. A report summarizing the inspection reports, field and laboratory tests and locations of tests.
8. Final Inspection Request
The *permittee* or the *permittee’s* agent shall notify the Department of Planning and Zoning when the *grading* operation is ready for final inspection. Final approval shall be given in a timely manner when all work (including installation of all drainage *structures* and *erosion* protective devices) has been completed as well as the required vegetative *stabilization* and the required reports have been submitted.

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SECTION 10 STORMWATER MANAGEMENT

10.1 INTENT

The purpose of this ordinance is to protect, maintain and enhance the public health, safety and general welfare by establishing minimum requirements and procedures to control the *adverse impacts* associated with increased stormwater runoff. Proper management of stormwater runoff will minimize damage to public and private property, reduce the effects of *development* or *redevelopment* on land, control stream channel *erosion*, assist in the attainment and maintenance of water quality standards, reduce local flooding, and maintain after *development* or *redevelopment*, as nearly as possible, the predevelopment runoff characteristics.

10.2 AUTHORITY; CONSTRUAL OF PROVISIONS

The provisions of this ordinance pursuant to the requirements of the Maryland Department of the Environment shall apply to all *development* or *redevelopment* occurring within the unincorporated area of Kent County. The application of this ordinance and the provisions expressed herein shall be the minimum *stormwater management* requirements and shall not be deemed a limitation or repeal of any other powers granted by state statute. The Kent County Planning Director or the Planning Director's designee shall be responsible for the coordination and enforcement of the provisions of this Ordinance.

10.3 INCORPORATION BY REFERENCE

The 2000 Maryland Stormwater Design Manual, Volumes I & II (Maryland Department of the Environment, April 2000 and as may be amended), shall be incorporated by reference and shall serve as the official guide for *stormwater management* principles, methods, and practices.

The USDA Natural Resources Conservation Service Maryland Conservation Practice Standard Pond Code 378 (January 2000 and as may be amended) shall be incorporated by reference.

10.4 SCOPE

No *person* shall develop any land for residential, commercial, industrial, or institutional uses or redevelop land without having provided for appropriate *stormwater management* measures that control or manage runoff from such developments, except as provided in this section.

10.5 EXEMPTIONS

The following *development activities* are exempt from the provisions of this Section and the requirements of providing *stormwater management*:

1. Normally accepted *agricultural land management* activities including crop production practices and installation of *best management practices (BMPs)*, i.e. *waterways*, ponds, etc.
2. Additions or modifications to existing single family detached residential *structures* provided that these additions or modifications do not disturb over 5,000 square feet of land.
3. Developments that do not disturb over 5,000 square feet of land.
4. Land *development activities* that the Maryland Department of the Environment determines will be regulated under specific state laws which provide for managing stormwater runoff.

10.6 STORMWATER MINIMUM CONTROL STANDARDS

Stormwater management shall be accomplished for all new *development* or *redevelopment* according to the following standards:

1. Management measures shall be required to satisfy the minimum control requirements. The *recharge volume*, *water quality volume*, and the *channel protection storage volume* sizing criteria shall be used to design *BMPs* according to the *Design Manual* for new *development*. Control of the 10-year frequency storm event is required according to the *Design Manual* if the Planning Director or the Planning Director's designee determines that historical flooding problems exist and downstream *floodplain development* and conveyance system design cannot be controlled.
2. Kent County may require more than the minimum control requirements specified in this regulation if the hydrologic or topographic conditions warrant or if flooding, stream channel *erosion*, or water quality problems exist downstream from a proposed project.
3. Where applicable, *stormwater management plans* shall be consistent with adopted *watershed* management plans or *flood* management plans as approved by the Maryland Department of the Environment in accordance with the Flood Hazard Management Act of 1976.
4. *Redevelopment*
 - a. *Stormwater management plans* for *redevelopment* shall be consistent with the *Design Manual* except that the recharge, *channel protection storage volume*, and *overbank flood protection volume* requirements do not apply unless required by the Planning Director or the Planning Director's designee.
 - b. Unless otherwise specified by the *watershed* management plan developed according to this ordinance, all *redevelopment* projects shall reduce existing *site* impervious area by at least 20% of the *site's* impervious area.
 - c. Where *site* conditions prevent the reduction of impervious area, *stormwater management* practices shall be implemented to provide water quality control for at least 20% of the *site's* impervious area.
 - d. Where a combination of impervious area reduction and stormwater practice implementation is used for *redevelopment* projects, the combination of impervious area reduction and the area controlled by a *stormwater management* practice shall equal or exceed 20%.
 - e. The Planning Director or the Planning Director's designee may permit practical alternatives where conditions prevent impervious area reduction or *on-site stormwater management*. Practical alternatives include, but are not limited to:
 - i. Fees in lieu;
 - ii. *Off-site BMP* implementation for a *drainage area* comparable in size and percent imperviousness to that of the project;
 - iii. *Watershed* or stream restoration;
 - iv. *Retrofitting*; or
 - v. Other practices approved by the Planning Director or the Planning Director's designee.
 - f. *On-site* or *off-site channel protection storage volume* requirements as specified in the *Design Manual* may be imposed if *watershed* management plans developed according to this ordinance indicate that downstream flooding or *erosion* need to be addressed.

10.7 STORMWATER MANAGEMENT MEASURES

One or a combination of the following practices shall be used in developing a *stormwater management plan*.

1. *Structural Stormwater Management*
 - a. The following structural *stormwater management* practices shall be designed according to the *Design Manual* to satisfy the minimum control requirements established in this Ordinance:
 - i. Stormwater management ponds;
 - ii. Stormwater management *wetlands*;
 - iii. Stormwater management *infiltration*;
 - iv. Stormwater management filtering systems;
 - v. Stormwater management open channel systems.
 - b. When selecting structural *stormwater management* practices, the *developer* shall consider the performance criteria specified in the *Design Manual* with regard to general feasibility, conveyance, pretreatment, treatment and geometry, environment and landscaping, and maintenance.
 - c. Structural *stormwater management* practices shall be selected to accommodate the unique hydrologic or geologic regions of the State.
2. *Non-structural Stormwater Management*
 - a. The following non-structural *stormwater management* practices shall be applied according to the *Design Manual* to minimize increases in new *development* runoff:
 - i. Natural area conservation;
 - ii. Disconnection of rooftop runoff;
 - iii. Disconnection of non-rooftop runoff;
 - iv. Sheet flows to buffers;
 - v. Grass channels; and
 - vi. Environmentally sensitive *development*.
 - b. The use of non-structural *stormwater management* practices shall be encouraged to minimize the reliance on structural *BMPs*.
 - c. The minimum control requirements may be reduced when non-structural *stormwater management* practices are incorporated into *site* design according to the *Design Manual*.
 - d. The use of non-structural *stormwater management* practices may not conflict with existing State or local laws, ordinances, *regulations*, or policies.
 - e. Non-structural *stormwater management* practices used to reduce the minimum control requirements shall be recorded with the Kent County Clerk of Court and shall remain unaltered by subsequent property owners. Approval from the Planning Director or the Planning Director's designee shall be obtained before non-structural *stormwater management* practices are altered.
3. *Alternative Stormwater Management Practices*
 - a. Alternative structural and non-structural *stormwater management* practices may be used for new *development* water quality control if the practices meet the performance criteria established in the *Design Manual* and are approved by the Maryland Department of the Environment. Practices used for *redevelopment* projects shall be approved by the Planning Director or the Planning Director's designee.

- b. For purposes of modifying the minimum control requirements or design criteria, the owner/*developer* shall submit an analysis to the Planning Director or the Planning Director's designee of the impacts of stormwater flows downstream in the *watershed*. The analysis shall include hydrologic and hydraulic calculations necessary to determine the impact of hydrographic timing modifications of the proposed *development* upon a dam, highway, *structure*, or natural point of restricted stream flow. The point of investigation shall be established with the concurrence of the Planning Director or the Planning Director's designee, downstream of the first downstream tributary whose *drainage area* equals or exceeds the contributing area to the project or *stormwater management facility*.

10.8 STORMWATER MANAGEMENT PLANS - REVIEW AND APPROVAL

1. A *stormwater management plan* or an application for a *waiver* shall be submitted to the Planning Director or the Planning Director's designee by the *developer* for review and approval for any proposed *development*, unless otherwise exempted. The *stormwater management plan* shall contain supporting computations, drawings and sufficient information describing the manner, location and type of measures in which stormwater runoff will be managed from the entire *development*. The Planning Director or the Planning Director's designee shall review the plan to determine compliance with the requirements of this ordinance prior to approval. The plan shall serve as the basis for all subsequent construction.
2. Notification of approval or reasons for the disapproval or modification shall be given to the applicant within forty-five (45) days after submission of the completed stormwater plan. If a decision is not made within forty-five (45) days, the applicant shall be informed of the status of the review process and the anticipated completion date. The *stormwater management plan* shall not be considered approved without the inclusion of the signature and date of the signature of the Kent County Soil and Water Conservation District on the plan.

10.9 CONTENTS OF STORMWATER MANAGEMENT PLANS

1. *Stormwater management plans* shall be prepared by a professional *engineer*, professional *land surveyor*, or landscape architect licensed in the State of Maryland. If a stormwater *BMP* requires either a dam safety permit from the Maryland Department of the Environment or small pond approval by the Kent County Soil and Water Conservation District, the *stormwater management plan* shall be prepared by a professional *engineer* licensed in Maryland.
2. Where a *stormwater management plan* involves direction of some or all runoff off of the *site*, it shall be the responsibility of the *developer* to obtain from adjacent property owners any *easements* or other necessary property interests concerning flowage of water. Approval of a *stormwater management plan* does not create or affect any such rights.
3. The owner/*developer* is responsible for submitting a *stormwater management plan* in the form of construction drawings that meet the design criteria specified in the *Design Manual* or are otherwise consistent with this ordinance. The plan shall be accompanied by a report that includes sufficient information to evaluate the environmental characteristics of the affected areas, the potential impacts of the proposed *development* on water resources, and the effectiveness and acceptability of measures proposed for managing stormwater runoff. The owner/*developer* shall certify on all drawings that land *clearing*, *development*, and drainage will be done according to the approved plan.

4. Reports submitted as a part of the *stormwater management plan* shall include:
 - a. A brief narrative description of the project;
 - b. Geotechnical investigations including *soil* maps, borings, *site* specific recommendations, and any additional information necessary for the proposed *stormwater management* designs;
 - c. Descriptions of all water courses, impoundments, and *wetlands* on or adjacent to the *site* or *sites* into which stormwater directly flows;
 - d. Computations:
 - i. Hydrology, including *drainage area* maps depicting predevelopment and post *development* runoff flow path segmentation and land use;
 - ii. Hydraulic;
 - iii. Structural;
 - e. Unified sizing criteria volume computations according to the *Design Manual*; and
 - f. Any other information required by the Planning Director or the Planning Director's designee.

5. Construction drawings submitted for *stormwater management plan* approval shall include:
 - a. Vicinity Map;
 - b. *Easements* and *right of-way*;
 - c. Delineation of the *100-year floodplain* and any *on-site wetlands*;
 - d. Topographic survey showing existing and proposed contours, including area necessary to determine downstream analysis for proposed *stormwater management* facilities;
 - e. Any proposed improvements including the locations of *buildings* or other *structures*, *impervious surfaces*, storm drainage facilities, and all *grading*;
 - f. Structural details for all components of the proposed drainage system or systems and *stormwater management* facilities;
 - g. All necessary construction specifications;
 - h. A sequence of construction;
 - i. Data for the total *site* area, disturbed area, new *impervious surfaces*, and total impervious area;
 - j. A table showing the unified sizing criteria volumes required by the *Design Manual*;
 - k. Location of utilities;
 - l. A table of materials to be used for *stormwater management* facility planting;
 - m. All *soil* boring logs and locations;
 - n. *Certification* by the owner/*developer* that all *stormwater management* construction will be done according to this plan;
 - o. Small pond approval shall be obtained from the Kent Soil and Water Conservation District or the State of Maryland;
 - p. An as-built *certification* signature block to be executed after the project's completion; and
 - q. Any other information required by the Planning Director or the Planning Director's designee.

10.10 PERMITS

A *grading* or building permit may not be issued for any parcel or *lot* unless a *stormwater management plan* has been approved or waived by the Planning Director, or the Planning Director's designee, as meeting all the requirements of this Ordinance, the *Design Manual*, and the policies adopted by Kent County for *redevelopment*. Where appropriate, a building permit may not be issued without:

1. Recorded *easements* for the *stormwater management* facility and *easements* to provide adequate access for inspection and maintenance from a public *right of way*;
2. A recorded *stormwater management maintenance agreement*;
3. A performance bond, an irrevocable letter of credit or other surety; and
4. Permission from adjacent property owners, as may be required.

10.11 SUSPENSION AND REVOCATION

Any *grading* or building permit issued by Kent County may be suspended or revoked after written notice is given to the *permittee* for any of the following reasons:

1. Any violation(s) of the conditions of the *stormwater management plan* approval.
2. Changes in *site* runoff characteristics upon which an approval or *waiver* was granted.
3. If construction is not in accordance with the approved plans.
4. Non-compliance with correction notice(s) or stop-work order(s) issued for the construction of the *stormwater management* facility.
5. If an immediate danger exists in a downstream area in the opinion of the Planning Director or the Planning Director's designee.

10.12 CONDITIONS FOR APPROVAL

In granting the plan approval, the Planning Director or the Planning Director's designee may impose such conditions thereto as may be deemed necessary to ensure compliance with the provisions of this ordinance and the preservation of the public health and safety.

10.13 BONDS

The *developer* is required to obtain a surety, irrevocable letter of credit, or other means of security acceptable to Kent County and payable to the County Commissioners of Kent County, prior to the issuance of any building and/or *grading* permit for construction of a *development* requiring a *stormwater management* facility. The amount of the security shall not be less than 125% of the total estimated construction cost of the *stormwater management* facility. The security so required in this Section shall include provisions relative to forfeiture for failure to complete work specified in the approved *stormwater management plan*, compliance with all the provisions of this Section and other applicable laws and *regulations*, and any time limitations. The security shall not be fully released without a final inspection of the completed work by Kent County, submission of "as-built" plans, and *certification* of completion by the Planning Director, or the Planning Director's designee, of the *stormwater management* facility as

being in compliance with the approved plan and the provisions of this Section. A provision may be made for partial release of the amount of the bond pro-rata upon completion and acceptance of the various stages of *development* as specifically delineated, described, and scheduled on the required plans and specifications. The *developer* shall notify the Planning Director or the Planning Director's designee upon completion of each stage that is ready for inspection.

10.14 INSPECTIONS

1. The owner/*developer* shall notify the Planning Director or the Planning Director's designee at least 48 hours before beginning any work in conjunction with *stormwater management* system construction.
2. Inspections shall be conducted by the Planning Director or the Planning Director's designee. The periodic inspections shall be documented and reports maintained by the Planning Director or the Planning Director's designee. Written reports shall be prepared for every inspection and shall include:
 - a. The date and location of the inspection;
 - b. Whether construction was in compliance with the approved *stormwater management plan*;
 - c. Any variations from the approved construction specifications; and
 - d. Any violations.
3. The owner/*developer* and *on-site* personnel shall be notified in writing when violations are observed. Written notification shall describe the nature of the violation and the required corrective action.
4. Work shall not proceed until the work previously complete is approved by the appropriate inspector.
5. At a minimum, regular inspections shall be made and documented at the following specific stages of construction.
 - a. Ponds:
 - i. Upon completion of *excavation* to sub-foundation and when required, installation of structural supports or reinforcement for *structures* including but not limited to:
 - a) Core trenches for structural *embankments*;
 - b) Inlet and outlet *structures*, anti-seep collars or diaphragms, and watertight connectors; and
 - c) Trenches for enclosed storm drainage facilities.
 - ii. During placement of structural *fill*, concrete, and installation of piping and catch basins;
 - iii. During backfill of foundations and trenches; and
 - iv. Upon completion of final *grading*, establishment of permanent *stabilization*.
 - b. *Wetlands* - At all stages specified for pond construction, during and after *wetlands* reservoir planting, and during the second *growing season* to verify a vegetation survival rate of at least 50%.
 - c. *Infiltration* trenches:
 - i. During *excavation* to subgrade;
 - ii. During placement and backfill of under drain systems and observation wells;
 - iii. During placement of geotextiles and all filter media;

- iv. During construction of appurtenant conveyance systems such as *diversion structures*, pre-filters and filters, inlets, outlets, and flow distribution *structures*; and
- v. Upon completion of final *grading* and establishment of permanent *stabilization*.
- d. *Infiltration* basins - At all stages specified for pond construction, during placement of and backfill of under drainage system.
- e. Filtering Systems:
 - i. During *excavation* to subgrade;
 - ii. During placement and backfill of under drain systems;
 - iii. During placement of geotextiles and all filter media;
 - iv. During construction of appurtenant conveyance systems such as *diversion structures*, pre-filters, and filters, inlets, outlets, and flow distribution *structures*; and
 - v. Upon completion of final *grading* and establishment of permanent *stabilization*.
- f. Open Channel Systems:
 - i. During *excavation* to subgrade;
 - ii. During placement and backfill of under drain systems for dry swales;
 - iii. During installation of diaphragms, check dams, or weirs; and
 - iv. Upon completion of final *grading* and establishment of permanent *stabilization*.
- g. Non-structural Practices - Upon completion of final *grading*, the establishment of permanent *stabilization*, and before issuance of a use and occupancy permit.

10.15 AS-BUILT PLANS

Once construction is complete, as-built plan *certification* shall be submitted by a professional *engineer* or professional *land surveyor* licensed in the State of Maryland to ensure that constructed *stormwater management* practices and conveyance systems comply with the specifications contained in the approved plan. At a minimum, as-built *certification* shall include a set of drawings comparing the approved plan with what was constructed. Other information shall be submitted as required by the Planning Director or the Planning Director's designee.

10.16. NOTICE TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

Within 45 days of construction, the Planning Director or the Planning Director's designee shall submit a notice of construction completion to the Maryland Department of the Environment on a form supplied by the Maryland Department of the Environment for each *stormwater management* practice. A notice shall be sent to the Kent Soil and Water Conservation District when *BMPs* requiring District approval are constructed.

10.17 MAINTENANCE

1. The owner of the property on which work has been done pursuant to this Ordinance for private *stormwater management* facilities, or any other *person* or agent in control of such property, shall maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, dams and *structures*, vegetation, *erosion* and sediment control measures, and other protective devices. Such repairs or restoration and maintenance shall be in accordance with approved plans.
2. A maintenance schedule shall be developed for the life of any *stormwater management* facility and shall state the maintenance to be completed, the time period for completion and who shall perform the maintenance. This maintenance schedule shall be on the *stormwater management plan*.

3. The owner shall perform or cause to be performed preventive maintenance of all completed *stormwater management* practices. The Planning Director or the Planning Director's designee shall inspect all *stormwater management* systems during the first year after construction and then at least once every three years thereafter.
4. Inspection reports shall be maintained by the Planning Director or the Planning Director's designee for all *stormwater management* systems and shall include the following:
 - a. Date of inspections
 - b. Name of inspector
 - c. The condition of:
 - i. Vegetation or filter media;
 - ii. Fences or other safety devices;
 - iii. Spillways, valves, or other control *structures*;
 - iv. *Embankments, slopes*, and safety benches;
 - v. Reservoir or treatment areas;
 - vi. Inlet and outlet channels or *structures*;
 - vii. Underground drainage;
 - viii. Sediment and debris accumulation in storage or forebay areas;
 - ix. Any non-structural practice to the extent possible; and
 - x. Any other item that could affect the proper function of the *stormwater management* system.
 - d. Description of needed maintenance
5. After notification is provided to the owner of any deficiencies discovered from the inspection of the *stormwater management* system, the owner shall have 30 days, or other time frame to which the Planning Director, or the Planning Director's designee, and the owner mutually agree to correct the deficiencies. The Planning Director or the Planning Director's designee shall then conduct an inspection to ensue completion of the repairs.
6. Failure to complete the repairs or repairs found to be improperly completed shall be considered violations and subject to the provisions of Article XII, Section 4 of this Ordinance.
7. If, after an inspection by the Planning Director, or the Planning Director's designee, the condition of a *stormwater management* facility presents an immediate danger to the public health or safety, because of an unsafe condition or improper maintenance, the Planning Director, or the Planning Director's designee, shall take such action as may be necessary to protect the public and make the facility safe. Any cost incurred by the Planning Director or the Planning Director's designee shall be assessed against the owner(s).

10.18 *MAINTENANCE AGREEMENT*

1. Prior to the issuance of any building permit for which *stormwater management* is required, the Planning Director or the Planning Director's designee shall require the applicant or owner to execute an inspection and *maintenance agreement* binding on all subsequent owners of land served by the private *stormwater management* facility. Such agreement shall provide for access to the facility at reasonable times for regular inspection by the Planning Director, or the Planning Director's designee, and for regular or special assessments of property owners to ensure that the facility is maintained in proper working condition to meet design standards and any provisions established.

2. The agreement shall be recorded by the applicant and/or owner with the Kent County Clerk of Court. A copy of the recorded agreement shall be returned to the Department of Planning and Zoning.
3. The agreement shall also provide that if, after notice by the Planning Director, or the Planning Director's designee, to correct a violation requiring maintenance work, satisfactory corrections are not made by the owner(s) within a reasonable period of time (thirty (30) days maximum), the Planning Director, or the Planning Director's designee, may perform all necessary work to place the facility in proper working condition. The owner(s) of the facility shall be assessed the cost of the work and any penalties, and there shall be a lien on the property, which may be placed on the tax bill and collected as ordinary taxes by Kent County.

10.19 APPEALS

Any *person* aggrieved by the action of any official charged with the enforcement of this ordinance as the result of the disapproval of a properly filed application for a permit, issuance of a written notice of violation or an alleged failure to properly enforce the ordinance in regard to a specific application shall have the right to appeal the action to the Kent County Board of Appeals. The appeal shall be filed, in writing, within thirty (30) days of the date of official transmittal of the final decision or determination to the applicant and shall state clearly the grounds on which the appeal is based.