# TOWNSHIP OF EASTAMPTON

# MUNICIPAL STORMWATER MANAGEMENT PLAN

***PREPARED FOR:***

**TOWNSHIP OF EASTAMPTON**
12 Manor House Court
Eastampton, New Jersey 08060

**NJPES #NJG 0149667**
**PI ID # 190531**
Burlington County

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## 1.0 Introduction

In 1972, Congress amended the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) to prohibit the discharge of any pollutant to waters of the United States from a point source unless the discharge is authorized by a New Jersey Pollutant Discharge Elimination System (NJPDES) permit. This act established the goal of making our nation's waters suitable for: the propagation of fish, aquatic and wildlife; recreational purposes; and the use of these waters for the public water supply, agricultural, industrial and other purposes. The act recognized the damaging effects that unmanaged stormwater can have on these national goals.

In 1987, Congress amended the Clean Water Act to require implementation, in two phases, of a comprehensive national program for addressing storm water discharges. The first phase of the program, commonly referred to as "Phase I" was promulgated on November 16, 1990 and required permits for stormwater discharges from priority sources including municipal separate storm sewer systems generally serving populations of 100,000 or more and several categories of industrial activity, including construction sites that disturbed five or more acres of land.

The second phase of the program, commonly referred to as "Phase II" was promulgated by the Federal government on December 8, 1999 and became effective on February 7, 2000. "Phase II" expanded the program to include discharges from smaller municipalities in urbanized areas and from construction sites that disturbed between one and five acres of land. The federal regulation required the implementation of six minimum measures and best management practices.

As a result of the U.S Environmental Protection Agency Phase II rules, the State of New Jersey Department of Environmental Protection developed the Municipal Stormwater Regulation program. The program addresses pollutants entering waters from storm drain systems owned or operated by local, county, state, interstate or federal agencies. The regulations refer to the storm systems as Municipal Separate Storm Sewer Systems (MS4s). New Jersey Pollutant Discharge Elimination System (NJPDES) permits have been issued to municipalities throughout the state as well as to public complexes and highway agencies. The Municipal Stormwater Regulation Program is being implemented through four types of NJPDES Permits, a Tier A Permit, a Tier B Permit, a Public Complex Permit and a Highway Permit.

## 2.0 Tier A NJPDES Requirements

The Township of Eastampton is considered a Tier A municipality under the New Jersey Pollution Discharge Elimination System (NJPDES). The regulations for the NJPDES Tier A Permits were issued on February 2, 2004 and became effective March 3, 2004. The Township of Eastampton was required to submit a Request for Authorization, known as an RFA on March 31, 2004 and the permit authorizations were dated April 1, 2004. April 1, 2004 is known as the effective date of the permit authorization or the EDPA date.

Under Section E.2 of the Tier A NJPDES Permit, the Township of Eastampton is required to prepare and implement a written stormwater pollution prevention plan within 12 months of the effective date of the permit authorization, or by April 1, 2005. The municipal stormwater pollution prevention plan is abbreviated as the SPPP. The basic SPPP consists of seventeen forms to be completed and implemented by the team members of the pollution prevention team. Maps of the municipality are required to plan the implementation of the pollution prevention plan. The pollution prevention plan for Eastampton was completed by April 1, 2005 and a signed and certified copy of the plan will be kept on file within the municipality for inspection by NJDEP and the public. The pollution prevention plan forms, maps and lists are a "living document" that will change during the year and will track how the pollution prevention plan is being implemented by the municipality.

Under Section F.3.b.ii of the Tier A NJPDES Permit, the Township of Eastampton is required to adopt a municipal stormwater management plan in accordance with NJAC 7:8-4 within 12 months of the effective date of the permit authorization, or by April 1, 2005. The municipal stormwater management plan is abbreviated as the MSWMP.

Under Section F.5 of the Tier A NJPDES Permit and as part of the municipal stormwater pollution prevention plan, the Township of Eastampton must adopt the improper disposal of waste ordinances to prevent pollution from entering the inlets and streams within the municipality by October 1, 2006. The Township Code sections revised in Ordinance No. 2005-11adopted March 28, 2005 include Chapter 60 Littering, §67-5 Wildlife Feeding, §84-5 Yard Waste, §84-6 Pet Waste, §126-15 Illicit Connection, and §126-16 Improper Disposal of Waste.

Under Section H.3.a of the Tier A NJPDES Permit, the Township of Eastampton is required to file an Annual Report and Certification to the New Jersey Department of Environmental Protection on or before May 2, 2005 and every 12 months thereafter. The Annual Report and Certification shall be maintained by the municipality for a period of five years. The Annual Report and Certification is the only report required to be sent to NJDEP.

Under Section F.3.b.iii of the Tier A NJPDES Permit, municipalities are required to adopt ordinances to implement the municipal stormwater management plan 12 months after the adoption of the municipal stormwater plan. In effect, municipalities have 24 months from the effective date of the permit authorization, or by April 1, 2006 to implement ordinances that set forth exact stormwater management design standards for development and redevelopment.

The municipal plan is required to conform to the regional stormwater management plan and must be reviewed and approved by the County review agency and NJDEP. In the Township of Eastampton, the municipal stormwater management plan and ordinances must be reviewed and approved by Burlington County and must conform to the Rancocas Creek Management Plan.

Subchapter 4 of NJAC 7:8 sets forth the specific requirements of a Municipal Stormwater Management Plan. The municipal stormwater management plan, NJAC 7:8-4.2(c)8 and 9 requiring evaluation of the municipalities entire master plan, official map and development regulations, zoning ordinances, projected land use assuming full development, and future non-point source pollutant load assuming full build are required for municipalities with more than one square mile of vacant or agricultural land within the municipality. Eastampton Township has less than one square mile remaining for development and is therefore exempt from this requirement per NJAC 7:8-4.2(c)10. The required documentation is provided later in this MSWMP.

Subchapter 5 of NJAC 7:8 sets forth the groundwater recharge, water quantity, and water quality standards (reduction of total suspended solids). If any exceptions are required from the design and performance standards for development projects submitted to the Land Use Planning Board, the stormwater management plan identifies mitigation options to offset the exceptions. The Township of Eastampton has unique characteristics and the mitigation plan provides the municipality with the power to correct and repair deficiencies that may be creating water quality impairments within various lakes and stream reaches within the Township.

## 3.0 Overview of Township of Eastampton Stormwater Management Plan

An aerial view of the Township, which illustrates the major waterways, is provided in the Appendix, **MAP 1 – Existing Conditions**. This Municipal Stormwater Management Plan documents the Township's strategy to manage the impact of stormwater and do its part to advance this goal for the region and state. Specifically, it addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating design and performance standards for new development that disturb one or more acre of land. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities by stressing best management practices.

The Township of Eastampton Stormwater Management Plan is prepared to reflect advances in stormwater management practices and new regulations, stemming from the Clean Water Act, as reflected in the State of New Jersey's Municipal Stormwater Regulations (N.J.A.C. 7:14A-25). It contains all of the required elements described in the Stormwater Management Rules, N.J.A.C. 7:8 Subchapter 4. The plan also addresses the review and update of existing ordinances, and other planning documents to allow for project designs that include non-structural strategies and low impact development techniques.

The final component of this plan is a mitigation strategy to be used when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, stormwater management measures within Eastampton Township are identified as alternative projects if a development cannot meet the stormwater design standards. Exemptions and mitigation projects are recommended to eliminate the proliferation of small detention basins.

This plan has been prepared in conformance with the "Rancocas Creek Watershed Management Plan" prepared by the Burlington County Department of Resource Conservation dated March 2003.

### 3.1 Previous Stormwater Management Planning

Notwithstanding the requirements of federal and state regulations, Eastampton has articulated a vision for its future that emphasizes a healthy and rewarding quality of life within a comfortable and attractive setting for its residents. Accordingly, Eastampton Township's Master Plan has incorporated a stormwater management plan since 1989. One of the central features of the 1989 Stormwater Management Plan, reflected in the development regulations codified under Chapter 88 of the Eastampton Township Municipal Code through Ordinance 1989-6, is the requirement that regional stormwater management facilities be constructed along the North Branch of the Rancocas Creek and Barkers Brook to provide additional floodplain capacity for flows which enter these waters.

Much of the development that was anticipated at the time of the 1989 plan adoption has not been realized because of Eastampton Township's aggressive open space and farmland preservation strategies. Nearly 1,000 acres or 27% of Eastampton Township's land area has been preserved since 1999 through a combination of strategies. Therefore, the prospects of utilizing revenue from anticipated future growth to finance regional stormwater management facilities, the traditional methodology and rational behind extensive capital improvement programs, is no longer a realistic or required element for long term stormwater management planning in Eastampton.

Another unique feature of the 1989 plan and related regulations is the prohibition of on site detention basins for storm water management, which the Township views as generally unsightly and an inappropriate feature in particular settings. The 1989 policies call for the use of subsurface infiltration systems, vegetation barriers, lakes and ponds where feasible, which have been successfully employed in a number of cases and contribute to the Township's community design goals.

In order to preserve the goals of the 1989 Stormwater Management Plan within the limitations of the requirements set forth in NJAC 7:8, the use of mitigation projects is encouraged where it would eliminate the proliferation of small visible detention facilities. The proposed stormwater management plan calls for enhancing and strengthening the buffer areas along the Rancocas Creek and Barkers Brook as an alternative to the regional facilities as a means of mitigating existing runoff. Powell Run has buffer requirements that will be maintained.

## 4.0 Stormwater Management Plan Goals

The goals of the MSWMP are to:

- Reduce flood damage, including damage to life and property.
- Minimize, to the greatest extent feasible, any increase in stormwater runoff from any new development.
- Reduce soil erosion from any development or construction project and consequent silting from total suspended solids.
- Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures.
- Improve base flow to streams by maintaining groundwater recharge through site design practices that allow stream base flows to approximate pre-development conditions.
- Prevent, to the greatest extent feasible, an increase in nonpoint pollution.
- 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.
- Protect public safety through the proper design and operation of stormwater basins.
- Identify methods to equitably distribute water supplies while encouraging water conservation and re-use.
- Develop regional distribution systems for water re-use.
- Address the concerns and challenges outlined in a report entitled “Clean and Plentiful Water” A Management Plan for the Rancocas Creek Watershed: March 2003” and utilize the proposed implementation strategies to the greatest extent possible.

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.

## 5.0 Stormwater Discussion

Land development can dramatically alter the hydrologic cycle (See Figure 1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration.

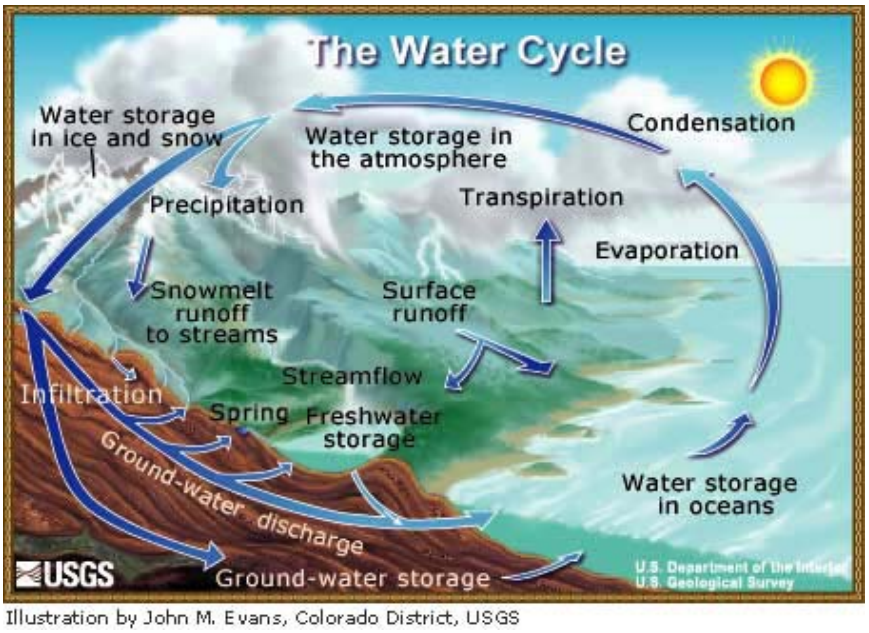


Illustration by John M. Evans, Colorado District, USGS

Figure 1. Hydrologic Cycle

Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new drainage conditions and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Downstream erosion, sediment deposits can be seen in Photograph 1.

Photograph 1. Downstream Erosion and Sediment Deposits

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.

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.

Groundwater recharge and well head protection areas are shown in the Appendix, on **Map 2, Groundwater Recharge and Wellhead Protection Areas** (WPAs). It is important to note that there are no WPA within Eastampton Township whch is why none are shown on **Map 2**. Soil types, which correspond to the recharge areas, are shown in the Appendix, on **Map 3, Soil Types.**

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 the stream biology. 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.

## 6.0 Rancocas Creek Watershed Management Plan

The NJDEP funded the Rancocas Watershed Management Plan through a grant with Burlington County. The Rancocas Creek Watershed Management Plan was finalized in March of 2003 by the Burlington County Department of Resource Conservation. The plan is the result of an effort from 1998 to 2003 by the New Jersey Department of Environmental Protection, the Public Advisory Committee (PAC), Omni Environmental, Burlington County Office of Land Use and six public subcommittees.

The Rancocas Creek Watershed Management Plan is a 29 page written summary report with a computer CD containing the Appendices. The Characterization and Assessment Report of the watershed is a Microsoft Power Point presentation contained on the CD. The assessment report is based on a water quality approach from a chemical standpoint. The assessment reviews the NJDEP data and status of water quality for oxygen, phosphorous, nitrogen, fecal coliform, total dissolved solids and pH.

The Rancocas Creek Watershed Management Plan recommends that municipal ordinances should be enacted for commercial and industrial sites to require stormwater inserts to remove floatables, oils and other pollutants as well as long term maintenance insured by escrow accounts. The plan recommends strengthening buffer protection ordinances. A separate report by the Burlington County Soil Conservation District compiling a prioritized list of “Action Now” projects for bank restoration and repair is referenced.

## 7.0 Eastampton Township Background

### 7.1 Population and Land Use

The Township of Eastampton encompasses a 5.86 square mile area of Burlington County, New Jersey. In recent years the Township has been under significant development pressure, as indicated by the number of new construction permits issued since 1991 (see Table 1). The population of the Township has increased from 3,814 in 1980 to 4,962 in 1990 to 6,202 in 2000. The resulting development has likely increased stormwater runoff volumes and pollutant loads to the waterways of the municipality.

**Table 1 - New Residential Building Permits**

| Year | Units |
|---|---|
| 1991 | 62 |
| 1992 | 56 |
| 1993 | 47 |
| 1994 | 2 |
| 1995 | 5 |
| 1996 | 49 |
| 1997 | 5 |
| 1998 | 19 |
| 1999 | 5 |
| 2000 | 101 |
| 2001 | 13 |

Eastampton Township has embraced the principles of smart growth planning. Eastampton has developed a comprehensive system of open spaces that form a greenbelt around the developed core of the community through numerous grants from the New Jersey Department of Environmental Protection's Green Acres Program, Burlington County's Open Space and Farmland Preservation Program and a local open space tax of 18 cents per $100 of assessed value. The majority of development activity will be concentrated in the Township's centrally located redevelopment area.

## 7.2 Description of Watershed[1]

The Township of Eastampton drains to two separate watersheds, the Rancocas Creek and the Assiscunk Creek. The North Branch of the Rancocas Creek Watershed runs through the southern portion of the Township and is the primary sub-watershed for Eastampton Township. The Rancocas Creek is located within Watershed Management Area 19. A smaller area in the northern section of Eastampton drains into Barkers Brook, which is a tributary of the Assiscunk Creek Watershed. The Assiscunk Creek is located in the southwestern corner of Watershed Management Area 20, for the Assiscunk, Crosswicks and Doctors Creeks. Watershed Management Areas 19 and 20 are two of the twenty major watersheds in the State of New Jersey shown in the Appendix on **Map 4, New Jersey's Watershed, Watershed Management Areas and Water Regions**.

The United States Geologic Survey (USGS) uses a 14 digit Hydrologic Unit Code (HUC 14) to delineate and name each sub-watershed with each major watershed area. There are three separate sub-watershed drainage delineations within the Township of Eastampton as shown in the Appendix on **Map 5, HUC-14 Delineation on USGS Quadrangle Map.**

The North Branch of the Rancocas Creek starts in Ocean County and flows westerly. The watershed contains 143 square miles from its point of origin in Ocean County to the municipal boundary between Mount Holly and Eastampton Township. The Rancocas Creek discharges into the Delaware River, approximately 10 miles downstream from Eastampton, and encompasses a total of 346 square miles of watershed at that point. Approximately 65 percent (3.68 square miles) of the Eastampton Township land area lies within the watershed of the North Branch of the Rancocas Creek.

There are three smaller brooks and streams that empty into the Rancocas Creek. The first, unnamed, starts at the entrance of Cliver Park off of Woodcrest Drive in the Eastampton Farms development and runs south-westerly, crosses beneath Powell Road, and empties into the Rancocas Creek at the south-western corner of the Township near the Mount Holly border. This unnamed tributary which begins in Cliver park is located in Hydrologic Unit Code 02040202040050, the North Branch of the Rancocas Creek below Smithville.

[1] Portions of this description were originally developed for the 1989 Eastampton Township Stormwater Management Plan and Study by the Richard A. Alaimo Engineering Company of Mount Holly, NJ.

The second stream in Eastampton also in HUC 02040202040050, Buttonwood Run, starts in the geographic center of the Township on the western side of Student Drive. It runs through the Carriage Park development, continues through the 50 acre wooded portion of Buttonwood Park, which the Township purchased through the local open space program in 2001, and continues into Mount Holly Township where it is the primary tributary to Woolman Lake that connects to the Rancocas Creek.

There are signs of scouring along Buttonwood Run within the recently acquired wooded portion of Buttonwood Park (Right Photo). These areas are creating a sediment load on the stream as shown in the sediment deposits in the stream bed (Left Photo). Bioremediation measures along the Buttonwood Run appear to be a feasible solution to restore a vegetated stream edge. The current conditions are shown in the photographs below:

*Pictures - Buttonwood Run within Township's open space acquired in 2001*

The third stream in Eastampton is Powells Run, which has one branch starting in Pemberton Township and one in Springfield Township. Powells Run is located in HUC 02040202040030, the North Branch of Rancocas Creek 9 (Route 206 to Pemberton Bridge). The two branches converge near the middle of the Township's eastern border with Pemberton. Powells Run flows parallel with Route 206 before converging with the Rancocas Creek in the south-eastern portion of the Township.

Thirty-five percent (1.99 square miles) of Eastampton drains into Barkers Brook, a smaller waterway, and into the Assiscunk watershed. Barkers Brook is located in the northern portion of the Township and comprises an area of 9.45 square miles above Eastampton Township at its municipal boundary with Springfield Township. The entire Barkers Brook sub-shed at its confluence with the Assiscunk Creek watershed is 12.16 square miles. The Barkers Brook drainage shed is located in HUC 02040201100020, Barkers Brook (above 40d02m30s).

The Route 206 Water Resources project identified the following problem areas or "sensitive receptors" within the Township. These locations are also shown graphically on the next page.

- Barkers Brook - beavers causing flooding and ponding damage along brook
- Wetland Mitigation Project – approved project located bounded by Woodlane, Smithville and Monmouth roads
- Old Mount Holly Landfill
- Ewansville – high density development in low lying flood prone area
- Stormwater Management / Streambank Stabilization Project – improvements to un-named tributary to Powells Run

The drainage shed can be categorized and summarized in the following table as shown in the Appendix on **Map 5, HUC-14 Delineation on USGS Quadrangle Map.**

| CATEGORY | RANCOCAS CREEK | ASSISCUNK |
|---|---|---|
| **Total Drainage Shed Area** | **349 Square Miles** | **45 Square Miles** |
| **Distance of Upper Reach from Delaware River** | **34 Miles** | **12 Miles** |
| **Distance of Eastampton Along Creek from Delaware River** | **10 Miles** | **9 Miles** |
| **Location of Eastampton Relative to Watershed** | **Lower 30%** | **Upper 25%** |
| **Hydrologic Unit Code** | **02040202040050<br>02040202040030** | **02040201100020** |

### 7.3 State Monitoring System

The New Jersey Department of Environmental Protection (NJDEP) and the USGS collect a variety of water quality information on the Rancocas and Assiscunk Watershed. The USGS conducts water quality sampling within the Township of Eastampton at monitoring station.

INSERT SENTSITIVE AREAS MAP

The NJDEP has established and maintains an Ambient Biomonitoring Network (AMNET) of monitoring sites 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 macro invertebrates by NJDEP on a five-year cycle. Benthic macro invertebrates include aquatic insects, worms, snails, crayfish and clams. Every five years, 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 bioethics related to benthic macroinvertebrate community dynamics. The AMNET sampling serves as an indicator of the stream health, but does not provide any information on the cause of the impairment. There are no AMNET sites within the Township of Eastampton as shown in the Appendix on **Map 6, Amnet and Stream Quality Monitoring Stations.**

The New Jersey Integrated Water Quality Monitoring and Assessment Report, 305(b) and 303(d) is required by the Federal Clean Water Act. The report identifies waters that are impaired by watershed area. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants in priority order. The list of impaired waterways for Eastampton Township is included in Appendix 4. The following table is a list of the specific impairments at various sampling sites:

| Stream Segment | Impairment |
|---|---|
| Barkers Brook at Jacksonville-Smithville Rd in Springfield | Benthic Macroinvertebrates |
| Barkers Brook N. Branch near Jobstown | Phosphorus, pH |
| Rancocas Creek N. Branch at Browns Mills | Phosphorus, Fecal Coliform, pH, Mercury |
| Rancocas Creek N. Branch at Hanover Furnace | Copper, Mercury, Lead |
| Rancocas Creek N. Branch at Iron Works Park at Mt. Holly | Phosphorus, pH, Arsenic, Copper, Lead |
| Rancocas Creek N. Branch at Pemberton | Copper, Lead |
| Rancocas Creek N. Branch at Pine St. Park in Mt. Holly | Benthic Macroinvertebrates |

The closest monitoring stations to the Township of Eastampton are:

1. Station AN0151, Mount Holly Township, Rancocas Creek at Pine Street Pk, Severly Impared
2. Station AN01410, Springfield Twp., Barkers Brook at Jacksonville-Smithville Rd, Moderately Impaired.

The total maximum daily load, abbreviated TMDL, is the amount of a pollutant that can be accepted by a water body without exceeding water quality standards or interfering with the ability to use a water body for one or more of its designated uses. A TMDL is a tool used to achieve water quality standards through mathematical analysis of the percent reduction of a pollutant from a particular source needed to meet the concentration specified in the water quality standards. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require a New Jersey Pollutant Discharge Elimination System 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, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other best management practices or BMPs.

As included in the Management Plan for the Rancocas Creek Watershed Plan, the NJDEP formulated an approach to deal with contaminants in the non-tidal reaches of the Rancocas creek and its tributaries. The document, Technical Approaches to Restore Impaired Waterbodies in the Non-Tidal Rancocas Creek Watershed, NJDEP, 2002, recommends steps to develop TMDLs or determine that no TMDL is needed. The technical approach paper was reviewed and approved by the Water Management Area 19 Technical Advisory Committee. There is a TMDL for fecal coliform along the Rancocas Creek entitled Total Maximum Daily Loads for Fecal Coliform to Address 27 Streams in the Lower Delaware Region adopted September, 2003. This TMDL has been adopted however much of this MSWMP and the adopted Eastampton Stormwater Pollution Prevention Plan will meet the strategies recommended for reduction of fecal coliform. Specifically in Eastampton's situation the stormwater outfall mapping, illicit connection elimination program and the passage of the pet waste ordinance and wildlife feeding ordinance will meet the strategies identified in the TMDL. There is also under development a phosphorus TMDL for the Rancocas Creek. If the TMDL is adopted, revisions to the MSWMP may be necessary. Revisions may include specific measures, standards and/or ordinances to reduce the phosphorus load in the Rancocas Creek.

## 8.0 Design and Performance Standards

All residential development projects over one acre must currently meet the storm water management design and performance standards of N.J.A.C. 7:8 through the State of New Jersey implementation of the Residential Site Improvement Standards. The Residential Site Improvement Standards supersede all Township of Eastampton Standards and do not have to be adopted by the municipality.

All non-residential development over one acre will be required to conform to the design and performance standards of N.J.A.C. 7:8 through the implementation of the Township of Eastampton stormwater management plan. The Township of Eastampton stormwater management ordinance is provided as **Attachment 1**. As required by the New Jersey Department of Environmental Protection, alternative standards such as stormwater management plans from municipalities 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 N.J.A.C. 7:8-5.

The Township 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 Burlington County for review and approval prior to final adoption.

**Storm Inlet in Conformance with Attachment C of Stormwater Regulations**

The Planning Board reviews development plans to ensure they meet all of the requirements of the Township's ordinance. In addition all projects are also required to be designed in conformance with the Standards for Soil Erosion and Sediment Control in New Jersey even though

a Soil Erosion and Sediment Control Plan Certification is only required for projects that disturb over 5,000 square feet. As part of any approval that may be granted by the Board it is standard procedure to include a condition for all outside agency approvals or permits to be obtained prior to the start of construction. Township inspectors observe construction of all projects to ensure that they are constructed in accordance with the approved plans and any permits that may have been issued. This includes ensuring that stormwater management facilities are constructed properly and that soil erosion control measures are being maintained. Any deficiencies noted in the field by the Township's inspector that can not be resolved with the contractor are reported to the appropriate agency, typically the NJDEP Bureau of Enforcement or the Burlington County Soil Conservation District for enforcement.

## 9.0 Plan Consistency

The Eastampton Township Master Plan is consistent with the Rancocas Creek Watershed Management Plan dated March 2003 prepared by the Burlington County Department of Resource Conservation.

## 10.0 Development Regulations & Master Plan Evaluation Exemption

The evaluation of the entire master plan (including the land use element), official map and development regulations (including the zoning ordinance) is element 8 of NJAC 7:8-4.2. Eastampton has less than on square mile of wooded open space and agricultural land that can be developed. **Map 8 Flood Prone Areas** illustrates the documented flood prone areas are limited to the stream corriddors which limit developable land. **Map 9 Developable Lands Map** illustrates the land uses within the Township. This map was used for the calculation to determine that there are 0.95 square miles of developable land remaining within the Township. The map illustrates the large tracks of wetlands and preserved land within the community that cover a substantial portion of the Township. Because the developable land is less than the one square mile it meets the exemption conditions of N.J.A.C. 7:8-4.2(c)10 from having to complete element N.J.A.C. 7:8-4.2(c)8 as part of this Stormwater Management Plan. The Township has elected to utilize this exemption and will not complete the master plan evaluation element.

## 11.0 Land Use Build-Out Analysis

The Land Use/Build-Out Analysis is element 9 of NJAC 7:8-4.2. This analysis is only required for municipalities with more than one square mile of open space and agricultural land. Eastampton has less than on square mile of wooded open space and agricultural land that can be developed as documented in Section 10. Because the developable land is less than the one square mile it meets the conditions of N.J.A.C. 7:8-4.2(c)10 and the Township is exempt from having to complete element N.J.A.C. 7:8-4.2(c)9 as part of this Stormwater Management Plan. The Township has elected to utilize this exemption and will not complete the build-out analysis element.

## 12.0 Mitigation Plan

Exemptions are provided to lessen the impact of redevelopment of existing sites within the Township of Eastampton where the current stormwater standards cannot be met. Exemptions are not recommended for development projects on sites that were previously open space or undeveloped. Exemptions are to be granted only upon the condition that the applicant provides a mitigation project of equal value within the same sub-watershed as delineated by the HUC 14 that do not negatively impact sensitive receptors. All mitigation projects are to be under the review of the Township Engineer and subject to the approval of the Planning Board. The entire length of the North Branch of the Rancocas Creek is considered to be a sensitive receptor along with the specific projects areas listed on the Sensitive Areas map included in Section 7.2 Description of Watershed.

Mitigation Plan project submissions shall include for review:

1. A table to show the required values and the values provided in the project are equivalent
2. An alternatives analysis demonstrating that on-site compliance was maximized.
3. Narrative and supporting information regarding the need for the waiver.
4. Identify the sensitive receptor and demonstrate that the mitigation project contributes to the same sensitive receptor.

5. Design details to include but not be limited to drawings, calculations, and other information needed to evaluate the mitigation project.
6. List the party or parties responsible for the construction and the future operation and maintenance of the mitigation project. Submit ownership documentation or easements as applicable.
7. Maintenance Plan meeting the requirements of Section 12 of the Borough's drainage ordinance.
8. Construction schedule of the mitigation project and development project.

All mitigation projects are to be reviewed and approved by the Township Engineer subject to all of the requirements of the Stormwater Ordinance. Proposed mitigation projects will be evaluated based on:

1. Project must be within the same area that would contribute to the receptor impacted by the project. If there is no specific sensitive receptor impacted, then the location of the mitigation project can be located anywhere within the Township, preferably at a location that would provide the most benefit.
2. Legal authorization from the property owner must be obtained to construct the project at the location selected. This includes the maintenance and any access needs for the project in the future.
3. The project should be close to the location of the original project, and if possible, be located upstream at a similar distance from the identified sensitive receptor. This distance should not be based on actual location, but on a similar hydraulic distance to the sensitive receptor.
4. Preference is given to one location that addresses any and all of the performance standards waived, rather than separate locations for each performance standard.
5. The project location must demonstrate no adverse impacts to other properties.

The following mitigation projects are proposed within the Township of Eastampton:

GROUNDWATER RECHARGE

Retrofit existing detention basins in the various developments within the same HUC14 to meet the groundwater recharge requirements of the new ordinance.

WATER QUALITY

1. Existing Basins

Provide water quality measures at existing stormwater basins within the same HUC14 under the guidance of the Eastampton Township Engineer. The retrofit of existing basins may be accomplished through a variety and/or combination of options to meet the mitigation costs required. Review of each existing basin condition and surrounding condition should be reviewed with the Township before selecting one or more of the following options:

a. Outlet Structure Modifications

b. Regrading and Planting

c. Elimination of Low Flow Channels

d. Installation of in-line or end-of-pipe Best Management Practice (BMP) as approved by the NJDEP to pretreat stormwater draining into an existing stormwater management basin or exiting from the basin.

2. Lake and Pond Management

Provide a re-vegetation plan, short term and long term maintenance plan for a publicly held lake/pond within the Township of Eastampton to discourage wildlife habitat adjacent to the lake or pond. The reduction of wildlife will reduce the pollutant loading on the lake and/or stream corridor.

3. Stream and Stream Bank Stabilization

Specifically in the NB Rancocas Creek (below Smithville) HUC the area south of Powell Road near Gloucester Court shall be considered a priority project. All stream bank stabilization projects meeting the following criteria and benefits may be presented for review and approval by the Eastampton Engineer.

a. Bioremediation of eroded stream banks where possible

b. Other structural measures of stabilization of eroded stream banks where public or private property or structures are threatened.

c. Stabilization to reduced sediment deposition in lakes, ponds and other low velocity areas.

WATER QUANTITY

Mitigation of Existing Stormwater Outfalls and Basins within the same HUC14 under the guidance of the Eastampton Engineer. The retrofit of existing outfalls may be accomplished through a variety and/or combination of options to meet the mitigation costs required. Review of each existing outfall condition should be reviewed with the Township before selecting one or more of the following options:

a. Replacement or modification of outfall control structure to meet current outflow standards including regarding of basin to provide additional volume required

b. Installation of groundwater recharge facilities to reduce outflow volume

## 13.0 Summary

The Stormwater Management Plan presented for adoption on April 27, 2005 to the Township of Eastampton Land Use Board is required for the Township of Eastampton to meet the requirements of the Eastampton Township NJPDES MS4 permit. If adopted the stormwater management plan will become an element of the Eastampton Township Master Plan.

The ordinance included as Attachment 1 of the Appendixes of the Township of Eastampton Municipal Stormwater Management Plan must be reviewed and adopted by the Township of Eastampton Council prior to April 1, 2006 in order to go into effect and to meet the requirements of the Eastampton Township NJPDES MS4 permit.

A copy of the adopted Township of Eastampton Stormwater Management Plan will be submitted to Burlington County Planning for review and approval. The plan has been prepared in conformance with the Rancocas Watershed Management Plan and NJAC 7:8.

The Township of Eastampton Stormwater Management Plan represents the beginning of a new process in which municipalities participate in improving water quality conditions from non-point source pollution. The Township of Eastampton's Stormwater Management Plan will improve the non-point source pollution conditions to the Delaware River, the Rancocas River and the Assiscunk River Watershed.