

TOWNSHIP OF MONTCLAIR

# STORMWATER MANAGEMENT PLAN

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## STORMWATER MANAGEMENT ELEMENT OF THE MASTER PLAN

APRIL 2005

The following amendment to the Master Plan has been adopted by the Planning Board of the Township of Montclair based on a Public Hearing held on April 11, 2005.

205 CLAREMONT AVENUE  
MONTCLAIR, NJ 07042

TOWNSHIP OF MONTCLAIR  
STORMWATER MANAGEMENT PLAN

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## INTRODUCTION

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This Municipal Stormwater Management Plan (the “Plan”) documents the strategy for the Township of Montclair (“the Township”) to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules.

The plan addresses groundwater recharge, stormwater quantity and 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 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 is not included in this plan, as there is a minimal amount of unimproved developable land in the Township. The plan addresses the review and update of existing ordinances, the Township 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..

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## GOALS

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The goals of this Plan are to:

- Prevent an increase in nonpoint pollution to the greatest extent feasible;
- maintain the integrity of stream channels for their biological functions, as well as for drainage;
- minimize pollutants in stormwater runoff from new and existing development
- reduce soil erosion from any development or construction project;
- minimize, to the extent practical, any increase in stormwater runoff from new development;
- reduce flood damage, including damage to life and property;

These goals are critical to the achievement of key objectives important to the overall goals of stormwater management:

- Restore, enhance, and maintain the chemical, physical, and biological integrity of the waters of the state,
- Protect public health,
- Safeguard fish and aquatic life and scenic and ecological values, and
- Enhance the domestic, municipal, recreational, industrial, and other uses of water; and
- Protect public safety through the proper design and operation of stormwater basins.
- maintain and improve existing and proposed culverts and bridges, and other in-stream structures so they are adequate to provide proper flows with minimal flooding or erosion;

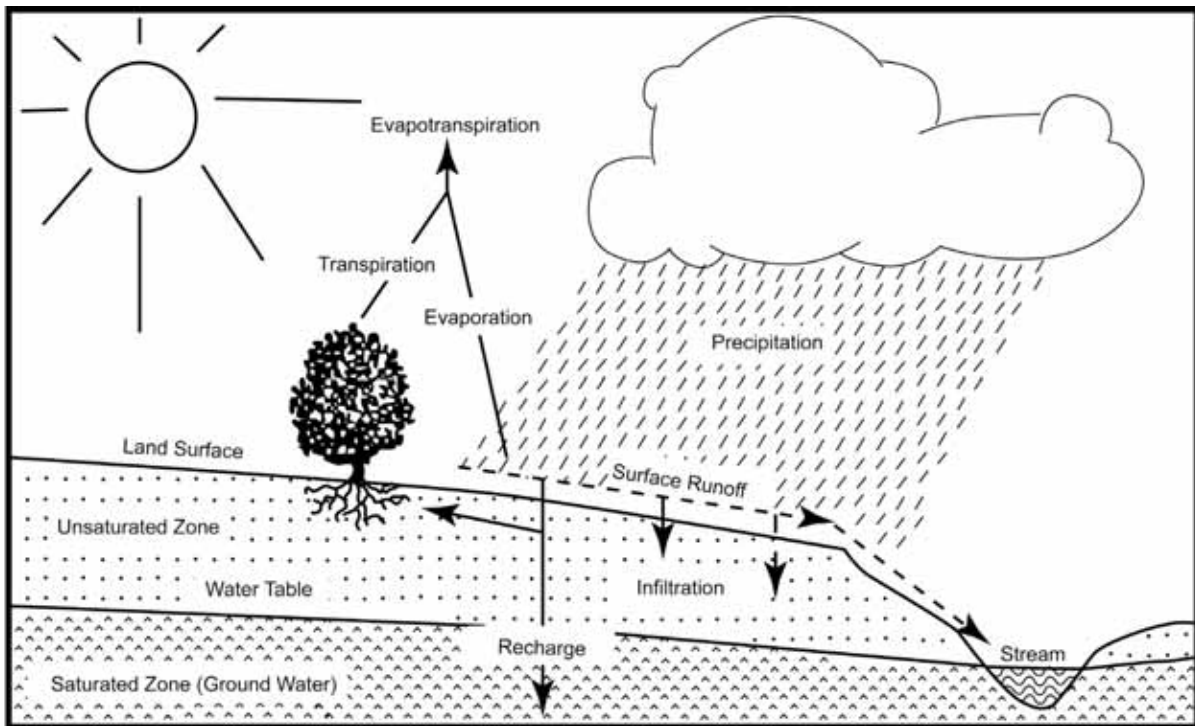
To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventative and corrective maintenance strategies are included in the plan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

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## OVERVIEW OF STORMWATER MANAGEMENT

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Land development can dramatically alter the hydrologic cycle (See Figure 1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation plays a key role in the cycle in one of two ways: directly intercepting precipitation and returning it to the atmosphere through evapotranspiration or allowing it to infiltrate the ground.



Source: New Jersey Geological Survey Report GSR-32

*Figure 1: Groundwater Recharge in the Hydrologic Cycle*

Development usually results in removal of beneficial vegetation, replacing it with lawn or impervious cover (e.g. buildings or pavement), thus reducing the site's evapo-transpiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil, diminishing its infiltration ability and causing an increase in the volume and rate of stormwater runoff from the site.

Impervious areas that are connected to each other through gutters, channels, and storm sewers 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 a waterway channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff

directly into a waterway. 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, threatening the survival of species that 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.

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## ABOUT MONTCLAIR

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### GENERAL INFORMATION

The Township of Montclair is located just 12 miles west of Manhattan in suburban Essex County. Figure 2 is an excerpt of the US Geological Survey (USGS) map (Orange Quadrangle) showing Montclair. The Township is just over 6 square miles and has approximately 39,000 residents (2000 census), an increase of 3.3% since 1990. Montclair is a well established primarily residential community, which traces its origins to the arrival of the first commuter railroad in the mid-nineteenth century. With a population density that is five times the New Jersey average, Montclair has virtually no unimproved developable land remaining<sup>1</sup>. Recent development activities have been focused on redevelopment in the downtown and contiguous areas and subdivisions of larger lots containing one single family home into two or three lots.

According to NJDEP 1995-1997 digital GIS data, approximately 75% of Montclair is residential and just over 10% commercial. There are five sizable commercial areas within the Township, the largest of which is the central business district along Bloomfield Avenue. Three of the four other areas are adjacent to train stations along the NJ Transit commuter rail line at Bellevue Avenue, Watchung Avenue and Walnut/Grove Streets. The fourth is Montclair South located along Orange Road at the intersection of Washington Avenue. Current land use is shown on Figure 3.

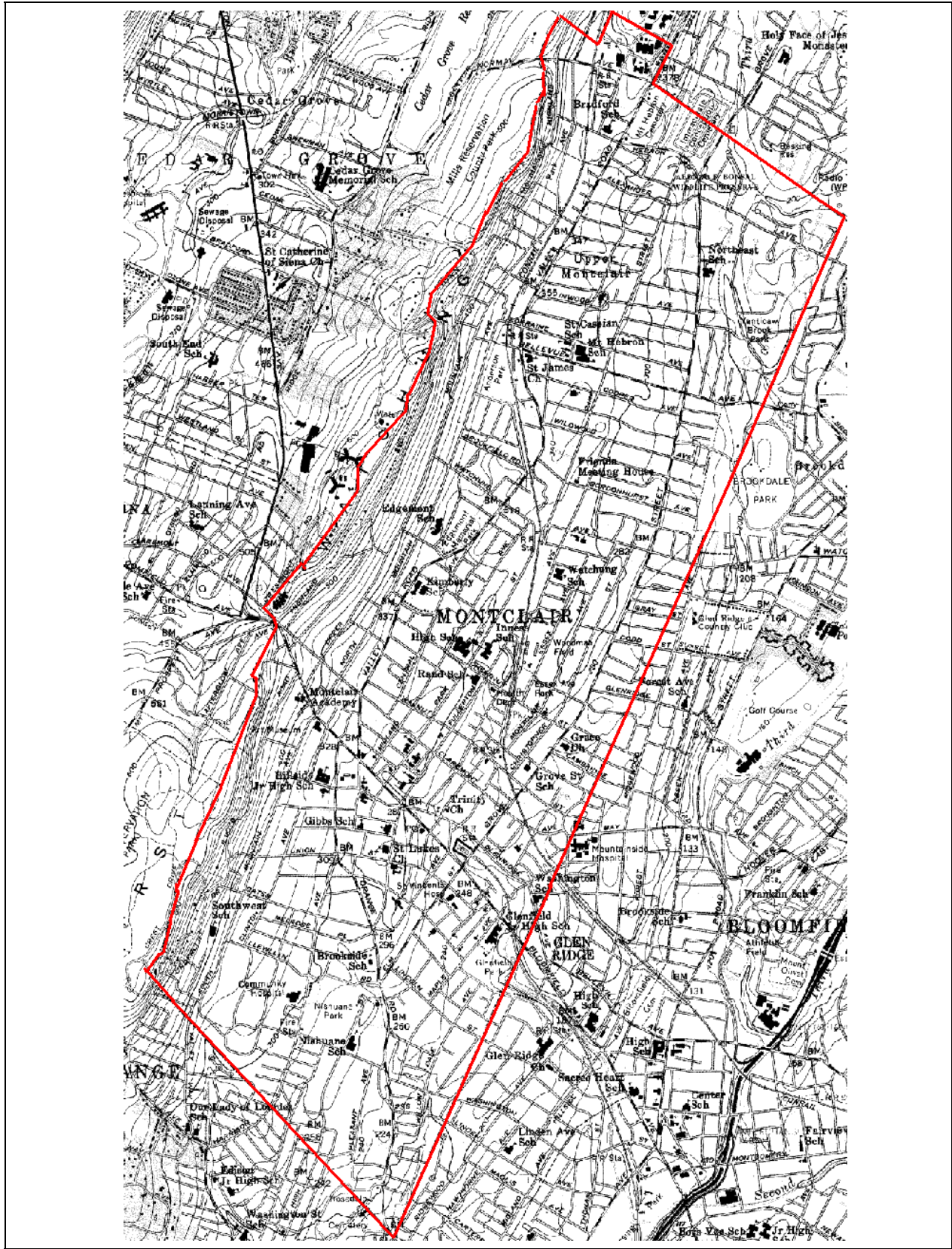
### GEOLOGY

Montclair is situated on lowlands and rolling hills abutting the ridge of First Watchung Mountain, which is located along the western boundary. At a mean elevation of 300 feet above sea level, the Township slopes downward from west to east, with steep slopes along much of the western border. The Master Plan addresses issues related to stormwater management and soil erosion prevention in these steep slope areas in a separate element, which is consistent with this Plan. Steep slope areas are shown on Figure 4.

There are two underlying bedrock formations, the first of which is the Passaic, which underlies most of the town. This formation is predominately brown, reddish-brown or gray mudstone, with varying thicknesses of siltstone and sandstone. The other formation is the Orange Mountain, which are the basalt flows that form the First Mountain. Overlying both these formations is unconsolidated clay, sand and gravel or glacial till. Geology of the Township is shown on Figure 5.

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<sup>1</sup> There are 173 parcels totaling 63.48 acres as of March 24, 2005 according to the Township of Montclair Tax Assessor's office.

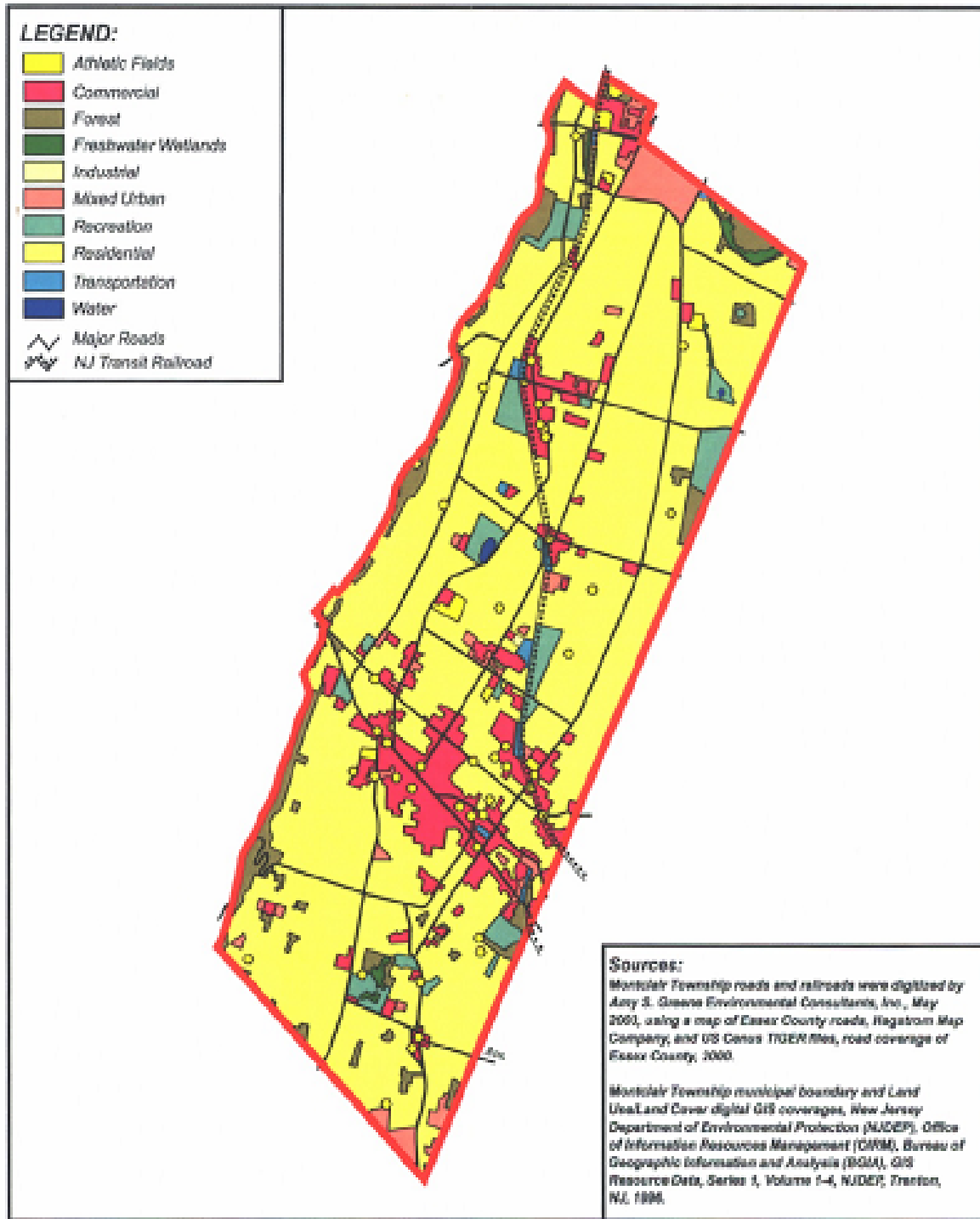


Source: USGS 7.5 Minute Topographic Series Map (Orange NJ Quadrangle)

Figure 2: Topographic Map of Montclair



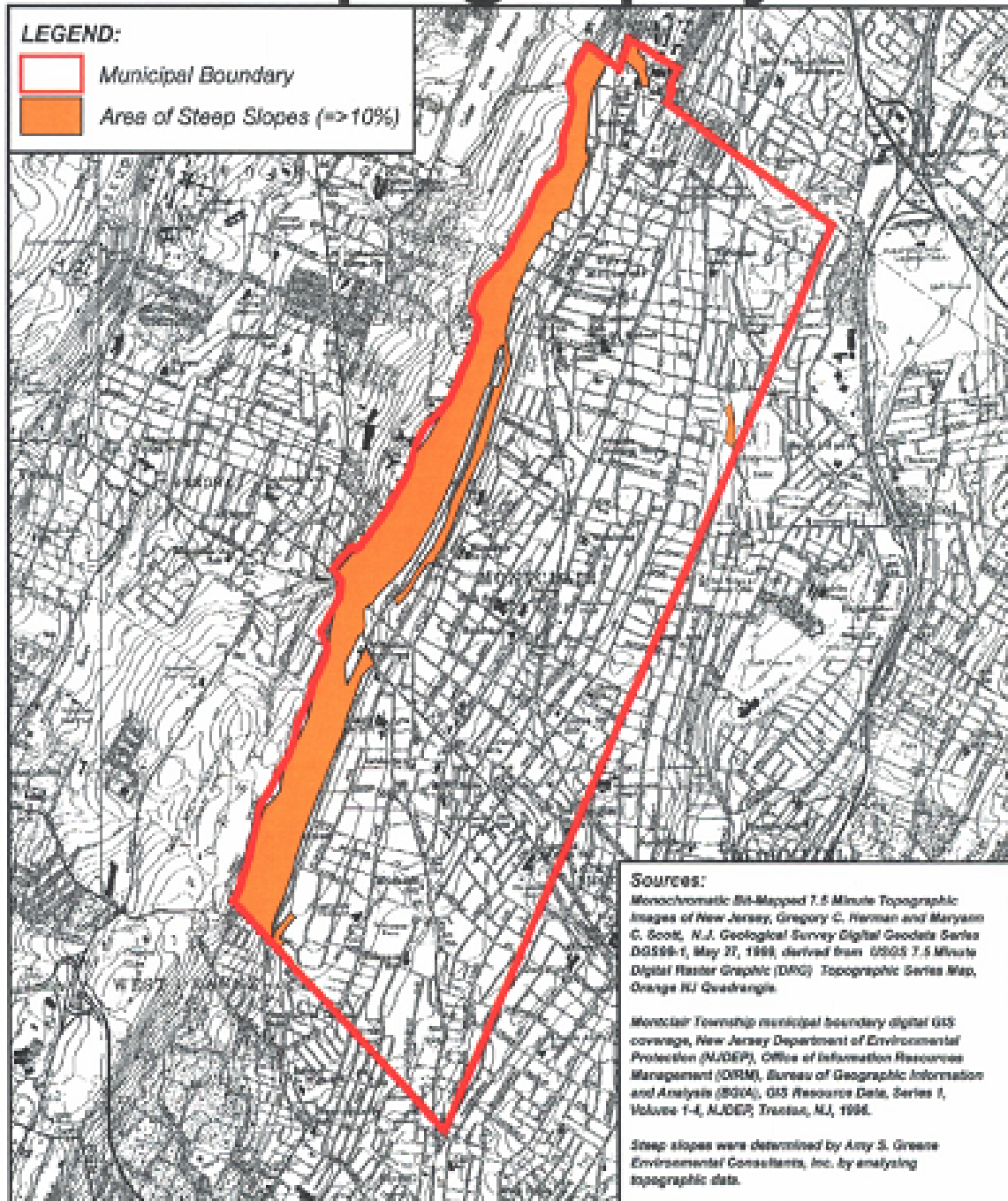
# Land Use/Cover



Source: Natural Resource Inventory for the Township of Montclair, July 2004

Figure 3: Land Use/Cover

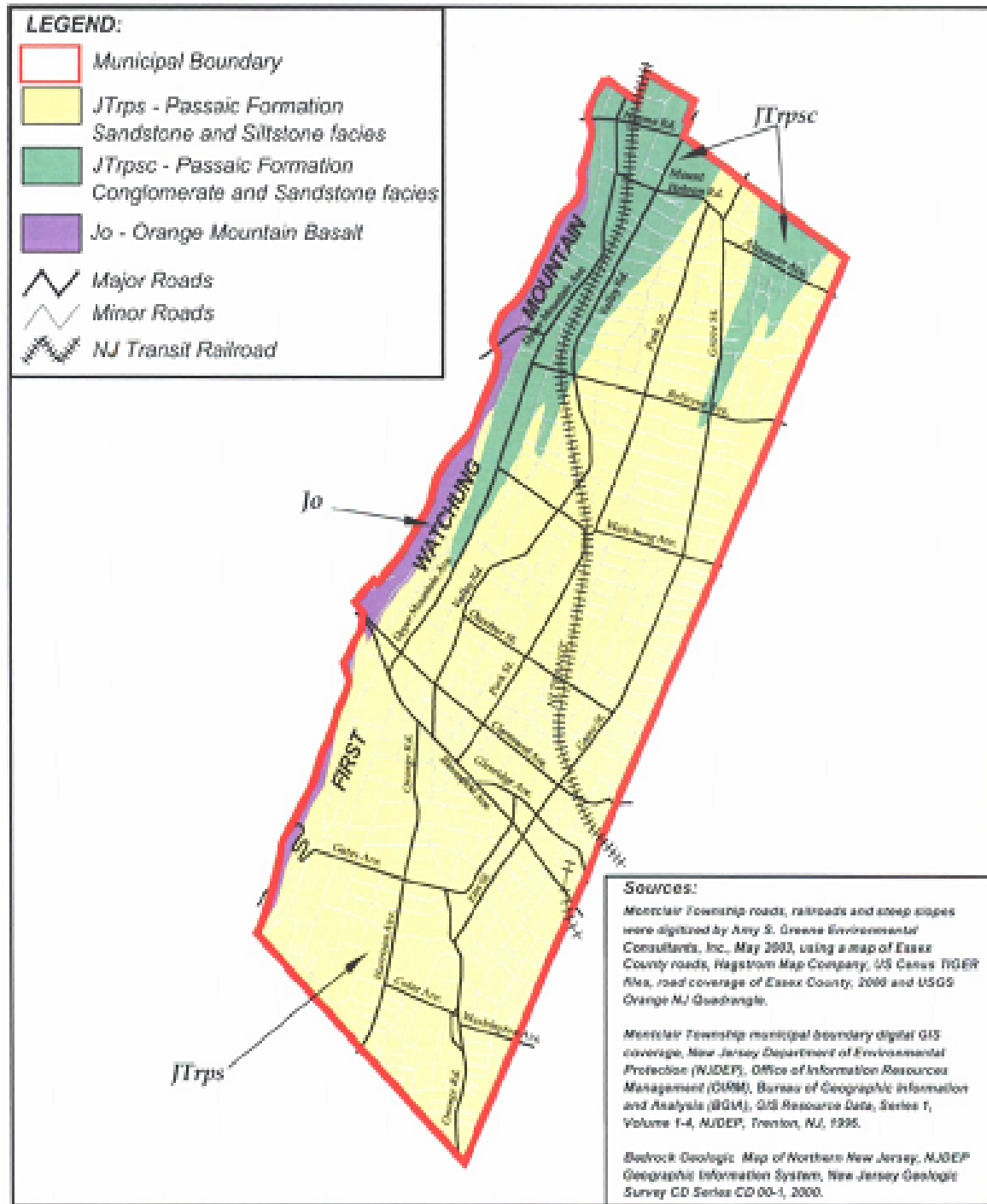
# Topography



Source: Natural Resource Inventory for the Township of Montclair, July 2004

Figure 4: Topography and Steep Slopes

# Geology



Source: USGS Natural Resource Inventory for the Township of Montclair, July 2004

Figure 5: Geology

There are groundwater aquifers associated with each of the bedrock formations underlying Montclair, each of which is capable of providing potable water supply. In 2004, it was reported 80% of Montclair's drinking water is supplied by the North Jersey District Water Supply Commission's reservoir system. The remainder is provided from three groundwater wells within the Township.

Wellhead Protection Areas are areas designated by NJ Department of Environmental Protection for special protection as public water supply wells. The Wellhead Protection Area is where a well draws its water from within certain time frames. These protection areas are based on a need to assess potential risk of contamination and to prioritize those that may pose a greater threat. Figure 6 shows locations of Montclair's public water supply wells and associated Wellhead Protection Area.

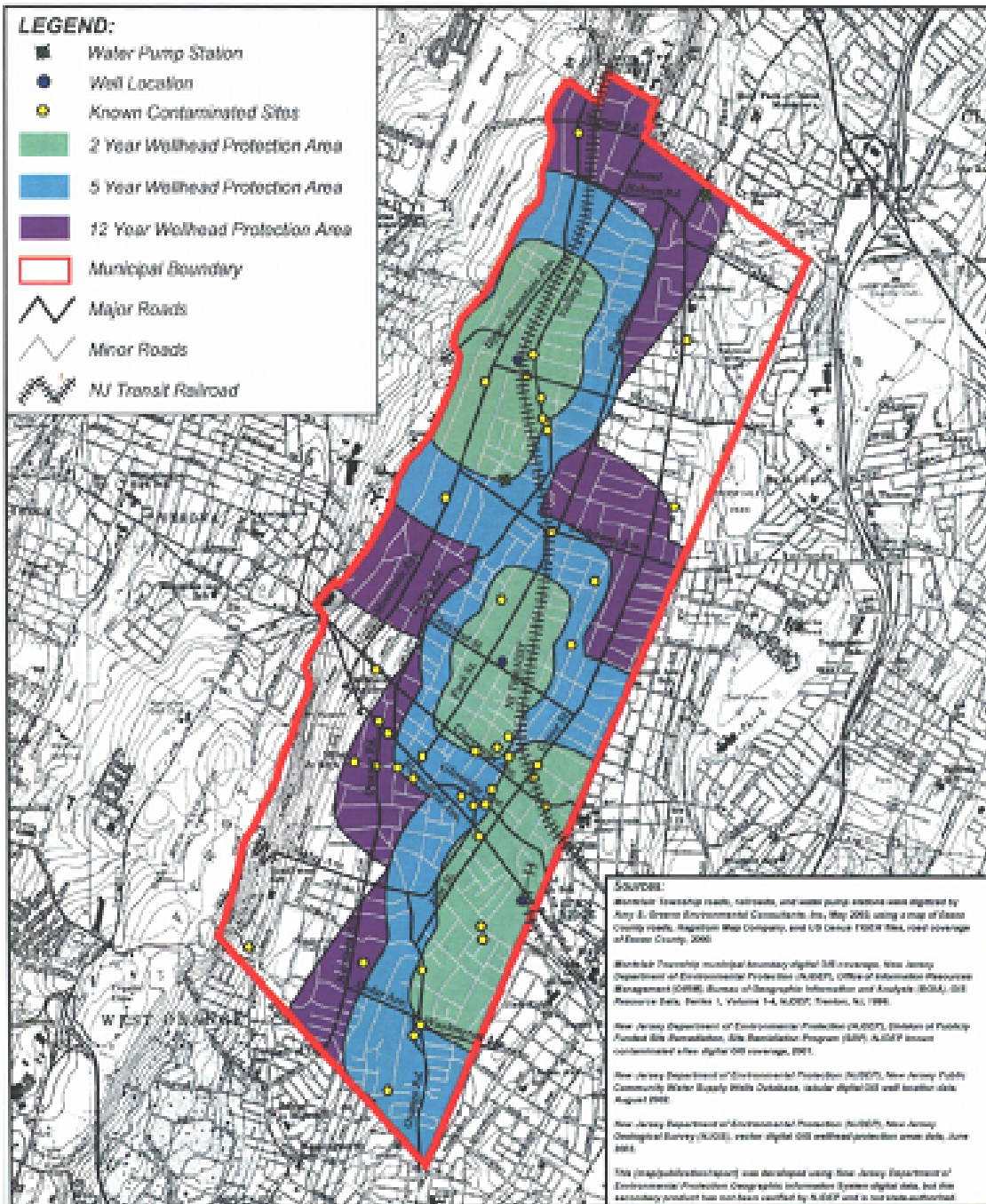
### **SURFACE WATER RESOURCES**

Montclair is within the drainage basin of the Passaic River, with several significant surface water features. There are several tributaries to the Second River (Toney's Brook, Nishuane Brook, and Crescent Brook), and two tributaries to the Third River (Yantacaw Brook and Pearl River). All of the surface water bodies that are located in Montclair are classified as "Freshwater – Nontrout", meaning they are not associated with trout production or trout maintenance. Locations of these features are shown on Figure 7.

The NJDEP Division of Watershed Management has designated several watershed management areas within the state of New Jersey. Montclair is located within the Lower Passaic Drainage Basin area, which is Watershed Management Area (WMA) 4. The USGS has also assigned "Hydrologic Unit Codes" (HUC) that are used to divide drainage basins into smaller study areas. Larger units are designated HUC-8, with HUC-11 and HUC-14 being smaller units within the HUC-8. There are three designated HUC-14 units in Montclair.

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics. There are no monitoring sites within the Township of Montclair.

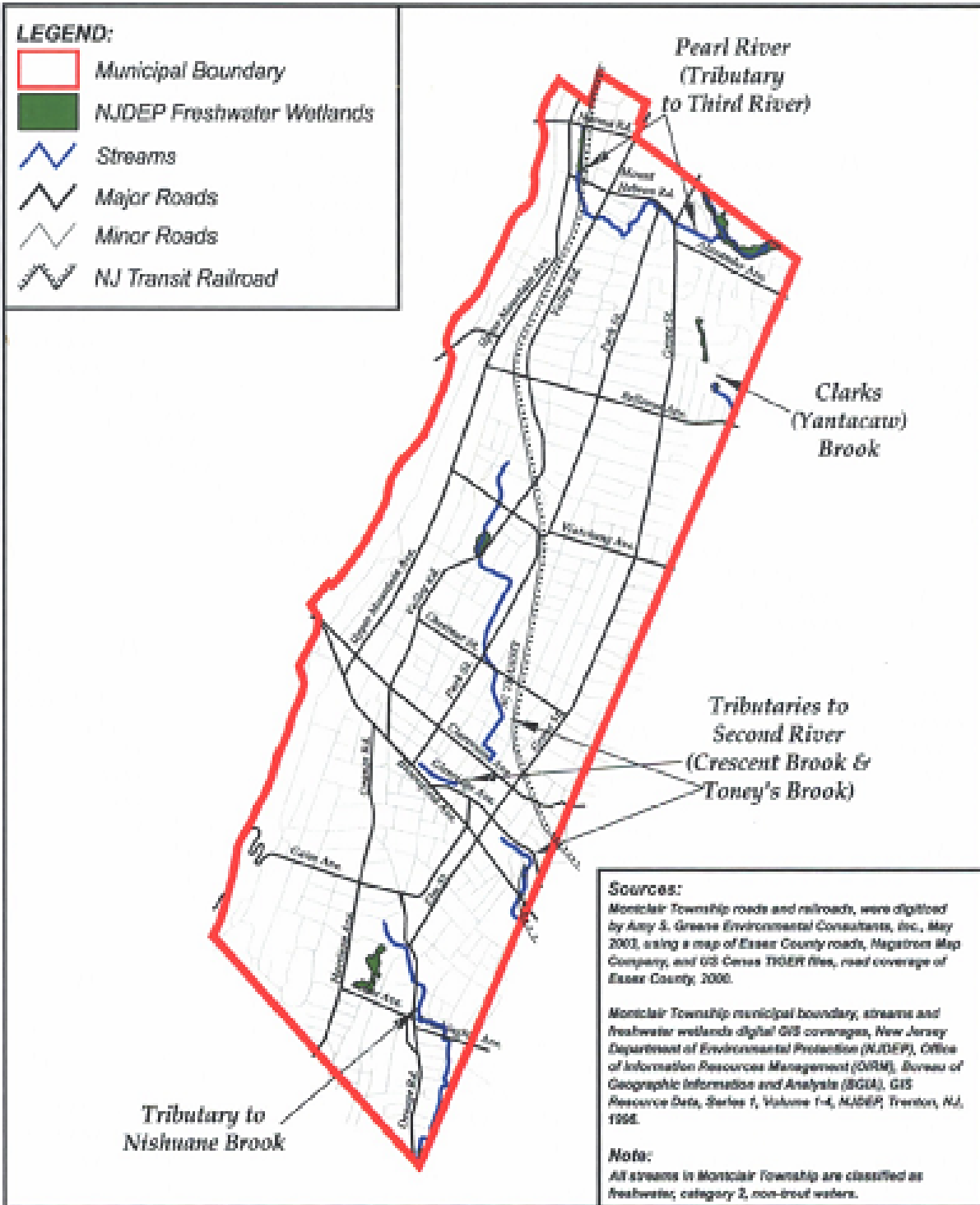
# Public Water Supply Wells, Known Contaminated Sites, and Wellhead Protection Areas



Source: USGS Natural Resource Inventory for the Township of Montclair, July 2004

Figure 6: Public Water Supply Wells

# Wetlands & Hydrology



Source: USGS Natural Resource Inventory for the Township of Montclair, July 2004

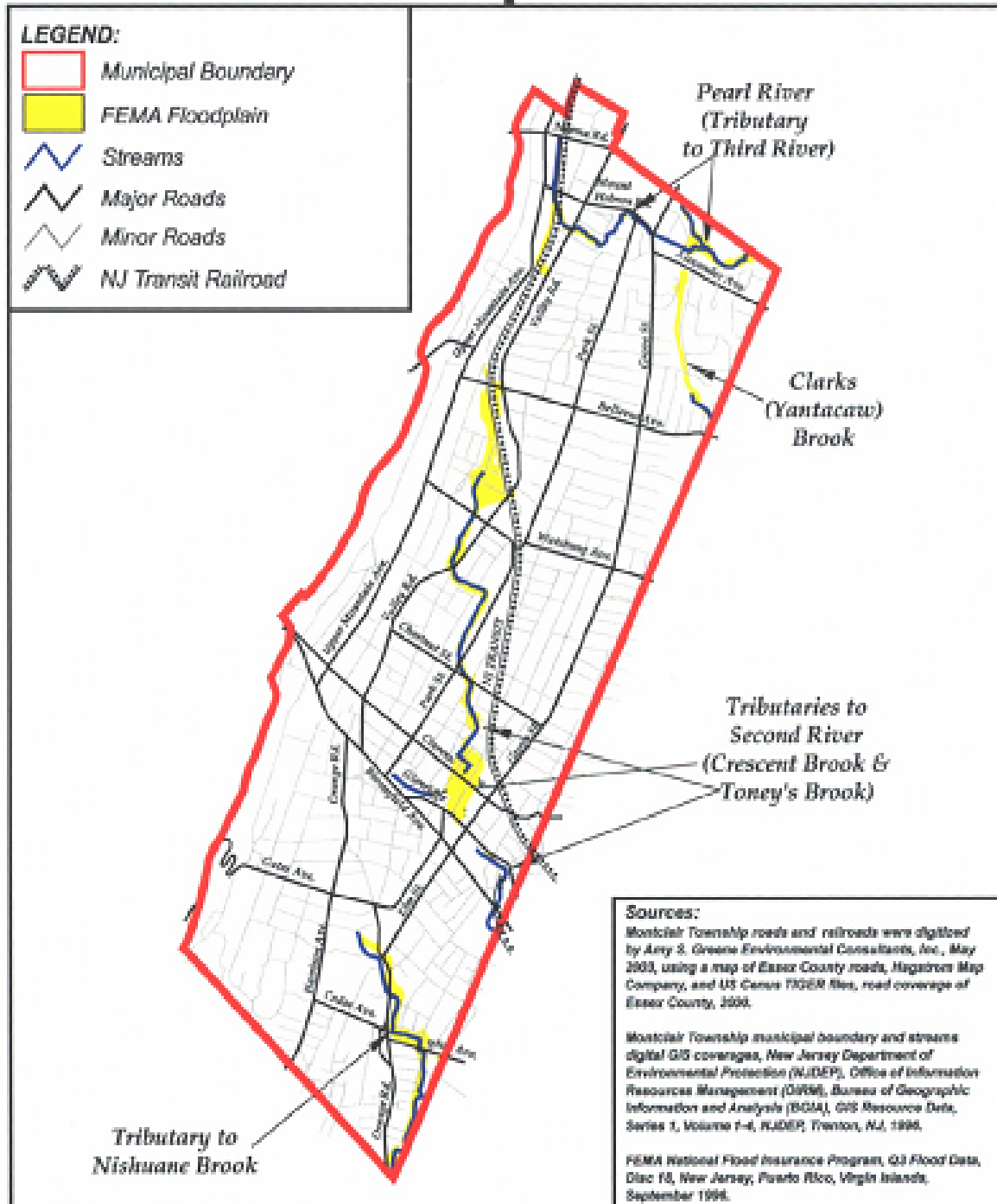
Figure 7: Wetlands and Hydrology

Like many other northern New Jersey communities, stormwater facilities were designed for conditions that existed fifty years ago or more, with few major improvements to accommodate the growth in intervening years. The cumulative effect of continuing development and redevelopment activities has been a steady increase in peak stream flows and localized flooding (in areas called floodplains) during major storms. A floodplain is defined as the area inundated by the regulatory flood including the watercourse that creates it. Figure 8 shows floodplains within Montclair.

In general, this localized flooding is primarily attributable to undersized road culverts, which combined with accumulated debris cause temporary dams. These conditions have resulted in stream bank and outfall erosion, decreased infiltration and diminished groundwater recharge.

Another contributing factor in localized flooding is the nature of the stormwater system itself. The Township's storm sewer system encompasses approximately 2,500 roadway inlets and 42 miles of sewer pipes, which outlet to a combination of natural streams and stabilized (man-made) waterways all leading to neighboring towns and eventually the Passaic River. These streams and stabilized waterways run through backyards and Municipal parks. A continuing issue has been the dumping of debris into these unprotected streams as they pass through private property throughout the Township.

# Floodplains



Source: Natural Resource Inventory for the Township of Montclair, July 2004

Figure 8: Floodplains



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## **DESIGN AND PERFORMANCE STANDARDS**

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The Township of Montclair will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. The design and performance standards include the language for maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins. The ordinances will be submitted to the county for review and approval within two years of the effective date of permit authorization (April 5, 2004).

During construction, the designated inspector, either the duly appointed Board Engineer or Township staff, will observe construction of the project on behalf of the Township of Montclair to ensure that the stormwater management measures are constructed as designed and according to the approved plans.

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## PLAN CONSISTENCY

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The Township of Montclair is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Township. Accordingly, this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) or any TMDLs. If any RSWMPs or TMDLs are developed in the future, this Plan will be updated to be consistent.

This Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. The municipality will utilize the most current update of the RSIS in the stormwater management review of residential areas. This Plan will be updated to be consistent with any future revisions to the RSIS. The Township'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, the designated inspector, either the duly appointed Board Engineer or Township staff, will observe on-site soil erosion and sediment control measures and report any inconsistencies to the local Soil Conservation District.

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## NONSTRUCTURAL STORMWATER MANAGEMENT STRATEGIES

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The Township has reviewed the Master Plan and Ordinances and a list of the sections in the Land Use and Zoning Ordinances that can be modified to include nonstructural stormwater management strategies follows. Once the Ordinance changes have been completed, they will be submitted to the County reviewing agency for review and approval within 24 months of the effective date of permit authorization (April 4, 2004).

### PROPOSED ORDINANCE CHANGES

The following ordinance changes should be enacted as part of the stormwater management plan:

1. Adopt maximum impervious surface standards for all zones

Under the current Zoning ordinance, maximum impervious area is specified for the OR-3 Garden Apartment and Office Building (70%); OR-3 Three-Story Apartment and Office Building (70%); and N-C Neighborhood Commercial Zones (80%). It is recommended the following changes be adopted for the remaining zones:

40% Maximum impervious surface:

- R-O Mountainside Zone
- R-O(a) One-Family Zone

50% Maximum impervious surface:

- R-1 One-Family Zone
- R-2 Two-Family Zone

70% Maximum impervious surface:

- R-3 Garden Group Zone
- R-4 Three-Story Apartment Zone

80% Maximum impervious surface:

- UR Urban Renewal Zone

2. Modify Article XVII, Off-Street Parking and Loading, Section 347-102. Design of parking spaces and access.

Under the current Zoning ordinance, Parking areas and spaces are required to be paved with a hardsurface paving. An exception is allowed for single- and two-family dwellings, which may have gravel driveways. It is recommended that this section be revised to allow for permeable or porous pavement in all zones. It is further recommended that the exception permitting use of gravel be

rescinded. Gravel washes into the roadway and catch basins, obstructing flow and contributing to localized flooding.

3. Adopt a Tree Preservation Ordinance

The Township of Montclair has no ordinance that restricts the removal of deciduous trees, except in areas of steep slopes. This ordinance would provide the Township a means to control and regulate the indiscriminate or excessive removal, large-scale, clear-cutting and destruction of trees and to control, regulate and prevent conditions which cause an increase in stormwater run-off, sedimentation, soil erosion, loss of wildlife habitat, air or noise pollution or inhibit aquifer recharge or impair the ambiance or physical appearance of the Township.

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**LAND USE/BUILD-OUT ANALYSIS**

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The Township of Montclair has 63.48 acres of vacant or agricultural land as of March 24, 2005 based on information provided by the Township of Montclair Tax Assessor. Of this amount, only 39.31 acres are composed of buildable lots, requiring no variances for construction under current zoning ordinances. Some of these properties may be further restricted due to stream buffers and other environmental concerns. This is far less than the one square mile, which would require a build-out analysis.

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## MITIGATION PLANS

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This mitigation plan is provided for use associated with a proposed development that is granted a variance or exemption from the stormwater management design and performance standards. Following is a hierarchy of options, listed in order of most desirable to least desirable.

### MITIGATION PROJECT CRITERIA

1. The mitigation project must be implemented in the same drainage area as the proposed development.
2. The project must provide additional groundwater recharge benefits or protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Stormwater Management Plan.
3. 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.

### PROPOSED MITIGATION PROJECTS

The applicant can select one or more projects from the categories listed below to compensate for the deficit from the performance standards resulting from the proposed project. More detailed information on the projects can be obtained from the Township Engineer.

1. Groundwater recharge
  - Install infiltration basins
  - Replace deteriorated pavement at select locations with permeable pavement
2. Water quality
  - Install stream bank erosion controls at select locations
3. Water Quantity
  - Stream cleaning and debris removal at select locations along Toney's and Nishuane Brook to maintain normal flow.

If a suitable mitigation site cannot be located in the same drainage area as the proposed development, the Township may allow a developer to provide funding or partial funding to the municipality for an environmental enhancement project that has been identified in the Stormwater Management Plan. The funding must be equal to or greater than the cost to implement the mitigation outlined above, including any costs associated with the long-term maintenance requirements of the mitigation measure.