

PWEA Position Statement

Sanitary Sewer Overflows

Adopted by PWEA on April 10, 2014



PWEA Mission Statement

Enhance the knowledge and abilities of Pennsylvania's water quality professionals, promote sound sustainable water policies, and promote public awareness of the need to protect water resources.

Background

A sanitary sewer system is a system which has been designed to carry sanitary and industrial wastewater and operate separately from stormwater systems. A sanitary sewer overflow (SSO) is an intermittent overflow of wastewater or other untreated discharge from a separate sanitary sewer system which results from a flow in excess of the carrying capacity of the system or some extraneous cause (blockage, etc.) prior to reaching the wastewater treatment facility. SSOs usually occur during storm events resulting from rainfall induced inflow and infiltration entering the sewer system from inappropriate sources, such as roof leaders, sump pumps, and area drains. There are several factors that may contribute to SSOs from a sewerage system, including pipe capacity, inadequate operations and maintenance, sewer design, age of system, pipe materials, pipe condition, existence of illegal connections, geology and building codes.

Enforcement actions by the U.S. Environmental Protection Agency (USEPA) and the Pennsylvania Department of Environmental Protection (PADEP) have varied over the years. Due to SSO regulation, environmental concerns and the costs associated with conveyance and treatment of excess flows during wet weather events, increased attention should be given to managing the effects of rainfall induced inflow and infiltration on their sewerage systems.

PWEA recommends the following minimum actions for prevention and control of SSOs:

- Proper design of new and expanded sewer systems
- Elimination of dry weather overflows
- Minimize wet weather SSOs to meet water quality standards
- Evaluate all factors influencing the sewerage system
- Implement effective operation and maintenance programs
- Address both public and private property inflow/infiltration sources

These principles are described in greater depth below:

Proper Design of New and Expanded Sewer Systems

Prevention and control of SSOs begin with proper design of new and expanded sewer systems. Proper system configuration, selection and sizing of materials and equipment, and construction and inspection methods can prevent the introduction of permanent system deficiencies that contribute to SSOs. Effective sewerage facilities planning which incorporates existing and future demands of the sewer system, including unavoidable and inevitable inflow and infiltration, will facilitate the appropriate sizing and design of gravity sewers and pump station facilities.

Elimination of Dry Weather Overflows

PWEA understands the importance of distinguishing between dry weather overflows and the complexity of wet weather SSOs. Due to the strength of discharge, public health concerns and operational responsibilities for the system, elimination or biological/secondary treatment of dry weather overflows needs to be a top priority in any SSO prevention and control program.

Minimize Wet Weather SSOs to Meet Water Quality Standards

Proper planning, design, and operations and maintenance should prevent the vast majority of SSOs in a community. There may exist, however, some wet weather related SSOs which are impractical to address other than through treatment. PWEA recommends that alternate treatment processes that will meet water

quality standards be considered before requiring secondary treatment of wet weather related SSOs. Treatment of SSOs during wet weather that meet water quality standards may be implemented without higher capital costs associated with secondary treatment.

Evaluate All Factors Influencing the Sewerage System

A thorough understanding of all factors influencing sanitary sewerage systems is essential to the mitigation of SSOs. The complex hydraulic and structural conditions that often exist in sanitary sewerage systems and the impact that stormwater and groundwater has on sanitary sewerage systems must be understood in order to address SSOs in an effective manner. Isolated inflow and infiltration reduction efforts to mitigate SSOs without knowledge of the complex hydraulic conditions that often exists in sanitary sewerage systems during wet weather may result in inflow and infiltration sources migrating to an adjacent area. PWEA suggests the following study components for development of an effective SSO mitigation program:

- Wet and dry weather flow measurements
- Sewer system hydraulic modeling
- Sewer system evaluation surveys
- Operation and maintenance assessment
- Technical and life-cycle cost evaluation of SSO reduction options including source removal (public and private) through rehabilitation, increased conveyance (gravity lines or pump stations/force mains), and storage
- Financial capability analyses

The development of an SSO mitigation program should be completed on a site specific basis and give priority to overflows that directly impact human health such as basement backups and other SSOs that have likely human exposure.

Implement Effective Operation and Maintenance Programs

Effective operations and maintenance (O&M) programs are proactive approaches that help to prevent SSOs from occurring. An effective sewerage system O&M program depends on the willingness to recognize that costs of reactive maintenance/repairs often exceed the costs of effective and proactive O&M programs. Recurring physical inspections of sewerage systems remain the foundation of an effective O&M program. Maintaining asset and condition assessment records is essential in implementing an effective O&M program. PWEA supports asset management and capital improvements plans which allow for a proactive approach to sewerage system maintenance and repairs. Capacity, Management, Operations and Maintenance (CMOM) systems are encouraged to adequately address planning and progress.

Address both Public and Private Property Inflow/Infiltration Sources

A thorough assessment of the sources of inflow/infiltration (I/I) in the public sewer system should be conducted to identify and prioritize portions of the system that contribute excessive I/I. I/I sources in the public-side of the sewerage system include leaking and inundated manholes, leaking sewer joints, broken pipe, utility break-ins, and cross-connected storm drains.

Private property I/I sources are also significant sources of I/I in many communities. Foundation drains, basement drains, and sewer later defects including offset lateral joints and root intrusion located on private property can be significant sources of I/I during wet weather conditions. Sump pumps and downspouts on private property that are connected to sanitary sewer laterals can also be significant sources of I/I. The overall success of an I/I removal program in a community will be limited if private property sources are not addressed. A means to overcome the institutional and legal barriers to reduce extraneous I/I from private property sources needs to be established. Education of the public and support from private property owners are important to the success of any I/I reduction program.

Compliance and Enforcement

The USEPA has discussed modifications to the NPDES regulations as they apply to SSOs for years. PWEA supports a comprehensive evaluation of the process and modification as necessary to ensure that SSOs are addressed in a technically and economically feasible manner while allowing for sound technical and financial planning and public involvement.