



Protecting Streams in Pennsylvania: *A Resource for Municipal Officials*

Prepared by the Delaware Riverkeeper Network

Funding provided by the William Penn Foundation through a grant to the Delaware Riverkeeper Network, the Clean Water Fund and the Stroud Water Research Center

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September 2007

Delaware Riverkeeper Network

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The Delaware Riverkeeper Network (DRN) *is the only advocacy organization working throughout the entire Delaware River Watershed. The Delaware Riverkeeper is an individual who is the voice of the River, championing the rights of the River and its streams as members of our community. The Delaware Riverkeeper is assisted by seasoned professionals and a network of members, volunteers and supporters. Together they form DRN, and together they stand as vigilant protectors and defenders of the River, its tributaries and watershed. DRN is committed to restoring the watershed's natural balance where it has been lost and ensuring its preservation where it still exists.*

Clean Water Fund

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The Clean Water Fund (CWF) *is a national research and education organization that promotes the public interest on issues relating to water, waste, toxics and natural resources. CWF's research, technical assistance, training, outreach and educational programs increase public understanding of environmental issues and promote adoption of environmentally sound policies.*

Stroud Water Research Center

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The Stroud Water Research Center (SWRC) *seeks to understand streams and rivers and to use the knowledge gained from its research to promote environmental stewardship and resolve freshwater challenges throughout the world.*

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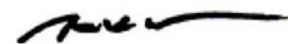
Foreword

All Pennsylvanians have a fundamental right to a healthy environment, a right that was officially recognized in 1971 with the adoption of the Environmental Rights amendment. Voters ratified the amendment by a 4 to 1 margin, demonstrating broad support by citizens across Pennsylvania for protecting the Commonwealth's natural resources.

Pennsylvania's Environmental Rights amendment also embraced the principle that the management of the Commonwealth's natural resources, including the 83,000 miles of streams and rivers contained within Pennsylvania's borders, is the administrative responsibility of the government. This principle is called the Public Trust Doctrine and comes to us from sixth century Roman law referred to as the *Institutes of Justinian*, which expressed that “[b]y the law of nature these things are common to all mankind, the air, running water, the sea and consequently the shores of the sea.”

Under the Public Trust Doctrine, Pennsylvania acts as the trustee for the Commonwealth's natural resources. Every agency staff member whose function relates to the environment is charged with protecting those resources for the benefit of future generations. Every elected official, from township supervisors to county officials to state legislators to Pennsylvania's governor, takes an oath of office to uphold Pennsylvania's Constitution and, in so doing, assumes the role of steward for the Commonwealth's natural resources that they may be protected for the benefit and use of future generations.

This guide has been prepared for municipal officials, with their responsibility as stewards of Pennsylvania's natural resources in mind, and for private citizens, to enhance their understanding of what to expect of those officials. Every Pennsylvanian should be aware of his or her rights to and responsibilities for a healthy environment. Municipal officials also need to be informed about the tools available to municipalities for protecting this fundamental right of all Pennsylvanians. This guide focuses on the municipal role in protecting water quality and quantity. Well-informed municipal officials will be more empowered to use their available powers to protect local streams which are vital to our quality of life. We hope the community leaders for whom this guide is intended will provide feedback that will ensure that it remains a useful and important resource for municipal officials.



Maya K. van Rossum,
the Delaware Riverkeeper

How To Use This Document

Private citizens expect their local officials to take a lead role in preserving water quality and quantity. A 2005 survey¹ of 1,000 voters nationwide identified local government as the entity that is the most or second most responsible for protecting clean water for communities. They believe that their local government should do more to address problems.

How land in a watershed is used affects water quality and water quantity, and Pennsylvania's local governments play a key role in regulating land by using the powers reserved for them under the Municipalities Planning Code. By using their powers to regulate land use to their fullest extent, municipalities will be best able to protect both water quality and water quantity within their jurisdictions.

The Pennsylvania Municipalities Planning Code² gives local governments authority to enact zoning provisions that protect public health and safety, preserve natural, historic, and agricultural resources, and prevent damage from flooding. But municipal officials also need to understand the federal and state roles in protecting water quality and quantity and the regulatory programs overseen by federal and state agencies. With this understanding, municipal officials will be better able to enact their local ordinances to protect water resources.

Whether you are a municipal official looking to protect your community's water resources or a concerned citizen hoping to spur your elected officials to take action, this guide will provide background information and useful tips for securing stronger local protections. This guide also includes action steps, a glossary, and links to important Internet sites that provide more information on water resource protection.

Glossary

Throughout this guide, you will find key words and phrases that appear in **bold** text. These words and phrases are defined in a glossary found in the sidebar on each page. Abbreviations and acronyms are also included. Sources of definitions include Title 25 of the Pennsylvania Code <http://www.pacode.com/secure/data/025/025toc.html>, the Environmental Protection Agency's Terms of Environment: Glossary, Abbreviations and Acronyms, <http://www.epa.gov/OCEPAterms/> and Fishbase's searchable glossary, online at <http://www.fishbase.org/search.php>.

Action Step

On many of the pages of this guide, you will find suggestions for meaningful actions. Some will increase personal awareness. Others may help you develop citizen action skills. Still others may secure greater regulatory protection for local streams. Pick a step, any step, and take action!

Additional Information

Occasionally, this sidebar will contain additional information that will help to increase the reader's understanding.

Related Topics

Under this heading you will find references to other pages in this guide that will further your understanding of the specific issue.

End Notes

¹ Lake Snell Perry Mermin and Associates. May 2005

² The Pennsylvania Municipalities Planning Code can be accessed via the website of the Pennsylvania State Association of Township Supervisors, <http://www.psats.org/mpc/index.html>.

Evolution of Water Protections

Glossary

Navigable waters: Traditionally, waters sufficiently deep and wide for navigation by all or specified vessels; in the United States, these waters come under federal jurisdiction and are protected by certain provisions of the Clean Water Act.

Point source: Any single identifiable source of pollution; e.g. a pipe, ditch, ship, ore pit, factory smokestack.

Antidegradation requirements: A federally mandated state program to protect water quality.

Stormwater: Runoff from precipitation, snowmelt runoff, surface runoff and drainage

Additional Information

What is Water Quality? The term “water quality” is often used to refer to the physical, chemical and biological characteristics of water. For scientific and legal purposes, “water quality” refers to the suitability of a waterway to support a particular use. Water quality may be suitable for some uses, but not for others. For example, water quality in a stream may be suitable for swimming, but not for drinking. Healthy water quality conditions are essential for a healthy environment and quality of life for us all.

End Notes

¹ See “Abandoned Mine Drainage” in *A Watershed Primer for Pennsylvania*, online at http://www.pecpa.org/_final_pec/Watershed_Primer.pdf.

² *The Clean Water Act Owner's Manual*, River Network, 1999.

³ See Sections 402(p) and 301 of the Clean Water Act. View the Act online at <http://www.epa.gov/r5water/cwa.htm#ECWA>. You can download all or parts of the Act (presents the law as amended as of November 27, 2002).

Water pollution control laws may be regarded as a relatively recent trend, but the first law intended to control the discharge of material to **navigable waters**, the federal Rivers and Harbors Act, was passed in the 19th Century (1899). Since that time, laws intended to protect water quality have evolved along with our understanding of the complexity of our aquatic ecosystems.

For much of our past, our water resources were not protected, but were instead exploited. Environmental laws did not provide the level of protection needed and often allowed pollution and environmental harm to continue. For example, despite the widespread knowledge of the harms inflicted by coal mining operations, mining companies in Pennsylvania were often exempted from regulations intended to protect waterways. As a result, decades of under-regulated mining resulted in thousands of miles of Pennsylvania streams being degraded or dead from the affects of acid mine drainage.¹

By the 1960's, the harm caused by exploitive uses of waterways began to be recognized across the country and brought about a shift in the way these resources would be regarded. 1972 marked the passage of the Federal Water Pollution Control Act Amendments. This landmark legislation, which would become known as the Clean Water Act, established a national water quality program.²

The goal of the Clean Water Act was to ensure all waters would be fishable and swimmable by 1983 and to eliminate pollution discharged to the nation's waters by 1985. The Clean Water Act made it unlawful for any person to discharge any pollutant from a **point source** into navigable waters unless a National Pollution Discharge Elimination System (NPDES) permit was obtained. Amendments passed in 1977 specifically provided for state implementation of Clean Water Act provisions.

The federal Clean Water Act was further strengthened through the 1987 amendments that added **antidegradation requirements** to Section 303, the Water Quality Standards program, and brought some **stormwater** discharges under the jurisdiction of the Clean Water Act.³

Significant progress in cleaning up our nation's waters has been achieved through the implementation of permitting programs for point source discharges, but the goals of fishable and swimmable waters and the elimination of all pollution discharges have yet to be achieved.

Delegation of Powers

The Clean Water Act, which applied to the surface waters of the United States, went beyond protection and sought restoration of our nation's waterways. Restoration of polluted waterways was a relatively new concept in 1972. Pennsylvania's Clean Streams Law, passed in 1937 to protect "clean" waters from becoming polluted, did not require that polluted waters be restored.¹ Nearly thirty years passed before the Clean Streams Law was amended to include the goal "to reclaim and restore to a clean unpolluted condition every stream in Pennsylvania that is presently polluted." Pennsylvania's Clean Streams Law was further amended in 1970 to state that the discharge of materials contributing to pollution was against public policy and constituted a public nuisance.

The Clean Water Act provides for the delegation of authority to states. In 1978, the EPA determined that Pennsylvania's Clean Streams Law met the minimum requirements of the Clean Water Act and delegated to the Commonwealth the power to implement the provisions of the federal law. Pennsylvania regulations meet and in many respects exceed federal law. The Pennsylvania Department of Environmental Protection is designated as the state agency with authority to enforce the powers of the Clean Water Act, however municipal governments play a key role protecting water quality and in meeting the water quality goals of the Clean Water Act.²

Like the 1899 Rivers and Harbors Act and the 1972 Clean Water Act, laws protecting water quality have generally originated at the federal level and primarily addressed point source pollution, leaving the regulation of **nonpoint source** pollution to state governments. Water quantity and water supply protections have also been left primarily to the states. By contrast, zoning and land use management decisions have generally been left to the control of local government.

In Pennsylvania, local governments, or municipal corporations, include cities, boroughs, incorporated towns, and townships of the first or second class. Each of these local government structures is a creation of the state and "may exercise any power or perform any function not denied by this Constitution, by its home rule charter or by the General Assembly at any time."³ Express powers, such as the power to enact zoning provisions that protect public health and safety, preserve natural, historic, and agricultural resources, and prevent damage from flooding can also be exercised by Pennsylvania's local governments.

Glossary

Nonpoint source: Diffuse pollution sources (i.e. without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by stormwater. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Additional Information

Going beyond Protection to Restoration: Protecting a water resource is an effort to prevent, stop or deter harm. Restoration is an effort to improve the resource not just prevent it from getting worse.

End Notes

¹ Commonwealth v. Barnes & Tucker Company, 455 Pa. 392, 408-410 (1974).

² Section 303 provides the water quality program requirement of the States; Section 402(p) provides the stormwater management program of the state and local governments.

³ Pennsylvania Constitution, Article IX, Section 2

Pennsylvania's Water Quality Standards Program

Glossary

Nonpoint source: Diffuse pollution sources (i.e. without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by stormwater. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Action Step

The Pennsylvania Department of Environmental Protection is required to review Water Quality Criteria regularly. When they come up for review, be sure to comment to improve and strengthen the criteria.

Related Topics

- Pennsylvania's Stream Use Classification
- Existing Use vs. Designated Use

End Notes

¹ Section 319 provides funding for State programs to control nonpoint source pollution on a watershed basis. Section 402 (p) specifically requires NPDES (National Pollution Discharge Elimination System) permits for stormwater runoff from industrial sites, municipal combined sewer/stormwater facilities and municipal separate storm sewer facilities, or MS4s.

Pennsylvania's Water Quality Standards Program is implemented through a three-step approach:

1. *Determining "Designated Use" of a Stream*

Designated uses are determined by evaluating historical data, biological information and current/existing activities, or "uses," that can occur in or on the water within a particular stream segment. The designated use assigned to any given waterbody segment will be based upon that segment's ability to support a specific use.

2. *Determining Water Quality Criteria*

Water quality criteria, which can be either numeric (e.g., based on technological and/or biological data, such as "maximum concentration 10 milligrams per liter") or narrative (e.g., "floating material, oil, grease, scum and substances which produce color, tastes, odors, turbidity or settle to form deposits"), are designed to protect a stream's designated use. Water quality criteria form the basis for developing pollutant limits for permitted point discharges.

3. *Development of an Antidegradation Program*

The final, essential step in the structuring of a state's Water Quality Standards Program is the development of an Antidegradation Program which provides a mechanism for protecting attained water quality goals and a system for protecting the good quality of streams that have either met or exceed their standards.

In Pennsylvania, the Department of Environmental Protection lists approximately 18% of total stream miles as impaired. Abandoned mine drainage, agriculture, and urban runoff/storm sewers are listed as the three largest sources of stream impairment in Pennsylvania (*2006 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*). Nationwide, the leading cause of impairment is **nonpoint source** pollution which can carry with it silt, bacteria, metals and nutrients like phosphorus and nitrogen, but the water quality standards program under the Clean Water Act addresses nonpoint source pollution only indirectly.¹

Pennsylvania's Stream Use Classifications

The Clean Water Act requires states to establish Water Quality Standards that will ensure that all waters are fishable and swimmable. The terms, fishable and swimmable, can be considered two very broad “uses” for waterways. States have used these broad concepts to develop a more complex system of use classifications for streams.

Pennsylvania's surface water use classifications were identified between 1966 and 1973, extensively reviewed in 1976, and then made into law.¹ The regulations provide five categories of uses that break down as follows:

- Aquatic Life - CWF (cold water fishery), WWF (warm water fishery), MF (migratory fishes), TSF (trout stocking fishery);
- Water Supply - PWS (potable water supply), IWS (industrial water supply), LWS (livestock water supply), AWS (wildlife water supply), IRS (irrigation);
- Recreation and Fish Consumption - B (boating), F (fishing), WC (water contact sports), E (esthetics);
- Special Protection - EV (exceptional value), HQ-CWF (high quality coldwater fishery), (HQ-TSF) high quality trout stocking fishery, HQ-WWF (high quality warm water fishery);
- Other: N (navigation).

Each use classification provides a specific level of protection. For example, the CWF Aquatic Life classification provides for the “[m]aintenance or propagation, or both, of fish species including the family **Salmonidae** and additional flora and fauna which are indigenous to a cold water habitat.”²

Specific water quality criteria are then identified to fulfill the promised level of protection. If these water quality criteria are met, the designated use is considered to be attained.

Use classifications are based upon the activities that should be supported by a given waterbody. At a minimum, all waterbodies in Pennsylvania have as designated uses all of the Water Supply and Recreation and Fish Consumption classifications, but only the WWF Aquatic Life classification.³

Because activities and uses on and in the water can vary throughout a waterbody, varying designated uses may be established and applied to segments of the waterbody. These segments are generally delineated based on the natural contours of the stream.

Glossary

Salmonidae: a family of fishes including trout and salmon. These fish require cooler temperatures and higher oxygen levels to thrive.

Action Step

Learn the designated stream use classifications for all streams in your municipality. Search Title 25 Chapter 93 the Pennsylvania Code online at <http://www.pacode.com/secure/data/025/chapter93/chap93toc.html>. Use your browser's Find feature to search for the names of your local streams. If one of your streams has a common name, like Pine Creek or Mill Creek, be careful to identify the correct stream.

Related Topics

- Pennsylvania's Water Quality Standards Program
- Existing Use vs. Designated Use

End Notes

¹ Title 25 Chapter 93.3 of the Pennsylvania Code.

² The goals and requirements for water quality in Pennsylvania's streams can be found in Title 25 Chapter 93 of the Pennsylvania Code. Chapter 93 sets forth water quality standards for Pennsylvania's surface waters including wetlands.

³ These minimum designated uses must be protected for all waterbodies statewide unless there is a specific statute or regulation stating otherwise. The water quality criteria established for these uses are intended to provide all streams with a minimum level of protection. Ascending levels of protection are provided for other classifications under Aquatic Life Uses and for the Special Protection Uses which have even more stringent water quality criteria.

Existing Use vs. Designated Use

Glossary

HQ: High Quality, Surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying Title 25 Chapter 93.4b(a).

EV: Exceptional Value, Surface waters of high quality which satisfy Title 25 Chapter 93.4b(b) (relating to antidegradation).

Action Step

Municipal support for a proposed stream upgrade can add weight to the strength of the upgrade petition. Local governments can pass a resolution of the municipal board in support of the upgrade. Highlight ordinances you have in place or plan to pass, such as steep slope, riparian buffer, stormwater, or floodplain ordinances, that demonstrate your municipality's commitment. Submit this resolution to the Department of Environmental Protection and/or the petitioners.

Additional Information

A guide for filing petitions, particularly petitions to "upgrade" a stream's current designation to HQ (high quality) or EV (exceptional value), can be found in PennFuture's "*Stream Redesignation Handbook, A Step-By-Step Guide for Petitioning to Upgrade Your Stream to High Quality or Exceptional Value Special Protection in Pennsylvania.*"

This document is available online at http://dev4.labwerks.com/pennfuture/media_pfr_detail.aspx?MediaID=21&TypeID=5.

Related Topics

- Pennsylvania's Stream Use Classification

At times, the Department of Environmental Protection will measure the stream conditions or biological water quality through water sampling to determine the exact current condition of the stream, or the "existing use." Existing use is defined in Title 25 Chapter 93 of the Pennsylvania Code as "[t]hose uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards." When existing water quality is below that needed to meet the designated use, the designated use becomes the desired use, or the water quality goal, for that stream segment.

If your stream has an existing use classification that exceeds the designated uses identified at Title 25 Chapter 93.9a-93.9z of the Pennsylvania Code, the existing use must be protected. The Department of Environmental Protection maintains a publicly accessible list of surface water segments where the existing use classification is more protective than the designated use. The list, http://www.depweb.state.pa.us/watersupply/lib/watersupply/eu_table_list.pdf, is maintained and updated by the Bureau of Water Supply and Wastewater Management and is used in reviewing requests for permits and approvals to protect surface water quality.

One mechanism to ensure protection of streams where water quality exceeds the designated uses is to upgrade the designated use. Every Pennsylvanian has the right to petition the Environmental Quality Board if the designated use, or stream classification, does not reflect the actual water quality of the stream. Whenever a stream's existing use is capable of meeting the requirements for **HQ** (high quality) and/or **EV** (exceptional value), upgrading to these designations is essential to ensuring the protection of Pennsylvania's water resources. Municipalities should play a lead role in the upgrade process whenever possible because local government support strengthens an upgrade petition.

Protecting Pennsylvania's Streams

Regular assessment and monitoring of streams (every three years) serves as the yardstick for Pennsylvania's Antidegradation Program, a state approach required under the Clean Water Act that must include mechanisms for the protection of water quality and for the clean-up of impaired waters. Pennsylvania's program employs a tiered structure. Protections increase with each tier, with Tier 1 receiving the minimum level of protection and Tier 3 receiving the maximum level of protection.

Existing Use Protection, or the "**Tier 1** rule", is the minimum level of protection. No permitted activity (e.g., effluent discharge under an **NPDES** permit) may allow a waterbody to deteriorate to a degree that would result in the loss of an existing use. Water quality is "locked in" and should never be reduced below the water quality criteria for that use. For example, on a waterbody with a designated use of WWF, (warm water fishery), an NPDES discharge permit shall not be granted if the discharge will lower the water quality below levels needed to sustain the WWF designation. Under Tier 1, if a stream has an existing use classification that exceeds designated uses, the protections for the existing use apply.

Under **Tier 2**, no degradation is permitted in a water body with a designated use as an HQ stream waters unless a reduction in protection is necessary for social or economic justification (SEJ). A minimum degradation in water quality may be allowed to accommodate a SEJ, but the existing and designated uses must remain protected.¹

Before such a discharge can be permitted in a HQ watershed, non-discharge alternatives must be evaluated to determine that there are no cost-effective and environmentally sound non-discharge alternatives. If there are no cost-effective and environmentally sound non-discharge alternatives, the Department of Environmental Protection may require that the new, additional or increased discharge must use the best available combination of cost-effective treatment (known as ABACT), land disposal, pollution prevention and wastewater reuse technologies. However, the Department of Environmental Protection may allow a reduction in water quality if it is necessary for important economic or social development (e.g., correcting existing public health or pollution hazards).

Tier 3 is the most stringent rule. Absolutely no degradation is permitted in a water body with a designated use as an **EV** stream. Streams with this designation are the "Outstanding National Resource Waters" established by the Clean Water Act.

Glossary

NPDES: National Pollution Discharge Elimination System

HQ: High Quality, Surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying Title 25 Chapter 93.4b(a).

EV: Exceptional Value, Surface waters of high quality which satisfy Title 25 Chapter 93.4b(b) (relating to antidegradation).

Related Topics

- Existing Use vs. Designated Use

End Notes

¹ "The Department may allow a reduction of water quality in a High Quality Water if it finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the Commonwealth's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. A reduction in water quality will not be allowed under this subparagraph unless the discharger demonstrates that the High Quality Water will support applicable existing and designated water uses (other than the high quality and exceptional value uses) in § 93.3, Table 1 (relating to protected water uses)." § 93.4c.

Healthy Or Impaired?

Glossary

Rapid Bioassessment Protocol:

Inexpensive screening tools for determining if a stream is supporting or not supporting a designated aquatic life use.

Action Step

Municipalities can help to clean up impaired waters by enforcing the **nonpoint source** components of a developed TMDL through progressive ordinances. The load allocation will identify categories of nonpoint sources contributing to the pollutant for which the TMDL was developed. These nonpoint source categories can be regulated by local ordinances as needed (e.g., stormwater management, riparian buffers, headwaters protections, requiring pet owners to pick up after their animals, or appropriate on-lot septic system management practices).

Action Step

Municipalities can collect and submit data to the Department of Environmental Protection to help list local waters that are degraded in order to get them in line to be restored. The criteria for monitoring data is available from the Citizens' Volunteer Monitoring Program, 717-772-5640.

Related Topics

- Pennsylvania's Impaired Waters List

End Notes

¹ Pennsylvania's State-Wide Surface Waters Assessment Program 2007 Update, modified 5/21/2007 online at <http://www.depweb.state.pa.us/watersupply/cwp/view.asp?a=1261&q=450586>

How do we know if our local streams are in good health or if their health is impaired? The Clean Water Act (Sections 305(b) and 319) requires states to regularly assess and monitor the health of streams. Pennsylvania fulfills these requirements through the Department of Environmental Protection's Statewide Surface Water Assessment Program. Every two years, Pennsylvania presents the results of its water quality assessment as part of the *Integrated Water Quality Monitoring and Assessment Report*, fulfilling Clean Water Act reporting requirements found in Sections 303(d) and 305(b). The *Integrated Assessment* describes the status of Pennsylvania's water quality, water quality problems including a list of impaired waters, and efforts to protect and restore streams.

The Department of Environmental Protection first implemented the Statewide Surface Water Assessment Program (SSWAP) in 1997. Prior to undertaking this program, not all of Pennsylvania's streams had been fully assessed. In 2007, after ten years, the Department of Environmental Protection reported 100% of its assessments as complete.¹ After 2007, it is anticipated that assessed waters will be revisited on a rotating basin approach approximately every five years.

In Pennsylvania, stream assessment looks at the community of aquatic insects that spend all or part of their lives in the stream. In-stream habitat is also evaluated. The assessment practices used are similar to the U.S. Environmental Protection Agency's **Rapid Bioassessment Protocol** and habitat evaluation procedures (*Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish, 1999*). Based upon the results of the assessment, Department of Environmental Protection biologists identify streams, or even stream segments, as unimpaired or impaired (i.e., failing to meet applicable water quality standards). In the *2006 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, Department of Environmental Protection listed approximately 18% of Pennsylvania's total stream miles as impaired with abandoned mine drainage, agriculture, and urban runoff/storm sewers listed as the three largest sources of stream impairment. The 2006 report along with links to the integrated list can be found at <http://www.depweb.state.pa.us/watersupply/cwp/view.asp?a=1261&q=480056>.

Pennsylvania's Impaired Waters List

The Clean Water Act requires that states compile an “impaired waters list.” Formerly referred to as the 303(d) list, Pennsylvania now incorporates this report into its *Integrated Water Quality Monitoring and Assessment Report*.¹ An impaired waterbody may be an entire stream or a stream segment. If the pollutant (e.g., sediment, nutrients, PCB, pathogens, etc.) is known, this is also listed.

The *Integrated Assessment* places Pennsylvania’s waterbodies in one of five categories:

- Those attaining the water quality standard,
- Those attaining some designated uses,
- Those for which data is insufficient or no information is available to determine if any designated uses are attained,
- Those that are impaired or threatened for one or more designated uses but not needing a **Total Maximum Daily Load, or TMDL**, and
- Those that are impaired or threatened for one or more designated uses and needing a TMDL.

Impaired or threatened waterbodies are separated into three subcategories:

- Those waterbodies for which a TMDL is complete,
- Those expected to meet the standard, and
- Those not impaired by pollutant.

An example of a listing from the 2006 *Integrated Assessment* for a stream that is impaired or threatened for one or more designated uses, but for which a TMDL is complete can be seen below.

Table 1 From the 2006 Integrated Water Quality Monitoring and Assessment Report

	Cause	Miles	Year Listed
Schuylkill River (Unit 01623) ID: 795 (Old ID: 7003)	Use Aquatic Life		
	Nutrients	0.65	1996

The stream name and assessment unit ID appear in the left hand column, e.g., Schuylkill River (Unit 01623). The cause of the impairment or threat impacting the specified designated use is listed in the “Cause” column. The extent of the impairment is listed in the “Miles” column. The “Year Listed” column represents the year in which the stream was first listed for the impairment. A stream may be listed for more than one reach or more than one cause of impairment.

Glossary

PCB: Polychlorinated biphenyls, a banned family of toxic chemicals formerly used as coolants and lubricants in electrical equipment.

Total Maximum Daily Load or TMDL: A Total Maximum Daily Load is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

Action Step

When a TMDL is developed for a waterbody, it is important to review the proposed TMDL during the public comment periods. Use experts from universities and river groups to assist with this review.

Action Step

Review proposed NPDES permit actions, TMDLs, rule changes and state agency public hearings which are posted weekly in the *Pennsylvania Bulletin*, available online www.pabulletin.com.

Related Topics

- Pennsylvania’s Water Quality Standards Program
- Pennsylvania’s Stream Use Classification
- Healthy or Impaired?
- Cleaning Up Polluted Streams

End Notes

¹ The 2006 report along with links to the integrated list can be found at <http://www.depweb.state.pa.us/watersupply/cwp/view.asp?a=1261&q=480056>.

Cleaning Up Polluted Streams

Glossary

Point source: Any single identifiable source of pollution; e.g. a pipe, ditch, ship, ore pit, factory smokestack.

Total Maximum Daily Load or TMDL: A Total Maximum Daily Load is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

Nonpoint source: Diffuse pollution sources (i.e. without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by stormwater. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Action Step

When new permits are proposed or old NPDES permits are up for renewal, review these permits. Make sure permits are modified to reflect a proportionate share of the TMDL amount.

Related Topics

- Pennsylvania's Water Quality Standards Program

End Notes

¹ The Philadelphia Water Department's *Belmont & Queen Lane Treatment Plants (PWSID #1510001) Source Water Assessment Report*, found online at http://www.phillyriverinfo.org/WICLibrary/Written%20Material/Schuylkill/Drinking%20Water%20Protection%20Program/020110_Sch_PWD%20Source%20Water%20Assessment.pdf.

² Title 25 Chapter 96 of the Pennsylvania Code (i.e., the application of Total Maximum Daily Loads and water quality based effluent limits, or WQBELs).

The National Pollutant Discharge Elimination System, or NPDES, permit program was established under the Clean Water Act for the purposes of controlling and ultimately eliminating all pollution discharges by 1985. However, implementation of the NPDES program has established a system through which licenses to discharge pollutants to waterways are granted regularly. Rather than eliminating **point source** discharges, more are permitted every day. A Philadelphia Water Department review of the Permit Compliance System found that 576 permitted point source discharges in the Schuylkill River watershed.¹

Pennsylvania's NPDES permitting program controls the amount of pollutants that point sources discharge to streams by establishing effluent limits that are based upon the water quality of the receiving stream and the technology available to control the pollutant at the discharge point. When a stream segment is considered impaired, the establishment of a **Total Maximum Daily Load, or TMDL**, is required.

TMDLs are set on a pollutant-by-pollutant basis (e.g., metals, PCBs, sediment, thermal pollution) and it identifies the total amount of the offending pollutant that a stream can assimilate without violating its water quality standards. This amount represents the desired in-stream water quality to be achieved by implementing specified reductions. The establishment of a TMDL may affect effluent limits for new and renewing NPDES permits.²

If the pollutant derives from a **nonpoint source**, a TMDL that reflects an "indicator" may be established in an effort to address the underlying nonpoint source. For example, if the pollution is causing reduced levels of oxygen in the waterbody, the pollutants of concern could be phosphorus and/or nitrogen, nutrients that pollute streams through runoff. A TMDL for the indicator, Biological Oxygen Demand, will be established for the waterbody and acceptable Biological Oxygen Demands will then be required and allocated among all sources on that waterbody.

The result of full implementation of a TMDL should be the restoration of the impaired waterbody (i.e., the water quality for the designated use is met). Subsequent assessments will show the effectiveness of a TMDL. If the water quality standard is met, the stream will be removed from the *Integrated Assessment* list of streams for which a TMDL is needed. If the water quality standard is not met, the TMDL will have to be reviewed and updated.

From Point Source To Nonpoint Source Pollution

The 1972 Clean Water Act did not directly regulate **nonpoint source** pollution, but subsequent amendments did regulate **stormwater** discharged from a pipe. The 1987 amendments resulted in the establishment of NPDES Phase I and Phase II rules, the intent of which was to improve waterways by reducing the quantity of pollutants picked up by stormwater and carried into storm sewer systems during storm events.

Phase I, announced in 1990, covered discharges from **municipal separate storm sewer systems, or MS4s** for communities with populations over 100,000, construction sites over 5 acres, and 10 industrial activity categories. Phase II permitting, announced in 1999, covers smaller municipalities, municipalities located within an urbanized area as defined by the 1990 Census and the 2000 Census, and construction sites over 1 acre.

Municipalities are required to implement a stormwater management program that includes **Best Management Practices, or BMPs**, for six minimum control measures which include:

1. Public education
2. Public participation and involvement
3. Illicit discharge detection
4. Construction site stormwater runoff control
5. Post-construction stormwater management
6. Pollution prevention/good housekeeping for municipal operations maintenance.

Municipalities have until 2008 to enact the six minimum control measures.

Municipalities can follow the Department of Environmental Protection's prescribed Stormwater Management Program or they can develop and implement their own program, which requires special approval. The prescribed Stormwater Management Program follows a watershed-based approach such as implementing a stormwater management plan.

Municipalities that are not included in the urbanized area as defined by the 1990 Census and 2000 Census may be required to obtain an NPDES MS4 stormwater permit if the Department of Environmental Protection determines that the regulated entity discharges to sensitive waters, has a high population density, has a high growth potential, is a significant contributor of pollutants to waterbodies and/or has ineffective protection of water quality concerns.

Glossary

Nonpoint source: Diffuse pollution sources (i.e. without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by stormwater. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Stormwater: Runoff from precipitation, snowmelt runoff, surface runoff and drainage

NPDES: National Pollution Discharge Elimination System

Municipal Separate Storm Sewer System or MS4: A conveyance or system of conveyances, owned or operated by a state, city, town, borough, county, parish, district, association or other public body, but is not a combined sewer and is not part of a publicly owned treatment works.

Best Management Practices or BMPs: Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.

Related Topics

- Evolution of Water Protections
- Delegation of Powers
- Planning for Stormwater

Planning for Stormwater

Glossary

Stormwater: Runoff from precipitation, snowmelt runoff, surface runoff and drainage

Vegetation systems: The use of plant material in stormwater management systems designed to infiltrate or collect stormwater.

Action Step

Municipalities must ensure that Act 167 Plans allow them the use of the most effective approaches to address stormwater quantity and quality issues. Local environmental groups that can provide informed input on stormwater Best Management Practices, or BMPs, are not automatically included on the Watershed Planning Advisory Committee (WPAC), but municipalities can appoint whomever they choose to represent them. Be sure your municipality's representative is up to speed on stormwater infiltration and other BMPs.

Related Topics

- Evolution of Water Protections

End Notes

¹ Newman, B., 2007. *Stormwater Management*. Department of Environmental Protection. http://www.depweb.state.pa.us/ncregion/lib/ncregion/stream_bank_erosion/Stormwater_Management_Presentation_-_Barry_Newman__10-05-06.pdf

² Pennsylvania's new stormwater Best Management Practices manual can be downloaded from <http://www.depweb.state.pa.us/watershedmgmt/cwp/view.asp?a=1437&Q=518682&PM=1>

Pennsylvania's **Stormwater** Management Program is a planning program without permitting authority. Responsibility for implementing this program lies with the Department of Environmental Protection, but the responsibility for developing the stormwater management plans, or Act 167 plans in reference to the designation of the 1978 Stormwater Management Act, has been passed on to municipalities.

Preparation of an Act 167 plan begins when a county initiates the planning process by identifying the scope of the plan and contacting the Department of Environmental Protection which provides 75% of the funding. Municipal officials, county conservation district staff and watershed group members are then invited to participate on a Watershed Planning Advisory Committee that will guide the plan's development.

All municipalities within a watershed are required to bring their stormwater ordinances into compliance within six months of completion of the plan, (financial support for this is available from the Department of Environmental Protection). The plan generally includes a model ordinance that provides the minimum requirements a municipality must enact in order to be in compliance with their Act 167 plan.

Under Act 167, the Department of Environmental Protection delineated over 300 Designated Stormwater Management Watersheds that require stormwater management plans. These plans were supposed to be completed by 1987, but fewer than 1/3 of these plans have been finished.¹ Updates of completed plans were to be prepared every five years at a minimum.

In the Schuylkill River watershed, plans have been approved for Sacony Creek, Tulpehocken Creek, Swamp Creek, East Branch Perkiomen Creek, and Stony Creek (Sawmill Run). Plans are under preparation for Maiden and Valley Creek and the Berks County section of the Schuylkill River.

Pennsylvania recently adopted a new stormwater Best Management Practices manual.² Although not enforceable by law, the manual provides important guidance on how municipalities should regulate development and manage stormwater to address associated flooding, drought, erosion and water quality impacts. The manual stresses the importance of groundwater recharge, capture and reuse of stormwater, and **vegetation systems**. The manual is also the basis for a statewide model ordinance that communities can use to help accomplish the requirements of Pennsylvania's Act 167 as well as the Clean Water Act stormwater management requirements.

Managing Post-Construction Stormwater

The National Pollutant Discharge Elimination System, or NPDES, Phase I rules required permits for all construction sites disturbing more than 5 acres. Under the Phase II rule, any proposal disturbing from 1 to 5 acres *with* a discharge to waters of the Commonwealth requires an NPDES **stormwater** discharge permit. In addition, Phase II also requires Post Construction Stormwater Management Plans that show that any post construction increase in stormwater will use **BMPs** for infiltration, limit discharges to surface waters and protect the health of receiving streams from the impacts of a **2-year/24-hour intensity storm** event.¹ Small construction discharges that have the potential to endanger public health and safety through accidental releases of pollution must also prepare Preparedness, Prevention, and Contingency plans that are kept on site.

In municipalities where stormwater ordinances have been adopted in support of **Act 167 plans** or to meet the requirements of the **MS4** program, Post Construction Stormwater Management Plans must comply with these ordinances. Municipalities where an Act 167 plan has not been completed or those seeking to address the Phase II MS4 requirements can consider adopting a post construction stormwater ordinance in order to ensure that Post Construction Stormwater Management Plans are required to incorporate BMPs that infiltrate stormwater.²

Regulations provide for the use of both General and Individual Permits for small construction stormwater discharges. General permits, which provide a faster and easier approval process, are allowed for many, but not all, small construction activities. For example, activities ineligible for a General permit include those that will impact **HQ** or **EV** waters. Individual permits require site-specific erosion and sediment controls.

Just as the EPA has delegated administration of parts of the Clean Water Act to Pennsylvania, the Department of Environmental Protection has delegated the Phase I and II post-construction permits to county conservation districts. Pennsylvania has conservation districts in every county except Philadelphia. Conservation districts oversee a variety of programs related to the protection of natural resources. Each district's responsibilities vary depending upon the authority delegated to it by the Department of Environmental Protection, however the Department of Environmental Protection retains jurisdiction over the enforcement of NPDES post-construction permits.

Glossary

Stormwater: Runoff from precipitation, snowmelt runoff, surface runoff and drainage

BMPs: Best Management Practices, methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.

2-year/24-hour intensity storm:

A storm of an intensity that has a 50% chance of occurring or being exceeded annually with a 24-hour duration.

Act 167 plans: Stormwater management plans so named in reference to the designation of the 1978 Stormwater Management Act.

MS4: Municipal Separate Storm Sewer System, a conveyance or system of conveyances, owned or operated by a state, city, town, borough, county, parish, district, association or other public body, but is not a combined sewer and is not part of a publicly owned treatment works.

HQ: High Quality, Surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying Title 25 Chapter 93.4b(a).

EV: Exceptional Value, Surface waters of high quality which satisfy Title 25 Chapter 93.4b(b) (relating to antidegradation).

Related Topics

- Planning for Stormwater

End Notes

¹ NPDES permit application/Notice of Intent, Section E.

² A post construction stormwater model ordinance is available at <http://dsf.chesco.org/water/lib/water/ordinance/swmordinance.pdf>

Managing Land to Protect Water

Glossary

Stormwater: Runoff from precipitation, snowmelt runoff, surface runoff and drainage

Additional Information

Local Concern, State Control: A look at the Pennsylvania Sewage Facilities Act, or Act 537, illustrates that while some responsibilities may be delegated to local government, the state retains control in areas of statewide concern. Under Act 537, municipalities are required to plan and regulate community and individual sewage systems. However, the Commonwealth can, acting through the Department of Environmental Protection, preempt this local planning effort by approving permits for public sewer extensions into areas not planned for public sewer by the municipality, a crucial weakness of Act 537. Changes to the Municipalities Planning Code require that state agencies consider local land use planning when making permitting decisions, but consistency with local planning is not required.

Related Topics

- Delegation of Powers
- Planning for Stormwater

End Notes

¹ The Clean Water Fund, Delaware Riverkeeper Network and Green Valleys Association have developed a Model Municipal Water Resources Ordinance designed to protect public health, the environment and economic interests for Pennsylvania municipalities. More information can be found online at <http://www.cleanwateraction.org/pa/stormwater.html> and <http://www.cleanwateraction.org/pa/wellhead.html>.

² A fee simple title represents absolute ownership of all the rights associated with real property. An easement represents a partial interest in real property.

Municipalities do not have inherent power, but are delegated authority by the Commonwealth through the Municipalities Planning Code to plan their development and adopt zoning, subdivision and land development ordinances. Zoning provides municipalities with a powerful tool to regulate land management, however local regulations cannot contradict or conflict with state regulations.

When municipalities have adopted zoning that has pushed the boundaries of municipal powers, such as regulating sewage sludge application, this zoning has been challenged in court. The outcome of these challenges has generally been the determination that such ordinances conflict with state laws - the Nutrient Management Act, the Solid Waste Management Act, the Sewage Facilities Act and Pennsylvania's right to farm laws - and is therefore preempted. But Pennsylvania's Municipalities Planning Code does authorize local government specific powers that can be used to protect water resources:

- ✓ Provide information - Municipalities can include articles in community newsletters to inform citizens about actions they can take to protect water quality.
- ✓ Enact zoning provisions - Local governments can adopt forward thinking ordinances that protect riparian buffers, steep slopes, woodlands, wellhead areas, wetlands, and floodplains.¹
- ✓ Hold real property for the best interest of their citizens – Sensitive lands with direct impact on water quality and quantity, such as headwaters areas, floodplains, and riparian corridors could be protected through fee simple acquisition² or through conservation easements.
- ✓ Establish municipal authorities – A **stormwater** management authority can be created to conduct stormwater management planning, detect illicit discharges and monitor water quality.
- ✓ Spend money – Municipalities can make appropriations to nonprofit watershed associations for watersheds serving the municipality for any uses other than litigation or to seek redress against any individual landowner.
- ✓ Levying taxes - Local governments are authorized to collect a maximum 1% tax on the transfer of real estate to fund the protection of open space. The municipality is required to split any realty tax with the local school district if it also collects this tax.

