

Township of Morris

Municipal Stormwater Management Plan

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Draft

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Introduction

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

This plan also addresses the review and update of existing ordinances, the Township of Morris Master Plan, and other planning documents to allow for project designs that include low impact development techniques. In addition, the plan includes 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.

MSWMP Goals

The goals of this MSWMP are to:

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

To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management

controls to address impacts from existing development. Preventative and corrective maintenance strategies are included in the plan to ensure long-term effectiveness of stormwater management facilities. The plan also outlines safety standards for stormwater infrastructure to be implemented to protect public safety.

Stormwater Discussion

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

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.

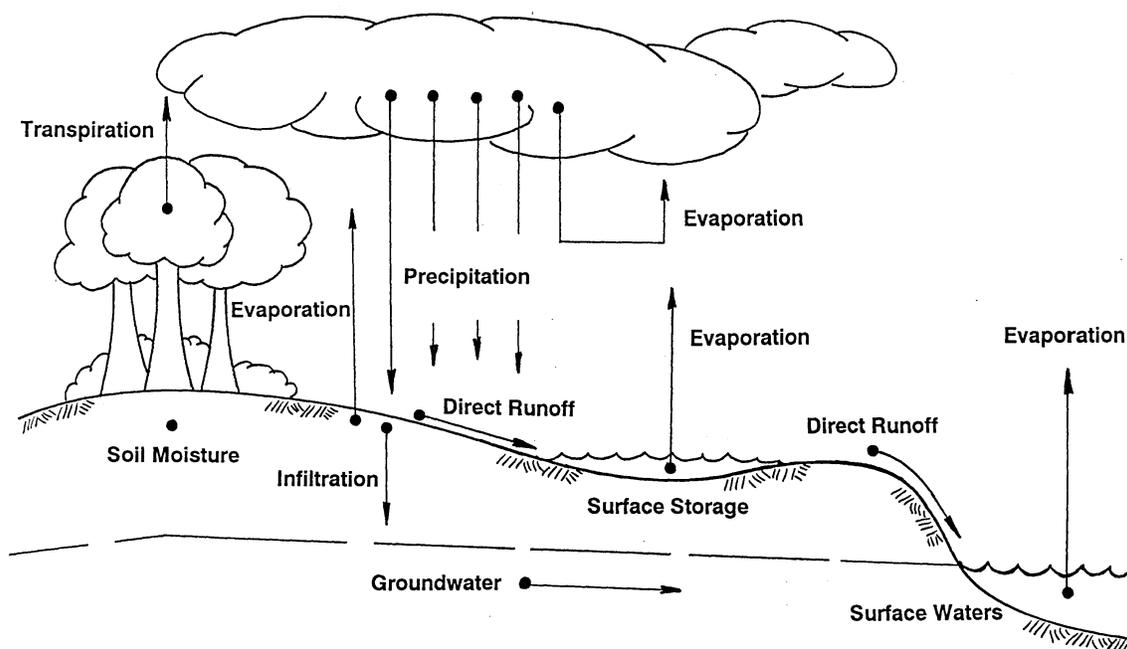


Figure 1

Background

The Township of Morris encompasses 15.8 square miles in heart of Morris County, New Jersey. The Township “enjoys a mix of commercial, industrial, professional and residential development while also enjoying the ambiance of a small town with a main street setting unique in the region.” The Township is an older community and few large areas of undeveloped area remain. The undeveloped areas that do exist are generally along stream corridors which are tributaries to the Whippany River. Streams and rivers, including C1 streams, are located within the Township and are shown in Figure 3. The geographic land use of the Township is shown in Figure 5.

According to the 2000 census, the Township of Morris has 21,796 residents. The population rose approximately 9 percent since the 1990 census. This population increase is less than Morris County (12%) and approximately the same as the State (8.9%) over the same period.

Township of Morris is located, in part, within the Whippany and Passaic River Basins. In addition, a portion of the Township is located in the Great Swamp Watershed. Information on the basins and the Great Swamp can be found at: <http://www.greatswamp.org> or <http://www.passaicriver.com>.

The Township of Morris is situated along both sides of the main stem of the Whippany River in the Passaic River Basin. It is located in Watershed Management Area (WMA) 6 – Upper and Mid Passaic, Whippany and Rockaway. The Township contains portions of Hydrologic Unit Code (HUC14S) areas. These HUC14 areas are shown in Figure 3.

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 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.

AMNET includes 49 sites located within Watershed Management Area No. 6. Based on the AMNET data, (40.8%) of those sites were non-impaired, the majority of site were moderately impaired (51%) and (8.2%) were rated as severely impaired. The closest AMNET site is AN0234, Whippany River, located at Ridgedale Avenue. There are also AMNET sites located at Loantaka Brook, Blue Stone Terrace AN0220 and Whippany River at Mount Pleasant Road AN0232. According to the data at AN0234 the site was rated at a value of 27 and considered "non-impaired".

In addition to the AMNET data, the NJDEP and other regulatory agencies collect water quality chemical data on the streams in the state. These data show can reveal when the instream total phosphorus concentrations and fecal coliform concentrations of Passaic River exceed the state's criteria. When those concentration exceed the state's criteria that the river is classified as an "impaired waterway" and the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for these pollutants.

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 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 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 TMDL's are needed. Listed below are the waterways in the Township that are listed in the Integrated List Sublist 5 with Priority Rankings:

<u>Waterbody</u>	<u>Impairment</u>	<u>Priority</u>
1. Watnong Brook (at W. Hanover Road)	Benthic Macroinvertebrates	Low
2. Whippany River (at Whitehead Road)	Benthic Macroinvertebrates	Low

In addition to water quality problems, the Township has occasional flooding problems. Flooding has occurred along sections of Loantaka Brook, Watnong Brook, and along James Street and Western Avenue.

The Passaic Flood Warning System (PFWS) consists of a network of stream and precipitation gages throughout the region. Information from these gages is automatically transmitted to a central location via telephone, radio and satellite. The information is then processed and appropriate actions are taken. These actions include notifying municipal police, fire and emergency management personnel with flood potential and water level information.

Currently there are 35 rain gages and 21 stream flow gages in the Passaic Flood Warning System (PFWS). Information on the stream gages located in the Township of Morris is available on the United States Geological Survey (USGS) web site in real time (<http://waterdata.usgs.gov/nj/nwjs>).

The Township of Morris is almost fully developed. The existing land use, based on 1995/1997 aerial photography, is shown in Figure 5. The existing zoning is shown in Figure 7. The vast majority of land is urban (land with little chance for groundwater recharge). The Township is located within the State Plan Designation PA1 through PA5. Groundwater recharge is required. Groundwater recharge rates for native soils in this area are generally between 1 and 17 inches annually. The average annual groundwater recharge rates are shown graphically in Figure 4.

According to the NJDEP, “A Well Head Protection Area (WHPA) in New Jersey is a map area calculated around a Public Community Water Supply (PCWS) well in New Jersey that delineates the horizontal extent of ground water captured by a well pumping at a specific rate over a two-, five-, and twelve-year period of time for unconfined wells. The confined wells have a fifty foot radius delineated around each well serving as the well head protection area to be controlled by the water purveyor in accordance with Safe Drinking Water Regulations (see NJAC 7:10-11.7(b)1).”

WHPA delineations are conducted in response to the Safe Drinking Water Act Amendments of 1986 and 1996 as part of the Source Water Area Protection Program (SWAP). The delineations are the first step in defining the sources of water to a public supply well. Within these areas, potential contamination will be assessed and appropriate monitoring will be undertaken as subsequent phases of the NJDEP SWAP

As shown in Figure 6, a significant portion of the Township is not located within any Tier's 1 through 3 well head protection areas.

In addition to the rivers and streams that run through and along the Township of Morris, there are a number of wetland areas. These wetland areas, shown in Figure 5, provide flood storage, non-point pollutant removal and habitat for flora and fauna.

Design and Performance Standards

The Township of Morris has adopted 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 24 months of the effective date of the Stormwater Management Rules.

Plan Consistency

The Township of Morris is not within a Regional Stormwater Management Planning Area and no TMDL's have been developed for waters within the Township; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) nor any TMDL's. 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. The Township will utilize the most current update of the RSIS in the stormwater review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates of 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, Township inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the Morris County Soil Conservation District.

Nonstructural Stormwater Management Strategies

The Township has reviewed the master plan and ordinances, and has included the sections in the Township of Morris land use and zoning ordinances that have been modified to incorporate nonstructural stormwater management strategies. They will be submitted to the county review agency 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.

Land Use/Build-Out Analysis

Since the Township of Morris has a combined total of less than one square mile of vacant lands (there are no agricultural lands), the Township is not required to do a build-out analysis. However, the Township has completed a build-out analysis as relates to the adoption of its Wastewater Management Plan which is currently ready for final adoption by NJDEP.

Mitigation Plans

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

Mitigation Project Criteria:

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

The applicant can select one or more of the following projects listed to compensate for the deficit from the performance standards resulting from the proposed project. Listed below are specific projects that can be used to address the mitigation requirement.

- Western Avenue Reservoir Improvements Project
- Jones Woods Dam Improvements Project
- Schneider's Pond Improvements Project
- Foote's Pond Improvements Project

Information about these projects including permit requirements, preliminary engineering cost estimates and property information is available in the office of the Township Engineer.

2. If a suitable site cannot be located in the same drainage area as the proposed development, as discussed in Option 1, the mitigation project may provide mitigation that is not equivalent to the impacts for which the variance or exemption is sought, but that addresses the same issue. For example, if a variance is given because the 80 percent TSS requirement is not met, the selected project may address water quality impacts that

impact aquatic life along Loantaka Brook. Listed below are specific projects that can be used to address the mitigation options.

- Loantaka Brook Stream Restoration Project
- Watnong Brook Stream Restoration Project
- Vom Eigen Stream Restoration Project
- Greenfield Stream Restoration Project
- TSS Reduction Program – Various Municipal Streets

Information about these projects including permit requirements, preliminary engineering cost estimates and property information is available in the office of the Township Engineer.

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

The Township of Morris currently has in place both storm water control and ground water recharge ordinances. Copies of these ordinances are included in appendix B. These ordinances were implemented in order to satisfy NJDEP and EO-109 requirements regarding the various analysis of impacts to environmentally sensitive areas including endangered species habitat.

Reference Materials

- Ambient Biomonitoring Network; Watershed Management Areas 3, 4, 5, and 6; Passaic Region; 1998 Benthic Macroinvertebrate Data; Prepared by the New Jersey Department of Environmental Protection, June 2000.
- Morris County Office of Planning, Development & Technology, Municipal GIS Stormwater Management Plan Mapping; December 2004.
- New Jersey Water Monitoring & Assessment Strategy; (2005-2014); Water Monitoring and Standards Program; NJ Department of Environmental Protection; Bradley M. Campbell, Commissioner; September 2004.
- Appendix I B; Approved 2004 List of Impaired Waterbodies (By Waterbody/Parameter) With Priority Ranking; New Jersey 2004 Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)); June 2004