TOWNSHIP OF BURLINGTON

ORDINANCE

2024-OR-024

ORDINANCE AMENDING IN ITS ENTIRETY LAND DEVELOPMENT SECTION 330-87 "STORMWATER MANAGEMENT"

WHEREAS, Section 330-87 of the Land Development Ordinance of the Township of Burlington contains requirements related to the regulation of surface (stormwater) drainage; and

WHEREAS, the recently revised NJDEP Stormwater Management Rules (N.J.A.C. 7:8) requires municipalities, through their Municipal Stormwater General Permits, to adopt an ordinance establishing minimum stormwater management standards and controls for both current and future projected rainfall events and also to make minor technical modifications; and

WHEREAS, the existing stormwater management regulations set forth in Land Development Code Section 330-87 do not meet the new standards and controls.

BE IT ORDAINED by the Township Council of the Township of Burlington, County of Burlington and State of New Jersey as follows:

Section 1. Section 330-87 is hereby deleted in its entirety and replaced with new Section 330-87 entitled "Stormwater Management", which is set forth hereinafter.

Section 2. All Ordinances or parts of Ordinances inconsistent with the provisions hereof, are hereby repealed insofar as said inconsistency exists.

Section 3. This Ordinance shall take effect immediately upon final passage and approval by the County Review Agency, or sixty (60) days from the receipt of the ordinance by the County Review Agency if the County Review Agency should fail to act.

§330-87 Stormwater Management.

A. General.

I. Policy Statement. Flood control, groundwater recharge, and pollutant reduction shall be achieved through the use of stormwater management measures, including green infrastructure Best Management Practices (GI BMPs) and nonstructural stormwater management strategies. GI BMPs and low impact development (LID) should be utilized to meet the goal of maintaining natural hydrology to reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution. GI BMPs and LID should be developed based upon physical site conditions and the origin, nature and the anticipated quantity, or amount, of potential pollutants. Multiple stormwater management BMPs may be necessary to achieve the established performance standards for water quality, quantity, and groundwater recharge.

II. Purpose. It is the purpose of this section to:

(a) Establish minimum stormwater management requirements and controls for "major development," as defined in subsection B, or any improvements which may create an adverse drainage impact.

(b) Assure the stormwater management design and methodology for new development and redevelopment is consistent with the goals, strategies, and design and performance standards set forth in the Burlington Township Municipal Stormwater Management Plan.

III. Applicability.

(a) This ordinance shall be applicable to all site plans and subdivisions for the following major developments that require preliminary or final site plan or subdivision review:

i. Non-residential major developments; and

ii. Aspects of residential major developments that are not pre-empted by the Residential Site Improvement Standards N.J.A.C. 5:21.

(b) This ordinance shall also be applicable to all major developments undertaken by Burlington Township.

(c) An application required by ordinance pursuant to III(a) above that has been submitted prior to June 25, 2024, shall be subject to the stormwater management requirements in effect on June 24, 2024.

(d) An application required by ordinance for approval pursuant to III(a) above that has been submitted on or after March 2, 2021, but prior to June 25, 2024, shall be subject to the stormwater management requirements in effect on June 24, 2024.

(e) Notwithstanding any rule to the contrary, a major development for any public roadway or railroad project conducted by a public transportation entity that has determined a preferred alternative or reached an equivalent milestone before July 17, 2023, shall be subject to the stormwater management requirements in effect prior to July 17, 2023.

(f) This ordinance shall also be applicable to any improvements requiring a Planning or Zoning Board Approval or Use Permit and which will result in an overall net increase in stormwater peak runoff rates or volumes, which in the opinion of the Reviewing Board Engineer or Township Engineer, may create an adverse impact due to existing site conditions; the absence of drainage facilities; or a lack of capacity within the existing stormwater management system to which runoff is being conveyed.

IV. Compatibility with Other Permit and Ordinance Requirements. Development approvals issued for subdivisions and site plans pursuant to this ordinance are to be considered an integral part of development approvals under the subdivision and site plan review process and do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance. In their interpretation and application, the provisions of this ordinance shall be held to be the minimum requirements for the promotion of the public health, safety, and general welfare. This ordinance is not intended to interfere with, abrogate, or annul any other ordinances, rule or regulation, statute, or other provision of law except that, where any provision of this ordinance imposes restrictions different from those imposed by any other ordinance, rule or regulation, or other provision of law, the more restrictive provisions or higher standards shall control.

B. Definitions. For the purpose of this section, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this Chapter clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory. The definitions below are the same as or based on the corresponding definitions in the Stormwater Management Rules at N.J.A.C. 7:8-1.2.

"CAFRA Centers, Cores or Nodes" means those areas with boundaries incorporated by reference or revised by the Department in accordance with N.J.A.C. 7:7-13.16.

"CAFRA Planning Map" means the map used by the Department to identify the location of Coastal Planning Areas, CAFRA centers, CAFRA cores, and CAFRA nodes. The CAFRA Planning Map is available on the Department's Geographic Information System (GIS).

"Community basin" means an infiltration system, sand filter designed to infiltrate, standard constructed wetland, or wet pond, established in accordance with N.J.A.C. 7:8-4.2(c)14, that is designed and constructed in accordance with the New Jersey Stormwater Best Management Practices Manual, or an alternate design, approved in accordance with N.J.A.C. 7:8-5.2(g), for an infiltration system, sand filter designed to infiltrate, standard constructed wetland, or wet pond and that complies with the requirements of this chapter.

"Compaction" means the increase in soil bulk density.

"Contributory drainage area" means the area from which stormwater runoff drains to a stormwater management measure, not including the area of the stormwater management measure itself.

"Core" means a pedestrian-oriented area of commercial and civic uses serving the surrounding municipality, generally including housing and access to public transportation.

"County review agency" means an agency designated by the Board of County Commissioners to review municipal stormwater management plans and implementing ordinance(s). The county review agency may either be:

1. A county planning agency or
2. A county water resource association created under N.J.S.A 58:16A-55.5, if the ordinance or resolution delegates authority to approve, conditionally approve, or disapprove municipal stormwater management plans and implementing ordinances.

"Department" means the Department of Environmental Protection.

"Designated Center" means a State Development and Redevelopment Plan Center as designated by the State Planning Commission such as urban, regional, town, village, or hamlet.

"Design engineer" means a person professionally qualified and duly licensed in New Jersey to perform engineering services that may include, but not necessarily be limited to, development of project requirements, creation and development of project design and preparation of drawings and specifications.

"Development" means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlarge-enlargement of any building or structure, any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land, for which permission is required under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq. In the case of development of agricultural land, development means: any activity that requires a State permit, any activity reviewed by the County Agricultural Board (CAB) and the State Agricultural Development Committee (SADC), and municipal review of any activity not exempted by the Right to Farm Act , N.J.S.A 4:1C-1 et seq.

"Disturbance" means the placement or reconstruction of impervious surface or motor vehicle surface, or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation. Milling and repaving is not considered disturbance for the purposes of this definition.

“Drainage area” means a geographic area within which stormwater, sediments, or dissolved materials drain to a particular receiving waterbody or to a particular point along a receiving waterbody.

“Environmentally constrained area” means the following areas where the physical alteration of the land is in some way restricted, either through regulation, easement, deed restriction or ownership such as: wetlands, floodplains, threatened and endangered species sites or designated habitats, and parks and preserves. Habitats of endangered or threatened species are identified using the Department's Landscape Project as approved by the Department's Endangered and Nongame Species Program.

“Environmentally critical area” means an area or feature which is of significant environmental value, including but not limited to: stream corridors, natural heritage priority sites, habitats of endangered or threatened species, large areas of contiguous open space or upland forest, steep slopes, and well head protection and groundwater recharge areas. Habitats of endangered or threatened species are identified using the Department’s Landscape Project as approved by the Department’s Endangered and Nongame Species Program.

“Empowerment Neighborhoods” means neighborhoods designated by the Urban Coordinating Council “in consultation and conjunction with” the New Jersey Redevelopment Authority pursuant to N.J.S.A 55:19-69.

“Erosion” means the detachment and movement of soil or rock fragments by water, wind, ice, or gravity.

“Green infrastructure” means a stormwater management measure that manages stormwater close to its source by:

1. Treating stormwater runoff through infiltration into subsoil;
2. Treating stormwater runoff through filtration by vegetation or soil; or
3. Storing stormwater runoff for reuse.

"HUC 14" or "hydrologic unit code 14" means an area within which water drains to a particular receiving surface water body, also known as a subwatershed, which is identified by a 14-digit hydrologic unit boundary designation, delineated within New Jersey by the United States Geological Survey.

“Impervious surface” means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water.

“Infiltration” is the process by which water seeps into the soil from precipitation.

“Lead planning agency” means one or more public entities having stormwater management planning authority designated by the regional stormwater management planning committee pursuant to N.J.A.C. 7:8-3.2, that serves as the primary representative of the committee.

“Major development” means an individual “development,” as well as multiple developments that individually or collectively result in:

1. The disturbance of one or more acres of land since February 2, 2004;
2. The creation of one-quarter acre or more of “regulated impervious surface” since February 2, 2004;
3. The creation of one-quarter acre or more of “regulated motor vehicle surface” since March 2, 2021; or
4. A combination of 2 and 3 above that totals an area of one-quarter acre or more. The same surface shall not be counted twice when determining if the combination area equals one-quarter acre or more.

Major development includes all developments that are part of a common plan of development or sale (for example, phased residential development) that collectively or individually meet any one or more of 1, 2, 3, or 4 above. Projects undertaken by any government agency that otherwise meet the definition of “major development”

but which do not require approval under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq., are also considered "major development."

"Maximum extent practicable" means the implementation of BMPs for a particular site when considering various factors, to include physical conditions, economic viability, project size and location within the watershed, and such other factors as may be considered by the reviewing board.

"Motor vehicle" means land vehicles propelled other than by muscular power, such as automobiles, motorcycles, autocycles, and low speed vehicles. For the purposes of this definition, motor vehicle does not include farm equipment, snowmobiles, all-terrain vehicles, motorized wheelchairs, go-carts, gas buggies, golf carts, ski-slope grooming machines, or vehicles that run only on rails or tracks.

"Municipality" means the Township of Burlington.

"New Jersey Stormwater Best Management Practices (BMP) Manual" or "BMP Manual" means the manual maintained by the Department providing, in part, design specifications, removal rates, calculation methods, and soil testing procedures approved by the Department as being capable of contributing to the achievement of the stormwater management standards specified in this chapter. The BMP Manual is periodically amended by the Department as necessary to provide design specifications on additional best management practices and new information on already included practices reflecting the best available current information regarding the particular practice and the Department's determination as to the ability of that best management practice to contribute to compliance with the standards contained in this chapter. Alternative stormwater management measures, removal rates, or calculation methods may be utilized, subject to any limitations specified in this chapter, provided the design engineer demonstrates to the municipality, in accordance with subsection C.II.(f) and N.J.A.C. 7:8-5.2(g), that the proposed measure and its design will contribute to achievement of the design and performance standards established by this chapter.

"Node" means an area designated by the State Planning Commission concentrating facilities and activities which are not organized in a compact form.

"Nutrient" means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the development of organisms.

"Person" means any individual, corporation, company, partnership, firm, association, political subdivision of this State and any state, interstate or Federal agency.

"Pollutant" means any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§ 2011 *et seq*.)), thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt, industrial, municipal, agricultural, and construction waste or runoff, or other residue discharged directly or indirectly to the land, ground waters or surface waters of the State, or to a domestic treatment works. "Pollutant" includes both hazardous and nonhazardous pollutants.

"Public roadway or railroad" means a pathway for use by motor vehicles or trains that is intended for public use and is constructed by, or on behalf of, a public transportation entity. A public roadway or railroad does not include a roadway or railroad constructed as part of a private development, regardless of whether the roadway or railroad is ultimately to be dedicated to and/or maintained by a governmental entity.

"Public transportation entity" means a Federal, State, county, or municipal government, an independent State authority, or a statutorily authorized public-private partnership program pursuant to P.L. 2018, c. 90 (N.J.S.A. 40A:11-52 et seq.), that performs a public roadway or railroad project that includes new construction, expansion, reconstruction, or improvement of a public roadway or railroad.

“Recharge” means the amount of water from precipitation that infiltrates into the ground and is not evapotranspired.

“Regulated impervious surface” means any of the following, alone or in combination:

1. A net increase of impervious surface;
2. The total area of impervious surface collected by a new stormwater conveyance system (for the purpose of this definition, a “new stormwater conveyance system” is a stormwater conveyance system that is constructed where one did not exist immediately prior to its construction or an existing system for which a new discharge location is created);
3. The total area of impervious surface proposed to be newly collected by an existing stormwater conveyance system; and/or
4. The total area of impervious surface collected by an existing stormwater conveyance system where the capacity of that conveyance system is increased.

“Regulated motor vehicle surface” means any of the following, alone or in combination:

1. The total area of motor vehicle surface that is currently receiving water;
2. A net increase in motor vehicle surface; and/or quality treatment either by vegetation or soil, by an existing stormwater management measure, or by treatment at a wastewater treatment plant, where the water quality treatment will be modified or removed.

“Reviewing Board Engineer” means the duly appointed Planning Board or Zoning Board Engineer.

“Sediment” means solid material, mineral or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water or gravity as a product of erosion.

“Site” means the lot or lots upon which a major development is to occur or has occurred.

“Soil” means all unconsolidated mineral and organic material of any origin.

“State Development and Redevelopment Plan Metropolitan Planning Area (PA1)” means an area delineated on the State Plan Policy Map and adopted by the State Planning Commission that is intended to be the focus for much of the State’s future redevelopment and revitalization efforts.

“State Plan Policy Map” is defined as the geographic application of the State Development and Redevelopment Plan’s goals and statewide policies, and the official map of these goals and policies.

“Stormwater” means water resulting from precipitation (including rain and snow) that runs off the land’s surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.

“Stormwater management BMP” means a device, excavation or embankment and related areas designed to retain stormwater runoff and includes measures that are intended to reduce, control and/or treat stormwater runoff impacts through sound site planning and design. A stormwater management BMP may either be normally dry (that is, a detention basin or infiltration system), retain water in a permanent pool (a retention basin/wet pond), or be planted mainly with wetland vegetation (most constructed stormwater wetlands).

“Stormwater management measure” means any practice, technology, process, program, or other method intended to control or reduce stormwater runoff and

associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal non-stormwater discharges into stormwater conveyances.

“Stormwater runoff” means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

“Stormwater management planning agency” means a public body authorized by legislation to prepare stormwater management plans.

“Stormwater management planning area" means the geographic area for which a stormwater management planning agency is authorized to prepare stormwater management plans, or a specific portion of that area identified in a stormwater management plan prepared by that agency.

“Tidal Flood Hazard Area” means a flood hazard area in which the flood elevation resulting from the two-, 10-, or 100-year storm, as applicable, is governed by tidal flooding from the Atlantic Ocean. Flooding in a tidal flood hazard area may be contributed to, or influenced by, stormwater runoff from inland areas, but the depth of flooding generated by the tidal rise and fall of the Atlantic Ocean is greater than flooding from any fluvial sources. In some situations, depending upon the extent of the storm surge from a particular storm event, a flood hazard area may be tidal in the 100-year storm, but fluvial in more frequent storm events.

“Urban Coordinating Council Empowerment Neighborhood” means a neighborhood given priority access to State resources through the N.J. Redevelopment Authority.

“Urban Enterprise Zones” means a zone designated by the New Jersey Enterprise Zone Authority pursuant to the New Jersey Urban Enterprise Zones Act, N.J.S.A. 52:27H-60 et. seq.

“Urban Redevelopment Area” is defined as previously developed portions of areas:

1. Delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1), Designated Centers, Cores or Nodes;
2. Designated as CAFRA Centers, Cores or Nodes;
3. Designated as Urban Enterprise Zones; and
4. Designated as Urban Coordinating Council Empowerment Neighborhoods.

“Water control structure” means a structure within, or adjacent to, a water, which intentionally or coincidentally alters the hydraulic capacity, the flood elevation resulting from the two-, 10-, or 100-year storm, flood hazard area limit, and/or floodway limit of the water. Examples of a water control structure may include a bridge, culvert, dam, embankment, ford (if above grade), retaining wall, and weir.

“Waters of the State” means the ocean and its estuaries, all springs, streams, wetlands, and bodies of surface or groundwater, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction.

“Wetlands” or “wetland” means a regulated area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

C. General Standards.

I. Design and performance standards for stormwater management measures.

(a) All developments shall be required to provide for surface drainage within the limits of the project to insure it will not create a burden to the ultimate users of the property or create an adverse off-site effect. All streets shall be provided with catch basins and pipes where the same may be necessary for proper surface drainage. The stormwater

management system shall be adequate to convey and/or store runoff and natural drainage water which originates within the development boundaries and that which also originates beyond the development boundaries but which passes through the development. Calculations shall be based upon the maximum potential development as permitted under this Ordinance. No stormwater runoff or natural drainage water shall be so diverted as to overload existing drainage systems or create flooding or the need for additional drainage structures on adjacent lands without proper and approved provisions being made for managing these conditions. Stormwater management measures for non-major development projects may be required, at the discretion of the Reviewing Board Engineer or Township Engineer, to incorporate any of the strategies and to meet the standards set forth in this ordinance, depending on the specific impact of project.

(b) Stormwater management measures for major development shall be designed to provide erosion control, groundwater recharge, stormwater runoff quantity control, and stormwater runoff quality treatment as follows:

1. The minimum standards for erosion control are those established under the Soil and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules at N.J.A.C. 2:90.
2. The minimum standards for groundwater recharge, stormwater quality, and stormwater runoff quantity shall be met by incorporating green infrastructure.

(c) The standards in this section do not apply to new major development to the extent that alternative design and performance standards, which provide at least as much protection from stormwater-related loss of groundwater recharge, stormwater quantity and water quality impacts of major development projects as would be provided under the standards in N.J.A.C.7:8-5, are applicable under a regional stormwater management plan or Water Quality Management Plan adopted in accordance with Department rules.

II. Stormwater management requirements for major development.

(a) The development shall incorporate a maintenance plan for the stormwater management measures incorporated into the design of a major development in accordance with subsection C.VII.(c)7.

(b) Stormwater management measures shall avoid adverse impacts of concentrated flow on habitat for threatened and endangered species as documented in the Department's Landscape Project or Natural Heritage Database established under N.J.S.A. 13:1B-15.147 through 15.150, particularly *Helonias bullata* (swamp pink) and/or *Clemmys muhlnebergi* (bog turtle).

(c) The following linear development projects are exempt from the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity requirements of subsections C.II.(o), (p) and (q):

1. The construction of an underground utility line provided that the disturbed areas are revegetated upon completion;
2. The construction of an aboveground utility line provided that the existing conditions are maintained to the maximum extent practicable; and
3. The construction of a public pedestrian access, such as a sidewalk or trail with a maximum width of 14 feet, provided that the access is made of permeable material.

(d) A waiver from strict compliance from the green infrastructure, groundwater recharge, stormwater runoff quality, and stormwater runoff quantity requirements of subsections C.II.(o), (p) and (q) may be obtained for the enlargement of an existing public roadway or railroad; or the construction or enlargement of a public pedestrian access, provided that the following conditions are met:

1. The applicant demonstrates that there is a public need for the project that cannot be accomplished by any other means;

2. The applicant demonstrates through an alternatives analysis that, through the use of stormwater management measures, the option selected complies with the intent of this chapter to the maximum extent practicable;
3. The applicant demonstrates that, in order to comply with the requirements of this chapter, existing structures currently in use, such as homes and buildings, would need to be condemned; and

4. The applicant demonstrates that it does not own or have other rights to areas, including the potential to obtain through condemnation, lands not falling under 3 above, within the upstream drainage area of the receiving stream that would provide additional opportunities to mitigate those requirements which were not achievable onsite;
5. The applicant demonstrates that implementing the stormwater management measures would present an adverse impact to public health, safety or the environment.

(e) Tables 1 through 3 below summarize the ability of stormwater best management practices identified and described in the New Jersey Stormwater Best Management Practices Manual to satisfy the green infrastructure, groundwater recharge, stormwater runoff quality and stormwater runoff quantity standards specified in this section. When designed in accordance with the most current version of the New Jersey Stormwater Best Management Practices Manual, the stormwater management measures found at N.J.A.C. 7:8-5.2 (f) Tables 5-1, 5-2 and 5-3 and listed below in Tables 1, 2 and 3 are presumed to be capable of providing stormwater controls for the design and performance standards as outlined in the tables below.

Upon amendments of the New Jersey Stormwater Best Management Practices to reflect additions or deletions of BMPs meeting these standards, or changes in the presumed performance of BMPs designed in accordance with the New Jersey Stormwater BMP Manual, the Department shall publish in the New Jersey Registers a notice of administrative change revising the applicable table. The most current version of the BMP Manual can be found on the Department's website at: https://dep.nj.gov/stormwater/bmp-manual/

Where the BMP tables in the NJ Stormwater Management Rule are different due to updates or amendments with the tables in this ordinance the BMP Tables in the Stormwater Management rule at N.J.A.C. 7:8-5.2(f) shall take precedence.

Table 1
Green Infrastructure BMPs for Groundwater Recharge, Stormwater Runoff Quality, and/or Stormwater Runoff Quantity

Best Management Practice	Stormwater Runoff Quality TSS Removal Rate (percent)	Stormwater Runoff Quantity	Groundwater Recharge	Minimum Separation from Seasonal High Water Table (feet)
Cistern	0	Yes	No	--
Dry Well[a]	0	No	Yes	2
Grass Swale	50 or less	No	No	2[e] 1[f]
Green Roof	0	Yes	No	--
Manufactured Treatment Device[a] [g]	50 or 80	No	No	Dependent upon the device
Pervious Paving System[a]	80	Yes	Yes[b] No[c]	2[b] 1[c]

Small-Scale Bioretention Basin[a]	80 or 90	Yes	Yes[b] No[c]	2[b] 1[c]
Small-Scale Infiltration Basin[a]	80	Yes	Yes	2
Small-Scale Sand Filter	80	Yes	Yes	2
Vegetative Filter Strip	60-80	No	No	--

Table 2
Green Infrastructure BMPs for Stormwater Runoff Quantity (or for Groundwater Recharge and/or Stormwater Runoff Quality with a Waiver or Variance from N.J.A.C. 7:8-5.3)

Best Management Practice	Stormwater Runoff Quality TSS Removal Rate (percent)	Stormwater Runoff Quantity	Groundwater Recharge	Minimum Separation from Seasonal High Water Table (feet)
Bioretention System	80 or 90	Yes	Yes[b] No[c]	2[b] 1[c]
Infiltration Basin	80	Yes	Yes	2
Sand Filter[b]	80	Yes	Yes	2
Standard Constructed Wetland	90	Yes	No	N/A
Wet Pond[d]	50-90	Yes[i]	No	N/A

Table 3
BMPs for Groundwater Recharge, Stormwater Runoff Quality, and/or Stormwater Runoff Quantity only with a Waiver or Variance from N.J.A.C. 7:8-5.3

Best Management Practice	Stormwater Runoff Quality TSS Removal Rate (percent)	Stormwater Runoff Quantity	Groundwater Recharge	Minimum Separation from Seasonal High Water Table (feet)
Blue Roof	0	Yes	No	N/A
Extended Detention Basin	40-60	Yes	No	1
Manufactured Treatment Device[h]	50 or 80	No	No	Dependent upon the device
Sand Filter[c]	80	Yes	No	1
Subsurface Gravel Wetland	90	No	No	1
Wet Pond	50-90	Yes	No	N/A

Notes to Tables 1, 2, and 3:

(a) subject to the applicable contributory drainage area limitation specified in subsection C.II.(n)2.;
(b) designed to infiltrate into the subsoil;
(c) designed with underdrains;
(d) designed to maintain at least a 10-foot wide area of native vegetation along at least 50 percent of the shoreline and to include a stormwater runoff retention component designed to capture stormwater runoff for beneficial reuse, such as irrigation;
(e) designed with a slope of less than two percent;
(f) designed with a slope of equal to or greater than two percent;
(g) manufactured treatment devices that meet the definition of green infrastructure in subsection B.;
(h) manufactured treatment devices that do not meet the definition of green infrastructure in subsection B;
(i) storage may only be presumed to be available above the elevation of seasonal high groundwater.

(f) An alternative stormwater management measure, alternative removal rate, and/or alternative method to calculate the removal rate may be used if the design engineer demonstrates the capability of the proposed alternative stormwater management measure and/or the validity of the alternative rate or method to the municipality. A copy of any approved alternative stormwater management measure, alternative removal rate, and/or alternative method to calculate the removal rate shall be provided to the Department in accordance with subsection C.IV.(b). Alternative stormwater management measures may be used to satisfy the requirements in subsection C.II.(n) only if the measures meet the definition of green infrastructure at subsection B. Alternative stormwater management measures that function in a similar manner to a BMP listed in subsection C.II.(n)2. are subject to the contributory drainage area limitation specified therein for that similarly functioning BMP. Alternative stormwater management measures approved in accordance with this subsection that do not function in a similar manner to any BMP listed at subsection C.II.(n)2. shall have a contributory drainage area less than or equal to 2.5 acres, except for alternative stormwater management measures that function similarly to cisterns, grass swales, green roofs, standard constructed wetlands, vegetative filter strips, and wet ponds, which are not subject to a contributory drainage area limitation. Alternative measures that function similarly to standard constructed wetlands or wet ponds shall not be used for compliance with the stormwater runoff quality standard unless a variance in accordance with N.J.A.C. 7:8-4.6 or a waiver from strict compliance in accordance with subsection C.II.(d) is granted.

(g) Whenever the stormwater management design includes one or more BMPs that will infiltrate stormwater into subsoil, the design engineer shall assess the hydraulic impact on the groundwater table and design the site, so as to avoid adverse hydraulic impacts. Potential adverse hydraulic impacts include, but are not limited to, exacerbating a naturally or seasonally high water table, so as to cause surficial ponding, flooding of basements, or interference with the proper operation of subsurface sewage disposal systems or other subsurface structures within the zone of influence of the groundwater mound, or interference with the proper functioning of the stormwater management measure itself.

(h) Design standards for stormwater management measures are as follows:

1. Stormwater management measures shall be designed to consider the existing site conditions, including, but not limited to, environmentally critical areas; wetlands; flood-prone areas; slopes; depth to seasonal high water table; soil type, permeability, and texture; drainage area and drainage patterns; and the presence of solution-prone carbonate rocks (limestone).
2. Stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning. Trash racks shall be installed at the intake to the outlet structure, as appropriate, and shall have parallel bars with one-inch spacing between the bars to the elevation of the water quality design storm. For elevations higher than the water quality design storm, the parallel bars at the outlet structure shall be spaced no greater than one-third the width of the diameter of the

orifice or one-third the width of the weir, with a minimum spacing between bars of one inch and a maximum spacing between bars of six inches. In addition, the design of trash racks must comply with the requirements of subsection C.V.(a).

3. Stormwater management measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant. Measures that are consistent with the relevant portions of the Residential Site Improvement Standards at N.J.A.C. 5:21-7.3, 7.4, and 7.5 shall be deemed to meet this requirement.
4. Stormwater management BMPs shall be designed to meet the minimum safety standards for stormwater management BMPs in subsection C.VI.
5. The size of the orifice at the intake to the outlet from the stormwater management BMP shall be a minimum of two and one-half inches in diameter.
6. The general design of all stormwater management facilities shall conform with the criteria set forth in the New Jersey Department of Environmental Protection's Best Management Practices Manual, as amended, and N.J.A.C. 5:21-7.8, with the following additional requirements:

   i. Infiltration basins shall be constructed with an infiltration trench along the bottom of the basin. The trench shall be a minimum of three feet wide and three feet deep and shall be lined (bottom and both sides) with an approved filter fabric and filled with coarse aggregate. It shall extend for the full length of the basin bottom in its longest dimension.
   ii. Wet ponds shall be designed with a minimum pool depth of four feet. If required by the reviewing board engineer, wet ponds shall be provided with an aerator and a water service to allow for replenishing the pond during extended periods of dry weather.

   iii. Any basin or other stormwater management facility located within 400 feet of a residential dwelling or public road, which will pond water to a depth greater than 18 inches, is required to be completely enclosed with a minimum four-foot-high fence with lockable gate in accordance with Chapter 590, Water Collection Areas; Excavation Fencing, of the Code of Burlington Township.
   iv. Unless exempted by the Reviewing Board, all surface stormwater management basins designed to treat water quantity in excess of the water-quality design storm shall have an emergency spillway along the basin berm that is capable of safely conveying the inflow from the maximum design storm while maintaining a minimum of 12" of freeboard as measured between the top of the basin (at the spillway) and the water surface elevation of the discharge being conveyed through the spillway. Potential settlement shall be considered in this design. In those cases where the construction of an emergency spillway is not physically possible, and the stormwater management basin is not equipped with an outlet structure that is designed to function as the principal spillway, the basin shall be designed to store the volume of runoff generated by back-to-back one-hundred-year design storms.
   v. For the purpose of calculating runoff curve numbers, the surface area below the elevation of the 100-year design storm in any stormwater management surface BMP that does not provide groundwater recharge in accordance with Tables 1, 2 and 3 herein shall be considered to be impervious.
   vi. Basins and other stormwater facilities which are designed with a positive outflow shall discharge into a stable outlet structure, whether natural or man-made. Stability calculations based on the 100-year design storm outflow shall be submitted to the County Soil Conservation District.
   vii. Design engineers shall locate basins and other stormwater facilities so as to not interfere with or adversely affect existing surface waters on or adjacent to the site. Excavation for extended detention facilities shall be designed to be the maximum practical distance above seasonal high groundwater elevation. Extended detention basins shall be designed to completely empty after a rainstorm occurs and have standing water for a short period of time during a storm.

(i) Manufactured treatment devices ("MTDs") may be used to meet the requirements of this section, provided the pollutant removal rates are verified by the NJ

Corporation for Advanced Technology and certified by the Department. MTDs that do not meet the definition of green infrastructure in subsection B may be used only under the circumstances described in subsection C.II.(n)4.

(j) Any application for a new agricultural development that meets the definition of major development in subsection B shall be submitted to the Soil Conservation District for review and approval in accordance with the requirements in subsections C.II.(n), (o), (p) and (q) and any applicable Soil Conservation District guidelines for stormwater runoff quantity and erosion control. For purposes of this subsection, "agricultural development" means land uses normally associated with the production of food, fiber, and livestock for sale. Such uses do not include the development of land for the processing or sale of food and the manufacture of agriculturally related products.

(k) If there is more than one drainage area, the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards in subsections C.II.(o), (p) and (q) shall be met in each drainage area, unless the runoff from the drainage areas converge onsite and no adverse environmental impact would occur as a result of compliance with any one or more of the individual standards being determined utilizing a weighted average of the results achieved for that individual standard across the affected drainage areas.

(l) Any stormwater management measure authorized under the municipal stormwater management plan or ordinance shall be reflected in a deed notice recorded in the Office of the Burlington County Clerk. A form of deed notice shall be submitted to the Township Engineer for approval prior to filing. The deed notice shall contain a description of the stormwater management measure(s) used to meet the green infrastructure, groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards in subsections C.II.(n), (o), (p) and (q). and shall identify the location of the stormwater management measure(s) in NAD 1983 State Plane New Jersey FIPS 2900 US Feet or Latitude and Longitude in decimal degrees. The deed notice shall also reference the maintenance plan required to be recorded upon the deed pursuant to subsection C.VIII.(b)5. Prior to the commencement of construction, proof that the above required deed notice has been filed shall be submitted to the Township Engineer and Township Clerk. Proof that the required information has been recorded on the deed shall be in the form of either a copy of the complete recorded document or a receipt from the clerk or other proof of recordation provided by the recording office. However, if the initial proof provided to the municipality is not a copy of the complete recorded document, a copy of the complete recorded document shall be provided to Township Engineer and Township Clerk within 180 calendar days of the authorization granted by the municipality.

(m) A stormwater management measure approved under the municipal stormwater management plan or ordinance may be altered or replaced with the approval of the municipality, if the municipality determines that the proposed alteration or replacement meets the design and performance standards pursuant to subsection C.II. and provides the same level of stormwater management as the previously approved stormwater management measure that is being altered or replaced. If an alteration or replacement is approved, a revised deed notice shall be submitted to the municipality for approval and subsequently recorded with the Office of the Burlington County Clerk and shall contain a description and location of the stormwater management measure, as well as reference to the maintenance plan, in accordance with subsection C.II.(l). Prior to the commencement of construction, proof that the above required deed notice has been filed shall be submitted to the municipality in accordance with subsection C.II.(l).

(n) Green Infrastructure Standards.

1. This subsection specifies the types of green infrastructure BMPs that may be used to satisfy the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards.
2. To satisfy the groundwater recharge and stormwater runoff quality standards in subsections C.II.(o) and (p), the design engineer shall utilize green

infrastructure BMPs identified in Table 1 herein and/or an alternative stormwater management measure approved in accordance with subsection C.II.(f). The following green infrastructure BMPs are subject to the following maximum contributory drainage area limitations:

Best Management Practice	Maximum Contributory Drainage Area
Dry Well	1 acre
Manufactured Treatment Device	2.5 acres
Pervious Pavement Systems	Area of additional inflow cannot exceed three times the area occupied by the BMP
Small-scale Bioretention Systems	2.5 acres
Small-scale Infiltration Basin	2.5 acres
Small-scale Sand Filter	2.5 acres

3. To satisfy the stormwater runoff quantity standards in subsection C.II.(q), the design engineer shall utilize BMPs from Table 1 or from Table 2 and/or an alternative stormwater management measure approved in accordance with subsection C.II.(f).
4. If a variance in accordance with N.J.A.C. 7:8-4.6 or a waiver from strict compliance in accordance with subsection C.II.(d) is granted from the requirements of this subsection, then BMPs from Table 1, 2, or 3, and/or an alternative stormwater management measure approved in accordance with subsection C.II.(f) may be used to meet the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards in subsections C.II.(o), (p) and (q)
5. For separate or combined storm sewer improvement projects, such as sewer separation, undertaken by a government agency or public utility, the requirements of this subsection shall only apply to areas owned in fee simple by the government agency or utility, and areas within a right-of-way or easement held or controlled by the government agency or utility; the entity shall not be required to obtain additional property or property rights to fully satisfy the requirements of this subsection. Regardless of the amount of area of a separate or combined storm sewer improvement project subject to the green infrastructure requirements of this subsection, each project shall fully comply with the applicable groundwater recharge, stormwater runoff quality control, and stormwater runoff quantity standards in subsections C.II.(o), (p) and (q) unless the project is granted a waiver from strict compliance in accordance with subsection C.II.(d).

(o) Groundwater Recharge Standards.

1. This subsection contains the minimum design and performance standards for groundwater recharge.
2. The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations in subsection C.III., either:

    a. Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site; or
    b. Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the 2-year storm is infiltrated.

3. This groundwater recharge requirement does not apply to projects within the "urban redevelopment area," or to projects subject to subsection 4 below.
4. The following types of stormwater shall not be recharged:

    a. Stormwater from areas of high pollutant loading. High pollutant loading areas are areas in industrial and commercial developments where solvents

and/or petroleum products are loaded/unloaded, stored, or applied, areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than "reportable quantities" as defined by the United States Environmental Protection Agency (EPA) at 40 CFR 302.4; areas where recharge would be inconsistent with Department approved remedial action work plan or landfill closure plan and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities; and

b. Industrial stormwater exposed to "source material." "Source material" means any material(s) or machinery, located at an industrial facility, that is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.

(p) Stormwater Runoff Quality Standards.

1. This subsection contains the minimum design and performance standards to control stormwater runoff quality impacts of major development. Stormwater runoff quality standards are applicable when the major development results in an increase of one-quarter acre or more of regulated motor vehicle surface.
2. Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm as follows:

   i. Eighty percent TSS removal of the anticipated load, expressed as an annual average shall be achieved for the stormwater runoff from the net increase of motor vehicle surface.
   ii. If the surface is considered regulated motor vehicle surface because the water quality treatment for an area of motor vehicle surface that is currently receiving water quality treatment either by vegetation or soil, by an existing stormwater management measure, or by treatment at a wastewater treatment plant is to be modified or removed, the project shall maintain or increase the existing TSS removal of the anticipated load expressed as an annual average.

3. The requirement to reduce TSS does not apply to any stormwater runoff in a discharge regulated under a numeric effluent limitation for TSS imposed under the New Jersey Pollutant Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement. Every major development, including any that discharge into a combined sewer system, shall comply with subsection 2 above, unless the major development is itself subject to a NJPDES permit with a numeric effluent limitation for TSS or the NJPDES permit to which the major development is subject exempts the development from a numeric effluent limitation for TSS.
4. The water quality design storm is 1.25 inches of rainfall in two hours. Water quality calculations shall take in to account the distribution of rain from the water quality design storm, as reflected in Table 4 below. The calculation of the volume of runoff may take in to account the implementation of stormwater management measures.

Table 4 - Water Quality Design Storm Distribution

Time (Minutes)	Cumulative Rainfall (Inches)	Time (Minutes)	Cumulative Rainfall (Inches)	Time (Minutes)	Cumulative Rainfall (Inches)
1	0.00166	41	0.1728	81	1.0906
2	0.00332	42	0.1796	82	1.0972
3	0.00498	43	0.1864	83	1.1038
4	0.00664	44	0.1932	84	1.1104
5	0.00830	45	0.2000	85	1.1170
6	0.00996	46	0.2117	86	1.1236
7	0.01162	47	0.2233	87	1.1302
8	0.01328	48	0.2350	88	1.1368
9	0.01494	49	0.2466	89	1.1434
10	0.01660	50	0.2583	90	1.1500
11	0.01828	51	0.2783	91	1.1550
12	0.01996	52	0.2983	92	1.1600
13	0.02164	53	0.3183	93	1.1650
14	0.02332	54	0.3383	94	1.1700
15	0.02500	55	0.3583	95	1.1750
16	0.03000	56	0.4116	96	1.1800
17	0.03500	57	0.4650	97	1.1850
18	0.04000	58	0.5183	98	1.1900
19	0.04500	59	0.5717	99	1.1950
20	0.05000	60	0.6250	100	1.2000
21	0.05500	61	0.6783	101	1.2050
22	0.06000	62	0.7317	102	1.2100
23	0.06500	63	0.7850	103	1.2150
24	0.07000	64	0.8384	104	1.2200
25	0.07500	65	0.8917	105	1.2250
26	0.08000	66	0.9117	106	1.2267
27	0.08500	67	0.9317	107	1.2284
28	0.09000	68	0.9517	108	1.2300
29	0.09500	69	0.9717	109	1.2317
30	0.10000	70	0.9917	110	1.2334
31	0.10660	71	1.0034	111	1.2351
32	0.11320	72	1.0150	112	1.2367
33	0.11980	73	1.0267	113	1.2384
34	0.12640	74	1.0383	114	1.2400
35	0.13300	75	1.0500	115	1.2417
36	0.13960	76	1.0568	116	1.2434
37	0.14620	77	1.0636	117	1.2450
38	0.15280	78	1.0704	118	1.2467
39	0.15940	79	1.0772	119	1.2483
40	0.16600	80	1.0840	120	1.2500

5. If more than one BMP in series is necessary to achieve the required 80 percent TSS reduction for a site, the applicant shall utilize the following formula to calculate TSS reduction:

   $R = A + B – (A \times B) / 100$,
   Where

   R = total TSS Percent Load Removal from application of both BMPs, and
   A = the TSS Percent Removal Rate applicable to the first BMP
   B = the TSS Percent Removal Rate applicable to the second BMP.

6. Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction nutrient load of the anticipated load from the developed site in stormwater runoff generated from the water quality design storm. In achieving reduction of nutrients to the maximum extent feasible, the design of the site shall include green infrastructure BMPs that optimize nutrient removal while still achieving the performance standards in subsections C.II.(o), (p) and (q).
7. In accordance with the definition of FW1 at N.J.A.C. 7:9B-1.4, stormwater management measures shall be designed to prevent any increase in stormwater runoff to waters classified as FW1.
8. The Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-4.1(c)1 establish 300-foot riparian zones along Category One waters, as designated in the Surface Water Quality Standards at N.J.A.C. 7:9B, and certain upstream tributaries to Category One waters. A person shall not undertake a major development that is located within or discharges into a 300-foot riparian zone without prior authorization from the Department under N.J.A.C. 7:13.
9. Pursuant to the Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-11.2(j)3.i, runoff from the water quality design storm that is discharged within a 300-foot riparian zone shall be treated in accordance with this subsection to reduce the post-construction load of total suspended solids by 95 percent of the anticipated load from the developed site, expressed as an annual average.
10. This stormwater runoff quality standards do not apply to the construction of one individual single-family dwelling, provided that it is not part of a larger development or subdivision that has received preliminary or final site plan approval prior to December 3, 2018, and that the motor vehicle surfaces are made of permeable material(s) such as gravel, dirt, and/or shells.

(q) Stormwater Runoff Quantity Standards.

1. This subsection contains the minimum design and performance standards to control stormwater runoff quantity impacts of major development.
2. In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations in subsection C.III., complete one of the following:

   i. Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the current and projected 2-, 10-, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;
   ii. Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater leaving the site for the current and projected 2-, 10- and 100-year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site. This analysis shall include the analysis of impacts of existing land uses and projected land uses assuming full development under existing zoning and land use ordinances in the drainage area;
   iii. Design stormwater management measures so that the post-construction peak runoff rates for the current and projected 2-, 10- and 100-year storm events are 50, 75 and 80 percent, respectively, of the pre-construction

peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed; or

iv. In tidal flood hazard areas, stormwater runoff quantity analysis in accordance with i., ii. and iii. above is required unless the design engineer demonstrates through hydrologic and hydraulic analysis that the increased volume, change in timing, or increased rate of the stormwater runoff, or any combination of the three will not result in additional flood damage below the point of discharge of the major development. No analysis is required if the stormwater is discharged directly into any ocean, bay, inlet, or the reach of any watercourse between its confluence with an ocean, bay, or inlet and downstream of the first water control structure.

3. The stormwater runoff quantity standards shall be applied at the site's boundary to each abutting lot, roadway, watercourse, or receiving storm sewer system.

III. Calculation of stormwater runoff and groundwater recharge.

A. Stormwater runoff shall be calculated in accordance with the following:

1. The design engineer shall calculate runoff using one of the following methods:

a. The USDA Natural Resources Conservation Service (NRCS) methodology, including the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in Chapters 7, 9, 10, 15 and 16 Part 630, Hydrology National Engineering Handbook, incorporated herein by reference as amended and supplemented. This methodology is additionally described in *Technical Release 55 - Urban Hydrology for Small Watersheds* (TR-55), dated June 1986, incorporated herein by reference as amended and supplemented. Information regarding the methodology is available from the Natural Resources Conservation Service website at:

https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/new-jersey/new-jersey-engineering

or at United States Department of Agriculture Natural Resources Conservation Service, 220 Davison Avenue, Somerset, New Jersey 08873.

2. In computing pre-construction stormwater runoff, the design engineer shall account for all significant land features and structures, such as ponds, wetlands, depressions, hedgerows, or culverts, that may reduce pre-construction stormwater runoff rates and volumes.

3. For the purpose of calculating runoff coefficients and groundwater recharge, there is a presumption that the pre-construction condition of a site or portion thereof is a wooded land use with good hydrologic condition. The term "runoff coefficient" applies to both the NRCS methodology above in subsection C.III.(a)1.a. A curve number or a groundwater recharge land cover for an existing condition may be used on all or a portion of the site if the design engineer verifies that the hydrologic condition has existed on the site or portion of the site for at least five years without interruption prior to the time of application. If more than one land cover has existed on the site during the five years immediately prior to the time of application, the land cover with the lowest runoff potential shall be used for the computations. In addition, there is the presumption that the site is in good hydrologic condition (if the land use type is pasture, lawn, or park), with good cover (if the land use type is woods), or with good hydrologic condition and conservation treatment (if the land use type is cultivation).

4. In computing stormwater runoff from all design storms, the design engineer shall consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces separately to accurately compute the rates and volume of stormwater runoff from the site. To calculate runoff from unconnected impervious cover, urban impervious area modifications as described in the NRCS *Technical Release 55 – Urban Hydrology for Small Watersheds* or other methods may be employed.

5. If the invert of the outlet structure of a stormwater management measure is below the flood hazard design flood elevation as defined at N.J.A.C. 7:13, the design engineer shall take in to account the effects of tailwater in the design of structural stormwater management measures.

B. Groundwater recharge shall be calculated in accordance with the following:

1. The New Jersey Geological Survey Report GSR-32, A Method for Evaluating Groundwater-Recharge Areas in New Jersey, incorporated herein by reference as amended and supplemented. Information regarding the

methodology is available from the New Jersey Stormwater Best Management Practices Manual; at the New Jersey Geological Survey website at:

https://www.nj.gov/dep/njgs/pricelst/gsreport/gsr32.pdf

or at New Jersey Geological and Water Survey, 29 Arctic Parkway, PO Box 420 Mail Code 29-01, Trenton, New Jersey 08625-0420.

C. The precipitation depths of the current two-, 10-, and 100-year storm events shall be determined by multiplying the values determined in accordance with items 1 and 2 below:

1. The applicant shall utilize the National Oceanographic and Atmospheric Administration (NOAA), National Weather Service's Atlas 14 Point Precipitation Frequency Estimates: NJ, in accordance with the location(s) of the drainage area(s) of the site. This data is available at:

https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=nj; and

2. The applicant shall utilize Table 5: Current Precipitation Adjustment Factors below, which sets forth the applicable multiplier for the drainage area(s) of the site, in accordance with the county where the drainage area(s) of the site is located.

Table 5: Current Precipitation Adjustment Factors

County	Current Precipitation Adjustment Factors		
	2-year Design Storm	10-year Design Storm	100-year Design Storm
Burlington	0.99	1.01	1.04

D. Table 6: Future Precipitation Change Factors provided below sets forth the change factors to be used in determining the projected two-, 10-, and 100-year storm events for use in this chapter, which are organized alphabetically by county. The precipitation depth of the projected two-, 10-, and 100-year storm events of a site shall be determined by multiplying the precipitation depth of the two-, 10-, and 100-year storm events determined from the National Weather Service's Atlas 14 Point Precipitation Frequency Estimates pursuant to (c)1 above, by the change factor in the table below, in accordance with the county where the drainage area(s) of the site is located.

6: Future Precipitation Change Factors

County	Projected (Future) Table Precipitation Change Factors		
	2-year Design Storm	10-year Design Storm	100-year Design Storm
Burlington	1.17	1.18	1.32

IV. Sources of technical guidance.

Technical guidance for stormwater management measures can be found in the documents listed below, which are available to download from the Department's website at: https://dep.nj.gov/stormwater/bmp-manual/

Guidelines for stormwater management measures are contained in the New Jersey Stormwater Best Management Practices Manual, as amended and supplemented. Information is provided on stormwater management measures such as, but not limited to, those listed in Tables 1, 2, and 3.

Additional maintenance guidance is available on the Department's website at: https://dep.nj.gov/stormwater/maintenance-guidance/

(a) Submissions required for review by the Department should be mailed to:

The Division of Watershed Protection and Restoration, New Jersey Department of Environmental Protection, Mail Code 501-02A, PO Box 420, Trenton, New Jersey 08625-0420.

V. Solids and floatable materials control standards.

(a) Site design features identified in subsection C.II.(e), or alternative designs in accordance with subsection C.II.(f), to prevent discharge of trash and debris from drainage systems shall comply with the following standard to control passage of solid and floatable materials through storm drain inlets. For purposes of this paragraph, "solid and floatable materials" means sediment, debris, trash, and other floating, suspended, or settleable solids. For exemptions to this standard, refer to subsection C.V.(a)2.

1. Design engineers shall use one of the following grates whenever they use a grate in pavement or another ground surface to collect stormwater from that surface into a storm drain or surface water body under that grate:

i. The New Jersey Department of Transportation (NJDOT) bicycle safe grate, which is described in Chapter 2.4 of the NJDOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines; or

ii. A different grate, if each individual clear space in that grate has an area of no more than seven (7.0) square inches, or is no greater than 0.5 inches across the smallest dimension.

Examples of grates subject to this standard include grates in grate inlets, the grate portion (non-curb-opening portion) of combination inlets, grates on storm sewer manholes, ditch grates, trench grates, and grates of spacer bars in slotted drains. Examples of ground surfaces include surfaces of roads (including bridges), driveways, parking areas, bikeways, plazas, sidewalks, lawns, fields, open channels, and stormwater system floors used to collect stormwater from the surface into a storm drain or surface water body.

iii. For curb-opening inlets, including curb-opening inlets in combination inlets, the clear space in that curb opening, or each individual clear space if the curb opening has two or more clear spaces, shall have an area of no more than seven (7.0) square inches, or be no greater than two (2.0) inches across the smallest dimension.

2. The standard in subsection a.1. above does not apply:

i. Where each individual clear space in the curb opening in existing curb-opening inlet does not have an area of more than nine (9.0) square inches;

ii. Where the municipality agrees that the standards would cause inadequate hydraulic performance that could not practicably be overcome by using additional or larger storm drain inlets;

iii. Where flows from the water quality design storm as specified in N.J.A.C. 7:8 are conveyed through any device (e.g., end of pipe netting facility, manufactured treatment device, or a catch basin hood) that is designed, at a minimum, to prevent delivery of all solid and floatable materials that could not pass through one of the following:

a. A rectangular space four and five-eighths (4.625) inches long and one and one-half (1.5) inches wide (this option does not apply for outfall netting facilities); or
b. A bar screen having a bar spacing of 0.5 inches.

iv. Where flows are conveyed through a trash rack that has parallel bars with one-inch (1 inch) spacing between the bars, to the elevation of the Water Quality Design Storm as specified in N.J.A.C. 7:8; or

v. Where the New Jersey Department of Environmental Protection determines, pursuant to the New Jersey Register of Historic Places Rules at N.J.A.C. 7:4-7.2(c), that action to meet this standard is an undertaking that constitutes an encroachment or will damage or destroy the New Jersey Register listed historic property.

VI. Safety standards for stormwater management basins.

(a) This section sets forth requirements to protect public safety through the proper design and operation of stormwater management BMPs. This section applies to any new stormwater management BMP.

(b) The provisions of this section are not intended to preempt more stringent municipal or county safety requirements for new or existing stormwater management BMPs. Municipal and county stormwater management plans and ordinances may, pursuant to their authority, require existing stormwater management BMPs to be retrofitted to meet one or more of the safety standards in subsection C.VI.(c) for trash racks, overflow grates, and escape provisions at outlet structures.

(c) Requirements for trash racks, overflow grates and escape provisions.

1. A trash rack is a device designed to catch trash and debris and prevent the clogging of outlet structures. Trash racks shall be installed at the intake to the outlet from the Stormwater management BMP to ensure proper functioning of the BMP outlets in accordance with the following:

i. The trash rack shall have parallel bars, with no greater than six-inch spacing between the bars;
ii. The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure;
iii. The average velocity of flow through a clean trash rack is not to exceed 2.5 feet per second under the full range of stage and discharge. Velocity is to be computed on the basis of the net area of opening through the rack; and
iv. The trash rack shall be constructed of rigid, durable, and corrosion resistant material and designed to withstand a perpendicular live loading of 300 pounds per square foot.

2. An overflow grate is designed to prevent obstruction of the overflow structure. If an outlet structure has an overflow grate, such grate shall meet the following requirements:

i. The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance;
ii. The overflow grate spacing shall be no less than two inches across the smallest dimension; and
iii. The overflow grate shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 pounds per square foot.

3. Stormwater management BMPs shall include escape provisions as follows:

i. If a stormwater management BMP has an outlet structure, escape provisions shall be incorporated in or on the structure. Escape provisions include the installation of permanent ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management BMPs. With the prior approval of the municipality pursuant to subsection C.VI.(d), a free-standing outlet structure may be exempted from this requirement;
ii. Safety ledges shall be constructed on the slopes of all new stormwater management BMPs having a permanent pool of water deeper than two and one-half feet. Safety ledges shall be comprised of two steps. Each step shall be four to six feet in width. One step shall be located approximately two and one-half feet below the permanent water surface, and the second step shall be

located one to one and one-half feet above the permanent water surface. Refer to subsection C.VI.(e) for an illustration of safety ledges in a stormwater management BMP; and

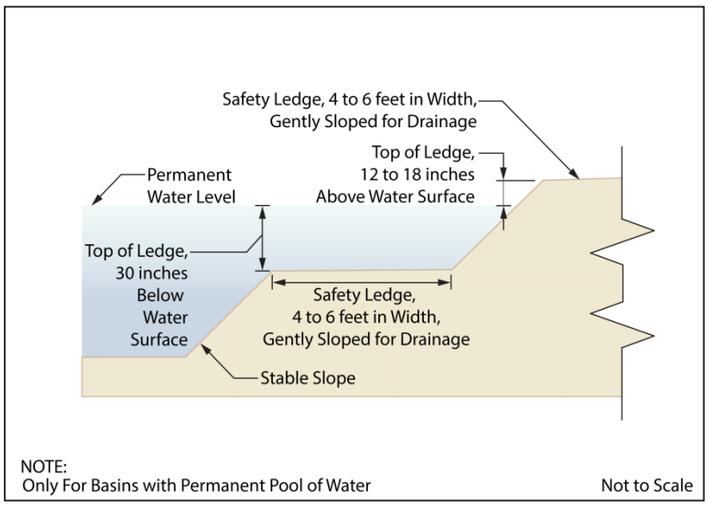
iii. In new stormwater management BMPs, the maximum interior slope for an earthen dam, embankment, or berm shall not be steeper than three horizontal to one vertical (3:1).

(d) Variance or exemption from safety standards.

1. A variance or exemption from the safety standards for stormwater management BMPs may be granted only upon a written finding by the municipality that the variance or exemption will not constitute a threat to public safety.

(e) Safety ledge illustration.

Elevation View – Basin Safety Ledge Configuration



VII. Requirements for a site development stormwater plan.

(a) Submission of a site development stormwater plan.

1. Whenever an applicant seeks municipal approval of a development subject to this ordinance, the applicant shall submit all of the required components of the Checklist for the Site Development Stormwater Plan in subsection C.VII.(c) as part of the submission of the application for approval.

2. The applicant shall demonstrate that the project meets the standards set forth in this ordinance.

3. The applicant shall submit two (2) copies of the materials listed in the checklist for site development stormwater plans in accordance with subsection C.VII.(c)

(b) Site development stormwater plan approval.

1. The applicant's site development project shall be reviewed as a part of the review process by the Township Engineer or the Reviewing Board Engineer from which Land Use Board approval is being sought. Said review process shall include a determination as to whether the items listed in subsection C.VII.(c) have been satisfied and to determine if the project meets the standards set forth in this section.

(c) Submission of site development stormwater plan. The following information shall be required:

1. Topographic Base Map

The reviewing engineer may require upstream tributary drainage system information as necessary. It is recommended that the topographic base map of the site be submitted which extends a minimum of 200 feet beyond the limits of the proposed development, at a scale of 1"=200' or greater, showing 2-foot contour intervals. The map as appropriate may indicate the following: existing surface water drainage, shorelines, steep slopes, soils, erodible soils, perennial or intermittent streams that drain into or upstream of the Category One waters, wetlands and flood plains along with their appropriate buffer strips, marshlands and other wetlands, pervious or vegetative surfaces, existing man-made structures, roads, bearing and distances of property lines, and significant natural and manmade features not otherwise shown.

2. Environmental Site Analysis

A written and graphic description of the natural and man-made features of the site and its surroundings should be submitted. This description should include a discussion of soil conditions, slopes, wetlands, waterways and vegetation on the site. Particular attention should be given to unique, unusual, or environmentally sensitive features and to those that provide particular opportunities or constraints for development.

3. Project Description and Site Plans

A map (or maps) at the scale of the topographical base map indicating the location of existing and proposed buildings roads, parking areas, utilities, structural facilities for stormwater management and sediment control, and other permanent structures. The map(s) shall also clearly show areas where alterations will occur in the natural terrain and cover, including lawns and other landscaping, and seasonal high groundwater elevations. A written description of the site plan and justification for proposed changes in natural conditions shall also be provided along with a description of the overall stormwater management methodology.

4. Land Use Planning and Source Control Plan.

This plan shall provide a demonstration of how the goals and standards of subsections C.I., II. and III. are being met. The focus of this plan shall be to describe how the site is being developed to meet the objective of controlling groundwater recharge, stormwater quality and stormwater quantity problems at the source by land management and source controls whenever possible.

5. Stormwater Management Facilities Map.

The following information, illustrated on a map of the same scale as the topographic base map, shall be included:

i. Total area to be disturbed, paved or built upon, proposed surface contours, land area to be occupied by the stormwater management facilities and the type of vegetation thereon, and details of the proposed plan to control and dispose of stormwater.
ii. Details of all stormwater management facility designs, during and after construction, including discharge provisions, discharge capacity for each outlet at different levels of detention and emergency spillway provisions with maximum discharge capacity of each spillway.

6. Calculations

i. Comprehensive hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in subsections C.II and C.III.
ii. When the proposed stormwater management control measures depend on the hydrologic properties of soils or require certain separation from the seasonal high water table, then a soils report shall be submitted. The soils report shall be based on onsite boring logs or soil pit profiles. The number and location of required soil borings or soil pits shall be

determined based on what is needed to determine the suitability and distribution of soils present at the location of the control measure in accordance with the BMP Manual.

7. Maintenance and Repair Plan

   The design and planning of the stormwater management facility shall meet the maintenance requirements of subsection C.VIII.

8. Waiver from Submission Requirements

   The municipal official or board reviewing an application under this ordinance may, in consultation with the Reviewing Board Engineer, waive submission of any of the requirements in subsection C.VII.(c)1. through C.VII.(c)6. of this section when it can be demonstrated that the information requested is impossible to obtain or it would create a hardship on the applicant to obtain and its absence will not materially affect the review process.

VIII. Maintenance and Repair.

(a) Applicability. Projects subject to review in accordance with subsection A.III. shall comply with the requirements of this subsection.

(b) General maintenance.

1. The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development.
2. The maintenance plan shall contain specific preventative maintenance tasks and schedules; cost estimates, including estimated cost of sediment, debris, or trash removal; and the name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement). The plan shall contain information on BMP location, design, ownership, maintenance tasks and frequencies, and other details as specified in Chapter 8 of the NJ BMP Manual, as well as the tasks specific to the type of BMP, as described in the applicable chapter containing design specifics.
3. If the maintenance plan identifies a person other than the property owner (for example, a developer, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's or entity's agreement to assume this responsibility, or of the owner's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.
4. Responsibility for maintenance shall not be assigned or transferred to the owner or tenant of an individual property in a residential development or project, unless such owner or tenant owns or leases the entire residential development or project. The individual property owner may be assigned incidental tasks, such as weeding of a green infrastructure BMP, provided the individual agrees to assume these tasks; however, the individual cannot be legally responsible for all of the maintenance required.
5. If the party responsible for maintenance identified under subsection C.VIII.(b)3. is not a public agency, the maintenance plan and any future revisions based on subsection C.VIII.(b)7. shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.
6. Preventative and corrective maintenance shall be performed to maintain the functional parameters (storage volume, infiltration rates, inflow/outflow capacity, etc.) of the stormwater management measure, including, but not limited to, repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.
7. The party responsible for maintenance identified under subsection C.VIII.(b)3. shall perform all of the following requirements:

i. maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders;
ii. evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed; and
iii. retain and make available, upon request by any public entity with administrative, health, environmental, or safety authority over the site, the maintenance plan and the documentation required by subsection C.VIII.

8. The requirements of subsections C.VIII.(b)3. and 4. do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency, subject to all applicable municipal stormwater general permit conditions, as issued by the Department. However, in the case of those facilities that a property owner chooses to offer for dedication to the municipality and the governing body agrees to accept in accordance with N.J.S.A. 40:55D-53j., prior to acceptance of any dedicated property containing a stormwater management facility, the property owner shall post funds with the municipality to defray the estimated maintenance costs of said facility for a ten-year period. The amount to be posted shall be based on the estimated annual maintenance cost, which cost shall be determined by the Township Engineer, multiplied by a factor of ten (10).
9. In the event that the stormwater management facility becomes a danger to public safety or public health, or if it is in need of maintenance or repair, the municipality shall so notify the responsible person in writing. Upon receipt of that notice, the responsible person shall have fourteen (14) days to effect maintenance and repair of the facility in a manner that is approved by the municipal engineer or his designee. The municipality, in its discretion, may extend the time allowed for effecting maintenance and repair for good cause. If the responsible person fails or refuses to perform such maintenance and repair, the municipality or County may immediately proceed to do so and shall bill the cost thereof to the responsible person. Nonpayment of such bill may result in a lien on the property.

(c) Nothing in this subsection shall preclude the municipality from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53, as applicable.

IX. Runoff conveyance system design.

(a) Pipe design.

1. All storm sewer pipes shall be rubber-gasketed circular reinforced concrete pipe (RCP) or elliptical reinforced concrete pipe (ERCP), meeting the requirements of ASTM C76 or C507, respectively. Subject to the approval of the Reviewing Board Engineer, alternate pipe materials such as corrugated metal (CMP), high-density polyethylene (HDPE), ductile iron (DIP), polyvinyl chloride (PVC), or corrugated polyethylene (CPP) may be utilized. The use of alternate pipe materials shall be at the sole discretion of the Reviewing Board Engineer and may require the submission of manufacturer's data and specifications, bedding and backfill requirements, installation instructions and applicable approvals of the alternate materials for use by other agencies such as the New Jersey Department of Transportation or New Jersey Department of Environmental Protection.

2. Joint design and joint materials for circular concrete pipe and elliptical concrete pipe shall conform to ASTM C443 and C877, respectively.
3. All concrete pipes shall be minimum Class III, unless loading conditions or pipe cover call for a higher-class pipe.
4. Minimum depth of cover for Class III concrete pipe with a diameter of 27 inches or less is two feet. For Class III concrete pipe with a diameter of 30 inches or greater, the minimum cover may be reduced to one foot. Depth of cover shall be measured from the top of pipe to the bottom of the overlying pavement section or finished grade, if no pavement exists or is proposed.

Minimum depth of cover for Class IV and Class V pipe shall be in accordance with that designated by the American Concrete Pipe Association.

5. Design engineers shall determine pipe size based on design runoff, conduit entrance conditions and hydraulic capacity.
6. No pipes shall be sized to less than 15 inches in diameter with the following exceptions:

    i. Pipes connected to a single terminal inlet may be sized to a minimum of 12 inches in diameter.
    ii. Roof drains may be sized to a minimum of six inches in diameter.
    iii. Sump pump laterals and collector pipes may be sized to a minimum of four inches in diameter.
7. Velocities at design flow shall be a minimum of 2.5 feet per second with the pipe flowing at 1/4 full, but not more than the velocity that will cause erosion damage to the conduit, in accordance with manufacturer's specifications.
8. Design engineers shall use Manning's equation to determine hydraulic capacity for pipes or open-channel flow. The hydraulic capacity is termed "Q" and is expressed as discharge in cubic feet per second as follows:

$$Q = (1.486/n) * A * R^{2/3} * S^{1/2}$$

Where

n = Manning’s roughness coefficient
A = cross-sectional area of flow in square feet
R = hydraulic radius in feet, R = A/P, where P is equal to the wetted perimeter, measured in feet, and defined as the length of the line of contact between the flowing water and the channel
S = slope of the pipe/culvert in feet per foot

9. All pipes shall terminate with a precast-concrete headwall with wingwalls, conforming to Township standards. Where design discharge velocities exceed five feet per second, a high-velocity headwall conforming to Township standards shall be provided. Flared-end sections are not permitted, unless authorized by the reviewing board engineer.

10. All pipes and culverts shall be designed to convey the peak runoff rates resulting from a twenty-five-year frequency storm, except that Culverts with an upstream drainage area of 50 acres or more shall be designed to accommodate the one-hundred-year frequency storm in accordance with Flood Hazard Are Control Regulations.
11. Design engineers shall base culvert capacity on inlet/outlet analysis, as specified in Hydraulic Design of Highway Culverts, Hydraulic Design Series (H.D.S.) No. 5, Report No. FHWA-IP-85-15, U.S. DOT, FHA, September 1985, incorporated herein by reference.
12. Continuous profiles for each reach of pipe shall be plotted, along with the location of the hydraulic gradient and such information as pipe size and type, slope of pipe, design capacity and velocity at design capacity.
13. Hydraulic gradient calculations of all pipe and drainage structures shall be submitted to the Reviewing Board Engineer. In those instances where calculations are not required by the Reviewing Board Engineer, the Design Engineer shall confirm in writing that the hydraulic design of all pipes is based on the assumption that the hydraulic gradient will match the inside top of the pipe when the system is under maximum design flow. When pipe sizes change, the inside tops of the pipes shall be matched. In addition, the design of all pipes shall consider the hydraulic impact of any water body that may be present at the point-of-discharge. Where a pipe discharges to a water body (to include any approved stormwater management basin or device) which has a 25-year elevation above the invert of said discharge pipe, the tailwater effect of said water body shall be considered in the hydraulic gradient calculations. In no instance shall the calculated elevation of the hydraulic gradient be less than one foot below the top-of-grate elevation of any drainage inlet, catch basin or manhole.

14. Time-of-concentration calculations shall be provided for all pipe runs, otherwise a time of concentration of six minutes shall be utilized.
15. Pipes constructed through or under a berm shall be capable of withstanding external loading without yielding, cracking or buckling. Flexible pipe strength shall not be less that necessary to support the design load with a maximum of five-percent deflection. All pipe joints shall be watertight.
16. Backfill for pipes and drainage structures shall be free of deleterious substances, stumps, brush, weeds, roots, sod, rubbish, garbage and matter that may decay. Backfill to a height of two feet above the top of pipes, culverts and other structures shall be free of stones or rock fragments larger than two inches in greatest dimension. Backfill shall also be free of large rocks or lumps that, in the opinion of the reviewing board engineer, may create voids or prevent proper compaction. The reviewing board engineer may require the developer to provide a professional certification as to the suitability of the on-site material for use as backfill. In those cases where such suitability does not exist, the developer may use borrow material, if said material is approved by the design engineer and a certification as to suitability is provided to the reviewing board engineer. All excavation and backfill shall meet the requirements of §330-123, Subsurface structure excavation.

17. No pipe or structure shall be placed on private property unless the owner of the land is to own or operate the pipe/structure, or an easement is obtained from the property owner. All easements shall be a minimum of 20 feet wide unless the depth, soil conditions, or additional utilities require wider as determined by the Reviewing Board Engineer.

(b) Design of inlets, catch basins, manholes, and outlets.

1. Design engineers shall design inlets, catch basins, manholes and outlet structures in accordance with New Jersey NJDEP of Transportation's Standard Specifications for Road and Bridge Construction (2007) and shall also conform to Township standards. In the event of a conflict, the more stringent standard, as determined by the Reviewing Board Engineer, shall govern.
2. Inlet spacing depends on inlet capacity. Sufficient inlets shall be located so that the peak rate of surface runoff shall not exceed the collection capacity of the inlet assuming a hydraulic head of two inches. Maximum distance between inlets shall be 400 feet. In areas where pipe is to be installed without the need for inlets, manholes shall be provided for access at maximum intervals of 400 feet.
3. Precast concrete structures shall conform to all applicable ASTM standards.
4. All structures constructed of concrete block shall be coated with two coats of Portland cement mortar on the inside and outside surfaces.
5. The use of masonry brick (clay or shale) is prohibited.
6. All structures shall be flush with the finished grade. Grade adjustments of less than eight inches shall be accomplished using precast concrete or metal grade rings. Concrete block may also be used, if approved by the reviewing board engineer.
7. Frames and covers shall be cast-iron construction, conforming to ASTM A48, and shall be suitable for H-20 loading capacity. Stream flow grates shall be provided for outlet structures not located within a paved area.
8. Channels should be constructed as a smooth continuation of the pipe to provide smooth, unobstructed flow through the structure. Completed channels shall be U-shaped with a minimum height of 3/4 of the diameter of the pipe.
9. Benches shall provide good footing for workmen and a place where tools can be laid. Permissible slope of benches is 4% to 8%.

(c) Open channel design.

1. Open ditches or channels will be permitted when the design capacity requires a pipe larger than 60 inches diameter, unless disapproved by the reviewing board engineer. Hydraulic capacity and design velocity shall be calculated based on a twenty-five-year frequency storm, utilizing Manning's equation as stipulated in subsection C.IX.(a)7. The Manning's roughness coefficient used by the design engineer shall be consistent with N.J.A.C. 5:21-7.1 or other authoritative source. Where permitted, open-channel design should be based on the

following:

i. In no case shall the design velocity of an open channel for a twenty-five-year frequency storm be less than 0.5 feet per second.
ii. Minimum freeboard of one foot, as calculated for a twenty-five-year frequency storm, should be provided on all channels.
iii. The channel should be designed to conform, wherever possible, to the adjacent ground conditions and elevations.
iv. Continuous profiles for each reach of open channel shall be plotted, along with adjacent average ground and the hydraulic information pertinent to each reach within the system. This information shall include the type of channel lining, the Manning's roughness coefficient, the width of the channel bottom, the side slopes, the water depth, the design capacity, bottom and top elevations, and the velocity at the design capacity.
v. Open channels shall have a maximum side slope of three horizontal to one vertical (3:1) and shall have adequate slope protection as required by the soil erosion and sediment control subsection of this section.

D. Other Applicable Regulations and Standards.

I. Grading and Drainage.

(a) All lots developed under the provisions of this ordinance shall be graded to secure proper drainage away from all buildings and to prevent the collection of storm water in pools and to avoid concentration of storm water from each lot to adjacent lots. Water shall not flow across adjacent property lines unless approved by the Reviewing Board Engineer and a cross-drainage easement is provided.

(b) The minimum slope for paved surfaces shall be 1%, unless otherwise approved by the Reviewing Board Engineer due to local conditions.

(c) The following minimum requirements apply to grading of lawn areas:

i. Provide a minimum six (6) inch drop in the first 20 feet from the building.
ii. Overland grades throughout the site shall be a minimum of 2%.
iii. Grades for grass or stone swales shall be a minimum of 2%; Concrete or asphalt shall be a minimum of 1%.
iv. Maximum slopes shall be 3 horizontal to 1 vertical (3:1).

(d) All work shall be in accordance with the established design standards of Burlington Township, and specifically §330-92 Grading and Filling.

II. Flooding and Control of Runoff.

(a) Land subject to periodic or occasional flooding shall not be designed for residential occupancy nor for any other purpose that may endanger life or property. Such land within a lot shall be considered for open spaces, yards, or other similar uses in accordance with §282 Flood Damage Prevention and applicable NJDEP flood plain regulations.

(b) Unless being discharged to a drainage easement or existing storm sewer system, the rate of runoff crossing an adjoining private property line resulting from any improvement or additional impervious surface shall not be increased more than 0.1 c.f.s. during a 2-year design storm.

(c) Discharge from a proposed sump pump, pool filter or any other pump conveying stormwater shall be prohibited from crossing an adjoining private property line absent a written agreement with the Owner of the affected property. In addition, said discharge shall not be conveyed across a sidewalk or into a street right-of-way if it will result in a hazardous or unhealthy condition, such as standing water, surface deposits and/or ice accumulation. Unless expressly authorized by the Zoning Officer and Township Engineer, no pipe discharging stormwater runoff or groundwater shall be installed through a curb to discharge directly to any street.

(d) Fences or walls that have the potential to block or impede stormwater runoff shall be prohibited.

(e) The Zoning Officer may require the submission of both a grading plan and an as-built grading plan in connection with any proposed site improvements, including, but not limited to additions, detached garages, driveway extensions, patios, decks, inground pools, landscaping beds or retaining walls, that could reasonably be expected to result in the conveyance of additional runoff to a neighboring property or right-of-way.

III. Storm Drainage Connection & Discharges.

(a) Every approved site plan and subdivision plat shall contain a note, if applicable, that excess storm drainage may not be conveyed to the public right-of-way or sanitary sewer system. Where the Reviewing Board Engineer determines that on-site retainage is inadequate to prevent the above from occurring, the Reviewing Board may require that the applicant provide an underdrain system, dry well, piped connection to an existing storm sewer or similar approved device on the lot or lots involved to channel the storm water flow, including but not limited to sump pump discharges, to an existing or proposed onsite storm sewer system. All improvements constructed for the purpose of conveying such discharges shall be owned and maintained by the Owner of the lot which is being served by said Improvement. In the event that said Improvement serves more than one (1) property, the Owners of each of the properties being served shall enter into an Agreement to be recorded in the Office of the County Clerk, and absent a recorded document that assigns this responsibility to another party, each Owner shall own and maintain the portion of the Improvement located on their respective property.

(b) Where the Reviewing Board Engineer or Township Engineer determines that roof runoff or the sump pump discharge from a proposed structure has the potential to adversely impact adjacent property or right-of-way, the Reviewing Board or Township Engineer may require that the applicant connect the roof downspouts and/or sump pump lateral from the structure to an existing or proposed storm sewer system located within a reasonable distance from the property creating the impact.

IV. Easements.

(a) Where a development is traversed by a watercourse, surface of underground drainage way or drainage system, channel, or stream, there shall be provided and dedicated a drainage right-of-way easement to the Township conforming substantially with the metes and bounds of such watercourse, and such further width or construction, or both, as will be adequate to accommodate expected storm water runoff in the future based upon reasonable growth potential in the Township and, in addition thereto, a minimum of fifteen (15) feet beyond the bank top on both sides for access to the drainage right-of-way and meeting any minimum widths and locations shown on any adopted official map or master plan or as required under this section or §330-88 Easements.

(b) Easements or right-of-way shall be required in accordance with §330-88 where storm drains are installed outside streets.

V. Deck Construction Specifications.

(a) All decks shall be constructed so as to allow a minimum of four percent pervious area uniformly distributed between adjacent floor boards utilizing minimum gaps of 1/8". The ground beneath the entirety of the deck shall be excavated to a depth of no less than 12 inches and a completely pervious surface of clean stone shall be constructed within the entire excavated area. Stone shall be a minimum of 12 inches deep with the top of the stone being flush with the adjacent ground surface. A means of drainage relief shall be provided to allow any overflow from the stone area to drain to the nearest yard swale of other point of drainage relief. Provisions shall also be made to prevent ground water seepage from the stone area into adjacent basements or crawlspaces. This type of deck shall not be considered impervious. The construction in all other aspects shall conform to all applicable ordinances, codes and standards.

E. Variances. A variance may be granted by the Reviewing Board from the green infrastructure, groundwater recharge, stormwater runoff quality and/or stormwater runoff quantity standards in accordance with N.J.A.C. 7:8-4.6. Should the standards contained herein conflict with the NJDEP BMP Manual, the Manual shall govern.

F. Penalties. Any person who erects, constructs, alters, repairs, converts, maintains or uses any building, structure or land in violation of this section shall be subject to the general penalty provisions of §1-18 and 1-19 of Chapter 1, General Provisions, Article II, Definitions; General Penalty, and/or §330-135C.

G. Severability. If the provisions of any section, subsection, paragraph, subdivision, or clause of this ordinance shall be judged invalid by a court of competent jurisdiction, such order of judgment shall not affect or invalidate the remainder of any section, subsection, paragraph, subdivision, or clause of this ordinance.

This Ordinance was introduced at a meeting of the Township Council in the Township of Burlington held on June 11, 2024, and will be considered for final passage after a public hearing held at a Regular Meeting of the Township Council to be held on June 25, 2024, at the Township Municipal Building, Burlington Township, New Jersey at 7:00 p.m.

This will certify that the foregoing Ordinance was passed by a majority of the Burlington Township Council on June 25, 2024.

_____
Mary E. Field
Municipal Clerk

_____
Carl M. Schoenborn
President of Council