walls shall not exceed one-third (1/3) of the horizontal distance from the foundation wall of any building to the face of the retaining wall.

H. The subdivider shall take all necessary precautions to prevent any siltation of streams during the construction of the subdivision. The subdivider shall provide adequate provisions to prevent all deposition of silt or other eroded material in any stream or watercourse. Such provisions may include but are not limited to construction and maintenance of siltation basins or holding ponds and diversion berms throughout the course of construction and planting areas.

I. All lots, open space and planting areas shall be seeded with a suitable stabilizing ground cover approved by the Township Engineer. On any waterfront lots or open spaces, the Board may allow a suitable stabilizing ground cover other than seeding if approved by the Township Engineer.

J. No topsoil shall be removed from the site or used as soil. Topsoil moved during the course of construction shall be redistributed so as to provide at least four (4) inches of spread cover to all seeding and planting areas of the subdivision and shall be stabilized by seeding or planting. In the event that the quantity of topsoil at the site is insufficient to provide four (4) inches of cover for all seeding and planting areas, the developer shall provide and distribute a sufficient quantity of topsoil to provide such a cover. Topsoil shall be approved by the Township Engineer.

K. This section shall be applicable to all subdivisions, site plans and all individual dwelling unit(s) site disturbances.

L. If, in the opinion of the Township Engineer, the requirements of this section cannot be met, a certification from a licensed Engineer or licensed Land Surveyor setting forth an acceptable drainage and grading plan shall be necessary prior to the issuance of a certificate of occupancy.

§ 15-12.11. Stormwater Control Ordinance for areas that are not within the Pinelands Area. [Amended on 12/13/2007 by Ord. No. 2007-26]

A. Policy Statement. Flood control, groundwater recharge, and pollutant reduction through nonstructural or low impact techniques shall be explored before relying on structural Best Management Practices (BMPs). Structural BMPs should be integrated with nonstructural stormwater management strategies and proper maintenance plans. Nonstructural strategies include both environmentally sensitive site design and source controls that prevent pollutants from being placed on the site or from being exposed to stormwater. 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, and groundwater recharge.

B. Purpose. It is the purpose of this ordinance to establish minimum stormwater management requirements and controls for "major development," as defined in subsection E.

C. Applicability.

(1) 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:
   (a) Non-residential major developments; and
   (b) Aspects of residential major 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 developments undertaken by Little Egg Harbor Township.

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 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.

E. 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. 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 PLANNING MAP – 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 – Those areas within boundaries accepted by the Department pursuant to N.J.A.C. 7:8E-5B.

COMPACTION – The increase in soil bulk density.

CORE – A pedestrian-oriented area of commercial and civic uses serving the surrounding municipality, generally including housing and access to public transportation.

COUNTY REVIEW AGENCY – 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:

(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 – The New Jersey Department of Environmental Protection.

DESIGNATED CENTER – A State Development and Redevelopment Plan Center as designated by the State Planning Commission such as urban, regional, town, village, or hamlet.

DESIGN ENGINEER – 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 – 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, and 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 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.*

DRAINAGE AREA – 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 – 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 – 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 – The detachment and movement of soil or rock fragments by water, wind, ice or gravity.

FILTER MATERIAL – Washed gravel crushed stone, slag, or clean bank run gravel ranging in size from one-half (½") inch to two and one-half (2 ½") inches free of dust, ashes or clay.

IMPERVIOUS SURFACE – A surface that has been covered with a layer of material so that it is highly resistant to infiltration by water.

INFILTRATION – The process by which water seeps into the soil from precipitation.

MAJOR DEVELOPMENT – Any development that provides for ultimately disturbing one or more acres of land. 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.

MUNICIPALITY – Any city, borough, town, township, or village.

NET FILL – The total amount of fill created incidental to the completion of the project less that amount of excavated material removed during the completion of the project, both measured below the elevation of the edge of the flood hazard area.

NODE – An area designated by the State Planning Commission concentrating facilities and activities which are not organized in a compact form.

NUTRIENT – A chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the development of organisms.

PERSON – Any individual, corporation, company, partnership, firm, association, Little Egg Harbor Township, 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 – 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 – The amount of water from precipitation that infiltrates into the ground and is not evapotranspired.

SEDIMENT – 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 – The lot or lots upon which a major development is to occur or has occurred.

SOIL – All unconsolidated mineral and organic material of any origin.

SOURCE MATERIAL – 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.

STATE DEVELOPMENT AND REDEVELOPMENT PLAN METROPOLITAN PLANNING AREA (PA1) – 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 – 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 – 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 – Water flow on the surface of the ground or in storm sewers, resulting from precipitation.

STORMWATER MANAGEMENT BASIN – 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 – 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 – A flood hazard area, which may be influenced by stormwater runoff from inland areas, but which is primarily caused by the Atlantic Ocean.

TIME OF CONCENTRATION – 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.

URBAN COORDINATING COUNCIL EMPOWERMENT NEIGHBORHOOD – A neighborhood given priority access to State resources through the New Jersey Redevelopment Authority.

URBAN ENTERPRISE ZONES – 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 – 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 – 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.

WETLANDS or WETLAND – 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.

F. 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 runoff quantity, and stormwater runoff quality standards in subsection G. To the maximum extent practicable, these standards shall be met by incorporating nonstructural stormwater management strategies into the design. 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 development and are intended to minimize the impact of stormwater runoff on water quality and water quantity in receiving water bodies and maintain 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.

G. Stormwater Management Requirements for Major Development

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

(2) 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 muhlenbergi* (bog turtle).

(3) The following linear development projects are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of subsections G(6) and G(7):

(a) The construction of an underground utility line provided that the disturbed areas are revegetated upon completion;

(b) The construction of an aboveground utility line provided that the existing conditions are maintained to the maximum extent practicable; and

(c) The construction of a public pedestrian access, such as a sidewalk or trail with a maximum width of fourteen (14') feet, provided that the access is made of permeable material.

(4) A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of subsections G(6) and G(7) 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:

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

(b) The applicant demonstrates 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 subsections G(6) and G(7) to the maximum extent practicable;

(c) The applicant demonstrates that, in order to meet the requirements of subsections G(6) and G(7), existing structures currently in use, such as homes and buildings, would need to be condemned; and

(d) 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 subsection G(4)(c) above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate the requirements of subsections G(6) and G(7)that were not achievable on-site.

(5) Nonstructural Stormwater Management Strategies

(a) To the maximum extent practicable, the standards in subsections G(6) and G(7)shall be met by incorporating nonstructural stormwater management strategies, set forth in subsection G(5), into the design. The applicant shall identify the nonstructural measures 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 (b) below into the design of a particular project, the applicant shall identify the strategy considered and provide a basis for the contention.

(b) Nonstructural stormwater management strategies incorporated into site design shall:

[1] Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;

[2] Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;

[3] Maximize the protection of natural drainage features and vegetation;

[4] Minimize the decrease in the "time of concentration" from pre-construction to post construction.

[5] Minimize land disturbance including clearing and grading;

[6] Minimize soil compaction;

[7] Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;

[8] Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas;

[9] 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:

[a] Site design features that help to prevent accumulation of trash and debris in drainage systems, including features that satisfy subsection G(5)(c) below;

[b] Site design features that help to prevent discharge of trash and debris from drainage systems;

[c] Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and

[d] 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.

(c) Site design features identified under subsection G(5)(b)[9][b] 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 subsection G(5)(c)[4] below.

[1] 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:

[a] 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

[b] 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.

[2] 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.

[3] 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") inches across the smallest dimension.

[4] This standard does not apply:

[a] 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;

[b] Where flows from the water quality design storm as specified in subsection G(7)(a) 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:

(i) 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

(ii) A bar screen having a bar spacing of 0.5 inches.

[c] 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 subsection G(7)(a); or

[d] 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.

(d) Any land area used as a nonstructural stormwater management measure to meet the performance standards in subsection G(6) and G(7) 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.

(e) 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.

(6) Erosion Control, Groundwater Recharge and Runoff Quantity Standards.

(a) This subsection contains minimum design and performance standards to control erosion, encourage and control infiltration and groundwater recharge, and control stormwater runoff quantity impacts of major development.

[1] 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.

[2] The minimum design and performance standards for groundwater recharge are as follows:

[a] The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at subsection I, either:

(i) Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain one hundred (100%) percent of the average annual pre-construction groundwater recharge volume for the site; or

(ii) 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.

[b] This groundwater recharge requirement does not apply to projects within the "urban redevelopment area," or to projects subject to G(6)(a)[2][c] below.

[c] The following types of stormwater 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."

[d] 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 down gradient of the groundwater recharge area.

[e] The infiltration/recharge systems shall not be situated within two hundred (200') feet of a private well not within five hundred (500') feet from a municipal well.

[3] In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at subsection I, complete one of the following:

[a] Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 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;

[b] 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 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;

[c] Design stormwater management measures so that the post-construction peak runoff rates for the 2-, 10- and 100-year storm events are fifty (50%) percent, seventy-five (75%) percent and eighty (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

[d] In tidal flood hazard areas, stormwater runoff quantity analysis in accordance with [a], [b], and [c] above shall only be applied if the increased volume of stormwater runoff could increase flood damages below the point of discharge.

(b) Any application for a new agricultural development that meets the definition of major development at subsection E 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.

(7) Stormwater Runoff Quality Standards

(a) Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff by eighty (80%) percent of the anticipated load from the developed site, expressed as an annual average. Stormwater management measures shall only be required for water quality control if an additional 1/4 acre of impervious surface is being proposed on a development site. 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 Pollution Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement. The water quality design storm is 1.25 inches of rainfall in two (2) 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.

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		

(b) 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 subsection J, or found on the Department's website at www.njstormwater.org. The BMP Manual and other sources of technical guidance are listed in subsection J. 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.

(c) If more than one BMP in series is necessary to achieve the required eighty (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 I(3)
Sand Filter	80
Vegetative Filter Strip	60-80
Wet Pond	50-90

(d) If there is more than one onsite drainage area, the eighty (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.

(e) 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 nonstructural strategies and structural measures that optimize nutrient removal while still achieving the performance standards in subsections G(6) and G(7).

(f) Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in subsection J.

(g) 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.

(h) Special water resource protection areas shall be established along all waters designated 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:

[1] The applicant shall preserve and maintain a special water resource protection area in accordance with one of the following:

[a] A three hundred (300') foot special 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.

[b] Encroachment within the designated special water resource protection area under Subsection [a] 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 one hundred fifty (150') feet as measured perpendicular to the top of bank of the waterway or centerline of the waterway where the bank is undefined. All encroachments proposed under this subparagraph shall be subject to review and approval by the Department.

[2] All stormwater shall be discharged outside of and flow through the special 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.*

[3] If stormwater discharged outside of and flowing through the special 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:

[a] Stabilization measures shall not be placed within one hundred fifty (150') feet of the Category One waterway;

[b] Stormwater associated with discharges allowed by this section shall achieve a ninety-five (95%) percent TSS post-construction removal rate;

[c] Temperature shall be addressed to ensure no impact on the receiving waterway;

[d] The encroachment shall only be allowed where the applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable;

[e] A conceptual project design meeting shall be held with the appropriate Department staff and Soil Conservation District staff to identify necessary stabilization measures; and

[f] All encroachments proposed under this section shall be subject to review and approval by the Department.

[4] 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 subsection G(7)(h) has been approved by the Department of Environmental Protection, then the provisions of the plan shall be the applicable special water resource protection area requirements for that waterway. A stream corridor protection plan for a waterway subject to G(7)(h) shall maintain or enhance the current functional value and overall condition of the special water resource protection area as defined in G(7)(h)[1][a] above. In no case shall a stream corridor protection plan allow the reduction of the Special Water Resource Protection Area to less than one hundred fifty (150') feet as measured perpendicular to the waterway subject to this subsection.

[5] Paragraph G(7)(h) does not apply to the construction of one (1) 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. Calculation of Stormwater Runoff and Groundwater Recharge.

(1) Stormwater runoff shall be calculated in accordance with the following:

(a) The design engineer shall calculate runoff using one of the following methods:

[1] 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; or

[2] The Rational Method for peak flow and the Modified Rational Method for hydrograph computations.

(b) 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 at subsection H(1)(a)[1] and the Rational and Modified Rational Methods at subsection H(1)(a)[2]. 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 (5) years without interruption prior to the time of application. If more than one land cover has existed on the site during the five (5) 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).

(c) 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.

(d) 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.

(e) 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.

(2) Groundwater recharge may be calculated in accordance with the following:

(a) 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.

I. Standards for Structural Stormwater Management Measures.

(1) Standards for structural stormwater management measures are as follows:

(a) 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).

(b) 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 (1") 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 (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 (1") inch and a maximum spacing between bars of six (6") inches. In addition, the design of trash racks must comply with the requirements of subsection K.4.

(c) 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.

(d) At the intake to the outlet from the stormwater management basin, the orifice size shall be a minimum of two and one-half (2½")inches in diameter.

(e) Stormwater management basins shall be designed to meet the minimum safety standards for stormwater management basins at subsection K.

(2) Dams and embankments.

(a) The minimum top width for all dams and embankments are listed below. These values have been adopted from the Standards for Soil Erosion and Sediment Control in New Jersey published by the New Jersey State Soil Conservation Committee.

MINIMUM TOP WIDTHS	
Height (ft) Width (ft)	Top
0-15	10
15-20	12
20-25 or greater	14

(b) The design top elevation of all dams and embankments after all settlement has taken place, shall be equal to or greater than the maximum water surface elevation in the basin resulting from the routed freeboard hydrograph. Therefore, the design height of the dam or embankment, defined as the vertical distance from the top down to the bottom of the deepest cut, shall be increased by the amount needed to ensure the design top elevation will be maintained following all settlement. This increase shall not be less than five percent. Where necessary, the Engineer shall require consolidation tests of the undisturbed foundation soil to more accurately determine the necessary increase in design height.

(c) All earth fill shall be free from brush, roots, and other organic material subject to decomposition.

(d) Cutoff trenches are to be excavated along the dam or embankment center line to impervious subsoil.

(e) The fill material in all earth dams and embankments shall be compacted to at least ninety-five (95%) percent of the maximum dry density obtained from compaction tests performed by the appropriate method in ASTM D698.

(3) 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 subsection G of this ordinance.

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

(5) Stormwater basin bottoms.

(a) To promote complete emptying and prevent standing water or soggy surfaces, vegetated bottoms shall have a minimum slope of two (2%) percent and shall be graded to the outlet structure or low flow channel, or low point (for infiltration basin).

(b) To promote compete emptying and prevent standing water or soggy surfaces, the lowest point in the bottom shall be at least one and one-half (1½')feet (or four (4') feet for infiltration basin) above the seasonally high groundwater level unless adequate subsurface drains are provided

(c) To provide adequate drying time, to avoid delaying scheduled maintenance efforts, and to prevent mosquito breeding, the maximum storage or ponding duration should not exceed forty-eight (48) hours.

(d) Subsurface drains connected to low flow channel, principal outlet structure, or other downstream discharge point shall be employed whenever possible to promote quick and thorough drying of the facility bottom.

(e) To minimize routine grass maintenance such as mowing and fertilizing, the use of grass varieties that relatively slow growing and tolerant of poor soil conditions are encouraged.

(f) To facilitate removal efforts, sedimentation shall be promoted at localized, readily accessible areas. The use of sediment traps at inflow and outflow points is encouraged, especially those lined with materials which have smooth, easily cleaned surfaces such as concrete. For this reason, the use of loose stone, rip rap, and other irregular linings which require manual removal of weeds, sediment, and debris should be avoided.

(g) Subsurface detention/infiltration facilities shall provide suitable access, observation points and/or monitoring wells to facilitate inspection and cleaning.

(6) Detention facilities in flood hazard areas.

(a) Whenever practicable, developments and their stormwater detention facilities should be beyond the extent of the flood hazard area of a stream. When that is not possible and detention facilities are proposed to be

located partially or wholly within the flood hazard area (as defined by the New Jersey Division of Water Resources, Bureau of Flood Plain Management), or other areas which are frequently flooded, some storm conditions will make the facility ineffective at providing retention of site runoff. This will happen if the stream is already overflowing its banks and the detention basin causing the basin to be filled prior to the time it is needed. In such cases the standards established in these regulations will be modified in order to give only partial credit to detention capacities located within a flood hazard area. The credit will vary in a ration intended to reflect the probability that storage in a detention basin will be available at the time a storm occurs at the site.

(b) Detention storage provided below the elevation of the edge of the 100-year flood plain will be credited as effective storage at a reduced proportion as indicated in the table below:

SIZE OF DRAINAGE AREA*

Elevation	Less than Sq Miles	5-100 Sq Miles	Greater than 100 Sq. Miles
Less than 2'below	40%	65%	90%
Between 2` and 4' below	25%	50%	75%
Over 4" below	10%	25%	50%

*Area contributing floodwaters to the flood hazard area at the site in question.

(c) This effective detention storage will be required to provide for drainage of the developed land in accordance with the criteria already established in these regulations. However, the gross storage considered for crediting will not exceed that which would be filled by runoff of a 100-year storm from the site.

(d) As an alternative to approach (b) above, if the developer can demonstrate that the detention provided would be effective, during runoff from the 100-year 24-hour Type 11 storm, peaking simultaneously at the site and on the flood hazard area, his or her plan will be accepted as complying with provisions of subparagraph (b) above.

(e) In making computations under subparagraph (b) or (c) above, the volume of net fill added to the flood hazard area portion of the project's site will be subtracted from the capacity of effective detention storage provided.

(f) Where detention basins are proposed to be located in areas which are frequently flooded but have not been mapped as flood hazard areas, the provisions of either subparagraph (b) or (c) will be applied, utilizing the elevation of a computed 100-year flood.

(g) Developers are also required to show compliance with the flood hazard areas regulations of the Department of Environmental Protection

(7) Methods for Assessing Soil Suitability for Infiltration Stormwater Management BMPs. The results of a subsurface investigation shall serve as the basis for the site selection and design of stormwater infiltration BMPs. The subsurface investigation shall include, but not be limited to, a series of soil test pits and soil permeability tests conducted in accordance with the following:

(a) All soil test pits and soil permeability results shall be performed under the direct supervision of a Professional Engineer. All soil logs and permeability test data shall be accompanied by a certification by a Professional Engineer. The results and location (horizontal and vertical) of all soil test pits and soil permeability tests, both passing and failing, shall be reported to Little Egg Harbor Township.

(b) During all subsurface investigations and soil test procedures, adequate safety measures shall be taken to prohibit unauthorized access to the excavations at all times. It is the responsibility of persons performing or witnessing subsurface investigations and soil permeability tests to comply with all applicable Federal, State and local laws and regulations governing occupational safety.

(c) A minimum of two (2) soil test pits shall be excavated within the footprint of any proposed infiltration BMP to determine the suitability and distribution of soil types present at the site. Placement of the test pits shall be within twenty (20') feet of the basin perimeter, located along the longest axis bisecting the BMP. For BMPs larger than ten thousand (10,000) square feet in area, a minimum of one (1) additional soil test pit shall be conducted within each additional area of ten thousand (10,000) square feet. The additional test pit(s) shall be placed approximately equidistant to other test pits, so as to provide adequate characterization of the subsurface material. In all cases, where soil and or groundwater properties vary significantly, additional test pits shall be excavated in order to accurately characterize the subsurface conditions below the proposed infiltration BMP. Soil test pits shall extend to a minimum depth of eight (8') feet below the lowest elevation of the basin bottom or to a depth that is at least two (2) times the maximum potential water depth in the proposed infiltration BMP, whichever is greater.

(d) A soil test pit log shall be prepared for each soil test pit. The test pit log shall, at a minimum, provide the elevation of the existing ground surface, the depth and thickness (in inches) of each soil horizon or substratum, the dominant matrix or background and mottle colors using the Munsell system of classification for hue, value and chroma, the appropriate textural class as shown on the USDA textural triangle, the volume percentage of coarse fragments (larger than two (2) millimeters in diameter), the abundance, size, and contrast of mottles, the soil structure, soil consistence, and soil moisture condition, using standard USDA classification terminology for each of these soil properties. Soil test pit logs shall identify the presence of any soil horizon, substratum or other feature that exhibits an in-place permeability rate less than one (1") inch per hour.

(e) Each soil test pit log shall report the depth to seasonally high water level, either perched or regional, and the static water level based upon the presence of soil mottles or other redoximorphic features, and observed seepage or saturation. Where redoximorphic features including soil mottles resulting from soil saturation are present, they shall be interpreted to represent the depth to the seasonal high water table unless soil saturation or seepage is observed at a higher level. When the determination of the seasonally high water table shall be made in ground previously disturbed by excavation, direct observation of the static water table during the months of January through April shall be the only method permitted.

(f) Any soil horizon or substratum which exists immediately below a perched zone of saturation shall be deemed by rule to exhibit unacceptable permeability (less than one (1") inch per hour). The perched zone of saturation may be observed directly, inferred based upon soil morphology, or confirmed by performance of a hydraulic head test as defined at N.J.A.C. 7:9A-5.9.

(g) Stormwater infiltration BMPs shall not be installed in soils that exhibit artesian groundwater conditions. A permeability test shall be conducted in all soils that immediately underlie a perched zone of saturation. Any zone of saturation which is present below a soil horizon which exhibits an in-place permeability of less than 0.2 inches per hour shall be considered an artesian zone of saturation unless a minimum one foot thick zone of unsaturated soil, free of mottling or other redoximorphic features and possessing a chroma of four or higher, exists immediately below the unsuitable soil.

(h) A minimum of one (1) permeability test shall be performed at each soil test pit location. The soil permeability rate shall be determined using test methodology as prescribed in N.J.A.C. 7:9A-6.2 (Tube Permeameter Test), 6.5 (Pit Bailing Test) or 6.6 (Piezometer Test). When the tube permeameter test is used, a minimum of two (2) replicate samples shall be taken and tested. Alternative permeability test procedures may be accepted by the approving authority provided the test procedure attains saturation of surrounding soils, accounts for hydraulic head effects on infiltration rates, provides a permeability rate with units expressed in inches per hour and is accompanied by a published source reference. Examples of suitable sources include hydrogeology, geotechnical or engineering text and design manuals, proceedings of American Society for Testing and Materials (ASTM) symposia, or peer-review journals. Neither a Soil Permeability Class Rating Test, as described in N.J.A.C. 7:9A-6.3, nor a Percolation Test, as described in N.J.A.C. 7:9A-6.4, are acceptable tests for establishing permeability values for the purpose of complying with this ordinance.

(i) Soil permeability tests shall be conducted on the most hydraulically restrictive horizon or substratum to be left in place below the basin as follows. Where no soil replacement is proposed, the permeability tests

shall be conducted on the most hydraulically restrictive horizon or substratum within four (4') feet of the lowest elevation of the basin bottom or to a depth equal to two (2) times the maximum potential water depth within the basin, whichever is greater. Where soil replacement is proposed, the permeability tests shall be conducted within the soil immediately below the depth of proposed soil replacement or within the most hydraulically restrictive horizon or substratum to a depth equal to two (2) times the maximum potential water depth within the basin, whichever is greater. Permeability tests may be performed on the most hydraulically restrictive soil horizons or substrata at depths greater than those identified above based upon the discretion of the design or testing engineer. The tested infiltration rate should then be divided by two (2) to establish the soil's design permeability rate. Such division will provide a one hundred (100%) percent safety factor to the tested rate.

(j) The minimum acceptable "tested permeability rate" of any soil horizon or substratum shall be one (1") inch per hour. Soil materials that exhibit tested permeability rates slower than one (1") inch per hour shall be considered unsuitable for stormwater infiltration. The maximum reportable "tested permeability rate" of any soil horizon or substratum shall be no greater than twenty (20") inches per hour regardless of the rate attained in the test procedure.

(k) After all construction activities have been completed on the development site and the finished grade has been established in the infiltration BMP, a minimum of one (1) permeability test shall be conducted within the most hydraulically restrictive soil horizon or substratum below the as-built BMP to ensure the performance of the infiltration BMP is as designed. Hand tools and manual permeability test procedures shall be used for the purpose of confirming BMP performance. In addition, the infiltration BMP shall be flooded with water sufficient to demonstrate the performance of the BMP. Test results shall be certified to the municipal engineer.

(l) A groundwater mounding analysis shall be provided for each stormwater infiltration BMP. The groundwater mounding analysis shall calculate the maximum height of the groundwater mound based upon the volume of the maximum design storm. The Professional Engineer conducting the analysis shall provide the municipal engineer with the methodology and supporting documentation for the mounding analysis used and shall certify to Little Egg Harbor Township, based upon the analysis, that the groundwater mound will not cause stormwater or groundwater to breakout to the land surface or cause adverse impact to adjacent surface water bodies, wetlands or subsurface structures including but not limited to basements and septic systems. If there is more than one infiltration BMP proposed, the model shall indicate if and how the mounds will interact. The mounding analysis shall be calculated using the most restrictive soil horizon that will remain in place within the explored aquifer thickness unless alternative analyses is authorized by the municipal engineer. The

mounding analysis shall be accompanied by a cross section of the infiltration BMP and surrounding topography and the mound analysis shall extend out to the point(s) at which the mound intersects with the preexisting maximum water table elevation.

(m) The Applicant shall demonstrate that stormwater infiltration BMPs meet the forty-eight (48) hour drain time requirement established in subsection H(2)(a) of this ordinance.

(8) Soil, geology, and groundwater

(a) The Board's Engineer may require additional information relative to soil structure, geology and groundwater elevations adjacent to or below the proposed basin or disposal area. However, the following information shall be required in all cases:

(b) The number of test borings or pits shall be as specified by this subsection.

(c) The minimum depth of test borings or pits shall be ten feet or four feet below the bottom elevation of the proposed basin or recharge system, whichever is greater. Power augers may be used to advance of clean out test holes to sampling depths but may not be used to retrieve soil samples. Split spoon samplers, plug samplers or other sampling devices may be used which retrieve a relatively undisturbed soil sample. Hand augers may be used as long as the test hold remains "open" and does not cave or slump.

(d) Reports of the type, nature and depth of the soil as found the depth to groundwater when encountered, and the seasonal high water table elevation shall be shown on the plans. Three options are open to the applicant for determining depth to seasonal high water table. First, if sole reliance is on the measurement of depth to groundwater (the actual physical measurement), then the test must be taken between January and April inclusive and with the absence of mottling. Second, the applicant may use available maps and data from the Soil Conservation Service provided the soil series mapped is verified by actual on-site soils testing. Or third, as determined by mottling.

(e) Locations and results or percolation/permeability tests, locations of soil borings and boring logs shall be shown on the plans.

(f) Fill material. Fill material used for stormwater facility construction shall have a percolation rate equal to or greater than existing soil conditions. Fill material shall be as free of clay soils as possible. Sieve analyses shall be performed on representative soil samples of all fill material and the effective size and the uniformity coefficient determined. Fill material shall meet or exceed the quality of the existing soil as determined by the sieve analyses. Test results shall be obtained by a certified laboratory and shall be submitted to the Township Engineer prior to the commencement of grading operations.

J. Sources for Technical Guidance.

(1) Technical guidance for stormwater management measures can be found in the documents listed at (a) and (b) 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.

(a) 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.

(b) The New Jersey Department of Environmental Protection Stormwater Management Facilities Maintenance Manual, as amended.

(2) Additional technical guidance for stormwater management measures can be obtained from the following:

(a) 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;

(b) The Rutgers Cooperative Extension Service, 732-932-9306; and

(c) The Ocean County Soil Conservation District, 714 Lacey Road, Forked River, NJ 08731; Telephone Number: (609) 971-7002, Facsimile Number: (609) 971-3391, Email Address: info@ocscd.org, Web Address: www.ocscd.org.

K. Safety Standards for Stormwater Management Basins.

(1) 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.

(2) Requirements for Trash Racks, Overflow Grates and Escape Provisions

(a) 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:

[1] The trash rack shall have parallel bars, with no greater than six (6") inch spacing between the bars.

[2] The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure.

[3] The average velocity of flow through a clean trash rack is not to exceed two and one-half (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.

[4] 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.

(b) 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:

[1] The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance.

[2] The overflow grate spacing shall be no less than two inches across the smallest dimension.

[3] 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.

(c) For purposes of this paragraph (c), 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:

[1] 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 subsection K(3) a free-standing outlet structure may be exempted from this requirement.

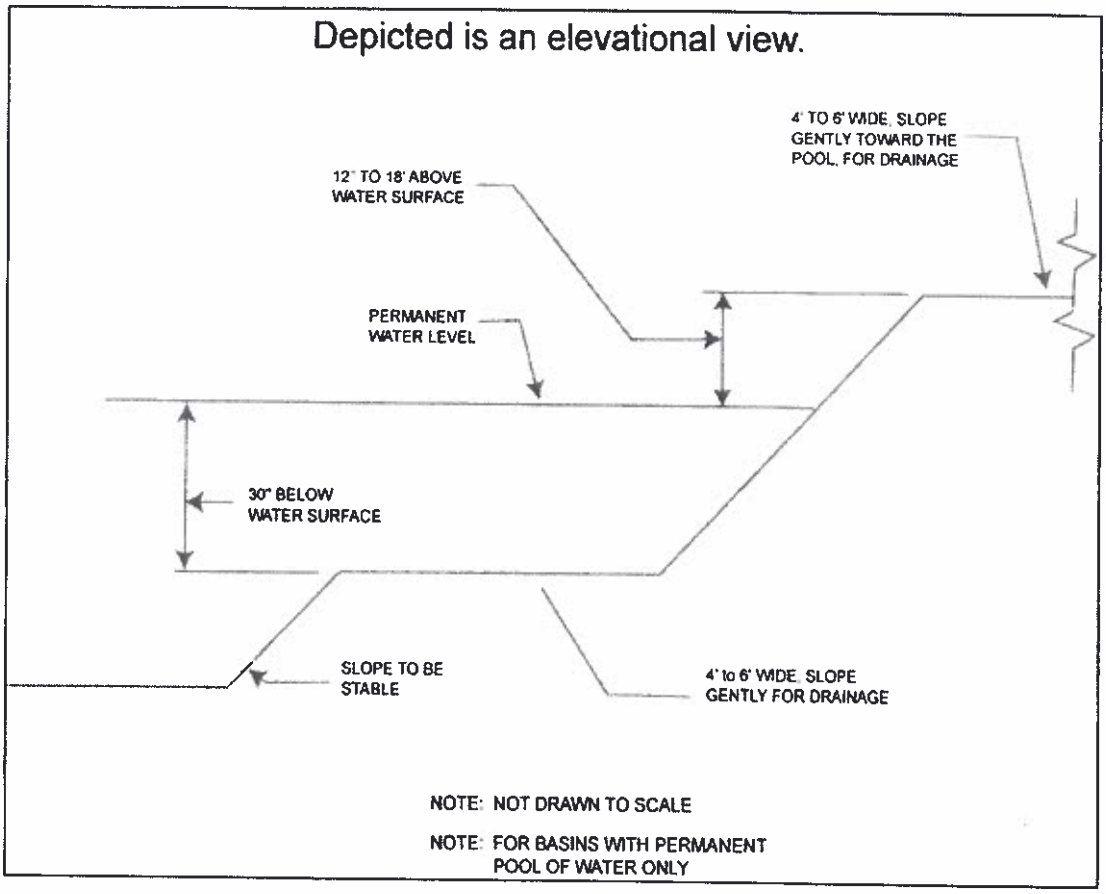
[2] Safety ledges shall be constructed on the slopes of all new stormwater management basins having a permanent pool of water deeper than two and one-half (2.5') feet. Such safety ledges shall be comprised of two (2) steps. Each step shall be four (4') feet to six (6') feet in width. One step shall be located approximately two and one-half (2.5') feet below the permanent water surface, and the second step shall be located one (1') foot to one and one-half (1.5') feet above the permanent water surface. See subsection K(4) for an illustration of safety ledges in a stormwater management basin.

[3] 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.

(3) Variance or Exemption from Safety Standards

(a) 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.

(4) Illustration of Safety Ledges in a New Stormwater Management Basin


Depicted is an elevational view.
4' TO 6' WIDE, SLOPE GENTLY TOWARD THE POOL, FOR DRAINAGE
12" TO 18" ABOVE WATER SURFACE
PERMANENT WATER LEVEL
30" BELOW WATER SURFACE
SLOPE TO BE STABLE
4' to 6' WIDE, SLOPE GENTLY FOR DRAINAGE
NOTE: NOT DRAWN TO SCALE
NOTE: FOR BASINS WITH PERMANENT POOL OF WATER ONLY

L. Requirements for a Site Development Stormwater Plan

(1) Submission of Site Development Stormwater Plan

(a) 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 subsection L(3) below as part of the submission of the applicant's application for subdivision or site plan approval.

(b) The applicant shall demonstrate that the project meets the standards set forth in this ordinance.

(c) The applicant shall submit twelve (12) copies of the materials listed in the checklist for site development stormwater plans in accordance with subsection L.3 of this ordinance.

(2) Site Development Stormwater Plan Approval.

The applicant's Site Development project shall be reviewed as a part of the subdivision or site plan 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.

(3) Checklist Requirements. The following information shall be required:

(a) 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 two hundred (200') feet beyond the limits of the proposed development, at a scale of 1"=200' or greater, showing two (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.

(b) Vicinity Map. Applicants must prepare a map at a scale of one inch equals 400 feet (1" = 400') or greater on a paper print of the latest air photographs available, updated in the field to reflect current conditions, showing the relationship of the proposed development to significant features in the general surroundings. The map must indicate at least the following: roads, pedestrian ways, access to the site, adjacent land uses, existing open space, public facilities, landmarks, places of architectural and historic significance, utilities, drainage (including, specifically, streams and surface water shown on U.S.G.S. and soils maps), and other significant features not otherwise shown.

(c) 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.

(d) 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.

(e) Land Use Planning and Source Control Plan. This plan shall provide a demonstration of how the goals and standards of subsections F through I 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.

(f) Stormwater Management Facilities Map. The following information, illustrated on a map of the same scale as the topographic base map, shall be included:

[1] 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.

[2] 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.

(g) Calculations.

[1] Comprehensive hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in subsection G of this ordinance.

[2] 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.

(h) Maintenance and Repair Plan. The design and planning of the stormwater management facility shall meet the maintenance requirements of subsection M.

(i) Waiver from Submission Requirements. The municipal official or board reviewing an application under this ordinance may, in consultation with the municipal engineer, waive submission of any of the requirements in subsections L(3)(a) through L(3)(f) of this ordinance 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.

(j) Stormwater Review Fee. Subdivisions and site plans requiring Preliminary or Final Approval, and Road Improvement Plans, that all meet the latest definition of "Major Development" per Section E, Definitions, shall pay the Stormwater Review Fee outlined in the Land Use Land Development Ordinance Article 15-16.3.

M. Maintenance and Repair.

(1) Applicability.

(a) Projects subject to review as in subsection C of this ordinance shall comply with the requirements of subsections M(2) and M(3).

(2) General Maintenance.

(a) The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development.

(b) 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). 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.

(c) 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.

(d) If the person responsible for maintenance identified under subsection M(2)(b) above is not a public agency, the maintenance plan and any future revisions based on subsection M(2)(g) below shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

(e) 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.

(f) The person responsible for maintenance identified under subsection M(2)(b) 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.

(g) The person responsible for maintenance identified under subsection M(2)(b) above shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

(h) The person responsible for maintenance identified under subsection M(2)(b) 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 subsections M(2)(f) and M(2)(7) above.

(i) The requirements of subsections M(2)(c) and M(2)(d) do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency.

(j) 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.

(3) Stormwater Basin Access.

(a) The facility must be readily accessible from a street or other public right-of-way. Inspection and maintenance easements, connected to the street or right-of-way, should be provided around the entire facility. The exact limits of the easements and right-of-ways should be specified on the project plans and other appropriate documents.

(b) Access roads and gates shall be wide enough to allow passage of necessary maintenance vehicles and equipment, including trucks, backhoes, grass mowers, and mosquito control equipment. In general, a minimum right-of-way width of fifteen (15') feet and a minimum roadway width of twelve (12') feet is required.

(c) To facilitate entry, a curb cut shall be provided where an access road meets a curbed roadway.

(d) To allow safe movement of maintenance vehicles, access ramps shall be provided to the bottom of all detention facilities greater than three feet in depth. Access ramps should not exceed ten percent in grade.

(e) Access roads and ramps shall be stable and suitably lined to prevent rutting and other damage by maintenance vehicles and equipment.

(f) When backing-up is difficult or dangerous, turning around areas should be provided at the end of all access roads.

(g) All stormwater basins shall be perimeter fenced for safety purposes. The minimum fence height shall be six feet.

(h) To allow safe movement of maintenance personnel and safe operation of equipment, fences shall be located at least three (3') feet beyond the top or toe of any slope steeper than five horizontal to one vertical.

(i) Fences shall be constructed of durable, vandal-resistant materials. Fences must meet all municipal code requirements.

(j) Bottom fence rails shall be set at a maximum height of six (6") inches above finished grade.

(k) Facility perimeters should be sized and stabilized to allow movement and operation of maintenance and mosquito control equipment. A minimum perimeter width of twenty-five (25') feet between the facility and adjacent structures is required along at least one side of the facility. This portion of the perimeter shall be readily accessible from a street or other public or private right-of- way. Gates shall be equipped with a double lock system in cooperation with the Ocean County Mosquito Commission to permit same access to the basins.

(l) The top of bank for facilities constructed in cut and the toe of slope for facilities constructed in fill shall be located no closer than ten (10') feet to an existing or proposed property line.

(m) Detention basins shall be attractively buffered and landscaped, and designed as to minimize propaganda of insects, particularly mosquitoes. All landscaping and buffering shall be approved by the Board Engineer.

(n) For safe movement of personnel and safe operation of equipment, side slopes greater than five (5') feet in height shall not be steeper than four horizontal to one vertical. Side slopes five (5') feet or less in height shall not be steeper than three horizontal to one vertical. Flatter side slopes shall be constructed wherever possible.

(o) For safe movement of personnel and safe operation of equipment, side slopes steeper than five to one and higher than four (4') feet shall be terraced at their midpoints. The terrace shall have a minimum width of three (3') feet and shall be graded at two (2%) percent towards the lower half of the slope.

(p) Suitable access to and along side slopes shall be provided for maintenance personnel and equipment.

(4) Maintenance Guarantee. The Applicant shall provide a maintenance guarantee to ensure that all stormwater management measures required under the provisions of this ordinance will be maintained in perpetuity according to the specifications established herein. Conditioned upon Little Egg Harbor Township's approval,

this may be accomplished by various mechanisms, including, but not limited to, the following:

(a) The Applicant may be required to post a bond or other financial assurance mechanism in the amount Little Egg Harbor Township determines is needed to provide maintenance in perpetuity of all stormwater management measures;

(b) Little Egg Harbor Township may collect an up-front fee from the Applicant in the amount Little Egg Harbor Township determines is needed to provide maintenance in perpetuity of all stormwater management measures. This up-front fee shall be expended by Little Egg Harbor Township for the sole purpose of conducting maintenance activities (including repair and renovation, if needed) for all stormwater management measures required under the Applicant's major development application approval;

(c) The Applicant may dedicate all stormwater management measures to the Little Egg Harbor Township, subsequent to which the Township shall assume all maintenance responsibilities; or

(d) The Applicant may be required to deposit funds in escrow in the amount Little Egg Harbor Township determines is needed to provide maintenance in perpetuity of all stormwater management measures.

(5) Stormwater management maintenance fees. For purposes of this section, the calculation of the maintenance fee will be based on the type of stormwater management system, which is to serve the development, that is, a surface system, such as a detention or retention basin and subsurface infiltration system or a combination of the above. The fee shall be determined as follows:

(a) Surface stormwater management systems (detention or retention basins). The amount of the maintenance fee shall be the annual maintenance cost per acre multiplied. by the twenty-five year maintenance period multiplied by the maintenance area in acres. The maintenance area of the stormwater management basin shall be defined to be the area included within a line drawn around the top of the bank of the basin, plus an additional twenty-five (25') feet outward from the top of the bank. The annual maintenance cost per acre shall be $1,281.25. The minimum contribution regardless of the size of the basin, will be $12,500.00.

(b) Surface infiltration system. The amount of the maintenance fee shall be determined as follows: $1.25 per linear foot of the infiltration system per year for maintenance multiplied by a twenty-five year period, plus twice the cost of the subsurface infiltration system (not including structures). The replacement cost shall be the amount of the performance guaranties for the subsurface infiltration system, plus the amount of $34.50 per linear foot for road repair for any portion of the roadway disturbed by such replacement determined by the Township Engineer. The minimum fee, regardless of the length of infiltration system, shall be $12,500.00.

(c) Combination systems. The required fee shall be based on a combined total of the above.

N. Penaltics.

(1) Any person who violates or fails to comply with any of the provisions of this ordinance shall, upon conviction, be punishable by a fine of not less than one hundred ($100.00) dollars nor more than one thousand two hundred fifty ($1,250.00) dollars, by imprisonment for a term not to exceed ninety (90) days or by community service of not more than ninety (90) days, or any combination of fine, imprisonment and community service as determined by the Municipal Court Judge. The continuation of such violation for each successive day shall constitute a separate offense, and the person or persons allowing or permitting the continuation of the violation may be punished as provided above for each separate offense.

(2) The violation of any provision of this chapter shall be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction.

§ 15-12.12. Drainage

A. All streets shall be provided with storm water inlets and pipes where same may be necessary for proper surface drainage. The system shall be adequate to carry off and/or store the stormwater and natural drainage water, which originates beyond the development boundaries and passes through the development calculated on the basis of maximum potential development as permitted under this chapter. No stormwater development as permitted under this chapter. No stormwater run-off or natural drainage water shall be so diverted as to overload existing drainage systems or create flooding or the need for additional drainage structure on the other lands without proper and approved provisions being made for taking care of these conditions, including off-tract improvements. All drainage design and computation factors shall be submitted to the Board Engineer for review and approval and shall be conforming to the requirements of this chapter.

(1) The duration of storm used in computing stormwater run-off shall be the equivalent of the time required for water falling at the most remote point of the drainage area to reach the point in the drainage system under consideration.

(2) No pipe size in any storm drainage system shall be less than 15 inch diameter reinforced concrete pipe or its equivalent.

(3) Dished gutters shall not be permitted on any streets and intersections.

(4) Storm drain pipes shall be reinforced concrete pipe in all cases and shall be of the size specified and laid to the exact lines and grades approved by the Planning Board Engineer. Reinforced concrete pipe shall conform to the most current A.S.T.M. Specifications C76. All pipe shall be Class III, Wall B strength except where stronger pipe is required as determined by the board engineer. All pipe shall be designed for AASHO H20-44 loading, and shall meet the minimum cover requirements.