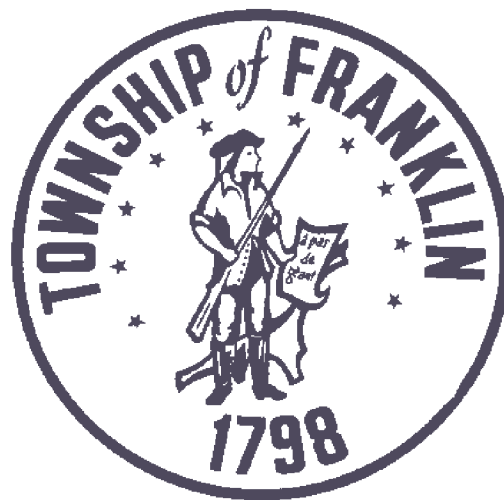


# Municipal Stormwater Management Plan

**For**



## **Township of Franklin Somerset County, New Jersey**

**Prepared by:**

**Franklin Township Stormwater Committee**

*December 2004*

*Latest Revision: 04/17/23*

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## GLOSSARY

AMNET .....	Ambient Biomonitoring Network
BMPs .....	Best Management Practices
HHW .....	Hazardous Household Waste
HUC .....	USGS Hydrologic Unit Code, which delineates watersheds
GIS .....	Geographical Information Systems
MCM .....	Minimum Control Measure
MEP .....	Maximum Extent Practicable
MIS .....	Management Information System
MS4s .....	Municipal Separate Storm Sewer System
MSWMP .....	Municipal Stormwater Management Program
NJDEP .....	New Jersey Department of Environmental Protection
NJPDES .....	New Jersey Pollutant Discharge Elimination System
NJIS .....	New Jersey Impairment Score
PHF .....	Pesticides, Herbicides & Fertilizers
RSIS .....	Residential Site Improvement Standards
SCFIS .....	Somerset County Flood Information System
SIC .....	Standard Industry Classification
SOP.....	Standard Operating Procedures
TMDL .....	Total Maximum Daily Load
WDID .....	Waste Discharge Identification
WMA .....	Water Management Area
USGS .....	United States Geological Survey

## DEFINITIONS

### **Structural BMPs:**

Structural BMPs are facilities designed and constructed for the treatment of stormwater with respect to quality and quantity. Examples of structural controls are vegetative strips, detention/water quality basins, and swirl separators.

### **Non-Structural BMPs:**

Non-structural BMPs are policies and procedures that manage land use in order to lessen the impacts of resource development and redevelopment on storm impacts on stormwater quality and quantity.

### **Impervious Coverage:**

The percent of lot area covered by impervious surfaces.

### **Impervious Surface:**

Any material, which substantially reduces or prevents the infiltration of stormwater into previously undeveloped land. Impervious surface shall include graveled driveways and parking areas.

### **Drainage Area:**

A geographic area within which stormwater runoff, sediments or dissolved materials drain into a particular receiving waterbody or to a particular point along a receiving waterbody.

# Township of Franklin

## Municipal Stormwater Management Program

### PROGRAM LEGAL FRAMEWORK

In 1987, the Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from stormwater is effectively prohibited, unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit. The 1987 amendments to the CWA added Section 402(p), which established a framework for regulating municipal, industrial and construction stormwater discharges under the NPDES program. In New Jersey, these permits are issued through the NJDEP.

In Nov 1990 -- Phase I started and focused on large Municipal Separate Stormwater Sewer Systems (MS4s), governments with populations of 100,000 or larger and construction sites of 5 acres or more.

In December 1999 - USEPA published Phase II National Pollutant Discharge Elimination System Stormwater Regulations mandating each State to implement the rules. Expanded program will include small MS4s. Phase II will ultimately affect more than 5,000 local governments with populations of 10,000 to 100,000 and construction sites of 1 acre and larger.

In January 2003 - NJDEP proposed Phase II **New Jersey Pollutant Discharge Elimination System** (NJPDES) stormwater regulations.

In January 2004 - Commissioner Bradley Campbell signed NJDEP Phase II New Jersey Pollutant Discharge Elimination System stormwater regulations.

The Official Version of Municipal Stormwater Regulations was published in the February 2, 2004 New Jersey Register.

NJPDES Master General Permit effective date of renewal, January 1, 2018.

# Township of Franklin

## Municipal Stormwater Management Plan

### Introduction

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for Franklin Township (“the Township”) to address stormwater related impacts. This Municipal Stormwater Management Plan (MSWMP or Plan) describes a comprehensive program to reduce pollution in stormwater runoff in Franklin Township (Somerset County). The program is designed to comply with the Federal Clean Water Act and meet federal and NJPDES (New Jersey Pollutant Discharge Elimination System) stormwater regulations for Tier A Municipal Separate Storm Sewer Systems (MS4s). 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. The New Jersey Department of Environmental Protection (NJDEP) issued an NJPDES permit to Franklin Township in March of 2004. The permit must be renewed every five years, next anticipated to occur in 2009.

The New Jersey Stormwater Regulation Program Rules (N.J.A.C. 7:8 & N.J.A.C. 7:14A) are intended to address and reduce pollutants associated with existing stormwater runoff. The Rules establish a regulatory program for existing stormwater discharges as required under the Federal Clean Water Act. These rules govern the issuance of permits to entities that own or operate small municipal separate storm sewer systems known as MS4s. Under this program, municipalities, certain public complexes such as universities and hospitals, and County and State agencies that operate or maintain highways, must secure permits. The permit program establishes the Statewide Basic Requirements that must be implemented to reduce non-point source pollutant loads from these sources. The Statewide Basic Requirements include measures such as: the adoption of ordinances (litter control, pet waste, wildlife feeding, proper waste disposal, etc.); the development of a municipal stormwater management plan and implementing ordinance(s); requiring certain maintenance activities (such as street sweeping and catch basin cleaning);

implementing solids and floatable control; locating discharge points and labeling catch basins; and a public education component.

Urban and stormwater runoff is a serious concern, during anytime of the year. Studies have shown that stormwater runoff from urban and industrial areas typically contain the same general types of pollutants that are often found in wastewater from industrial discharges. Pollutants commonly found in stormwater runoff include heavy metals, pesticides, herbicides, fertilizer, animal droppings, trash, food wastes, and synthetic organic compounds such as fuels, waste oils, solvents, lubricants, and grease.

Waters that flow over streets, parking lots, construction sites and industrial facilities carry these pollutants through the storm drain network directly to the streams, wetlands and rivers of New Jersey. These compounds can have damaging effects on both human health and aquatic ecosystems.

In addition to pollutants, the high volumes of stormwater discharged from the storm drain system in areas of rapid urbanization have had significant impacts on aquatic ecosystems due to physical modifications such as bank erosion and widening of channels.

Water Quality Assessments conducted by the NJDEP and NJ Water Supply Authority identified impairment of a number of water bodies in New Jersey. The beneficial uses of certain water bodies specifically identified in these assessments are either impaired or threaten to be impaired. In our area this includes the Millstone River, Six Mile Run and the Raritan River. Pollutants found causing impairment include: heavy metals, coliforms, enteric viruses, pesticides, nutrients, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, organic solvents, sediments, trash, debris, algae, scum, and odor. The NJDEP therefore considers stormwater and urban runoff discharges to be significant sources of pollutants that may be causing, threatening to cause, or contributing to the impairment of the water quality and beneficial uses of the receiving water bodies in New Jersey.

Franklin Township waterways have many uses including recreation, habitat, fishing, and water supply. Water quality protection requires a diverse program aimed at those who discharge water to our streams. The population growth in Franklin Township could threaten water quality in a number of ways:

- Everyday human activities send many types of pollutants into creeks and streams, including oils and hydrocarbons from automobiles, trash, pesticides and fertilizer from landscaping, and sediment resulting from construction sites and intensive land uses.
- Increases in impervious surfaces due to buildings and pavement send more water more quickly to creeks and streams. This can contribute to erosion, changes in stream temperature, and changes in the types and amounts of pollutants the water gathers as it drains.



- Urban development creates new pollution sources as population density increases and brings with it proportionately higher levels of vehicle emissions, vehicle maintenance wastes, municipal sewage, pesticides, household wastes, pet wastes, trash, etc., which can be washed into the storm drain system. Urban areas generally contribute a higher level of pollutant load in streams than rural areas.

# Township of Franklin

## 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 major 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. Preventive 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.

Under the Plan, the Township will endeavor to reduce the amount of pollutants reaching our waterways from human activities by implementing the six minimum control measures required in the federal law. These are:

- Public Education and Outreach on Stormwater Impacts;
- Public Involvement/Participation;
- Illicit Discharge Detection and Elimination;
- Construction Site Stormwater Runoff Control;

- Post-Construction Stormwater Management in New Development and Redevelopment; and
- Management SOPs/Good Housekeeping for Municipal Operations.

In addition to the six minimum control measures required by the federal law, the NJ State Tier A permit will impose Discharge Prohibitions, New Development design standards, and additional evaluation and reporting requirements.

This Franklin Township Stormwater Management Plan includes specific Best Management Practices (BMP's) that support the six minimum control measures and the State's Tier A permit.

Funding for the program may come from new development fees. Federal and State funding will also be necessary, and is needed in order to comply with the mandates of the NJPDES regulations included herein. Without such funding, the program schedule may require modification. If in the future New Jersey State Regulations allow the formation of a Municipal Stormwater Utility, the Township shall investigate ones formation. The new Stormwater Utility might be a division of Engineering and Public Works. Funding may come from either current revenue sources and/or additional stormwater tax.

Training will be provided for both Township employees and affected members of the public. Periodic training for Township personnel involved in aspects of the program will be held at appropriate times. Educational activities aimed at non-Township personnel who may affect stormwater quality, such as developers, business owners, contractors, and engineers, are also proposed.

Program evaluation will be required on an annual basis to assess the effectiveness of the Best Management Practices (BMP's). Evaluation results will be provided to the NJDEP yearly, beginning in 2006, as part of the required annual report.

### PROGRAM BENEFITS

Clean water is a desirable and beneficial resource of the Township. Clean water is necessary for drinking, to maintain recreational activities, habitat preservation, and Township aesthetics. Stormwater quality is a contributing source of unnecessary pollutant loading into receiving waters. If not addressed,

stormwater pollutants will negatively impact the Township and its resources. Through effective implementation of the MSWMP, the Township believes pollutant loading will be reduced to the maximum extent practicable (MEP) and receiving waters will be cleaner. Clean water will enhance the quality of life by improving and reducing potential risks associated with degraded water quality.

# Township of Franklin

## Township Information

Franklin Township is located in the southeast section of Somerset County. The Township is 46.4 square miles, bounded on the north and west by the Raritan and Millstone Rivers except in the section bordered by the South Bound Brook Borough on the north, on the east and south by Mile Run and State Highway 27 except for the Little Rocky Hill section of the Township where the boundary is Old Road, which is the former State Highway 27 alignment. The Township encompasses the localities of Zarephath, East Millstone, Franklin Park, Griggstown, Middlebush, Somerset and portions of Kingston and Little Rocky Hill.

The major watersheds in the Township are the Lower Raritan Watershed and the Stony Brook–Millstone Watershed.

The Lower Raritan Watershed comprises about 14.25 square miles in the northern section of the Township. The Lower Raritan Water Management Area is 352 square miles. The WMA is surrounded by the Upper Passaic to the north, the Arthur Kill and Monmouth Watersheds to the east, the Millstone to the southwest and the North & South Raritan River branch to the west. The Raritan River empties into the Raritan Bay and the Atlantic Ocean.

The Stony Brook-Millstone Watershed comprises about 31.75 square miles in remaining portion of the Township. The Millstone River begins in Millstone Township. The Stony Brook has its headwaters near the northern border of Hopewell Township and flows eastward until it joins the Millstone River at Carnegie Lake in Princeton. The Millstone River continues north and eventually reaches the Raritan River.

The Township land use is varied (See Figure 4). The undeveloped areas that exist are located in the northwestern section, the central section and the southern section of the Township. Streams and rivers within the Township are shown in Figure 2 .

According to the 2000 census, the Township has 50,903 residents, the most of any municipality in Somerset County. The population rose approximately 19 percent since the 1990 census. This population increase is more than the overall state increase of approximately 9 percent but less than the overall county increases of 24 percent over the same period. The estimated population in 2014 was 65,938.

The Township contains portions of ten Hydrologic Unit Code (HUC14) drainage areas. These HUC14 areas are shown in Figure 5.

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.

Based on the AMNET data, the water bodies bordering the Township are impaired moderately to significantly. There is an AMNET site located on the Millstone River by Blackwells Mill Road. There are also AMNET sites downstream at the confluence of the Millstone River and the Raritan River; and within the Township on Ten Mile Run, Simonson's Brook and Six Mile Run.

In addition to the AMNET data, the NJDEP and other regulatory agencies collect water quality chemical data on streams in the state. If this data shows that the in-stream concentrations exceed the state's criteria, the river is considered an impaired waterway and the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for specific pollutants that exceed the criteria.

A TMDL is the amount of a pollutant that can be accepted by a water body without causing an exceedance of water quality standards or interfering with the ability to use a water body 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 a NJPDES permit to discharge, and non-point 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 measures, 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 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. Sub list 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDL's are needed. The Raritan and Millstone Rivers are listed in the proposed Sub list 5 (March 1, 2004). Six Mile Run at Canal Road and Mile Run are also listed in the proposed Sub list 5 (March 1, 2004).

In addition to water quality problems, the Township has occasional flooding problems. Flooding occurs on the Raritan River, the Millstone River and on Six Mile Run. The approximate 100-year floodplain is shown in Figure 7.

In conjunction with the USGS, Somerset County operates a flood information system for its 21 municipalities. The Somerset County Flood Information System (SCFIS) consists of a network of stream and precipitation gages throughout the County. 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.

There are several SCFIS stream and precipitation gages near or in Franklin Township. The Township has a precipitation gage on DeMott Lane north of Amwell Road. There are four stream gages along the Millstone and Raritan Rivers as follows:

RARITAN RIVER AT MANVILLE NJ
MILLSTONE RIVER AT GRIGGSTOWN NJ
MILLSTONE RIVER AT BLACKWELLS MILLS NJ
RARITAN RIVER BELOW CALCO DAM AT BOUND BROOK NJ

Information from these latter gages is available on the United States Geological Survey (USGS) web site in real time (<http://waterdata.usgs.gov/nj/nwis>). There is also a stream gage on the Millstone River in Millstone Borough at Amwell Road.

The Township has a moderate amount of developable land. The existing land use, based on 1995/1997 aerial photography, is shown in Figure 4. The existing zoning is shown in Figure 3. A current aerial photo with parcel lot lines overlain on it is shown in Figure 1. The Township is partly within the State Plan Designation PA1 Metropolitan Planning Area and has a designated center (Kingston) where infiltration requirements for new developments are not applicable for redevelopment. Groundwater recharge rates for native soils in the

Township are generally between 1 and 16 inches annually. The average annual groundwater recharge rates are shown graphically in Figure 9.

As shown in Figure 8, a portion of the Township is just in the outer section of a Tier 3 wellhead protection area. This area is located where the Township borders Manville.

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.

In addition to the rivers and streams that run through and along the Township, there are a number of major wetland areas. These major wetland areas, shown in Figure 6, provide flood storage, non-point pollutant removal and habitat for flora and fauna.

## LEAD ENTITIES

### Public Works:

The Department of Public Works will lead in the day-to-day activities and administration of the MSWMP. The contact phone and address for Franklin Township DPW is:

40 Churchill Avenue  
Somerset, NJ 08873-3405  
(732) 249-7800 OR (732) 873-2500 Ext. 6290 & 6291



## MSWMP REVIEW AND MODIFICATION

The Township has prepared this MSWMP to meet the requirements for coverage under Tier A Municipal Stormwater Master General Permit Number NJ0141852, P.I. ID #50577 issued March 3, 2004. The draft MSWMP was prepared by December 20, 2004 to meet the NJPDES permit obligations. This MSWMP includes Best Management Practices (BMP's) intended to reduce to the Maximum Extent Practicable (MEP) the quantity of stormwater and the discharge of pollutants to the stormwater system. The MSWMP will be reviewed on an annual basis and any changes or modifications will be described and submitted to NJDEP. The municipality shall reexamine the MSWMP at each reexamination of the Township's Master Plan in accordance with N.J.S.A. 40:55D-89

This review will include the following:

- A review of the status of program implementation and compliance;
- A review of any revision or change of BMP's during the year and an assessment of the effectiveness of such revision;
- An overall assessment of the goals and direction of the MSWMP and effectiveness of BMP's; and
- A review of monitoring data, any changes in monitoring methods and parameters, and an assessment of the overall monitoring program.

# Township of Franklin

## Stormwater Discussion

Land development can dramatically alter the hydrologic cycle (see Illustration 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 the natural habitat of some species.

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.

Water is essential to life. Without it, the biosphere that exists on the surface of the earth wouldn't be possible. Nicknamed the "water" planet, Earth is covered by one of our most precious resources. However, almost 93% is locked in the oceans, unsuitable for consumption by humans, many plants and animals, due to its high salinity. How do we obtain fresh water resources then? Where does drinkable water come from? To understand, we need to turn to the **Hydrologic Cycle**:

### The Hydrologic Cycle

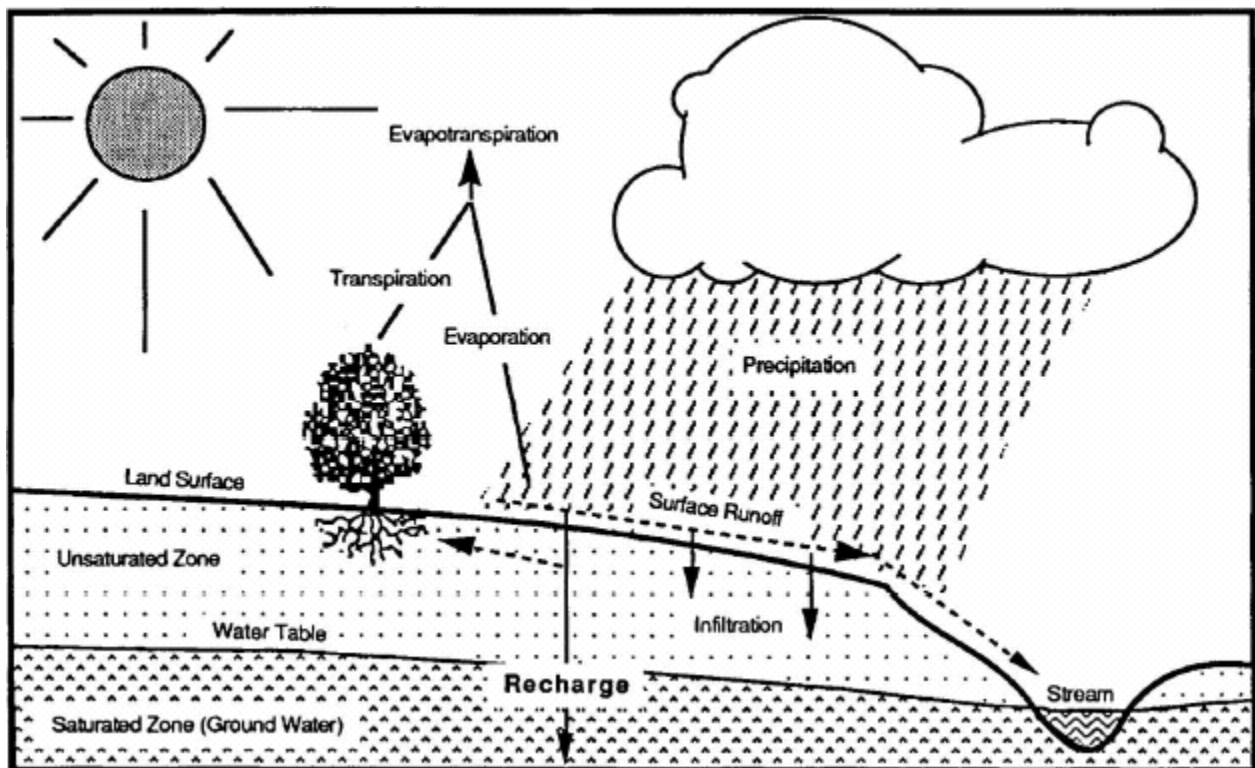


Illustration 1

Source: New Jersey Geological Survey Report GSR-32.

Water's molecular arrangement is very simple, two hydrogen to each oxygen atom, but this is misleading. Water has many unique properties that allow it to be such a universal material. One special characteristic of water is its ability to change state very easily under Earth conditions. It can be found readily on the planet in all of its three forms, solid, liquid, and gas. These forms also play a great part in the hydrologic cycle. Now, exactly what is the hydrologic cycle? The hydrologic cycle takes place in the **hydrosphere**; this is the region containing all the water in the atmosphere and on the surface of the earth. The cycle is the movement of water through this hydrosphere.

Now the entire process is very simple, divided in to five parts



The process begins with **condensation**, when water vapor condenses in the atmosphere to form clouds. Condensation occurs when the temperature of the air or earth changes. Water changes states when temperatures fluctuate. When the air cools enough, water vapor has to condense on particles to form clouds. This process is very noticeable on plants as dew forms on them in the morning.

As clouds form, winds move them across the globe, spreading out the water vapor. When the clouds can't hold the moisture, they release it in the form of precipitation, which can be snow, rain, hail, etc.

The next three stages: infiltration, runoff, and evaporation occur simultaneously. **Infiltration** occurs when precipitation seeps into the ground. This depends on the permeability of the ground.

Permeability is the measure of how easily something flows through a substance. The more permeable, the more precipitation seeps into the ground. If precipitation occurs faster than it can infiltrate the ground, it becomes **runoff**. Runoff remains on the surface and flows into streams, rivers, and eventually large bodies such as lakes or the ocean. Infiltrated groundwater moves similarly as it replenishes rivers and heads towards large bodies of water.

As both of these processes are happening, the power of the sun is driving this cycle by causing **evaporation**. Evaporation is the change of liquid water to a vapor. Sunlight aids this process as it raises the temperature of liquid water in

oceans and lakes. As the liquid heats, molecules are released and change into a gas. Warm air rises up into the atmosphere and becomes the vapor involved in condensation.

Considering so little of the water on earth is drinkable to people, it is amazing the supply has survived as long as it has. The hydrologic cycle continues to move water and recirculate it back into the system. It is estimated that 100 million billion gallons a year are cycled through this process. Without this process, life would be impossible. We need it to sustain us for it is a vital function in everyday life. Without water, life would not be possible.

The Township 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 have been submitted to the County for review and were approved by letter dated April 7, 2008.

# Township of Franklin

## Plan Consistency

The Township is not within a Regional Stormwater Management Planning Area and TMDL's are only now being developed for waters within the Township; therefore this plan does neither need to be consistent with any Regional Stormwater Management Plans (RSWMP's) nor any TMDL's. When RSWMP's or TMDL's are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

The northern section of the Township is within the Raritan Basin and much information on the basin and about its characteristics has been developed as part of the Raritan Plan. Additional information concerning this plan can be found at: <http://www.raritanbasin.org>. The Township supports the Raritan Plan.

The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) per 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 local Soil Conservation District.

# Township of Franklin

## Nonstructural Stormwater Management Strategies

The Planning Board reviewed this MSWMP when it prepared and adopted the 2005 Township Master Plan. In conjunction with this, the Township Development Ordinance has been examined for ways of implementing the non-structural stormwater management strategies outlined in NJAC 7:8-5.3(b). These two documents were found to be in accordance with this Stormwater Management Plan. Therefore no changes to the Plan were necessary.

The Township Shade Tree Commission has examined the Township's Tree Removal Permit for ways of implementing non-structural stormwater strategies. For example, a Tree Replacement Plan was adopted with the intention of discouraging unnecessary removal of mature trees during development. The number of replacement trees is calculated based on a table that takes into account the number (or percentage) of trees to be removed and their sizes. If it is impractical to replace on site all the trees required per the Tree Replacement Plan, a waiver may be granted allowing the developer to make a contribution to the Township Tree Fund. All funds contributed are used solely for the planting of trees in various public areas within the Township.

The Township currently has Littering, Wildlife Feeding, Pet Waste, Improper Waste Disposal, Yard Waste Dumping, Illicit Connection and Stormwater Control ordinances in place. Ordinances for Refuse Containers/Dumpsters and for Private Storm Drain Inlet Retrofitting are currently being developed and are anticipated to be adopted by September 1, 2009.

The Township 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 ground water recharge in receiving water bodies. The design and performance standards include language for maintenance of stormwater management measures consistent with the stormwater management rules per 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.

Nonstructural Stormwater Management Strategies, New Jersey Stormwater BMP Manual, *Chapter 2 Low Impact Development*, must be used prior to use of Structural Stormwater Management Strategies, *Chapter 9.0 – 9.11 Structural Stormwater Management Measures*, in all development and redevelopment.

To the maximum extent practicable, the standards in N.J.A.C. 7:8-5.4 and 5.5 shall be met by incorporating nonstructural stormwater management strategies per N.J.A.C. 7:8-5.3 into the design. The persons submitting an application for review shall identify the nonstructural strategies incorporated into the design of the project. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate a nonstructural stormwater management strategy into the design of a particular project, the applicant shall identify the strategy and provide a basis for the contention.



# Township of Franklin

## Mitigation Plans

In order to grant a variance or exemption from the design and performance standards in N.J.A.C. 7:8-5, a mitigation plan must be developed that identifies what measures are necessary to offset the deficit created by granting the variance or exemption. The mitigation plan shall ensure that mitigation is completed within the drainage area and for the performance standard for which the variance or exemption was granted.

### 7:8-4.6 Variance or exemption from the design and performance standards for stormwater management measures

A municipality may grant a variance or exemption from the design and performance standards for stormwater management measures set forth in its approved municipal stormwater management plan and stormwater control ordinance(s), provided the municipal plan includes a mitigation plan in accordance with N.J.A.C. 7:8-4.2(c) 11 and the municipality submits a written report to the county review agency and the Department describing the variance or exemption and the required mitigation.

### 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. More detailed information on the projects can be obtained from the Township Engineer. Listed below are outfall locations that can be used to address the mitigation requirement.

**DELAWARE & RARITAN CANAL TRIBUTARY ASSESSMENT &  
NONPOINT SOURCE MANAGEMENT PROJECT**

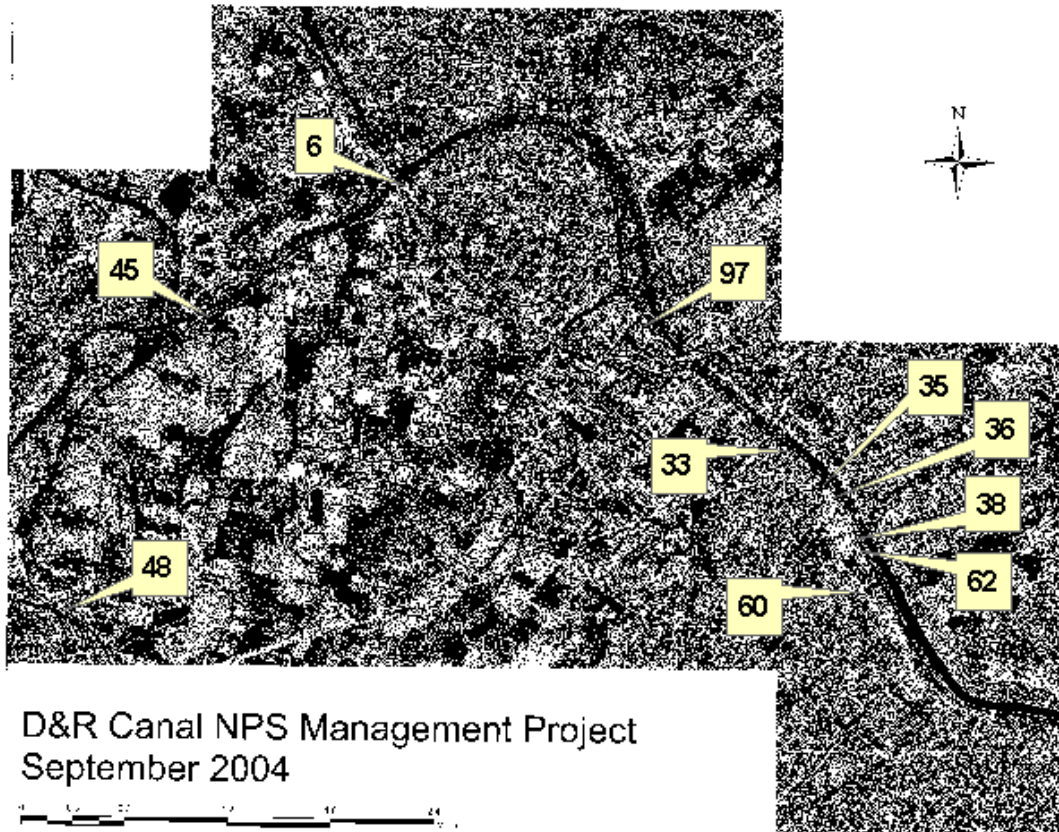
**NJWSA 319(h) PROJECT**

Administrated by Kathy Hale, NJ Water Supply Authority

Projects listed below are based upon ranking within the Township:

<u>Final Rank</u>	<u>Infall Number*</u>	<u>Infall Location</u>
1	62	End of DeMott Ln by VanWinkle House
2	48	Along canal, 0.4 mi South of Weston Rd
3	60	Easton Ave, 0.2 mi South of DeMott Ln
4	33	End of Bertram Ave
5	6	North of Rte 287 on Weston Canal Rd
6	36	North of Rutgers Prep School
7	35	North of Rutgers Prep School
8	97	Easton Ave, South of Davidson Ave
9	45	Weston Rd, 1.5 mi South of Rte 287
10	38	Along canal, 0.3 mi North of DeMott Ln

\*Infall number per above-mentioned NJWSA project.



**Illustration 2**

Only the top ten ranked sites are listed above. There are a total of 46 infall locations identified by NJWSA within the project area. Details of the specific remediation work proposed at each infall are available from the NJWSA.

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. Listed below are specific projects that can be used to address the mitigation options.

**RETROFIT DETENTION BASIN WATER QUALITY AND  
GROUNDWATER RECHARGE PROJECT**  
Administrated by the Franklin Township Engineer

Developer shall provide all costs and materials associated with upgrading Township-maintained detention basin facilities to provide greater removal of total suspended solids (TSS) and greater groundwater recharge. Typical projects could consist of any of the following: the removal of the concrete low-flow channel and replacement with a gravel channel with underdrain, planting of native species in and around the detention basin, modifying a dry basin to a wet basin, providing a manufactured TSS removal device. Developer may substitute Township-maintained facilities with privately maintained facilities when prior written consent is obtained from the owner.

3. The Township may allow a developer to provide funding or partial funding to the Township 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.

**FRANKLIN TOWNSHIP REFORESTATION PROJECT**  
Administrated by the Franklin Township Shade Tree Commission

Developer shall supply funding equal to or greater than the cost of the stormwater management measure for which the variance is requested. Said monies will be utilized by the Franklin Township Shade Tree Commission for the planting of trees and other such improvements associated with the reforestation project. Said monies will be combined with monies collected in the following amendment to the Franklin Township Development Ordinance:

## 222-5.1 Tree replacement plan.

For all replacement requirements, the following formulas shall apply:

- A. For trees with a DBH equal to or greater than four inches and less than 16 inches, replacement shall be based upon the percentage of the trees removed as set forth below:

	<b>Percentage of Trees Removed from Entire Development</b>	<b>Percentage of Trees to be Replaced with Trees of Minimum Size 2.5 Inch Caliper</b>
	80% to 100%	80%
	60% to 79%	60%
	40% to 59%	40%
	20% to 39%	20%
	Less than 20%	10%

- B. For trees with a DBH equal to or greater than 16 inches, the removed tree shall be replaced:

	<b>Existing Tree to be Removed (inch caliper)</b>	<b>Number of Replacement Trees (minimum size 2.5 inch caliper)</b>
	Less than 18	3
	Less than 21	4
	Less than 24	5
	Less than 27	6
	Less than 29	7
	Less than 31	8
	Less than 33	9
	Less than 35	10
	Less than 37	11
	Less than 39	12
	Less than 40	13
	Less than 41	14
	41 inches or greater	15

### **§ 222-5.3 Tree replacement; contributions to Tree Fund.**

A. All required replacement trees shall be planted on the site from which trees were removed. A waiver from any portion or all of the required on-site replacement shall be granted by the board with jurisdiction, shall be based upon practical physical difficulties and undue hardship related to conditions of the site from which trees are to be removed. The comments and recommendations of the Shade Tree Commission shall be solicited in determining whether the requested waiver is required.

B. In lieu of replanting trees on the removal site, applicant shall have the option of planting replacement trees of type(s) selected by the Shade Tree Commission from the approved list of trees as established by it at an off-site location chosen by the Township in consultation with the Shade Tree Commission. Such off-site locations shall be public property and rights-of-way, including but not limited to public parks, public schools and public buildings.

C. In the alternative, the applicant may make a contribution to be deposited in the Township Tree Fund as established by this article. The contribution in lieu of planting of trees shall be based on a fixed rate of material and installation costs for those trees. This rate shall be adjusted annually and based on estimates by the Township Engineer. No more than 25% of tree replacement may be by way of contribution.

### **§ 222-5.4 Tree Fund.**

A. There shall be established by this article a Township Tree Fund for the purposes set forth in this article.

B. All funds collected as contribution in lieu of replanting shall be deposited in a dedicated account clearly designated as the Township Tree Fund. All funds so deposited shall be used solely for the planting of trees. This fund may be used to plant trees in public parks, property surrounding public buildings and rights-of-way.

C. The Tree Fund shall be administered by the Township Manager, who shall report to the Township Council and the Shade Tree Commission on a quarterly basis detailing the use of the fund.

# Township of Franklin

## Land Use/Build-Out Analysis

(Prepared by Civil Solutions, a Division of ARH)

### **A. Introduction:**

Since there is more than one square mile of combined vacant and agricultural lands throughout Franklin Township, a land use/build-out analysis has been included within the MSWMP (as required by N.J.A.C. 7:8 and 7:14A-25).

The purpose of this analysis is to provide a tool to assess the impacts of continued land development within the Township. As a municipality matures towards its full land use potential, development can tend to adversely impact both water quality and quantity. As lands are cleared and land uses intensified (e.g. constructing housing developments on previously farmed agricultural lands), detrimental impacts to water quality and quantity typically are manifested through stormwater runoff due to increases in both pollutant loadings and impervious surface coverage.

As land is developed and subsequently ‘de-vegetated’, it has a greater potential to accumulate and mobilize a variety of pollutants from such sources as the atmosphere, fertilizers, animal wastes, leakage/wear from transportation vehicles. Pollutants such as metals, suspended solids, hydrocarbons, pathogens, and nutrients are commonly associated with land development and therefore need to be closely monitored. Increases in impervious surface coverage (via increases to building, roadway, sidewalk, driveway and parking lot surface areas; etc.) cause pollutants to more readily collect, mobilize and be transported to downstream receiving waters and ecosystems. Development also causes greater potential for soil erosion and migration.

As a result of the above, downstream receiving water bodies and ecosystems become impaired as flooding events are increased and intensified from the new impervious surface areas. Water quality is further degraded as increased stormwater pollutant loads enter the water bodies and alter the chemical, physical and biological integrity of the receiving waters. Therefore to better protect the public health and safeguard downstream water bodies and aquatic life, the land use/build-out analysis is the first step in assisting the municipality in understanding the magnitude of these impacts and developing strategies to minimize, manage and/or mitigate these impacts through by such means as additional stormwater management control techniques, changes in construction practices and even changes to the land use zoning.

## **B. Process:**

The land use/build-out analysis is conducted assuming full development under existing zoning for each HUC14 drainage area within the municipality. The analysis attempts to quantify the projected increases in pollutant loadings and impervious surface coverage so that the municipality can then use these values to project impacts to water quality and quantity and develop strategies to minimize, manage and/or mitigate the impacts.

The term HUC represents a hydrologic unit code used by the United States Geological Service (USGS) to delineate and identify watersheds (where a watershed is defined as a specific land area that drains water into a river system or other body of water body). More specifically, a HUC14 is a 14-digit code used to identify the individual sub-watersheds that make up a larger watershed (identified by the USGS as a HUC11). The USGS has identified 921 HUC14 sub-watersheds within New Jersey that range in size between 0.1 and 42 square miles.

The steps used to prepare the land use/build-out analysis are as follows:

1. Identify and characterize the HUC14 watersheds within the municipality.

Using the NJDEP's Geographical Information System (GIS) mapping data for HUC14s, the 11 HUC14s drainage areas within Franklin Township were identified, their boundaries delineated (see Figure 5), and the results saved within a GIS feature layer.

Then through the use of ESRI's ArcGIS mapping software, the total land areas for each of the HUC14 watersheds were determined (and summarized in Table 1 below) based on the delineated watershed's digital feature attributes.

**Table 1: HUC14 Drainage Areas**

HUC14 ID	HUC14 Sub-Watershed Name	Area (acres)
02030105110010	Heathcote Brook	981.03
02030105110030	Millstone R (Beden Bk to Heathcote Bk)	2,341.20
02030105110110	Millstone R (Blackwell Mills to BedenBk)	5,571.00
02030105110120	Six Mile Run (above Middlebush Rd)	4,202.57
02030105110130	Six Mile Run (below Middlebush Rd)	3,472.28
02030105110140	Millstone R (Amwell Rd to Blackwells Mills)	965.80
02030105110170	Millstone River (below Amwell Rd)	3,067.04
02030105120140	Raritan R Lwr (I-287 Piscatway-Millstone)	3,320.94
02030105120150	Mile Run	1,320.42
02030105120160	Raritan R Lwr (Mile Run to I-287 Pisctwy)	4,525.38
02030105130030	Oakeys Brook	35.25

Total: 29,802.91

It should be noted that two additional HUC14s #02040301160060 and #02040301160140 were not incorporated into this analysis since their land areas were insignificant.

2. Identify the Township's land use zones.

Using the Township's GIS mapping data of their land use zoning districts (see both Figure 3 and Attachment 3 for an overview of these zones), the zones were overlaid over the HUC14 drainage areas to identify and delineate the land use zones within each individual HUC14 drainage area.

3. Identify and calculate all existing impervious land cover within each HUC14 watershed.

The existing impervious land covers were determined using aerial mapping techniques. The areas of the primary impervious land covers (such as roadways, building structures and parking lots) were previously mapped by the Township using aerial photography performed by Surdex Corporation.

The remaining impervious areas (such as driveways, sidewalks, swimming pools, tennis courts, and other miscellaneous paved areas etc.) were delineated and digitized by Civil Solutions using impervious areas extracted from the NJDEP's 2002 digital orthophotography.



The impervious covers from the above two techniques were then merged into GIS feature layer and then overlaid on both the HUC14 and the land use zoning feature layers. The amounts of impervious land cover within each HUC14 were then calculated by zone (see Figures 12A-12I and Attachment 1).

4. Identify and calculate all existing constrained lands within each HUC14 drainage area.

Using a combination of the NJDEP's and the Township's GIS mapping data, the lands constrained from future development (including such lands identified as surficial water bodies, wetland areas, Category One resource protection areas and their associated 300 foot buffers, designated open space and protected park areas) were identified and merged into a GIS feature layer (see Figure 11). This layer was then overlaid on the both the HUC14 and Township land use zoning feature layers and the amount of impervious land cover within each HUC14 were then calculated by zone (see Figures 12A-12I and Attachment 1).

5. Calculate the land areas available for development and redevelopment within each HUC14 watershed.

The land areas available for development and redevelopment were then calculated by subtracting the constrained lands from the total land areas for each HUC14 (see Attachment 1). In essence the land available for development is the agricultural, forest and/or barren lands and the land available for redevelopment consist of the eligible existing residential, commercial and industrially zoned parcels.

6. Calculate the potential additional impervious surface coverage assuming full development.

Using the maximum impervious surface coverage percentages specified within the municipal ordinance, the potential additional impervious surface coverage was calculated by multiplying land areas available for development and redevelopment by the maximum impervious surface coverage. See table 2 below:

TABLE 2

Zone	Maximum Percentage Of Lot Coverage	Maximum Percentage Of Impervious Coverage
A	10	20
CP	3	N/A
RR	10	20
R-40	10	20
R-20	15	25
R-15	20	30
R-10	20	30
R-10A	25	35
R-10B	25	35
R-7	20	30
C-R	20	40
G-B	30	70
N-B	40	80
O-P	20	45
R-O-L	15	30
C-B	30	55
M-1	50	60
M-2	50	65
M-3	40	65

7. Estimate nonpoint source pollutant load for each HUC14 drainage area. Nonpoint source pollutant loads were calculated for each HUC14 using the land use pollutant loads published in the NJDEP Stormwater BMP Manual 2004 (see Table 3 below) multiplied by the amount of potential maximum developable land areas within each municipality.

For purposes of his analysis, the pollutants were limited to total phosphorus, total nitrogen and total suspended solids. However the analysis can be expanded in the future to include other contaminants of concern.

**Table 3: Pollutant Loads by Land Cover**

Land Cover	Total Phosphorus Load (lbs/acre/year)	Total Nitrogen Load (lbs/acre/year)	Total Suspended Solids Load (lbs/acre/yr)
High, Medium Density Residential	1.4	15	140
Low Density, Rural Residential	0.6	5	100
Commercial	2.1	22	200
Industrial	1.5	16	200
Urban, Mixed Urban, Other Urban	1.0	10	120
Agricultural	1.3	10	300
Forest, Water, Wetlands	0.1	3	40
Barrenland/Transitional Area	0.5	5	60

Source: NJDEP Stormwater BMP Manual 2004 (Appendix C, Table C-2).

### C. Results:

The results of the land use/build-out analysis are detailed in Attachments 1 and 2 and summarized below in Table 4 (for the potential maximum pollutant loadings) and Table 5 (for the potential increased impervious surface coverage).

**Table 4: Land Use/Build-Out Nonpoint Source Summary**

HUC14 ID	HUC14 Sub-Watershed Name	Potential Developable Area (acres)	TP (lbs/yr)	TN (lbs/yr)	TSS (lbs/yr)
02030105110010	Heathcote Brook	821.	666	5,591	118,731
02030105110030	Millstone R (Beden Bk to Heathcote Bk)	1,499	1,496	14,314	211,268
02030105110110	Millstone R (Blackwells Mills to Beden Brook)	2,953	2,528	21,672	444,652
02030105110120	Six Mile Run (above Middlebush Rd)	1,299	1,405	14,178	171,145
02030105110130	Six Mile Run (below Middlebush Rd)	788	520	4,467	85,537
02030105110140	Millstone R (Amwell Rd to Blackwells Mills)	581	529	4,198	109,222
02030105110170	Millstone River (below Amwell Rd)	1,901	2,499	22,857	406,292
02030105120140	Raritan R Lwr (I-287 Piscatway-	1,396	1,905	19,838	232,185

	Millstone)				
02030105120150	Mile Run	729	1,037	10,901	109,139
02030105120160	Raritan R Lwr (Mile Run to I-287 Pisctwy)	2,329	2,134	20,586	275,798
02030105130030	Oakeys Brook	16	31	319	3,002
Total:		14,312	14,750	138,921	2,166,971

TP = Total phosphorous  
TSS = Total nitrogen  
TSS = Total suspended solids

**Table 5: Land Use/Build-Out Calculation Summary**

HUC14 ID	HUC14 Sub-Watershed Name	Existing		Potential Build-Out	
		Total Area (acres)	Imperv. Area (acres)	Imperv. Area (acres)	Imperv Increase
02030105110010	Heathcote Brook	981.03	52.01	172.80	332.2%
02030105110030	Millstone R (Beden Bk to Heathcote Bk)	2,341.20	112.66	451.62	400.9%
02030105110110	Millstone R (Blackwells Mills to Beden Brook)	5,571.00	350.78	648.37	184.8%
02030105110120	Six Mile Run (above Middlebush Rd)	4,202.48	580.13	461.21	79.5%
02030105110130	Six Mile Run (below Middlebush Rd)	3,472.28	283.75	185.34	65.3%
02030105110140	Millstone R (Amwell Rd to Blackwells Mills)	965.80	47.79	116.31	243.4%
02030105110170	Millstone River (below Amwell Rd)	3,067.04	151.89	469.89	309.4%
02030105120140	Raritan R Lwr (I-287 Piscatway-Millstone)	3,320.94	787.12	627.47	79.7%
02030105120150	Mile Run	1,320.42	466.44	298.28	63.9%
02030105120160	Raritan R Lwr (Mile Run to I-287 Pisctwy)	4,525.38	1,139.88	707.22	62.0%
02030105130030	Oakeys Brook	35.25	19.03	11.71	61.5%
Total:		29,802.82	3,991.48	4150.22	104.0%

Imperv. = Impervious  
Develop. = Developable

As would be expected, full build-out conditions within the Township will cause increases in both pollutant loadings and impervious surface areas within the Township, with the amount of impervious surface coverage expected to double at maximum build-out.

**D. Conclusions:**

As presented within the Township Environmental Commission’s “Report On Water Quality of Franklin Township”, the Commission sampled the water quality throughout most streams within the Township in order to establish a baseline for water quality. The streams were sampled for such contaminants as

fecal coliforms, total phosphorous, turbidity, total suspended solids, and total nitrogen. The study concluded that the following for the sampled streams:

- a. All streams exceeded the NJDEP Surface Water Quality Standards (SWQS) for fecal coliform.
- b. Most streams exceeded the NJDEP SWQS for total phosphorous.
- c. Some of the streams exceeded the NJDEP SWQS for total suspended solids and turbidity.
- d. None of the streams exceeded the NJDEP SWQS for total nitrogen.

Although the scope of the land use/build-out analysis was limited to total phosphorous, nitrogen and suspended solids, it is evident that stormwater pollutant loadings under full build-out land development conditions shall only cause further degradation of water quality within receiving water bodies. In addition, with the amount of impervious surface coverage expected to double under build-out conditions, stormwater management strategies need to be established to reduce the potential for increased flood frequencies, volumes and soil erosion concerns that accompany dramatic increases in such impervious coverage.

It is also noted that the Township Environmental Commission's study sampled a few of the streams for oil and grease and the results indicated that these contaminants do not pose a water quality issue at the present time. However the development potential for 4,150 acres of new impervious surface coverage suggests that petroleum hydrocarbons and other contaminants related to oil and grease may become future water quality concerns. This analysis is the first step in understanding the impacts that future development will have on water quality and quantity. The Township should therefore be proactive in developing strategies to minimize, manage and/or mitigate these impacts through such mechanisms as additional stormwater management control techniques and possible changes to the land use zoning.

**Note: See attachments and figures at the end of this document for additional land use and build-out information.**

# Township of Franklin

## BMP Design Criteria

### Groundwater Recharge

The Municipal Stormwater Management Plan requires that a proposed major land development comply with one of the following two groundwater recharge requirements:

**Requirement 1:** That 100 percent of the site's average annual pre-developed groundwater recharge volume be maintained after development; or

**Requirement 2:** That 100 percent of the difference between the site's pre- and post-development 2-Year runoff volumes be infiltrated.

The MSMP allows the site designer to select which requirement to follow. The Plan also states that compliance with either of the above alternative requirements must be demonstrated through hydrologic and hydraulic analysis. Regardless of which alternative requirement is selected, such an analysis will generally begin with a computation of the existing (or pre-developed) hydrologic conditions at the proposed development site. In the case of **Requirement 1**, these conditions will focus on the annual amount of groundwater recharge that occurs at the site under pre-developed conditions while, for **Requirement 2**, the focus will instead be on the pre-developed volume of 2-Year site runoff.

These computations to be followed by similar ones for the proposed (or post-developed) conditions at the site. A comparison of the results of either of these pre- and post-development computations will then yield the annual volume of groundwater that must be recharged (**Requirement 1**) or 2-Year storm runoff volume that must be infiltrated (**Requirement 2**) through one or more structural recharge or infiltration BMP's. Ideally, the planning and design of the proposed site will have incorporated nonstructural measures to such an extent that the need for structural facilities is reduced to a practical minimum.

Finally, once the analysis of pre- and post-development conditions has established the need for structural recharge (**Requirement 1**) or infiltration (**Requirement 2**) BMP's, the hydrologic and hydraulic analysis would next focus on the actual design of such facilities. This process would include answering questions such as:

- should the required recharge or infiltration be achieved at a single facility or several located throughout the development site?

- should the facilities be located above or below ground?
- which portions of the development site should be utilized to generate runoff to the facilities?
- what facility dimensions are required?
- where should the facilities be located on the site relative to buildings, septic systems, property lines, and other sensitive areas?

New Jersey Stormwater BMP Manual *Chapter 6: Groundwater Recharge* presents the groundwater recharge information necessary to perform the hydrologic and hydraulic analysis required for **Requirement 1** (maintaining pre-developed annual recharge volumes).

Information necessary for the analysis required for **Requirement 2** (infiltrating the increased 2-Year runoff volume) is presented in New Jersey Stormwater BMP Manual *Chapter 5: Computing Stormwater Runoff Rates and Volumes*. Design information regarding structural recharge and infiltration BMP's can be found in this chapter and New Jersey Stormwater BMP Manual *Chapter 9: Structural Stormwater Management Measures*.

# Township of Franklin

## Public Education and Outreach on Stormwater Impacts

Franklin Township has traditionally and will continue to conduct the following Local Public Education activities:

Franklin Township includes educational stormwater articles within the Township newsletter that is mailed out 3 times a year to all residents.

Educational information and materials are distributed to the public at the Township's Fourth of July fireworks celebration each year. NJDEP brochures and other educational materials are made available at the Township table. In addition, the Township invites local watershed and other environmental groups to set up their own booths during this event.

Aforementioned brochures and other education material are made available at the Township Clerk's Office, the Township's Community Development and Senior Center and the Franklin Township Library. Education materials are made available on the Franklin Township website and educational programs are produced for Franklin Township's 24-hour cable channel (FFTV-25).

Somerset County mails out an NJDEP flyer with their recycling calendars.

In order to be fully conforming with the new 10-point system outlined in March 2009 renewal of the Master General Permit, the Township will be exploring some of the following activities: creating and maintaining a stormwater page on the Township website, presenting a stormwater display at a Township event, creating a Citizen Stormwater Advisory Committee to the Environmental Commission, utilize NJDEP material to produce a broadcast on the Township's cable channel, mailing educational material to every resident and business in the Township, partnering with local watershed or other local group to carry out watershed stewardship/education activities and distributing a letter from the Mayor highlighting the requirements and environmental benefits of the Township's stormwater-related ordinances. Update (3/3/16): The Township has been able to meet all of those goals.



## Storm Drain Inlet Labeling

The Township's Public Works Department completed the initial labeling in spring 2008. The Township labeled all storm drain inlets that are along municipal streets with sidewalks, and all storm drain inlets within plazas, parking areas, or maintenance yards that are operated by Franklin Township.

The Public Works Department used plastic labels ordered through a cooperative pricing agreement through Somerset County that were applied using adhesive. The storm drain inlet labeling program was completed ahead of the schedule set by the NJDEP.

During our annual catch basin cleaning program, the Township checks these labels to ensure that they are still visible, and if they are not, the Township replaces them immediately.

# **Township of Franklin**

## **Construction Site Stormwater Runoff Control**

Stormwater management measures for major development shall meet the erosion control and stormwater runoff quality. These standards shall be met by incorporating nonstructural stormwater management strategies into the design.

The development shall incorporate a maintenance plan for the stormwater management measures. Stormwater management measures shall be designed to reduce the construction load of total suspended solids (TSS) in stormwater runoff generated during construction.

### **Post-Construction Stormwater Management**

Stormwater management measures for major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards per N.J.A.C. 7:8-5.4 and 5.5. To the maximum extent practicable, these standards shall be met by incorporating nonstructural stormwater management strategies per N.J.A.C. 7:8-5.3 into the design. If these measures alone are not sufficient to meet these standards, structural stormwater management measures per N.J.A.C. 7:8-5.7 necessary to meet these standards shall be incorporated into the design.

Design stormwater management measures so that the post-construction peak runoff rates for the two, 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 development shall incorporate a maintenance plan under N.J.A.C. 7:8- 5.8 for the stormwater management measures.

Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm 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 one-quarter acre of impervious surface is being proposed on a development site. The requirement to reduce total suspended solids (TSS) does not apply to any

stormwater runoff in a discharge regulated under a numeric effluent limitation for TSS imposed under the New Jersey Pollutant Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement. 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 6 below. The calculation of the volume of runoff may take into account the implementation of non-structural and structural stormwater management measures.

<b>Time (minutes)</b>	<b>Cumulative Rainfall (inches)</b>	<b>Time (minutes)</b>	<b>Cumulative Rainfall (inches)</b>
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		

# Franklin Township

## POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

### Franklin Township Good Housekeeping Goals

- Proper Recycling
- Proper Waste Disposal
- Pollution Prevention

**Introduction** This standard operating procedure (SOP) contains the basic practices of good housekeeping to be implemented at the maintenance yard and garage including maintenance activities at additional operations in the Township. The purpose of this SOP is to provide a set of guidelines for the employees of the Township for Good Housekeeping Practices at their maintenance yard and garage including maintenance activities at other locations.

**Scope** This SOP applies to the maintenance yard and garage including maintenance activities at other locations.

#### Standards and Specifications (General)

- all containers shall be properly labeled and the labels must remain clean and visible.
- all containers must be kept in good condition and tightly closed when not in use.
- when practical, chemicals, fluids and supplies should be kept indoors.
- if containers are stored outside, they must be covered and placed on spill platforms.

- keep storage areas clean and well organized.
- spill kits and drip pans must be kept near any liquid transfer areas and protected from rainfall.
- absorbent spill cleanup materials must be available in maintenance areas and shall be disposed of properly after use.
- place trash, dirt and other debris in properly labeled containers.
- collect waste fluids in properly labeled containers and dispose of them properly.
- maintain a recycling program by disposing of papers, cans, bottles and trash in designated containers.

#### Standards and Specifications (Salt and De-Icing Material Handling General)

- during loading and unloading of salt and de-icing materials, prevent and/or minimize spills. If salt or de-icing is spilled, remove the materials using dry cleaning methods. All collected materials shall be either reused or properly discarded.
- sweeping should be conducted once a week to get rid of dirt and other debris. Sweeping should also be conducted immediately following loading/unloading activities, when practical.
- minimize the tracking of materials from storage and loading/unloading areas.
- minimize the distance that salt and de-icing materials are transported during loading/unloading activities.
- any materials that are stored outside must be tarped when not actively being used.

- if interim seasonal tarping is being implemented, de-icing materials may be stored outdoors only between October 15<sup>th</sup> through April 30<sup>th</sup>.

#### Spill Response and Reporting (General)

- conduct clean up of any spill(s) immediately after discovery.
- spills are to be cleaned using dry cleaning methods only.

#### Maintenance and Inspection (General)

- Periodically check for leaks and damaged equipment and make repair as necessary.
- Perform monthly inspections of all indoor and outdoor storage areas.
- The discharge pipe/outfall from a secondary containment area must have a valve and the valve must remain closed at all times except as described below. Accumulated stormwater may be discharged if a visual inspection is performed to ensure the contents of aboveground storage tank have not come into contact with the stormwater to be discharged. If the contents of the tank are not visible in stormwater, previous tank inspections must be relied up to determine if leakage has occurred. If a determination cannot be made that the stormwater in the secondary containment area is uncontaminated by the contents of the tank, then the stormwater shall be hauled for proper disposal.

#### Standard Operating Procedure for Maintenance Facility

- Yearly inventory of all vehicles and equipment.
- Current up to date list of all chemicals stored and used on site.
- MSDS kept on file.

- Right to Know training for new employees and refreshers courses for other employees is done annually.
- Clean up after spills as soon as they are discovered.
- Properly disposing of hazardous materials.
- Store all materials needed for maintenance indoors.

#### Standard Operating Procedures for Vehicle Fueling and Receiving Bulk Fuel

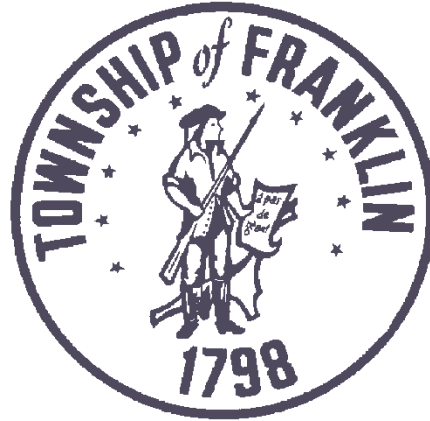
- No topping off vehicles, mobile fuel tanks, and storage tanks. Drip pans must be used under all hose and pipe connections and other leak-prone areas during bulk transfer of fuels.
- A trained employee will be present during bulk fuel delivery at all times. Employee will be in possession of spill containment and cleanup materials.
- Only designated sites can receive bulk fuel delivery.
- Absorbent booms will be deployed around the nearest downhill drainage structures during bulk transfers.
- Instructions will be clearly posted in prominent areas for safe operation of fueling equipment.
- Contact information will be clearly posted in case of a spill.
- A contract with a certified vendor to make all necessary repairs will be in place.
- Any leaks will be reported and repaired immediately.

#### Standard Operating Procedure for Vehicle Maintenance

- All repairs are to be done indoors whenever possible.
- The indoor facility will have a concrete or paved floor.
- If repairs must be done outdoors and for longer than a day, a cover will be provided.
- Drip pans will be used whenever there is a possibility for any type of fluid spillage. All fluids will be recycled or disposed of according to DEP regulations.

**Municipal Stormwater  
Management Plan**

**For**



**Township of Franklin  
Somerset County, New Jersey**

Approved by the Franklin Township Stormwater Committee on  
December 6, 2004.

Original Township Stormwater Committee Members:

C. Andrew Twiford – Township Stormwater Coordinator  
Fred McKenzie – Township Council Representative  
Kenneth W. Daly – Township Manager  
Theodore Chase, Jr. – Planning Board/Environmental Commission Representative  
Frank Hasner – Planning Board/Economic Development Representative  
Joseph Punia – Local Business Representative  
Thomas Zilinek III – Township Engineer  
Scott M. Thomas – Township Senior Engineer  
Walter Galanowsky – Township Health Official  
Joyce Miller – Township Purchasing Agent

Stormwater Management Plan Revisions:

03/30/05 – Update Build-out Analysis  
07/17/06 – Per County Comments  
08/01/06 – Per County Comments  
06/19/07 – Per NJDEP & Public Comments  
06/01/09 – Per NJPDES Stormwater Discharge Master General Permit Renewal



12/15/12 – General Plan Updates

03/03/16 – General Plan Updates

Plan Approval and Adoption Dates:

12/06/2004 – Stormwater Management Plan approved by Stormwater Committee

03/30/2005 – Stormwater Pollution Prevention Plan signed

04/27/2006 – Stormwater Management Plan sent to Somerset County for review

07/01/2006 – Stormwater Management Plan added to the Master Plan by the Township Planning Board

04/07/2008 – Stormwater Management Plan and Stormwater Control Ordinance approved by the Somerset County Planning Board

Ordinance Adoption Dates:

07/22/1976 – Pet Waste Ordinance (#806)

04/11/1989 – Litter Ordinance (#1478)

11/27/2001 – Wildlife Feeding Ordinance (#3254)

12/02/2004 – ~~Containerized Yard Waste Ordinance~~ (Property Maintenance)

12/02/2004 – ~~Improper Disposal of Waste Ordinance~~ (Property Maintenance)

05/23/2006 – Stormwater Control Ordinance (#3607)

09/12/2006 – Revised Stormwater Control Ordinance (#3631 – Ordinance was revised based upon Somerset County comments)

03/10/2009 – Property Maintenance Ordinance (includes containerized yard waste and improper disposal of waste regulations)

05/03/2010 – Private Storm Drain Inlet Retrofitting Ordinance

05/03/2010 – Refuse Containers/Dumpsters Ordinance

Stormwater Pollution Prevention Team Members (2023 Calendar Year):

Stormwater Program Coordinator:

Scott M. Thomas, CFM, Senior Engineer – (732) 873-2500 ext. 6237

Public Notice Coordinator:

Ann Marie McCarthy, Municipal Clerk – (732) 873-2500 ext. 6211

Post-Construction Stormwater Management Coordinator:

Carl Hauck, Public Works Manager – (732) 249-7800

Local Public Education Coordinator:

William Byrtus, Director of Recreation – (732) 873-2500 ext. 6345

Ordinance Coordinator:

Louis Rainone, Esq., Municipal Attorney – (201) 928-1100

Public Works Coordinator:

Carl Hauck, Public Works Manager – (732) 249-7800

Employee Training Coordinator:

Carl Hauck, Public Works Manager – (732) 249-7800

Other:

Barry Wilbur, Code Enforcement Official – (732) 873-2500 ext. 6228

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Scott M. Thomas, CFM  
Stormwater Program Coordinator

Date