MASTER PLAN AMENDMENT

Borough of Hillsdale
Bergen County, New Jersey

AMENDMENT TO UTILITY PLAN OF MASTER PLAN

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UTILITY ELEMENT AMENDMENT

Page U4, immediately before the section labeled, "Recommendations" add the following:

Stormwater Management Plan

The Borough of Hillsdale prepared a Stormwater Management Plan pursuant to N.J.S.A. 40:55D-93. The Municipal Stormwater Management Plan addresses the strategy for the Borough of Hillsdale to address stormwater-related impacts. The 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 base flow in receiving water bodies.

The Borough's Municipal Stormwater Management Plan prepared by C.P. Statile, PA, dated October 2005 is included as part of the Utility Element pursuant to N.J.S.A. 40:55D-28b(5). The Stormwater Management Plan follows in this appendix, and therefore, is an integral part of the Borough of Hillsdale Master Plan as required by N.J.S.A. 40:55D-94.

Borough of Hillsdale

Municipal Stormwater Management Plan

October 2005

Borough of Hillsdale
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Hillsdale, NJ 07642

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Introduction

This Municipal Stormwater Management Plan (MSWMP) lays out the strategy for the Borough of Hillsdale to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 of the Municipal Stormwater Regulations and the "Authorization to Discharge – Tier A Municipal Stormwater General Permit" issued to the Borough and all the communities throughout the State by the New Jersey Department of Environmental Protection effective April 1, 2004.

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 base flow in receiving water bodies.

The Plan describes long-term operation and maintenance measures for existing and future stormwater facilities. A "build-out" analysis was not required 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.

Background

The Borough of Hillsdale is an almost fully developed suburban community in Bergen County that is comprised of 2.90 square miles all within the PA-1, Metropolitan Planning Area (See Exhibit 1 - Borough Boundary on USGS Quadrangles).

The Borough borders seven municipalities: Woodcliff Lake Borough, Park Ridge Borough, River Vale Township, Borough of Westwood, Washington Township, Ho-Ho-Kus Borough and the Borough of Saddle River. Hillsdale is characterized by an established commercial downtown center located around the Hillsdale train station.

Hillsdale's current population exceeds 10,000 residents. The dominant land use is residential, with over 70 percent of the Borough comprised of single-family dwellings. It has less than 640 acres (1 square mile) of vacant lands with public or exempt properties comprising almost

15 percent of the Borough's acreage, and commercial uses comprise over seven percent of Borough properties. **Less than five percent or about 90 acres of the Borough consists of vacant land.** The Borough contains 9.2 miles of County roads, and 44.4 miles of municipal streets. The NJ TRANSIT Pascack Valley Rail Line bisects the Borough from north to south providing commuter rail service.

As shown in the following table, Hillsdale's 2000 census population was 10,087 persons. This is a 337 person or 3.5 percent increase from the 1990 population of 9,750. The 1970 census showed the largest Borough population of 11,768 people. According to the 2000 census the Borough has 3,550 households. (See Exhibits 4 & 5 – Existing and Proposed Land Use Maps).

Table 1
Borough of Hillsdale Population & Households
1900 – 2000

Year	*Population*	*Households*
1900	891	N.A.
1910	1,072	N.A.
1920	1,720	N.A.
1930	2,959	N.A.
1940	3,438	N.A.
1950	4,127	N.A.
1960	8,734	2,388
1970	11,768	3,149
1980	10,495	3,222
1990	9,750	3,326
2000	10,087	3,502

Source: Bergen County Data Book, 2003

Hillsdale is broken down into two Watershed Management Areas (WMAs). WMA4 which flows to the Saddle and Passaic Rivers is found along the extreme western edge of the Borough just west of Craig Road. The balance of the Borough is located within WMA5 which flows to the Hackensack River (see Exhibit 2).

The entire Borough is served by municipally-owned sanitary sewers; there are no individual homeowner septic systems in the Borough. Sanitary sewers are metered and discharged into the Bergen County Utility Authority BCUA trunk lines at five locations.

The entire Borough is served by a potable water supply under a franchise agreement with the United Water Company of NJ, formerly Hackensack Water Company.

All of the Borough's waterways are located within Watershed Management Area 5 (WMA5) (see Exhibit 2). The major waterways in Hillsdale are as follows:

- **Woodcliff Lake Reservoir (FW2-NT(C1)[1], HUC 02030103170010)**, which is located in both Hillsdale and Woodcliff Lake, is impounded by an earthen dam with a cement core. Bascule gates control the water surface elevation and storage volume. The Hillsdale portion of the reservoir is located north of Church Road and west of Reservoir Road. The Reservoir is owned and operated by United Water, NJ, and flows to the Oradell Reservoir, several miles to the south.

- **Musquapsink Brook, (FW2-NT(C1), HUC 02030103170010)**, which traverses from north to south and is located east of the Garden State Parkway and west of Pascack Road. The Brook flows into Washington Township.

- **Pascack Brook, (FW2-NT(C1), HUC 02030103170010)**, which generally traverses in a north to southeast direction from the Woodcliff Lake Reservoir to the Westwood Borough border. This Brook has the greatest potential for flooding, and is often the cause of property damage in the Glenbrook Park section of the Borough below Hillsdale Avenue. Flow in the Brook channel is generally controlled by the automatic bascule gates impounding the reservoir. Because of its limited channel capacity, the Brook is subject to rapid changes in the water surface profile caused by the operation of the gates during storm events. The gates are closely monitored during floods by the local emergency management officials.

- **Hillsdale Brook (FW2-NT(C1), HUC 02030103170030)**,, which is located generally within the Glen Dale County Park, flowing southeasterly into River Vale Township.

- **Holdrum Brook, (FW2-NT(C1), HUC 02030103170030)**, runs southerly along the extreme eastern boundary of the Borough, generally through the golf course and senior citizens housing complex.

Freshwater wetlands are found throughout the Borough (See Exhibit 6).

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

[1] Freshwater 1, Non-Trout Production, Category 1 Waters of the State

used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics.

Watershed Management Area 5 (WMA5) includes eight AMNET sites in the Hackensack River watershed. The sampling shows that 25% of the sites were non-impaired; the majority of the sites (62.5%) were found to be moderately impaired, and the remaining sites (12.5%) were severely impaired. Based on a 1993 survey of similar sampling sites, a significant improvement was apparent at two sites while no sites exhibited a decline in impairment rating. Positive changes in scoring are exhibited in the current data relative to the 1993 data. Although the percentage of moderately impaired sites remains constant, the percentage of non-impaired sites has doubled while the proportion of severely impaired sites is reduced by half.

Of the Borough's five waterways listed above, only the Musquapsink Brook was classified as "Moderately Impaired," while the Pascack Brook was classified as "Non-Impaired" (the other brooks in the Borough were not sampled by the State). The Musquapsink Brook sampling location, however, was five miles southeast of the Borough boundary with Washington Township, immediately above the Pascack Brook gauging station in Westwood Borough.

This means that the Musquapsink Brook is an impaired waterway and the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for pollutants for this brook A TMDL is the amount of a pollutant that can be accepted by a waterbody without exceeding 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 New Jersey Pollutant Discharge Elimination System (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 Best Management Practices (BMP's).

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.

All waterways in the Borough are designated as Category One (C1) Waters of the State primarily due to their influence on the public water supply system. These waters are designated by the State for the purposes of implementing anti-degradation policies set forth in N.J.A.C. 7:9B-1.5(d), for protection from measurable water quality characteristics because of their: clarity, color, scenic setting, other characteristics of aesthetic values, exceptional ecological significance, exceptional resource significance, exceptional water supply significance, or exceptional fisheries resources. None of the waterways are classified as either trout production or trout maintenance waters. All waterways have portions which are delineated with 100-year floodplains/flood hazard areas by the State. None of the waterways are on the New Jersey Integrated Water Quality Monitoring and Assessment report (305(b) and 303(d)) (Integrated List). The Borough's wellhead protection areas are shown on Exhibit 3.

The Borough has no formal groundwater assessment. There is a limited number of groundwater monitoring wells located within the Borough. The Borough maintains four groundwater monitoring wells at Centennial Field, which was the Borough's sanitary landfill until 1987. Due to good water quality drawn from these wells, the New Jersey Department of Environmental Protection is permitting the Borough to reduce the frequency of groundwater testing.

The Borough is also aware of several sites where groundwater monitoring is being undertaken due to hazardous discharges to groundwater. These commercial properties are located at or near: #60 Broadway, #145 Broadway, #137 Broadway, and #377- #389 Washington Avenue. Results of these tests are not provided to the Borough but reported to the New Jersey Department of Environmental Protection. Other properties in the Borough may also be under investigation.

Goals

The goals of the Borough's MSWMP are to:

1. Reduce flooding damage, including damage to life and property.

2. Minimize, to the maximum extent practical, any increase in stormwater runoff from any new development.

3. Reduce soil erosion from any development or construction project.

4. Assure the adequacy of existing and proposed culverts and bridges and other in-stream structures.

5. Maintain groundwater recharge.

6. Prevent, as much as possible, an increase in nonpoint source pollution.

7. Maintain the integrity of stream channels for their biological functions, as well as for drainage.

8. 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.

9. Protect public safety through the proper design and operation of stormwater management facilities.

To achieve these goals, this plan outlines specific stormwater design and performance standards for new 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.

Borough's Efforts in Achieving Its Goals

1. Reduce flooding damage, including damage to life and property.

   The Borough sustained hundreds of thousands of dollars of damage during Tropical Storm Floyd, wherein the Federal Emergency Management Agency provided assistance to both private property owners and the Borough.

   In 2001, the Borough convened its Open Space Committee to prioritize a rational plan for future acquisition of lands. The Committee regarded lands along flood prone areas as its top priority and recommended the establishment of an Open Space Trust Fund implemented by the Borough.

   In subsequent applications to the County, the Borough has received funding to purchase properties along brooks and streams where flooding has caused the greatest property damage. These include:

   - Old Tandy and Allen Tract **3.5 acres floodplain & wetlands** (1982)
   - 12 Building Lots from County of Bergen in **floodplain** (1992)
   - New Tandy & Allen Tract, approx. **9 acres wetlands** (2002).
   - Walsky Tract, **8.7 acres floodplain and floodway** (2003)
   - Weinberger Tract, **floodplain and wetlands** (2003)

- McSpirit, Block 1106, Lots 34, 35, 36, 37, **0.82 acres floodway** (2002).
- F.E.M.A. funded (2001):
  Block 1106, Lot 23, **0.25 acres floodplain**
  Block 1111, Lot 6, **0.12 acres floodplain**
  Block 1108, Lot 2, **0.24 acres floodplain**
- Berdais, Block 1108, Lot 1, **0.58 acres floodplain & floodway** (1999)

In 2005, the Borough applied for funds to purchase three properties along the Pascack Brook with two properties containing portions of the regulatory floodway. All properties acquired have the potential for development.

The Borough also has obtained permits in the past from the New Jersey Department of Environmental Protection for the cleaning and de-snagging of its various brooks on a seven-year cycle. Utilizing the assistance of the Bergen County Mosquito Extermination Commission, snags, debris, fallen trees, silt accumulation and other obstructions to flow have been removed thereby enhancing the hydraulic capacity of the brooks. The work is closely monitored to ensure that small stone dams are retained to pool water for fish production and maintenance. A permit was just issued in 2005 for this work.

2. Minimize, to the maximum extent practical, any increase in stormwater runoff from any new development.

   The combined Borough Planning/Zoning Board ensures compliance with the Resident Site Improvement Standards (RSIS) for residential development, and the Soil Conservation Service requirements for commercial sites. It also enforces the current Stormwater Management Rules promulgated by the State in February 2002. Implementation of these various standards has reduced surface runoff and total suspended solids (TSS) from new developments.

3. Reduce soil erosion from any development or construction project.

   All projects approved by the Planning/Zoning Board with greater than 5,000 SF of disturbance are required to obtain Bergen County Soil Conservation Service Plan Certification. Projects of lesser disturbance or which do not receive Plan Certification none-the-less require Plot Plan and Soil Movement Permit reviews by the Borough Engineer. These type developments as well as infrastructure construction by the Borough are required to implement similar erosion controls under the current Hillsdale Land Use Ordinance.

4. Assure the adequacy of existing and proposed culverts and bridges and other in-stream structures.

Using the expertise of its Borough Engineer, the Borough has designed and administered the replacement of four major bridges and culverts over the Pascack Brook in the past decade with Bergen County funding. These were: the Hillsdale Avenue Bridge (65 ft. span), Broadway Bridge (65 ft. span), Fairview Avenue Bridge (65 ft. span), and the culvert under NJ TRANSIT railroad (18 ft. single cell).

Currently the Borough Engineer is undertaking the design and permit acquisition of another bridge over the Pascack Brook at Patterson Street with a roadway re-alignment. The Borough Engineer is also designing the replacement of the Hillsdale Avenue culvert at the Township Brook where flooding has plagued the neighborhood. Under current New Jersey Department of Environmental Protection regulations, the surface water profile of the various brooks cannot be changed via these replacements using accepted HECII or HECRAS software modeling.

5. Maintain groundwater recharge.

All development applications, plot plan, and soil movement permit applications, since 1975 have required to some extent groundwater recharge through the use of seepage pits, dry detention ponds, infiltration trenches, and bioretention ponds. Under the current New Jersey Department of Environmental Protection stormwater management rules, groundwater recharge is required to match pre-development recharge using the worksheet software provided by the State.

In numerous areas of the Borough, groundwater recharge has been deemed unacceptable due to the presence of high seasonal groundwater, flooded basements, or proximity to wetlands. These areas are generally found along stream corridors, in proximity to the Garden State Parkway, and several other neighborhoods.

6. Prevent, as much as possible, an increase in nonpoint source pollution.

The Borough maintains a pro-active approach to keeping its streets, parks, and public facilities in a clean and safe condition. Street sweeping is conducted daily on the 54 miles of local and county roads, all inlets in the Borough are cleared at least once per calendar year using shared equipment with adjacent municipalities. Deicing salt and grit storage is contained within a structure to reduce runoff, and all public works equipment is maintained within a closed garage.

Grit is swept from the streets as soon as weather conditions permit after snow storm events. The Borough's Code Compliance Department is diligent in ensuring that refuse trucks traveling along designated truck routes to the local transfer station are issued summons for spillage of leachate or trash which could enter the storm drainage system.

The Borough also closed their solid waste landfill in 2001, and converted the 12-acre landfill into a recreation facility. The closure included a leachate collection system tied into the B.C.U.A. sanitary sewer system, and has a passive methane ventilation system. Groundwater monitoring and surface water sampling is conducted each quarter, and reported to the New Jersey Department of Environmental Protection.

The Borough enforces the 300 ft. buffer requirements for all of its C1 water designations. Enforcement is though the Planning/Zoning Board development application process and through the Construction Code Department oversight.

The Borough previously enacted wildlife feeding ordinances to prevent attracting waterfowl.

7. Maintain the integrity of stream channels for their biological functions, as well as for drainage.

   The Borough undertakes stream cleaning and desnagging on a seven year cycle with Bergen County Mosquito Extermination Commission. During this process, the Borough inspects all the waterways for their integrity, erosion damage, potential liabilities, litter accumulation, vegetation quality, and performance of the numerous outlet structures. Existing low check dams used to provide pools for fish maintenance are retained. These stone and rubble dams are constructed by volunteers from the community in order to enhance the health of the stream corridors.

8. 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.

   The Borough has long recognized the environmental benefits of proper stormwater management techniques to reduce biological degradation of the local streams and brooks because of the Borough's recreational use of these local waterways and the fact that they all are part of the regional water supply (Oradell) system.

   Currently the Hillsdale Planning Board encourages developers to use non-structural stormwater management practices outlined in Chapter 2 "Low Impact Development Techniques" of the New Jersey Department of Environmental Protection "New Jersey Stormwater Best Management Manual." Where these practices cannot be reasonably employed, the Board requires the use of the methods outlined in Chapter 9 "Structural Stormwater Management Measures" of the Manual. When the opportunity arises with land use applications, the Board attempts to improve existing site conditions when new construction is proposed on older, existing sties.

The Borough's code compliance office is also diligent in enforcing the maintenance and operation of stormwater management devices when violations occur, particularly in the commercial and industrial zoning districts.

9. Protect public safety through the proper design and operation of stormwater management facilities.

   The Borough has been plagued by flooding primarily caused by the Pascack Brook, whose flow is controlled by the outfall from the Woodcliff Lake Dam. The municipalities of Hillsdale and Westwood have had a long history of working with United Water, NJ in the operation of the dam. The three parties reached an informal agreement several years ago to lower the reservoir surface 5 ft. during non-summer or low demand periods, thus providing some stormwater storage to buffer and attenuate storm events.

   The Borough's emergency management staff has also assisted the water purveyor during anticipated flood events in the operations of the bascule outfall gates, overriding the automatic operation to react more precisely to ongoing hydrological conditions.

Stormwater Discussion

Land development can dramatically alter the hydrologic cycle (See Figure C-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.

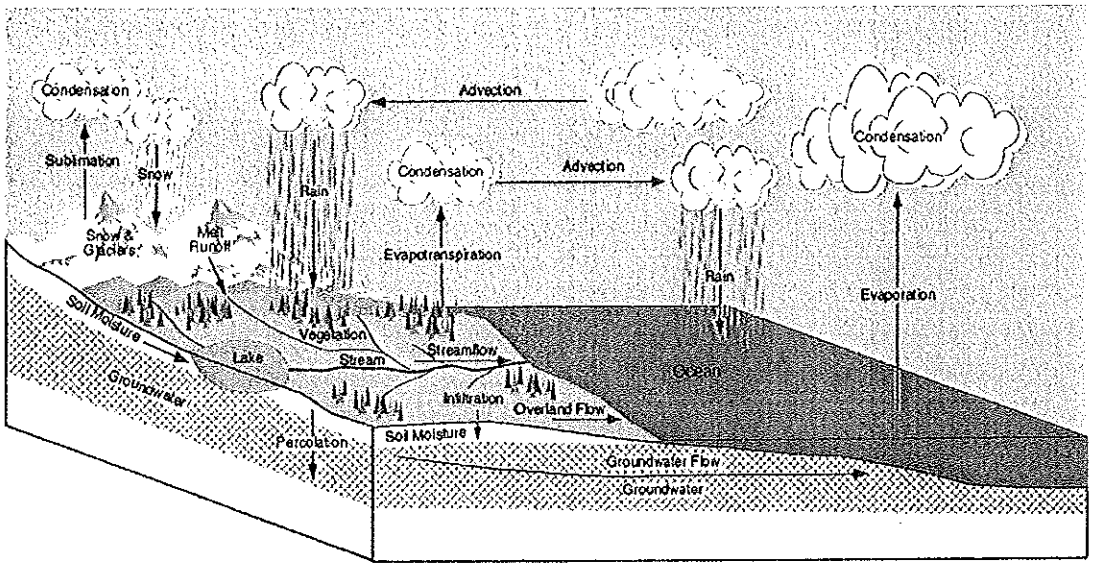


Figure C-1
Groundwater Recharge in the Hydrologic Cycle

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.

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.

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 will 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. The ordinances will be submitted to Bergen County for review and approval within 24 months of the effective date of the Stormwater Management Rules. During construction, Borough officials will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed.

Failure to comply with the design and performance standards will result in revocation of building permits, soil movement permits, and Planning/Zoning Board approvals if applicable, under the same stipulation of typical land use controls.

Long term operation and maintenance measures for existing and future stormwater facilities by the Hillsdale Department of Public Works include:

1. Annual inspections of storm drain outfalls for erosion, storm drain integrity, and child entry protection.
2. Annual storm drain inspections, vacuum cleaning, repair, and labeling.
3. Installation of storm drain inlet heads for floatable controls with capital improvement and resurfacing projects.
4. Annual inspection of detention/retention ponds and structures for serviceability.
5. Maintenance of road deicing chemical and grit storage to prevent runoff.
6. Cleaning of wet ponds, ponds, and detention structures.
7. Stream cleaning and de-snagging of debris.
8. Public outreach programs.

The Borough will adopt the necessary ordinance by resolution, under Article XXX "Penalties of Land Use Ordinance", penalties for non-compliance of long-term operation and maintenance of Best Management Practices.

Plan Consistency

The Borough is not within a Regional Stormwater Management Planning Area (RSWMP) 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. The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. Bergen County is currently creating a County Stormwater Management Plan that should be complete in 2005. The MSWMP will be updated as necessary to be consistent with the County Stormwater Management Plan.

The Borough 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 of the RSIS. The Borough's Stormwater Management Ordinance requires all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, Borough officials enforce on-site soil erosion and sediment control measures and report any inconsistencies to the local Soil Conservation District.

Nonstructural Stormwater Management Strategies

The Borough recently updated their Master Plan in 2002 and is currently updating the zoning ordinance consistent with the Plan recommendations. The Master Plan and Land Use Ordinance were reviewed, and a list developed of the sections that could be modified to incorporate nonstructural stormwater management strategies. Below is listed several ordinances identified for consideration by the Borough for future revision. Once the ordinance texts are completed, they will be submitted to Bergen County for review and approval within 24 months of the effective date of the Stormwater Management Rules. A copy will be sent to the Department of Environmental Protection at the time of submission.

Chapter 310 of the Hillsdale Code, entitled "Land Use" was reviewed to incorporate nonstructural stormwater management strategies. Several changes will be made to Article XXVI entitled "Site Plan Design Standards" to incorporate these strategies.

Changes to the ordinance may include changing the **vegetated buffer** areas to require the use of native vegetation, which requires less fertilization and watering than non-native species. Additionally, language may include allowing buffer areas to be used for stormwater management by disconnecting impervious surfaces and treating runoff from these impervious surfaces.

The Borough currently does not have **cluster development provisions** to provide for a cluster development option to preserve lands for public and agricultural purposes, to prevent development on environmentally sensitive areas, and as an aid in reducing the cost of providing streets, utilities and services in New Jersey residential developments. Such an ordinance may be appropriate for the golf course lands in the northeast area of the Borough which are currently being rezoned. A cluster option is an excellent tool for reducing impervious roads and driveways. The option allows for smaller lots with smaller front and side yard setbacks than traditional development options. It also minimizes the disturbance of large tracts of land, which is a key nonstructural stormwater management strategy. This type ordinance could provide for the use of native vegetation, which requires less fertilization and watering than non-native ornamental plants. Although most development options require public concrete sidewalks to be installed along all streets, paths in open space could be mulched or stone to decrease the impervious area.

Curbs and gutters are generally required of concrete curb and gutter, concrete curb, or Belgian block curb be installed along every street within and fronting on a development. These requirements could 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.

Watercourses and Flood Hazard Areas require that all streets be provided with inlets and pipes where the same are necessary for proper drainage. This section could be amended to encourage the used of natural vegetated swales in lieu of inlets and pipes.

Paved driveways and accessways are required for construction of any new driveway or accessway to any street. The Borough has enacted a new Impervious Coverage requirement of 30% maximum for any lot in the Borough. This ordinance encourages the use of more pervious pavements and pathways by allowing a 50% discount in coverage for pervious paving materials to minimize stormwater runoff and promote groundwater recharge.

The land use ordinance requires that **natural features**, such as trees, brooks, swamps, hilltops, and views, be preserved whenever possible, and that care be taken to preserve selected trees to enhance soil stability and landscaped treatment of the area. This section could 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.

Homeowners must mitigate the impact of the additional **impervious surfaces** unless the stormwater management plan for the development provides for these increases in impervious surfaces. This mitigation effort must also address water quality, flooding, and groundwater recharge as described in **Chapter 310**. A detailed description of how to develop a mitigation plan will be provided in the land use ordinance.

Language could be added to **Article XXVIII** "Off-Tract Improvements" to require that any off-site and off-tract stormwater management and drainage improvements must conform to the "Design and Performance Standards" described in this plan and provided in Chapter 310.

Under **Article XVI** "Parking regulations" parking lots are required to have concrete or Belgian block curbing around the perimeter of the parking and loading areas. This section also requires that concrete curbs be installed around all landscaped areas within the parking lot or loading areas. This section can be amended to allow for flush curb with curb stop, or curbing with curb cuts to encourage developers to allow for the discharge of impervious areas into landscaped areas for stormwater management. Also, supplemental language could be added to allow for use of natural vegetated swales for the water quality design storm, with overflow for larger storm events into storm sewers. This section also provides guidance on minimum parking space requirements. These requirements are based on the number of dwelling units and/or gross floor area. The section allows a developer to demonstrate that fewer spaces would be required, provided area is set aside for additional spaces if necessary. This section could also be amended to allow pervious paving to be used in areas to provide overflow parking, vertical parking structures, smaller parking stalls, and shared parking.

The Borough has a **shade trees replacement ordinance at Section 310-133** which requires a minimum of two shade trees be planted for each one removed, plus outlines penalties for any additional trees removed that were not approved by the Planning/Zoning Board. This ordinance recognizes that the preservation of mature trees and forested areas is a key strategy in the management of environmental resources, particularly watershed management, air quality, and ambient heating and cooling. This section provides a realistic clearing limit for development, and generally complies with minimizing land disturbance, which is a nonstructural stormwater management strategy. These sections could be amended to require the identification of forested areas, and that a specific percentage of forested areas are protected from disturbance.

Sidewalk construction is a requirement of the R.S.I.S. Although sidewalks are not always required along all streets, the Borough does require them in areas where the probable volume of pedestrian traffic, the development's location in relation to other populated areas and high vehicular traffic, pedestrian access to bus stops, schools, parks, and other public places, and the general type of improvement intended indicate the advisability of providing a pedestrian way. Sidewalks are to be a minimum of four feet wide and constructed of durable materials. Language could be 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.

Soil erosion and sediment control measures are generally addressed in major developments by the County Soil Conversation District and under **Chapter 248** "Soil Movement." This ordinance requires developers to comply with the New Jersey Soil Erosion and Sediment Control Standards and outlines some general design principles, including: whenever possible, retain and protect natural vegetation; minimize and retain water runoff to facilitate groundwater recharge; and, install diversions, sediment basins, and similar required structures prior to any on-site grading or disturbance.

Stormwater management is addressed under **Sections 310-67 & 102** of the Site Plan Ordinance. These sections will be updated to include all requirements outlined in N.J.A.C. 7:8-5. These changes were presented earlier in this document.

Street hierarchy is provided in the R.S.I.S. which describes the requirements for streets in all municipalities. **Street paving widths** are a function of the number of units served, whether a street is curbed, whether on-street parking is permitted, whether the interior streets serve lots of two acres or larger, and whether onsite topographical constraints allow design flexibility. Depending on these factors, paving width for secondary local streets has a range from 20 to 30 feet. The Borough encourages developers to limit on-street parking to allow for narrower paved widths. This section also required that cul-de-sacs have a minimum radius of 50 feet. The reviewing Board could allow the reduction in the minimum radius of cul-de-sac designs on an application by application basis.

Changes were enacted in 2004 to **Article XII** of the Borough Code entitled "Zones Established" wherein the Borough has several types of residential districts. Each district now has a maximum of 30 percent **impervious surface** allocation and a Floor Area Ratio which varies by district to control the bulk of dwellings. The Borough also has two non-residential districts: commercial and industrial which do not have a maximum percent impervious surface allocation. These zones could be amended to provide a maximum limit, and amended to remind developers that satisfying the percent impervious requirements does not relieve them of responsibility for complying with other design and performance standards for stormwater management contained in other sections of the ordinance.

Also, if a developer is given a variance to exceed the maximum allowable percent imperviousness, the Board requires the developer must mitigate the impact of the additional impervious surfaces. This mitigation effort must address water quality, flooding, and groundwater recharge as described in Site Plan Ordinance. An overview description of how to develop a mitigation plan is included in this Municipal Stormwater Management Plan.

Land Use/Build-Out Analysis

The Borough does not have sufficient undeveloped areas to require a Land Use/Build Out Analysis because there is less than 640 developable acres (one square mile) of vacant lands remaining. (See discussion under "Background" and Exhibits 4 & 5).

Well Head Protection Areas

Only one, small Tier 1 Well Head Protection Area designated by the State is located within the Borough (Exhibit 3). This area is limited to the vacant, wooded lands immediately below the Woodcliff Lake Dam which are owned by the Untied Water Company. These lands do not have the potential for development.

Mitigation Plans

A mitigation plan is required to grant a variance or exemption from the design and performance standards of the municipal stormwater management plan. Although not anticipated at this time, the Borough's mitigation requirements could offer a hierarchy of options to clearly offset the effect on groundwater recharge, stormwater quantity control, and/or stormwater quality control that was created by granting the variance or exemption.

This suggested mitigation plan is provided such that a proposed development could be granted a variance or exemption from the stormwater management design and performance standards. Below is a hierarchy of potential 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 this 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 NJDEP Stormwater BMP Manual.

   The applicant can select one of the following suggested projects listed to compensate for the deficit from the performance standards resulting from the proposed project. More specific and detailed information on suggested projects can be obtained from the Borough Engineer subject to the governing body's approval.

   Below are project examples that can be used to address the mitigation requirement.

Groundwater Recharge Enhancements

a. Permit the retrofitting of existing detention basins or subsurface seepage pits to provide additional storage for annual groundwater recharge.

b. Replace existing deteriorated impervious parking areas at municipal/governmental complexes (West Parking Lot, East Parking Lot, Borough Hall, recreation fields) with permeable paving to provide additional groundwater recharge.

Water Quality Enhancements

c. Retrofit existing municipal stormwater management facilities to provide the removal of 80 percent of total suspended solids from the parking lot runoff using structured or non-structured devices or methods. These projects could include the municipal swimming pool complex, the five commuter/merchant parking lots, and the various parks.

d. Install stormwater management measures in available open space areas to reduce the peak flow from the upstream development on the receiving stream for the 2, 10, and 100-year storms. This could include the various municipal and county parks.

e. The planting of native trees and/or vegetation within the Borough's right-of-way, or various parks.

2. If suitable sites cannot be located in the same drainage area as the proposed development, as discussed above, a mitigation project might 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 could address this mitigation option.

Water Quality

a. Re-establish a vegetative buffer (say 50 foot wide) along the shoreline at Forest Drive Pond as a goose control measure and to filter stormwater runoff from the high goose traffic areas.

b. Provide goose management measures, including public education at local parks and the annual fishing contest held in April.

c. Incorporate seepage pits, infiltration trenches, and bioretention ponds in existing public parking areas at the schools, the Borough recreations areas, and the commuter

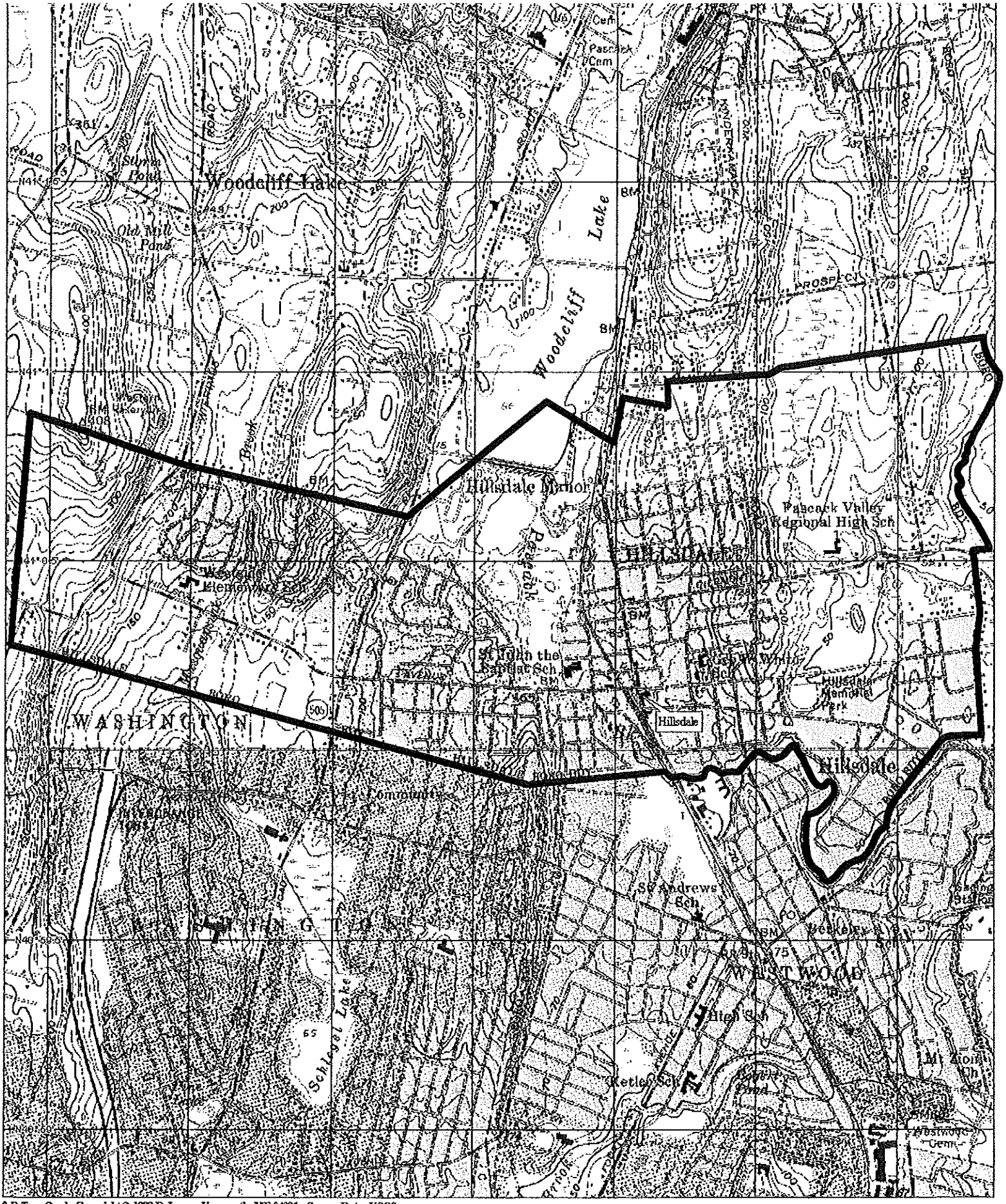
parking areas. Other off-tract improvements could include new curbing to prevent roadside erosion, inlet conversions with floatable guards, and storm drain pipe outlet protection.

d. The Borough Engineer and/or Planning Board should maintain a current list of mitigation projects for consideration by developers and the Board during land use applications.

Working with the local Environmental Commission and Open Space Committee, the Borough can also establish a list of environmental enhancement projects to provide groundwater recharge, control flooding, or control nonpoint source pollution, with sufficient information on each project, including size of the project, permit requirements, land ownership, and estimated project costs (i.e., permitting fees, engineering costs, construction costs, and maintenance costs) to permit a mitigation plan to be undertaken by a developer.

The Borough may allow developers to fund or partially fund the Borough to undertake earmarked environmental enhancement projects that have been identified in this Municipal Stormwater Management Plan, or towards the development of a Regional Stormwater Management Plan. The funding shall 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.

Exhibit 1
Borough Boundary on USGS Quadrangles



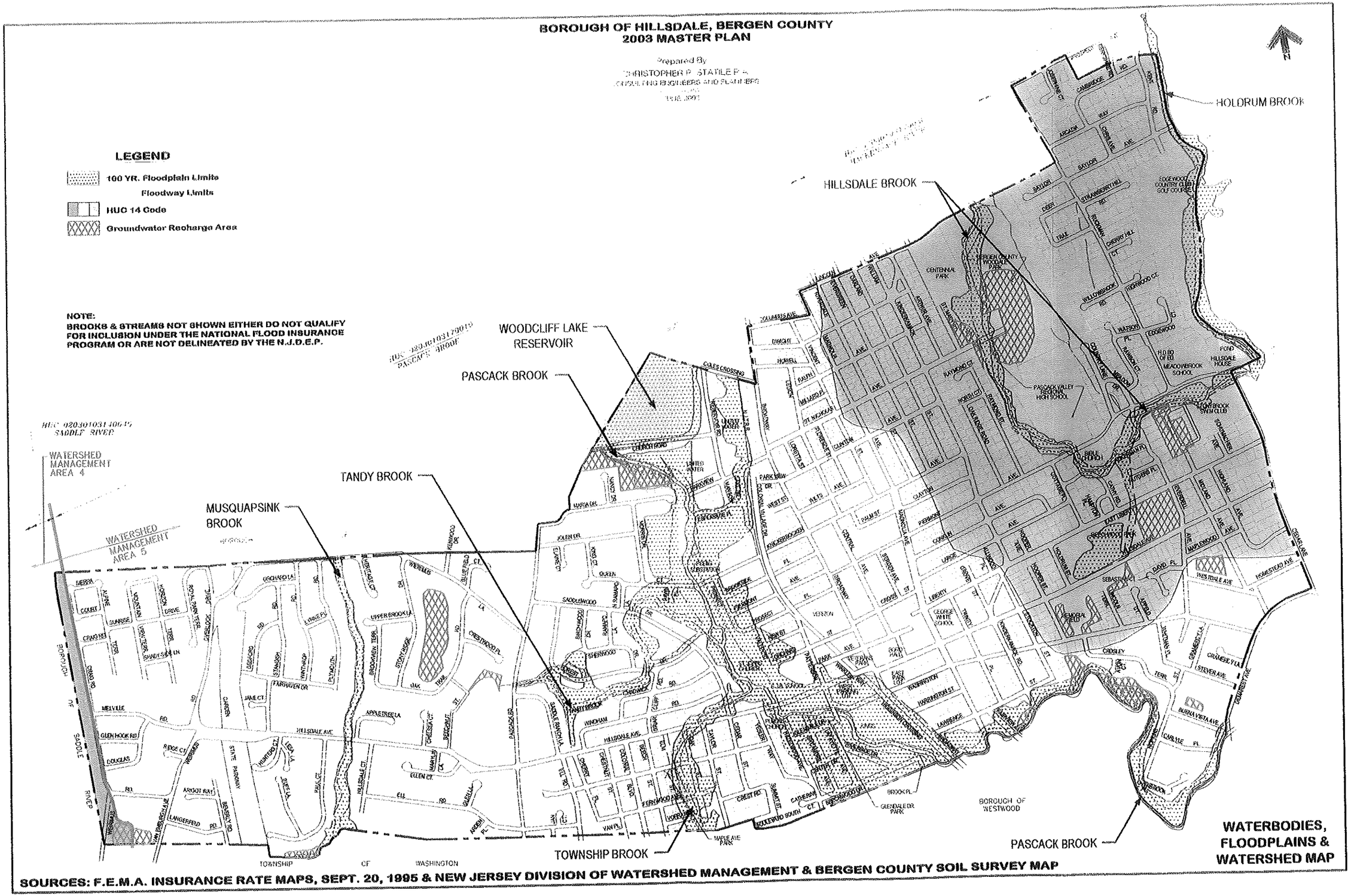
3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS

750 ft Scale: 1 : 25,000 Detail: 13-0 Datum: WGS84

Exhibit 2
Waterbodies, Floodplains, & Watershed Map

BOROUGH OF HILLSDALE, BERGEN COUNTY
2003 MASTER PLAN

Prepared By
CHRISTOPHER P. STATILE P.E.
CONSULTING ENGINEERS AND PLANNERS
JUNE 2001



SOURCES: F.E.M.A. INSURANCE RATE MAPS, SEPT. 20, 1995 & NEW JERSEY DIVISION OF WATERSHED MANAGEMENT & BERGEN COUNTY SOIL SURVEY MAP

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Christopher P. Statile, P.A. (2)

Exhibit 3
Well Head Protection Areas

New Jersey Map

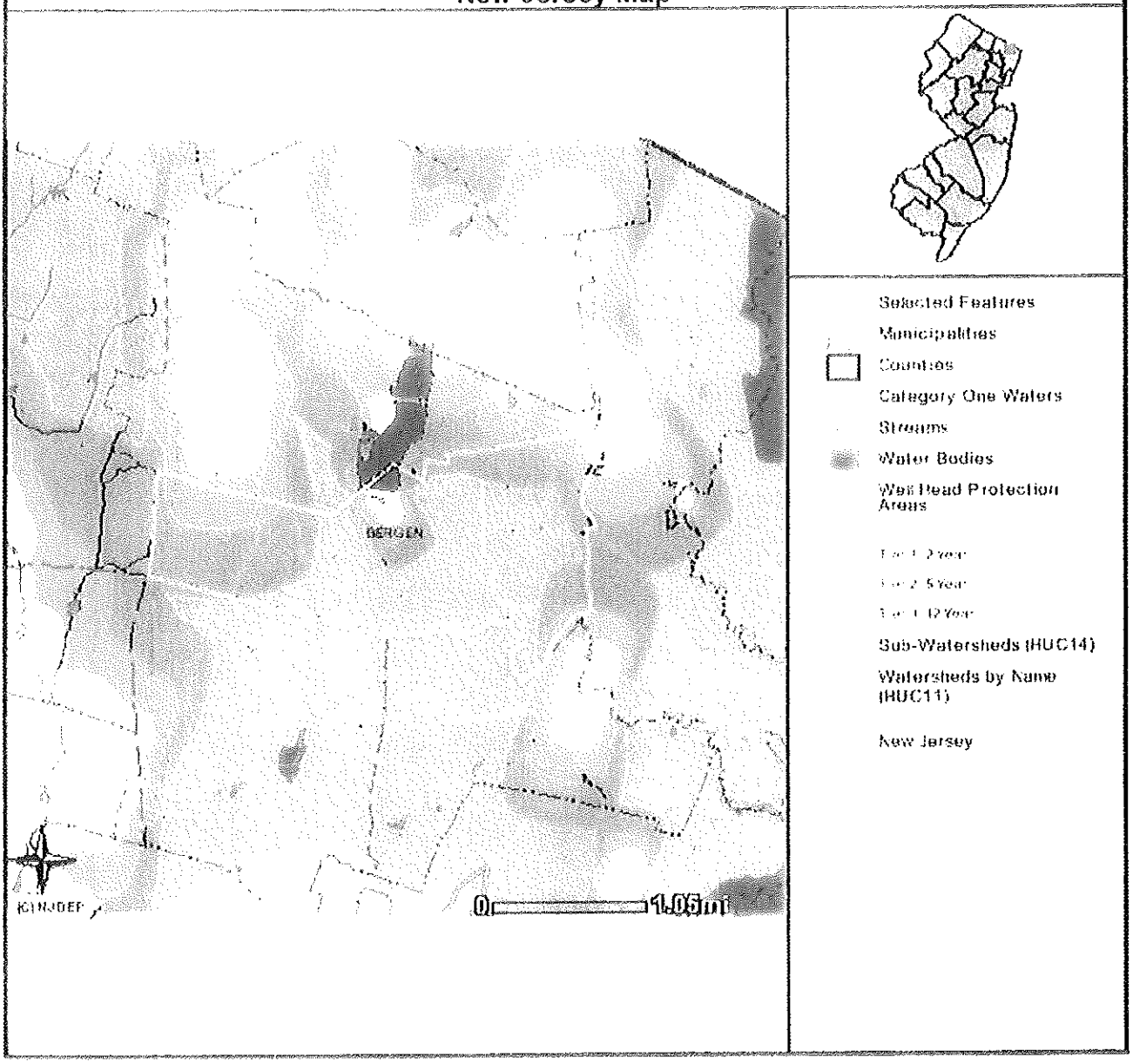


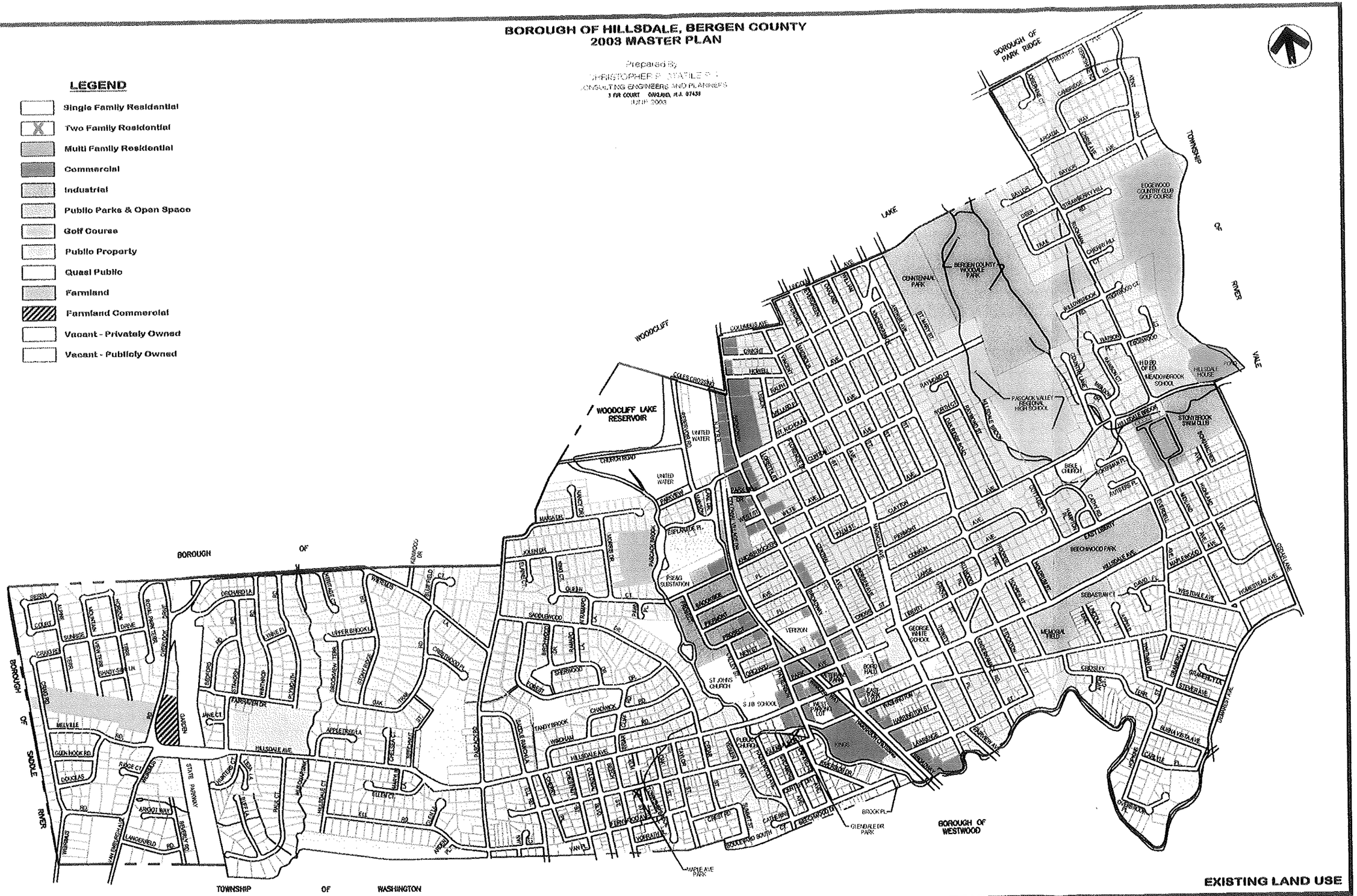
Exhibit 4
Existing Land Use

BOROUGH OF HILLSDALE, BERGEN COUNTY
2003 MASTER PLAN

Prepared By
CHRISTOPHER P. STATILE P.A.
CONSULTING ENGINEERS AND PLANNERS
3 FIR COURT OAKLAND, N.J. 07436
JUNE 2003

LEGEND

- Single Family Residential
- X Two Family Residential
- Multi Family Residential
- Commercial
- Industrial
- Public Parks & Open Space
- Golf Course
- Public Property
- Quasi Public
- Farmland
- Farmland Commercial
- Vacant - Privately Owned
- Vacant - Publicly Owned



EXISTING LAND USE

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Christopher P. Statile, P.A. (2)

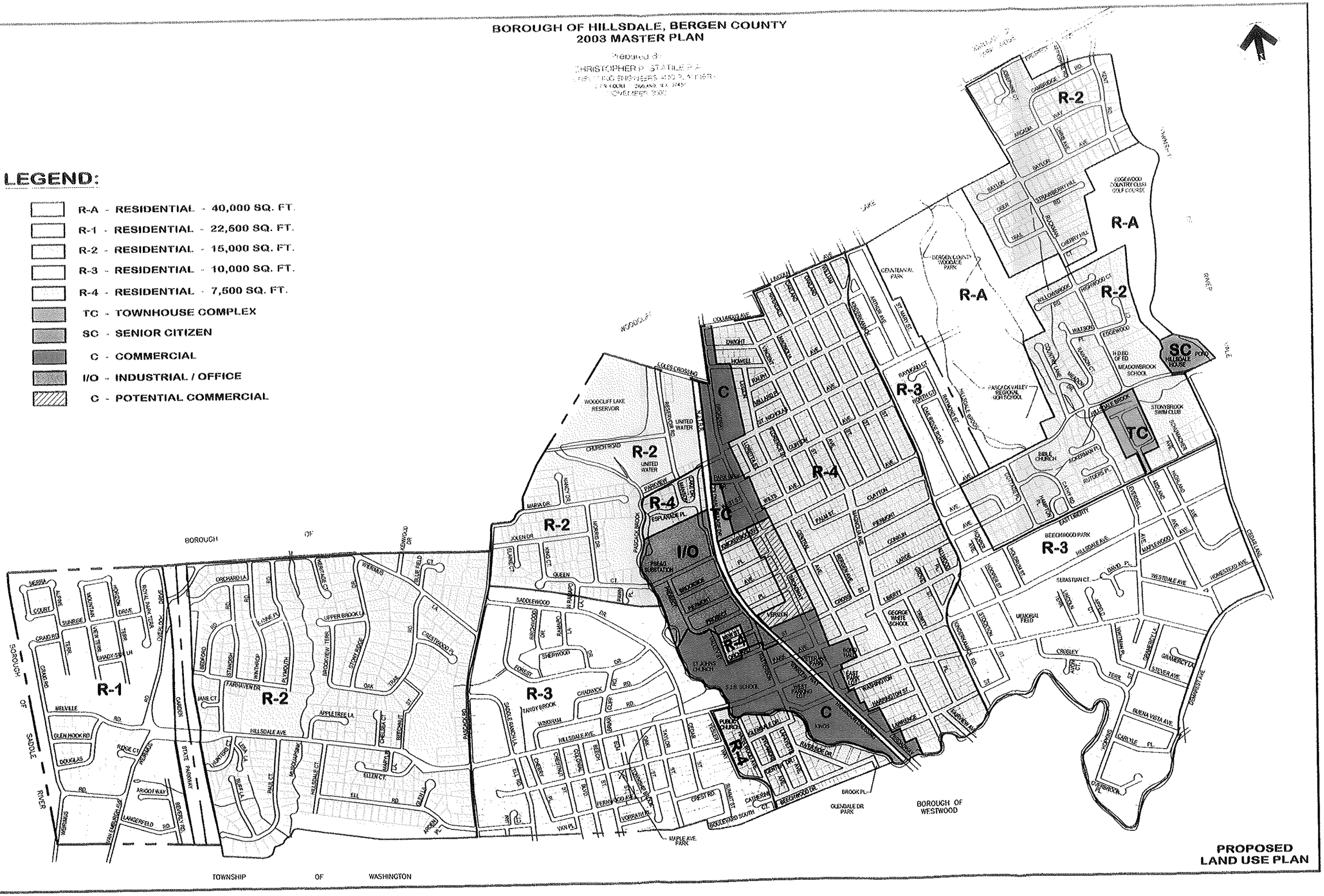
Exhibit 5
Proposed Land Use

BOROUGH OF HILLSDALE, BERGEN COUNTY
2003 MASTER PLAN

Prepared By
CHRISTOPHER P. STATILE P.A.
CONSULTING ENGINEERS AND PLANNERS
[illegible] COURT OAKLAND, N.J. 07436
NOVEMBER 2003

LEGEND:

- R-A - RESIDENTIAL - 40,000 SQ. FT.
- R-1 - RESIDENTIAL - 22,500 SQ. FT.
- R-2 - RESIDENTIAL - 15,000 SQ. FT.
- R-3 - RESIDENTIAL - 10,000 SQ. FT.
- R-4 - RESIDENTIAL - 7,500 SQ. FT.
- TC - TOWNHOUSE COMPLEX
- SC - SENIOR CITIZEN
- C - COMMERCIAL
- I/O - INDUSTRIAL / OFFICE
- C - POTENTIAL COMMERCIAL



PROPOSED
LAND USE PLAN

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Christopher P. Statile, P.A. (1)

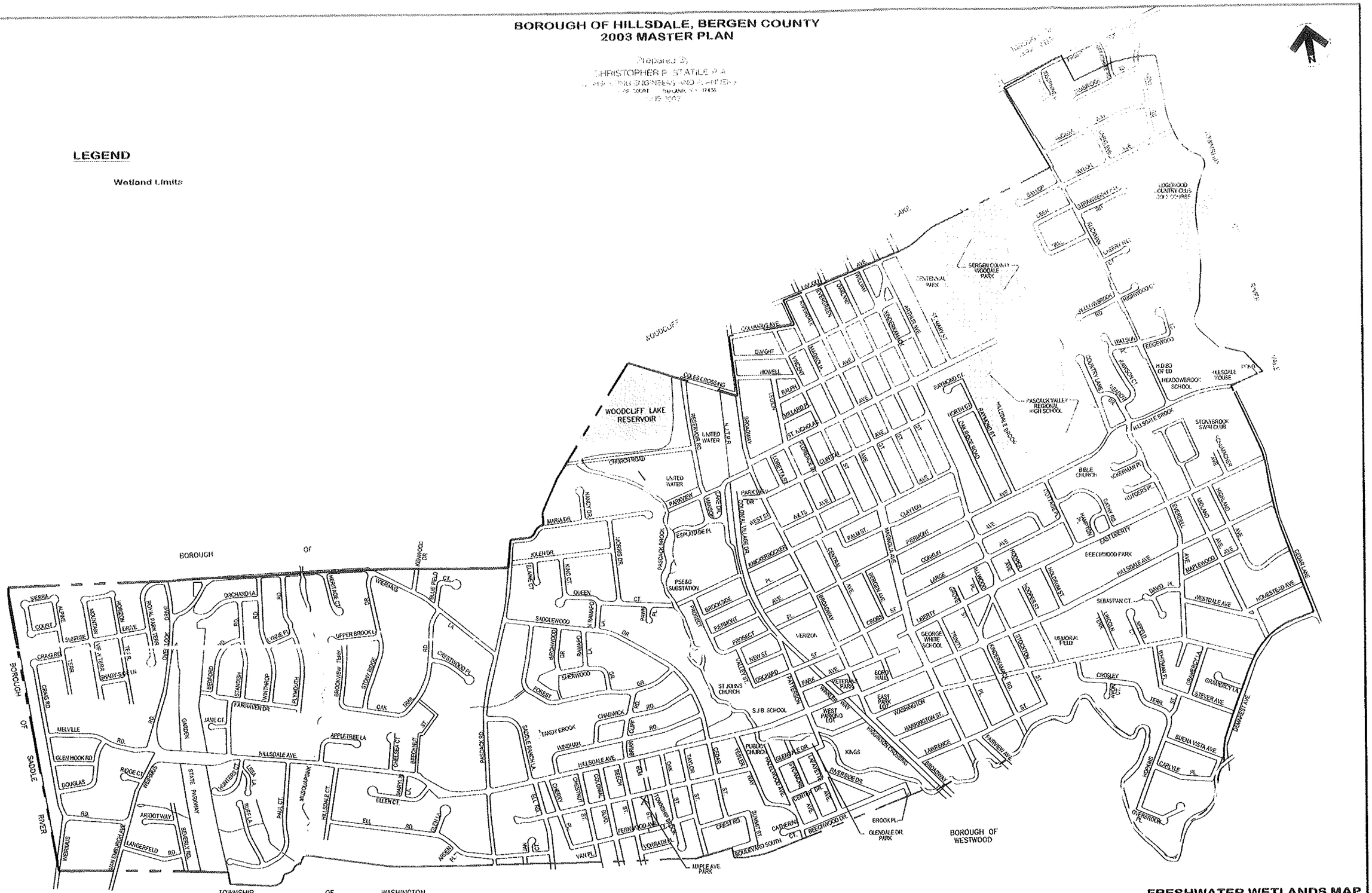
Exhibit 6
Freshwater Wetlands Map

BOROUGH OF HILLSDALE, BERGEN COUNTY
2003 MASTER PLAN

Prepared By
CHRISTOPHER P. STATILE, P.A.
CONSULTING ENGINEERS AND PLANNERS
[illegible]

LEGEND

Wetland Limits



SOURCE: U.S.C.O.E. FRESHWATER WETLANDS NATIONAL INVENTORY MAP

FRESHWATER WETLANDS MAP

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Christopher P. Statile, P.A. (1)

Exhibit 7
Model Stormwater Control Ordinance

Model Stormwater Control Ordinance for Municipalities

Section 1: Purpose

A. Policy Statement.

Flood control, groundwater recharge and pollutant reduction through nonstructural or low impact techniques shall be explored before relying on structural BMPs. Structural BMPs should be integrated with nonstructural stormwater management measures and proper maintenance plans. Nonstructural measures include both environmentally sensitive site design and source controls that prevent pollutants from being placed on the site. Source control plans should be developed based upon physical site conditions and the origin, nature, and the anticipated loading 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.

C. Applicability

This ordinance shall be applicable to any site plan or subdivision that requires preliminary or final site plan review. No variances, waivers or special exceptions shall be granted without the express approval of the Department of Environmental Protection.

D. Compatibility with other permit and ordinance requirements.

Development approvals issued 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: 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 this section. To the maximum extent feasible, these standards shall be met by incorporating nonstructural stormwater management strategies into the design. If these strategies alone are not sufficient to meet these standards, structural stormwater management measures necessary to meet these standards shall be incorporated into the design.

2. The standards in this ordinance apply only to new major development and are intended to minimize the impact of stormwater runoff on water quality and water quantity in receiving water bodies and maintain groundwater recharge. The standards do not apply to new major development to the extent that alternative design and performance standards are applicable under a regional stormwater management plan or Water Quality Management Plan adopted in accordance with Department rules. Such alternative standards shall provide at least as much protection from stormwater–related loss of groundwater recharge, stormwater quantity and water quality impacts of major development projects as would be provided under the standards in this subchapter.

3. For site improvements regulated under the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21, the RSIS shall apply in addition to this Section except to the extent the RSIS are superseded by this Section or alternative standards applicable under a regional stormwater management plan or Water Quality Management Plan adopted in accordance with Department rules.

Section 3. Stormwater Management Requirements For Major Development

A. The development shall incorporate a maintenance plan and designate a responsible party for the stormwater management measures incorporated into the design of a major development.

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

C. The following linear development projects are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements at Sections 3.F and 3.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.

3. The construction of a public pedestrian access, such as a sidewalk or trail with a maximum width of 10 feet, provided that the access is made of permeable material.

D. A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements at Sections 3.F and 3.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 3.F and 3.G to the maximum extent practicable;

3. The applicant demonstrates that, in order to meet the requirements at Sections 3.F and 3.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 3.D above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate for requirements of Sections 3.F and 3.G that were not achievable on-site.

E. Nonstructural stormwater management measures

1. The applicant shall identify the nonstructural measures incorporated into the design of the project. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management measures identified in 2.E below into the design of a particular project, the applicant shall identify the measures considered and provide a basis for the contention.

2. Nonstructural stormwater management measures incorporated into site design shall:

a. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;

b. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;

c. Maximize the protection of natural drainage features and vegetation;

d. Minimize the decrease in the pre-construction "time of concentration." "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the watershed to the point of interest within a watershed;

e. Minimize land disturbance including clearing and grading;

f. Minimize soil compaction;

g. Provide low-maintenance native plant landscaping that maximizes retention of existing native vegetation and planting of native vegetation and minimizes the use of lawns and need for fertilizers and pesticides;

h. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas;

i. Provide other preventative 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. These source controls include, but are not limited to:

(1) Site design features that help to prevent accumulation of trash and debris in drainage systems;

(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. Any land area used as a non-structural stormwater management measure to meet the performance standards in Sections 3.F and 3.G shall be dedicated through deed to a government agency, subjected to a conservation deed restriction filed with the appropriate County Clerk's office, or subject to an approved equivalent restriction that ensures the maintenance of that measure in perpetuity.

4. Guidance for nonstructural stormwater management measures is available in the New Jersey Stormwater Best Management Practices Manual. The manual is available on the Department's web page at http://www.njstormwater.org or www.njnonpointsource.org.

F. Erosion control, groundwater recharge and runoff quantity standards

1. This section 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) Except if (2) or (3) apply, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at Section 4, either:

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

         (b) Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the 2-year storm is infiltrated.

      (2) This groundwater recharge requirement does not apply to projects that qualify as "urban redevelopment".

      (3) The following types of stormwater shall not be recharged;

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

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

(4) The design engineer shall assess the hydraulic impact on the groundwater table and design the site so as to avoid adverse hydraulic impacts. Potential adverse hydraulic impacts include, but are not limited to, exacerbating a naturally or seasonally high water table so as to cause surficial ponding, flooding of basements, or interference with the proper operation of subsurface sewage disposal systems and other subsurface structures in the vicinity or downgradient of the groundwater recharge area.

c. In order to control stormwater runoff quantity impacts, the design engineer shall, use the assumptions and factors for stormwater runoff calculations at Section 4, complete one of the following:

(1) Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2, 10, and 100 year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;

(2) Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater leaving the site for the 2, 10, and 100 year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site. This analysis shall include the analysis of impacts of existing land uses and projected land uses assuming full development under existing zoning and land use ordinances in the drainage area; or

(3) Design stormwater management measures so that the post-construction peak runoff rates for the 2, 10 and 100 year storm events are 50, 75 and 80 percent, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed. The percentages shall not be applied to post-construction stormwater runoff into tidal flood hazard areas if the increased volume of stormwater runoff will not increase flood damages below the point of discharge;

2. Any application for a new agricultural development that meets the definition of major development at Section 12 shall be submitted to the appropriate Soil Conservation District for review and approval in accordance with the requirements of this section and any applicable Soil Conservation District guidelines for stormwater runoff quantity and erosion control.

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

Table 1: Water Quality Design Storm Distribution

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

2. For purposes of TSS reduction calculations, Table 2 below presents the presumed removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in Section 6. 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% TSS reduction for a site, the applicant shall utilize the following formula to calculate TSS reduction:

$$R = A + B - (A \times B)/100$$

Where
R = total TSS load removal from application of both BMPs, and
A = the TSS removal rate applicable to the first BMP
B = the TSS removal rate applicable to the second BMP

Table 2: TSS Removal Rates for BMPs	
Best Management Practice	**TSS %Removal Rate**
Bioretention Systems	90
Constructed Stormwater Wetland	90
Forested Buffers	70
Extended Detention Basin	40-60
Infiltration Structure	80
Manufactured Treatment Device	See N.J.A.C. 7:8-5.7(c)
Sand Filter	80
Vegetative Filter Strip	50
Wet Pond	50-90

4. If there is more than one onsite drainage area, the 80% TSS removal rate shall apply to each drainage area, unless the runoff from the subareas converge on site in which case the removal rate can be demonstrated through a calculation using a weighted average.

5. Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction nutrient 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 3.F and 3.G.

6. Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in Section 6.

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 direct discharge of stormwater to waters classified as FW1.

[This section reserved till after the adoption of the Stormwater Management Rule N.J.A.C 7:8.

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 HUC 14 drainage. 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, measured perpendicular to the waterway from the top of bank outwards or from the centerline of the waterway where the bank is not defined, consisting of existing vegetation or vegetation allowed to follow natural succession is provided.

(2) Encroachment within the designated special water resource protection area under subsection 8.Ga(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 Category One waterway. 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% TSS post construction removal rate;

(3) Temperature shall be addressed to ensure no impact on receiving waterway;

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

(5) A conceptual project design meeting shall be held with the appropriate Department staff and Soil Conservation District staff to identify necessary stabilization measures; and

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

d. This subsection 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 [adoption date of the ordinance], provided that the construction begins on or before [five years from adoption date of the ordinance].]

Section 4: Calculation of stormwater runoff

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

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

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

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

2. For the purpose of calculating runoff coefficients, there is a presumption that the pre-construction condition of a site or portion thereof is a wooded land use with good hydrologic condition. A runoff coefficient for an existing condition may be used on all or a portion of the site if the design engineer verifies that the hydrologic condition has existed on the site or portion of the site for at least five years without interruption prior to the time of calculation. 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 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 a design storm, the design engineer shall consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces separately to accurately compute the rates and volume of stormwater runoff from the site. To calculate the water quality storm, urban impervious area modifications as described in

the NRCS Technical Release-55, Urban Hydrology for Small Watersheds may be employed.

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

Section 5: Standards for Structural Stormwater Management Measures

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

1. Structural stormwater management measures shall be designed to take into account the existing site conditions, including, for example, wetlands; flood-prone areas; slopes; depth to seasonal high water table; soil type, permeability and texture; drainage area and drainage patterns; and the presence of solution-prone carbonate rocks (limestone).

2. Structural stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning. Trash racks shall be installed at the intake to the outlet structure as appropriate, and shall have parallel bars with one-inch (1") spacing between the bars to the elevation of the water quality design storm. For elevations higher than the water quality design storm, the parallel bars at the outlet structure shall be spaced no greater than one-third (1/3) the width of the diameter of the orifice or one-third (1/3) the width of the weir. In addition, the design of trash racks must comply with the requirements of Section 7.D.

3. Structural stormwater management measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant. Measures that are consistent with the relevant portions of the Residential Site Improvement Standards at N.J.A.C. 5:21-7.3, 7.4, and 7.5 shall be deemed to meet this requirement.

4. At the intake to the outlet from the stormwater management basin, the orifice size shall be a minimum of 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 7.

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 this subchapter.

C. Manufactured treatment devices may be used to meet the requirements of this subchapter,

provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology and certified by the Department.

Section 6: 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, 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, forested buffers, extended detention basins, infiltration structures, manufactured treatment devices, pervious paving, sand filters, vegetative filter strips, and wet ponds.

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

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

   1. The "Standards for Soil Erosion and Sediment Control in New Jersey" promulgated by the State Soil Conservation Committee and incorporated into N.J.A.C. 2:90. Copies of these standards may be obtained by contacting the State Soil Conservation Committee or any of the Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a) 4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey 08625; 609-292-5540;

   2. The Rutgers Cooperative Extension Service, 732-932-9306; and

   3. The Soil Conservation Districts listed in N.J.A.C. 2:90-1.3(a) 4. The location, address, and telephone number of each Soil Conservation District may be obtained from the State Soil Conservation Committee, P.O. Box 330, Trenton, New Jersey, 08625, 609-292-5540.

Section 7: 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 subchapter applies to any new stormwater management basin.

B. The provisions of this section are not intended to preempt municipal or county safety requirements for new or existing stormwater management basins. Municipal and county

stormwater management plans and ordinances may, pursuant to their authority, require existing stormwater management basins to be retrofitted to meet one or more of the safety standards in Section 7.D. 1 for trash racks, overflow grates, and escape provisions at outlet structures.

C. Operative date and compliance schedule

1. For purposes of this subchapter, a stormwater management basin is "existing" if construction of such basin commenced prior to (one year from the effective date of this ordinance), or if such basin was identified in a subdivision or site plan application that received final approval pursuant to the Municipal Land Use Law (N.J.S.A. 40:55D-1 et seq.) as of (one year from the effective date of this ordinance). Any other stormwater management basin is a "new" basin.

2. As of (one year from the effective date of this ordinance), the construction, installation, or operation of any new stormwater management basin that does not conform to the requirements of this subchapter is prohibited.

3. If an existing stormwater management basin does not conform to a municipal or county stormwater control ordinance adopted pursuant to N.J.A.C. 7:8-6.1(c), the person responsible for the stormwater management basin under such ordinance shall, within the time period specified in the ordinance, modify the basin to comply with the ordinance.

D. 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 subsection, 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 7.E., a free-standing outlet structure may be exempted from this requirement.

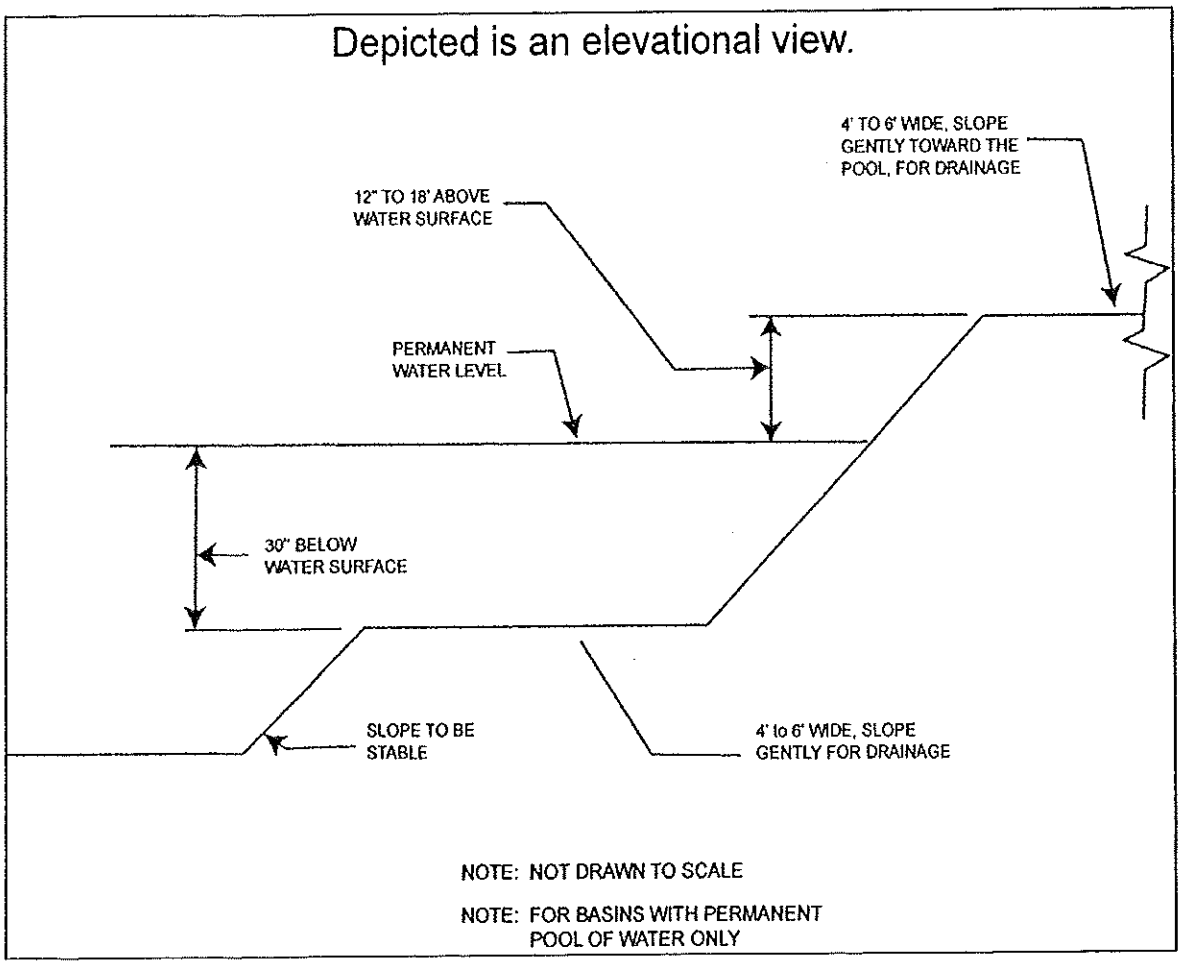
b. Safety ledges shall be constructed on the slopes of all new stormwater management basins having a permanent pool of water deeper than two and one-half feet. Such safety ledges shall be comprised of two steps. Each step shall be four to six feet in width. One step shall be located approximately two 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 7.F 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.

E. 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.

F. Illustration of safety ledges in a new stormwater management basin.



Section 8: 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 8.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 (specify number) copies of the materials listed in the checklist for site development stormwater plans in accordance with subsection 8.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 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 1 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 2-5 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 2 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 soil types present at the location of the control measure.

7. Maintenance and Repair Plan

The design and planning of the stormwater management facility shall meet the maintenance requirements of Section 9.

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 Sections 8.C.1 through 8.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 9: Maintenance and Repair

A. General Maintenance

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

2. The maintenance plan shall contain specific preventative maintenance tasks and schedules; cost estimates, including estimated cost of sediment, debris, or trash removal; and the name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement). Maintenance guidelines for stormwater management measures are available in the New Jersey Stormwater Best Management Practices Manual. If the maintenance plan identifies a person other than the developer (for example, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or 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 or tenant owns or leases the entire residential development or project.

4. If the person responsible for maintenance identified under Section A.2 above is not a public agency, the maintenance plan and any future revisions based on Section A.7 below shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

5. Preventative and corrective maintenance shall be performed as needed, 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 A.2 above shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

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

8. The person responsible for maintenance identified under Section A.2 above shall retain and make available, upon request by a public entity, the maintenance plan and the documentation required by Sections A.2, A.6, and A.7 above.

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

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

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, 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. If the responsible person fails or refuses to perform such maintenance and repair, the **municipality** or County may immediately proceed to do so and shall bill the cost thereof to the responsible person.

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

C. Penalties

Any responsible person who violates any portion or Section of this ordinance shall be subject to the following penalties: [Municipality to specify].

Section 10: Effective Date

This ordinance shall take effect upon adoption.

Section 11: Severability

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

Section 12: 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.

"Agricultural development" means land uses normally associated with the production of food, fiber and livestock for sale. Such uses do not include the development of land for the processing or sale of food and the manufacture of agriculturally related products.

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

"Compaction" means the increase in soil bulk density.

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

"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 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, for which permission is required under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq.

"Drainage area" means a geographic area within which water, sediments, and dissolved materials drain to a particular receiving waterbody or to a particular point along a receiving waterbody.

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

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

"Infiltration" is the process by which water that seeps into the soil from precipitation.

"Major development" means any "development" shown in any site plan or subdivision plan that has not received preliminary or final approval by [insert the effective date of this ordinance] that provides for ultimately disturbing one or more acres of land or increasing impervious surface by one-quarter acre or more. 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. Projects undertaken by any government agency which otherwise meet the definition of "major development" but which do not require approval under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq. are also considered "major development."

"Municipality" means any city, borough, town, township, or village.

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

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

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

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

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

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

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

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

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

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

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

"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 nonstormwater discharges into stormwater conveyances.

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

"Urban Coordinating Council Empowerment Neighborhood" means a neighborhood given priority access to state resources through the New Jersey Redevelopment Authority.

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

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

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

(4) Designated as Urban Coordinating Council Empowerment Neighborhoods.

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

"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.

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NEW YORK, NY

Memorandum

To: Bob Sandt, Borough of Hillsdale Clerk

From: Caroline Reiter, P.P., AICP

Date: June 20, 2008

Regarding: Master Plan Amendment

Attached are the following:

1. A proposed amendment to the Borough of Hillsdale Master Plan. The proposed amendment is dated June 2008 and amends the Utility Plan to include the Borough of Hillsdale Municipal Stormwater Management Plan.

2. A copy of a public notice regarding a Borough of Hillsdale Planning Board hearing scheduled for July 2, 2008 at 7:30 PM at the Hillsdale Municipal Building, 380 Hillsdale Avenue, Hillsdale, New Jersey to consider the June 2008 Master Plan amendment.

Please have these items available for members of the public to review.

Thank you.

PUBLIC NOTICE

BOROUGH OF HILLSDALE PLANNING BOARD

TAKE NOTICE that on the 2nd of July 2008 at 7:30 p.m., a hearing will be held before the Hillsdale Borough Planning Board at the Borough of Hillsdale Municipal Building, 380 Hillsdale Avenue, Hillsdale, New Jersey to consider an amendment to the Borough of Hillsdale Master Plan. The proposed amendment will amend the Utility Plan to include the Borough of Hillsdale Municipal Stormwater Management Plan.

In connection with this hearing, the following described maps and papers are on file in the office of the Municipal Clerk and Planning Board and are available for public inspection during regular business hours.

Master Plan Amendment, entitled, "Amendment to Utility Plan of Master Plan," dated June 2008, prepared by Caroline Z. Reiter, P.P., AICP, of Christopher P. Statile, P.A.

Any interested party may appear at this hearing and participate in accordance with the rules of the Planning Board.

BY ORDER OF THE HILLSDALE
PLANNING BOARD
Christie Wyssenski
Deputy Secretary to the Board