

Enhanced Stormwater Management Control Model Ordinance for Municipalities



Notes about this model Stormwater Control Ordinance:

NJDEP included the following introductory notes with its model ordinance, which remain relevant to this Sustainable Jersey model ordinance:

- This model ordinance does not include a section on fees. The Department expects that the review of development applications under this ordinance would be an integral part of the municipal review of subdivisions, site plans, zoning permits, and building or construction permits. As a result, the costs to municipalities of reviewing development applications under this ordinance can be defrayed by fees charged for review of subdivisions and site plans under N.J.S.A. 40:55D-8.b.

Notes are provided in italics throughout this model stormwater control ordinance, and are not intended to be adopted as part of the ordinance.

Section 1: Scope and Purpose

A. Policy Statement

As municipalities throughout New Jersey are developed, impervious surfaces create increased amounts [and rates] of stormwater runoff during precipitation events. This runoff picks up large amounts of pollutants that collect on parking lots, roadways, rooftops, and other paved or hardened surfaces, and then flows through stormwater conveyances to our streams, rivers, and beaches. The increased runoff rate and volume also lead to erosion and flooding in and downstream of developed areas. Further, combined sewer systems (CSS) in many older urban areas of the state carry stormwater and wastewater in the same pipes to treatment facilities. The volume of runoff produced during storm events routinely overwhelms the capacity of these systems, resulting in combined sewer overflow (CSO) events, which discharge untreated sewage and polluted stormwater directly to nearby waterbodies.

Low impact development or “LID” (also referred to as “green infrastructure”) practices restore or mimic natural conditions, allowing rainwater to infiltrate into the soil, evapotranspire into the air, or be captured for reuse, dealing with the stormwater at its source rather than after it has been channeled downstream. LID techniques can be implemented at site, neighborhood, or regional scales and include both nonstructural practices such as site planning and design, and structural best management practices (“BMPs”) such as porous pavement, green roofs, parks, roadside plantings, and rain barrels. Such approaches keep stormwater runoff from overloading sewer systems and triggering raw sewage overflows or from carrying pollutants directly into bodies of water. LID practices not only address stormwater runoff but may also result in multiple benefits, including providing open space and beautifying neighborhoods, cooling and cleansing the air, reducing asthma and heat-related illnesses, and saving on heating and cooling energy costs.

Note: Municipalities are encouraged to participate in the development of regional stormwater management plans, or to coordinate development or adoption of final ordinances with neighboring municipalities, and to adopt and implement ordinances for specific drainage area performance standards that address local stormwater management and environmental characteristics.

B. Purpose

It is the purpose of this ordinance to establish minimum stormwater management requirements and controls for “major development,” [optional: and “minor development”] as defined in Section 2. The environmental objectives of these requirements are to reduce pollution from municipal separate sewer systems, direct discharges to surface waters, and combined sewer overflows, and to reduce flooding and streambank erosion, enhance groundwater recharge, and promote rainwater harvesting for on-site reuse. [Note: Goals to be included as appropriate for each municipality.] Nonstructural techniques shall be implemented before relying on structural BMPs, and retention of stormwater, where feasible, shall be achieved before implementation of BMPs that result in the discharge of stormwater runoff. Structural BMPs should be integrated with nonstructural stormwater management strategies and proper inspection and maintenance plans. LID based strategies should include consideration of both environmentally sensitive site design and source controls that prevent pollutants from being placed on the site or from being exposed to stormwater, even where the requirements of this ordinance may be met through use of regional projects. Source control plans 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, stormwater retention, and groundwater recharge. It is the intent of [insert name of municipality] to fully integrate these stormwater management objectives into its zoning codes and land use plans.

Note: N.J.A.C. 7:8-4.2(c)(8) requires municipalities to modify land use plans and zoning ordinances as necessary to facilitate implementation of the non-structural strategies identified in Section 4(e)(2) of this model ordinance. Additionally, N.J.S.A. 40:44D-93 requires municipalities to review their stormwater master plans each time they reexamine or review their land use master plans. In connection with adoption of this Sustainable Jersey model ordinance, municipalities are strongly encouraged to review and update their existing land use plans and zoning ordinances to promote compliance not only with non-structural strategies, but with all provisions of this ordinance.]

Note: Any ordinance adopted by a municipality or through a regional planning process must be, at minimum, as protective as the design and performance standards found in the New Jersey Stormwater Management Rules at N.J.A.C. 7:8-5. The requirements of this ordinance are intended not only to meet, but also to exceed, those standards. (For example, this ordinance includes a “stormwater retention requirement” that, in some cases, will require greater on-site capture of runoff than is required under the minimum state standards; this ordinance also applies to many developments under one acre in size, which are not covered by the minimum state standards.) In addition to the provisions of this model ordinance, municipalities are further encouraged to incorporate more stringent requirements as appropriate or necessary to achieve public health, safety, general welfare, environmental, or other goals.

C. Applicability

1. This ordinance shall be applicable to all site plans and subdivisions for the following major [optional: and minor] developments that require preliminary or final site plan or subdivision review, zoning approval, or a building or construction permit:
 - a. Non-residential major [optional: and minor] developments; and
 - b. Aspects of residential major [optional: and minor] developments that are not pre-empted by the Residential Site Improvement Standards at N.J.A.C. 5:21.

2. This ordinance shall also be applicable to all major [*optional*: and minor] developments undertaken by [*insert name of municipality*].

3. The requirements of this ordinance apply in addition to any other requirements associated with other local, state, or interstate construction, building, zoning, or environmental permits or reviews that apply to development projects. Compliance with such other permitting or review requirements does not constitute compliance with the requirements of this ordinance.

Note: As discussed in a note in Section 2 below, municipalities are encouraged to apply certain provisions of this ordinance to projects defined below as “minor development.” Additional Sustainable Jersey points will be awarded to municipalities that do so. Throughout this model ordinance, bracketed “optional” text indicates where language should be included to effectuate these optional requirements.

D. 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, zoning, and building or construction permit 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.

Section 2: Definitions

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application.

“Bioretention” means a BMP that consists of a bed filled with soil, gravel, or other material and planted with suitable non-invasive (preferably native) vegetation. Stormwater runoff entering the bioretention system is filtered through the planting bed before being either conveyed downstream by an underdrain system or infiltrated into the existing subsoil below the planting bed.

“CAFRA Planning Map” means the geographic depiction of the boundaries for Coastal Planning Areas, CAFRA Centers, CAFRA Cores and CAFRA Nodes pursuant to N.J.A.C. 7:7E-5B.3.

“CAFRA Centers, Cores or Nodes” means those areas within boundaries accepted by the Department pursuant to N.J.A.C. 7:8E-5B.

“Compaction” means the increase in soil bulk density due to construction, development, or other causes.

“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 County Board of Chosen Freeholders to review municipal stormwater management plans and implementing ordinance(s). The county review agency may either be:

A county planning agency; or

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 New Jersey 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 enlargement of any building or structure, any mining excavation or landfill, any clearing, grading, or excavation or any other activity that results in land disturbance, and/or any use or change in the use of any building or other structure, or land or extension of use of land, by any person, 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 lands, development means: any activity that requires a State permit; any activity reviewed by the County Agriculture Development Board (CADB) and the State Agriculture 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.

“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 critical areas” means an area or feature which is of significant environmental value, including but not limited to: stream corridors; natural heritage priority sites; habitat 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 Neighborhood” means a neighborhood 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 street” means a street or public right of way designed using a combination of vegetated or non-structural and engineered strategies to manage stormwater through infiltration or evapotranspiration to reduce the amount of runoff and pollutants transported to a separate storm sewer system or a combined sewer system.

“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.

“Green Infrastructure ” refers to best management practices (BMP) that manage runoff close to the source by retention, infiltration, evapotranspiration, and filtration. Green infrastructure can be designed to capture and retain the Water Quality volume of 1.2 inches with no immediate surface discharge.

“Major development” means any development or redevelopment, as defined by this section, that adds or replaces (alone or in combination) 5,000 square feet or more of impervious surface, or that provides for ultimately disturbing a ½ acre or more of land. Major development includes both private and public projects or activities. Disturbance for the purpose of this rule is the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation.

Note: Some cities or towns may want to reduce the area of disturbance to lower than ½ acre to reflect local conditions, e.g. a lower net density, smaller parcel sizes, etc.

[Optional: “Minor development” means any development or redevelopment, as defined by this section, that adds or replaces (alone or in combination) 1,000 or more square feet [or less, if defined as such by the municipality, e.g. 250 square feet], but less than 5,000 square feet of impervious surface, or that provides for ultimately disturbing 1,000 or more square feet [or less, if defined as such by the municipality, e.g. 250 square feet] but less than or equal to ½ acre of land. Minor development includes both private and public projects or activities. Disturbance for the purpose of this rule is the exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation.]

Note: Municipalities are encouraged to require “minor development,” as defined here, to comply with the requirements for stormwater retention under section 4.H. and all pertinent requirements of section 3 and sections 6 through 10, in order to reduce stormwater runoff volume and pollutant loading. Municipalities choosing this option must include this definition of “minor development,” as well as all optional text below that references “minor development.”

Municipalities are additionally encouraged to modify this definition to set a threshold for “minor development” even lower than 1,000 square feet, as appropriate or necessary to achieve water quality, public health, or safety goals in their own jurisdictions. Examples of municipalities that have applied requirements to small developments: Hightstown has a threshold of 250 square feet of new impervious surface; Cranford’s is 450 square feet of new impervious surface; Millburn’s is 200 square feet of new impervious surface or 500 square feet of land disturbance; Edison’s is 500 square feet of new impervious surface.

“Municipality” means any city, borough, town, township, or village.

“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, [insert name of municipality], or political subdivision of this State subject to municipal jurisdiction pursuant to the Municipal Land Use Law , N.J.S.A. 40:55D-1 et seq.

“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.

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

“Redevelopment” means land-disturbing activity that results in the creation, addition, or replacement of impervious surface area on an already developed or disturbed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

“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 [*optional*: or minor] 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 runoff” means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

“Stormwater management basin” means an excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management basin may either be normally dry (that is, a detention basin or infiltration basin), retain water in a permanent pool (a retention basin), or be planted mainly with wetland vegetation (most constructed stormwater wetlands).

“Stormwater management measure” means any structural or nonstructural strategy, 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.

“Tidal Flood Hazard Area” means a flood hazard area, which may be influenced by stormwater runoff from inland areas, but which is primarily caused by the Atlantic Ocean.

“Urban Coordinating Council Empowerment Neighborhood” means a neighborhood given priority access to State resources through the New Jersey 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.

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

“Water resource protection area” refers to the area surrounding Category one waters, as classified by the State of New Jersey, that necessitate stringent protective measures to preserve their exceptional significance in ecology, water supply and/or recreation.

“Wetlands” or “wetland” means an 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.

Section 3: General Standards

A. Design and Performance Standards for Stormwater Management Measures

1. Stormwater management measures for major development shall be developed to meet the erosion control, groundwater recharge, stormwater retention, stormwater runoff quantity, and stormwater runoff quality standards in Sections 4.F and 4.G. [*optional*: Stormwater management measures for minor development shall be developed to meet the stormwater retention standards in Section 4.H.] To the maximum extent practicable, the standards in Sections 4.F and 4.G shall be met by incorporating nonstructural stormwater management strategies into the design in accordance with Section 4.E. If these strategies alone are not sufficient to meet these standards, structural stormwater management measures necessary to meet these standards shall be incorporated into the design.
2. The standards in this ordinance apply only to new major [*optional*: and minor] development (including redevelopment) and are intended to minimize the impact of stormwater runoff on water quality and water quantity in receiving water bodies and achieve additional environmental benefits including maintaining groundwater recharge. The standards do not apply to new major development to the extent that alternative design and performance standards are applicable under a regional stormwater management plan or Water Quality Management Plan adopted in accordance with Department rules, provided such alternative design and performance standards also satisfy the stormwater retention standards of 4.F.1.c.

Note: Alternative standards shall 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 and as much stormwater retention as required by this ordinance.

3. Where redevelopment that adds, replaces, or disturbs (alone or in combination) greater than 5,000 square feet [*Note: for municipalities choosing to regulate “minor development” in this ordinance, replace “5,000” with “1,000”*] of impervious surface results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, the entire existing development shall meet the requirements of this ordinance.

Section 4: Stormwater Management Requirements for Major [*optional*: and Minor] Development

- A. The development shall incorporate a maintenance plan for the stormwater management measures incorporated into the design of a major [*optional*: or minor] development in accordance with Section 10.
- B. Stormwater management measures shall avoid adverse impacts of concentrated flow on habitat for threatened and endangered species as documented in the Department' 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 retention, stormwater runoff quantity, and stormwater runoff quality requirements of Sections 4.F, 4.G[*optional*: , and 4.H]:
1. The construction of an underground utility line, sixteen inches in diameter or less, provided that the disturbed areas are revegetated upon completion, with priority given for use of native plant species;
[underground utility lines greater than 16 inches in diameter must comply with this stormwater ordinance]
 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 groundwater recharge, stormwater retention, stormwater runoff quantity, and stormwater runoff quality requirements of Sections 4.F, 4.G[*optional*: , and 4.H] may be granted 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 in writing through an alternatives analysis, that through the use of nonstructural and structural stormwater management strategies and measures, the option selected complies with the requirements of Sections 4.F and 4.G to the maximum extent practicable. For road or highway projects, the applicant shall, at minimum, follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) and/or the National Association of City Transportation Officials (NACTO) guidance in its Urban Street Stormwater Guide (2017, Island Press);
 3. The applicant demonstrates that, in order to meet the requirements of Sections 4.F and 4.G, 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 D.3 above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate the requirements of Sections 4.F and 4.G that were not achievable on-site.

E. Nonstructural Stormwater Management Strategies

1. The standards in Sections 4.F and 4.G shall be met by incorporating nonstructural stormwater management strategies set forth at Section 4.E.2 into the design unless the use of structural practices is determined to be absolutely necessary. The applicant shall consider each strategy set forth in Paragraph 2 and identify the nonstructural measures ultimately incorporated into the design of the project. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management measures identified in Paragraph 2 below into the design of a particular project, the applicant shall identify the strategy considered and provide a basis for the contention of infeasibility for each practice that is not used. The applicant bears the burden of proving infeasibility. The requirements of this Section 4.E. apply notwithstanding any provisions of any other local law that allows for site designs that conflict with such requirements, including but not limited to other local laws authorizing disturbance of a certain percentage of a development site.
2. Nonstructural stormwater management strategies incorporated into site design shall:
 - a. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;
 - b. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;
 - c. Maximize the protection of natural drainage features and vegetation;
 - d. Minimize the decrease in the "time of concentration" from pre-construction to post construction. "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the watershed to the point of interest within a watershed;
 - e. Minimize land disturbance including clearing and grading;
 - f. Minimize soil compaction;
 - g. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;
 - h. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas;
 - i. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site, in order to prevent or minimize the release of those pollutants into stormwater runoff. Such source controls include, but are not limited to:
 - (1) Site design features that help to prevent accumulation of trash and debris in drainage systems, including features that satisfy Section 4.E.3. below;
 - (2) Site design features that help to prevent discharge of trash and debris from drainage systems;
 - (3) Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and

- (4) When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules.
3. Site design features identified under Section 4.E.2.i.(2) above 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 see Section 4.E.3.c below.
- a. Design engineers shall use either 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:
 - (1) 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 (April 1996); or
 - (2) 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 basin floors.

- b. Whenever design engineers use a curb-opening inlet, 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.
- c. This standard does not apply:
 - (1) Where the review agency determines that this standard would cause inadequate hydraulic performance that could not practicably be overcome by using additional or larger storm drain inlets that meet these standards;
 - (2) Where flows from the water quality design storm as specified in Section 4.G.1 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 inches long and one and one-half inches wide (this option does not apply for outfall netting facilities); or
 - (b) A bar screen having a bar spacing of 0.5 inches.
 - (3) Where flows are conveyed through a trash rack that has parallel bars with one-inch (1”) spacing between the bars, to the elevation of the water quality design storm as specified in Section 4.G.1; or

- (4) 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.
 4. Any land area used as a nonstructural stormwater management measure to meet the performance standards in Sections 4.F and 4.G shall be dedicated to a government agency, subjected to a conservation restriction filed with the appropriate County Clerk's office, or subject to an approved equivalent restriction that ensures that measure or an equivalent stormwater management measure approved by the reviewing agency is maintained in perpetuity.
 5. Guidance for nonstructural stormwater management strategies is available in the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in Section 7, or found on the Department's website at www.njstormwater.org.
- F. Erosion Control, Groundwater Recharge, Stormwater Retention and Runoff Quantity Standards for Major Development
1. This subsection contains minimum design and performance standards for erosion control, groundwater recharge, stormwater retention and runoff quantity standards for major development.
 - a. The minimum design and performance standards for erosion control are those established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq. and implementing rules.
 - b. The minimum design and performance standards for groundwater recharge are as follows:
 - (1) The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at Section 5, use the demonstration approach below that results in a greater recharge volume performance standard:
 - (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.
 - (2) 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 and other subsurface structures in the vicinity or downgradient of the groundwater recharge area.
 - c. The minimum design and performance standards for stormwater retention are as follows:
 - (1) The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at Section 5, demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures will result in retention on-site,

with no discharge, of the Stormwater Quality Design Volume (SWQDv), defined as the runoff from the 1.25-inch, 2-hour rainfall event.

(a) Groundwater recharge performed in compliance with 4.F.1.b(1)(a) or 4.F.1.b(1)(b) above may count toward required retention of the SWQDv. Where groundwater recharge will result in equal or greater retention than required to meet the SWQDv, then it shall constitute compliance with section 4.F.1.c. Where meeting the groundwater recharge requirement will not result in retention of the full SWQDv, the major development shall retain any additional volume to meet the requirements of 4.F.1.c(1) through additional infiltration, or through evapotranspiration or capture and on-site re-use of rainfall.

(2) No finding of technical infeasibility to retain on-site the full SWQDv, pursuant to 4.F.1.d.2, shall be made unless the following green infrastructure practices and any others identified in guidance issued by [insert name of municipality], individually and in combination, have been utilized to the maximum extent technically feasible:

- (a) Bioretention Systems (rain gardens, trees & tree boxes)
- (b) Green roofs;
- (c) Pervious paving systems
- (d) Grass swales
- (e) Dry wells
- (g) Vegetative filter strips
- (h) Wet ponds
- (i) Constructed stormwater wetlands;
- (j) Disconnected low flow channels

d. In instances where it is technically infeasible to recharge groundwater or to meet the requirement to retain the SWQDv, as established through submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, and/or landscape architect, a major development may comply with section 4.F.1.b. and 4.F.1.c. through the following alternative compliance measures:

(1) Where it is technically infeasible to meet groundwater recharge requirements under section 4.F.1.b., full compliance with the stormwater retention requirements under 4.F.1.c. and with the municipality's approved mitigation plan, including the implementation of a project in accordance with that plan, completed pursuant to N.J.A.C. 7:8-4.2 and 4.6, shall constitute compliance with section 4.F.1.b. Technical infeasibility for groundwater recharge may arise from the following conditions:

- (a) Presence of the following types of stormwater, which shall not be recharged:
 - (i) 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

- (ii) 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.

(b) Adverse hydraulic impact on the groundwater table.

- (2) Where it is technically infeasible to retain the full SWQDv on-site, the major development shall use bioretention with an underdrain, constructed wetlands, or other practice that relies on vegetation and soil for water quality treatment, to treat 1.5 times the volume of the SWQDv that is not retained on-site. All such practices shall be designed in accordance with the New Jersey Stormwater BMP Manual, and the combination of practices used on the site shall achieve the TSS removal rate contained in Table 2 below. The project shall ensure that use of bioretention shall not result in recharge for major development subject to F.1.d(1)(b). Technical infeasibility for stormwater retention may arise from any condition under 4.F,1.d(1) or conditions including, but not limited to, the following:

(a) Locations where pollutant mobilization is a documented concern; or

(b) Other geotechnical hazards such as karst terrain.

[Note: Municipalities may add language to this ordinance authorizing use of a neighborhood or regional scale stormwater management practice (e.g., a green street, park retrofit, or groundwater spreading field) to meet the groundwater recharge and/or stormwater retention standard for any project, provided that such standard is ultimately met prior to discharge into a MS4 or combined sewer system; and provided that, for projects defined as “major development” under NJAC 7:8-1.2, use of such practice to achieve compliance is authorized under a mitigation plan adopted in accordance with DEP rules (see NJAC 7:8-4.6).]

e. In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at Section 5, complete one of the following:

- (1) Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the two, 10, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;

- (2) 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 two, 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;
 - (3) Design stormwater management measures so that the post-construction peak runoff rates for the 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. The percentages shall not be applied to post-construction stormwater runoff into tidal flood hazard areas if the increased volume of stormwater runoff will not increase flood damages below the point of discharge; or
 - (4) In tidal flood hazard areas, stormwater runoff quantity analysis in accordance with (1), (2) and (3) above shall only be applied if the increased volume of stormwater runoff could increase flood damages below the point of discharge.
2. If there is more than one onsite drainage area, the requirements of this section shall apply to each drainage area, unless the runoff from the subareas converge on site in which case compliance can be demonstrated through a calculation using a weighted average.
 3. Any application for a new agricultural development that meets the definition of major development at Section 2 shall be submitted to the appropriate Soil Conservation District for review and approval in accordance with the requirements of this section and any applicable Soil Conservation District guidelines for stormwater runoff quantity and erosion control. For the purposes of this section, "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 manufacturing of agriculturally related products.

G. Stormwater Runoff Quality Standards for Major Development

1. This subsection contains minimum design and performance standards for stormwater runoff quality at major development. Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff by 80 percent of the anticipated load from the developed site, expressed as an annual average. The water quality design storm is 1.25 inches of rainfall in two hours. Water quality calculations shall take into account the distribution of rain from the water quality design storm, as reflected in Table 1. The calculation of the volume of runoff may take into account the implementation of non-structural and structural stormwater management measures. Pollution reductions achieved by measures installed to satisfy the requirements of Part F.1.b, F.2.c, and/or F.1.d.2 may also be counted toward satisfaction of the requirements of this section.

Table 1: Water Quality Design Storm Distribution			
Time (Minutes)	Cumulative Rainfall (Inches)	Time (Minutes)	Cumulative Rainfall (Inches)
0	0.0000	65	0.8917
5	0.0083	70	0.9917
10	0.0166	75	1.0500
15	0.0250	80	1.0840
20	0.0500	85	1.1170
25	0.0750	90	1.1500
30	0.1000	95	1.1750
35	0.1330	100	1.2000
40	0.1660	105	1.2250
45	0.2000	110	1.2334
50	0.2583	115	1.2417
55	0.3583	120	1.2500
60	0.6250		

2. For purposes of TSS reduction calculations, Table 2 below presents the presumed removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in Section 7, or found on the Department’s website at www.njstormwater.org. The BMP Manual and other sources of technical guidance are listed in Section 7. TSS reduction shall be calculated based on the removal rates for the BMPs in Table 2 below. Alternative removal rates and methods of calculating removal rates may be used if the design engineer provides documentation demonstrating the capability of these alternative rates and methods to the review agency. A copy of any approved alternative rate or method of calculating the removal rate shall be provided to the Department at the following address: Division of Watershed Management, New Jersey Department of Environmental Protection, PO Box 418 Trenton, New Jersey, 08625-0418.

3. 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:

$$R = A + B - (AXB)/100$$

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

Table 2: TSS Removal Rates for BMPs	
Best Management Practice	TSS Percent Removal Rate
Bioretention Systems	90
Constructed Stormwater Wetland	90
Extended Detention Basin	40-60
Infiltration Structure	80
Manufactured Treatment Device	See Section 6.C
Sand Filter	80
Vegetative Filter Strip	60-80
Wet Pond	50-90

4. If there is more than one onsite drainage area, the 80 percent TSS removal rate shall apply to each drainage area, unless the runoff from the subareas converge on site in which case the removal rate can be demonstrated through a calculation using a weighted average.
5. Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction nutrient load (nitrogen and phosphorous) 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 nonstructural strategies and structural measures that optimize nutrient removal while still achieving the performance standards in Sections 4.F and 4.G.
6. Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in Section 7.
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. Water resource protection areas (WRPA) shall be established along all waters designated as Category One at N.J.A.C. 7:9B, and perennial or intermittent streams that drain into or upstream of the Category One waters as shown on the USGS Quadrangle Maps or in the County Soil Surveys, within the associated HUC14 drainage area. These areas shall be established for the protection of water quality, aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, and exceptional fisheries significance of those established Category One waters. These areas shall be designated and protected as follows:
 - a. The applicant shall preserve and maintain a water resource protection area in accordance with one of the following:
 - (1) A 300-foot water resource protection area shall be provided on each side of the waterway, measured perpendicular to the waterway from the top of the bank outwards or from the centerline of the waterway where the bank is not defined, consisting of existing vegetation or vegetation allowed to follow natural succession is provided.

- (2) Encroachment within the designated water resource protection area under Subsection (1) above shall only be allowed where previous development or disturbance has occurred (for example, active agricultural use, parking area or maintained lawn area). The encroachment shall only be allowed where applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable. In no case shall the remaining special water resource protection area be reduced to less than 150 feet as measured perpendicular to the top of bank of the waterway or centerline of the waterway where the bank is undefined.
- b. All stormwater shall be discharged outside of and flow through the water resource protection area and shall comply with the Standard for Off-Site Stability in the “Standards For Soil Erosion and Sediment Control in New Jersey,” established under the Soil Erosion and Sediment Control Act , N.J.S.A. 4:24-39 et seq.
- c. If stormwater discharged outside of and flowing through the water resource protection area cannot comply with the Standard For Off-Site Stability in the “Standards for Soil Erosion and Sediment Control in New Jersey,” established under the Soil Erosion and Sediment Control Act , N.J.S.A. 4:24-39 et seq., then the stabilization measures in accordance with the requirements of the above standards may be placed within the special water resource protection area, provided that:
 - (1) Stabilization measures shall not be placed within 150 feet of the Category One waterway;
 - (2) Stormwater associated with discharges allowed by this section shall achieve a 95 percent TSS post-construction removal rate;
 - (3) Temperature shall be addressed to ensure no impact on the receiving waterway;
 - (4) The encroachment shall only be allowed where the applicant demonstrates that the functional value and overall condition of the water resource protection area will be maintained to the maximum extent practicable and the applicant demonstrates that the proposed activity does not violate applicable water quality standards and requirements;
 - (5) A conceptual project design meeting shall be held with the appropriate Department staff and Soil Conservation District staff to identify necessary stabilization measures; and
- d. A stream corridor protection plan may be developed by a regional stormwater management planning committee as an element of a regional stormwater management plan, or by a municipality through an adopted municipal stormwater management plan. If a stream corridor protection plan for a waterway subject to Section 4.G(8) has been approved by the Department of Environmental Protection, then the provisions of the plan shall be the applicable water resource protection area requirements for that waterway. A stream corridor protection plan for a waterway subject to G.8 shall maintain or enhance the current functional value and overall condition of the water resource protection area as defined in G.8.a.(1) above. In no case shall a stream corridor protection plan allow the reduction of the Water Resource Protection Area to less than 150 feet as measured perpendicular to the waterway subject to this subsection.
- e. Paragraph G.8 does not apply to the construction of one individual single family dwelling that is not part of a larger development on a lot receiving preliminary or final subdivision approval on or before February 2, 2004, provided that the construction begins on or before February 2, 2009.

H. Retention Standard for Minor Development (*optional*)

1. This section contains minimum design and performance standards for stormwater retention at minor development.
 - a. For each 250 square feet of impervious surface, 250 gallons of stormwater shall be retained on-site using the green infrastructure practices listed in Section 4.F.1.c.2 or such other measures as may be identified by [insert name of municipality]. This standard shall apply proportionally to impervious surfaces not evenly divisible by 250 square feet.
 - b. Where it is technically infeasible to retain the full retention volume on-site, the minor development shall comply with the alternative treatment requirements in Section 4.F.1.d.2.]

[Note: This section (H) must be included if a municipality opts to apply its ordinance to minor development.]

Section 5: Calculation of Stormwater Runoff, Stormwater Retention, and Groundwater Recharge for Major Development

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

1. The design engineer shall calculate runoff using the USDA Natural Resources Conservation Service (NRCS) methodology, including the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in the NRCS National Engineering Handbook Section 4 – Hydrology and Technical Release 55 – Urban Hydrology for Small Watersheds.
2. 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 the NRCS methodology. A runoff coefficient 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 type 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).
3. 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.
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 and 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 into account the effects of tailwater in the design of structural stormwater management measures.

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

1. The New Jersey Geological Survey Report GSR-32 A Method for Evaluating Ground-Water 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 <http://www.state.nj.us/dep/njgs/>; or at New Jersey Geological Survey, 29 Arctic Parkway, P.O. Box 427 Trenton, New Jersey 08625-0427; (609) 984-6587.

Section 6: Standards for Structural Stormwater Management Measures

A. Standards for structural stormwater management measures are as follows:

1. Structural stormwater management measures shall be designed to take into account the existing site conditions, including, for example, 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. Structural 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 (1") 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 (1/3) the width of the diameter of the orifice or one-third (1/3) 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 Section 8.D. Green infrastructure shall be designed to consider sediment and trash, and shall include measures to prevent to movement of sediment and debris from entering the green infrastructure practice. These may include sumps, filter strips, sediment trap areas, or other measures appropriate to the BMP.
3. Structural 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. At the intake to the outlet from the stormwater management basin, the orifice size shall be a minimum of two and one-half inches in diameter. This requirement does not apply to slow-release green infrastructure.
5. Stormwater management basins shall be designed to meet the minimum safety standards for stormwater management basins at Section 8.
6. Stormwater conveyance systems shall, at a minimum, match the downstream stormwater management design event.

B. Stormwater management measure guidelines are available in the New Jersey Stormwater Best Management Practices Manual. Other stormwater management measures may be utilized provided the design engineer demonstrates that the proposed measure and its design will accomplish the required water quantity, groundwater recharge and water quality design and performance standards established by Section 4 of this ordinance.

- C. Manufactured treatment devices may be used to meet the requirements of Section 4 of this ordinance, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology and certified by the Department.

Section 7: Sources for Technical Guidance

A. Technical guidance for stormwater management measures can be found in the documents listed at 1 and 2 below, which are available from Maps and Publications, New Jersey Department of Environmental Protection, 428 East State Street, P.O. Box 420, Trenton, New Jersey, 08625; telephone (609) 777-1038.

1. Guidelines for stormwater management measures are contained in the New Jersey Stormwater Best Management Practices Manual, as amended. Information is provided on stormwater management measures such as: bioretention systems, constructed stormwater wetlands, dry wells, extended detention basins, infiltration structures, manufactured treatment devices, pervious paving, sand filters, vegetative filter strips, and wet ponds.
2. The New Jersey Department of Environmental Protection Stormwater Management Facilities Maintenance Manual, as amended.

B. Additional technical guidance for stormwater management measures can be obtained from the following:

1. The "Standards for Soil Erosion and Sediment Control in New Jersey" promulgated by the State Soil Conservation Committee and incorporated into N.J.A.C. 2:90. Copies of these standards may be obtained by contacting the State Soil Conservation Committee or any of the Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a)4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey 08625; (609) 292-5540;
2. The Rutgers Cooperative Extension Service, 732-932-9306; and
3. The Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a)4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey, 08625, (609) 292-5540.
4. U.S. Environmental Protection Agency, Green Infrastructure resource page:
<http://water.epa.gov/infrastructure/greeninfrastructure/index.cfm>

Section 8: 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 basins. This section applies to any new stormwater management basin.

Note: This section implements mandatory minimum requirements as per N.J.A.C. 7:8-6. The provisions of this section are not intended to preempt more stringent municipal or county safety requirements for new or existing stormwater management basins. Municipal and county stormwater management plans and ordinances may, pursuant to their authority, require existing stormwater management basins to be

retrofitted to meet one or more of the safety standards in Sections 8.B.1, 8.B.2, and 8.B.3 for trash racks, overflow grates, and escape provisions at outlet structures.

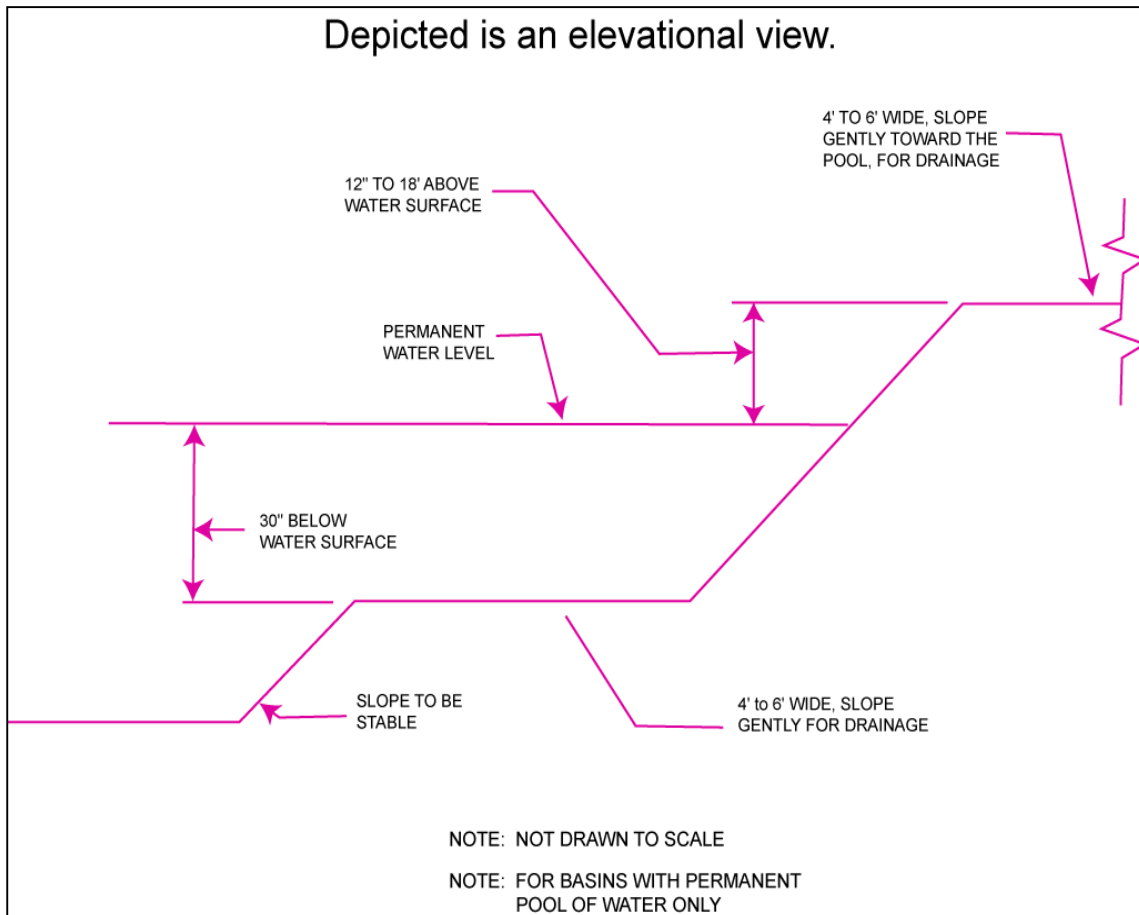
B. Requirements for Trash Racks, Overflow Grates and Escape Provisions

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 basin to ensure proper functioning of the basin outlets in accordance with the following:
 - a. The trash rack shall have parallel bars, with no greater than six inch spacing between the bars.
 - b. The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure.
 - c. 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.
 - d. The trash rack shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 lbs/ft sq.
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:
 - a. The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance.
 - b. The overflow grate spacing shall be no less than two inches across the smallest dimension.
 - c. 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 lbs./ft sq.
3. For purposes of this paragraph 3, escape provisions means the permanent installation of ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management basins. Stormwater management basins shall include escape provisions as follows:
 - a. If a stormwater management basin has an outlet structure, escape provisions shall be incorporated in or on the structure. With the prior approval of the reviewing agency identified in Section 8.C a free-standing outlet structure may be exempted from this requirement.
 - b. Safety ledges shall be constructed on the slopes of all new stormwater management basins having a permanent pool of water deeper than two and one-half feet. Such 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. See Section 8.D for an illustration of safety ledges in a stormwater management basin.
 - c. In new stormwater management basins, the maximum interior slope for an earthen dam, embankment, or berm shall not be steeper than 3 horizontal to 1 vertical.

C. Variance or Exemption from Safety Standards

1. A variance or exemption from the safety standards for stormwater management basins may be granted only upon a written finding by the appropriate reviewing agency (municipality, county or Department) that the variance or exemption will not constitute a threat to public safety.

D. Illustration of Safety Ledges in a New Stormwater Management Basin



Section 9: Requirements for a Site Development Stormwater Plan

A. Submission of 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 at Section 9.C [optional: or 9.D, as applicable,] below as part of the submission of the applicant's application for subdivision or site plan approval.
2. The applicant shall demonstrate that the project meets the standards set forth in this ordinance.
3. The applicant shall submit [specify number] copies of the materials listed in the checklist for site development stormwater plans in accordance with Section 9.C [optional: or 9.D, as applicable] of this ordinance.

B. Site Development Stormwater Plan Approval

The applicant's Site Development plan shall be reviewed as a part of the subdivision or site plan review, zoning approval, or building or construction permit review process by the municipal board or official from which municipal approval is sought. That municipal board or official shall consult the engineer retained by the Planning and/or Zoning Board (as appropriate) to determine if all of the checklist requirements have been satisfied and to determine if the project meets the standards set forth in this ordinance. Neither a building or construction permit nor a zoning approval may be issued unless the requirements of this ordinance are met. Approval of other local, state, and/or other permits (also known as "prior approvals") is not a substitute for local approval of a project's Site Development Stormwater Plan.

C. Checklist Requirements for Major Development

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 environs. 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 Plan(s)

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 occur in the natural terrain and cover, including lawns and other landscaping, and seasonal high ground water elevations. A written description of the site plan and justification of proposed changes in natural conditions may also be provided.

4. Land Use Planning and Source Control Plan

This plan shall provide a demonstration of how the goals and standards of Sections 3 through 6 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:

- a. Total area to be 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.
- b. 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

- a. Comprehensive hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in Section 4 of this ordinance.
- b. When the proposed stormwater management control measures (e.g., infiltration basins) depends on the hydrologic properties of soils, 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.

7. Maintenance and Repair Plan

The design and planning of the stormwater management facility shall meet the maintenance requirements of Section 10.

8. Waiver from Submission Requirements

The conditions for a waiver from submission requirements are defined in the Municipal Land Use Law, N.J.S.A. 40:55D-10.3.

[optional: D. Checklist Requirements for Minor Development

Applicants seeking municipal approval of minor developments shall submit the information described in Sections 9.C.3, 9.C.4, 9.C.5, and 9.C.7. Applicants shall also submit calculations demonstrating compliance with the retention standard in Section 4.H.

The conditions for a waiver from submission requirements are defined in the Municipal Land Use Law, N.J.S.A. 40:55D-10.3.]

Section 10: Maintenance and Repair

A. Applicability

1. Projects subject to review as in Section 1.C of this ordinance shall comply with the requirements of Sections 10.B and 10.C.

B. General Maintenance

1. The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major [*optional*: or minor] development.
2. The maintenance plan shall contain specific preventative maintenance tasks and schedules, including consideration of winterization for structural BMPs; 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). Maintenance guidelines for stormwater management measures are available in the New Jersey Stormwater Best Management Practices Manual. If the maintenance plan identifies a person other than the developer (for example, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or of the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.
3. The maintenance plan shall specifically provide a municipal right of access, which may include stormwater easements or covenants. The maintenance access shall be provided by the property owner(s) for access regarding facility inspections and maintenance, as required. Easements and covenants shall be recorded prior to issuance of any permit or approval.
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.
5. If the person responsible for maintenance identified under Section 10.B.2 above is not a public agency, the maintenance plan and any future revisions based on Section 10.B.7 below 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 function of the stormwater management measure, including 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 nonvegetated linings.
7. The person responsible for maintenance identified under Section 10.B.2 above shall 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.
8. The person responsible for maintenance identified under Section 10.B.2 above shall evaluate the effectiveness of the maintenance plan at least once per year and, subject to municipal approval, adjust the plan and the deed as needed.
9. The person responsible for maintenance identified under Section 10.B.2 above shall 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 Sections 10.B.6 and 10.B.7 above.

10. On or before February 1 of each year, the person responsible for maintenance identified under Section 10.B.2 above shall submit to the municipality, a certification of compliance during the prior year with the Sections 10.B.5 through 10.B.8, [*optional: on a form to be prescribed by [insert name of municipality or municipal agency]*], which shall include a summary of inspection and maintenance activities and any proposed changes to the maintenance plan.

(Note: When adopting this model ordinance, municipalities should establish clear procedures regarding who these certifications—including proposed changes to maintenance plans—should be submitted to, and what the responsibilities of that municipal official will be in reviewing the certifications and taking any necessary follow-up action regarding inspection and enforcement of existing maintenance plans and/or approval of proposed changes to maintenance plans. Municipalities should educate both the regulated community and relevant municipal staff about such protocols.)

11. The requirements of Sections 10.B.3 and 10.B.4 do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency.

(Note: It may be appropriate to delete requirements in the maintenance and repair plan that are not applicable if the ordinance requires the facility to be dedicated to the municipality. If the municipality does not want to take this responsibility, the ordinance should require the posting of a two year maintenance guarantee in accordance with N.J.S.A. 40:55D-53. Guidelines for developing a maintenance and inspection program are provided in the New Jersey Stormwater Best Management Practices Manual and the NJDEP Ocean County Demonstration Study, Stormwater Management Facilities Maintenance Manual, dated June 1989 available from the NJDEP, Watershed Management Program.)

12. 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.

- B. Nothing in this section shall preclude the municipality in which the major [*optional: or minor*] development is located from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53.

Section 11: Penalties

Any person who erects, constructs, alters, repairs, converts, maintains, or uses any building, structure or land in violation of this ordinance shall be subject to the following penalties: [*Municipality to specify*].

Section 12: Effective Date

This ordinance shall take effect immediately upon the 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.

Section 13: 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.