

ON-SITE STORMWATER DETENTION

**Chapter 53**

**ON-SITE STORMWATER DETENTION AND STORMWATER  
POLLUTION PREVENTION**

ARTICLE I

**On-Site Stormwater Detention**

- § 53-1. **Short title.**
- § 53-2. **Purpose.**
- § 53-3. **Permits required; new building construction, additions to existing buildings, tennis courts and in-ground swimming pools.**
- § 53-4. **Application for permit; required data.**
- § 53-5. **Standards; minimization of stormwater runoff and retention of stormwater on site.**
- § 53-6. **Exceptions or variances authorized.**
- § 53-7. **Severability.**
- § 53-8. **Conflicting statutes; higher standards to prevail.**
- § 53-9. **Violations and penalties.**

ARTICLE II

**Stormwater Pollution Prevention**

- § 53-10. **Pet waste.**
- § 53-11. **Litter control.**

- § 53-12. **Improper disposal of waste.**
- § 53-13. **Wildlife feeding.**
- § 53-14. **Containerized yard waste.**
- § 53-15. **Illicit connection to storm sewer system.**
- § 53-16. **Fertilizer Application.**
- § 53-17. **Violations and penalties.**
- § 53-18. **Severability.**

**ARTICLE III  
Stormwater Control**

- § 53-19. **Scope and purpose.**
- § 53-20. **Definitions.**
- § 53-21. **Design and performance standards for storm water management measures.**
- § 53-22. **Stormwater management requirements for major development.**
- § 53-23. **Calculation of storm water runoff and groundwater measures.**
- § 53-24. **Standards for structural storm water management measures.**
- § 53-25. **Sources for technical guidance.**
- § 53-26. **Safety standards for storm water management basins.**
- § 53-27. **Requirements for site development storm water plan.**

**§ 53-28. Maintenance and repair.**

**§ 53-29. Violations and penalties.**

**§ 53-30. When effective.**

**§ 53-31. Severability.**

**[HISTORY: Adopted by the Mayor and Council of the Borough of North Caldwell 4-9-2002 by Ord. No. 9-02; amended in its entirety 4-19-2005 by Ord. No. 7-05 and Sections 53-16 thru 53-31 Amended by Ord. No. 20-2008 adopted 10-28-08]**

ARTICLE I  
**On-Site Stormwater Detention**

**§ 53-1. Short title.**

This article shall be known and may be cited as the “Borough of North Caldwell On-Site Stormwater Detention Ordinance.”

**§ 53-2. Purpose.**

The purpose of this article is to regulate and minimize the runoff of stormwater from properties within the Borough of North Caldwell onto adjoining properties so as to assure and safeguard the health, safety, property values and general welfare of the citizens of the Borough of North Caldwell.

**§ 53-3. Permit required; new building construction, additions to existing buildings, tennis courts and in-ground swimming pools.**

It shall be unlawful for any person, firm or corporation to construct a new building with a roof area of 500 square feet or greater, an addition to an existing building with a roof area of 500 square feet or greater, a tennis court or an in-ground

swimming pool without first applying for and securing a permit as provided in this article.

**§ 53-4. Application for permit; required data.**

A. The application for a permit shall be accompanied by a plot plan of the property showing the location of all present and proposed ditches, streams, pipes and other drainage structures, as well as cuts or fills. In addition to showing elevations, dimensions, and the location and extent of all proposed grading and/or drainage, the plan shall clearly indicate the location and elevations of all buildings, parking areas, tennis courts, pools and pool decks, and driveways. Further, the application shall indicate the present and proposed sources, storage and disposition of water being generated on site or channeled through or across the property, together with elevations, gradients and maximum flow rates.

B. Plot plans shall be prepared, signed and sealed by a professional engineer or architect registered in the State of New Jersey.

**§ 53-5. Standards; minimization of stormwater runoff and retention of stormwater on site.**

A. Stormwater runoff shall be minimized and retained on the site by the construction of one or more of the following:

1. Detention basins designed in accordance with the provisions of the Residential Site Improvement Standards (N.J.A.C., Title 5, Chapter 21) and as further modified herein:

a. Basins shall be designed to accommodate site runoff generated from two-year, ten-year and fifty-year storms as routed to the basin.

b. The design of all detention facilities shall be as approved by the Borough Engineer.

2. Dry wells or seepage pits for new driveway construction designed to retain a minimum of 250 cubic feet of storage volume for every 1,000 square

feet of driveway area which does not drain to a public street. For driveway areas not evenly divisible by 1,000 square feet, the required storage volume shall be apportioned accordingly. Details and location of the dry wells or seepage pits shall be shown on the plot plan.

3. Dry wells or seepage pits for new tennis court and in-ground pool construction designed to retain a minimum of 250 cubic feet of storage volume for every 1,000 square feet of tennis court or pool and decking. For tennis courts or pool areas not evenly divisible by 1,000 square feet, the required storage volume shall be apportioned accordingly. Details and location of dry wells or seepage pits shall be shown on the plot plan.

4. Roof drain dry wells or seepage pits for any structure designed to retain a minimum of 250 cubic feet of storage volume for every 1,000 square feet of roofed area computed on a horizontal basis. For roof areas (computed on a horizontal basis) not evenly divisible by 1,000 square feet, the required storage volume shall be apportioned accordingly. Details and location of dry wells or seepage pits shall be shown on the plot plan.

5. All discharge from detention basins shall be connected to the municipal storm water system. Dry wells and seepage pits shall be provided with an overflow discharge to the municipal storm water system when possible.

#### B. Natural vegetation retention and groundcover.

1. Whenever feasible, natural vegetation shall be retained and protected.

2. Permanent, final plant cover or lawn or ground cover shall be installed on any site prior to the issuance of a certificate of occupancy. In the event weather conditions prohibit the installation of permanent, final plant cover at the time the other structures required hereby are completed, a performance guarantee in an amount established by the Borough Engineer shall be posted with the Borough to assure installation of the final plant cover when weather permits. Pending installation of permanent, final plant cover, temporary measurers in

accordance with the standards for soil erosion and sediment control in New Jersey as promulgated by the State Soil Conservation Committee must be installed.

3. Temporary seeding, mulching, plant cover or other suitable stabilization measures shall be used to protect exposed critical erosion areas during construction or other land disturbance.

C. Work within the right-of-way of Borough street. Any work performed within the right-of-way of a Borough street shall require the issuance of a road opening permit before work commences. Any piping in a Borough right-of-way shall be constructed with reinforced concrete, ductile iron or schedule 80 p.v.c.

D. Dust control measures. Land disturbance work shall be conducted in such a manner as to minimize or prevent the deposit of dirt upon any public street in the Borough. Notwithstanding the foregoing, in the event of such deposit, the applicant or the applicant's contractors shall expeditiously remove the dirt and clean the street where the dirt was deposited.

**§ 53-6. Exceptions or variances authorized.**

Notwithstanding the foregoing, where, by reason of extraordinary or exceptional conditions of a specific piece of property, the strict application of the provisions of this article would result in peculiar and exceptional practical difficulties to the owner of such property, upon application to and approval by the Mayor and council, the Borough Engineer may be authorized to accept a plan that does not comply strictly with the standards set forth herein, provided the Council is satisfied that the plan will not impair the intent and purpose of this article and will not result in storm water runoff hardship or damage to any adjoining property or properties.

**§ 53-7. Severability.**

Should any section or provision of this article be declared by a court of competent jurisdiction to be invalid, such decision shall not effect the validity of this article as a whole or of any part thereof.

**§ 53-8. Conflicting statutes; higher standards to prevail.**

Any person, firm or corporation violating any provisions of this article shall be subject to a fine not to exceed \$500 or to imprisonment for a term of not more than 90 days, or both, upon conviction. Each and every day in which a person, firm or corporation shall be in violation of this article shall constitute a separate offense.

## ARTICLE II **Stormwater Pollution Prevention**

### **§ 53-10. Pet waste.**

A. Purpose. The purpose of this section is to establish requirements for the proper disposal of pet solid waste in North Caldwell so as to protect public health, safety and welfare, and to prescribe penalties for failure to comply.

B. Definitions and word usage. For the purpose of this section, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this section clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word “shall” is always mandatory and not merely directory.

IMMEDIATE – The pet solid waste is removed at once, without delay.

OWNER/KEEPER – Any person who shall possess, maintain, house or harbor any pet or otherwise have custody of any pet, whether or not the owner of such pet.

PERSON – Any individual, corporation, company, partnership, firm, association, or political subdivision of this state subject to municipal jurisdiction.

PET – A domesticated animal (other than a disability assistance animal) kept for amusement or companionship.

PET SOLID WASTE – Waste matter expelled from the bowels of the pet; excrement.

PROPER DISPOSAL – Placement in a designated waste receptacle or other suitable container, and discarded in a refuse container which is regularly emptied by the municipality or some other refuse collector; or disposal into a system designed to convey domestic sewage for proper treatment and disposal.

C. Requirement for disposal. All pet owners and keepers are required to immediately and properly dispose of their pet’s solid waste deposited on any property, public or private, not owned or possessed by that person.

D. Exemptions. Any owner or keeper who required the use of a disability assistance animal shall be exempt from the provisions of this section while such animal is being used for that purpose.

E. Enforcement. The provisions of this section shall be enforced by the Police Department and the Health Officer of North Caldwell.

**§ 53-11. Litter control.**

A. Purpose. The purpose of this section is to establish requirements to control littering in North Caldwell so as to protect public health, safety and welfare, and to prescribe penalties for the failure to comply.

B. Definitions and word usage. For the purpose of this section, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this section clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word “shall” is always mandatory and not merely directory.

LITTER – Any used or unconsumed substance or waste material which has been discarded, whether made of aluminum, glass, plastic, rubber, paper, or other natural or synthetic material, or any combination thereof including, but not limited to, any bottle, jar or can, or any top, cap or detachable tab of any bottle, jar or can, any unlighted cigarette, cigar, match or any flaming or glowing material or any

garbage, trash, refuse, debris, rubbish, grass clippings or other lawn or garden waste, newspapers, magazines, glass, metal, plastic or paper containers or other packaging or construction material, but does not include the waste of the primary processes of farming or manufacturing.

LITTER RECEPTACLE – A container suitable for the depositing of litter.

PERSON – Any individual, corporation, company, partnership, firm, association, or political subdivision of this state subject to municipal jurisdiction.

C. Prohibited acts and regulated activities.

1. It shall be unlawful for any person to throw, drop, discard or otherwise place any litter of any nature upon public or private property other than in a litter receptacle, or having done so, to allow such litter to remain.

2. Whenever any litter is thrown or discarded or allowed to fall from a vehicle in violation of this article, the operator or owner, or both, of the motor vehicle shall also be deemed to have violated this article.

D. Enforcement. This article shall be enforced by the Police Department of North Caldwell.

### **§ 53-12. Improper disposal of waste.**

A. Purpose. The purpose of this section is to prohibit the spilling, dumping, or disposal of materials other than storm water into the municipal separate storm sewer system (MS4) operated by North Caldwell so as to protect public health, safety and welfare, and to prescribe penalties for the failure to comply.

B. Definition and word usage. For the purpose of this section, the following terms, phrases, words, and their derivations shall have the meanings stated herein unless their use in the text of this section clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words

used in the singular number include the plural number. The word “shall” is always mandatory and not merely directory.

**MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)** – A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) that is owned or operated by North Caldwell or other public body, and is designed and used for collecting and conveying stormwater.

**PERSON** – Any individual, corporation, company, partnership, firm, association, or political subdivision of this state subject to municipal jurisdiction.

**STORMWATER** – Water resulting from precipitation (including rain and snow) that runs off the land’s surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewerage or drainage facilities, or is conveyed by snow removal equipment.

C. Prohibited conduct. The spilling, dumping, or disposal of materials other than storm water into the municipal separate storm sewer system operated by North Caldwell is prohibited. The spilling, dumping, or disposal of materials other than storm water in such a manner as to cause the discharge of pollutants to the municipal separate storm sewer system is also prohibited.

D. Exceptions to prohibition.

1. Water line flushing and discharges from potable water sources.
2. Uncontaminated groundwater (e.g. infiltration, crawl space or basement sump pumps, foundation or footing drains, rising groundwaters).
3. Air-conditioning condensate (excluding contact and noncontact cooling water).
4. Irrigation water (including landscape and lawn watering runoff).

5. Flows from springs, riparian habitats and wetlands, water reservoir discharges and diverted stream flows.

6. Residential car washing water, and residential and municipal swimming pool discharges.

7. Sidewalk, driveway and street wash water.

8. Flows from fire-fighting activities.

9. Flows from rinsing equipment used in the application of salt and deicing materials immediately following salt and deicing material applications. Prior to rinsing with clean water, all residual salt and deicing materials must be removed from equipment and vehicles to the maximum extent practicable using dry cleaning methods (e.g. shoveling and sweeping). Recovered materials are to be returned to storage for reuse or properly discarded. Rinsing of such equipment is limited to exterior, undercarriage, and exposed parts and does not apply to engines or other enclosed machinery.

E. Enforcement. This article shall be enforced by the Police Department of North Caldwell.

**§ 53-13. Wildlife feeding.**

A. Purpose. The purpose of this ordinance is to prohibit the feeding of unconfined wildlife in any public park or on any other property owned or operated by North Caldwell so as to protect public health, safety and welfare, and to prescribe penalties for failure to comply.

B. Definitions and word usage. For the purpose of this section, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this section clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word “shall” is always mandatory and not merely directory.

FEED – to give, place, expose, deposit, distribute or scatter any edible material with the intention of feeding, attracting or enticing wildlife. Feeding does not include baiting in the legal taking of fish and/or game.

PERSON – any individual, corporation, company, partnership, firm, association, or political subdivision of this state subject to municipal jurisdiction.

WILDLIFE – All animals that are not domesticated.

C. Prohibited conduct. No person shall feed any wildlife in any public park or on any other property owned or operated by North Caldwell.

D. Enforcement.

1. This article shall be enforced by the Police Department of North Caldwell.

2. Any person found to be in violation of this section shall be ordered to cease the feeding immediately.

**§ 53-14. Containerized yard waste.**

A. Purpose. The purpose of this section is to establish requirements for the proper handling of yard waste in North Caldwell so as to protect public health, safety and welfare, and to prescribe penalties for the failure to comply.

B. Definitions and word usage. For the purpose of this section, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this section clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word “shall” is always mandatory and not merely directory.

CONTAINERIZED – The placement of yard waste in a trash can, bucket, bag or other vessel, such as to prevent the yard waste from spilling or blowing out into the street and coming into contact with stormwater.

PERSON – Any individual, corporation, company, partnership, firm, association, or political subdivision of this state subject to municipal jurisdiction.

STREET – Any street, avenue, boulevard, road, drive, or other way, which is an existing county or municipal roadway, and includes the land between the street lines, whether improved or unimproved, and may comprise pavement, shoulders, gutters, curbs, sidewalks, parking areas, and other areas within the street lines.

YARD WASTE – Leaves and grass clippings.

C. Prohibited conduct. The owner or occupant of any property, or any employee or contractor of such owner or occupant engaged to provide lawn care or landscaping services, shall not sweep, rake, blow or otherwise place yard waste in the street, unless the yard waste is containerized. If yard waste that is not containerized is placed in the street, the party responsible for placement of the yard waste must remove the yard waste from the street or said party shall be deemed in violation of this article.

D. Enforcement. The provisions of this article shall be enforced by the Police Department of North Caldwell.

**§ 53-15. Illicit connection to storm sewer system.**

A. Purpose. The purpose of this section is to prohibit illicit connections to the municipal separate storm sewer system operated by North Caldwell so as to protect public health, safety and welfare, and to prescribe penalties for the failure to comply.

B. Definitions and word usage. For the purpose of this section, the following terms, phrases, words, and their derivations shall have the meanings stated herein unless their use in the text of this section clearly demonstrates a

different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word “shall” is always mandatory and not merely directory. The definitions below are the same as or based on corresponding definitions in the New Jersey Pollutant Discharge Elimination System (NJPDES) rules at N.J.A.C. 7:14A-1.2.

**DOMESTIC SEWAGE** – Waste and wastewater from humans or household operations.

**ILLICIT CONNECTION** – Any physical or nonphysical connection that discharges domestic sewage, noncontact cooling water, process wastewater, or other industrial waste (other than storm water) to the municipal separate storm sewer system operated by North Caldwell, unless that discharge is authorized under a NJPDES permit other than the Tier A Municipal Stormwater General Permit (NJPDES Permit Number NJ014 1852). Nonphysical connections may include, but are not limited to, leaks, flows, or overflows into the municipal separate storm sewer system.

**INDUSTRIAL WASTE** – Nondomestic waste, including, but not limited to, those pollutants regulated under Section 307(a), (b), or (c) of the Federal Clean Water Act [33 U.S.C. § 1317 (a), (b), or (c)].

**MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)** – A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is owned or operated by North Caldwell or other public body and is designed and used for collecting and conveying stormwater.

**NJPDES PERMIT** – A permit issued by the New Jersey Department of Environmental Protection to implement the New Jersey Pollutant Discharge Elimination System (NJPDES) rules at N.J.A.C. 7:14A.

**NONCONTACT COOLING WATER** - Water used to reduce temperature for the purpose of cooling. Such waters do not come into direct contact with any raw material, intermediate product (other than heat) or finished product. However,

noncontact cooling water may contain algaecides, or biocides to control fouling of equipment such as heat exchangers, and/or corrosion inhibitors.

PERSON - Any individual, corporation, company, partnership, firm, association, or political subdivision of this state subject to municipal jurisdiction.

PROCESS WASTEWATER – Any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. Process wastewater includes, but is not limited to, leachate and cooling water other than noncontact cooling water.

STORMWATER – Water resulting from precipitation (including rain and snow) that runs off the land’s surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewerage or drainage facilities, or is conveyed by snow removal equipment.

C. Prohibited conduct. No person shall discharge or cause to be discharged through an illicit connection into the municipal separate storm sewer system operated by the North Caldwell any domestic sewage, noncontact cooling water, process wastewater, or other industrial waste (other than storm water).

D. Enforcement. This article shall be enforced by the Police Department of North Caldwell.

**§ 53-16. Fertilizer Application.**

A. Purpose: It is the purpose of this provision to regulate the outdoor application of fertilizer so as to reduce the overall amount of excess nutrients entering waterways, thereby helping to protect and improve surface water quality. This section does not apply to fertilizer application on commercial farms.

B. Basis and Background: Elevated levels of nutrients, particularly phosphorus, in surface water bodies can result in excessive and accelerated growth of algae and aquatic plants (eutrophication). Excessive plant growth can result in diurnal variations and extremes in dissolved oxygen and pH, which, in turn, can be

detrimental to aquatic life. As algae and plant materials die off, the decay process creates a further demand on dissolved oxygen levels. The presence of excessive plant matter can also restrict use of the affected water for recreation and water supply. While healthy vegetated areas are protective of water quality by stabilizing soil and filtering precipitation, when fertilizers are applied to the land surface improperly or in excess of the needs of target vegetation, nutrients can be transported by means of stormwater to nearby waterways, contributing to the problematic growth of excessive aquatic vegetation. Most soils in New Jersey contain sufficient amounts of phosphorus to support adequate root growth for established turf. Over time, it is necessary to replenish available phosphorus, but generally not at the levels commonly applied. Other target vegetation, such as vegetable gardens and agricultural/horticultural plantings, will have a greater need for phosphorus application, as will the repair or establishment of new lawns or cover vegetation. A soils test and fertilizer application recommendation geared to the soil and planting type is the best means to determine the amount of nutrients to apply. Timing and placement of fertilizer application is also critical to avoid transport of nutrients to waterways through stormwater runoff. Fertilizer applied immediately prior to a runoff-producing rainfall, outside the growing season or to impervious surfaces is most likely to be carried away by means of runoff without accomplishing the desired objective of supporting target vegetation growth. Therefore, the management of the type, amount and techniques for fertilizer application is necessary as one tool to protect water resources. This section does not apply to application of fertilizer on commercial farms, but improper application of fertilizer on farms would be problematic as well. Stewardship on the part of commercial farmers is needed to address this potential source of excess nutrient load to water bodies. Commercial farmers are expected to implement best management practices in accordance with conservation management plans or resource conservation plans developed for the farm by the Natural Resource Conservation Service and approved by the Soil Conservation District Board.

C. Definitions: For the purpose of this section, the following terms, phrases, words, and their derivations shall have the meanings stated herein unless their use in the text of this section clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in

the singular number include the plural number. The word “shall” is always mandatory and not merely directory.

**BUFFER** - the land area, 25 feet in width, adjacent to any water body. The buffer may be reduced to 10 feet in width if a drop spreader is used for fertilizer application.

**COMMERCIAL FARM** - a farm management unit producing agricultural or horticultural products worth \$2,500 or more annually.

**FERTILIZER** - means a fertilizer material, mixed fertilizer or any other substance containing one or more recognized plant nutrients, which is used for its plant nutrient content, which is designed for use or claimed to have value in promoting plant growth, and which is sold, offered for sale, or intended for sale.

**IMPERVIOUS SURFACE** – for purposes of this section only, a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water. This term shall be used to include any highway, street, sidewalk, parking lot, driveway, or other material that prevents infiltration of water into the soil.

**PERSON** - any individual, corporation, company, partnership, firm, association, or political subdivision of this State subject to municipal jurisdiction.

**PHOSPHORUS FERTILIZER** - any fertilizer that contains phosphorus, expressed as P<sub>2</sub>O<sub>5</sub>, with a guaranteed analysis of greater than zero; except that it shall not be considered to include animal (including human) or vegetable manures, agricultural liming materials, or wood ashes that have not been amended to increase their nutrient content.

**SOILS TEST** - a technical analysis of soil conducted by an accredited soil testing laboratory following the protocol for such a test established by Rutgers Cooperative Research and Extension.

WATER BODY - a surface water feature, such as a lake, river, stream, creek, pond, lagoon, bay or estuary.

D. Prohibited Conduct: No person may do any of the following:

a) Apply fertilizer when a runoff producing rainfall is occurring or predicted and/or when soils are saturated and a potential for fertilizer movement off-site exists.

b) Apply fertilizer to an impervious surface. Fertilizer inadvertently applied to an impervious surface must be swept or blown back into the target surface or returned to either its original or another appropriate container for reuse.

c) Apply fertilizer within the buffer of any water body.

d) Apply fertilizer more than 15 days prior to the start of or at any time after the end of the recognized growing season which is March 1 to November 15.

E. Phosphorus Fertilizer Application: No person may do the following:

a) Apply phosphorus fertilizer in outdoor areas except as demonstrated to be needed for the specific soils and target vegetation in accordance with a soils test and the associated annual fertilizer recommendation issued by Rutgers Cooperative Research and Extension.

b) Exceptions:

1. Application of phosphorus fertilizer needed for:

a. establishing vegetation for the first time, such as after land disturbance, provided the application is 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,

b. re-established or repairing a turf area.

2. Application of phosphorus fertilizer that delivers liquid or granular fertilizer under the soils surface, directly to the feeder roots.

3. Application of phosphorus fertilizer to residential container plantings, flowerbeds, or vegetable gardens.

F. Enforcement: This ordinance shall be enforced by the Police Department of the Borough of North Caldwell.

**§ 53-17. Violations and penalties.**

Any person violating any provisions of this Article shall be subject to a fine not to exceed \$500 or to imprisonment for a term of not more than 90 days, or both, upon conviction. Each and every day in which a person shall be in violation of this article shall constitute a separate defense.

**§ 53-18. Severability.**

Each section, subsection, sentence, clause and phrase of this article is declared to be an independent section, subsection, sentence, clause and phrase, and the finding or holding of any such portion of this article to be unconstitutional, void, or ineffective for any cause, or reason, shall not affect any other portion of this article.

ARTICLE III  
**Stormwater Control**  
[Added 8-22-206 by Ord. No. 12-06]

**§ 53-19. Scope and purpose.**

A. Policy statement. Flood control, groundwater recharge, and pollutant reduction through nonstructural or low-impact techniques shall be explored before relying on structural BMPs. Structural BMPs should be integrated with nonstructural stormwater management strategies and proper maintenance plans. Nonstructural 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 article to establish minimum stormwater management requirements and controls for major development as defined in § 53-19.

C. Applicability.

1. This article 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. Nonresidential major developments; and

b. Aspects of residential major developments that are not preempted by the Residential Site Improvement Standards at N.J.A.C. 5:21.

2. This article shall also be applicable to all major developments undertaken by the Borough of North Caldwell.

D. Compatibility with other permit and ordinance requirements. Development approvals issued for subdivisions and site plans pursuant to this article 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 article shall be held to be the minimum requirements for the promotion of the public health, safety, and general welfare. This article 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 article 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.

**§ 53-20. Definitions.**

Unless specifically defined below, words or phrases used in this article shall be interpreted so as to give them the meaning they have in common usage and to give this article 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 CENTERS, CORES OR NODES – Those areas within boundaries accepted by the Department pursuant to N.J.A.C. 7:8E-5B.

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.

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 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 – 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 water body or to a particular point along a receiving water body.

**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.

**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 wellhead 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.

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

**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.

**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, Borough of North Caldwell, 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, groundwaters 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.

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 – Is defined as the geographic application of the State Development and Redevelopment Plan’s goals and state-wide 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 MANGEMENT 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 nonstormwater discharges into stormwater conveyances.

**STORMWATER RUNNOFF** – Water flow on the surface of the ground or in storm sewers, resulting from precipitation.

**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.

**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** – Is defined as previously developed portions of areas:

A. Delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1), Designated Centers, Cores or Nodes;

B. Designated as CAFRA Centers, Cores or Nodes;

C. Designated as Urban Enterprise Zones; and

D. Designated as Urban Coordinating Council Empowerment Neighborhoods.

**WATERS OF THE STATE** – The ocean and its estuaries, all springs, streams, wetlands, and bodies of surface water or groundwater, 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 groundwater 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.

**§ 53-21. Design and performance standards for stormwater management measures.**

A. 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 § 53.22. To the maximum extent practicable, these standards shall be met by incorporating nonstructural stormwater management strategies into the design. If these strategies along are not sufficient to meet these standards, structural stormwater management measures necessary to meet these standards shall be incorporated into the design.

B. The standards in this article 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.

**§ 53-22. Stormwater management requirements for major development.**

A. The development shall incorporate a maintenance plan for the stormwater management measures incorporated into the design of a major development in accordance with § 53-28.

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

C. The following linear development projects are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Subsections F and G.

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

D. A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Subsections F and G may be obtained for the enlargement of an existing public roadway or railroad, or the construction or enlargement of a public pedestrian access, provided that the following conditions are met:

1. The applicant demonstrates that there is a public need for the project that cannot be accomplished by any other means;
2. The applicant demonstrates through an alternatives analysis, that through the use of nonstructural and structural stormwater management strategies and measures, the option selected complies with the requirements of Subsections F and G to the maximum extent practicable;
3. The applicant demonstrates that, in order to meet the requirements of Subsections F and 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 Subsection D(3) above within the upstream drainage area of the

receiving stream, that would provide additional opportunities to mitigate the requirements of Subsections F and G that were not achievable on site.

E. Nonstructural stormwater management strategies.

1. To the maximum extent practicable, the standards in Subsections F and G shall be met by incorporating nonstructural stormwater management strategies set forth in Subsection S 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 Subsection E(2) below into the design of a particular project, the applicant shall identify the strategy considered and provide a basis for the contention.

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 preconstruction to postconstruction. "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 Subsection 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 identify under Subsection 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 subsection “solid and floatable materials” means sediment, debris, trash, and other floating, suspended, or settleable solids. For exemptions to this standard, see Subsection E(3)(c) below.

a. Grates.

[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 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.

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 square inches, or be no greater than two 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 Subsection 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  $4\frac{5}{8}$  inches long and 1  $\frac{1}{2}$  inches wide (this option does not apply for outfall netting facilities);

[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 spacing between the bars, to the elevation of the water quality design storm as specified in Subsection 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 Subsections F and 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 § 53-25 or found on the Department's Web site at [www.njstormwater.org](http://www.njstormwater.org).

F. Erosion control, groundwater recharge and runoff quantity standards.

1. 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.

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 § 53-23 either:

[a]. Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100% of the average annual preconstruction groundwater recharge volume for the site; or

[b]. Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from preconstruction to postconstruction for the two-year storm is infiltrated.

[2]. This groundwater recharge requirement does not apply to projects within the urban redevelopment area or to projects subject to Subsection F(1)(b)[3] below.

[3]. The following types of stormwater shall not be recharged:

[a]. Stormwater from areas of high pollutant loading. High pollutant loading areas are areas in industrial and commercial developments where solvents and/or petroleum products are loaded/unloaded, stored, or applied, areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than reportable quantities as defined by the United States Environmental Protection Agency (EPA) at 40 CFR 302.4; areas where recharge would be inconsistent with Department-approved remedial action work plan or landfill closure plan and areas with high

risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities; and

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

[4]. 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. In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at § 53-23, complete one of the following:

[1]. Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, postconstruction runoff hydrographs for the two-, ten-, and one-hundred-year storm events do not exceed, at any point in time, the preconstruction runoff hydrographs for the same storm events;

[2]. Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the preconstruction condition, in the peak runoff rates of stormwater leaving the site for the two-, ten-, and one-hundred-year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at our 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 postconstruction peak runoff rates for the two-, ten-, and one-hundred-year storm events are 50%, 75% and 80%, respectively, of the preconstruction peak runoff rates. The percentages apply only to the postconstruction 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 postconstruction 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 Subsection F(1)(c)[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. Any application for a new agricultural development that meets the definition of major development at § 53-20 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.

1. Stormwater management measures shall be designed to reduce the postconstruction load of total suspended solids (TSS) in stormwater runoff by 80% 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  $\frac{1}{4}$  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 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 nonstructural and structural stormwater management measures.

**Table 1: Water Quality Design Storm Distribution**

<b>Time (minutes)</b>	<b>Cumulative Rainfall (inches)</b>	<b>Time (minutes)</b>	<b>Cumulative Rainfall (inches)</b>
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 §53-25, or found on the Department’s Web site at [www.njstormwater.org](http://www.njstormwater.org). The BMP Manual and other sources of technical guidance are listed in §53-25. 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, P.O. Box 418, Trenton, New Jersey 08625-0418.

3. If more than one BMP in series is necessary to achieve the required 80% TSS 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

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**

<b>Best Management Practice</b>	<b>TSS Percent Removal Rate</b>
Bioretention systems	90
Constructed stormwater wetland	90
Extended detention basin	40-60
Infiltration structure	80
Manufactured treatment device	See §53-24 C

Sand filter	80
Vegetative filter strip	60-80
Wet pond	50-90

4. If there is more than one on-site drainage area, the 80% 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 postconstruction 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 F and 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 §53-25.

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. 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:

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

[1]. A three-hundred-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.

[2]. Encroachment within the designated special water resource protection area under Subsection G(8)(a)[1] above shall only be allowed where previous development or disturbance has occurred (for example, active agricultural use, parking area or maintained law 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 the bank of the waterway or centerline of the waterway where the bank is undefined. All encroachments proposed under this subsection shall be subject to review and approval by the Department.

b. 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.

c. 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:

[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% TSS postconstruction 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 special water resource protection area will be maintained to the maximum extent practicable;

[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

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

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 Subsection G(8) 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 Subsection G(8) shall maintain or enhance the current functional value and overall condition of the special water resource protection area as defined in Subsection G(8)(a)[1] above. In no case shall a stream corridor protection plan allow the reduction of the special water

resource protection area to less than 150 feet as measured perpendicular to the waterway subject to this subsection.

e. Subsection 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.

**§ 53-23. Calculation of stormwater runoff and groundwater recharge.**

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

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

a. The USDA Natural Resources Conservation Service (NRCS) methodology, including the NRCS runoff Equation and Dimensionless Unit Hydrograph, as described in the NRCS National Engineering Handbook Section 4 – Hydrology and Technical Release 55 – Urban Hydrology for Small Watersheds; or

b. The Rational Method for peak flow and the Modified Rational Method for hydrograph computations.

2. For the purpose of calculating runoff coefficients and groundwater recharge, there is a presumption that the preconstruction condition of a site or portion thereof is wooded land use with good hydrologic condition. The term “runoff coefficient” applies to both the NRCS methodology at Subsection A(1)(a) and the Rational and Modified Rational Methods at Subsection A(1)(b). 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 have 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 preconstruction 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 preconstruction 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: 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.

**§ 53-24. 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 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 1/3 the width of the diameter of the orifice or 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 Subsection 8(D).

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 2 ½ inches in diameter.

5. Stormwater management basins shall be designed to meet the minimum safety standards for stormwater management basins at § 53-26.

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 §53-22 of this article.

C. Manufactured treatment devices may be used to meet the requirements of §53-22 of this article, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology and certified by the Department.

**§ 53-25. Sources for technical guidance.**

A. Technical guidance for stormwater management measures can be found in the documents listed at Subsection (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.

(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.

**§ 53-26. 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.

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 pounds per square foot.

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

(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 pounds per square foot.

(3) For purposes of this Subsection B(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 Subsection C a freestanding 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 2 ½ 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 2 ½ feet below the permanent water surface, and the second step shall be located one to 1 ½ feet above the permanent water surface. See Subsection 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 three horizontal to one-vertical.

C. Variance or exemption from safety standards. 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.

**§ 53-27. Requirements for site development stormwater plan.**

***Diagram***

A. Submission of site development stormwater plan.

(1) Whenever an applicant seeks municipal approval of a development subject to this article, the applicant shall submit all of the required components of the checklist for the site development stormwater plan at Subsection C 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 article.

(3) The applicant shall submit 15 copies of the materials listed in the checklist for site development stormwater plans in accordance with Subsection C of this article.

B. 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 article.

C. Checklist requirements. 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 one inch equals

200 feet or greater, showing two-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 man-made 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 groundwater 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 §§53-21 through 53-24 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 predevelopment and postdevelopment conditions for the design storms specified in §53-22 of this article.

(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 on-site 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 §53-10.

(8) Waiver from submission requirements. The municipal official or board reviewing an application under this article may, in consultation with the Municipal Engineer, waive submission of any of the requirements in Subsections C(1) through (6) of this article 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.

**§ 53-28. Maintenance and repair.**

A. Applicability. Projects subject to review as in § 53-19C of this article shall comply with the requirements of § 53-28B and 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 development.

(2) The maintenance plan shall contain specific preventative maintenance tasks and schedules; cost estimates, including estimated cost of sediment, debris, or trash removal; and the name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement). 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 if the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

(3) 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.

(4) If the person responsible for maintenance identified under Subsection B(2) above is not a public agency, the maintenance plan and any future revisions based on Subsection 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.

(5) 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.

(6) The person responsible for maintenance identified under Subsection 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.

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

(8) The person responsible for maintenance identified under Subsection 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 Subsection B(6) and (7) above.

(9) The requirements of Subsection B(3) and (4) do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency.

(10) 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 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.

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

**§ 53-29. Violations and penalties.**

Any person who erects, constructs, alters, repairs, converts, maintains, or uses any building, structure or land in violation of this article shall be subject to a fine not to exceed \$500 or to imprisonment for a term of not more than 90 days, or both, upon conviction. Each and every day in which a person shall be in violation of this article shall constitute a separate offense.

**§ 53-30. When effective.**

This article shall take effect immediately upon the approval by the county review agency, or 60 days from the receipt of the article by the county review agency if the county review agency should fail to act.

**§ 53-31. Severability.**

If the provisions of any section, subsection, paragraph, subdivision, or clause of this article 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 article.

