Non-Point Source Planning for the Delaware River Basin

Outline

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Background

Delaware River Basin Commission

• Founded in 1961 to manage the water resources of the Delaware River Basin
• Members include the four basin state governors (NY, NJ, PA, and DE) and a representative appointed by the President
Delaware River Basin

- 330 Miles of River
- Approximate drainage area of 13,500 square miles
- 4 states
- 2 EPA regions
- 17 million water users

Commission Programs

- Water Supply Planning
- Water Quality Protection
- Watershed Management
- Flood Protection
- Recreation
- Regulatory Review
History of Special Protection Waters Designation

Water Quality Programs

• Adopted Water Quality Regulations in 1962
• Prior to 1992-focus of programs was on raising water quality to meet criteria
  – Required plants to upgrade to secondary treatment
  – Issued wasteload allocations in estuary for CBOD$_{20}$
River Reaches added to the National Wild and Scenic Rivers System in 1978

- The Upper Delaware Scenic and Recreational River stretches about 73 miles from Hancock, N.Y. to Milriff, Pa.
- The Middle Delaware Scenic and Recreational River stretches about 40 miles from just south of Port Jervis, N.Y. downstream to the Delaware Water Gap near Stroudsburg, Pa.

Petition to Designate Scenic Rivers

In 1989 the Watershed Association of the Delaware River petitioned the Commission to classify the Delaware River from Hancock, NY to the Delaware Water Gap as an Outstanding National Resource Water (EPA definition)
Protection for High Quality Waters

Staff and the Water Quality Advisory Committee worked with the public to develop a DRBC designation for high quality waters.

Establishing Existing Water Quality

- DRBC expanded its existing water quality monitoring program in the Upper and Middle Delaware to define existing water quality.
- DRBC also utilized historical data from USGS, NJDEP, NYDEC, and PADEP to define existing water quality.
Special Protection Water Rule

- On December 9, 1992, the Commission amended the Regulations to establish the Special Protection Water policy.
- On February 23, 1994, the Commission amended the Regulations to add requirements for controlling non-point sources (NPS) of pollution in Special Protection Waters.

Special Protection Waters (SPWs)

Goal: Protect existing high quality waters with exceptionally high scenic, recreational, ecological or water supply values through the “no measurable change” policy.
No Measurable Change Policy

There shall be no measurable change in existing water quality except towards natural conditions in waters considered by the Commission to have exceptionally high scenic, recreational, ecological, and/or water supply values.

Stream Segments Designated by DRBC as SPWs in 1992

- The Upper Delaware Scenic and Recreational River including the portions of the tributaries located within the river corridor
- The Middle Delaware Scenic and Recreational River including the portions of the tributaries within the Delaware Water Gap National Recreation Area
- The 8.5-mile stretch of river above the Delaware Water Gap National Recreation Area and below the Upper Delaware National Scenic and Recreational River
DRBC Watershed Planning Projects in the Basin

Current Special Protection Waters Regulations
Current SPW NPS Regulations

- Reviewable projects must submit a **Non-Point Source Pollution Control Plan**
- NPS Pollution Control Plan requirement is satisfied if the service area is part of a watershed NPS management plan that has been adopted into the Commission’s Comprehensive Plan and is being implemented

NPS Pollution Control Plan

A plan describing the Best Management Practices to be used at the project site and in the project service area to control increases in non-point source pollutant loadings resulting from the project
Applicability of NPS Pollution Control Plan

Required for reviewable withdrawal and discharge projects in the drainage area of SPWs

Proposed Changes to the Regulations
Proposed Changes to the Non-point Source Requirements

- Encourage the development of **Area-wide Plans**
- Expand the goal of the NPS Pollution Control Plans to include specific requirements to control the rate, volume, and quality of stormwater runoff
- Encourage the use of non-structural BMPs over structural BMPs

Area-wide Plan

- A plan prepared on a municipal, multi-municipal, county or watershed basis
- Plan may include strategies for managing, controlling, and abating non-point source loadings
- Applicants are exempt from the requirement of submitting a NPS Control Plan if an Area-wide Plan has been adopted and is being implemented
Design Principles and Minimum Requirements

Pre vs. Post Development Hydrograph

Source: Schuler, 1987
Effect of Groundwater Recharge on Stream Flow

Source: Schuler, 1987

References Used in Developing Design Principles and Minimum Requirements

- Maryland Stormwater program
- Draft Brodhead/McMichaels Creek Watershed Act 167 Stormwater Management Plan Update
- Pequea Township Stormwater Management Ordinance
- New Jersey Stormwater program
- Pennsylvania Stormwater program
Design Principles

• Maintain or restore the natural hydrology of the site
• Preserve natural landscapes
• Minimize site disturbance
• Maximize pervious areas and maintain existing infiltration
• Utilize non-structural BMPs before structural BMPs
• Protect stream channels from degradation

Design Principles (cont.)

• Prevent increased flooding or erosion due to runoff rate or volume
• Adequately treat stormwater through the development and implementation of construction and post-construction BMPs to maintain existing water quality in SPWs
• Ensure long-term operation and maintenance of BMPs
Minimum Requirements

Water Quality Controls

- BMPs must be designed to remove at least 80% of the average annual post-development TSS load
- BMPs shall remove nutrient load to the extent feasible
Rate and Volume Controls

• Post-construction runoff hydrographs shall be matched to the pre-development hydrographs for the 2, 10, and 100 year storm events; or
• Post-development peak runoff rates shall be reduced to that of pre-development peak runoff rates for the 2, 10, and 100 year storm events; and
• There shall be no increase in runoff volume from post-development to pre-development generated during the 2-year storm.

Rate and Volume Controls cont.

• Annual average post-development recharge must equal pre-development recharge
• Alternatives to post-development stormwater infiltration shall be used in areas of limited soil capability due to site conditions
Partnering

Partners in Developing Area-wide Plans

- Basin states
- County Soil Conservation Districts
- County Planning Commissions
- Municipalities
- Watershed Associations
Partnering with States

• Establish MOAs with the states to define roles of the state vs. DRBC in implementing NPS programs
• Work with the states as they revise their stormwater requirements so that the requirements are consistent

Partnering with Counties

• Partner with County Soil Conservation districts to:
  – Help enforce Area-wide plans
  – Review Erosion and Sediment Control Plans
• Partner with County Planning Commissions to:
  – Develop Act 167 Stormwater Management Plans
  – Adopt Stormwater Management Plans into the Comprehensive Plan
Partnering with Municipalities

- Work with Municipalities who are developing/revising ordinances for stormwater control to ensure the ordinances meet DRBC requirements
- Once adopted, the ordinances would allow DRBC requirements to be applied to projects that are below the DRBC review threshold

Partnering with Watershed Associations

Partner with Watershed Associations to:
- Develop watershed plans containing a strategy for controlling non-point source pollution
- Perform volunteer monitoring that can alert DRBC and other agencies of problems in water bodies
- Apply for grants for watershed planning efforts
- Provide education/outreach in the watershed
Case Studies

Brodhead/McMichaels Creek Watershed Stormwater Management Plan

- Updating the Act 167 Stormwater Management Plan
- Potential adoption of the Stormwater Plan into the DRBC Comprehensive Plan
- This would be the first Area-wide Plan adopted
Plan Objectives

• Maintain groundwater recharge
• Implement NPS pollution removal methodologies
• Reduce channel erosion
• Manage overbank flood events
• Manage extreme flood events

Model Ordinance

• Provisions are sequenced to minimize stormwater impacts
• Design must first emphasize non-structural alternatives
  – Non-discharge Alternatives
  – Minimizing impervious surfaces
  – Maintaining the natural hydrologic regime of the site
• Remaining Stormwater must comply with design requirements to control the rate, volume, and quality
Design Requirements Contained in the Model Ordinance

- Groundwater recharge component with water quality BMPs required prior to infiltration
- Require BMPs to detain the post-development 2, year 24-hour design storm to the pre-development 1-year design storm to prevent streambank erosion and water quality control
- Requirements to control the runoff rates for the 2, 5, 10, 25, and 100-year storms to prevent flooding

Mt. Pocono Municipal Authority

- Needs DRBC docket approval for expansion of the wastewater treatment plant
- Required to develop a NPS Pollution Control Plan
- Must work with Mt. Pocono Borough because they do not have the authority to implement the plan
- Located in Brodhead Creek Watershed
Mt. Pocono Municipal Authority

- Formed a Pocono Mountain Water Quality Committee to address in-stream water quality problems
- DRBC advises the committee and is part of the stormwater sub-committee
- The Municipal Authority has been working on the NPS Pollution Control Plan through the sub-committee
- Mt. Pocono Borough plans to pass the model ordinance from the Brodhead/McMichaels Creek Watershed Stormwater Management Plan

Ongoing Work
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• DRBC is creating a SPW guidance manual
• DRBC is revising the Special Protection Water section of the Water Quality Regulations
• DRBC is collecting data to determine existing water quality in the Lower Delaware River for possible SPW designation

Conclusion

The effort to combine planning, design, and regulations to control NPS pollution will help DRBC meet its goal of maintaining existing water quality in Special Protection Waters
Contact Information

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