Regional Stormwater Management Plan for Robinson's Branch, Union and Middlesex Counties, New Jersey

A. Project Abstract

This project will develop and roll out an effective Regional Stormwater Management Plan (RSMP) for the Robinson's Branch that addresses both water quality and quantity problems. In order to complete the RSMP, a characterization and assessment of the drainage area will be completed including, as needed, detailed hydrologic, hydraulic, and water quality models of specific reaches. Using the data collected for the characterization and assessment, a RSMP will be developed addressing issues such as mitigation of increased volume and rates of runoff due to new and existing development, and the impact of these increases on the waterways. The RSMP will address reduced stream baseflow due to increased impervious areas, nonpoint source pollution, stream corridor restoration, public education and outreach, and BMP technology transfer to municipal, county, and state officials.

B. Description of Project Area

Robinson's Branch is in the Rahway River watershed, which the NJDEP is currently developing a TMDL for fecal coliform. Since no point sources discharge to this waterway, it is expected that the TMDL will require significant reductions in nonpoint source pollution. The majority of the 22 square miles of the Robinson's Branch Watershed is highly impervious. The 1995/97 land use GIS data from NJDEP indicates that approximately 79% of the watershed is urban, 11% is wetlands and 9% forested. The watershed is littered with commercial and industrial properties and contains major transportation arteries. Due to the urbanized nature of this watershed, which continues to be intensively developed, increased volumes and rate of runoff have resulted in significant flooding in this watershed and the degradation of Robinson's Branch. In addition to the flooding problems, very few Best Management Practices (BMPs) appear to be in place to treat storm water runoff. Two impoundments are located on Robinson's Branch: the Clark Reservoir and Milton Lake. Both of these impoundments collect sediment. Milton Lake is suffering from severe sedimentation and impacts from Canada geese. The Union County Parks system is in the planning stages for dredging Milton Lake. The Ash Brook reservation is also located within the Robinson's Branch Watershed. This is one of the only natural areas remaining in the watershed.

C. Summary of existing conditions to be addressed

Robinson's Branch is a tributary to the Rahway River. The Rahway River is a 303(d) listed waterbody (moderately impaired) for both fecal coliform and total phosphorous (NJDEP, 1998). Both of these pollutants are largely associated with stormwater runoff. The initial listing was based on chemical data collected on the Rahway River. In addition to being on NJDEP's list of impaired waterways, the NJDEP has four ambient macroinvertebrate sampling stations (i.e., AMNET Stations AN0196, AN0197, AN0198, and AN0199) located on Robinson's Branch and unnamed tributaries to Robinson's Branch. All of these stations are listed as moderately impaired (NJDEP, 1998).

Due to the highly urbanized nature of the watershed, the Robinson's Branch is in severe jeopardy of becoming severely impaired. The stream receives uncontrolled runoff from highly impervious urbanized areas, including areas that send fecal coliform from geese and pets into waterways. The flashy nature of the stream causes severe erosion during storm events, depositing the eroded sediment and other NPS pollution downstream.

Flooding is a severe problem in the watershed. There is strong community support for this project for this reason. Although the municipalities are enforcing stricter storm water control requirements for new development, little is being done to address storm water control for existing development. This project addresses this need.

In the past, flood control projects typically only addressed controlling runoff volumes and accomplished little in the way of pollutant removal. The RSMP will incorporate management measures for controlling stormwater volumes and achieving high pollutant removal efficiencies. Through regional planning that examines Robinson's Branch as a whole, both water quality and water quantity issues can be addressed.

D. PROJECT DESCRIPTION

This project will develop a Regional Stormwater Management Plan (RSMP) for Robinson's Branch by examining the watershed as a whole and fully understanding the interactions of each piece of this troubled system. The RSMP for Robinson's Branch will address mitigating increases in stream flows due to stormwater runoff, promote recharge to increase the baseflow of the stream, and implement BMPs to improve the water quality of the Robinson's Branch, and hence the water quality of the Rahway River. The RSMP will also address reducing erosion of the stream banks and enhancing the riparian corridor.

We anticipate providing a significant in-kind match through the participation of our County members, and by working with community groups that already are deeply concerned and involved in water quality and/or quantity issues. By actively assisting the professionals on the project team (e.g., in collecting data for the characterization and assessment of Robinson's Branch, evaluating degraded stream sections, recommending strategies for pollution reduction and mitigation of flooding, and rolling the RSMP out to the community), concerned citizens and local government officials will gain a broader perspective on the problems of Robinson's Branch and their roles in solving them.

The ultimate goal of this project is to develop and roll out a Regional Stormwater Management Plan that, once implemented, will minimize flooding in the watershed and improve the water quality of the Robinson's Branch. The plan that is developed for this project will contain all the elements that are required for a Regional Stormwater Management Plan as outlined in N.J.A.C. 7:8, the NJDEP Stormwater BMP Manual, and the NJDEP's Guidelines for Creation, Implementation, and Adoption of Regional Stormwater Management Plans (see attached copy). A brief summary of the project tasks are given below.

a) Form a Regional Stormwater Management Committee as described in NJDEP's Guidelines for Creation, Implementation, and Adoption of Regional Stormwater Management Plans (See Attached Copy).
b) Assemble all existing data for Robinson's Branch and its watershed.
c) Complete a characterization and assessment of the watershed including producing maps of drainage area boundaries; existing land use; projected land use (build out scenarios); topography; water bodies; freshwater wetlands; flood hazard areas; aquifer recharge areas; environmentally sensitive areas; man-made stormwater conveyances (storm sewer systems), storage and discharge systems; drinking water treatment plant intakes; significant or known obstructions within the flood plain; and areas of significant impairments including eroding stream beds or banks, failing structures, degraded habitats, and depleted/degraded riparian buffers.
d) Develop mathematical models to describe the physical characteristics of the watershed including hydrologic and hydraulic models. Several models to be considered are HEC-1, HEC-HMS, TR20, PSRM, HSPF, SewerCAD, and HEC-RAS. Although the modeling will be mainly based on existing data, additional flow and stream characteristics may be collected including stream cross-section data, bridge data, and channel condition data.
e) Evaluate the existing conditions of the stream and the potential for restoration of degraded sections of stream using the Federal Interagency Stream Restoration Working Group's manual *Stream Corridor Restoration* as a guide. Too often stream restoration projects are blindly implemented without any thought given to the potential negative impacts of the restoration. By following this guide, the unforeseen consequences of restoration attempts can be avoided.
f) Use the modeling and evaluation in d) and e) above to identify area specific water quality, water quantity, and groundwater recharge objectives.
g) Identify drainage area specific design and performance standards to meet the objectives stated by the RSMP Committee.
h) Develop stormwater management measures to achieve the RSMP Committee stated objectives for new and existing land uses.
i) Develop an implementation strategy for the RSMP as described in the NJDEP Guidelines.
j) Prepare the RSMP, which will include management measures for new and existing land uses; management measures to enhance, protect and preserve watershed ecosystems; and recommended monitoring and evaluation techniques for determining the effectiveness of the management measures and the overall RSMP.
k) Design, print, and widely disseminate a report that contains recommended "top line" strategies from the RSMP and actions residents, businesses, and local government officials who live and work in the watershed need to take in order to implement them.
l) Conduct roll out events that involve stakeholders and draw attention to the need for water resources protection and improvement.
m) Conduct media outreach to increase public understanding and support for the Robinson's Branch RSMP, in particular, and water resources protection and improvement in general.
n) Report the results of the project to NJDEP and the WMA 7 PAC through quarterly reports, and presentations at the six-month mark and after the completion of the project.

E. GOALS AND MEASURABLE OBJECTIVES

The ultimate goal of this project is to develop and roll out a Regional Stormwater Management Plan that, once implemented, will minimize flooding in the watershed and improve the water quality of the Robinson's Branch. A major step towards accomplishing this goal is to achieve the following objectives:

a) Form a RSMP Committee.
b) Conduct a characterization and assessment of the drainage area to completely understand the watershed and its hydrology.
c) Complete a search of previously completed studies of Robinson's Branch in order to build on, but not duplicate, earlier efforts. Information from these studies may be incorporated into the RSMP.
d) Review all available engineering drawings that contain storm sewer systems for incorporation into the characterization and assessment.
e) Incorporate all data collected in the characterization and assessment into a Geographic Information System (GIS).
f) Develop mathematical models to describe the physical characteristics of the watershed. Both hydrologic and hydraulic modeling of the watershed will be completed to examine existing conditions and future "build out" scenarios.
g) Evaluate Robinson's Branch and its tributaries to determine the current status and the potential for restoration of degraded stream sections.
h) Involve local public officials in implementing the project.
i) Involve the public and media through education and outreach to the community
j) Involve the WMA 7 Public Advisory Committee through scheduled communications.

The project offers a host of other watershed enhancement benefits. The project addresses watershed management priorities, goals, objectives; improving the health of the watershed to aid public health; fostering local government's and the general public's environmental awareness and role in watershed management through hands-on technology transfer and public education and outreach; researching, assessing, and monitoring the health of surface water; enhancing the quality of surface and ground water; enhancing wildlife habitat; restoring ecosystem health; improving an aquatic community; managing waterfowl damage; reducing contamination of surface and ground water; reducing nutrient loadings; utilizing BMPs to protect and improve water quality; turning watershed management plans into reality; and setting a precedent for other communities to protect the water resources of the Rahway River and other waterbodies in WMA 7.

This project also addresses Commissioner Campbell's objectives, including accelerating the TMDL process, developing regional stormwater management plans, upgrading and implementing municipal codes for water resources enhancement, and Smart Growth.

F. PROJECT TIMELINE

Milestones:				
Description	**Responsible Parties**	**Timeline**	**Anticipated Start Date**	**Anticipated Completion Date**
Form a RSMP Committee, identify a Lead Planning Agency, hold regular meetings, and allow committee to steer the project.	• Rutgers	Months 1-24	September 2003	August 2005
Search for available data and review of existing engineering drawings of storm sewer systems	• Rutgers • Rahway River Association • County Engineers • Volunteers	Months 1-4	September 2003	December 2003
Preparation of characterization and assessment and mapping	• Rutgers • Rahway River Association • County Engineers • Volunteers	Months 4-6	December 2003	February 2003
Collection of additional data for model development including biomonitoring, dry and wet weather sampling	• Rutgers • Rahway River Association • County Engineers	Months 6-18	February 2003	March 2004
Hydrologic and hydraulic model development; water quality model development	• Rutgers	Months 6-21	February 2003	May 2005
Evaluate existing stream conditions and potential stream segments for restoration	• Rutgers • Rahway River Association • County Engineers • Volunteers	Months 6-21	February 2003	May 2005
Prepare the Regional Stormwater Management Plan	• Rutgers • Rahway River Association • County Engineers • Volunteers	Months 21-24	May 2005	August 2005
Progress reports (NJDEP)	• Rutgers	Months 3 – 24 (quarterly)	November 2003	August 2005

Anticipated Start Date: September 1, 2003 Anticipated End Date: August 31, 2005