

# New Castle County

## Chapter 12 – Drainage Code



New Castle County is proposing updates to Chapter 12 (Drainage) of the County Code. The primary goals of these revisions are to improve water quality and prepare for the impacts associated with climate change.

More than 90% of the state's waterways do not meet Delaware's water quality standards and are identified as impaired by the EPA. Due to this designation, the Federal Clean Water Act required Delaware to develop Total Maximum Daily Loads (TMDLs) for the identified pollutants of concern. In 1998 Delaware began establishing TMDLs and by 2006 TMDLs for the waterways in New Castle County were developed. While the Delaware Sediment and Stormwater Regulations (DSSR) have been updated since 2006, its latest revision in 2019 rolled back key water quality improvement standards, provisions New Castle County considers essential to the quality of our waterways.

Believing our future water quality to be of utmost importance, New Castle County is proposing updates to Chapter 12 (Drainage) that will position New Castle County to more appropriately address stormwater quality. These focused standards will apply to both new land development and redevelopment applications, with the goal of improving legacy water quality issues from decades of growth with minimal or limited stormwater regulations.

Our path to clean water will be primarily realized through two key amendments of the Drainage Code. The first targets non-residential applications, by requiring 50% of their stormwater runoff from existing unmanaged impervious surfaces to be treated. This is an improvement of the DSSR standard which exempts non-residential developments under an acre from treating existing impervious areas and only requiring that 15% of the existing impervious area be treated for projects greater than 1-acre.

The second significant water quality update requires new land development applications to include stormwater management practices that specifically address the TMDLs for their watershed. When implemented, New Castle County will be consistent with other regional and national jurisdictions regarded for their high water quality standards through our targeted reduction of the key pollutants; total nitrogen, total phosphorous and total suspended solids.

In addition to these efforts to improve water quality, New Castle County also recognizes a need to proactively address the growing concern for the increased frequency and intensity of storm events resulting from climate change. In consideration of the potential for new flooding impacts, the proposed Drainage Code requires the boundaries of the FEMA 500-year flood be delineated. Furthermore, the lowest adjacent grade of any occupiable building must be elevated a minimum of 18-inches above the 100-year water surface elevation from an adjacent stormwater conveyance system.

By implementing these signature updates to the Drainage Code, New Castle County will align itself with other national leading stormwater regulations in the pursuit of clean water and ensure New Castle County grows in an environmentally friendly and ecologically sustainable way, providing our future generations with cleaner water and climate ready communities.

Introduced by:  
Date of introduction:

**ORDINANCE NO. 21-**

**TO AMEND *NEW CASTLE COUNTY CODE* CHAPTER 12 (“DRAINAGE”)  
REGARDING THE ESTABLISHMENT OF UPDATED DRAINAGE STANDARDS  
WITHIN NEW CASTLE COUNTY**

**WHEREAS**, the General Assembly of the State of Delaware, pursuant to 9 *Del. C.* § 1102, has transferred to the government of New Castle County the primary responsibility for the provision and financing of local service functions, such as public works including drainage systems; and

**WHEREAS**, pursuant to authority granted under 9 *Del. C.* § 1521, New Castle County Council has the power to act upon all matters pertaining to, among other things, drainage; and

**WHEREAS**, pursuant to authority granted under 9 *Del. C.* § 3002, the Department of Land Use has the responsibility to regulate the subdivision of all unincorporated land in the County for, among other things, the adequate provision of drainage; and

**WHEREAS**, New Castle County (“County”) has engaged in a comprehensive review of Chapter 12 of the *New Castle County Code* to identify standards that need revision for technical compliance, internal consistency, or consistency with current development practices; and

**WHEREAS**, the Department of Land Use and the Department of Public Works have determined Chapter 12 of the *New Castle County Code* should be revised to better regulate drainage in New Castle County; and

**WHEREAS**, County Council has determined that the provisions of this Ordinance substantially advance, and are reasonably and rationally related to, legitimate government interests, including, but not limited to, the protection and preservation of the public health, safety, prosperity, general welfare, and quality of life.

**NOW, THEREFORE, THE COUNTY OF NEW CASTLE HEREBY ORDAINS:**

Section 1. *New Castle County Code* Chapter 12 (“Drainage”), Article 1 (“In General”), is hereby amended by adding the material that is underscored and deleting the material that is bracketed and stricken, as set forth below:

**ARTICLE 1. IN GENERAL**

### **Sec. 12.01.001. General.**

A. *Scope.* This Chapter is to protect ...

~~[E. *Appendix.* An appendix to this Code shall be maintained by the Department, and shall be amended from time to time as deemed necessary by the Department. (The Department of Law shall be required to approve all legal forms and documents which appear in the appendix, and shall be responsible for updating and making any amendments thereto.)]~~

### **Sec. 12.01.002. Validity.**

A. *Validity.* If any section ...

### **Sec. 12.01.003. Definitions.**

*Adequate capacity* means ...

*Adverse effect* means ...

*Applicant* means a ~~[party requesting authorization to perform an activity regulated by the New Castle County Department of Land Use]~~person, firm or governmental agency who executes the necessary forms to obtain approval or a permit for any zoning, subdivision, land development, building, land disturbance, or other activity regulated by this Chapter.

*Blockage* means impedance of concentrated ~~[surface-]~~water flows~~[in a defined watercourse].~~

~~[BOCA International Building Code means the BOCA International Building Code, as amended, adopted as the building code of the County, for the control of buildings and structures. See Chapter 6.]~~

*Building* means a structure built on a lot, having a roof, and intended [for supporting or sheltering any use or occupancy per the BOCA International Building Code]to shelter people, animals, property or business activity. Any structure used or intended to be used for supporting or sheltering any use or occupancy. The word “building” shall be construed as if followed by the words “or part or parts thereof and all equipment therein.”

*Closed channel* means ...

*Code Official* means the ~~[Licensing]~~General Manager of the Department of Land Use or his or her designee, the General Manager of the Department of Public Works or his or her designee.

*Concentrated flow* means ...

*Contours* means ...

Conveyance mitigation area means a practice to mitigate the flow of stormwater runoff on a residential lot.

*Conveyance system* means ...

*Culvert* means a drainage crossing under [a road] an embankment.

*Damage* means ...

*DelDOT* means ...

*Department*, when not specified, means ...

Design professional means registered professional in the State of Delaware who signed, dated and sealed the approved construction plans.

*Design storm frequency* means time interval in years at which a storm occurrence has a chance to exceed or equal the storm of specific duration and intensity used in the design of drainage [facilities]systems.

*Designated resource areas* means ...

*Designated watershed* means ...

*Developer* means a person or persons [~~engaged in the conversion of land to a specific use~~] seeking to build or develop as defined in Chapter 40 of the New Castle County Code.

*Development* means [~~the conversion of land to a specific use~~] any manmade change to improved or unimproved property, including but not limited to, buildings or other structures, placement of manufactured homes, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials. Development includes any action covered under Section 40.01.110 of the New Castle County Code.

*Discharge* means ...

*DNREC* means ...

*Drainage areas* means ...

*Drainage [~~conveyance~~]-system[s]* means the way by which stormwater runoff is directed to a specific destination.

*Earthwork* means ...

*Encroach* means ...

*Encumbrance* means that which impedes the flow of surface waters in a drainage [conveyance] system or watercourse.

*Fill* means ...

*Flood or flooding* [~~problems~~] means [~~substantiated complaints on record with New Castle County or with the New Castle Conservation District, at a specific location giving evidence of hazard or property damage due to overbank flows in a watercourse~~] a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters or the unusual and rapid accumulation of surface runoff from any source.

*Freeboard* means the vertical elevation between the design high water level and the top of bank or lowest floor.

*Frequency (storm)*. See [D]design storm frequency.

[~~General permit means a permit granted by the Department of Land Use authorizing a landowner, developer, or designated agent, to perform certain land disturbing activities. See Section 11 of the Delaware Sediment and Stormwater Regulations.~~]

*Green technology stormwater best management practices (GTBMPs)* means a practice that achieves stormwater management objectives by applying the principles of filtration, infiltration and storage most often associated with natural vegetation and undisturbed soils. GTBMPs may also be constructed using [an] imported soil medium and planted vegetation designed to promote the natural hydrologic process. These GTBMPs include vegetative filtration, riparian buffer plantings, bio-retention areas, vegetative flow conveyances, as well as recharge and surface storage in undisturbed natural areas.

*Groundwater* means ...

*Hydraulically critical area*[s] means a location[s] where the design high water level may exceed the top of the bank or overtop a catch basin or facility causing flooding conditions.

*Hydric Soil* means soil having characteristics of an abundance of moisture.

*Hydrologic characteristics* means ...

*Industrial activity* means ...

*Industrial waste*[s] means liquid or other waste[s] resulting from any process of industry, manufacture, trade or business, or from the development of any natural resource.

*Inflow hydrograph*[s] means the graphical representation of the runoff rate versus time for flow into a stormwater management facility.

*Inundated* means submerged under water.

*Land disturbing activity*~~[ies]~~ means a land change or construction activity for residential, commercial, industrial and institutional land ~~[use]~~ development which may result in soil erosion from water or wind or the movement of sediments or pollutants into state waters or onto adjacent lands; or which may result in accelerated stormwater runoff, including, but not limited to, clearing, grading, excavating, transporting and filling of land as defined in Section 2 of the Delaware Sediment and Stormwater Regulations.

~~[Land grading means any excavation, filling or stockpiling of earth materials or any combination thereof including the land in its excavated or filled condition.]~~

*Maintenance* means ...

*Maintenance organization* means an organization approved by the County that is legally responsible for owning, maintaining, or managing open space. A maintenance organization may be a condominium association, a third-party conservancy or a maintenance corporation. ~~[a body of persons legally responsible for the maintenance of specific facilities or systems.]~~

*NRCS Web Soil Survey* means the NRCS Soil Survey, New Castle County, Delaware, as promulgated by the U.S. Department of Agriculture.

*NRCS method* means the method of estimating runoff and peak discharges in a watershed used by the U.S. Department of Agriculture, including Technical Release 20 and Technical Release 55.

*Off-site* means ...

*Open channel* means a facility for the conveyance of stormwater which is exposed to the atmosphere (e.g. swales).

*Open and free flowing* means a condition where a non-tidal stream or watercourse has a natural flow that is free of any objects or material that create a blockage of flow that has the potential to cause serious personal harm or property damage or structural damage.

*Open space* means ~~[a portion of developed lands that is designed or intended for common use by a specific group of people (private) or by the residents of New Castle County (public)]~~ parcels of land within a residential subdivision, exclusive of streets and lots, generally preserved in a natural state or improved to provide common amenities for the residents of the subdivision. Open space shall be categorized as either natural resource area or community area. Open space is intended to preserve environmentally sensitive areas and protected resources, provide active and passive recreation facilities, establish greenways, provide wildlife habitats, facilitate stormwater management functions, and landscaped bufferyards. Both natural resource area open space and community area open space can be public or private and would be annotated as such on the development record plan or deed.

*Outfall point* means ...

*Predevelopment* means ...

~~[Professional engineer means an engineer as defined by the Delaware Association of Professional Engineers.]~~

*Rational method* means ...

*Retaining wall* means ...

~~*Right-of-way* means [a strip or area of land encumbered by a deed or an easement with the legal right to be passed over by parties other than the property owner]~~ an area of land dedicated for public or private use to accommodate a transportation system.

*Runoff* means ...

*Sanitary sewage* means any liquid discharge from a structure or animal containment area, except roof drains.

~~*Sanitary sewer* means the system of underground conduits that collect and deliver sanitary~~ sewage to a wastewater treatment plant.

~~[Sanitary wastewater means wastewater from toilets, sinks, and other plumbing fixtures.]~~

~~[SCS method means the method of estimating runoff and peak discharges in a watershed utilized by the U.S. Department of Agriculture, including Technical Release 20 and Technical Release 55.~~

~~*SCS Soil Survey* means the SCS Soil Survey, New Castle County, Delaware, as promulgated by the U.S. Department of Agriculture.]~~

*Sediment and erosion control* means ...

*Sediment and stormwater management plan* means a plan for the control of soil erosion, sedimentation, stormwater quantity, and water quality impact resulting from any land disturbing activity, through both the construction and post construction phases of development.

~~[Sewage means the water-carried human wastes from residences, buildings, industrial establishments or other places, together with such industrial wastes, stormwater or other water as may be present.~~

~~*Site development agreement* means a properly executed and legally binding compact between the developer of a parcel of land and New Castle County to proceed with development as noted therein.]~~

*Slope* means ...

*Stormwater pollution prevention plan* means ...

Structural component means a portion of a stormwater management facility such as an inlet, outfall, pipe, outlet structure, low flow device, orifice, trash rack, or other physical feature of the stormwater management facility.

Sump[s] means a point of comparatively low elevation which cannot be drained by means of surface flow.

Topography means ...

Unlawful act means ...

Watercourse means a ~~[definite]~~ stream channel (perennial or intermittent, mapped or unmapped) with banks and a bed within which concentrated surface water flows ~~[continuously or intermittently]~~.

Watershed means ....

Water quality means those characteristics of stormwater runoff ~~[,usually from a land-disturbing activity,]~~ that relate to the chemical, physical, biological or radiological integrity of water.

Water table means ...

#### **Sec. 12.01.004. Other publications referenced.**

A. Delaware Erosion and Sediment Control Handbook ~~[for Development]~~, as amended, ~~[Delaware Stormwater Management Design Manual, as amended,]~~ and the Delaware Sediment and Stormwater Regulations, as amended, all promulgated by the Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation. See also 7 Del. C. Ch. 40 (Erosion and sediment control).

B. DelDOT's ~~[Rules and Regulations for Subdivision Streets]~~ Development Coordination Manual effective November 2019, as amended, DelDOT's ~~[Standards and Regulations for Access to State Highways]~~ Utilities Design Manual, DelDOT's Standard Construction Details as amended, DelDOT's Standard Specifications, as amended and DelDOT's ~~[Highway]~~ Road Design Manual, as amended, all promulgated by the Delaware Department of Transportation.

C. ~~[SCS]~~ NRCS Web Soil Survey, New Castle County, Delaware ("~~[SCS]~~ Web Soil Survey") issued by the U.S. Department of Agriculture, as amended.

D. New Castle County Code, Chapter 40, Unified Development Code.

E. New Castle County Code, Chapter 6, Building Code

F. U.S. Department of Agriculture, NRCS, Pond Code 378

Section 2. *New Castle County Code* Chapter 12 (“Drainage”), Article 2 (“Standards of Compliance”), is hereby amended by adding the material that is underscored and deleting the material that is bracketed and stricken, as set forth below:

## ARTICLE 2. STANDARDS OF COMPLIANCE

### **Sec. 12.02.001. Land disturbing activities.**

A. Prior to commencing any land disturbing activity, a plan must be submitted and approved by the ~~[Department of Land Use]~~County. Any land disturbing activity conducted in the absence of an approved plan or not in conformance with an approved plan shall be considered in violation of this Chapter. For land disturbing activities not subject to regulation, see Section 1.4 ~~[3 “Exemptions, waivers, and Variances” of]~~the Delaware Sediment and Stormwater Regulations; however, any structure that is four hundred eighty (480) square feet or greater and where a building permit is required, pursuant to the provisions of Chapter 6 of the New Castle County Code, shall be subject to the regulations herein.

B. During all phases of construction, the developer shall maintain all drainage ~~[facilities]~~systems and watercourses within any subdivision. After obtaining the necessary inspections and approvals from the Department of Land Use and completing developer’s warranty obligations, the developer's maintenance responsibilities shall terminate in accordance with the provisions of this Chapter. Maintenance of completed and approved drainage ~~[facilities]~~systems shall be by a State agency, the County, or, in the case of community stormwater management facilities and conveyance systems, the maintenance corporation for that specific subdivision, or, in the case of individual lots, by the lot owner.

~~[C.— For each development, a site development agreement shall be executed before any building permits may be issued. This agreement, and all relevant surveys, maps, plans, profiles, cross sections, easement drawings, and specifications shall be available for public examination. Enforcement of this agreement shall be according to the provisions contained therein.]~~

~~[D.— Any requirements, or parts of a requirement, can be waived by the Code Official for a particular submission if sound engineering judgment warrants such a waiver.]~~

### **Sec. 12.02.002. Industrial activities.**

A. Those conducting industrial activities...

### **Sec. 12.02.003. Third-party plan review.**

The County may utilize a third-party professional to review applications for plan approval. When requested by an applicant, the County may allow third-party review of non-residential applications at the applicant’s expense. The County may require third-party review of applications that are not approved after the second submission at the applicant’s expense.

### **Sec. 12.02.004. Variances.**

The Department may grant a variance from the provisions of this Chapter, except that the Department of Public Works may grant a variance for projects where the County is the applicant. The responsible department may grant a variance if it finds that:

- A. The variance sought will not be detrimental to the environment or contrary to law,
- B. Owing to special conditions or an unusual situation, a literal interpretation of the provisions of this Chapter will result in hardship to the owner of the property in question,
- C. If the variance were granted, the goals of this Chapter will be met,
- D. The variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, or create a nuisance, and
- E. For residential applications, the variance will not increase the cost of maintenance.

Section 3. *New Castle County Code* Chapter 12 (“Drainage”), Article 3 (“Grading to Promote Adequate Drainage”), is hereby amended by adding the material that is underscored and deleting the material that is bracketed and stricken, as set forth below:

### **ARTICLE 3. GRADING TO PROMOTE ADEQUATE DRAINAGE**

#### **Sec. 12.03.001. Design goals.**

~~[A.]~~ The intent of this Article is to:

- ~~[1]~~A. Provide protection for buildings from stormwater damage by directing stormwater runoff away from the building via land grading adjacent to the building.
- ~~[2]~~B. Transport stormwater runoff for up to one-hundred (100) year frequency storms ~~[to the designated stormwater management facility]~~ by means of adequate conveyance systems.
- ~~[3]~~C. Maintain or improve the flow characteristics for runoff leaving the site.
- ~~[4]~~D. Seek to conform post development grading to existing topography and protect designated resource areas on the site to the maximum practical extent.
- E. Delineate the boundaries of the Flood Insurance Rate Maps Zone X (shaded) FEMA five-hundred (500) year, two-tenths (0.2) percent annual chance flood.

#### **Sec. 12.03.002. Surface water collection and disposition.**

~~[A.]~~ Every person, corporation, or other entity engaged in land disturbing activity shall:

- [1]A. Collect concentrated on-site runoff and convey the runoff from the point of discharge into the common natural watercourse of the drainage area, or to such other point approved by the ~~[Department of Land Use]~~County.
- [2]B. Handle existing off-site runoff through the development by installing adequate conveyance systems to accommodate the design storms as specified in Article 4.
- [3]C. Ensure that surface water flows which become concentrated occur in a conveyance system of adequate capacity as specified in Article 4.

**Sec. 12.03.003. Land grading on residential lots.**

[A.]The ground on which structures are located shall be graded to carry stormwater runoff away from the buildings and dispose of it without causing water to pond on a private lot. Land grading on residential lots shall comply with the following specific standards:

- [1]A. *Minimum protective slopes around a ~~[dwelling]~~building.* ~~[Grading of pervious areas for a minimum distance of eight (8) feet away from any building shall slope perpendicularly away from the building toward areas designated to accept runoff. The minimum slope in this area shall be twelve (12) feet horizontal to one (1) foot vertical (12:1) (net differential in grade sixty-seven hundredths (0.67) feet) as stated in the BOCA International Building Code. Lesser slopes may be approved in specific cases where application of these requirements is not feasible and where an alternative method of foundation protection is provided to the satisfaction of the Department of Land Use. Where restricted by a property line, the distance may be shortened to the minimum side yard provided in Chapter 40.]~~ Lots shall be graded to drain surface water away from foundations walls. The grade shall fall a minimum of six (6) inches within the first ten (10) feet consistent with the International Residential Code Chapter 4 §R401.3
- [2]B. *Maximum protective slopes around a ~~[dwelling]~~building.* In grading of pervious areas for a minimum of four (4) feet from the foundation of any building the slope shall not be steeper than four (4) feet horizontal to one (1) foot vertical (4:1). The maximum man-made slope at any place on a residential lot shall not be steeper than two (2) feet horizontal to one (1) foot vertical (2:1), and any man-made slope steeper than three (3) feet horizontal to one (1) foot vertical (3:1) shall be designed according to the applicable provisions of the Delaware Erosion and Sediment Control Handbook, to ensure slope stability and minimize maintenance requirements.
- [3]C. *Residential driveways.* The maximum average grade slope shall be fourteen (14) percent, the maximum grade slope within the right-of-way shall be ten (10) percent per DelDOT's Standards and Regulations for Access to State Highways. Driveways sloping toward buildings shall be graded to a low point located at least ~~[eight (8)]~~ten (10) feet from the building with a minimum ~~[sixty-seven]~~fifty hundredths ~~[(0.67)]~~ (0.50) foot vertical elevation difference between the elevation at the building and the low point. The low point shall be graded to drain away from the building. In subdivisions where roadside swales are employed rather than curb and gutter, a reinforced concrete pipe of adequate size per

Article 4, but in no case smaller than fifteen (15) inches in diameter, shall be provided under each driveway.

[4]D. *Fill slopes.* The toe of slope on any fill steeper than three (3) feet horizontal to one (1) foot vertical (3:1) on any individually developed lot (exclusive of an overall subdivision) must be maintained at a minimum of two (2) feet from the nearest property line.

[5]E. *Retaining walls.* Retaining walls in excess of four (4) feet exposed height shall be located as far as necessary from the property line to accommodate the maintenance or replacement of [structured] structural components. ~~[In addition,]~~ Retaining walls more than four (4) feet exposed height shall be designed according to the [BOCA] International Building Code §1807.2, conform with the latest version of the Department's checklist and be approved by the Department.

[6]F. *Minimum slopes.* The minimum slope, beyond the protective slope as defined in Subsection A.1, on a residential lot shall be ~~[five-tenths (5/10)]~~ one-half (1/2) percent on impervious surfaces, ~~[one (1)]~~ two (2) percent on all other pervious surfaces. When acceptable to the Department of Land Use, the grade on pervious surfaces may be reduced to ~~[five-tenths (5/10)]~~ one (1) percent, providing soil testing and assessment by a qualified professional are provided to ensure adequate infiltration potential is available through all layers of the soil horizon and that the local water table characteristics are amenable to such practices. It must be demonstrated that the lesser gradient is adequate to drain the lot without detrimental effect upon buildings or upon essential uses, including an individual sewage disposal system. ~~[Conditions]~~ Graded areas that result in standing water after a rain event~~[,]~~ in excess of forty-eight (48) hours~~[,]~~ are not acceptable~~[, except in areas where delineated wetlands are shown on the lot].~~

[7. *Drainage easements.*

a. ~~In residential subdivisions, where the average lot is less than eight thousand (8,000) square feet in size, ditches or swales located on lots that have a contributing drainage area greater than one (1) acre must be located within a drainage easement designated for private maintenance. The width shall be the limits of inundation during a one hundred (100) year storm event, but in no case be less than ten (10) feet wide. The easement shall have a constant width for its span over a given lot. No buildings shall be constructed within the easement nor shall any blockage be placed within the easement.~~

b. ~~Wherever closed conveyance systems are proposed on lots, a drainage easement shall be provided with a width not less than twenty (20) feet. Suitable allowance for channel grading over the closed system must be made. Storm inlets draining an off-site drainage area greater than ten (10) acres shall not be located on private lots. For inlets draining an area of less than ten (10) acres, an easement must be provided at the limits of inundation for the one hundred (100) year storm event. No buildings shall be constructed within the easement nor shall any blockage be placed within the easement.~~

8]G. *Vegetative stabilization.* All [~~lots~~] graded areas must be top-soiled to a minimum depth of four (4) inches. Seeding, soil amendments, and mulching must be applied according to the "Standards and Specifications for Vegetative Stabilization" and "Additional Standard and Specifications for Permanent Stabilization" sections of the Delaware Erosion and Sediment Control Handbook [~~for Development~~]. The certificate of occupancy for a [~~dwelling~~] permitted structure shall be withheld pending satisfactory completion of these items. These requirements may be postponed to a specific date [~~, in writing~~] by the [~~Manager of Land Use, or his or her designee~~] Code Official.

[9]H. *Postponement or waiver of final grading and vegetative stabilization requirements.* A postponement or waiver of final grading and vegetative stabilization requirements may be approved by the [~~Manager of Land Use, or his or her designee~~] Code Official, upon presentation of a [~~tripartite form~~] form prescribed by the Department of Land Use and signed by the builder, the prospective homeowner(s), and the County pursuant to the regulations permitting such postponement or waiver [~~or upon such form or forms to be prescribed by the Department of Land Use~~].

[10]I. *Poor drainage soils.* Buildings and their foundations placed in areas having poor drainage characteristics that result in a seasonal high-water table (SHWT) (within thirty-six (36) inches of the lowest floor elevation) shall be waterproofed [~~by an approved method as specified in the BOCA International Building Code. Soils typically considered to have poor drainage characteristics (as defined on Table #7, page 78 of the SCS Soil Survey) shall be delineated on the lines and grades plan with a note that basements shall not be constructed pending soil testing and assessment by a qualified professional engineer~~]. The lowest floor shall be constructed a minimum of twenty-four (24) inches above the SHWT.

[11]J. *Groundwater.*

[a]1. All buildings requiring foundation drains shall be provided with discharge drain lines which extend beyond the protective slope of the structure in order to avoid recirculation of water back to the foundation. In the event that there is an excess of water (i.e., springs, etc.) the discharge line shall be extended to the street drainage system or to a natural or design drainage system within the development. No subsoil or other drain shall be connected in any way to the sanitary sewer system. The drain shall not adversely affect the maintenance or operation of any stormwater management facility.

[b]2. The location of any groundwater outflows discovered during development of a site must be brought to the attention of the Department of Land Use. The developer must identify the source of the outflow and provide a means of draining these flows around and away from any building [~~that is satisfactory~~] to the satisfaction of the Department before release of certificates of occupancy for the affected building.

[e]3. The developer must provide the means to satisfactorily drain any portion of a residential lot observed to have wet conditions that prohibit the growth of stabilizing vegetation [~~and~~] or present maintenance difficulties for an extended

period due to groundwater outflows. ~~[This requirement shall be waived where a portion of a lot falls within the limits of any delineated wetland that is identified as to remain undisturbed (unfilled).]~~

#### **Sec. 12.03.004. Grading in residential and nonresidential common areas.**

Disturbance of open space recorded on a subdivision or land development plan shall be limited to those activities that are necessary to meet the provisions of this Code. Any area designated by the ~~[effective]~~ record subdivision or land development plan to remain undisturbed ~~[and/]~~ or any limits of disturbance line depicted on an approved site construction plan shall be clearly and visibly delineated on the site before the commencement of land disturbing activities. The accuracy of the delineation must be certified by a qualified design professional ~~[engineer or land surveyor]~~ before the commencement of any land disturbing activity. ~~[On an individual subdivision lot, the delineation must be maintained in a condition satisfactory to the County up to the time a certificate of occupancy is issued. In open space, t]~~ The delineation must remain in place until the surety is released according to the Land Development Improvement Agreement ~~[site development agreement]~~. Land grading on common areas shall comply with the following specific standards:

~~[1]A.~~ Minimum protective slopes around a nonresidential building. ~~[Grading of pervious areas for a minimum distance of eight (8) feet away from any building shall slope perpendicularly away from the building toward areas designated to accept runoff. The minimum slope in this area shall be twelve (12) feet horizontal to one (1) foot vertical (12:1) (net differential in grade sixty seven hundredths (0.67) foot) as stated in the BOCA International Building Code. Lesser slopes may be approved in specific cases where application of these requirements is not feasible and where an alternative method of foundation protection is provided to the satisfaction of the Department Where restricted by a property line, the distance may be shortened to the minimum side yard provided in Chapter 40] Grading shall be consistent with the International Building Code §1804.4, as amended.~~

~~[2].~~ B Maximum open area slope.

~~[a]1.~~ Impervious/paved areas ...

~~[b]2.~~ Pervious areas ...

~~[3].~~ C Minimum open area slope.

~~[a].~~ Impervious/paved areas ...

~~[b].~~ Pervious areas: two (2) percent. ~~[one (1) percent (as part of a stormwater management practice the grade on pervious surfaces may be reduced).]~~

D. Retaining walls. Retaining walls in excess of four (4) feet exposed height shall be located as far as necessary from the property line to accommodate the maintenance or replacement of structural components. Retaining walls more than four (4) feet exposed height shall be

designed according to the International Building Code §1807.2, conform with the latest version of the Department's checklist and be approved by the Department.

- E. Vegetative Stabilization. All graded areas must be top-soiled to a minimum depth of four (4) inches. Seeding, soil amendments, and mulching must be applied according to the "Standards and Specifications for Vegetative Stabilization" and "Additional Standard and Specifications for Permanent Stabilization" sections of the Delaware Erosion and Sediment Control Handbook. The certificate of occupancy for a permitted structure associated with land disturbance shall be withheld pending satisfactory completion of these items. These requirements may be postponed to a specific date by the Code Official.

### **Sec. 12.03.005. Environmentally sensitive grading.**

A. The amount of cutting [~~and~~] or filling required on site shall be minimized to the maximum practical extent by:

1. Honoring natural drainage divides;
2. Placing streets and roads as close to existing grade as possible; and
3. Performing land grading in a way that minimizes adverse impact to existing vegetation.

B. For the protection of natural resource areas designated [~~on the record land development or subdivision plan~~] to remain undisturbed, not including the riparian buffer area, a minimum ten (10) foot wide buffer must be provided between [~~any grading,~~] the sediment control practice and the natural resource area(s) [~~, and/or building and the area(s) designated to remain undisturbed~~].

C. Improvements to streams and watercourses shall be designed and constructed to preserve and enhance the natural environment to the maximum extent practical. [~~The design shall also conform to the provisions of Article 4 of this Chapter.~~]

~~[D.—Where stockpiling is necessary to complete the earth work for a project that is approved after the effective date of this ordinance, all stockpiles shall be located in open space. The required erosion and sediment controls shall be placed around the stockpile immediately. Temporary vegetative stabilization shall be completed within seven (7) calendar days of the formation of the stockpile. For any period of inactivity longer than thirty (30) calendar days, the stockpile shall be stabilized with permanent vegetation and maintained in such a manner so that the stockpile is mowable (maximum slope 3:1). Stockpiles shall be no taller than twenty (20) feet at any point as measured from lowest toe of slope of any pile to the tallest point on the stockpile.~~

~~Exception: Individual stockpiles serving a residential lot, associated with a building permit, shall be permitted on lot so long as the stockpile is temporarily stabilized with vegetation, mowable (maximum slope 3:1), no taller than five (5) feet at any point thirty (30) days after the footer inspection is approved, as measured from lowest toe of slope of any pile to the tallest point on the stockpile, and the stockpile is removed or the material applied to the lot prior to the issuance of a certificate of occupancy for that permit as defined by Chapter 6 of~~

~~the New Castle County Code. For any period of inactivity longer than thirty (30) calendar days, the stockpile shall be stabilized with permanent vegetation.]~~

**Sec. 12.03.006. Review of land grading design.**

A. The Department will review site construction plan submissions required by Appendix 1 of Chapter 40 of the *New Castle County Code*.~~[New Castle County Subdivision and Land Development Regulations]~~ to determine the grading feasibility for recordation purposes.

B. A ~~[general]~~ grading plan approval is required before a subdivision or land development plan is recommended for recordation. An approved lines and grades plan~~[, either overall or individual,]~~ is required before the issuance of a building permit for new buildings or expansion of existing buildings ~~[in excess of]~~ four hundred eighty (480) square feet or greater, regardless of the amount of land disturbance. The lines and grades plan must demonstrate adequate conveyance in compliance with Section 12.04.001(A). Exception: a lines and grades plan is not required for proposed structures without walls that do not meet the definition of GFA.

C. The lines and grades plan must conform ~~[with]~~to the latest version of the Department's plan content checklist.

D. Before issuance of [granting] a certificate of occupancy, the Department ~~[shall]~~ must receive a lines and grades as-built plan certifying that the lot was graded according to the approved grading plan.~~[inspect final grading around a building for conformance to requirements of this Chapter. Changes to grading, or to a building on a lot where a lines and grades plan has been approved, must be submitted for review and be approved before issuance of a certificate of occupancy.]~~

Section 4. *New Castle County Code* Chapter 12 (“Drainage”), Article 4 (“Conveyance Systems”), is hereby amended by adding the material that is underscored and deleting the material that is bracketed and stricken, as set forth below:

**ARTICLE 4. CONVEYANCE SYSTEMS**

**Sec. 12.04.001. Conveyance system ~~[stipulations]~~standards.**

A. Any person who engages in land disturbing activity ...

B. ~~[Open channels (i.e., ditches, swales)]~~Open channel. When open channels with a drainage area greater than 5-acres are proposed, an engineering analysis shall be submitted supporting the proposal with respect to feasibility, capacity design, and soil stabilization within the channel. Where open channels are designed as an integral part of a stormwater management plan, the following requirements may be superseded by approved guidelines for a specific stormwater practice. In all other cases, the engineering analysis shall adhere to the following requirements:

1. Documentation of the seasonal high-water table elevation ...
2. ~~[Capacity design shall be in accordance with Section 12.04.002 of this Chapter.]~~

- [3.] Channels shall be trapezoidal or parabolic in shape. In either case, accessibility for maintenance shall be considered in the design.
- [4]3. Maximum side slopes: three (3) feet horizontal ...
- [5]4. Minimum bottom width shall be [~~three (3)~~two (2)] feet where the depth exceeds one (1) foot.
- [6]5. Minimum design velocity shall be two (2) feet per second.
- [7]6. The maximum design velocity in a grassed channel shall not exceed the permissible values stated in the "Standards and Specifications for Grassed Waterways" section of the Delaware Erosion and Sediment Control Handbook [~~for Development~~], except as provided with structural measures as detailed therein. Also, as noted therein, sustained wet conditions in a channel are not amenable to the establishment of adequate vegetative cover; therefore, where conditions will exist which indicate a base flow in the channel, the channel shall be provided with a stone center according to the specification noted above.
- [8]7. If designed with a paved bottom, the bottoms shall be reinforced Portland cement concrete with a minimum six (6) inch thickness.
- [9]8. All other standards and specifications contained in the "Grassed Waterway" and "Lined Waterway or Outlet" sections of the Delaware Erosion and Sediment Control Handbook [~~for Development~~] shall apply.
- [10.] ~~Ditches or swales draining an off-site area greater than ten (10) acres shall only be located in open space and shall be designated for maintenance by the owner of the open space. The width of the easement and the minimum width of its open space corridor shall be the area encompassed by the flows from the one hundred (100) year storm event plus one (1) foot of freeboard.~~
11. ~~Open channels proposed as part of the street drainage system shall be subject to review by the Department of Land Use according to the provisions of this Chapter. Easements, according to the criteria stated in paragraph (B)(10) of this Section, shall be provided wherever the watercourse design exceeds the limits of the right-of-way. Regardless of whether streets are to be publicly or privately maintained, the design and construction of the open channels must meet DelDOT standards.]~~
- [12]9. The maximum flow depth for the design storm event in an open channel on a residential lot [~~and/~~] or the right-of-way adjacent to a residential lot shall be one (1) foot. The maximum channel depth shall be three (3) feet. The depth at any given cross section shall be measured from the bottom of of [~~or~~] the channel to the height at which the side slope becomes less than five (5) feet horizontal to one (1) foot vertical.

[13]10. A backwater analysis may be required by New Castle County to assess the impact of post-development flows if apparent constrictions exist downstream.

C. ~~[Closed channel (i.e., pipe networks)]~~ Closed channel (i.e., pipe networks). All closed conveyance systems shall be designed and constructed according to this Article and DelDOT's Development Coordination Manual effective November 2019, as amended.

~~[1. Capacity design shall be per Section 12.04.002.]~~

~~2. Where DelDOT regulations do not apply, minimum soil cover over pipe is one (1) foot.~~

~~3. Catch basin and grate specifications design shall conform to DelDOT standards.]~~

[4]1. Rock outlet protection, designed per the "Rock Outlet Protection" section of the Delaware Erosion and Sediment Control Handbook ~~[for Development]~~, shall be provided at each outfall.

~~[5. Drainage easements of a minimum twenty (20) foot width shall be provided where closed drainage systems are proposed on open space.]~~

[6]2. A backwater analysis may be required by New Castle County to assess the impact of post development flows if apparent constrictions or high tailwater conditions exist downstream.

D. Conveyance systems shall outfall to a stormwater management facility or watercourse capable of accepting the design runoff.

E. Development sites shall be graded and stormwater management facilities located in a way that ensures that no buildings will be flooded by a one hundred (100) year storm event and that all runoff from areas designed to drain to a stormwater management facility shall reach the facility, even in the event that the runoff rate exceeds the capacity of the conveyance system or the conveyance system fails. The following ~~[guidelines shall]~~ standards will be used to verify this requirement:

1. For building protection, the overall site drainage system ~~[shall]~~ will be evaluated using the [S]NRCS method one hundred (100) year frequency storm. The water surface elevation at catch basin sumps, flat areas, and other hydraulically critical areas ~~[shall]~~ will be assessed by a topographic appraisal indicating the maximum limits of flooding. At locations where the topographic appraisal indicates limited conveyance possibilities, the water surface elevation ~~[shall]~~ will be computed by Manning's Equation or backwater analysis as appropriate. A minimum distance of ten (10) feet ~~[shall]~~ must be maintained between the computed limits of inundation and any occupiable ~~[existing or proposed]~~ building. A minimum eighteen (18) inches freeboard must be maintained between the computed water surface elevation and the lowest adjacent grade of any occupiable building.

2. On-site grading shall also be evaluated using the [S]NRCS method one hundred (100) year frequency storm to verify that the runoff from this storm shall properly reach the designated

stormwater management facility or point of discharge. The inlet(s) for the closed conveyance system shall be credited with fifty (50) percent of its design storm capacity for the purposes of this analysis to anticipate the possibility of system blockage. The intent is that grading in the form of relief channels/berms and building location ~~[and/]~~ or elevation be altered to achieve the desired goal of directing all design runoff to the stormwater management facility or the point of discharge for the one hundred (100) year frequency storm. In circumstances where this requirement creates a hardship, or would result in excessive cutting or filling, the intent of this paragraph may be addressed by providing pipe and inlet grate capacity with one hundred fifty (150) percent of the capacity of the one hundred (100) year storm flow rates.

F. The drainage system shall be designed so that parcels over which the surface waters are conveyed from the development site to existing watercourses or pipe systems are not adversely affected. The following criteria ~~[shall]~~will be used for verifying that a property is not adversely affected and that the developed property may continue to discharge runoff without off-site modification:

1. The peak runoff flow rate after development does not exceed the predevelopment peak runoff flow rate for the design storm frequencies required by the Delaware Sediment and Stormwater Regulations.
2. For projects generating a post-development discharge rate of one (1) ~~[two (2)]~~ cubic feet per second, or greater in a one (1) ~~[two (2)]~~ year storm event, the post-development discharge is not concentrated in a location where the predevelopment runoff was not concentrated.
3. The drainage design shall not adversely impact upstream property by impeding drainage or increasing the water surface elevation upstream of the parcel being developed.
4. Where ~~[ponds are the proposed method of control]~~ a stormwater management facility is proposed to manage the Flooding Event at specific discharge points, the developer ~~[shall]~~must submit, when required by the Department ~~[of Land Use]~~, an analysis that demonstrates no impact (~~[significant increase velocity and/or]~~ i.e., an increase in velocity that causes an erosive condition, an increase in flood elevation, or an increase in duration of flooding) from the stormwater flow downstream in the watershed for the one hundred (100) year frequency storm event. The analysis shall include hydrological and hydraulic calculations necessary to determine the impact of hydrograph timing modifications of the proposed development, with and without the stormwater management facility ~~[pond]~~, on receiving dams, highways, structures and natural points of constricted stream flows past which the timing effects would be considered negligible. The results of this analysis will determine the need to modify the ~~[pond]~~ design or eliminate the ~~[pond]~~ stormwater management facility requirement. The investigation shall incorporate any available studies and their recommendations to the maximum practical extent. Lacking a clearly defined point of constriction, the limit of the analysis for downstream impact, with concurrence of the Department ~~[of Land Use]~~, will terminate at the first downstream tributary whose drainage area meets or exceeds the contributing area to the stormwater management facility

[pond] or the first downstream tributary whose peak discharge exceeds the design release rate [for the pond] in the one hundred (100) year frequency storm event. As a result of this analysis the developer may be required to:

- a. Provide additional stormwater detention on the project [~~according to the following criteria:~~
  - i. ~~The ] such that the peak [runoff] rate of runoff from the ten (10) year storm event after development does not exceed that of the two (2) year storm event before development, and the peak rate of runoff from the twenty-five (25) year storm event after development does not exceed that of the ten (10) year storm event before development. [This criteria shall be provided at specific discharge points.] For the purpose of this analysis, [the pervious portion of predevelopment ground cover shall be modeled as woods in good condition for that portion of the site where trees greater than six (6) inches in diameter existed within eighteen (18) months preceding the application. A] all [other E] existing pervious areas [not meeting this criteria] shall be modeled as meadow in good condition.~~
- b. Obtain drainage easement(s) from the downstream property owner(s) [~~according to the criteria of this Chapter, for] to convey drainage to an acceptable point of discharge and provide access to improve and maintain the receiving conveyance system. [Design and construct a conveyance system (per this Article) to convey the stormwater to the nearest adequate conveyance system. A receiving conveyance system is considered adequate where the required conveyance of flows from the appropriate design storm for the entire upstream drainage area can be shown to exist.]~~

#### **Sec. 12.04.002. Estimation of peak flow for [~~drainage] conveyance systems.~~**

A. The design of [~~drainage] conveyance systems requires the peak rate of flow for a specified storm frequency. [Since most closed (i.e., piped) drainage conveyance systems in New Castle County become the maintenance responsibility of the State of Delaware, New Castle County requires that all closed drainage conveyance systems be designed and constructed according to DelDOT's Rules and Regulations for Subdivision Streets, Section 7 "Drainage Criteria," as amended. Conveyance facilities are] Conveyance systems must be designed starting from the uppermost reaches of the impacted watershed; each subsequent area contributing runoff is included in the downstream calculation.~~

B. The components of a successful drainage design are:

1. Research data.
  - a. Drainage area characteristics:
    - i. Soil types based on [~~SCS] NRCS Web Soil Survey (supplemented by site soil inspection, if necessary);~~

- ii. Topography; and
  - iii. Existing (and proposed) ground cover.
2. Existing drainage system information.
  3. Watercourse information: flood profiles.
  4. Field review:
    - a. Condition of existing drainage systems;
    - b. Characteristics of proposed site outfalls;
    - c. Impact of existing features (i.e., utilities, vegetation to remain, etc.) on drainage design;
    - d. Identification of natural ~~and~~ or man-made downstream constrictions to the extent required in Subsection 12.04.001.F.4.

C. Drainage area delineation...

D. Determination of appropriate equation values. Values of parameters shall conform to figures provided in the ~~[DelDOT's Rules and Regulations for Subdivision Streets, Section 7, Drainage Criteria, as amended]~~ DelDOT Development Coordination Manual effective November 2019, as amended.

E. The criteria for selecting a storm frequency for conveyance system design is provided below:

Function	Open Channels	Storm Pipes	Culverts
<del>[On-site and off-site coming onto the site]</del> <u>Stormwater that is captured and managed in a facility</u>	25	10*	<del>[40]</del> <u>25</u>
<del>[Through-site]</del> <u>Stormwater that is conveyed through the site without management</u>	25	25	25
<del>[Natural w]</del> <u>Watercourse</u>	<del>[25]</del> <u>100</u>	<del>[25]</del> <u>100</u>	<del>[25]</del> <u>100</u>

\* Use twenty-five (25) year frequency for sumps drained by a storm pipe.

**Sec. 12.04.003. Hydraulic design standards.**

A. *Generally.* All drainage systems, including culverts and bridges, shall be designed and constructed in a manner to achieve the following:

1. To account for both on-site and off-site surface runoff;

2. Drainage [~~facilities shall meet and~~]systems must conform to DeIDOT standards; and
3. To retain or improve the character of the surrounding area as much as practical.

B. *Closed conveyance systems.*

1. Pipe networks shall be designed to accommodate the peak runoff rate according to the standards and methodologies contained in [~~DeIDOT's Rules and Regulations for Subdivision Streets, Section 7, Drainage~~]the DeIDOT Development Coordination Manual effective November 2019, as amended. The parameters for a successful conveyance system design are as follows:
  - a. Minimum full flow velocity in the pipe shall be [~~two (2)~~]three (3) feet per second to prevent deposition of sediment.
  - b. Maximum full flow velocity in the pipe shall be fifteen (15) feet per second.
  - c. Minimum pipe diameter shall be fifteen (15) inches.
  - d. Minimum pipe cover shall be per the manufacturer's specifications for the type of loading proposed; in no case shall the cover be less than one (1) foot.
  - e. Type of material shall conform to DeIDOT standards and rated by the manufacturer to have a service life of at least fifty (50) years. Metal pipe is not permitted.
  - f. Storm manholes or junction boxes shall be used for changes in the direction of flow (the [~~maximum~~] deflection shall not be less than ninety (90) degrees).
2. Refer to [~~the drainage design chapter of DeIDOT's Highway Design~~]the DeIDOT Road Design Manual, as amended, Chapter Six, Drainage and Stormwater Management for calculation procedures.

C. *Gradeline analysis.*

1. A hydraulic gradeline analysis . . .
2. The hydraulic gradeline is submitted to check the operation of the system under the design storm frequency by starting from the design tailwater elevation at the outfall and proceeding upstream, considering every pipe unit up to the initial inlet. Calculated water surface elevation in the catch basin must be no higher than one (1) foot below the grate elevation for the design storm.

D. *Culverts.* Design of culverts shall be in conformance with DeIDOT standards. [~~Multiple culvert openings terminating at the same point are not permitted unless specifically approved by DeIDOT, or the Department if the culvert is not designated for maintenance by DeIDOT.~~] Outlet

protection, according to the "Rock Outlet Protection Section" of the Delaware Erosion and Sediment Control Handbook [~~for Development~~], must be provided at all culverts.

#### **Sec. 12.04.004. Design for maintenance.**

New or improved drainage [~~conveyance~~] systems shall be designed and constructed to require economical maintenance. Conveyance systems must be built with materials rated by the manufacturer to have a service life of at least 50 (fifty) years. [~~Improvements to watercourses in existing developments must be designed and constructed to retain the character of the surrounding area as much as practicable.~~] Adequate [~~rights-of-way~~] easements must be provided for access [~~for~~] during construction and afterwards for maintenance.

#### **Sec. 12.04.005. Drainage easements.**

A. *General.* All [~~on-site and off-site~~] drainage easements [~~required either by the approved drainage design for development or alteration of natural watercourses~~] will be sized and recorded according to the following:

1. For a conveyance system located outside a street right-of-way, a drainage easement must be provided along any watercourse, any closed channel, or any open channel conveying runoff from three or more buildings.
2. All drainage [~~off-site~~] easements [~~agreements~~] shall identify the party responsible for maintenance [~~within the easement agreement/declaration~~] and be recorded according to the procedures that are established by the Unified Development Code, as amended. [~~The developer shall be responsible for acquisition of all necessary off-site easements to convey drainage to an acceptable point of discharge. Copies of the easement agreement/declaration shall be provided to the Department of Land Use, and the easements shall be depicted and/or referenced by note (including deed record number) on the Record Plan.~~]
2. ~~Watercourses that flow through or along the boundaries of developments shall be located in private or public open space and have dedicated rights-of-way of a width not less than the area estimated to be inundated by a one hundred (100) year frequency storm after grading. However, in no case shall the width of a right-of-way be less than the width of the course bed and slopes plus a thirty (30) foot strip on each side. If only one (1) strip can be provided, a minimum of forty (40) feet will be required. Access to these areas must be provided as set forth herein.]~~
3. The developer shall provide or acquire a permanent recorded access easement to [~~all~~] any on-site or off-site drainage easement[s]. This easement shall be at least [~~ten (10)~~] fifteen (15) feet [~~in width~~] wide, with no slope greater than four (4) feet horizontal to one (1) foot vertical for vehicular access.
4. [~~On watercourses where the above width requirements place a hardship on the landowner(s), the requirements may be varied [waived] by the Department and an acceptable easement of lesser width shall be provided. The alignment of the easement will generally be governed by the hydraulic characteristics of the stream flow, location~~]

of, and relationship to the adjacent properties. The alignment shall follow the natural drainage channel where possible.]No building shall be constructed within a drainage easement nor shall any blockage or encumbrance be placed within the easement.

5. [All off-site easements deemed necessary by the Department to comply with this Code must be obtained before recordation of the record land development or subdivision plan to which the easement pertains.]The minimum width of any drainage easement shall be twenty (20) feet. The easement shall have a constant width between drainage structures as determined by the Department.

6. In major residential subdivisions, drainage easements shall only be located in common open space.

B. *Open Channels.*

1. Open channels that convey runoff from a drainage area greater than five (5) acres must be located within a drainage easement. The width must be constant and accommodate the limits of inundation during a one hundred (100) year storm event plus one (1) foot of freeboard.

2. In major residential subdivisions, surface waters collected from more than two (2) lots shall be located within a drainage easement. The width must accommodate the limits of inundation during a one hundred (100) year storm event.

3. In minor residential subdivisions without common open space, surface waters collected from more than two (2) lots shall only be provided in a drainage easement. The width must accommodate the limits of inundation during a one hundred (100) year storm event. The easement shall have a constant width for its span over a given lot.

C. *Closed Channels.*

1. In residential subdivisions, the developer must make a suitable allowance for channel grading over the closed system. The easement width must be constant and accommodate the limits of inundation during a one hundred (100) year storm event plus one (1) foot of freeboard.

2. The closed conveyance system must be located in the center of the easement.

D. *Watercourse.*

1. Watercourses that flow through or along the boundaries of developments shall be located in open space and within a drainage easement of a width not less than the area estimated to be inundated by a one hundred (100) year frequency storm and within the area required for eighteen (18) inches of freeboard after grading. Additionally, the easement must not be less than the width of the course bed and slopes plus a thirty (30) foot strip on each side. If only one (1) strip can be provided, a minimum of forty (40) feet will be required.

2. On watercourses where the above width requirements place a hardship on the landowner(s), the requirements may be varied [waived] by the Department of Public Works and an acceptable easement of lesser width shall be provided. The alignment of the easement will generally be governed by the hydraulic characteristics of the stream flow, location of, and relationship to the adjacent properties. The alignment shall follow the natural drainage channel where possible.

E. Off-site. The developer shall be responsible for acquisition of all necessary off-site easements to convey drainage to an acceptable point of discharge. An off-site easement must be depicted on the Record Plan and any separately recorded easement must be referenced by instrument number.

#### **Sec. 12.04.006. Review of drainage design.**

Plan submissions will be reviewed ...

#### **Sec. 12.04.007. As-builts.**

~~A. [At the discretion of the Department of Land Use, an as-built topography plan of open channels that drains an area greater than five acres and has a slope less than two (2) percent shall be provided. The as-built shall include profiles and cross sections at fifty (50) foot stations and computations that demonstrate that the channel meets design objectives. All stormwater management facilities shall be as-built.~~

~~B. Stormwater management basin/pond as-builts shall]~~ An as-built must be provided for all stormwater management facilities and contain sufficient information to complete the documentation required by the Delaware Sediment and Stormwater Regulations, and the [U.S. Department of Agriculture, Soil Conservation Service,]USDA NRCS Pond Code 378, [(September, 1990)] as amended. Stormwater management facility as-builts shall conform to the latest version of the applicable stormwater as-built checklist.

B. An as-built must be provided for all conveyance systems (i.e., open and closed channels) located in an easement. Conveyance system as-builts shall conform to the latest version of the conveyance system as-built checklist.

C. The Code Official may require an as-built survey of any disturbed area to ensure compliance with any plan or code requirement.

Section 5. *New Castle County Code* Chapter 12 (“Drainage”), Article 5 (“Sediment and Stormwater Management”), is hereby amended by adding the material that is underscored and deleting the material that is bracketed and stricken, as set forth below:

### **ARTICLE 5. SEDIMENT AND STORMWATER MANAGEMENT**

#### **Sec. 12.05.001. Adoption of State sediment and stormwater regulations.**

Certain documents on file with the Clerk of the County Council, being marked and designated as the Delaware Sediment and Stormwater Regulations, as amended [~~having an effective date of January 23, 1994~~], promulgated by the DNREC, are hereby adopted as the sediment and stormwater regulations of the County. All the sections, penalties, conditions, and terms of the Delaware Sediment and Stormwater Regulations are hereby referred to, adopted, and made part of this Chapter [~~Article~~] as if fully set out in this Section.

#### **Sec. 12.05.002. Sediment and stormwater permit fees.**

~~[A. The Department of Land Use]~~ New Castle County shall collect, at the time a sediment and stormwater management application is submitted, a fee calculated in accordance with Appendix [~~1 of this Chapter~~] 2 of the Unified Development Code.

~~[B. At the discretion of the General Manager of the Department of Land Use or his/her designee, an additional review fee may be charged if the original plan submission has not been found acceptable for approval after the second submission. This fee shall be two hundred (200) percent of the original review fee.~~

~~C. The Department of Land Use shall collect, at the time construction plans for stormwater management and erosion and sediment control are submitted, a permit fee to provide for the costs of plan review and construction review. The minimum fee shall be one hundred twenty five dollars (\$125.00) per acre per project. The fee for acreage and fractions of acreage greater than one (1) shall be at the rate of one hundred twenty five dollars (\$125.00) per acre. The fee for a general permit shall be one hundred twenty five dollars (\$125.00).]~~

#### **Sec. 12.05.003. Prohibited land disturbing activities.**

Except as provided in the Delaware Sediment and Stormwater Regulations, no person or entity may engage in any land disturbing activity until such person or entity has obtained [~~a sediment and stormwater permit~~] an approved sediment and stormwater management plan. Lines and grades plans will not be approved for a parcel of land before approval of a sediment and stormwater management plan, except as exempted by the Delaware Sediment and Stormwater Regulations. These requirements are in addition to all other provisions of law relating to the issuance of such permits and are not intended to otherwise affect the requirements for such permits.

#### **Sec. 12.05.004. Approved land disturbing activities.**

The [~~Department of Land Use~~] County shall approve a sediment and stormwater management plan if it determines that the plan meets the applicable standards and if the person responsible for carrying out the plan certifies that the sediment and stormwater control measures included in the plan will be implemented and that the provisions of the Delaware Sediment and Stormwater Regulations and County Code will be followed.

#### **Sec. 12.05.005. Regulations governing the use of approved sediment and stormwater management plans.**

A. Implementation of the approved plan may only be altered ~~[as]~~through a revised plan approved by [the Department of Land Use]New Castle County. Such changes may be directed where:

1. Inspection has revealed an inadequacy of field controls to accomplish the sediment and stormwater management objectives~~[- of the plan, and appropriate modifications to correct the deficiencies agreed to by the Department, in writing, and the person responsible for carrying out the plan];~~ or
2. The person responsible for carrying out the approved plan finds that because of changed circumstances or for other reasons the approved plan cannot be effectively carried out~~[-, and proposed amendments to the plan, consistent with the requirements of applicable regulations, are agreed to by the Department, in writing, and the person responsible for carrying out the plan.];~~ or
3. The sequence of construction does not adequately address construction and completion of the project; or
4. Material standards or construction techniques have changed that would result in a more economical design for construction and maintenance.

B. No building, grading or other permits for a site shall be ~~[granted by the Department, nor shall any sediment and stormwater permit be approved by the Department]~~issued by New Castle County, where:

1. DNREC considers the applicant to be in violation of *7 Del. C. § 4001 et seq.*; or
2. The applicant has failed to comply with any directives arising out of a New Castle County [Departmental] referral to DNREC~~[-];~~ or
3. The applicant has failed to comply with the provisions of the New Castle County Code [this Chapter.]; or
4. The applicant has not obtained a DelDOT entrance permit, when required.

C. Approval of a sediment and stormwater management plan by the County [Department] does not relieve the applicant of the responsibility to abate sediment pollution, or comply with any and all other applicable local, state and federal laws.

D. The ~~[Department]~~County may, in its ~~[sole-]~~discretion under appropriate circumstances, restrict or prohibit the use of ~~[general permits]~~standard plans as defined in the Delaware Sediment and Stormwater Regulations. Such a decision shall result in the applicant being obligated to submit a detailed sediment and ~~[erosion control]~~stormwater management plan in accordance with this Chapter.

E. ~~[General permits may be applicable to continuing operations for time periods up to one (1) year, such as, but not limited to, approved general permits for utility maintenance operations.]~~ Standard plans are valid for one (1) year from their approval date.

#### **Sec. 12.05.006. Sediment and stormwater regulations and design standards.**

A. The following references apply to sediment and stormwater management design, implementation, inspection and review:

1. Delaware Sediment and Stormwater Regulations, as amended;
2. Delaware Sediment and Erosion Control Handbook [~~for Development~~];
3. Unified Development Code, Chapter 40, New Castle County Code [~~Delaware Stormwater Management Design Manual~~].

B. The sediment and stormwater submission shall conform to the latest version of the ~~[Department's]~~ sediment and stormwater ~~[and drainage design]~~ checklist. The following design standards apply [~~are provided as a clarification of relevant checklist items~~]:

1. ~~[Waivers. To qualify for a waiver from the stormwater quantity control criteria, in accordance with Section 3(2.)(B)(1) of the Delaware Sediment and Stormwater Regulations, the computations must be site specific. If the site drains to more than one (1) outfall, the computations must be based on only that part of the site which contains the proposed land disturbance that drains to each of the outfall locations.]~~ Stormwater management systems shall be designed to treat runoff from sources to obtain the greatest water quality benefit. All non-residential projects processed as redevelopment under the Delaware Sediment and Stormwater Regulations shall employ treatment or runoff reduction practices to achieve an equivalent fifty (50) percent reduction in effective imperviousness from existing impervious areas for the Resource Protection Event (RPv).
2. ~~[Acceptability of proposed techniques. The following criteria must be submitted in order to determine acceptability of the proposed techniques for stormwater quality control:~~
  - a. ~~An investigation regarding the feasibility of the preferred practices, as set forth in the Delaware Sediment and Stormwater Regulations (first wet ponds, then dry ponds, then infiltration), prior to considering other alternatives.~~
  - b. ~~Submission of ample evidence of the nonfeasibility of a preferred practice as a justification for using an alternate practice. The evidence must relate to the following areas, at a minimum: soil types and characteristics, seasonally high water table elevation and anticipated type of pollutant loading.~~
  - c. ~~Documentation of a proposed practice's ability to meet the efficiency standards, as set forth in the Delaware Sediment and Stormwater Regulations.]~~ All projects subject to a stormwater management detailed plan shall demonstrate compliance with the

TMDL load reduction requirements for total nitrogen, total phosphorous and total suspended solids in the watershed(s) for which the project is located.

3. ~~[Design storm.]~~The design storm ~~[to be used to satisfy the criteria of extended detention, specified in Sections 10(3.)(E)(2) & (3) in the Delaware Sediment and Stormwater Regulations, must be the one that generates the quantity of runoff which is required to meet the extended detention requirement. The hydrograph for the design storm must be routed through the design pond. The detention time shall be determined by subtracting the hydrograph time at which outflow begins from the hydrograph time at which outflow stops]~~ must be in accordance with the storm events outlined within the Delaware Sediment and Stormwater Regulations.
  
4. Stormwater management ~~[basin]~~ design.
  - a. The minimum horizontal or vertical dimension of an orifice or weir ~~[acceptable to the Department]~~ is one and one-half (1½) inches~~[Any orifice with a minimum dimension less than three (3) inches must be provided in the form of a horizontal plate located inside a perforated vertical riser with a removable cap at the top to allow cleaning of the orifice when necessary. The minimum acceptable size of the perforated pipe is eight (8) inches in diameter and the total cross sectional area of the perforations must be at least ten (10) times the cross sectional area of the orifice. The cross sectional area of a perforation shall not be less than one half (½) inch in diameter circular shape]~~.
  
  - b. ~~[The perforated riser in a dry pond must be wrapped with wire mesh and filter cloth and surrounded by a stone filter layer]~~The design must include adequate pre-treatment measures to minimize the frequency of clogging of any orifice or weir.
  
  - c. ~~[A skimmer type shield must be provided around the perforated riser in a wet pond to skim off floating debris]~~Any orifice or weir within a structure must be provided such that it is accessible for visual inspection and maintenance.
  
  - d. ~~[For orifices not protected by a perforated riser as described above, the Department must be satisfied that adequate measures have been included in the design to avoid clogging of the orifice and to allow its cleaning if clogging occurs.]~~
  
  - ~~[e]~~ Large orifices ~~[and all weirs]~~ proposed for stormwater quantity control must ~~[also be provided with]~~include trash racks, hoods ~~[and/]~~ or other features to avoid clogging~~[and allow skimming of oil and grease]~~. For outlets with openings equivalent to a fifteen (15) inch diameter circular shape or less, the trash rack area shall be at least ten (10) times the outlet area with the spacing between openings of the trash rack smaller than the smallest dimension of the outlet but not larger than ~~[six (6)]~~four (4) inches. For outlets larger than a fifteen (15) inch diameter circular shape, the area of the trash rack shall be at least ~~[ten (10)]~~four (4) times the outlet area and the spacing between the openings of the rack shall not be larger than ~~[six (6)]~~four (4) inches.

- ~~[f. The bottom of a dry pond must be at least three (3) feet above the groundwater table and have positive drainage to the outfall.]~~
- [g]e. In the design of wet ponds, hydrologic and geologic characteristics of the site must be considered to [i]ensure that the following requirements are satisfied:
- i. An adequate supply of water will be available to maintain the design level of the permanent pool, or a drainage area [~~four (4)~~ten (10)] acres or larger.
  - ii. The soils are appropriate to maintain the permanent pool as designed.
- [h]f. The pond must be [~~at least three (3)~~a minimum of four (4)] feet deep [~~over fifty (50) percent of its surface area~~]to maintain an adequate supply of oxygen in the permanent pool to avoid anaerobic reactions and provide a suitable habitat for predators of mosquito larvae.
- [i]g. Means to drain the permanent pool for maintenance purposes must be provided.
- ~~[j. The horizontal location of basin inlets and outlets with respect to each other shall be designed in accordance with the "Standards and Specifications for Sediment Basins" in the Delaware Erosion and Sediment Control Handbook for Development, so as to provide adequate time for sediment deposition.]~~
- h. Bio-retention facilities must be sized for the maximum ponding depth of the RPv to provide for economical design and maintenance.
- i. Where space is available, a ten (10) foot-wide native vegetated buffer must be provided along the water's edge of a stormwater practice with a permanent pool.
- j. Stormwater management facilities that require confined space certification for entry may not be designed for residential communities.
- k. Residential stormwater management facilities must be designed to allow for economical maintenance.
- l. Open space may not be transferred or a certificate of occupancy issued in a phase before any stormwater management facility receiving runoff from the phase is inspected and approved.
5. [~~Stormwater management ponds. Stormwater management ponds proposed to be located in existing wetlands must comply with the applicable regulations pertaining to disturbance in wetlands and the Department must be provided a copy of all necessary approvals by the Army Corps of Engineers and/or DNREC, as appropriate.]~~
- [6.] Size of stormwater management area and required easements.

- a. The stormwater management area must include:
  - i. Embankments and their slopes;
  - ii. Area corresponding to water surface elevation for one hundred (100) year frequency storm plus one (1) foot of vertical freeboard;
  - iii. Sediment disposal area, sized in accordance with ~~[Section 10(3)(K) of]~~ the Delaware Sediment and Stormwater Regulations. The area must be accessible from a public street or easement and not surrounded by landscaping that restricts access to the area.
- b. An easement of appropriate width, not less than ten (10) feet on both sides of the centerline of the pipe of the principal spillway, must be provided. The easement must encompass the riprap apron. An easement shall also be provided along the exit swale of the emergency spillway up to a point of positive outfall. The width of this easement shall be from top of bank to top of bank plus ~~[ten (10)]~~ fifteen (15) feet on both sides for maintenance access. The Department of Land Use must be provided all necessary information, including proposed grading if required, in order to determine where the positive outfall is located.
- c. Easements of appropriate widths, not less than ~~[ten (10)]~~ fifteen (15) feet, must be provided for legal access to the stormwater management area from a public street for maintenance. The longitudinal and transverse slopes of this access strip shall not exceed ten (10) percent. In residential communities, maintenance access must be across common open space and may not occur through private lots.
- d. If any part of the stormwater management facility is proposed to be located off site, an easement that encompasses that part of the facility off site, in accordance with Subsections B.6.a. and B.6.b. shall be provided. The off-site easement must be depicted on the Record Plan and any separately recorded easement must be referenced by instrument number.
- e. An easement of appropriate width, but not less than ~~[ten (10)]~~ fifteen (15) feet, must be provided for maintenance all around the facility. The longitudinal and transverse slopes of this access strip shall not exceed ten (10) percent. No building shall be constructed within the easement nor shall any blockage or encumbrance be placed within the easement.

[7]6. Landscaping in the stormwater management area.

- a. No trees or woody vegetation shall be permitted on embankments and their slopes.
- b. ~~[No trees or vegetation other than grass shall be proposed]~~ Vegetation designed by a landscape architect is permitted within the area inundated by a ~~[two (2)]~~ one (1)

year frequency storm. ~~[The only exception to this restriction is the creation of wetlands for stormwater quality control, but such wetlands vegetation shall be subject to the approval of the Department and DNREC].~~

- c. A copy of the landscape plan must be provided to the Department of Land Use ~~[at the time a record plan review is requested]~~ for review during the construction stage.

~~[8]7. [Maintenance of the stormwater management area.]~~ Maintenance requirements for all stormwater management facilities must be established by the designer and submitted to the Department of Land Use for review and approval.

#### **Sec. 12.05.007. Construction review and enforcement.**

A. In accordance with the provisions of the Delaware Sediment and Stormwater Regulations, New Castle County, as a delegated ~~[enforcement]~~ agency, will periodically inspect the sites of land disturbing activities for which permits have been issued to determine if the activities are being conducted in accordance with the plan and if the measures required in the plan are effectively controlling erosion and sedimentation.

~~B. [At the discretion of the Department of Land Use, the developer may be required to provide]~~ The County may require a certified construction reviewer to provide on-site construction review according to [(see) the Delaware Sediment and Stormwater Regulations](-) on the site.]

C. All easements must be field delineated at the post bulk inspection to verify all stormwater facilities and conveyance systems are constructed within the easements and that access for maintenance is provided.

D. Prior to the issuance of a nonresidential Certificate of Occupancy or the turnover of community open space, the design professional who prepared the drainage system and stormwater management for the project must provide a certification verifying both are functioning as designed. Upon written request, the Department may approve another professional to provide the certification.

Section 6. *New Castle County Code* Chapter 12 (“Drainage”), Article 6 (“Stormwater Management Facility and Watercourse Maintenance”), is hereby amended by adding the material that is underscored and deleting the material that is bracketed and stricken, as set forth below:

#### **ARTICLE 6. STORMWATER MANAGEMENT FACILITY~~[-AND]~~, WATERCOURSE AND DRAINAGE SYSTEM MAINTENANCE**

##### **Sec. 12.06.001. Responsibility.**

A. Except where responsibility is legally transferred, the owner(s) of the property on which a stormwater management facility is located shall keep such facility in good order and repair so that it performs and functions in accordance with its intended purpose, approved design, applicable

provisions of the New Castle County ~~[this]~~ Code and ~~[/or]~~ the Delaware Sediment and Stormwater Regulations.

B. Stormwater management facilities shall be inspected and maintained by the property owner(s) on a routine basis and in accordance with the natural resource area open space management plan, open space management plan, landscape plan, ~~[or]~~ sediment and stormwater management plan, and post construction verification documents. Stormwater management facilities shall be maintained pursuant to the general maintenance requirements provided herein to the extent that they do not contradict any other specific plan requirement. If there is any contradiction between the general maintenance requirements and the specific plan requirements, the plan requirements shall govern.

1. General maintenance requirements for stormwater management ~~[ponds and recharge basins. Stormwater management ponds and recharge basins]~~ facilities. Stormwater management facilities shall be maintained in accordance with the Delaware Sediment and Stormwater Program Regulatory Guidance Documents, Post Construction Stormwater BMP Standards and Specifications as well as Standard Guidelines for Operation and Maintenance of Stormwater BMPs [Technical Document, Article 5. Maintenance of Permanent Stormwater Management Systems]. In addition, the following conditions ~~[shall]~~ must be met~~[-]~~:
  - a. *Grass mowing and trimming.* All grass within the limits of the stormwater management facility that is not under water ~~[shall]~~ must be mowed~~[and trimmed]~~ to a minimum height of ~~[three (3)]~~ four (4) inches and a maximum height of eight (8) inches, unless otherwise provided by a specific plan requirement. Clippings shall be either reduced to a fine mulch and distributed over the grassed area or disposed of in an appropriate location, but never within the vicinity of the stormwater management facility. ~~[Where possible, a ten (10) foot wide access path must be maintained around the perimeter of the facility and to all structural components, such as inlets, outfalls and outlet structures.]~~
  - b. *Debris removal.* Debris consisting of leaves, paper, trash, branches, dead vegetation and other material ~~[may accumulate within]~~ must be removed from the limits of the stormwater management facility~~[- especially at the outlet structure, low flow channels and inlets and outfalls, and must be removed promptly]~~ and its structural components. The debris shall be disposed of in an appropriate location, but never within the vicinity of the stormwater management facility.
  - c. ~~[Minor -s]~~ Sediment removal. The outlet structure, low flow channels, ~~[and]~~ headwall aprons, and facility outlet energy dissipator features must be kept clear of sediment~~[at all times]~~. Where a forebay is provided, sediment ~~[shall not be permitted to accumulate to where the forebay is more than half full of sediment]~~ must be removed when forebay capacity has been reduced to fifty (50) percent. All sediment collected from the stormwater management facility area shall be disposed of in an appropriate location, usually designated on the record plan, but never within the vicinity of the stormwater management facility.

- d. *Erosion, animal burrows and woody vegetation.* All eroded areas . . .
  - e. *Plant materials.* Where other plant materials are used, stalks shall be trimmed to no lower than twelve (12) inches in mid-March before new growth emerges. Appropriate herbicides shall be applied when needed. Any bare areas must be re-seeded or replanted as required based upon inspection findings.
  - f. *Dams.* Where check dams are used, materials that collect on the upstream face must be removed quarterly every year and after each rainfall event greater than one (1) inch. All vegetation with roots that extend within the check dam shall be removed and herbicides shall be applied as necessary.
  - g. *Mulch.* Bioretention facilities with mulch as a topdressing, must be maintained to a depth of three (3) inches every spring. Mulch must be triple shredded, non-dyed and aged for a minimum of six (6) months.
2. [~~General maintenance requirements for green technology stormwater best management practices (GTBMPs).~~]
- a. ~~*Sediment removal.* All visible sediment collected in the facility must be removed in the spring and fall of every year and after each rainfall event exceeding two (2) inches. Where a forebay is provided, sediment shall not be permitted to accumulate to where the forebay is more than half full of sediment. Removed sediment must be disposed of in an appropriate location, usually designated on the record plan, but never within the vicinity of the stormwater management facility.~~
  - b. ~~*Erosion, animal burrows, trees.* All eroded areas and animal burrows must be filled, compacted and stabilized with reinforcing erosion control products or turf reinforcing mats and/or reseeded and replanted.~~
  - c. ~~*Grass mowing and trimming.* Grass must be mowed regularly and kept to a height of a minimum of three (3) and a maximum of eight (8) inches at all times, except for bioswales, which shall be kept no lower than six (6) inches in height and no higher than eight (8) inches in height.~~
  - d. ~~*Plant materials.* Where other plant materials are used, stalks shall be trimmed to no lower than twelve (12) inches in mid March before new growth emerges. Appropriate herbicides shall be applied when needed. The area should be re-seeded or replanted as required based upon inspection findings.~~
  - e. ~~*Dams.* Where check dams are used, materials that collect on the upstream face must be removed. All vegetation with roots that extend within the check dam shall be removed and herbicides shall be applied as necessary.~~

- f. ~~Mulch. Triple shredded mulch must be added to bioretention facilities with mulch topdressing every spring in order to maintain a three (3) inch mulch depth.]~~

[3.] Inspections.

- a. All stormwater management facilities shall be inspected by the property owner(s) in the spring and fall of every year and after each rainfall event [~~in excess of two (2) inches~~] greater than one (1) inch.
- b. Underground stormwater management facilities must also be inspected annually by a qualified third-party inspector. The third-party inspection must document the condition of the facility, any necessary maintenance, and any repairs made.

[4]3. Maintenance log. A stormwater management facility inspection and maintenance log ("maintenance log") shall be maintained by the property owner(s) on a form obtainable from the Department of Public Works.

- a. The property owner(s) must submit the maintenance log and any underground stormwater management facility third-party inspection to the Department of Public Works on an annual basis, no later than January 31 of the following year. [~~The maintenance log must be certified and provide~~] The property owner(s) must certify that required maintenance has been performed.
- b. Maintenance logs and third-party inspections shall be maintained by the property owner(s) for a period of [~~five (5)~~] ten (10) years.

C. It is the responsibility of the County to keep all non-tidal streams in New Castle County, which are not under the jurisdiction of the U.S. Army Corps of Engineers, State of Delaware, DelDOT, a tax ditch organization, municipality, or any maintenance organization, open and free flowing. Unless necessary to maintain an open and free flowing condition, the County is not obligated to perform the following:

1. Removal of any object or material for aesthetic purposes:
2. Removal of vegetation, rock, tree debris, sediment or other similar natural source.
3. Alteration, reduction or enhancement of the rate of flow or water levels.

D. The County will assume the responsibility for maintaining an open and free flowing condition in [all non-tidal streams, communal] watercourses[;] and conveyance systems [which are necessary for proper drainage, in the discretion of the County, and subject to funding availability and] which are not already maintained by another public agency, tax ditch association, or maintenance organization if an adequate [right-of-way] easement exists or can be acquired. The County will undertake this responsibility provided that such watercourses[;] and drainage systems, newly constructed or approved, meet County design criteria and are affirmatively accepted by the County.

E. Maintenance of [~~“on-street”~~]drainage [~~facilities~~]systems or stormwater management facilities for publicly dedicated or owned streets and roads to the point of open discharge is the responsibility of DeIDOT once inspected and accepted by that agency. Maintenance of drainage systems or stormwater management facilities for privately-owned streets and roads to the point of open discharge is the responsibility of the owner or maintenance organization. New Castle County is not responsible for drainage systems or stormwater management facilities in private roadways.

F. Maintenance of drainage [~~facilities~~]systems or watercourses [~~and the control of the contribution of pollutants originating on [and entirely on] private [and/]or public property~~] are the responsibility of the property owner(s) to their point of [~~open~~] discharge at the property line[~~or at a communal watercourse within the property or to their point of piped discharge into a communal system~~], unless otherwise [~~dedicated~~]designated by a record plan or recorded agreement. [~~Private and/or public owners shall comply with this ordinance.~~] Maintenance of private or public property adjacent to watercourses is the responsibility of the property owner.

G. Resolution of drainage concerns created by a change in grade or through the placement of a blockage or an encumbrance that impacts drainage by a property owner to the detriment of an adjacent property owner is not the responsibility of New Castle County.

**Sec. 12.06.002. [~~Maintenance objectives.~~**

~~Maintenance of streams, watercourses, and drainage facilities will consist of keeping them open and free flowing to prevent, to the extent possible, flooding that will cause serious personal harm or significant property and/or structural damage.~~

**Sec. 12.06.003.] Permitting of maintenance activities.**

It is the responsibility of any person, corporation, or other entity planning any act on or across a [~~communal~~]stream, [~~or~~]watercourse or right-of-way thereof to acquire the necessary federal, state and local permits.

Section 7. *New Castle County Code* Chapter 12 (“Drainage”), Article 7 (“Drainage Improvements by New Castle County”), is hereby amended by adding the material that is underscored and deleting the material that is bracketed and stricken, as set forth below:

**ARTICLE 7. DRAINAGE IMPROVEMENTS BY NEW CASTLE COUNTY**

**Sec. 12.07.001. Qualification criteria.**

A. Improvements to [~~public and communal~~]watercourses, drainage systems and stormwater management [~~basins~~]facilities by New Castle County shall only be made:

1. To protect persons and property (specifically buildings) from serious harm and significant damage from flooding caused by storms of up to one hundred (100) year frequency;

2. To protect a dwelling unit(s) or attachment building(s) from structural damage because of flowing water;
3. To eliminate a public health hazard certified as such by the ~~[State Public Health Officer]~~Delaware Division of Public Health, provided other methods are not available or practical to eliminate the health hazard~~[-]; or~~
4. To comply with any other obligation of the County mandated by applicable law or permit.

B. Inundation of yards ~~[and/]~~or periodic basement flooding are not considered significant damage. Ponding ~~[and/]~~or failure of a lot to drain is not the responsibility of the County.

C. Improvements made with bond revenues must have a useful life of at least ten (10) years.

### **Sec. 12.07.002. Approval procedure.**

~~[A.]~~The following approval procedure will be followed for stream and watercourse improvements; however, every effort should be made with a minimal expenditure, to determine if County Council will ~~[approve]~~support the project, before any further study or expenditure.

~~[1]A.~~ A study will be made to establish and map the floodplain and delineate the wetlands along the watercourse.

~~[2]B.~~ A typical cross section of the improvements ~~[will]~~may be developed showing approximate widths, depths and type of construction.

~~[3]C.~~ Order of magnitude costs for proposed improvements ~~[will]~~may be developed.

~~[4]D.~~ A public hearing will be held with those property owners adjacent to the watercourse to obtain their comments regarding the drainage study and the proposed improvement(s).

~~[5]E.~~ An informal meeting will be held with County Council to ~~[reach a consensus concerning proceeding with project development and a determination will be made]~~provide information, timeline of project development and a recommendation to proceed or abandon the proposed improvement(s).

### **Sec. 12.07.003. Design and construction concerns.**

Improvements to streams and watercourses shall be designed and constructed to preserve and enhance the natural environment to the maximum extent ~~[practical]~~practicable. The design shall also conform to the provisions of ~~[this Chapter]~~the New Castle County Code, as amended.

Section 8. *New Castle County Code* Chapter 12 (“Drainage”), Article 8 (“Prohibitions, Enforcement, and Penalties”), is hereby amended by adding the material that is underscored and deleting the material that is bracketed and stricken, as set forth below:

## ARTICLE 8. PROHIBITIONS, ENFORCEMENT, AND PENALTIES

### Sec. 12.08.001. Prohibitions.

A. [~~General prohibition~~]General prohibition. Any person who shall violate any provision(s) of this Chapter...

B. [~~Specific prohibitions~~]Specific prohibitions. It shall be a violation of this Chapter to:

1. Discharge, or cause to allow to be discharged, sanitary sewage, industrial waste[s], sediment or other wastes into the storm sewer system, or any component thereof, or onto driveways, sidewalks, parking lots, or other areas draining to the storm sewer system; or
2. Connect, or cause or allow to be connected, any sanitary sewer or sump pumps to the storm sewer system, including any sanitary sewer connected to the storm sewer system as of the date of the adoption of this Ordinance; or
3. Discharge stormwater associated with industrial activity into the storm sewer system, or any component thereof, without State or County approval.

C. For a period of [~~two (2) years~~]one (1) year after the issuance of a certificate of occupancy or release of the performance guarantee for the project [~~termination of activity on the property~~], the County may require, subject to the notice requirements in this Article, the person to redress any conditions that arise from any failure to comply with the requirements of this [~~Code~~]Chapter or an approved plan regardless of whether or not it can be demonstrated that the [~~development complied with plans approved by the County~~]condition was identified by the County at the time of issuance or release.

D. Subject to the provisions of Subsection E, the following activities . . .

E. In the event any of the activities listed in Subsection D are found to cause sanitary sewage, industrial waste[(s)], sediment or other waste[(s)] to be discharged into the storm sewer system, New Castle County shall notify the person performing such activities and shall order such activities be stopped or conducted in such a manner as to avoid the discharge of sanitary sewage, industrial waste[(s)], sediment or other waste[(s)] into the storm sewer system.

### Sec. 12.08.002. Notice of violation.

A. At the discretion of the Code Official, whenever the Code Official determines that there has been a violation of this Code or has grounds to believe that a violation has occurred, notice shall be given to the owner or the person(s) responsible for the structure, facility or premises.

1. [~~Form~~]Form. Such notice shall:
  - a. Be in writing;

- b. Include ~~[a description of the real estate sufficient for identification]~~ the address or tax parcel identification number or a description of the property sufficient for identification;
  - c. Include a statement of the ~~[reason or reasons]~~ violation or violations and why the notice is being issued; and
  - d. Include a ~~[correction order allowing]~~ directive indicating a reasonable time to bring the structure, facility, or premises in compliance with the provisions of this [Code] Chapter.
2. ~~[Method of service]~~ Method of service. Such notice shall be deemed to be properly served if a copy is:
- a. Delivered ~~[to the owner]~~ personally to the owner; or
  - b. ~~[Sent by certified or registered mail]~~ Mailed by regular United States mail and addressed to the owner at [the]their last known address [with return receipt requested owner at the last known address with return receipt requested. If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the premises affected by such notice. Service of such notice in the foregoing manner upon the owner's agent, upon some person of suitable age and discretion residing on the premises, or upon the person responsible for the premises shall constitute service upon the owner.]as reflected by the County's records; or
  - c. Posted in a conspicuous place on the property affected by such notice; or
3. Method of service exception. In no case shall the Code Official be required to provide a violation notice to any owner or person responsible who was previously provided notice of the same violation during the course of an application.

### **Sec. 12.08.003. Inspection.**

~~[Right of entry]~~ Right of entry. When any Code Official has reasonable cause to believe that a code violation exists or when entry is required for periodic inspections and monitoring to determine compliance, then they are authorized to enter the structure or premises at reasonable times to inspect. Prior to inspection, the Code Official must make reasonable efforts to locate the owner or other person having charge or control of the structure or premises to request entry. If entry is refused or not obtained, the Code Official is authorized to pursue recourse as provided by law.

### **Sec. 12.08.004. Abatement of violation.**

A. *Stop work orders.* Upon notice from the Code Official that work on any premises is being done contrary to the provisions of this Code or in an unsafe and dangerous manner, such work shall be immediately stopped. The stop work order shall be in writing and shall be given to the

owner of the property involved, or the owner's agent, or to the person doing the work, and shall state the conditions under which work will be permitted to resume.

1. *Unlawful Continuance.* Any person who [~~shall~~]continues any work [~~in or about the structure~~]after having been served with a stop work order [~~, or on a property where a stop work placard was posted~~], except such work as that person has been directed to perform to remove a violation [~~of an~~]or unsafe condition, shall be considered to be in violation of this Chapter.
2. *Removal of Placard.* Any person ...

B. *Emergency measures.* When, in the opinion of the Code Official ...

### **Sec. 12.08.005. Enforcement.**

A. *Criminal enforcement.* Any person violating the provisions of this [~~Section shall~~]Chapter may be subject to a criminal proceeding instituted by the Code Official [~~and/~~]or the County Attorney [~~and subject to the fines outlined in Section 1.01.009~~]. It is unnecessary to prove the defendant's state of mind with regard to offenses which constitute violations as the legislative purpose is to impose strict liability for such offenses. [~~Each day that a continuing violation of any ordinance is maintained or permitted shall constitute a separate offense.~~]

1. A [~~willful~~] violation of the provisions of this Ordinance shall constitute a [~~Class 1~~] misdemeanor. If a penalty is not otherwise provided for, violators will be subject to a five hundred (\$500.00) dollar penalty. [~~Each day that a continuing violation of this Ordinance is maintained or permitted shall constitute a separate offense.~~]
2. Each day any violation of this Chapter is maintained shall constitute a separate offense for which a separate conviction may be obtained and a separate penalty for each day imposed.

B. *Civil enforcement.* Any person violating ...

C. *Administrative enforcement.* Any person in violation of this Chapter may be subject to any [~~one (1), any combination,~~]or all of the enforcement mechanisms listed below:

1. *Show cause hearing; imposition of fines.* The Code Official may conduct a show cause hearing to determine punitive measures to be instituted against the person(s) found to be violating this Chapter. Any person who intentionally commits any of the acts prohibited by this Chapter shall be subject to a civil penalty in an amount not less than five hundred dollars (\$500) and not to exceed [~~one~~]five thousand dollars (~~[\$1,000.00]~~5,000.00) for each day that a violation continues. These fines shall be in addition to any investigation fees.
2. *Refusal to issue permits to a violator.* If the Code Official finds any person or permit, license or certificate holder in violation of any of the provisions of this Code, or to have multiple expired permits outstanding, the Code Official may refuse to grant any further

building permits to such holder and all other legal entities with which said holder is associated ~~[with,]~~ until all violations have been corrected.

3. *Refusal to issue certificates to a violator.* If the Code Official finds any person or permit, license or certificate holder in violation of any of the provisions of this Code, or to have multiple expired permits outstanding, the Code Official may refuse to grant any further certificates of occupancy or completion to such holder and all other legal entities with which said holder is associated ~~[with,]~~ until all violations have been corrected.
4. *Stop work orders.* ~~[The County may issue "stop work orders" on all building permits the person has within New Castle County.]~~ Whenever the Code Official determines that work is being done contrary to this Chapter, or in an unsafe or dangerous manner, jeopardizes the health, safety, or welfare of the public, or is being done in the absence of a necessary approval, inspection, plan, or permit, such work shall be immediately stopped.
5. *Institution of remedial action.* The County may initiate action to remedy the violation.~~[a-]~~ Upon completion of such remedial work, the person shall be provided the opportunity to reimburse the County for the cost incurred. If the violator fails to reimburse the County within the time period specified, the County may:
  - ~~[i]~~a. Call or collect on any bond or insurance established for this purpose~~[-];~~
  - ~~[ii]~~b. Place a lien on any property within the County held by the person~~[-];~~ or
  - ~~[iii]~~c. Institute a civil action for the recovery of such expense, together and with any penalty and/or interest, against the person, and the County shall be awarded reasonable attorney fees.

#### **Sec. 12.08.006. Means of appeal.**

A. *Administrative decisions.* Any person aggrieved by a decision of ~~[any]~~the Code Official shall have the right to an appeal to the Board of License, Inspection and Review as prescribed ~~[in Sections 2.05.104 and 2.05.105. An application for appeal shall be based on a claim that the decision of the Code Official was arbitrary or capricious or was not taken pursuant to law.]~~ 9 *Del. C. § 1315.*

1. All appeals shall be filed with the Department of Land Use within twenty (20) business days of the date the written decision is issued by the Code Official. A public hearing will then be afforded to the appellant within forty-five (45) days of the filing of the appeal.
2. The Board may affirm, modify, reverse, vacate, or revoke the action appealed, provided that such action shall be affirmed by the Board if the action taken was not arbitrary or capricious or was not taken pursuant to law.

B. *Criminal proceedings.* Justices of the Peace shall have jurisdiction throughout the State to hear, try and finally determine any violation or violations of any ordinance. Only upon conviction does the defendant have the right to appeal to the Court of Common Pleas.

Section 9. *New Castle County Code Chapter 12 (“Drainage”), Appendix 1 (“FEES”),* is hereby amended by deleting the material that is bracketed and stricken, as set forth below:

[APPENDIX 1.— FEES

~~In order to reduce the cost to the public for review of subdivision and land development plans by the Department of Land Use as required by this Chapter, the following fees are established and collectible at the time of formal plan submission:~~

~~PLAN REVIEW~~

	<del>Minor/resubdivision plan, per plan</del>	<del>\$ 50.00</del>
	<del>Preliminary major subdivision plans:</del>	
	<del>Residential</del>	<del>250.00</del>
	<del>Plus, per lot</del>	<del>5.00</del>
	<del>Nonresidential</del>	<del>250.00</del>
	<del>Plus, per acre</del>	<del>10.00</del>
	<del>Record plan review and letter:</del>	
	<del>Residential</del>	<del>250.00</del>
	<del>Plus, per lot</del>	<del>5.00</del>
	<del>Nonresidential</del>	<del>250.00</del>
	<del>Plus, per acre</del>	<del>10.00</del>
	<del>Sanitary plans:</del>	
	<del>Requiring DNREC review</del>	<del>500.00</del>
	<del>Not requiring DNREC review</del>	<del>250.00</del>
	<del>Sewage pump station review, per station</del>	<del>500.00</del>
	<del>Process sewer/drainage agreement, per agreement</del>	<del>200.00</del>
	<del>Lines and grades plans:</del>	
	<del>Overall, per lot</del>	<del>15.00</del>
	<del>Individual, per lot</del>	<del>25.00</del>
	<del>General grading plans:</del>	
	<del>Residential:</del>	
	<del>Less than 25 lots, per plan</del>	<del>150.00</del>

		25—100 lots, per plan	200.00
		More than 100 lots, per plan	400.00
		Nonresidential:	
		Less than 5 acres, per plan	150.00
		5—25 acres, per plan	200.00
		26—75 acres, per plan	300.00
		More than 75 acres, per plan	400.00
		Review floodplain applications, per application	125.00
		Sewer inspections, per linear foot of sewer	2.50 ]

Section 10. New Castle County Council finds that the provisions of this Ordinance are consistent with the spirit and intent of the New Castle County Comprehensive Development Plan.

Section 11. All ordinances or parts of ordinances and all resolutions or parts of resolutions that may be in conflict herewith are hereby repealed except to the extent they remain applicable to land use matters reviewed under previous Code provisions as provided in Chapter 40 of the New Castle County Code.

Section 12. The provisions of this Ordinance shall be severable. If any provision of this Ordinance is found by any court of competent jurisdiction to be unconstitutional or void, the remaining provisions of this Ordinance shall remain valid, unless the court finds that the valid provisions of this Ordinance are so essentially and inseparably connected with, and so dependent upon, the unconstitutional or void provision that it cannot be presumed that County Council would have enacted the remaining valid provisions without the unconstitutional or void one, or unless the court finds that the remaining valid provisions, standing alone, are incomplete and incapable of being executed in accordance with County Council's intent. If any provision of this Ordinance or any zoning map or portion thereof is found to be unconstitutional or void, all applicable former ordinances, resolutions, zoning maps or portions thereof shall become applicable and shall be considered as continuations thereof and not as new enactments regardless if severability is possible.

Section 13. This Ordinance shall become effective immediately upon passage by New Castle County Council and signature of the County Executive or as otherwise provided in 9 Del. C § 1156.

Adopted by County Council of  
New Castle County on:

\_\_\_\_\_  
President of County Council

of New Castle County

Approved on:

County Executive  
New Castle County

**SYNOPSIS:** The following is a summary of the revisions contained in this ordinance broken down by New Castle County Code Division or Section number.

**Sec. 12.01.001.** This amendment removes the reference to a Chapter 12 appendix.

**Sec. 12.01.003.** This amendment updates several existing definitions, deletes terms no longer used and provides several new definitions.

**Sec. 12.01.004.** This amendment updates references to other publications.

**Sec. 12.02.001.** This amendment clarifies that a plan is to be submitted and approved by the County and may involve action by the Department of Land Use or the Department of Public Works or both. The term County is similarly substituted for the term Department of Land Use in several other sections of this Ordinance. This amendment updates a reference to state regulations and removes the reference to site development agreements, which have been replaced with Land Development Improvement Agreements. The reference to waivers is removed in favor a variance procedure.

**Sec. 12.02.003.** This amendment provides that the County may authorize the use of third-party professionals for plan approvals and site inspections.

**Sec. 12.02.004.** This amendment provides a new section authorizing variances, replacing an existing, less detailed standard for waivers.

**Sec. 12.03.001.** This amendment updates section formatting and requires the delineation of the FEMA 500-year floodplain to site construction documents.

**Sec. 12.03.002.** This amendment updates section formatting.

**Sec. 12.03.003.** This amendment updates section formatting, updates citations to and standards found in the international codes, increases the minimum slope on pervious services, removes drainage easement standards where such standards are consolidated elsewhere, clarifies standards for vegetative stabilization, provides a minimum separation between the lowest floor and the seasonal high-water table, and clarifies standards for groundwater outflows.

**Sec. 12.03.004.** This amendment updates section formatting and provides edits for clarity and consistency with the IBC and other sections of this Chapter.

**Sec. 12.03.005.** This amendment clarifies that a protection buffer must be provided even for resources that do not appear on a record plan. Stockpiling standards are removed from this section to be consistent with the UDC, which requires site work within a phase to be complete prior to home construction.

**Sec. 12.03.006.** This amendment provides edits for clarity and for consistency with Section 12.02.001.A. Lines and grades plans will not be required for certain structures without walls. An as-built plan to confirm grading on a residential lot prior to certificate of occupancy will be required.

**Sec. 12.04.001.** This amendment clarifies the section title and adjusts the requirements for designing open and closed channels. Drainage easement standards are consolidated in Section 12.04.005. An eighteen-inch freeboard requirement is provided for occupiable buildings. Drainage system discharge rates are made consistent with state sediment and stormwater regulations. The criteria for additional stormwater detention or offsite improvement to ensure adequate conveyance are simplified.

**Sec. 12.04.002.** This amendment removes surplus text, updates external references, provides edits for clarity and increases capacity requirements for certain conveyance systems.

**Sec. 12.04.003.** This amendment updates external references, provides edits for clarity, increases standards for materials to be consistent with the UDC and removes surplus text.

**Sec. 12.04.004.** This amendment increases standards for materials to be consistent with the UDC.

**Sec. 12.04.005.** This amendment consolidates regulations for drainage easements in a single section, where previously these regulations were found throughout the Drainage Code.

**Sec. 12.04.007.** This amendment requires as-builts for all designed conveyance systems and provides authority for the Code Official to require an as-built of any disturbed area.

**Sec. 12.05.001.** This amendment updates the reference to state regulations.

**Sec. 12.05.002.** This amendment removes references to fees that are captured in Appendix 2 of the UDC.

**Sec. 12.05.003.** This amendment clarifies the type of plan the County must approve for an applicant to engage in land disturbing activity.

**Sec. 12.05.004.** This amendment adds compliance with the County Code to the required plan certification.

**Sec. 12.05.005.** This amendment clarifies the conditions under which an approved plan may be altered and expands on the conditions necessary to obtain building, grading or other permits.

**Sec. 12.05.006.** This amendment updates references to authority and reorganizes the section for clarity. Design standards are provided to improve water quality. The reference to waivers is removed. Standards for stormwater management design are updated to reflect current practices.

**Sec. 12.05.007.** This amendment clarifies and expands on a developer's responsibilities with respect to construction review. A design professional must verify the drainage system and stormwater facilities function as intended.

**Article 6.** This amendment alters the title to more fully capture the scope of subsequent text.

**Sec. 12.06.001.** This amendment reorganizes and consolidates the section, updates terms for clarity, expands maintenance log requirements and clarifies the County's limited responsibility to address drainage concerns.

**Sec. 12.06.002.** This amendment removes the standard for maintenance objectives, as these have been incorporated into Section 12.06.001. Former Section 12.06.003 is edited for clarity and moved to Section 12.06.002.

**Sec. 12.07.001.** This amendment clarifies that the County may make improvements to comply with applicable authority. Section B is edited for clarity.

**Sec. 12.07.002.** This amendment clarifies the parameters for making a recommendation to County Council for stream or watercourse improvement and corrects formatting.

**Sec. 12.07.003.** This amendment provides edits for clarity.

**Sec. 12.08.001.** This amendment provides edits for clarity and limits the time requirement for a contractor to redress drainage problems.

**Sec. 12.08.002.** This amendment provides procedures for a notice of violation to be more aligned with other County Code enforcement sections, including the use of regular U.S. mail, and an exception where service is not required for duplicate violations within twelve (12) months.

**Sec. 12.08.004.** This amendment provides edits for clarity.

**Sec. 12.08.005.** This amendment provides standards consistent with other County Code enforcement section and updates administrative enforcement penalties.

**Sec. 12.08.006.** This amendment provides appeal standards consistent with Delaware Code and other County Code provisions.

**Appendix 1** is deleted.

**FISCAL NOTE:**