The Combined Sewer Overflows: A Long Term Control Plan and Our Rivers

Introduction

Philadelphia is blessed with an abundance of creeks, open space, parkland and beautiful rivers. The Schuylkill and Delaware Rivers are not only scenic; they are the drinking water source for Philadelphia residents. These waterways, however, suffer from pollution from various sources, both within and outside of the City limits. One such pollution source: Combined Sewer Overflows (CSOs).

What is the Combined Sewer Overflow Program?

The goal of the Philadelphia Water Department's (PWD) combined sewer overflow program is to improve and preserve the water environment in the Philadelphia area and implement technically viable, cost-effective improvements and operational changes.

1. Nine Minimum Controls (NMC) – System "Tune-Up"

The first component of the PWD CSO strategy involves the Nine Minimum Controls (NMC). The NMC are low-cost actions or measures that can reduce CSO discharges and their effect on receiving waters, do not require significant engineering studies or major construction, and can be implemented in a relatively short time frame. This program ensures that our existing sewer system is operating to the best of its ability, providing a "tune-up" to the existing infrastructure.

For more details on the NMC, please visit the U.S.EPA online at: http://cfpub.epa.gov/npdes/home.cfm?program_id=5.

2. Capital Projects – Design and Build New Combined Sewer System Components

The second component of the PWD CSO strategy involves technology-based capital improvements to the City's sewer system. This program requires significant engineering, design and construction to improve the performance of the combined sewer system. This program has and will continue to increase the capacity of the City's combined sewer system, reduce infiltration into the system, decrease the volume of overflows and improve stream water quality.

What are Combined Sewer Overflows?

A combined sewer system is a wastewater collection system which transports sanitary wastewater (from homes, businesses and industry), stormwater from the storm drains on our streets (approximately 75,000 of them) and stormwater from property rain leaders - through a single-pipe system to a Water Pollution Control Plant (WPCP).

During dry weather conditions (when it is not raining) and during very small storm events, combined sewers can adequately transport this mixture of sanitary wastewater and stormwater to one of the City's three water pollution control plants for treatment.

Under heavier rainfall conditions, however, the flow in combined sewers may exceed the capacity of the pipe or treatment facility. As a result, a portion of the wastewater and stormwater may be diverted directly to a nearby stream or river to prevent the flooding of homes and streets. This is what is known as a Combined Sewer Overflow.

During heavy rainfalls or sudden snowmelts, Philadelphia may experience these overflows in various locations throughout the City from any of its 164 permitted combined sewer outfalls. These overflows may exceed water quality standards (WQS), threaten aquatic life and its habitat, and impair the use and enjoyment of the water body.

A watershed refers to the land that drains stormwater (rain or melting snow)to a specific body of water, such as a river or stream.

3. Watershed Management & Watershed Partnerships – Integrated Regional Watershed Planning Implementation

The watershed approach evaluates the impacts of both point and non-point pollution sources and aims to find regional, watershed solutions to restore water quality. Because watersheds are defined by natural features and do not adhere to political boundaries, PWD believes that watershed management is the most practical and effective way to manage pollution and improve water quality.

The PWD forms partnerships with its suburban neighbors, businesses and industries, community and non-profit groups and other stakeholders to evaluate the region's watersheds and to develop an effective watershed management plan. To be successful, watershed management plans must be adopted and implemented by all participating stakeholders and their constituents.

To date, PWD has initiated the formation of watershed partnerships in all of the City's watersheds. The combined sewer watersheds include the Darby-Cobbs Watershed Partnership, Tookany/Tacony – Frankford Watershed Partnership and Pennypack Watershed Partnership, while the separate sewer watersheds include the Poquessing Watershed Partnership and the Wissahickon Watershed Partnership. The Schuylkill Watershed is represented by the Schuylkill Action Network (SAN), a partnership of the City of Philadelphia, federal and state agencies, and local watershed groups protecting the drinking water supply in the Schuylkill River Watershed. This fall, the Delaware Direct Watershed Partnership will be formed.

If you are interested in joining a partnership or for further information on the PWD watershed management planning projects, visit: http://www.phillyriverinfo.org.

Clean Water, Green City: Long Term Control Plan Update

Crescentville CSO

The public participation program of the CSO Long Term Control Plan Update is also known as the "Clean Water, Green City Program."

Introduction

In 2007, PWD began to revaluate its combined sewer overflow program and capital improvements program to integrate additional projects that reduce CSO frequency and volume. As a result, the CSO Long Term Control Plan Update (LTCPU) was created. It involves the development of management alternatives that ensure capture and treatment of sanitary sewer system flows and CSO reductions.

PWD is committed to a balanced "land-water-infrastructure" approach to achieve its watershed management and CSO control goals. This method includes infrastructure-based approaches, where appropriate, but also includes a range of land-based stormwater management techniques and the physical reconstruction of aquatic habitats, where appropriate.

The "Land-Watershed-Infrastructure" approach is made up of three programs:

LAND: Wet Weather Source Control

The Wet Weather Source Control program promotes the use of Low Impact Development (LID) and other structural and non-structural controls to reduce CSO volume through evaporation, transpiration, infiltration and detained release to the combined system for treatment, such as an extensive street tree program, green roofs and rain gardens. This program also requires post-construction stormwater controls on land development and redevelopment in the combined sewer area to achieve CSO reductions.

WATER: Ecosystem Restoration and Aesthetics

The Ecosystem Restoration and Aesthetics program focuses on projects that contribute to the improvement of the aesthetic and ecological integrity of CSO receiving waters. Such water-based approaches include stream bed and bank stabilization and reconstruction, aquatic habitat creation, plunge pool removal, improvement of fish passage, and floodplain reconnection.

INFRASTRUCTURE: Capital Improvement Projects

The Capital Improvement Projects program continues to implement CSO capital improvement projects that were planned during the previous combined sewer overflow program in addition to new projects to increase the capture and treatment of combined sewage. Examples of such projects include the work of the Waterways Restoration Team, Stream Habitat Restoration, Wetland Enhancement and Construction, Fish Passage Projects and Riparian Buffer Creation and Enhancement.

GLOSSARY

Runoff refers to water from rain or melting snow or irrigation that flows over the ground and into the nearest body of water. It can contribute to soil erosion and carry harmful pollutants.

Point source pollution refers to any discernible, confined, and discrete conveyance, such as a pipe, tunnel or ditch, from which pollutants are or may be discharged.

Nonpoint source (NPS) pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, such as lawn fertilizers, oil and dog waste, finally depositing them into the nearby creeks and rivers.

Receiving Waters: All distinct bodies of water that receive runoff or wastewater discharges, such as streams, rivers, ponds, lakes, and estuaries.

Water Quality Standards (WQS) are state-adopted and EPA-approved standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.