

MUNICIPAL STORMWATER MANAGEMENT PLAN

BOROUGH OF CALIFON, HUNTERDON COUNTY

SUBMITTED TO:

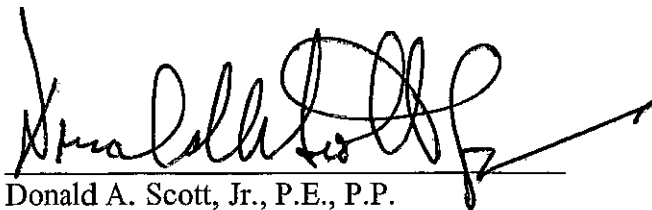
Califon Borough Environmental Commission
Califon Borough Planning Board
Califon Borough Mayor and Council

PREPARED BY:

Keller & Kirkpatrick
Parsippany, New Jersey

in association with
William Cutri-French, Stormwater Program Coordinator

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BOROUGH OF CALIFON
Tier B General Permit
MSWMP Document



Donald A. Scott, Jr., P.E., P.P.
Califon Borough Engineer
New Jersey Professional Engineer
License No. 25890

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Date

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FOREWARD

Califon is located in the upstream half of the South Branch Raritan River watershed. The watershed of the South Branch of the Raritan River has a drainage area of 276 square miles. The South Branch, originating in Budd Lake, flows southwesterly and then loops easterly joining North Branch Raritan River near Raritan Borough to form the main stem of the Raritan River.

The South Branch Raritan River watershed is the headwaters of the Raritan River watershed, the largest drainage area located entirely in New Jersey. The two largest reservoirs in the State lie within the South Branch Raritan River watershed, Round Valley Reservoir and Spruce Run Reservoir. These reservoirs supply water to the populated areas to the north and east, but not to the residents of the watershed.

The residents of the South Branch watershed largely depend on groundwater for their water supply. The use of the land within a watershed directly affects the quality of water within the watershed. Pollutants from stormwater runoff have an adverse impact on the health of the Borough's water resources.

The following plan is one component of local stormwater management intended to address stormwater quality, stormwater quantity, and groundwater recharge impacts within the Borough. The plan is intended to compliment a Local Education Program relating to the collection and handling of solids and floatables, and proper disposal of waste.

The Municipal Stormwater Management Plan (MSWMP) was adopted by the Borough in March, 2005. A copy of the MSWMP was submitted to Hunterdon County Planning Board (HCPB), the designated County Review Agency, for preliminary review. The MSMP has been revised to incorporate the HCPB review comments and suggestions.

INTRODUCTION

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for the Borough of Califon ("the Borough") to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development, defined as projects that disturb one or more acre of land. These standards are intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides baseflow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities.

A "land use" analysis has been included in this plan based upon existing zoning and land available for development. The plan also addresses the review and update of existing ordinances, the Borough Master Plan, and other planning documents to allow for project designs that include low impact development techniques. The final component of this plan is a mitigation strategy for when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

GOALS

The goals of this MSWMP are to:

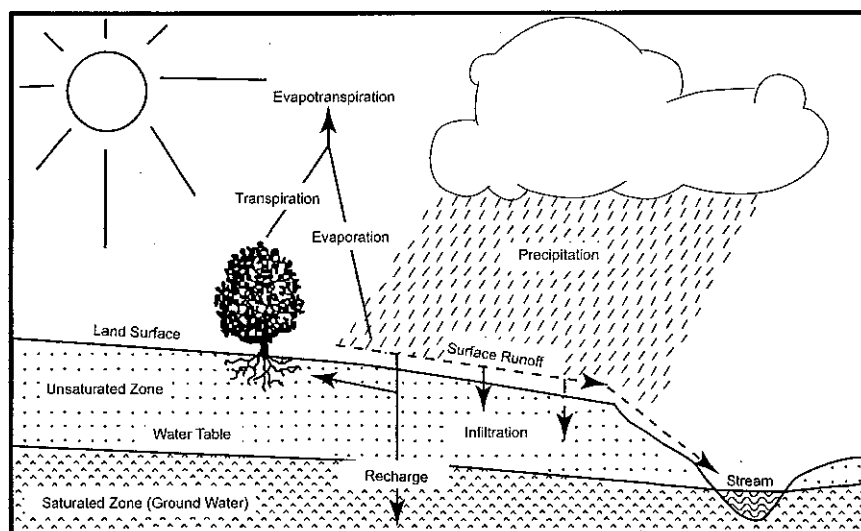
- Reduce flood damage, including damage to life and property;
- Minimize, to the extent practical, any increase in stormwater runoff from any new development;
- Identify and mitigate problems with the existing stormwater systems;
- Reduce soil erosion from any development or construction project or existing land use;
- Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
- Maintain groundwater recharge and provide mitigation of recharge lost to development;
- Prevent, to the greatest extent feasible, an increase in nonpoint pollution;
- Identify and reduce existing nonpoint pollution problems;
- Maintain or restore the integrity of stream channels for their biological functions, as well as for drainage;
- Minimize pollutants in stormwater runoff from new and existing development to restore, enhance, and maintain the chemical, physical, and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial, and other uses of water; and
- Protect public safety through the proper design and operation of stormwater basins.

To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventative and corrective maintenance strategies are included in the plan to ensure long-term effectiveness of stormwater management facilities. The plan also outlines safety standards for stormwater infrastructure to be implemented to protect public safety.

STORMWATER DISCUSSION

Land development can dramatically alter the hydrologic cycle (See Figure 1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration. Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can destroy habitat from which some species cannot adapt.

Figure 1: Groundwater Recharge in the Hydrologic Cycle



Source: New Jersey Geological Survey Report GSR-32.

In addition to increases in runoff peaks, volumes, and loss of groundwater recharge, land development often results in the accumulation of pollutants on the land surface that runoff can mobilize and transport to streams. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended solids, hydrocarbons, pathogens, and nutrients.

In addition to increased pollutant loading, land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and raise the temperature of the downstream waterway, adversely affecting cold water fish species such as trout. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

BACKGROUND

Location.

The Borough of Califon encompasses a 1.0 square mile area located in northern Hunterdon County. The Borough is located in the Highlands physiographic province of New Jersey in the valley of the South Branch of the Raritan River; generally known as Long Valley. The major transportation routes serving the Borough are County Route 512 and County Route 513. The Borough is adjoined by Lebanon Township and Tewksbury Township. Figure 2 depicts the Borough boundary on the USGS quadrangle map.

History.

Initial settlement occurred in the mid 18th century around waterpower sites established on the South Branch of the Raritan River and has historically functioned as a rural center. Much of the community's 19th century heritage survives intact within a designated National and State Register of Historic Places historic district. The C.R.N.J. rail line of 1875 is abandoned and its right-of-way has been rededicated to recreational uses.

The central historic core of the Borough consists of small lot residential uses mixed with village commercial establishments. The southern portion of the municipality climbs a northeast-southwest ridge, known as the Fox Hill Range. Residential lots tend to be larger due to steep slopes and other natural constraints. North of the Raritan River, there is more recent residential development mostly constructed between 1950 to 1970. Highway strip development exists along CR 513.

Historically, the Raritan River was utilized to power gristmills in the Borough. Today, much of the waterfront land has been reinterpreted as open space and recreational area. Preservation of the river access and the overall condition of the river is of major importance to maintaining the unique character of the Borough.

Population.

Most of the Borough's population growth occurred between the years 1950 to 1990. The population increased by almost 25 percent between 1960 and 1970. In succeeding decades, the population stabilized, and most recently there has been a slight decline.

<u>Year</u>	<u>Population</u>	<u>Year</u>	<u>Population</u>
1950	623	1980	1,023
1960	777	1990	1,073
1970	970	2000	1,055

Source: US Bureau of the Census: Censuses of Population and Housing

The Borough's rate of population growth in the last two decades lags significantly behind that of Hunterdon County. Hunterdon County has been one of the fastest growing regions in New Jersey. It may be reasonable for the municipality to expect increased development pressure in the future.

Demand for redevelopment and "infill" development will likely result in increased stormwater runoff volumes and pollutant loads to the waterways of the municipality if preventative measures are not undertaken through land use planning and decision making at the municipal level.

Waterways/Ponds.

The State is divided into twenty (20) watershed management areas. The Borough is completely contained within Watershed Management Area (WMA) 08, North and South Branch Raritan, and contains portions of three (3) HUC14 subwatersheds;

- 282 Ac. within HUC14 02030105010060
- 337 Ac. within HUC14 02030105010070
- 13 Ac. within HUC14 02030105050080

The South Branch of the Raritan River flows through the Borough in a southwesterly direction. The South Branch of the Raritan River emanates from Budd Lake and then flows through Roxbury, Washington, and Lebanon Townships before entering the Borough. The river is impounded by a stone masonry dam located along River Road. This structure creates a slack water area that is valuable as a recreational and aesthetic facility. An area of open space adjoins this pool on the north side of the river along First Street. Overall, the river is a highly valuable landscape feature in the Borough.

Frog Hollow Brook enters the Borough at the eastern border. The headwaters are located in Washington Township and then flows through Tewksbury Township before entering the Borough. Frog Hollow Brook flows southwesterly following Philhower Avenue before turning northwesterly, parallel to Main Street and entering the South Branch of the Raritan River just upstream of the Main Street Bridge.

A small unnamed tributary forms between Academy and Main Streets, and then is piped via brick masonry culvert to Frog Hollow Brook. Figure 3 illustrates the waterways in the Borough.

Two (2) ponds are located within the Borough. One pond is located in close proximity to Frog Hollow Brook near the Borough's eastern border. The other pond is located within Island Park.

The Borough of Califon is located entirely within the Highlands Preservation Area. Category One (C1) antidegradation provisions apply to all Highlands open waters. The surface water classification of the South Branch of the Raritan River upstream of CR512 is FW2-TP (C1) and downstream of CR512 is FW2-TM. Frog Hollow Brook is classified as FW2-TP (C1). The Stormwater Management rules N.J.A.C. 7:8-5.5(h) require the preservation of a 300-foot special water resource protection area (SWRPA) along all Category One waters.

Water Quality.

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics. One (1) AMNET monitoring site is located within the Borough. The South Branch of the Raritan River is moderately impaired based on AMNET data.

The South Branch Watershed Association has been collecting data and monitoring the river for the past 12 years. Results of the 2004 water quality monitoring indicates that of 17 data collection sites, 14 were non-impaired and three (3) were moderately impaired. The results indicate an improvement over prior years.

In addition to the AMNET data, the NJDEP and other regulatory agencies collect water quality chemical data on the streams in the State. These data show that the instream total phosphorus concentrations and fecal coliform concentrations of the Raritan River frequently exceed the State's criteria. This means that the river is an impaired waterway and the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for these pollutants for the waterway.

A TMDL is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for one or more of its designated uses. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and nonpoint source, which includes stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation strategies may include improved stormwater treatment plants, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other BMPs.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)) (Integrated List) is required by the Federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report presents the extent to which New Jersey waters are attaining water quality standards, and identifies waters that are impaired. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed. One monitoring location upstream of the Borough at Middle Valley (01396280) indicates impairments from phosphorous, fecal coliform bacteria and temperature. According to the Raritan Basin Project, bioassessment monitoring indicates no decline in condition between 1994 and 1999.

Stormwater Quantity.

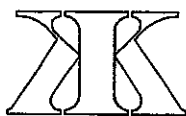
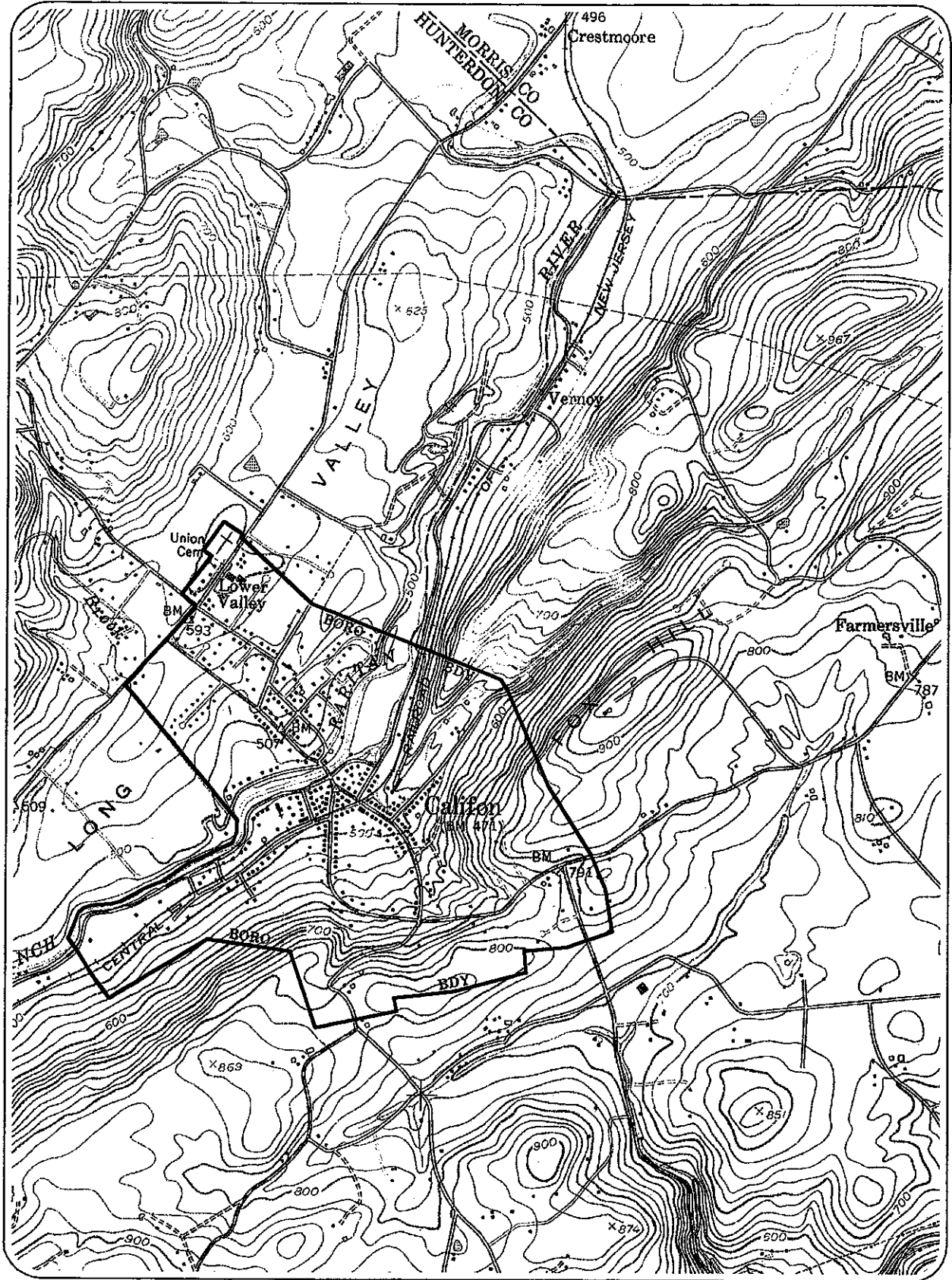
In addition to water quality problems, the Borough has exhibited storm water quantity problems including localized flooding on certain streets. Many of the culverts associated with road crossings in the Borough were constructed years ago and are undersized. These culverts were designed for much different hydrologic conditions (i.e., less impervious area) than presently exist in the Borough. During severe storm events, these undersized culverts do not have adequate capacity, thereby causing a backwater effect and flooding upstream.

As the imperviousness increased in the Borough, the peak and volumes of stream flows also increased. The increased amount of water resulted in stream bank erosion, which resulted in unstable areas at roadway/bridge crossings, and degraded stream habitats. The high imperviousness of the Borough has significantly decreased groundwater recharge, decreasing base flows in streams during dry weather periods. Lower base flows can have a negative impact on instream habitat during the summer months. A map of the groundwater recharge areas are shown in Figure 4.

A central water system, supplied by locally available groundwater, serves portions of the Borough. There are three (3) NJDEP Public Water Supply Wells located within the southern portion of the Borough. The system is operated by Aqua New Jersey (formerly Consumers N.J. Water Company). Wellhead protection areas are shown in Figure 5. Areas outside this service area are "self-supplied" by individual on-site groundwater wells.

**BOROUGH BOUNDARY
STORMWATER MANAGEMENT PLAN**
Borough of Califon, Hunterdon County

Portion of USGS
Califon Quadrangle
Scale 1 Inch = 2000 Feet







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Borough of Califon Hunterdon County, NJ

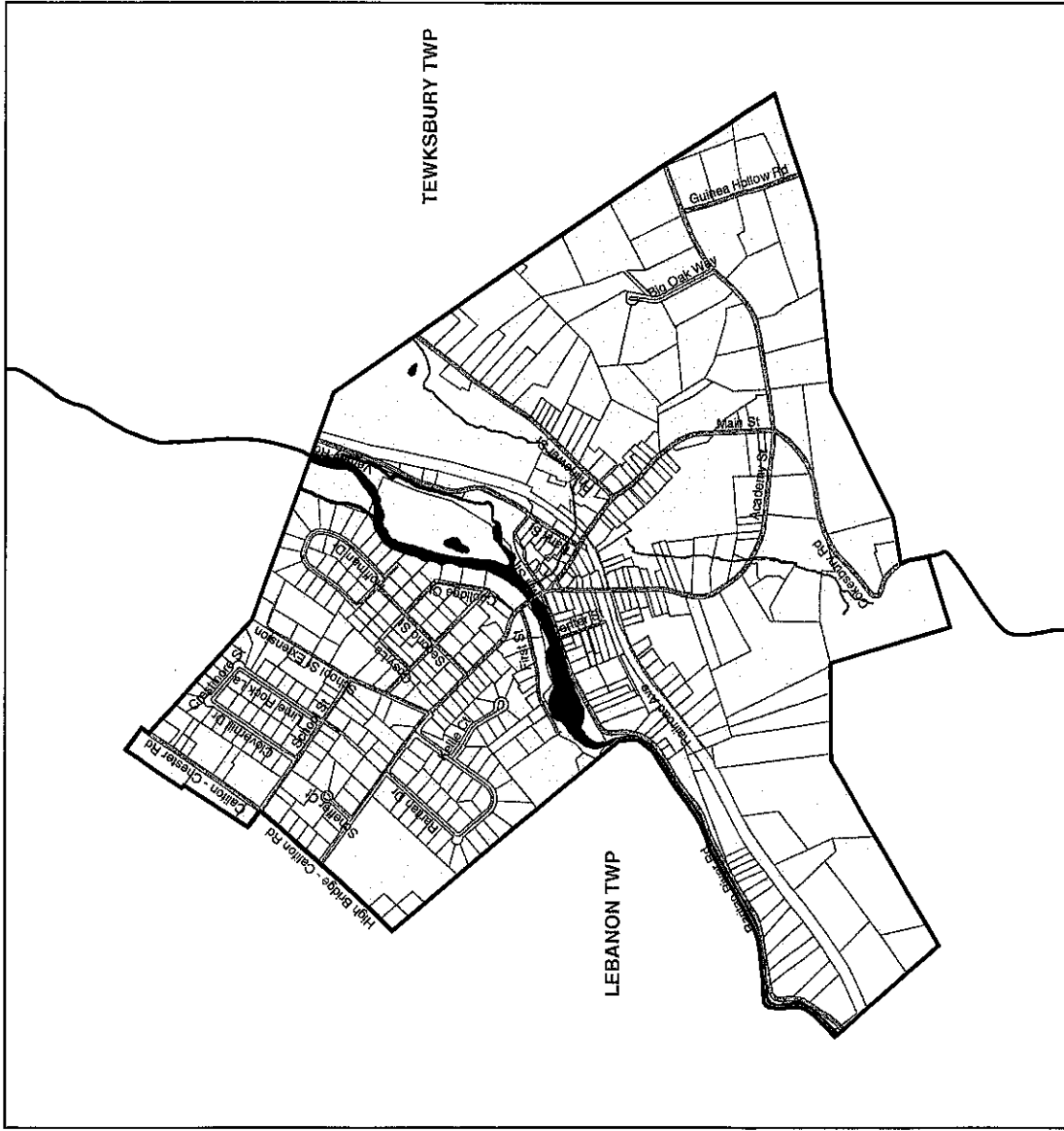
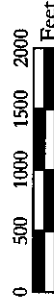
Legend

-  Tax Parcels
-  Streams, Lakes, Rivers
-  Roads
-  Municipal Boundaries

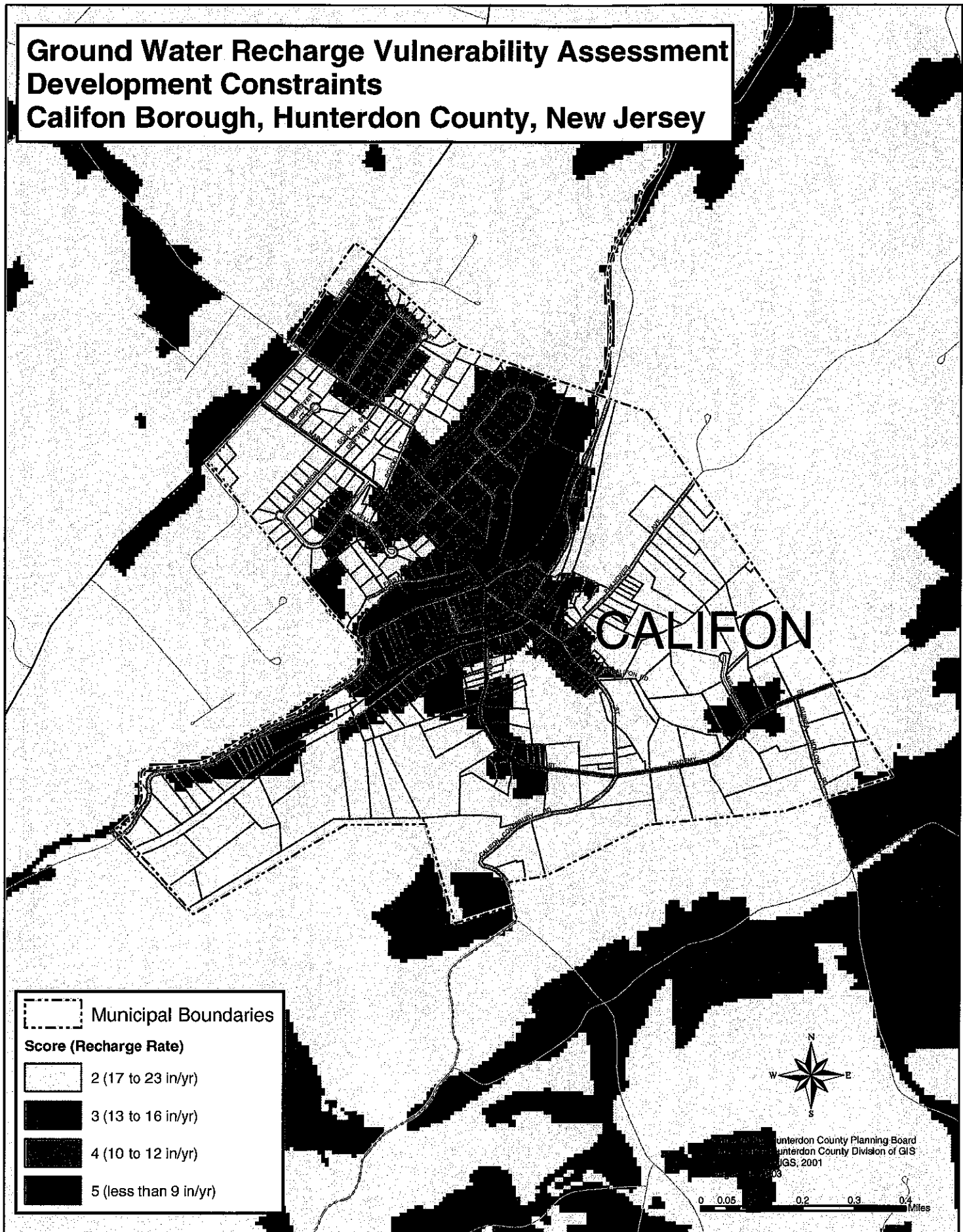
Prepared for the Califon Environmental Commission by
The GIS Center at Stony Brook, Pennington, NJ, May 2002

Data Source:
Hunterdon County Division of GIS (2002)

This map was prepared using digital data from the above source,
but this secondary product has not been verified or authorized
by the data provider.

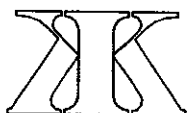
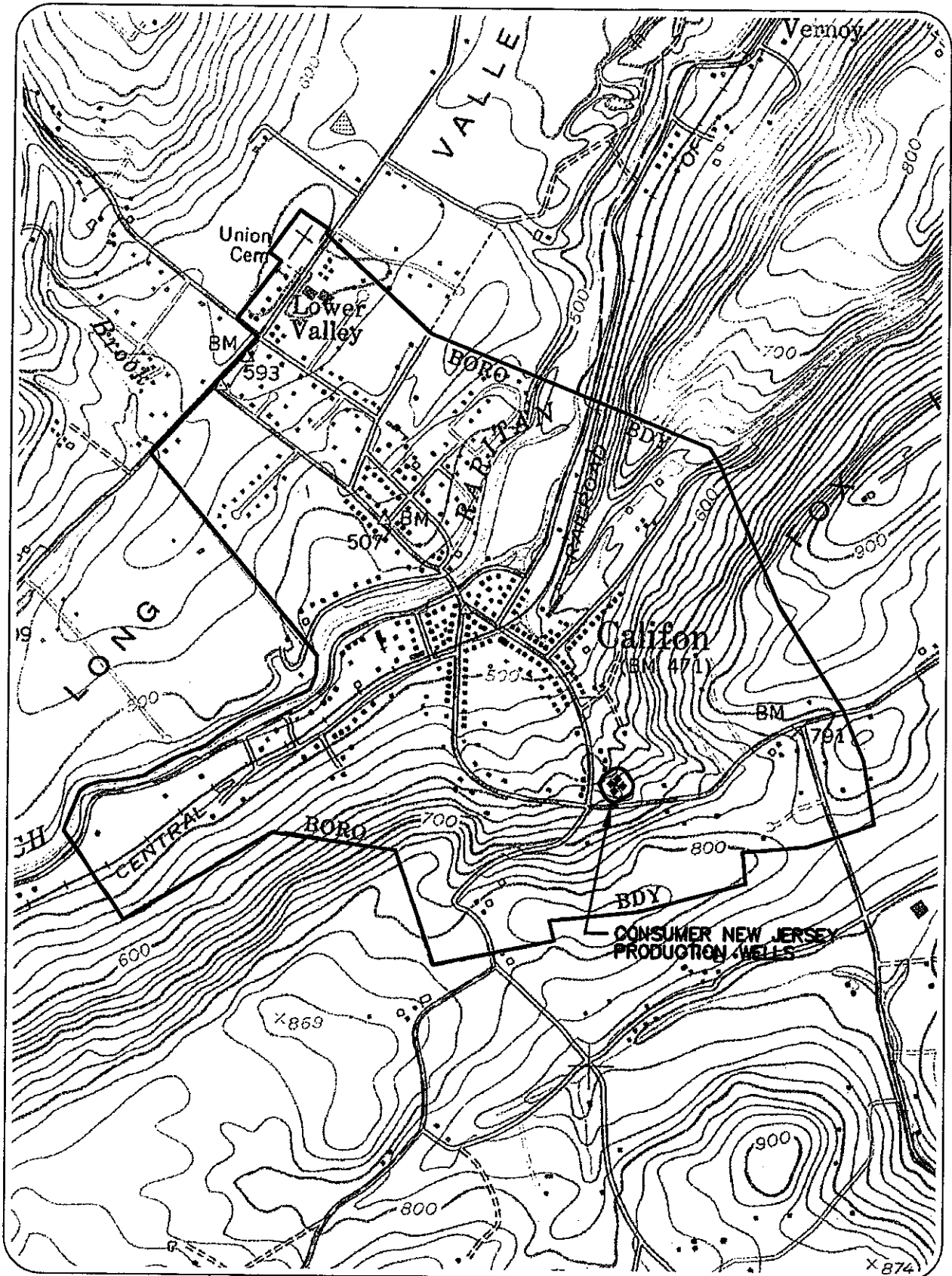


Ground Water Recharge Vulnerability Assessment Development Constraints Califon Borough, Hunterdon County, New Jersey



**WELL HEAD PROTECTION AREAS
STORMWATER MANAGEMENT PLAN
Borough of Califon, Hunterdon County**

Portion of USGS
Califon Quadrangle
Scale 1 Inch = 1300 Feet



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DESIGN AND PERFORMANCE STANDARDS

The Borough will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. The design and performance standards include the language for maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins.

A Low Impact Development Checklist is included in Appendix A of the *New Jersey BMP Manual* to assist reviewers and designers in ensuring stormwater management measures have been implemented. In addition, a model Site Conditions Checklist has been developed by the Hunterdon County Environmental Toolbox Committee for use by municipalities. A copy is included in the Appendix.

A copy of the Draft Stormwater Control Ordinance is included in the Appendix. The ordinance will be submitted to Hunterdon County for review and approval.

During construction, Borough inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed.

PLAN CONSISTENCY

Regional Stormwater Management Plan

The Borough is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Borough; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) nor any TMDLs. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

Residential Site Improvement Standards

The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. The municipality will utilize the most current update of the RSIS in the stormwater management review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

Soil Erosion and Sediment Control Standards

The Borough's *Land Development Ordinance* requires all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During

construction, Borough inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the local Soil Conservation District.

Highlands Water Protection and Planning Act

The Borough of Califon is located within the Highlands Preservation Area. As such, a series of environmental regulations apply to projects defined by the Act as major Highlands development. Generally, restrictions include 300' buffers around open waters, limit of 3% impervious coverage, and development restrictions on slopes of 20% and upland forested areas.

The Highlands septic system density standard was established in consideration of the antidegradation provisions of both the Surface Water Quality Standards (SWQS) N.J.A.C. 7:9B-1.5(d)6(iii), and Stormwater Management rules N.J.A.C. 7:8-5.5(h) for Category One waters. The Borough has no public sanitary sewer facilities and relies entirely on individual on-site disposal systems. Special conditions, such as poor soils, underlying carbonate rock formations, steep slopes, small undersized lots, and aged and failing systems, exist within the Borough which severely limit the applicability of conventional systems. The Borough has received a grant from the *Highlands Water Protection and Planning Council* for a study to evaluate individual on-site alternative wastewater treatment technologies in relation to special conditions that are common within the Borough. This evaluation includes identification of alternative systems, discussion of feasibility of implementing alternative systems, and identification of industry experts that may serve as an Alternative Wastewater Technology work group in support of Califon Borough's needs, as well as a valuable resource for the Highlands Regional Master Plan.

Raritan Basin Plan

The Raritan Basin Watershed Management Plan was developed by stakeholder participants from the Raritan River Basin with the assistance of the New Jersey Water Supply Authority under a Memorandum of Agreement with the New Jersey Department of Environmental Protection. The Raritan Plan includes goals, objectives, and strategies to address:

- Surface Water Pollution
- Loss of Riparian Areas
- Biological Impairment of Streams
- Loss of Ground Water Recharge
- Water Supply Limitations
- Stormwater Impacts

It is envisioned that plan implementation will occur through existing organizations and new partnerships. Two watershed associations are active in the North and South Branch WMA, The South Branch Watershed Association and The Upper Raritan Watershed Association.

Hunterdon County Cross-Acceptance Report

Cross-Acceptance is a process mandated by the State Planning Act for soliciting public comment on the State Development and Redevelopment Plan (State Plan). Counties across New Jersey

coordinate the Cross-Acceptance process for their respective municipalities. The first phase of Cross-Acceptance concludes with the submission of a Cross-Acceptance report submitted by the counties to the State Planning Commission. The Hunterdon County Cross-Acceptance Report will be submitted to the State Planning Commission following its adoption.

The Hunterdon County Cross-Acceptance report (2004) is a two-volume document. Volume I includes an overview of the State Plan and the Cross-Acceptance process, presents key findings, issues and recommendations concerning the relative consistency between local, county and State Plans. Volume II includes a survey of municipal and county planning documents, information on redevelopment sites in the County and other supporting documentation as background to Volume I.

NONSTRUCTURAL STORMWATER MANAGEMENT STRATEGIES

Strategies that seek to reduce and/or prevent adverse impacts from runoff through sound site planning and stormwater management measures are known as Low Impact Development (LID). These strategies are intended to preserve or closely mimic a site's natural or pre-developed condition. Effective low impact development includes the use of both nonstructural and structural stormwater management measures known as LID-BMPs. The New Jersey Stormwater *Best Management Practices Manual* (BMP manual) provides guidance to address the standards in the proposed Stormwater Management Rules N.J.A.C. 7:8.

The Stormwater Management Rules require municipalities to review their master plans and ordinances in order to incorporate LID practices into their land development regulations to the maximum extent practicable. The Borough has reviewed the master plan and ordinances, and has provided a list of the sections in the Borough land use and zoning ordinances that are to be modified to incorporate nonstructural stormwater management strategies. These are the ordinances identified for revision. Once the ordinance texts are completed, they will be submitted to the county review agency for review and approval. A copy will be sent to the Department of Environmental Protection at the time of submission.

The *Land Development Ordinance* of the Borough, was reviewed with regard to incorporating nonstructural stormwater management strategies. Several changes are recommended to Article VII, entitled "Improvements and Design Standards" to incorporate these strategies.

- Section 701. Drainage
- Section 705. Natural Features
- Section 706. Design of Off-Street Parking, Loading Areas and Driveways
- Section 707. Landscaping
- Section 710. Streets, Curbs and Sidewalks
- Section 713. Soil Erosion and Sediment Control.

Section 701: Drainage addresses stormwater runoff and control measures. It is recommended that cited stormwater management provisions be updated to include all requirements outlined in N.J.A.C. 7:8-5.

Section 705: Natural Features requires that natural features, such as trees, open waters, hilltops, and views be preserved to the maximum extent possible. It is encouraged that care be taken to preserve existing vegetation and trees to enhance natural scenic qualities of the Borough. It is recommended that this section be amended to expand trees to forested areas, to ensure that leaf litter and other beneficial aspects of the forest are maintained in addition to the trees.

Section 706: Design of Off-Street Parking, Loading Areas and Driveways details off-street parking and loading requirements and describes the procedure for construction of any new driveway or accessway to any street. It is recommended that this section be amended to allow the use of pervious paving materials to minimize stormwater runoff and promote groundwater recharge. The use of pervious paving materials, however, should be carefully considered, especially where deicing materials may potentially be used.

Section 707: Landscaping requires landscape plantings be integrated in overall site design and buffer areas. It is recommended that this section be amended to require the use of native vegetation, which requires less fertilization and watering than non-native species. Additionally, it is recommended that language be included to allow buffer areas to be used for stormwater management by disconnecting impervious surfaces and treating runoff from these impervious surfaces. Recommended native shrubs for riparian buffers includes spicebush, red chokeberry, sweet pepperbush, steeplebush, buttonbush, and swamp azalea. Invasive exotics should not be used. Additional plantings guidance is given in Chapter 7 of the *New Jersey Stormwater BMP Manual*.

Section 710: Streets, Curbs and Sidewalks describes the requirements for streets in the Borough. It is recommended that this section be amended to allow for curb cuts or flush curbs with curb stops to allow vegetated swales to be used for stormwater conveyance and to allow the disconnection of impervious areas. It is also recommended that language was added to this section to require developers to design sidewalks to discharge stormwater to neighboring lawns where feasible to disconnect these impervious surfaces, or use permeable paving materials where appropriate.

Section 713: Soil Erosion and Sediment Control addresses soil erosion and sediment control measures by requiring developers to comply with the New Jersey Soil Erosion and Sediment Control Standards. It is recommended that this section be amended to include some general design principles, such as retain and protect natural vegetation; minimize and retain water runoff to facilitate groundwater recharge; tighten sequence to reduce duration of disturbance, and install diversions, and similar required structures prior to any on-site grading or disturbance.

LAND USE/BUILD-OUT ANALYSIS

Land Cover.

Land use and land cover are not synonymous terms. Land cover indicates a type or class of land surface condition, while land use generally refers to specific activities taking place within the land cover category. Land cover mapping is highly useful in quickly identifying patterns of

developed and undeveloped land. In more highly developed municipalities like Califon, the undeveloped areas usually remain undeveloped due to some type of environmental constraint. The easily seen remaining open space areas often indicate patterns of wetlands, forests, and other critical natural features that constrain development.

Land cover classifications are:

Urban -	Lands altered by traditional development
Agriculture -	Lands primarily used for production of food
Forest -	Lands covered by wooded vegetation
Water -	Open water bodies and areas periodically water covered
Wetlands -	Areas of saturated soil condition that support vegetation
Barren Land -	Landfills, active construction sites, and surface mines

Figure 6 illustrates the existing land cover in the Borough based on 1995/97 GIS information from NJDEP. Land Use percentages are as follows:

Agriculture:	27 Ac. (4.3%)	Forest:	275 Ac. (43.5%)
Urban:	318 Ac. (50.3%)	Water:	11 Ac. (1.8%)

Urban Land. This land use is the most dominant land use in the Borough. It is heavily concentrated in the northern section of the Borough between CR 513 and the historic core. This land use category also includes landscaped open spaces. Island Park located along the South Branch and the Columbia Trail located along the abandoned railroad right-of-way are included in this category.

Agricultural Land. Farmlands within the Borough are scarce with only a few parcels remaining.

Forests. Forests are the second largest land use/land cover category present in the Borough. Although fragmented to a considerable degree, the forested lands in the Borough are located primarily in the southern and eastern sections of the Borough. One area of woodlands is located between Academy and Main Streets. There is also a fairly large area of woodlands associated with the river corridor between the Island Park and the Tewksbury border.

Open Water. The major water area in the Borough is the South Branch of the Raritan River that traverses the municipality flowing from northeast to southwest. This portion of the South Branch is classified by the NJDEP as freshwater, trout maintenance (FW2-TM).

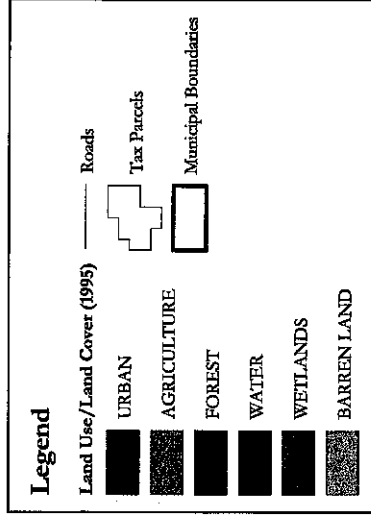
Frog Hollow Brook is tributary to the South Branch and flows through the most densely developed areas of the Borough. Frog Hollow Brook is classified by NJDEP as freshwater, trout production, (FW2-TP) Category 1 waters.

Wetlands. According to mappings, wetlands are present immediately along the South Branch of the Raritan below the impoundment. Although not shown on general mappings, it is likely that wetlands also exist along portions of Frog Hollow Brook.

Barren Land. No land in this classification is shown within the Borough.

Borough of Califon Hunterdon County, NJ

Land Use/Land Cover



Prepared for the Califon Environmental Commission by
The GIS Center at Stony Brook, Pennington, NJ, May 2002

Data Sources:
Hunterdon County Division of GIS (roads, parcels, water, MCDs 2002)
NJ Department of Environmental Protection (land use/land cover 1995)

This map was prepared using digital data from the above sources,
but this secondary product has not been verified or authorized
by the respective data providers.



Zoning.

The Borough of Califon is divided into the following zones:

R-1	Rural Residential (3 acres minimum)
R-2	Low Density Residential District (1 acre minimum)
R-3	Medium Density Residential District (22,000 s.f. minimum)
R-MF	Multi-Family Residential District
GB	General Business/Historic Preservation District
HB	Highway Business District
FP/R-1	Flood Plain/Residential District (3 acres minimum)
CRD	Carbonate Rock District

The Carbonate Rock District is a secondary or overlay to the zoning districts.

Carbonate Rock District. Areas within the municipality are underlain by carbonate bedrock, including the area between the abandoned railroad bed south of the river and running northward beyond the northern Borough boundary. The solution of this bedrock causes surface depressions, open drainage passages, and the development of irregular, subsurface rock topography known as karst. Groundwater travels quickly through the many solution channels that may enlarge to considerable size. These conditions make such areas unstable and susceptible to subsidence and surface collapse. As a result, the alteration of drainage patterns in these areas by the placement of impervious coverage or grade changes from site improvements can lead to land subsidence and sinkholes.

Dolomite is the predominate carbonate rock formation, composed primarily of calcium and magnesium carbonates. Dolomite is particularly susceptible to rapid weathering and the development of solution channels. Fractures or solution openings and fissures in the carbonate rock may lead to public or private water supplies, making those sources especially susceptible to groundwater contamination. Sinkholes pose serious concerns about possible structural collapse and rapid contamination of groundwater by surface water reaching the groundwater table directly.

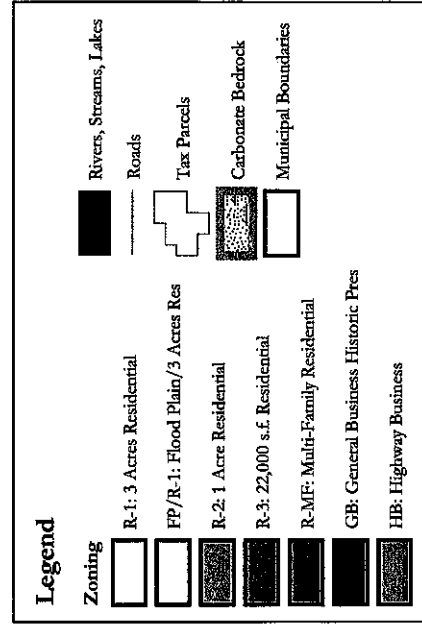
There is little undeveloped land within the area underlain by carbonate rock. The special floodplain zoning and dominate conservation and recreational uses in the FP/R-1 zone pose little problem. Developments with relatively large areas of impervious surfaces have the potential to generate considerable run-off and to concentrate it in collection systems and detention facilities. Exposing carbonate geology to large amounts of ponded water or injected subsurface flows may induce collapse due to surface water rapidly entering solution channels. Special design considerations and site investigations are necessary as set forth in the Borough's *Carbonate Rock Ordinance*. The Borough Zoning Map is shown in Figure 7.

Build-Out Analysis

The Borough of Califon contains a combined total of less than one (1 sq. mi.) square mile of vacant or agricultural lands. A build-out analysis to determine non-point source pollutant loads has not been prepared.

Borough of Califon Hunterdon County, NJ

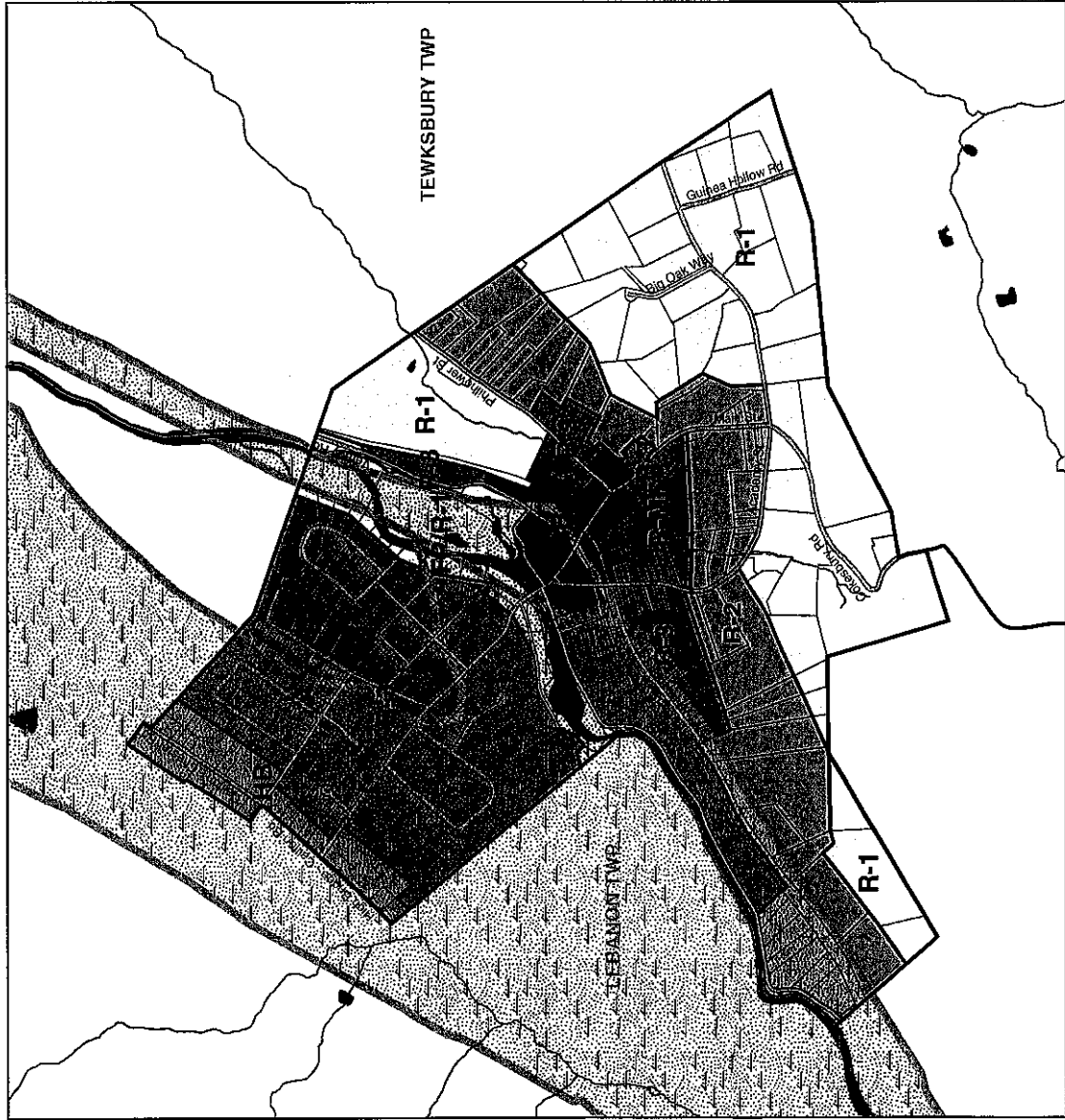
Zoning/Carbonate Rock



Prepared for the Califon Environmental Commission by
The GIS Center at Stony Brook, Pennington, NJ, May 2002

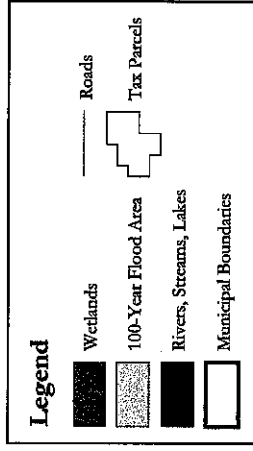
Data Sources:
Hunterdon County Division of GIS (zoning, roads, parcels, water, MCDs, 2002)
NJ Department of Environmental Protection, NJGS (geology 1999)

This map was prepared using digital data from the above sources, but this secondary product has not been verified or authorized by the respective data providers. NOTE: The locations of geologic contacts are from a data set originally published at a scale of 1:100,000 and must therefore be considered approximate at the scale of this map.



Borough of Califon Hunterdon County, NJ

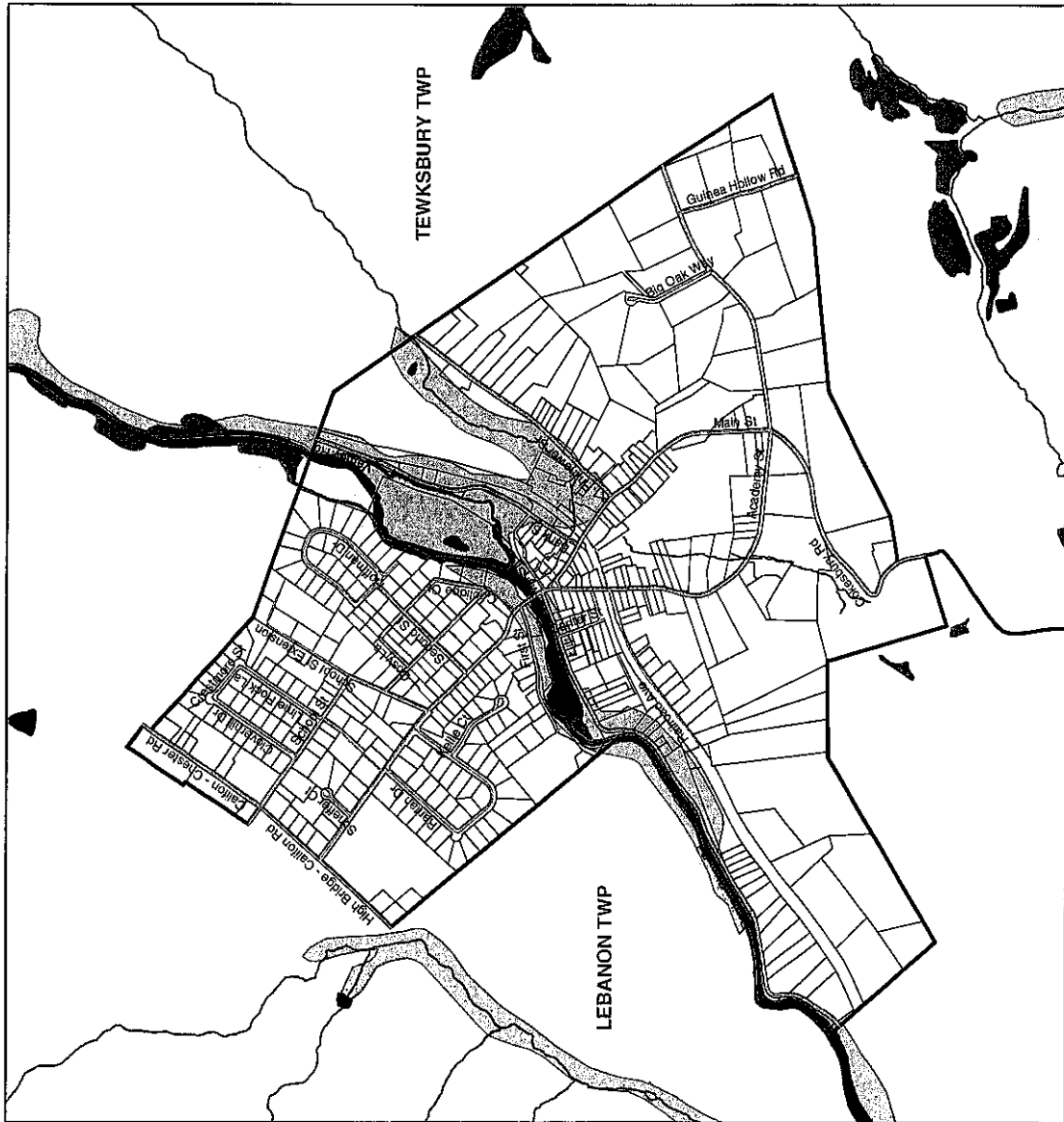
Flood-Prone Areas and Wetlands



Prepared for the Califon Environmental Commission by
The GIS Center at Stony Brook, Pennington, NJ, May 2002

Data Sources:
Hunterdon County Division of GIS (parcels, roads, water, MCDs 2002)
NJ Department of Environmental Protection (flood-prone 1986, wetlands 1995)

This map was prepared using digital data from the above sources, but this secondary product has not been verified or authorized by the respective data providers. Note: the flood-prone areas depicted on this map are from NJDEP data and do not coincide with the boundaries on Flood Insurance Rate Maps or other FEMA map products.



MITIGATION PLANS

This mitigation plan is provided for a proposed development that is granted a variance or exemption from the stormwater management design and performance standards. Presented is a hierarchy of options.

Mitigation Project Criteria

1. The mitigation project must be implemented in the same drainage area as the proposed development. The project must provide additional groundwater recharge benefits, or protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Municipal Stormwater Management Plan. The developer must ensure the long-term maintenance of the project, including the maintenance requirements under Chapters 8 and 9 of the *New Jersey Stormwater BMP Manual*.

Currently there are no site/drainage area specific mitigation projects that are planned or that have been identified for future implementation.

2. If a suitable site cannot be located in the same drainage area as the proposed development, as discussed in Option 1, the mitigation project may provide mitigation that is not equivalent to the impacts for which the variance or exemption is sought, but that addresses the same issue. For example, if a variance is given because the 80 percent TSS requirement is not met, the selected project may address water quality impacts due to a fecal impairment. Listed below are specific projects that can be used to address the mitigation option. More detailed information on the projects can be obtained from the Borough Engineer.

Water Quality.

- An area of open space adjoins the impoundment of the South Branch along First Street. Numerous waterfowl, particularly Canada Geese, are present and may be generating water quality concerns. Provide goose management measures and public education.
- Immediately downstream of the impoundment along First Street, the north streambank has eroded and undercut root systems of adjacent vegetation. Provide bioengineering measures for erosion reduction and native riparian plantings for stream shading.

Stormwater Quantity.

- Many of the culverts associated with road crossings in the Borough were constructed years ago and are undersized. During severe storm events, these undersized culverts do not have adequate capacity, thereby causing localized flooding on certain streets. Provide replacement of undersized culverts and pipes to control flooding.

The municipality may allow a developer to provide funding or partial funding to the municipality for an environmental enhancement project that has been identified in a Municipal Stormwater Management Plan, or towards the development of a Regional Stormwater Management Plan. The funding must be equal to or greater than the cost to implement the mitigation outlined above, including costs associated with purchasing the property or easement for mitigation, and the cost associated with the long-term maintenance requirements of the mitigation measure.

REFERENCES

Engineering Field Handbook, USDA, Dec. 1996.

Forested Areas, 1995/97 NJDEP Land Use/Land Cover.

New Jersey Integrated List of Waterbodies, Ambient Biomonitoring Network (AMNET), NJDEP Division Of Watershed Management, 2004.

Map - *Borough/Waterways*, prepared by GIS Center at Stony Brook - Andy Rowen, Pennington, N.J., May, 2002.

Map - *Flood-Prone Areas and Wetlands*, prepared by GIS Center at Stony Brook - Andy Rowen, Pennington, N.J., May, 2002.

Map - *Land Use/Land Cover*, prepared by GIS Center at Stony Brook - Andy Rowen, Pennington, N.J., May, 2002.

Map - *Zoning/Carbonate Rock*, prepared by GIS Center at Stony Brook - Andy Rowen, Pennington, N.J., May, 2002.

Map - *Ground Water Recharge, Vulnerability Assessment*, Hunterdon County Planning Board, August 20, 2003.

Narrative - *Califon Environmental Resource Inventory*, Upper Raritan Watershed Association - David Pfeifer, Director, May, 2004 (edits by Califon Environmental Commission).

Tier B Municipal Stormwater Guidance Document, NJDEP April, 2004.

Native Trees and Shrubs for Riparian Forest Buffers, NJDEP, Nov. 2002.

New Jersey Highlands Wellhead Protection Project, South Branch Watershed Association, Inc.

The South Branch Raritan River Watershed, South Branch Watershed Association, Inc., 2003.

US Bureau of the Census: *Censuses of Population and Housing, 1950, 1960, 1970, 1980, 1990, and 2000*.

Well Head Protection Areas for Public Community Water Supply Wells in New Jersey - List of Public Community Wells, New Jersey Department of Environmental Protection, New Jersey Geological Survey, March, 2004.

Wetlands, NJDEP 1995/97 Land Use/Land Cover

APPENDIX

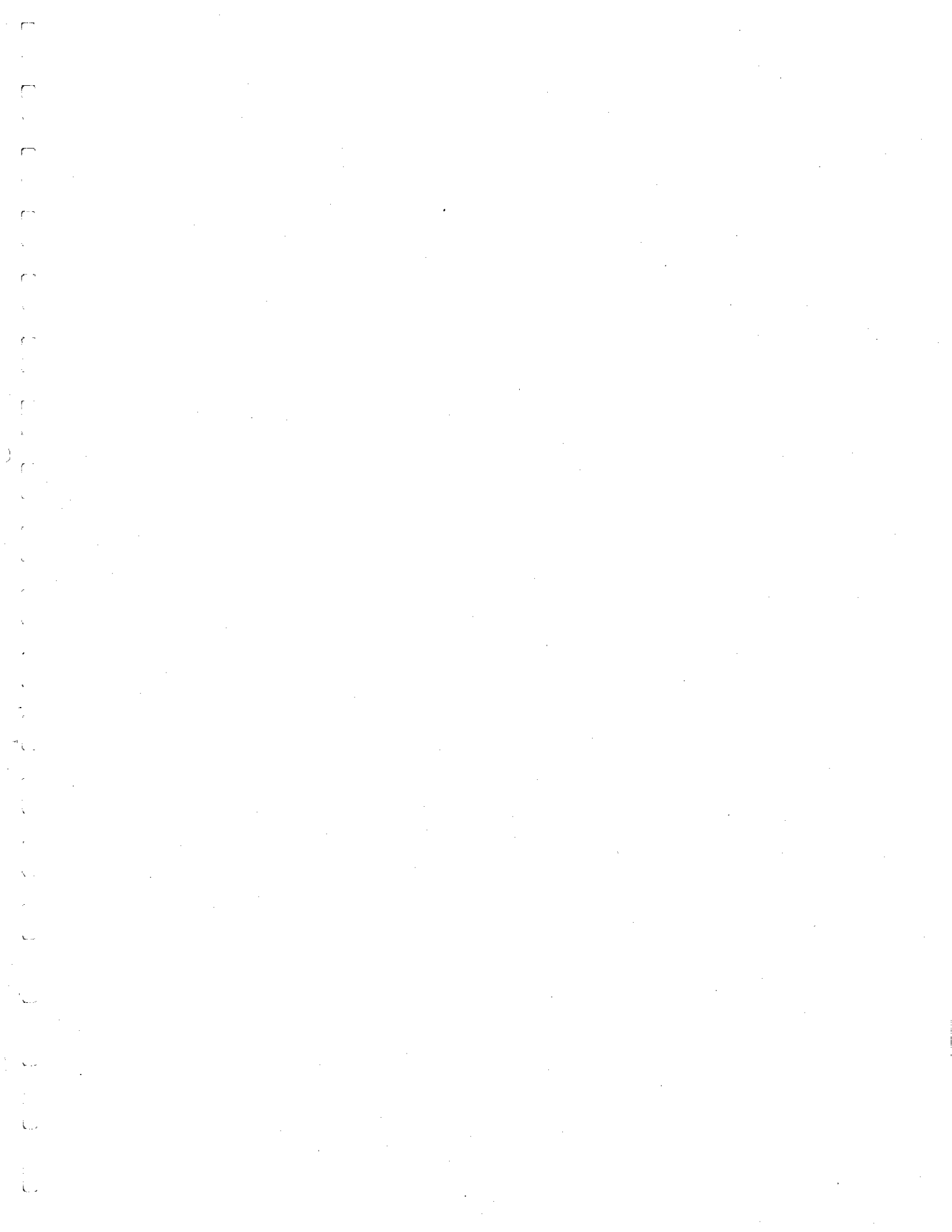
SITE DEVELOPMENT STORMWATER PLAN

SITE CONDITIONS CHECKLIST

Y	N	N/A	Hydrology
			Perennial or intermittent streams as shown on the USGS 7.5 Minute Quadrangle Maps and as indicated in the Soil Survey of Hunterdon County, New Jersey
			Special water resource protection areas along all waters designated Category One at N.J.A.C. 7:9B and perennial/intermittent streams that drain into/upstream of the Category One waters as shown on the USGS Quad Maps Soil Survey
			Wetlands, NJDEP Linear Non-Tidal Wetlands, Marshlands and NJDEP Letter of Interpretation findings.
			FEMA Q3 Flood Data 100 Year – Floodplains and Floodways
			Geometry of on-site drainage areas.
Y	N	N/A	Boundaries and Buffers
			Appropriate buffers to streams, rivers, wetlands, marshlands, ponds, lakes, and other water bodies as specified in pertinent "ordinances, rules, regulations, statutes or other provisions of law imposed by local, County, State or Federal agencies".
			Existing and proposed bearing and distances of property lines.
			Existing and proposed conservation, maintenance, construction, reconstruction, sight, utility, drainage and right-of-way easements and dedications.
Y	N	N/A	Vegetation and Landscaping
			Pervious and vegetated surfaces, i.e. woodlands, grasslands, and other significant natural features not listed if being utilized for LID credit.
			Native and invasive strands of vegetation.
			Vegetated habitat for Threatened and Endangered Species.
Y	N	N/A	Geology and Soils (Soil Survey of Hunterdon County, New Jersey)
			Steep slopes, 10% or > slopes.
			Soil types.
			Highly erodible soils, with an erodibility factor (K) of .40 or <.
			Drainage Class and recharge potential.
			Colloidal soils.
			Depth to bedrock.

			Seasonal high water table.
			Soils subject to dynamic compaction and compacted soils.
			Soil pH.
			Shrink swell potential.
			Deeply fractured bedrock.
			Limestone and karst topography.
			Hardpans and plough pans.
Y	N	N/A	Existing Man Made Structures and Activities
			Existing buildings and significant permanent manmade features.
			Roads by classification, parking areas and other impervious surfaces.
			Bridges and culverts.
			Utilities, subsurface and above ground.
			Mining / quarry operations and blasting areas.
			Acid or other hazardous runoff.
			Areas of fill and buried debris.
			Wellheads and associated groundwater withdrawals.
			Pipes, discharges and BMP's of existing stormwater utilities.
			Groundwater mounding.
			Septic systems and wells of adjacent lots.
			Leaking sanitary lines.
			Previous land use (agricultural, industrial, commercial).

Reference: Hunterdon County Environmental Toolbox: Model Stormwater Control Ordinance for Municipalities, Nov. 2005.





Bureau of Nonpoint Pollution Control
Division of Water Quality
PO Box 029
Trenton, NJ 08625-0029
Phone: (609) 633-7021
Fax: (609) 984-2147

AUTHORIZATION TO DISCHARGE
R10 -Tier B Municipal Stormwater General Permit

Facility Name:

PIID #: 171561

CALIFON BORO

Facility Address:

NJPDES #: NJG0149641

39 ACADEMY ST
CALIFON, NJ 07830

Type of Activity: Stormwater Discharge General Permit Authorization New

Owner:

CALIFON BORO
PO BOX 368
CALIFON, NJ 07830

Operating Entity:

CALIFON BORO
PO BOX 368
CALIFON, NJ 07830

Issuance Date:

03/24/2004

Effective Date:

04/01/2004

Expiration Date:

02/28/2009

Your Request for Authorization under NJPDES General Permit No. NJ0141861 has been approved by the New Jersey Department of Environmental Protection.

Date: 03/24/2004

Barry Chalofsky, P.P., Chief
Bureau of Nonpoint Pollution Control
Division of Water Quality
New Jersey Department of Environmental Protection



NEW JERSEY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Permit Number: NJ0141861
P.I. ID# 60577

Final: Tier B Municipal Stormwater Master General Permit

Permittee:

Division Of Water Quality
401 E State Street
Trenton, New Jersey 08625

Co-Permittee:


Property Owner:

Location Of Activity:

NJPDES Master General Permit Program
Interest
401 E State Street
Trenton, New Jersey 08625

Authorization(s) Covered Under This Approval	Issuance Date	Effective Date	Expiration Date
R10 -Tier B Municipal Stormwater General Permit	02/02/2004	03/03/2004	02/28/2009

By Authority of:
Commissioner's Office


DEP AUTHORIZATION
Barry Chalofsky, P.P., Chief
Bureau of Nonpoint Pollution Control
Division of Water Quality

(Terms, conditions and provisions attached hereto)

Tier B Municipal Stormwater General Permit (NJ0141861)

PART I NARRATIVE REQUIREMENTS:

A. Authorization Under this Permit

1. Permit Area

- a. This permit applies to all areas of the State of New Jersey.

2. Eligibility

- a. This permit may authorize all new and existing stormwater discharges to surface water and groundwater from small municipal separate storm sewer systems (MS4s) owned or operated by municipalities assigned to Tier B under N.J.A.C. 7:14A-25.3(a)2 (Tier B Municipalities), except as provided in A.5 below.
- b. After the Effective Date of Permit Authorization (EDPA), the permit authorizes the following new and existing non-stormwater discharges from small MS4s owned or operated by Tier B Municipalities except if identified by the municipality as a significant contributor of pollutants to or from the MS4. If any of the following discharges are identified as a significant contributor, the Tier B Municipality shall contact the Department so appropriate actions may be taken:
 - i. Water line flushing and discharges from potable water sources
 - ii. Uncontaminated ground water (e.g., infiltration, crawl space or basement sump pumps, foundation or footing drains, rising ground waters)
 - iii. Air conditioning condensate
 - iv. Irrigation water (including landscape and lawn watering runoff)
 - v. Flows from springs, riparian habitats and wetlands, water reservoir discharges and diverted stream flows
 - vi. Residential car washing water, and residential swimming pool discharges
 - vii. Sidewalk, driveway and street wash water
 - viii. Flows from fire fighting activities
 - ix. Flows from rinsing of the following equipment with clean water:
 - Beach maintenance equipment immediately following their use for their intended purposes; and
 - Equipment used in the application of salt and de-icing materials immediately following salt and de-icing material applications. Prior to rinsing with clean water, all residual salt and de-icing 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 equipment in the above situations is limited to exterior, undercarriage, and exposed parts and does not apply to engines or other enclosed machinery.

3. Authorization

- a. In order to obtain authorization under this permit (except for automatic renewal of authorization under A.4 below) a complete Request for Authorization (RFA) shall be submitted in accordance with the requirements of this permit. Upon review of the RFA, the Department may, in accordance with N.J.A.C. 7:14A-6.13, either:
 - i. Issue notification of authorization under this permit, in which case, authorization is deemed effective the first day of the following month of the date of the notification of authorization;
 - ii. Deny authorization under this permit and require submittal of an application for an individual permit; or
 - iii. Deny authorization under this permit and require submittal of an RFA for another general permit.
- b. For discharges from a small MS4 authorized by this permit, the Tier B Municipality is exempt from N.J.A.C. 7:14A-6.2(a)2. This exemption means that the discharge of any pollutant not specifically regulated in the NJPDES permit or listed and quantified in the NJPDES application or RFA shall not constitute a violation of the permit.
- c. Authorization under this permit shall cease to be effective under N.J.A.C. 7:14A-6.13(f), (h), (j) and (o), where applicable.

4. Automatic Renewal of Authorization

- a. Authorization under this permit will be automatically renewed when this general permit is reissued as provided by N.J.A.C. 7:14A-6.13(d)9 and 25.8(c) so long as the discharge authorized under the general permit continues to be eligible. The Department shall issue a notice of renewed authorization to the Tier B Municipality.
- b. If the Tier B Municipality is aware of any information in the most recently submitted RFA that is no longer true, accurate, and/or complete, the Tier B Municipality shall provide the correct information to the Department within 90 days of the effective renewal authorization notice.

5. Stormwater Discharges Not Authorized

- a. This permit does not authorize "stormwater discharge associated with industrial activity" as defined in N.J.A.C. 7:14A-1.2. Types of facilities that a Tier B Municipality may operate and that are considered to be engaging in "industrial activity" include but are not limited to certain landfills and recycling facilities, certain transportation facilities (including certain local passenger transit and air transportation facilities), certain facilities handling domestic sewage or sewage sludge, steam electric power generating facilities, and construction activity that disturbs five acres or more (see N.J.A.C. 7:14A-1.2 for the full definition of "stormwater discharge associated with industrial activity"). Any municipality that operates an industrial facility with such a discharge must submit a separate request for authorization (RFA) or individual permit application for that discharge. An RFA submitted for the Tier B Municipal Stormwater General Permit does not qualify as an RFA for such a discharge.

- i. Deadlines to apply for a NJPDES permit for “stormwater discharge associated with industrial activity” are set forth in N.J.A.C. 7:14A-24.4(a)1. If such a discharge is from a facility (other than an airport, powerplant, or uncontrolled sanitary landfill) that is owned or operated by a municipality with a population of less than 100,000, the municipality shall submit the RFA or individual permit application by March 3, 2004. If such a discharge is from any other industrial facility, N.J.A.C. 7:14A-24.4(a)1 specifies earlier deadlines to apply.
- b. This permit does not authorize “stormwater discharge associated with small construction activity” as defined in N.J.A.C. 7:14A-1.2. In general, this is the discharge to surface water of stormwater from construction activity that disturbs at least one but less than five acres (see N.J.A.C. 7:14A-1.2 for the full definition). Any municipality that operates a construction site with such a discharge must submit a separate RFA or individual permit application for that discharge. An RFA submitted for the Tier B Municipal Stormwater General Permit does not qualify as an RFA for such a discharge.
- c. This permit does not authorize any stormwater discharge that is authorized under another NJPDES permit. A municipality does not have to implement measures contained in this NJPDES permit for stormwater discharges at facilities owned or operated by that municipality that are regulated under a separate NJPDES stormwater permit authorizing those discharges.
- d. This permit does not authorize stormwater discharges from projects or activities that conflict with an adopted areawide or Statewide WQM plan.

B. Requests for Authorization Requirements

1. Deadline for Requesting Authorization for an Existing Discharge

- a. An RFA for the existing discharges from the small MS4 owned or operated by a Tier B Municipality must be submitted to the Department on or before March 3, 2004, except as provided below.
 - i. If a municipality receives notice from the Department that it has been reassigned from Tier A to Tier B, the deadline to submit an RFA is 90 days after the receipt of that notice.
 - ii. The Department may, in its discretion, accept an RFA submitted after the foregoing deadline; however, the municipality may still be held liable for violating the deadline to apply in accordance with N.J.A.C. 7:14A-25.8 and for discharging pollutants without a valid NJPDES permit in accordance with N.J.A.C. 7:14A-2.1(d).

2. Deadline for Requesting Authorization for a New Discharge

- a. An RFA for discharges from a new small MS4 owned or operated by a Tier B Municipality must be submitted to the Department at least ninety (90) days prior to the operation of the new MS4 system.
 - i. A Tier B Municipality that already has authorization to discharge from a small MS4 under the Tier B Municipal Stormwater Permit does not need to submit an additional RFA for the expansion of an existing small MS4.
 - ii. A new small MS4 is a small MS4 that did not exist on March 3, 2004 and results in a new discharge to surface or ground waters of the State.

3. Requesting Authorization

- a. A separate RFA shall be submitted by each Tier B Municipality applying for authorization under this permit.
- b. A single RFA is required for the entire stormwater discharge from the small MS4 owned or operated by and located within a single municipality. Multiple RFAs are not required for multiple municipal operations (e.g., municipally owned and operated maintenance facilities, garages, and/or offices).

4. Contents of the Request for Authorization

- a. A completed RFA shall include all of the following information regarding the Tier B Municipality and shall be completed using the Department's RFA form:
 - i. The name of the municipality that owns and operates the small MS4, county it is located in, and the address of the main municipal office (e.g., city hall, town hall, or municipal building).
 - ii. The name and mailing address of the Municipal Stormwater Program Coordinator who will submit any reports or certifications required by the permit and to whom the Department shall send all correspondence concerning the permit.
 - iii. A certification acknowledging the best management practices, measurable goals, and other requirements specified in the permit.
 - iv. A map showing the boundaries of any "combined sewer area" that a Tier B Municipality wants to exclude from the Stormwater Program under Part I, Section E. A "combined sewer area" is an area that is excluded because all stormwater discharges that are from that area (and operated by the municipality) are discharges to combined (or sanitary) sewer systems.
 - v. Additional information may be required by the Department to be included as part of the RFA if the Department determines that such additional information (including other data, reports, specifications, plans, permits, or other information) is reasonably necessary to determine whether to authorize the discharge under this permit.

5. Where to Submit

- a. A completed and signed RFA shall be submitted to the Department at the address specified on the Department's RFA form.

C. Definitions

1. The following definitions apply to this permit.

- a. "EDPA" means Effective Date of Permit Authorization.
- b. "MS4" means a municipal separate storm sewer system.
- c. "Municipality" means a "municipality" as defined in the Municipal Land Use Law at N.J.S.A. 40:55D-5, that is, any city, borough, town, township, or village.
- d. "Municipal separate storm sewer" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

- i. Owned or operated by the United States, an interstate agency, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface water or groundwater;
- ii. Designed and used for collecting or conveying stormwater;
- iii. Which is not a combined sewer;
- iv. Which is not part of a POTW; and
- v. Which is not either of the following:
 - A separate storm sewer(s) that is at an industrial facility, and that collects or conveys stormwater discharges associated with industrial activity that occurs at that facility; or
 - A separate storm sewer(s) that is at a construction site, and that collects or conveys stormwater discharges associated with small construction activity that occurs at that site.
- e. "Small municipal separate storm sewer system" or "small MS4" means all municipal separate storm sewers (other than "large" or "medium" municipal separate storm sewer systems as defined in N.J.A.C. 7:14A-1.2) that are:
 - i. Owned or operated by municipalities described under N.J.A.C. 7:14A-25.1(b);
 - ii. Owned or operated by county, State, interstate, or Federal agencies, and located at public complexes as described under N.J.A.C. 7:14A-25.2(a)2;
 - iii. Owned or operated by county, State, interstate, Federal, or other agencies, and located at highways and other thoroughfares as described under N.J.A.C. 7:14A-25.2(a)3; or
 - iv. Owned or operated by county, State, interstate, Federal, or other agencies, and receive special designation under N.J.A.C. 7:14A-25.2(a)4.
- f. "Solid and floatable materials" means sediment, debris, trash, and other floating, suspended, or settleable solids.
- g. "Stormwater" means 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.

D. Special Conditions

1. Sharing of Responsibilities

- a. A Tier B Municipality may share with one or more other entities (for example, a watershed association or another municipality) the responsibility for implementing any of the Statewide Basic Requirements (SBRs), or Additional Measures (AMs) required by this permit pursuant to N.J.A.C. 7:14A-25.8(e).
- b. The Tier B Municipality is responsible for compliance with this permit if the other entity fails to implement the measure(s), or component(s) thereof. In the annual reports the municipality must submit under Part I, Section H.2, the municipality shall specify that it is relying on another entity to satisfy some of the Tier B Municipality's NJPDES permit obligations.
- c. If the municipality is relying on another entity regulated under the NJPDES permit program to satisfy all of that Tier B Municipality's NJPDES permit obligations, including that municipality's obligation to file these annual reports, the municipality shall notify the Department of this reliance in writing.

E. Stormwater Program

1. Stormwater Program

- a. Tier B municipalities are required to develop, implement, and enforce a stormwater program that must include the SBRs that are listed in Part I, Section F and the AMs, if any, required by Part I, Section G.1 of the permit.
- b. For any projects or activities which the municipality contracts out to private contractors after the EDPA, the awarded contract must contain conditions that the contractor must conduct such projects or activities in such a manner that is in compliance with the municipality's stormwater program and this permit's conditions. The municipality is responsible for any violations of this permit resulting from a contractor's noncompliance.

F. Statewide Basic Requirements (SBRs)

1. Stormwater quality issues related to new development, redevelopment and existing development are to be addressed through the implementation of the following Statewide Basic Requirements (SBRs). The permit specifies the BMPs that will be implemented for those SBRs.

- a. Additional information is provided and each of the SBRs and related BMPs are described in more detail in the Department's Tier B Municipal Stormwater Permit Guidance Document.

2. Post-Construction Stormwater Management in New Development and Redevelopment

- a. **Minimum Standard** - To prevent or minimize water quality impacts, the Tier B Municipality shall develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects (including projects operated by the municipality itself) that disturb one acre or more, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the municipality's small MS4. The municipality shall in its post-construction program:
 - i. Adopt and reexamine a municipal stormwater management plan (or adopt amendments to an existing municipal stormwater management plan) in accordance with N.J.A.C. 7:8-4.
 - ii. Adopt and implement a municipal stormwater control ordinance or ordinances in

- accordance with N.J.A.C. 7:8-4. The ordinance(s) will control stormwater from non-residential development and redevelopment projects.
- iii. Ensure that any residential development and redevelopment projects that are subject to the Residential Site Improvement Standards for stormwater management (N.J.A.C. 5:21-7) comply with those standards (including any exception, waiver, or special area standard that was approved under N.J.A.C. 5:21-3).
 - iv. Where necessary to implement the municipal stormwater management plan, the municipal stormwater control ordinance(s) will also:
 - Control aspects of residential development and redevelopment projects that are not pre-empted by the Residential Site Improvement Standards; and
 - Set forth special area standards approved by the Site Improvement Advisory Board for residential development or redevelopment projects under N.J.A.C. 5:21-3.5.
 - v. Ensure adequate long-term operation and maintenance of BMPs.
 - vi. This post-construction program shall also require compliance with standards set forth in Attachment A of the permit to control passage of solid and floatable materials through storm drain inlets.
 - vii. This post-construction program shall require compliance with the applicable design and performance standards established under N.J.A.C. 7:8 for major development, unless:
 - Those standards do not apply because of a variance or exemption granted under N.J.A.C. 7:8; or
 - Alternative standards are applicable under an adopted areawide or Statewide Water Quality Management Plan adopted in accordance with N.J.A.C. 7:15.
- b. Measurable Goal – Tier B Municipalities shall certify annually that they have developed, implemented, and are actively enforcing a program to address stormwater runoff from new development and redevelopment projects that discharge into the Tier B Municipality’s small MS4 in accordance with the minimum standard.
- c. Implementation
- i. Upon the effective date of permit authorization, Tier B Municipalities shall for new development and redevelopment projects:
 - Ensure that any residential development and redevelopment projects that are subject to the Residential Site Improvement Standards for stormwater management (N.J.A.C. 5:21-7) comply with those standards (including any exception, waiver, or special area standard that was approved under N.J.A.C. 5:21-3).
 - Ensure adequate long-term operation and maintenance of BMPs on property owned or operated by the municipality.

- ii. Within 12 months from the effective date of permit authorization, Tier B Municipalities shall:
 - Adopt a municipal stormwater management plan (or adopt amendments to an existing municipal stormwater management plan) in accordance with N.J.A.C. 7:8-4;
 - Comply with the standards set forth in Attachment A of the permit to control passage of solid and floatable materials through storm drain inlets for storm drain inlets the municipality installs within the Tier B Municipality's small MS4.
- iii. Within 12 months from the adoption of the municipal stormwater management plan, Tier B Municipalities shall adopt a stormwater control ordinance(s) to implement that plan, and shall submit the adopted municipal stormwater management plan and ordinance(s) to the appropriate county review agency for approval.
- iv. Tier B Municipalities shall enforce stormwater control ordinance(s) when approved in accordance with N.J.A.C. 7:8-4.
- v. Within 24 months from the effective date of permit authorization Tier B Municipalities shall:
 - Ensure adequate long-term operation and maintenance of BMPs on property not owned or operated by the municipality;
 - Enforce, through the stormwater control ordinance(s) or a separate ordinance, compliance with the standards set forth in Attachment A of the permit to control passage of solid and floatable materials through storm drain inlets for storm drain inlets not installed by the Tier B Municipality.

3. Local Public Education

a. Local Public Education Program

- i. Minimum Standard – The Local Public Education Program shall ensure that the annual mailing of the informational brochure and the annual educational event are conducted as required below. The Annual Report and Certification shall summarize how the Tier B Municipality distributed educational information and how the educational activities, including the educational event, will be conducted to satisfy this minimum standard. The following SBR and/or BMP topics shall be included in the Local Public Education Program:
 - Stormwater/Nonpoint Source Education – impact of stormwater discharges on surface and ground waters of the State and steps that the public can take to reduce pollutants in stormwater runoff.
 - Storm Drain Inlet Labeling – hazards of dumping materials into the storm drain, and fact that storm drains are usually connected to water bodies and do not receive treatment.
 - Fertilizer/Pesticide Education –proper application, storage and disposal of

pesticides and fertilizers, and the benefits of using native or well adapted vegetation that requires little or no fertilization.

- Waste Disposal Education – identification, proper handling and proper disposal of wastes (including the locations of hazardous waste collection facilities in the area) and the hazards associated with illicit connections and improper disposal of waste.

Tier B Municipalities shall provide for the duplication and annual mailing (or other means of delivery) to all residents and businesses within the municipality of the informational brochure provided by the Department. The informational brochure covers all the topics above. The Department may periodically provide the Tier B Municipality with an updated brochure for duplication and distribution.

As part of this program, Tier B Municipalities shall also conduct each year, at minimum, one education effort in the form of an “event.” An event may be an activity established primarily to satisfy this requirement or may be part of a bigger existing event such as municipal festivals, county fairs, or an Earth Day, Arbor Day or 4th of July celebration. During this event, the informational brochure shall also be made available to the public.

- ii. Measurable Goal - Tier B Municipalities shall certify annually that they have met the Local Public Education Program minimum standard and shall provide the date(s) of the annual mailing (or other means of delivery) and annual event, including a description of the event.
 - iii. Implementation - Within 12 months from the effective date of permit authorization, Tier B Municipalities shall have developed and begun implementing the Local Public Education Program minimum standard.
- b. Storm Drain Inlet Labeling
- i. Minimum Standard - Tier B Municipalities shall establish a storm drain inlet labeling program and label all storm drain inlets that are along municipal streets with sidewalks, and all storm drain inlets within plazas, parking areas, or maintenance yards that are operated by the municipality. The program shall establish a schedule for labeling, develop a long term maintenance plan, and when possible, coordinate efforts with watershed groups and volunteer organizations.
 - ii. Measurable Goal - Tier B Municipalities shall certify annually that a storm drain inlet labeling program has been developed or is being implemented, and shall identify the number of storm drain inlets labeled within the year.
 - iii. Implementation - Within 12 months from the effective date of permit authorization, Tier B Municipalities shall develop a labeling program for the storm drain inlets identified in the minimum standard. Tier B Municipalities must either:
 - Label a minimum of 50% of the storm drain inlets within 36 months from the EDPA; and label all remaining storm drain inlets on or before 60 months from EDPA; or

- Divide the municipality into two sectors for the purposes of storm drain inlet labeling. Prepare a map of the two sectors. Label the storm drain inlets in one sector within 36 months from the EDPA; and label all remaining storm drain inlets on or before 60 months from EDPA.

G. Additional and Other Measures

1. Additional Measures

- a. Additional Measures (AMs) are non-numeric or numeric effluent limitations that are expressly required to be included in the stormwater program by an adopted areawide or Statewide Water Quality Management Plan (WQM plan). AMs may modify or be in addition to SBRs. AMs may be required by a TMDL approved or established by USEPA, a regional stormwater management plan, or other elements of adopted areawide or Statewide WQM plans.
- b. The Department will provide written notice of the adoption of an AM to each Tier B Municipality whose stormwater program will be affected, and will list each adopted AM in the permit by making a minor modification to the permit. The AMs, other than numeric effluent limitations, will specify the BMPs that must be implemented and the measurable goals for each BMP. The AMs will also specify time periods for implementation.

2. Other Stormwater Control Measures

- a. Tier B Municipalities may also implement other stormwater control measures as allowed by statute. These activities are outside the scope of the Tier B stormwater program.

H. Deadlines and Certifications

1. Statewide Basic Requirements

- a. Each SBR contained in Part I, Section F of the permit has a specific implementation schedule based on the effective date of permit authorization. Each SBR shall be implemented in accordance with that schedule. Tier B Municipalities shall certify in the Annual Report and Certification the status of the implementation of each SBR and the date implementation was completed, as appropriate.

2. Annual Report and Certification

- a. Tier B Municipalities shall complete an Annual Report (on a form provided by the Department) summarizing the status of compliance with this permit including measurable goals and the status of the implementation of each SBR contained in Part I, Section F of the permit. This report shall include a certification that the municipality is in compliance with this permit, except for any incidents of noncompliance. Any incidents of noncompliance with permit conditions shall be identified in the Annual Report and Certification. A copy of each Annual Report and Certification shall be kept at a central location and shall be made available to the Department for inspection.
 - i. If there are incidents of noncompliance, the report shall identify the steps being taken to remedy the noncompliance and to prevent such incidents from recurring.
 - ii. The Annual Report and Certification shall be signed and dated by the Tier B Municipality, and shall be maintained for a period of at least five years. This period may be extended by written request of the Department at any time.

- b. The Annual Report and Certification shall be submitted to the Department pursuant to the following submittal schedule:
 - i. Submit an Annual Report and Certification: on or before July 1, 2005 and every 12 months thereafter.

I. Standard Conditions

1. The following general conditions are incorporated by reference. The Tier B Municipality is required to comply with the regulations, which were in effect as of the March 3, 2004.

- a. General Permits N.J.A.C. 7:14A-6.13
 - b. Penalties for Violations N.J.A.C. 7:14-8.1 et seq.
 - c. Incorporation by Reference N.J.A.C. 7:14A-2.3
 - d. Toxic Pollutants N.J.A.C. 7:14A-6.2(a)4i
 - e. Duty to Comply N.J.A.C. 7:14A-6.2(a)1 & 4
 - f. Duty to Mitigate N.J.A.C. 7:14A-6.2(a)5 & 11
 - g. Inspection and Entry N.J.A.C. 7:14A-2.11(e)
 - h. Enforcement Action N.J.A.C. 7:14A-2.9
 - i. Duty to Reapply N.J.A.C. 7:14A-4.2(e)3
 - j. Signatory Requirements for Applications and Reports N.J.A.C. 7:14A-4.9
 - k. Effect of Permit/Other Laws N.J.A.C. 7:14A-6.2(a)6 & 7 & 2.9(c)
 - l. Severability N.J.A.C. 7:14A-2.2
 - m. Administrative Continuation of Permits N.J.A.C. 7:14A-2.8
 - n. Permit Actions N.J.A.C. 7:14A-2.7(c)
 - o. Reopener Clause N.J.A.C. 7:14A-6.2(a)10, 16.4(b) & 25.7(b)
 - p. Permit Duration and Renewal N.J.A.C. 7:14A-2.7(a) & (b)
 - q. Consolidation of Permit Process N.J.A.C. 7:14A-15.5
 - r. Confidentiality N.J.A.C. 7:14A-18.2 & 2.11(g)
 - s. Fee Schedule N.J.A.C. 7:14A-3.1
 - t. UIC Corrective Action N.J.A.C. 7:14A-8.4
 - u. Additional Conditions Applicable to UIC Permits N.J.A.C. 7:14A-8.9
 - v. UIC Operating Criteria N.J.A.C. 7:14A-8.16
- ### 2. Operation And Maintenance
- a. Need to Halt or Reduce not a Defense N.J.A.C. 7:14A-2.9(b)
 - b. Proper Operation and Maintenance N.J.A.C. 7:14A-6.12
- ### 3. Monitoring And Records
- a. Monitoring N.J.A.C. 7:14A-6.5
 - b. Recordkeeping N.J.A.C. 7:14A-6.6
 - c. Signatory Requirements for Monitoring Reports N.J.A.C. 7:14A-6.9
- ### 4. Reporting Requirements
- a. Planned Changes N.J.A.C. 7:14A-6.7
 - b. Reporting of Monitoring Results N.J.A.C. 7:14A-6.8
 - c. Noncompliance Reporting N.J.A.C. 7:14A-6.10 & 6.8(h)
 - d. Hotline/Two Hour & Twenty-four Hour Reporting N.J.A.C. 7:14A-6.10(c) & (d)
 - e. Written Reporting N.J.A.C. 7:14A-6.10(e) & (f) & 6.8(h)
 - f. Duty to Provide Information N.J.A.C. 7:14A-2.11, 6.2(a)14 & 18.1
 - g. Compliance Schedules N.J.A.C. 7:14A-6.4
 - h. Transfer N.J.A.C. 7:14A-6.2(a)8 & 16.2

5. Copies of the NJPDES rules may be purchased by contacting West Group, St. Paul, Minnesota, 1-800-808-WEST.

J. Additional Conditions

1. Agency and Public Review

- a. The Tier B municipality shall keep records required by this general permit for at least five years from the date of the record. The municipality shall submit these records to the Department if requested.
- b. Upon review by an authorized representative, the Department may notify the Tier B Municipality at any time that the stormwater program does not meet one or more of the minimum requirements. Within 30 days after receiving such notification (unless otherwise specified by the Department), the stormwater program shall be revised to adequately address all deficiencies, and written certification of such revisions shall be submitted to the Department.
- c. Tier B Municipalities shall make records required by this permit available to the public at reasonable times during regular business hours (see N.J.A.C. 7:14A-18 for confidentiality provisions).

2. Other Laws

- a. In accordance with N.J.A.C. 7:14A-6.2(a)7, this permit does not authorize any infringement of State or local law or regulations, including, but not limited to the Pinelands rules (N.J.A.C. 7:50), N.J.A.C. 7:1E (Department rules entitled "Discharges of Petroleum and other Hazardous Substances"), the New Jersey Register of Historic Places Rules (N.J.A.C. 7:4), and all other Department rules. No discharge of hazardous substances (as defined in N.J.A.C. 7:1E-1.6) resulting from an onsite spill shall be deemed to be "pursuant to and in compliance with [this] permit" within the meaning of the Spill Compensation and Control Act at N.J.S.A. 58:10-23.11c.

3. Operations and Maintenance Manual

- a. In accordance with N.J.A.C. 7:14A-6.12(c), for a discharge authorized by this permit, the Tier B Municipality is exempt from the requirement to prepare an operations and maintenance manual.

Attachment A

DESIGN STANDARD - STORM DRAIN INLETS

This standard applies to storm drain inlets installed as part of new development and redevelopment projects (public or private) that disturb one acre or more. For exemptions to this standard see "Exemptions" below.

Grates in Pavement or Other Ground Surfaces

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

1. The New Jersey Department of Transportation (NJDOT) bicycle safe grate, which is described in Chapter 2.4 of the NJDOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines (April 1996).
2. A different grate, if each individual clear space in that grate has an area of no more than seven (7.0) square inches, or is no greater than 0.5 inches across the smallest dimension.

(In regard to whether the different grate must also be bicycle safe, the Residential Site Improvement Standards include requirements for bicycle-safe grates.)

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.

Curb-Opening Inlets (Including Curb-Opening Inlets in Combination Inlets)

Whenever design engineers use a curb-opening inlet, the clear space in that curb opening (or each individual clear space, if the curb opening has two or more clear spaces) shall have an area of no more than seven (7.0) square inches, or be no greater than two (2.0) inches across the smallest dimension.

Exemptions

Hydraulic Performance Exemptions

1. New Development and Redevelopment Projects - 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. Retrofitting of existing storm drain inlets - Where the review agency determines that this standard would cause inadequate hydraulic performance.

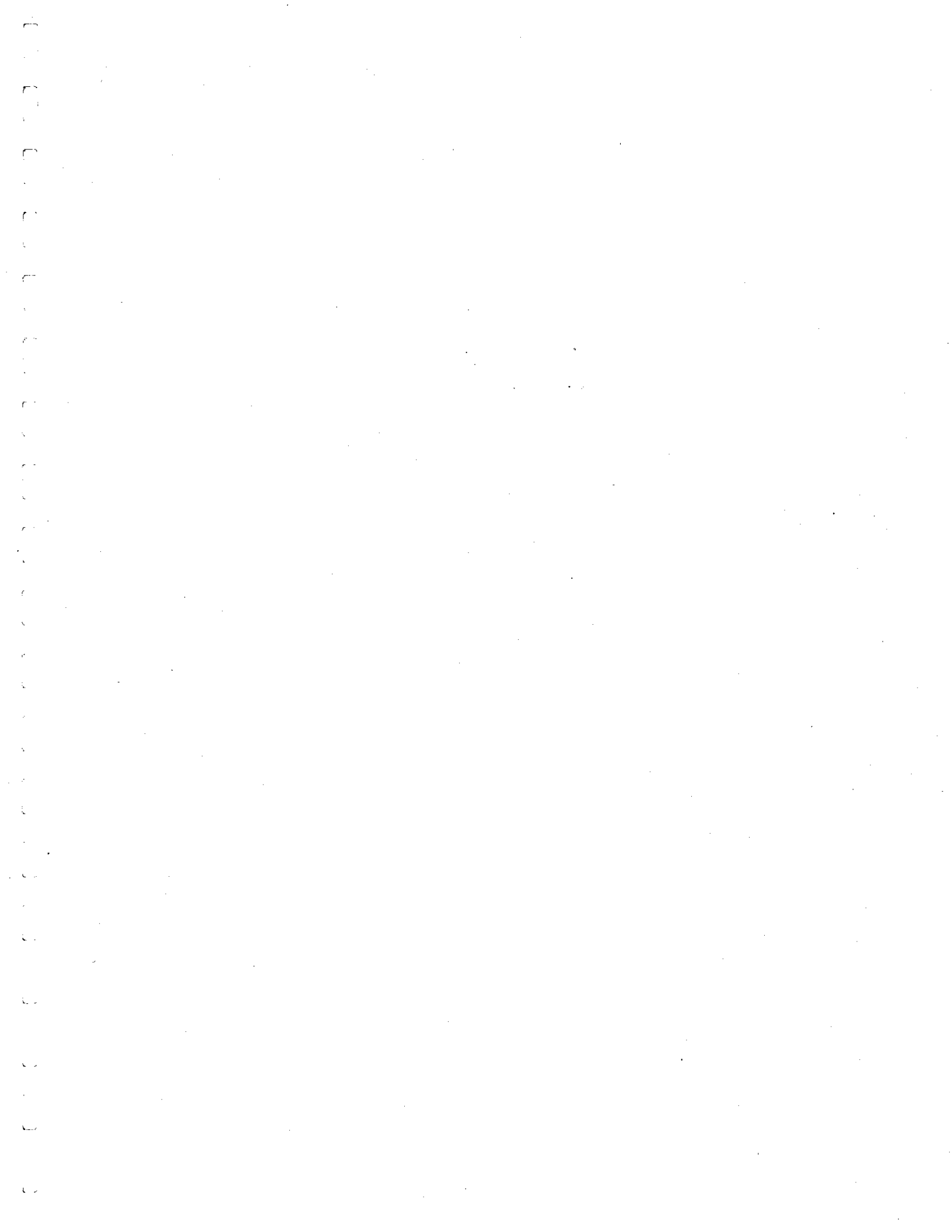
Alternative Device Exemptions

1. Where flows from the water quality design storm as specified in N.J.A.C. 7:8 are conveyed through any device (e.g., end of pipe netting facility, manufactured treatment device, or a catch basin hood) that is designed, at a minimum, to prevent delivery of all solid and floatable materials that could not pass through one of the following:
 - a. A rectangular space four and five-eighths inches long and one and one-half inches wide (this option does not apply for outfall netting facilities); or
 - b. A bar screen having a bar spacing of 0.5 inches.
2. 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 N.J.A.C. 7:8.

Note - The preceding exemptions do not authorize any infringement of requirements in the Residential Site Improvement Standards for bicycle-safe grates in new residential development (N.J.A.C. 5:21-4.18(b)2 and 7.4(a)).

Historic Places Exemption

Where the Department 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.

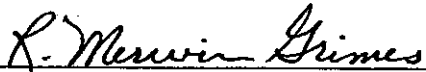


BOROUGH OF CALIFON
COUNTY OF HUNTERDON
STATE OF NEW JERSEY

RESOLUTION 2005-47

BE IT RESOLVED by the Mayor and Council of the Borough of Califon that the **MUNICIPAL STORMWATER MANAGEMENT PLAN** for the Borough of Califon As prepared by Borough Engineer, Donald Scott, P.E., of the firm of Keller & Kirkpatrick in association with William Cutri-French, Califon Borough's Stormwater Program Coordinator, be submitted to the Department of Environmental Protection; State of New Jersey; and

BE IT FURTHER RESOLVED that the Municipal Stormwater Management Plan be submitted to the State subject to amendments following the review by various municipal officials.


R. Merwin Grimes, Mayor
Borough of Califon

ATTEST:



Laura G. Eidsvaag, RMC
Borough Clerk/Administrator

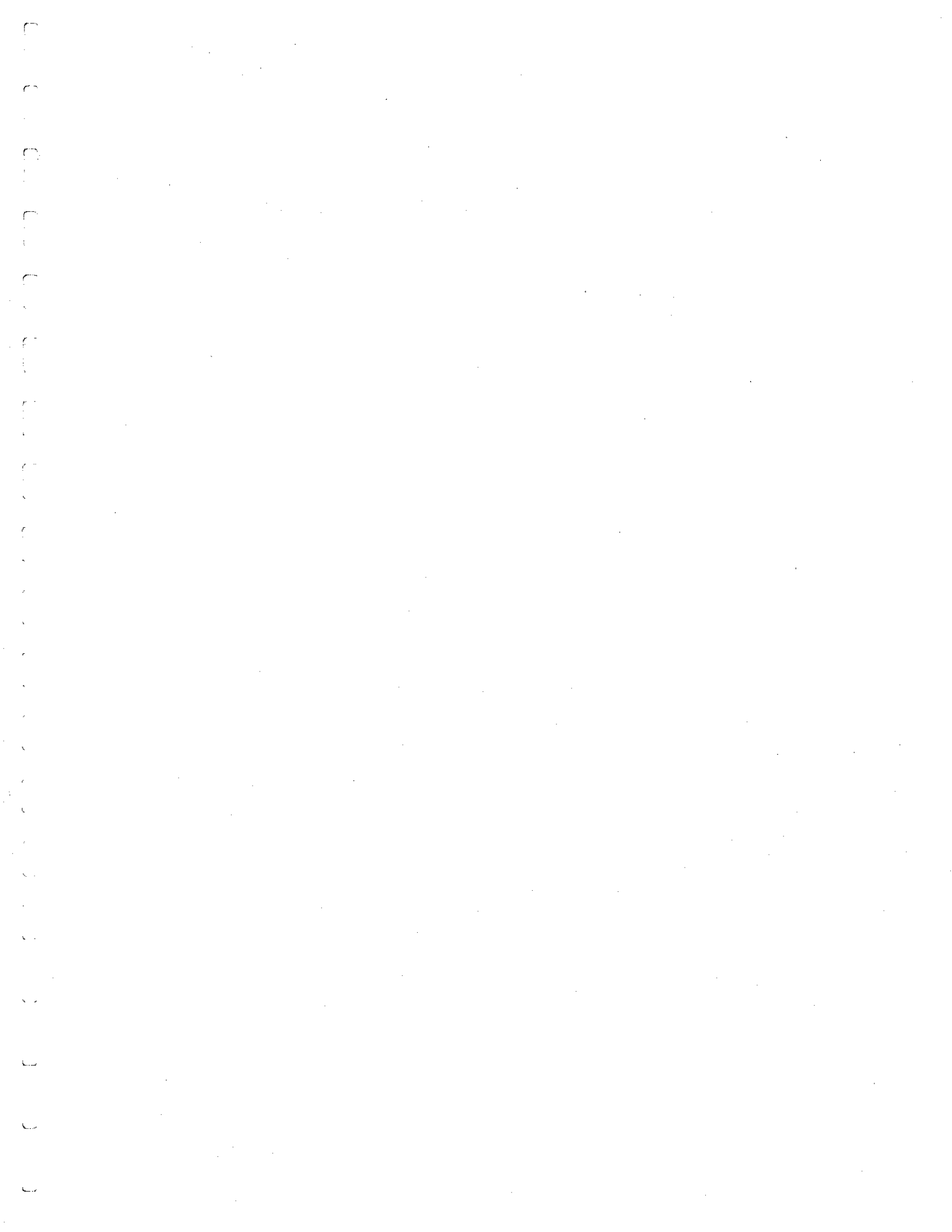
CERTIFICATION

I hereby certify that the foregoing is a true and accurate copy of a Resolution adopted by the Borough Council of the Borough of Califon at a regular meeting held on March 21, 2005.

(SEAL)



Laura G. Eidsvaag, RMC
Borough Clerk/Admin.





HUNTERDON COUNTY PLANNING BOARD

Hunterdon County Administration Building #1
Route 12 County Complex, PO Box 2900
Flemington, New Jersey 08822-1200

April 28, 2005

Linda Beers, Secretary
Califon Borough Planning Board
P.O. Box 368, 39 Academy Street
Califon, NJ 07830

Re: Municipal Stormwater Management Plan

Dear Ms. Beers:

The Hunterdon County Planning Board as the Hunterdon County Board of Chosen Freeholders designated "County Review Agency" has conducted a preliminary review of your Municipal Stormwater Management Plan (MSWMP). As specified by the New Jersey Department of Environmental Protection (NJDEP) Stormwater Phase II Permitting Regulations and the Stormwater Management Rules at N.J.A.C. 7:8,

- Adoption of the MSWMP is due within 1 year of the effective date of NJPDES permit authorization, April 2005 (7:8-4.3(a)1).
- Adoption of the stormwater control ordinance(s) is due within 1 year of adoption of the MSWMP, April 2006 (7:8-4.3(b)).
- Submission of the adopted MSWMP and stormwater control ordinance(s) to be submitted to the HCPB for approval, conditional approval or disapproval concurrent with the adoption date of the ordinances, April 2006 (7:8-4.3(b)).

The attached document details the comments and suggestions as provided by the staff of the Hunterdon County Planning Board, Department of Engineering and Soil Conservation District. Please review this document and address questions or concerns to Sue Dziamara or Melanie Martin at the Planning Board (908) 788-1490. We look forward to reviewing the implementing ordinance(s) as soon as a draft version is available.

Should you have any questions regarding this matter, please do not hesitate to contact this Office.

Sincerely,

Sue Dziamara
Senior Planner

Melanie Martin
Assistant Planner

Enc.

Cc: Borough Council (6)

Mayor
Jill
W. Cutri-Gunch
Senior Comm.
D. Scott, Assoc. Engineer

Hunterdon County Review Agency
Preliminary Review, Suggestions and Comments
Municipal Stormwater Management Plan

COUNTY DATE RECEIVED / INITIALS: 03/20/2005 / SD MM TM

MUNICIPALITY: Califon Borough

CONTACT NAME: Linda Beers, Planning Board Secretary

CONTACT NUMBER: 908-832-7250

COMMENTS:

INTRODUCTION

- Adequate

MSWMP GOALS

- Goals can include other municipal goals relative to stormwater management and pollution control

STORMWATER DISCUSSION

- Adequate

BACKGROUND

- Very nice
- Completely contained within Watershed Management Area (WMA)08, North and South Branch Raritan, and contains portions of 3 HUC14s,
 - 282 Acres within HUC14 02030105010060
 - 337 Acres within HUC14 02030105010070
 - 13 Acres within HUC 14 02030105050080
- One AMNET monitoring site within the Borough, located on the South Branch of the Raritan River
- There are 3 NJDEP Public Water Supply Wells within the Borough
- Should mention C1 designated stream segments

DESIGN AND PERFORMANCE STANDARDS

- Plan should include a draft ordinance, please submit the draft ordinances when completed.
NOTE: The Hunterdon County Environmental Toolbox is developing a Draft Stormwater Ordinance that should be available this summer. Check the County website www.co.hunterdon.nj.us/planning for updated stormwater information.

PLAN CONSISTENCY

- Good connection to the Highlands, what about the Raritan Basin Plan?
- When applicable, will the Borough comply with the Highlands? Might discuss how?
- How did Califon participate in the County Cross Acceptance process?

NONSTRUCTURAL STORMWATER MANAGEMENT STRATEGIES

- Good review; please submit revised ordinances when completed.

LAND-USE/BUILD-OUT ANALYSIS

- Good discussion of Land Use although build-out is not required for Califon.
- Land Use Percentages: Agriculture: 27 Acres (4.3%) Forest: 275 Acres (43.5%)
 Urban: 318 Acres (50.3%) Water: 11 Acres (1.8%)
- Good discussion of zoning within the Borough and the description of the geology.

MITIGATION PLANS

- Adequate
- Elaborate more on site-specific opportunities for mitigation

MAPPING

- Good job.

Description of Tier B responsibilities should be included.

A DRAFT STORMWATER MANAGEMENT ORDINANCE is required

The plan does not address how long-term operation/preventative/maintenance is ensured.

Engineering Comments/TM

- Need to mention nonstructural and structural bmp's
- Pervious pavement doesn't work where deicing materials are spread
- List approved "native vegetation" species
- Drainage area = HUC14
- How about replacing undersized culverts and pipes to control flooding in mitigation plan

Christopher D. Testa
Senior Site Inspector
Hunterdon County Soil Conservation District

Goals

The goals of this Municipal Stormwater Management Plan are to:

- reduce flood damage, including damage to life and property;
- minimize, to the extent practical, any increase in stormwater runoff from any new development; Identify and mitigate problems with the existing stormwater system
- reduce soil erosion from any development or construction project; Or existing landuse
- assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
- maintain groundwater recharge; Mitigation of recharge lost to development
- prevent, to the greatest extent feasible, an increase in non-point pollution; locate and reduce existing NPS problems
- maintain or restore the integrity of stream channels for their biological functions, as well as for drainage;
- minimize pollutants in stormwater runoff from new and existing development to restore, enhance, and maintain the chemical, physical, and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial, and other uses of water;
- protect public safety through the proper design and operation of stormwater basins.

Section 706 – Use care with siting pervious paving material some locations are better than others.

Section 707 – Suggest consult with LA on acceptable plant species – Most turf grasses are not native. Also in a technical sense the new Chestnut cultivars are not 100% native nor are the DED elm replacements. Too strict an interpretation could harm rather than help the environment, but definitely avoid invasive exotics.

713 – HCSCD is administering SESC in Califon- we do not utilize sediment basins, and it would be difficult to install one prior to grading a site (*...install diversions sediment basins and similar required structures prior to any on-site grading or disturbance*) since you would need to disturb the basin area

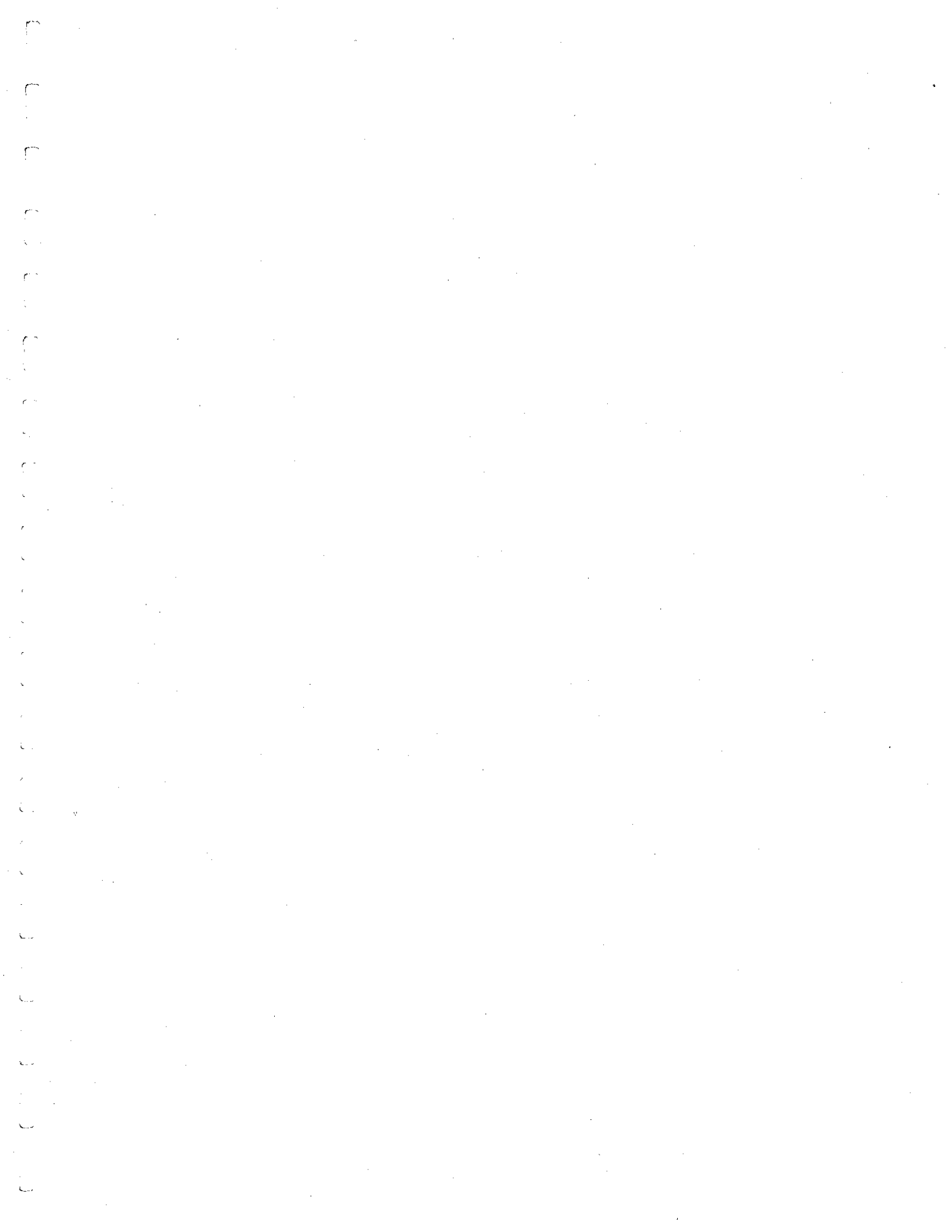
to construct it and then you would also have to disturb an area to stage or stockpile the excavated material from the construction of the basin. A better suggestion might focus on tightening the sequence of construction and assuring that the relevant controls are installed at the appropriate time.

We do though recognize the importance of the BMP manual and the new stormwater rules. The District is more than willing to work with you to tighten up the ordinance as you see fit.

Generic comments I have attached to all mitigation plans-

- This option should be a measure of last resort. I have suggested that towns try to get a 2 or 3 to 1 benefit through this process. Thus-the need to remove 2 tons of TSS equals needing to remove 4 or 6 tons elsewhere. There will be a temptation to go offsite with BMP's to lessen maintenance responsibilities, aesthetic impacts and cost.
- Look to improve the townships road system / stormwater infrastructure. There are literally 100's of miles of open road ditch delivering tons of TSS to local streams. All of these offer opportunities and are of measurable benefit. Likewise there are points of discharge that will need to be stabilized. tier A towns have to do this by statute, tier B's should consider it as well.
- Stay away from building or modifying structures on Green Acres encumbered parkland. May want to avoid parks all together.
- Look to retrofit DPW yards, & municipal facilities. Califons facility offers plenty of opportunities.
- Returning to the road theme set the goal of having every pipe or ditch pass through a BMP prior to discharging into a stream.

Given Califon's Highlands status I'd love to see a stronger focus on finding & correcting any problems that are already in the Borough. I believe the threat from future development has been reduced, and given limited resources, the best bang for the buck may be to focus on existing problems.



Stormwater Control Ordinance

BOROUGH OF CALIFON, HUNTERDON COUNTY

DRAFT

March 2006

**BOROUGH OF CALIFON
Tier B Municipal Stormwater General Permit**

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Section 1: Scope and Purpose

A. Policy Statement

Stormwater Management is the process of minimizing stormwater runoff and directing stormwater by appropriate nonstructural and structural stormwater management measures, so as to control flooding, recharge ground water, and reduce pollution of water resources. Transport of stormwater-related pollutants into local surface and ground waters can have detrimental results; the destruction of fish, wildlife, and habitats; threats to public health due to contaminated food and drinking water supplies; and losses of recreational and aesthetic values. Stormwater management shall occur with the understanding and acceptance of stormwater as a resource; low impact and non-structural measures shall be tailored to a site, and applied wherever and to the extent feasible.

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 Section 2. This ordinance guides new development in a manner that is proactive and minimizes harmful impacts to natural resources. The provisions of this ordinance are intended to:

- (1) Minimize increased stormwater runoff and volumes;
- (2) Induce water recharge into the ground wherever suitable infiltration, soil permeability, and favorable geological conditions exist;
- (3) Prevent an increase in nonpoint source pollution;
- (4) Maintain the integrity and stability of stream channels and buffers for their ecological functions, as well as for drainage, the conveyance of floodwater, and other purposes;
- (5) Control and minimize soil erosion and the transport of sediment.
- (6) Maintain adequate baseflow and natural flow regimes in all streams and other surface water bodies to protect the aquatic ecosystem;
- (7) Protect all surface water resources from degradation; and
- (8) Protect ground water resources from degradation and diminution.

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 (RSIS) at N.J.A.C. 5:21.
2. This ordinance shall also be applicable to all major developments undertaken by the Borough of Califon.
3. This ordinance does not apply to activities of Hunterdon County, the State of New Jersey, and the government of the United States of America when those activities are specifically exempted from municipal regulation by relevant State or Federal law.

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.

Section 2: Definitions

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

“Category 1 (C1) Waters” means Waters of the State, including unnamed waterways that appear on Soil Survey and USGS Topographic Quadrangle within the same HUC 14 watershed, designated in NJAC 7:9B-1.15(c) through (h) for purposes of implementing the anti-degradation policies set forth at NJAC 7:9B-1.5(d) for protection from measurable changes in water quality characteristics because of their clarity, color, scenic setting, other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resource(s).

“Compaction” means the increase in soil bulk density.

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

“County review agency” means an agency designated by the County Board of Chosen Freeholders to review municipal stormwater management plans and implementing ordinance(s). The county review agency is designated as the Hunterdon County Planning Board.

“Department” means the New Jersey Department of Environmental Protection.

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

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

“Development” means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or structure, any mining excavation or landfill, 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.

“Disturbance” means any activity including the clearing, excavating, storing, grading, filling or transportation of soil, or any activity that causes soil to be exposed to the potential of erosion.

- “Drainage area” means a geographic area within which stormwater, sediments, or dissolved materials drain to a particular receiving waterbody or to a particular point along a receiving waterbody.
- “Environmentally critical areas” means an area or feature which is of significant environmental value, including but not limited to: stream corridors; natural heritage priority sites; habitat of endangered or threatened species; large areas of contiguous open space or upland forest; steep slopes; and well head protection and groundwater recharge areas. Habitats of endangered or threatened species are identified using the Department’s Landscape Project as approved by the Department’s Endangered and Nongame Species Program, or by the Department pursuant to the Highlands Act at NJSA 13:20-32k. and 13:20-34a(4).
- “Erosion” means the detachment and movement of soil or rock fragments by water, wind, ice, or gravity.
- “Ground water” means a body of water below the surface of the land in a zone of saturation where the spaces between the soil or geological materials are fully saturated with water.
- “Highlands Act” means the Highlands Water Protection and Planning Act, P.L. 2004, c.120, codified at N.J.S.A. 13:20-1 et seq. as amended.
- “HUC-14” means a watershed as defined by the United States Geological Survey with a 14-digit identifier; a subwatershed.
- “Impervious surface” means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water relative to natural conditions in the area
- “Infiltration” is the process by which water from precipitation seeps into the soil to a level below the normal root soil of plant species.
- “Karst Terrain” means an area where karst topography, with its characteristic surface and subterranean features, is developed as a result of the dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terrains include but are not limited to sinkholes, sinking streams, caves, blind valleys, large springs and subterranean drainage. See also limestone area.
- “Limestone area” means an area of Hunterdon County underlain by carbonate sedimentary rock consisting predominately of calcium carbonate. Limestone is commonly used as a general term for the class of rocks that consist of at least 80 percent calcium or magnesium carbonate. See also karst terrain.
- “Low Impact Development” (LID) means methods incorporating design measures to replicate pre-development hydrology to reduce the impacts of development at a lot-level basis, treating rainwater where it falls by creating conditions that allow the water to infiltrate back into the ground. LID emphasizes greater infiltration of stormwater on-site, rather than regarding the stormwater as a nuisance condition and disposable.
- “Maintenance Plan” means a document required for all major development projects for stormwater management maintenance. The document 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.

- “Major development” means 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.
- “Maximum Extent practicable” means compliance with the specific objective to the greatest extent possible taking into account equitable considerations and competing factors, including but not limited to: environmental benefits, pollutant removal effectiveness, regulatory compliance, ability to implement given site-specific environmental conditions, cost, and technical or engineering feasibility.
- “Mitigation” means an action by an applicant providing compensation or offset actions for onsite stormwater management requirements where the applicant has demonstrated the inability or impracticality of strict compliance with the stormwater management requirements set forth in NJAC 7:8, in an adopted regional stormwater management plan, or in this local ordinance, and has received a waiver from strict compliance from the municipality. Mitigation for the purposes of this ordinance, includes both the mitigation plan detailing how the project’s failure to strictly comply will be compensated, and the implementation of the approved mitigation plan within the same HUC-14 within which the subject project is proposed, or a contribution of funding toward a regional stormwater control project, or provision for equivalent treatment at an alternate location, or other equivalent water quality benefit.
- “Municipality” means any city, borough, town, township, or village.
- “Node” means an area designated by the State Planning Commission concentrating facilities and activities which are not organized in a compact form.
- “Nonstructural Stormwater Management Techniques” means techniques that control or reduce stormwater runoff in the absence of stormwater structures (e.g. basins and piped conveyances), such as minimizing site disturbance, preserving important site features including, but not limited to, natural vegetation, reducing and disconnecting impervious cover, minimizing slopes, utilizing native vegetation, minimizing turf grass lawns, increasing time of concentration and maintaining and enhancing natural drainage features and characteristics.
- “Nutrient” means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the development of organisms.
- “Nutrient load” means the total amount of a nutrient such as nitrogen or phosphorus entering the water during a given time, such as “tons of nitrogen per year”, or “pounds of phosphorus per day”. Nutrient may enter the water from runoff, ground water recharge, point source discharges, or the air (in the form of dry deposition or wet deposition such as rain or snow).
- “Nutrient concentration” means the amount of a nutrient in a defined volume of water (such as milligrams of nitrogen per liter). The relationship between nutrient concentration and nutrient load can vary and depends on the surface water flow, the volume of water in the water body or aquifer, and watershed characteristics.
- “Permeable” means a surface or land cover capable of transmitting or percolating a significant amount of precipitation into the underlying soils.

- “Person” means any individual, corporation, company, partnership, firm, association, Borough of Califon, or political subdivision of this State subject to municipal jurisdiction pursuant to the Municipal Land Use Law , N.J.S.A. 40:55D-1 et seq.
- “Pollutant” means any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.), thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt, industrial, municipal, agricultural, and construction waste or runoff, or other residue discharged directly or indirectly to the land, ground waters or surface waters of the State, or to a domestic treatment works. “Pollutant” includes both hazardous and nonhazardous pollutants.
- “Pollution” means the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water to the extent that the pollutant concentration or level violates either the Ground Water Quality Standards (N.J.A.C. 7:9-6) or the Surface Water Quality Standards (N.J.A.C. 7:9B) of New Jersey.
- “Recharge” means the amount of water from precipitation that infiltrates into the ground and is not evapotranspired.
- “Review agency (municipal)” means the municipal body or official that is responsible for the review of a major development project for compliance with the stormwater management requirements.
- “Sediment” means solid material, mineral or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water or gravity as a product of erosion.
- “Site” means the lot or lots upon which a major development is to occur or has occurred.
- “Soil” means all unconsolidated mineral and organic material of any origin.
- “Solid and floatable materials” means sediment, debris, trash, and other floating, suspended, or settleable solids.
- “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, that could be a source of pollutants in any industrial stormwater discharge to ground or surface water. 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.
- “Special Resource Waters” means water-bodies receiving special protections due to their drinking water status, or role as high-quality habitat for Threatened and Endangered species or species of commercial or recreational importance. This includes waterways so designated through the Stormwater Management Rules (N.J.A.C. 7:8) because of exceptional ecological significance, exceptional water supply significance, exceptional recreational significance, exceptional shellfish resource, or exceptional fisheries resource. Waters so designated are protected by a 300-foot buffer extending on either side of the waterway measured perpendicular from top-of-bank or center of channel for waterways lacking a defined top-of-bank.

- “State Development and Redevelopment Plan Metropolitan Planning Area (PA1)” means an area delineated on the State Plan Policy Map and adopted by the State Planning Commission that is intended to be the focus for much of the state’s future redevelopment and revitalization efforts.
- “State Plan Policy Map” is defined as the geographic application of the State Development and Redevelopment Plan’s goals and statewide policies, and the official map of these goals and policies.
- “Stormwater” means water resulting from precipitation (including rain and snow) that runs off the land’s surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.
- “Stormwater runoff” means water flow on the surface of the ground or in storm sewers, resulting from precipitation.
- “Stormwater management basin” means an excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management basin may either be normally dry (that is, a detention basin or infiltration basin), retain water in a permanent pool (a retention basin), or be planted mainly with wetland vegetation (most constructed stormwater wetlands).
- “Stormwater management measure” means any structural or nonstructural strategy, practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal non-stormwater discharges into stormwater conveyances.
- “Stream buffer” means a strip of land located immediately adjacent to a stream channel consisting of natural, undisturbed vegetative cover, which serves as a transition area between uplands and riparian lands. A stream buffer may encompass wetlands, may be contained within a floodplain or floodway, or may extend beyond a wetlands, floodplain or floodway boundary.
- “Structural Stormwater Techniques” means a stormwater management measure that involves control of concentrated stormwater runoff or infiltration such as stormwater basins, piped conveyance systems and manufactured stormwater devices, and can include various types of basins, filters, surfaces, and devices located on individual lots in a residential development or throughout a commercial, industrial, or institutional development site in areas not typically suited for larger, centralized structural facilities.
- “Threatened and Endangered Species” – Endangered Species are those species whose prospects for survival in New Jersey are in immediate danger because of a loss or change in habitat, over-exploitation, predation, competition, disease, disturbance or contamination. Assistance is needed to prevent future extinction in New Jersey. Threatened Species are those who may become endangered if conditions surrounding them begin to or continue to deteriorate. Habitats of endangered or threatened species are those identified by the Department’s Landscape Project as approved by the Department’s Endangered and Nongame Species Program, or by the Department pursuant to the Highlands Act at N.J.S.A. 13:20-32k. and 13:20-34a(4).

“Time of Concentration” is defined as the time it takes for stormwater runoff to travel from the hydraulically most distant point of the watershed to the point of interest within a watershed.

“Transition Area” means an area of protected upland adjacent to a freshwater wetlands that minimizes adverse impacts on the wetland or serves as an integral component of the wetlands ecosystem. Also called “buffer” area.

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

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

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

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

Section 3: General Standards

- A. Design and Performance Standards for Stormwater Management Measures
1. Stormwater management measures for major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards in Section 4. 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 along with the practicable nonstructural strategies.
 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 major developments 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.

Section 4: Stormwater Management Requirements for Major Development

A. Maintenance Plan

The development shall incorporate a maintenance plan for the stormwater management measures incorporated into the design of a major development in accordance with Section 10.

B. Threatened and Endangered Species

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.

C. Exemptions

The following linear development projects are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Sections 4.F and 4.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. Waivers from Strict Compliance

A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Sections 4.F and 4.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 Sections 4.F and 4.G to the maximum extent practicable;
3. The applicant demonstrates that, in order to meet the requirements of Sections 4.F and 4.G, existing structures currently in use, such as homes and buildings, would need to be condemned; and
4. The applicant demonstrates that it does not own or have other rights to areas, including the potential to obtain through condemnation lands not falling under

D.3 above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate the requirements of Sections 4.F and 4.G that were not achievable on-site.

A waiver from strict compliance with the requirements of Sections 4.B and 4.C. may be issued in those case where an applicant has demonstrated the inability or impracticality of strict compliance, other than projects addressed under Subsection F.1., with the stormwater management requirements setforth in NJAC 7:8, in an adopted regional stormwater management plan, or in a local ordinance which is as strict as NJAC 7:8. A waiver from strict compliance for such projects can only be obtained if the applicant agrees to undertake a suitable mitigation measure identified in the mitigation section of the municipality's Stormwater Management Plan. In such cases, the Applicant must submit a mitigation plan detailing how the project's failure to strictly comply will be compensated. In cases where a waiver is granted, an applicant should provide mitigation, if possible and/or practical within the same HUC-14 watershed within which the subject project is proposed, or contribute funding toward a regional stormwater control project, or provide for equivalent treatment at an alternate location, or other equivalent water quality benefit, in lieu of implementing the required stormwater control measures on their specific site.

E. Nonstructural Stormwater Management Strategies

1. To the maximum extent practicable, the standards in Sections 4.F and 4.G shall be met by incorporating nonstructural stormwater management strategies set forth at Section 4.E into the design. The applicant shall identify the nonstructural measures incorporated into the design of the project. Documentation of the use of nonstructural stormwater management measures shall require the preparation by the applicant of the NJDEP Low Impact Development checklist. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management measures identified in Paragraph 2 below into the design of a particular project, the applicant shall identify the strategy considered and provide a basis for the contention. In both cases, the applicant bears the burden of proving any impracticality.
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 except where native or natural vegetation is considered invasive;
 - d. Minimize the decrease in the "time of concentration" from the pre-developed site condition to post developed site condition;
 - 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, pesticides, and irrigation;
 - h. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas;
 - i. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site, in order to prevent or minimize the release of those pollutants into stormwater runoff. Such source controls include, but are not limited to:
 - (1) Site design features that help to prevent accumulation of trash and debris in drainage systems, including features that satisfy Section 4.E.3. below;
 - (2) Site design features that help to prevent discharge of trash and debris from drainage systems;
 - (3) Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and
 - (4) When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules.
3. Site design features identified under Section 4.E.2.i.(2) above shall comply with the following standard to control passage of solid and floatable materials through storm drain inlets. For purposes of this paragraph, "solid and floatable materials" means sediment, debris, trash, and other floating, suspended, or settleable solids. For exemptions to this standard see Section 4.E.3.c below.
- a. Design engineers shall use either of the following grates whenever they use a grate in pavement or another ground surface to collect stormwater from that surface into a storm drain or surface water body under that grate:
 - (1) The New Jersey Department of Transportation (NJDOT) bicycle safe grate, which is described in Chapter 2.4 of the NJDOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines (April 1996); or
 - (2) A different grate, if each individual clear space in that grate has an area of no more than seven (7.0) square inches, or is no greater than 0.5 inches across the smallest dimension.

Examples of grates subject to this standard include grates in grate inlets, the grate portion (non-curb-opening portion) of combination inlets, grates on storm sewer manholes, ditch grates, trench grates, and grates of spacer bars in slotted drains. Examples of ground surfaces include surfaces of roads (including bridges), driveways, parking areas,

bikeways, plazas, sidewalks, lawns, fields, open channels, and stormwater basin floors.

- b. Whenever design engineers use a curb-opening inlet, the clear space in that curb opening (or each individual clear space, if the curb opening has two or more clear spaces) shall have an area of no more than seven (7.0) square inches, or be no greater than two (2.0) inches across the smallest dimension.
- c. This standard does not apply:
 - (1) Where the review agency determines that this standard would cause inadequate hydraulic performance that could not practicably be overcome by using additional or larger storm drain inlets that meet these standards;
 - (2) Where flows from the water quality design storm as specified in Section 4.G.1 are conveyed through any device (e.g., end of pipe netting facility, manufactured treatment device, or a catch basin hood) that is designed, at a minimum, to prevent delivery of all solid and floatable materials that could not pass through one of the following:
 - (a) A rectangular space four and five-eighths inches long and one and one-half inches wide (this option does not apply for outfall netting facilities); or
 - (b) A bar screen having a bar spacing of 0.5 inches.
 - (3) Where flows are conveyed through a trash rack that has parallel bars with one-inch (1") spacing between the bars, to the elevation of the water quality design storm as specified in Section 4.G.1; or
 - (4) Where the New Jersey Department of Environmental Protection determines, pursuant to the New Jersey Register of Historic Places Rules at N.J.A.C. 7:4-7.2(c), that action to meet this standard is an undertaking that constitutes an encroachment or will damage or destroy the New Jersey Register listed historic property.
4. Any land area used as a nonstructural stormwater management measure to meet the performance standards in Sections 4.F and 4.G shall be dedicated to a government agency, subjected to a conservation restriction filed with the Hunterdon County Clerk's office, or subject to an approved equivalent restriction that ensures that measure or an equivalent stormwater management measure approved by the reviewing agency is maintained in perpetuity.
5. Guidance for nonstructural stormwater management strategies is available in the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in Section 7, or found on the Department's website at www.njstormwater.org.

F. Erosion Control, Groundwater Recharge 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 Section 5, either:
 - (a) Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site; or
 - (b) Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction produced by the 2-year 24-hour storm is fully infiltrated.
 - (2) Groundwater recharge is not required for projects within the "urban redevelopment area," or to projects subject to (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."
 - (4) The design engineer shall assess and certify the hydraulic impact on the groundwater table, and design the project site and all recharge measures 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 facilities 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 Section 5, comply with at least one of the following standards:

- (1) Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-developed runoff hydrographs for the 2, 10, and 100-year storm events do not exceed, at any point in time, the pre-developed runoff hydrographs for the same storm events;
- (2) Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-developed site conditions, 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 project site.

When performing this analysis for pre-developed site conditions, all off-site development levels shall reflect existing conditions. When performing this analysis for post-developed site conditions, all off-site development levels shall reflect full development in accordance with current zoning and land use ordinances.

- (3) Design stormwater management measures so that the post-developed peak runoff rates for the 2, 10 and 100 year storm events are 50, 75 and 80 percent, respectively, of the pre-developed peak runoff rates.

Peak stormwater outflow rates for these storms shall be adjusted where necessary to account for the discharge of increased stormwater runoff rates and/or volumes from project site areas not controlled by the onsite measures. The percentages do not have to be applied to those portions of the project site that are not proposed for development at the time of application provided that such areas are: 1) protected from future development by conservation easement, deed restriction, or other acceptable legal measures, or 2) would be subject to review under these standards if they are proposed for any degree of development in the future.

2. Any application for a new agricultural development that meets the definition of major development at Section 2 shall be submitted to the Hunterdon 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 post-construction load of total suspended solids (TSS) in stormwater runoff by 80 percent of the anticipated load from the developed site, expressed as an annual average. 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. Daily limits of TSS (TMDL) may apply to the site development based on conditions of regulatory approvals.

The water quality design storm shall be 1.25 inches of rainfall in two hours. Water quality calculations shall take into account the distribution of rain from the water quality design storm, as reflected in Table 1. The calculation of the volume of runoff may take into account the implementation of non-structural and structural stormwater management measures.

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

2. For purposes of TSS reduction calculations, Table 2 below presents the presumed removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in Section 7, or found on the Department's website at www.njstormwater.org. The BMP Manual and other sources of technical guidance are listed in Section 7. TSS reduction shall be calculated based on the removal rates for the BMPs in Table 2 below. Alternative removal rates and methods of calculating removal rates may be used if the design engineer provides documentation demonstrating the capability of these alternative rates and methods to the review agency. A copy of any approved alternative rate or method of calculating the removal rate shall be provided to the Department at the following address: Division of Watershed Management, New Jersey Department of Environmental Protection, PO Box 418 Trenton, New Jersey, 08625-0418.
3. If more than one BMP in series is necessary to achieve the required 80 percent TSS reduction for a site, the applicant shall utilize the following formula to calculate TSS reduction:

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

Where

R = total TSS percent load removal from application of both BMPs, and

A = the TSS percent removal rate applicable to the first (upstream) BMP

B = the TSS percent removal rate applicable to the second (downstream) BMP

In cases where three (or more) BMPs are used in series, the applicant shall calculate the TSS reduction for the two most upstream BMPs in the series using the above formula, then substitute the result (R) of that calculation in the formula for A" when calculating the combined result with the next BMP in the series.

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

4. If there is more than one onsite drainage area, the 80 percent TSS removal rate shall apply to each drainage area, unless the runoff from the subareas converge on site in which case the removal rate can be demonstrated through a calculation using an area-weighted average.
5. 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 Sections 4.F and 4.G. This standard may be superceded by a more stringent numeric effluent limitation 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. Daily limits for nutrient loading (TMDL) may apply to the site development based on conditions of regulatory approvals.
6. Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in Section 7.
7. In accordance with the definition of FW1 at N.J.A.C. 7:9B-1.4, stormwater management measures shall be designed to prevent any increase in stormwater runoff to waters classified as FW1.
8. 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. Other authoritative sources of stream delineation may be utilized, such as a delineation that is part of the Municipal or Regional Stormwater Management Plan or a stream delineation overlay prepared by the Department. 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 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.

- (2) Encroachment within the designated special water resource protection area under Subsection (1) above shall only be allowed where previous development or disturbance has occurred (for example, active agricultural use, parking area or maintained lawn area). The encroachment shall only be allowed where applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable. In no case shall the remaining special water resource protection area be reduced to less than 150 feet as measured perpendicular to the top of bank of the waterway or centerline of the waterway where the bank is undefined. All encroachments proposed under this subparagraph 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 percent TSS post-construction removal rate;
 - (3) Thermal pollution by stormwater discharges shall be addressed to ensure no significant increase or decrease in temperature occurs in the receiving waterway outside of the mixing zone;
 - (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. If a stream corridor protection plan for a waterway subject to Section 4.G(8) has been approved by the Department of Environmental Protection, then the provisions of the plan shall be the applicable special water resource protection area requirements for that waterway. A stream corridor protection plan for a waterway subject to G.8 shall maintain or enhance the current functional value and overall condition of the special water resource protection area as defined in G.8.a.(1) above. In no case shall a stream corridor protection plan allow the reduction of the Special Water Resource Protection Area to less than 150 feet as measured perpendicular to the waterway subject to this subsection.
- e. Paragraph G.8 does not apply to the construction of one individual single family dwelling that is not part of a larger development on a lot receiving preliminary or final subdivision approval on or before February 2, 2004 , provided that the construction begins on or before February 2, 2009.

Section 5: 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. Use of the Rational Method and Modified Rational method are limited to drainage areas of 20 acres or less. Neither the Rational Method nor Modified Rational Method shall be used to calculate runoff volumes for ground water recharge or stormwater runoff infiltration purposes.
 2. For the purpose of calculating runoff coefficients and groundwater recharge, there is a presumption that the pre-construction condition of a site or portion thereof is a wooded land use with good hydrologic condition. The term “runoff coefficient” applies to both the NRCS methodology at Section 5.A.1.a and the Rational and Modified Rational Methods at Section 5.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 documents through the use of photos, affidavits, or other land use records 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 pre-construction stormwater runoff, the design engineer shall account for all significant land features and structures, such as ponds, wetlands, depressions, hedgerows, or culverts, that may reduce pre-construction stormwater runoff rates and volumes.
 4. In computing stormwater runoff from all design storms, the design engineer shall consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces separately to accurately compute the rates and volume of stormwater runoff from the site. In calculating stormwater runoff using the NRCS methodology, the design engineer shall use appropriate 24-hour rainfall depths as developed for the project site by the National Oceanic and Atmospheric Administration.
 5. In calculating stormwater runoff using the NRCS methodology, the design engineer shall separately calculate and then combine the runoff volumes from pervious and directly connected impervious surfaces within a drainage area.

6. Calculation of stormwater runoff from unconnected impervious surfaces shall be based, as applicable, upon the Two-Step methodology as described in the Department's current Stormwater Best Management Practices Manual or the NRCS methodology described in the current Technical Release 55 – Urban Hydrology for Small Watersheds.
 7. If the invert of the outlet structure of a stormwater management measure is below the flood hazard design flood elevation as defined at N.J.A.C. 7:13, the design engineer shall take into account the effects of tailwater in the design of structural stormwater management measures.
- B. Groundwater recharge may be calculated in accordance with the following:
1. The New Jersey Geological Survey Report GSR-32 A Method for Evaluating Ground-Water Recharge Areas in New Jersey, incorporated herein by reference as amended and supplemented. Information regarding the methodology is available from the New Jersey Stormwater Best Management Practices Manual; at <http://www.state.nj.us/dep/njgs/>; or at New Jersey Geological Survey, 29 Arctic Parkway, P.O. Box 427 Trenton, New Jersey 08625-0427; (609) 984-6587.
 2. In complying with the design and performance standards in Section 4, the design engineer shall calculate stormwater runoff infiltration volumes in accordance with the NRCS methodology, including the NRCS Runoff Equation, as described in the current NRCS National Engineering Handbook Part 630 – Hydrology and the current Technical Release 55 – Urban Hydrology for Small Watersheds. In addition, the design engineer shall use appropriate 2-Year, 24-Hour rainfall depths as developed for the project site by the National Oceanic and Atmospheric Administration.
 3. When selecting or calculating runoff coefficients for pre-developed project site conditions for ground water recharge or stormwater runoff infiltration calculations, the project site's land cover shall be assumed to be woods. However, another land cover may be used to calculate runoff coefficients if: 1) such land cover has existing at the site or portion thereof site without interruption for at least five years immediately prior to the time of application; and 2) the design engineer can document the character and extent of such land cover through the use of photographs, affidavits, and/or other acceptable land use records. If more than one land cover other than woods has existing on the site during the five years immediately prior to the time of application, the land cover with the lowest runoff potential (including woods) shall be used for the computations. All pre-developed land covers shall be assumed to be in good hydrologic condition and, if cultivated, shall be assumed to have conservation treatment.

Section 6: Standards for Structural Stormwater Management Measures

- A. Standards for structural stormwater management measures are as follows:
1. Structural stormwater management measures shall be designed to factor into the design the existing site conditions which may cause the measure to fail, have an adverse effect on water quality or quantity, or cause harm or damage to persons or property, 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; existing or former mines; significant land filling; and the presence of solution-prone carbonate rocks (limestone) and related Karst topography.
 2. Structural stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning. Trash racks shall be installed at the intake to the outlet structure as appropriate, and shall have parallel bars with one-inch (1") spacing between the bars to the elevation of the water quality design storm. For elevations higher than the water quality design storm, the parallel bars at the outlet structure shall be spaced no greater than one-third (1/3) the width of the diameter of the orifice or one-third (1/3) the width of the weir, with a minimum spacing between bars of one-inch and a maximum spacing between bars of six inches. In addition, the design of trash racks must comply with the requirements of Section 8.D.
 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. The measures are to be sequenced in the site development process so that erosion control standards are met, and so the measure is not compromised or impaired by construction runoff.
 4. At the intake to the outlet from the stormwater management basin, the orifice size shall be a minimum of two and one-half inches in diameter.
 5. Stormwater management basins shall be designed to meet the minimum safety standards for stormwater management basins at Section 8.
- B. Stormwater management measure guidelines are available in the New Jersey Stormwater Best Management Practices Manual. Other stormwater management measures may be utilized provided the design engineer demonstrates that the proposed measure and its design will accomplish the required water quantity, groundwater recharge and water quality design and performance standards established by Section 4 of this ordinance.
- C. Manufactured treatment devices may be used to meet the requirements of Section 4 of this ordinance, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology and certified by the Department.

Non-verified manufactured treatment devices may also be used for purposes other than underground discharge of stormwater, where such devices provide a clear benefit to stormwater quality or flow control in a manner that facilitates improved nonstructural stormwater management controls on the site, or avoids the need for approval of off-site mitigation. The benefits of proposed non-verified manufactured treatment devices must be proved to the satisfaction of the review agency.

Manufactured treatment devices may be used only where the maintenance plan required by Section 10 ensures that the manufactured device will be properly maintained for its functional lifespan and will be replaced as needed with management measures that are at least as effective as the original manufactured treatment device working in accordance with manufacturers specifications.

Section 7: Sources for Technical Guidance

- A. Technical guidance for stormwater management measures can be found in the documents listed at 1 and 2 below, which are available from Maps and Publications, New Jersey Department of Environmental Protection, 428 East State Street, P.O. Box 420, Trenton, New Jersey, 08625; telephone (609) 777-1038.
1. Guidelines for stormwater management measures are contained in the New Jersey Stormwater Best Management Practices Manual, as amended. Information is provided on stormwater management measures such as: bioretention systems, constructed stormwater wetlands, dry wells, extended detention basins, infiltration structures, manufactured treatment devices, pervious paving, sand filters, vegetative filter strips, and wet ponds. This document is also available at www.njstormwater.org.
 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 Hunterdon County Soil Conservation District, 687 Pittstown Road; Suite 1, Frenchtown, N.J. 08825, (908) 788-1397.
 4. The United States Environmental Protection Agency, including the National Management Measures to Control Nonpoint Source Pollution from Urban Areas, available at the Web site: <http://www.epa.gov/owow/nps/urbanmm/index.html>.
 5. Field guides of the United States Department of Agriculture, National Resources Conservation Service, where supplemental to and not conflicting with a source of Primary Guidance in Section 7.A.
 6. Other similarly authoritative governmental or trade association sources acceptable to the municipality.

Section 8: Safety Standards for Stormwater Management Basins

- A. This section sets forth requirements to protect public safety through the proper design and operation of stormwater management basins. This section applies to any new stormwater management basin.
- B. Requirements for Trash Racks, Overflow Grates and Escape Provisions
1. A trash rack is a device designed to catch trash and debris and prevent the clogging of outlet structures. Trash racks shall be installed at the intake to the outlet from the stormwater management basin to ensure proper functioning of the basin outlets in accordance with the following:
 - a. The trash rack shall have parallel bars, with no greater than six inch spacing between the bars.
 - b. The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure.
 - c. The average velocity of flow through a clean trash rack is not to exceed 2.5 feet per second under the full range of stage and discharge. Velocity is to be computed on the basis of the net area of opening through the rack.
 - d. The trash rack shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 lbs/ft sq.
 2. An overflow grate is designed to prevent obstruction of the overflow structure. If an outlet structure has an overflow grate, such grate shall meet the following requirements:
 - a. The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance.
 - b. The overflow grate spacing shall be no less than two inches across the smallest dimension.
 - c. The overflow grate shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 lbs./ft sq.
 3. For purposes of this paragraph 3, escape provisions means the permanent installation of ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management basins. Stormwater management basins shall include escape provisions as follows:
 - a. If a stormwater management basin has an outlet structure, escape provisions shall be incorporated in or on the structure. With the prior approval of the reviewing agency identified in Section 8.C a free-standing outlet structure may be exempted from this requirement.
 - b. Safety ledges shall be constructed on the slopes of all new stormwater management basins having a permanent pool of water deeper than two and one-half feet. Such safety ledges shall be comprised of two steps.

Each step shall be four to six feet in width. One step shall be located approximately two and one-half feet below the permanent water surface, and the second step shall be located one to one and one-half feet above the permanent water surface. See Section 8.D for an illustration of safety ledges in a stormwater management basin.

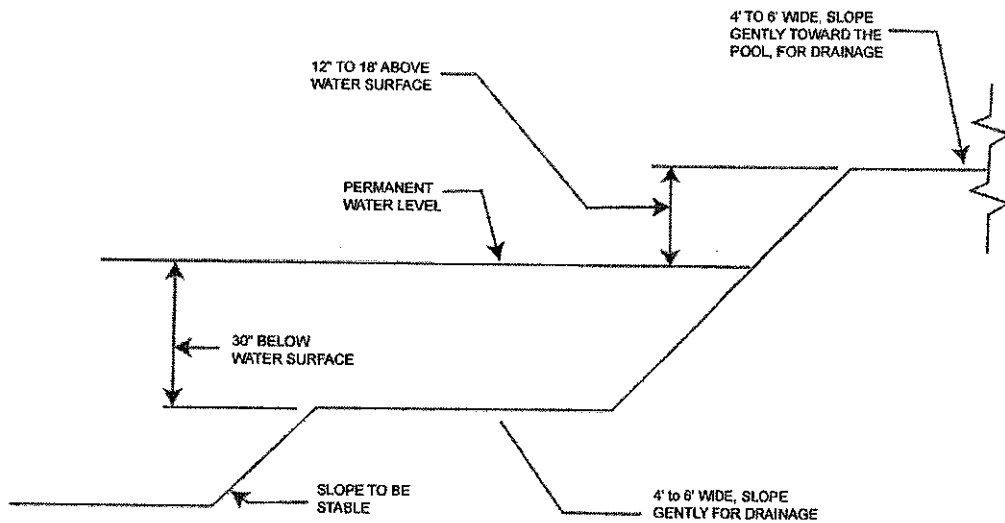
- c. In new stormwater management basins, the maximum interior slope for an earthen dam, embankment, or berm shall not be steeper than 3 horizontal to 1 vertical in accordance with NJAC 7:8-6(C)3.
- d. An emergency drawdown method for detention basins is required where the permanent pool will be more than two and one-half feet deep. This drawdown method must consider downstream or offsite stability at the outfall in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey.

C. Variance or Exemption from Safety Standards

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

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

Depicted is an elevational view.



NOTE: NOT DRAWN TO SCALE

NOTE: FOR BASINS WITH PERMANENT POOL OF WATER ONLY

Section 9: Requirements for a Site Development Stormwater Plan

A. Submission of Site Development Stormwater Plan

1. Whenever an applicant seeks municipal approval of a development subject to this ordinance, the applicant shall submit all of the required components of the Checklist for the Site Development Stormwater Plan at Section 9.C below as part of the submission of the applicant's application for subdivision or site plan approval.
2. The applicant shall demonstrate that the project meets the standards set forth in this ordinance.
3. The applicant shall submit the required number of copies of the materials listed in the checklist for site development stormwater plans in accordance with Section 9.C of this ordinance.

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 ordinance.

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 1"=200' or greater, showing 2-foot contour intervals. The map as appropriate may indicate the following: existing surface water drainage, shorelines, steep slopes, soils, erodible soils, perennial or intermittent streams that drain into or upstream of the Category One waters, wetlands and flood plains along with their appropriate buffer strips, marshlands and other wetlands, pervious or vegetative surfaces, existing man-made structures, roads, bearing and distances of property lines, and significant natural and manmade features not otherwise shown.

2. Environmental Site Analysis

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

3. Project Description and Site Plan(s)

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

4. Land Use Planning and Source Control Plan

This plan shall provide a demonstration of how the goals and standards of Sections 3 through 6 are being met. The focus of this plan shall be to describe how the site is being developed to meet the objective of controlling groundwater recharge, stormwater quality and stormwater quantity problems at the source by land management and source controls whenever possible.

5. Stormwater Management Facilities Map

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

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

6. Calculations

- a. Comprehensive hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in Section 4 of this ordinance.
- b. When the proposed stormwater management control measures (e.g., infiltration basins) depends on the hydrologic properties of soils, then a soils report shall be submitted. The soils report shall be based on onsite boring logs or soil pit profiles. The number and location of required soil borings or soil pits shall be determined based on what is needed to determine the suitability and distribution of soils present at the location of the control measure.

The municipality shall be notified of site investigation activities and given the opportunity to have a witness, either prior to approval or as a condition of approval, as appropriate for the specific type of measure. Subsequent to approval of the major development, post-construction bulk soil density and infiltration testing shall be required for all

infiltration measures that were used as justification for meeting the recharge standard, to ensure that they were properly constructed.

7. **Maintenance and Repair Plan**

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

8. **Waiver from Submission Requirements**

The 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 Sections 9.C.1 through 9.C.6 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.

Section 10: Maintenance and Repair

A. Applicability

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

B. General Maintenance

1. The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development. This plan shall be separate from all other documents and designed for ongoing use by the site owners or operators in performing and documenting maintenance and repair, and by the municipality in ensuring implementation of the maintenance plan. The final maintenance plan shall be updated and provided to the municipality post-construction to include an evaluation based on the specifications of the initial maintenance plan and as-built conditions.
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 of 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/tenant owns or leases the residential development or project.
4. If the person responsible for maintenance identified under Section 10.B.2 is not a public agency, the maintenance plan and future revisions based on Section 10.B.7 shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.
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 Section 10.B.2 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 Section 10.B.2 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 Section 10.B.2 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 documentation required by Sections 10.B.6 and 10.B.7.
 9. The requirements of Sections 10.B.3 and 10.B.4 do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency.
 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 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.
- 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.
- D. The maintenance plan shall specifically provide a specific municipal right of access for inspection of measures, and for maintenance if required under Section B.10.

Section 11: Penalties

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

Section 12: Effective Date

This ordinance shall take effect immediately upon the approval by the county review agency, or sixty (60) days from the receipt of the ordinance by the county review agency, if the Hunterdon County Planning Board as the county review agency should fail to act.

Section 13: Severability

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