Private Inflow White Paper

By

NEWEA Private Inflow Task Force

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NEWEA
WORKING FOR WATER QUALITY

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TABLE OF CONTENTS

Page

LIST OF APPENDICES

EXECUTIVE SUMMARY

In February 2017, the new leadership of NEWEA's Collection System Committee (Committee) agreed that for at least the following two years the committee would apply significant interest and focus on the following two topics:

- Private Inflow – Understanding and mitigating the impacts of water other than sanitary waste entering sanitary collection systems from private sources.

- Fats Oils and Grease (FOG) – Understanding and mitigating the pacts of buildup of fats, oils and grease in wastewater collection systems

The Committee decided to convene a subcommittee (Task Force) to focus on each of these two topics.

This working document is the result of the efforts of the subcommittee for Private Inflow.

Immediately following the convening of the subcommittee, a Subcommittee Charter/Mandate was developed to guide the subcommittee in its activities. The main activities identified were the development of this informational white paper, and to inform NEWEA of the intended focus on Private Inflow as a 'Hot Topic'. Private Inflow is a major issue that impacts the ability of collection systems to perform as designed. When ignored, Private Inflow can result in significant sanitary system surcharges and backups, with consequential public health and environmental impacts.

For almost two years, the subcommittee of volunteers has given their time to collect data, prepare written descriptions and prepare a working draft of this white paper.

The purpose of this document is to provide information to those interested in the topic of Private Inflow. It is a result of collating information that could be readily located, and identifying and referring to existing documentation, issues, regulations and solutions that may be of help to those interested in or dealing with this topic/issue.

This document is not and should not be considered or used as a comprehensive text, guidance or direction on the topic of Private Inflow. This white paper is made available by New England Water Environment Association's (NEWEA) Collection Systems Committee. The sole purpose of this white paper is to inform on the outlined topic. The information included herein should not be considered exhaustive, definitive, and/or peer reviewed. The views and opinions expressed in this white paper are representative of participants of the survey and do not reflect the opinions of NEWEA, its employees, general membership, and/or Executive Committee.

We would like to thank and acknowledge members of the subcommittee for their efforts in developing this working white paper, including:

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1.0 INTRODUCTION

1.1 Introduction

Due to the issues associated with Private Inflow on the operation and maintenance of collection and treatment systems and the recent interest given to the issue by the regulatory community, the NEWEA Collection System Committee decided that this topic should be an area of focus in calendar years 2017 and 2018. As infrastructure continues to age, structural and operational defects in sewers reduce wastewater collection system capacity and increase the risk of future blockages, failures, and sanitary sewer overflows (SSOs). In particular, infiltration/inflow (I/I) is becoming a growing concern for regulators and municipalities. State departments like the Massachusetts Department of Environmental Protection (MassDEP) have created regulations and guidance documents for identifying and removing public I/I. These documents however provide limited guidance on how to manage and remove private inflow. Unlike Massachusetts, other New England states do not have specific I/I guidelines similar to Massachusetts; and primarily follow those provided by the MassDEP.

Additionally, municipalities have been actively completing Sanitary Sewer Evaluation Surveys (SSES) and rehabilitation projects to investigate, identify, and remove sources of I/I in their collection systems. In Massachusetts, regulations related to I/I are located in 314 CMR 12.04.

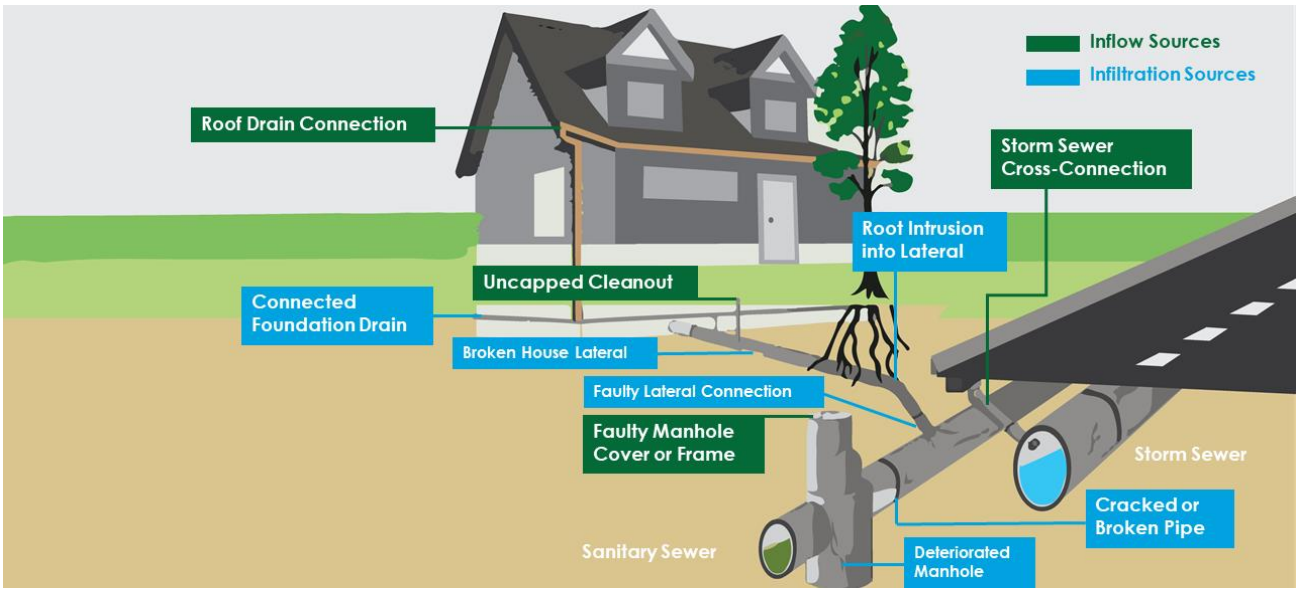

Photo 1 – Inflow and infiltration (Image by Wright-Pierce).

Infiltration is defined as water other than sanitary flow (including from publicly or privately owned sewer service connections) from the ground (typically groundwater) through means which include, but are not limited to, defective pipes, pipe joints, connections, or manholes. Infiltration does not include and is distinguished from inflow.

Inflow is defined as water (typically rainwater) other than sanitary flow that enters a sewer system (including from publicly or privately owned sewer service connections) from sources which include, but are not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, storm waters, surface runoff, street wash waters, sump pump discharges, or drainage. Inflow does not

include, and is distinguished from, infiltration. The total amount of inflow is equal to the sum of the delayed inflow (example: sump pumps) and direct inflow (example: catch basin). Inflow can come from public sources (e.g., those that are located within the publicly owned sewer system) or private sources (e.g., those that are located on private property). A fact sheet prepared by Water Environment Federation (WEF) discussing Private Property Infiltration and Inflow is provided in Appendix A. Because this white paper focuses on private inflow, and for the purposes of this document, private inflow is defined below:

Private inflow is defined as inflow coming from sources such as sump pumps, roof leaders, driveway drains or other direct sources of extraneous flow to the collection system which are located on private property.

Extraneous water from inflow sources reduces the useful life and the capacity of sewer systems and treatment facilities to transport and treat domestic and industrial wastewaters. Inflow normally occurs when rainfall enters the sewer system through direct connections such as roof leaders, yard drains, catch basins, sump pumps, defective manhole covers and frame seals, or indirect connections with storm sewers. The mitigation of inflow by inflow source removal, combined with an on-going operation and maintenance program, is essential to protect the environment and the significant capital investment in sewers and wastewater treatment facilities made by municipalities and districts.

1.2 Benefits to Removing Infiltration/Inflow

The removal of public and private I/I may assists in lowering municipal wastewater expenditures, preventing the inflation of rates for sewer users, and improving wastewater collection system capacity.

1.2.1 Lower costs to sewer users

Sewer rates are a typical source of revenue for municipalities to raise funds for sewer or wastewater department operation, system maintenance, and wastewater treatment. These rates are issued at set durations (e.g., monthly, quarterly, annually, etc.) payments for residents, businesses, and industries connected to the collection system. One driver for increases in sewer rates is to compensate for increased wastewater treatment costs associated with the treatment of I/I. Other major factors are the added cost to manage issues that arise in collection systems associated with excessive I/I and the costs associated with operating collection systems that have excessive I/I.

Reducing the amount of I/I in the collection system will help reduce the total cost of treatment, thus limiting the increase in costs for sewer users.

1.2.2 Lower costs to municipality

I/I increases the total wastewater volume present in a collection system, resulting in increased flows entering a wastewater treatment facility. By reducing the total volume of wastewater in a collection system through I/I removal, less wastewater will require conveyance by pumping stations or treatment – ultimately reducing a municipality's total wastewater treatment expenses including pumping costs at pump stations.

2.0 PRIVATE INFLOW

2.1 Identifying and Quantifying Inflow Sources

Locating sources of inflow in a collection system typically involves a combination of system metering, data analysis, and field investigations. The following summarizes a typical approach that might be followed in the quantification and identification of inflow sources.

2.1.1 Identification of Inflow Sources

Step 1 – Flow Metering

The first step in identifying if a collection system is subjected to excessive private inflow (and inflow of all types) is through flow metering. This involves installing a flow meter in a downstream manhole of a sewershed so that it can measure and record flow through that manhole over an extended period of time (typically 8 to 10 weeks or more depending on the weather, groundwater conditions, or analysis needs). This is typically installed during high groundwater season and simultaneously with a rain gauge to measure and record rainfall volume and intensity over time at the same location.

When the flow and rain records for the extended period are graphically presented, a determination can be made whether there is a noticeable increase in flow recorded during and after a rain event. In theory, for a fully separated sanitary collection system there should be no increase in flow during this period, so if an increase is noted the general conclusion is that inflow from one or more sources was generated during the rain event.

Step 2 – Determining the Type of Inflow Source

There is a wide variety of potential inflow source types. The next step is to try to determine how to differentiate between the different types and how to identify individual sources.

Most private inflow sources come from among one or more of sump pumps, perimeter drains, yard drains, and roof leaders located on private property. Other inflow sources such as catch basins and defective manhole covers can reside on either public or private property. These different types of inflow sources can be further categorized in terms of the timing of their generation of inflow.

- Direct Inflow - Catch basins, defective manhole covers, roof leaders, yard drains and direct connections with storm sewers will typically be activated immediately when a rain event begins and will generally stop generating inflow very shortly after the event stops. These sources of inflow are more commonly referred to as “direct” inflow sources.

- Delayed Inflow - Sump pumps or basement perimeter drains, unless being activated by conditions antecedent to a given rain event, may not be activated immediately when the rain event starts. There is typically a lag time between start of the rain event and its impact on the groundwater levels that cause a sump pump to start or a perimeter drain to start flowing. Sump pumps and perimeter drains generally remain active for a period of time while groundwater gradually declines after the end of the rain event. This type of inflow sources is more commonly referred to as “delayed” inflow.

When analyzing the flow/rain data graphically (e.g. using a hydrograph and/or scatter graph), the impact of delayed inflow sources such as private sump pumps shows as a slightly delayed impact on a flow hydrograph, continuing for some extended period after the end of a rain event. This is often referred to as delayed inflow. It should be noted that *rain induced infiltration and inflow (RDII)* will also respond in a similar fashion. The impact of direct inflow source types (as long as they are in reasonable proximity to the sanitary system) show immediately after the start of rain event, and finish soon after the event finishes with flows returning to pre-rain the significance of the different flow responses is that that there are different methods to determine the location of these different inflow sources.

Step 3 - Identifying Individual Sources of Private Inflow

Initial flow/rain hydrograph analysis/inspection provides direction as to the presence of inflow sources connected to the sanitary system upstream of the manhole where flow is being metered. The next step is to identify the location and type of the specific sources of inflow. This process typically involves field investigations; the type of which are driven by the results of the hydrograph analysis conducted under Step 2 above.

- Smoke Testing – One of the most efficient method of identifying sources of direct inflow is by smoke testing the sanitary system upstream of the metered manhole. Using this method, smoke is admitted to the sewer system under pressure and will look for natural exit points from the system. If assets such as catch basins, rook leaders and yard drains are connected to the sanitary system the smoke will emanate from these assets, confirming them as being connected and therefore inflow sources. If they are on private property, they are private inflow sources. Smoke testing is typically completed to locate direct inflow sources and will not locate sources such as sump pumps or other sources where the smoke is blocked from exiting the sewer system (e.g., by a trap filled with water or back flow preventer). Implementing a smoke testing program should be done so in close coordination with other agencies within a community and involve a robust public outreach process. This will avoid confusion with residents and local authorities.

Photo 2 - Sample of Illicit Connection identified during Smoke Testing (Roof Leaders to Sewer - Image by Weston & Sampson)

- Building Inspections - Building inspections, or more commonly called "house to house" inspections, involve the visitation of properties in a sewershed that is suspected of having inflow sources. The goal of the program is to confirm the presence of sources identified during a smoke testing program and to locate other sources of inflow such as sump pumps. There are challenges in doing this and an inspection program like this must be well planned and implemented.

- Dye Testing – Dye testing is a method of locating direct and indirect sources of inflow. Colored water is introduced into roof leaders, floor drains, area drains, etc. The nearest downstream sewer manhole is then opened to observe if any of the dye has entered the sewer system.

Photo 3 - Sample of Illicit Connection (Sump Pump to Sewer - Image by Weston & Sampson)

2.1.2 Quantifying Impact of Private Inflow Sources

The volume of inflow from all sources in a sewer shed area can be estimated from the flow hydrograph data collected during the metering program. Inflow volumes are calculated by subtracting the pre-storm diurnal curve values (or synthesized dry weather flow curves depending on analysis approach) from the actual flow readings during and after a storm event. The analysis should be completed when post storm flow values return to pre-storm conditions or another rainfall event occurs. In some instances, corrections need to be made to adjust for groundwater conditions. This is done so on a case by case basis. The total volume of inflow from a sewershed is the sum of the direct and indirect inflow. This can be reported in gallons, or gallons per day per inch diameter mile of pipe. This analysis provides a good understanding as to the relative inflow experienced by the sewershed but can't differentiate between delayed and direct or delayed public and private inflow estimates.

Estimating quantities of private inflow generated by different sources is approached in different ways depending on the type of inflow source. For sump pumps connected to a sanitary system, the volume estimate is generally made based on the output capacity of the pump, the number of pumps, and the duration of time the pump(s) is active. Based on MassDEP, these types of sump pumps typically pump 3.0 to 6.0 gallons per minute. For design storm, MassDEP estimates 1,200 gallons per pump engaged (or per day). For most other inflow sources, the inflow generated is estimated based on the surface area connected to the source (for example drainage area connected to a yard drain) and applying the equation:

$$Q = CiA$$

Q = inflow rate in cubic feet per second (cfs)
C = coefficient of discharge
i = average rainfall intensity in inches per hour
A = area of discharge in acres

Table 4 of MassDEP I/I Guidelines provide values for sump pumps as well as additional private inflow sources, see below.

INFLOW SOURCES AVERAGE INFLOW DESIGN STORM		
PRIVATE SECTOR SOURCES	RATE (gpm) [2]	TOTAL INFLOW VOLUME (gal) [3]
Storm Sump Pump to Sanitary Sewer	3.0-6.0	1,200
Foundation Drain or Floor Drain	3.0-6.0	
Downspout	3.0[4]	1,000[5]
Driveway Drain	3.0[4]	1,000[5]
Window Well or Stairway Drain	0.5-1.0	

NOTES FOR TABLE 4

(1) Individual sources may be assigned different rates based on site conditions, and best engineering judgment.

(2) Based on Average rainfall intensity of 0.29 in/hr (Design Storm). Peak flow rate may be also considered based on peak rainfall intensity of 0.87 in/hr.

(3) Based on total rainfall of 1.72 in. (Design Storm).

(4) Flow is calculated by using the rational formula assuming the following: Q = CiA

Area of discharge = A (Acres)
Coefficient of discharge = C
Average rainfall intensity = i in/hr.

This yields Q in CF/sec. Q is then converted to gpd.

For accurate calculation area of discharge must be measured in the field and coefficient of discharge will vary according to the type of soil/pavement.

(5) Estimated volume of inflow is based on the same parameters of the flow rate except the intensity used is the total rainfall of the design storm, which is 1.72" (in).

It should be noted that a 1/3 HP sump pump can pump approximately 3,000 gallons per hour. Some industry experts feel that 1,200 gpd is too low of a value and not accurate compared to actual discharge flows from sump pumps when considering peak flows during high groundwater periods. It is recommended that the values reported for inflow estimates from identified sources connected to the sewer system be reported in a range of values given the uncertainties in actual flow production and unknowns associated with timing of discharges from the various sources to the system.

3.0 PUBLIC OUTREACH/EDUCATION

3.1 New England Outreach and Education Programs

Public outreach is a key component in informing and educating the public on the effects of private inflow in the sewer system. Outreach efforts can include information related to the issues, how it effects each homeowner and the public, ways to correct the issue, regulations, and enforcement. Examples of methods to reach the public used within New England include the following:

- Informational Flyers in water/sewer bill each quarter:
  - Includes educational material, contact information to schedule inspection and translations in multiple languages (English, Spanish and others that are applicable to population)
- Newspaper advertisements in City/Town paper, locally distributed real estate, community papers
- Advertisement on City/Town website
- Social Media Outreach – Twitter, Facebook, Instagram
- City/Town Events - Fairs, Earth Day events, school sports events
- Schools – Tours of facilities, class demonstrations, vocational school assistance in outreach document developments
- House-to House Notice Distribution - door knob hangers
- Mayor's or Selectmen's newsletters
- Notification posters at local super markets, convenient store and restaurant cork boards.
- Property sale – transfer of title regulations and inspections
- Community Service programs utilizing high school students, Boy Scouts, Girl Scouts to distribute door hangers and notices.

4.0 REGULATIONS

A major obstacle in creating a successful private inflow program is the distribution of responsibilities between private and public entities. In many cases, private owners will not be willing to fund a project on their property that they feel will not benefit them directly. If public funding is used for the project, jurisdiction over future maintenance becomes an issue, as private owners may be unwilling to accept the responsibility of maintaining drainage structures, sump pumps, and other drainage technology if they are initially installed by a municipality. To combat this issue, municipalities have used the strategy of creating different private inflow plans that offer incentives to private owners through reimbursement, amnesty from regulations, and other methods.

4.1 New England State Regulations

A major obstacle to the creation of private inflow regulations is the lack of state regulation requiring municipalities to create and enforce the programs. Without requirements set by state regulating bodies, municipalities have neither the requirements nor legal backing to develop and enforce a private inflow program and have it successfully implemented.

In addition to the state regulations, many municipalities have restrictions that inhibit the removal of private inflow sources. Such restrictions include the lack of ability to connect to the existing stormwater system, discharge of flow across a public sidewalk or into a publicly owned right of way.

Currently, Massachusetts addresses private inflow through MassDEP regulations and SSES program guidelines. Under the Massachusetts regulation 314 CMR 12.04, *Operation, Maintenance, and Pretreatment Standards for Wastewater Treatment Works*, sewer system authorities are required to create inflow programs to remove both public and private inflow sources under the authority's I/I Control Plan. MassDEP's *Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys, May 2017*(Guidelines) presents municipalities with recommended SSES analysis techniques to identify and quantify both private and public I/I. In addition, the Guidelines provide municipalities with recommended rehabilitation methods to remove I/I sources in the wastewater collection system.

4.2 New England Municipalities Regulations

Because of the private inflow requirements in 314 CMR 12.04, Massachusetts municipalities need to be developing private inflow programs conforming with their I/I Control Plans. 314 CMR 12 currently requires for systems that are combined or subject to SSO or those systems that discharge to combined systems or system that are subject to SSO where an additional 15,000 gpd is expected to be discharged that the proposer remove at a 4 to 1 ratio infiltration and inflow. This is a regulatory requirement that should be enforced and can be used to support some type of private inflow abatement program. Examples of private inflow removal options include the following:

- *Reimbursement Programs:* Under this strategy, the municipality reimburses property owners all or a portion of the cost of removing the private inflow source(s) identified on the property. Reimbursement should be offered for a limited time in order to encourage prompt response by the owner. If this option is considered, it should be made clear that after the reimbursement period has expired, owners are responsible for the full cost of removal and any fines or penalties incurred as a result of violating the municipality ordinances, etc.

- *Sewer Bank:* Under this strategy, private developers and other parties that propose new connections to the sewer system are required to remove an amount of inflow equal to or greater than the sanitary flow to be added by their proposed new connection(s). Typically, this ratio is around 4 to 1. This may also be accomplished by assigning a dollar amount for every gallon per day of wastewater that the new connection will add to the sewer. The charge is then assessed as part of the fees for obtaining a permit for the proposed new connection.

- *Voluntary Compliance:* Under this strategy, property owners are encouraged to remove their private inflow source(s) through written correspondence from the municipality and the threat of fines or other penalties. With an ultimate goal of voluntary removal, the municipality needs to show property owners why it makes sense to remove sources. Voluntary compliance may also be completed in tandem with system improvements being completed by the Town (e.g. – a new stormwater system that allows the users to disconnect and direct flows to the new system).

- *Mandatory Compliance:* Under this strategy, property owners are provided with a time period in which to redirect their private inflow source(s). If a property owner fails to meet the deadline, fines and/or other penalties are assessed as of that date.

- *Waiver Period:* Under this strategy, property owners are provided with a waiver period during which fines and/or other penalties accrue, but the municipality does not yet charge the property owner. If the owner removes the inflow source prior to the expiration of the waiver period, then the fines or penalties are repealed. If the owner fails to remove the inflow source prior to the expiration of the waiver period, then the owner is assessed not only the fines and penalties beginning from that date forward, but also those that accrued during the waiver period.

- *Community Assistance/Volunteer Programs:* Under this strategy, the municipality solicits assistance from the community to remove the private inflow sources. This strategy requires an aggressive campaign to educate and encourage residents and local contractors to volunteer time, materials, and labor to accomplish removal work.

- *Removal by the Municipality:* Under this strategy, the municipality schedules and disconnects all private inflow sources on behalf of the property owners. This may be accomplished through utilizing municipality personnel or by hiring private contractors. In either case, the municipality bears the cost of the removal. Although this strategy is more costly and exposes the municipality to greater liability due to work on private property, some communities choose this strategy because it ensures full compliance within a set period of time.

Some municipalities have already enacted private inflow programs using various programs and incentives. A few examples of these communities are identified below:

<u>Marion, Massachusetts</u>

In 2001 following the completion of a Comprehensive Wastewater Facilities Plan, the Town decided that targeting infiltration and inflow was a priority to increase capacity at its wastewater treatment plant. In 2003, the Town initiated a study of its sewer system. This followed up with a SSES in 2006. The study concluded that private inflow was a major contributor to excessive flows in its system. In 2013, following extensive renovations to its WWTP and several key pumping stations, the Town completed over 600 building inspections and several hundred dye tests. This was followed up with an extensive rewrite of

sewer user regulations which included triggers for inspection of properties, fines, enforcement guidelines, creation of an I/I bank, and the legal mechanisms for disconnection of sources and redirecting flows to the stormwater system. With the teeth for enforcement and the data to support the documented connections, the Town followed with the sending of enforcement letters to those locations that were identified as having non-compliant connections. Working closely with property owners, many of the connections were successfully removed. In 2015, the Town completed an extensive stormwater project in a densely developed area to Town that provided the infrastructure to redirect private inflow sources to the new system. This project was completed in conjunction with sewer system rehabilitation, roadway reconstruction and pedestrian safety upgrades. This allowed the Town to leverage multiple funding sources under one project including Chapter 90, SRF, Mass Works and existing town funding. To date, the Town continues to implement is private inflow program by completing inspections at the time of property transfer as well as follow-up inspections on those properties that were previously identified to ensure continued compliance. This program has been extremely successful.

Copies of the Town's Sewer User Regulations can be found in the following link:
https://www.marionma.gov/sites/marionma/files/uploads/sewer_use_regulations.pdf

Lunenburg, Massachusetts

In 2013, Lunenburg revised their Sewer Use Regulations to include Building Access Regulations. Under the regulations, the Sewer Commission is allowed to inspect all public and private residences for violations of the sewer use regulations (inflow sources). The Town also utilizes a $500 monthly penalty for the presence of inflow sources if the source is not removed.

Taunton, Massachusetts

The City of Taunton, Massachusetts has language in their City codes that allow for City personnel to inspect all properties for private inflow sources. In addition, the codes require private owners to remove identified inflow sources, and failure to remove the source results in a $300 penalty per day.

Fitchburg, Massachusetts

The City of Fitchburg, Massachusetts has language in their City code that allows for City personnel to inspect all properties for compliance with the City's Sewer Code, which prohibits private inflow sources. The City does have the ability to levy fines against non-conforming sewer connections, however a dedicated cost per day is not specified. During past combined sewer separation projects, the City provided notice to homeowners in the project the area that private I/I connections are illegal under City Code and must be removed. In order to ease the cost burden on homeowners, the City would pay for 50 percent of the cost of removal for new drain laterals from the street to within 10 feet of the building foundation. To date, the program has only been moderately successful, and the City is looking at modifying their private I/I removal program for upcoming sewer separation projects.

Massachusetts Water Resources Authority (MWRA), Massachusetts

The MWRA provides sewer and water to multiple communities throughout the state of Massachusetts. In 2001, the MWRA created an I/I reduction plan that includes the goal of working with communities to reduce I/I in their wastewater collection systems. Updates of this plan are required for submittal to EPA each year under MWRA's NPDES Permit. Each year, the submittal includes a brief overview of each MWRA community's I/I reduction work, including private inflow.

Sample of MWRA Communities with Sump Pump Programs can be found in the following link: http://www.mwra.com/harbor/html/infinletter01.htm

5.0 CHALLENGES TO REMOVING PRIVATE INFLOW

5.1 Costs and Cost Sharing Methods

The cost to implement private inflow removal programs can vary widely. This section attempts to provide, at least at a high level, what one might expect to spend on a typical removal. These prices will vary widely depending on community and contractual requirements.

These prices are estimated; actual costs will vary from state to state. The sump pump cost itself - not including installation - will vary according to the pump model and horsepower rating.

- Roof leader removal can vary from $100 to greater than $5,000 depending on if it can be directed to the ground or needs to be redirected to an existing drainage system.
- Expect a sump pump designed for basement use to cost $50 to $600 (including backup).
- Installation of a sump pump (including the sump pump pit, permanent plumbing for drain water, and electrical work) costs $800-$2,000.
- Installing basement drainage channels (perimeter drains) or other water collection systems can cost anywhere from $300 to $5,000.
- Overall cost can range from $1,500 to $10,000 depending on many variables including the distance to convey the flow to the outside or drain system.

5.2 Funding Sources

Funding sources available for sewer programs in communities vary by state. Sewer enterprise funds, for those communities that have it, is a separate funding source for sewer improvements. State Revolving Funds (SRF), like the MassDEP SRF Program, can be used for evaluation and construction of sewer improvements. The requirements and interest rates for these funds vary for each state. Regardless of the available funds, there is still the unclarity from community to community of the use of public funds on private property and how they should be used.

5.3 Political

Of the many challenges to removal of private inflow, including technical, financial and legal, the most difficult may be purely bureaucratic. Local political bodies, whether a mayoral form of government or Board of Selectmen, are responsible for establishing and enforcing ordinances such as prohibiting the discharge of private inflow to the public sewer system. Although such ordinances may have been adopted by the community and been on the books for years, municipal leaders are often hesitant to enforce them, particularly when it comes to homeowners, and to a lesser degree commercial/business entities due to the perceived burden placed on the owner to spend money on mitigating the issue.

No public servant wishes to force homeowners to expend funds to disconnect and redirect sump pumps, foundation drains, downspouts or area drains from their sewer connection to their yard where it can create other problems such as flooding in poor draining areas or icing of paved surfaces. Many may view the enforcement of private inflow removal as an “unfunded mandate” unless there are funds made available to fully or partially offset the homeowner’s costs to comply. Some homeowners are also hesitant to allow inspectors to enter their homes, being skeptical of their true intentions or motives.

Political leaders are also sensitive to imposing new costs on the business community to address private inflow, which is often viewed as not being business friendly. In many cases, local businesses are a major source of tax income to the community and political leaders are reluctant to take steps that might discourage growth of the commercial tax base or lead to businesses moving out of the community.

Overcoming the political challenges requires educating local leaders of the long-term benefit to the community in terms of the environment (reduced overflows and backups), financial (lower costs of transporting and treating), and sewer system operation (improved system efficiency). Once political leadership has been convinced of the need and benefits of removing private inflow, a comprehensive and well laid out public outreach program directed to homeowners and business alike must be developed and implemented (See Section 3) to achieve buy-in from these entities, the general public and stakeholders.

5.4 Legal

Legal issues related to private inflow are numerous and can be the largest road block in implementing a private inflow removal program. Before beginning a private inflow removal program, the utility's legal counsel should be included as a key decision maker in the process. Without legal counsel, the utility could be taking on unnecessary risk or conducting an illegal activity without any intent. Common legal hurdles for private inflow removal can include:

- The right to enter private property
- The liability of a government entity conducting work on private property
- Legality of spending public monies on private property.

5.4.1 Entering Private Property

In order to have an effective I/I removal program, access to private property is required, and is typically the first step towards removal. Access can be granted via a right-of-entry waiver signed by the property owner, or through a local sewer ordinance. Typically, a local sewer ordinance includes a mechanism that allows the sewer utility the right to enter any private property connected to the public sewer system. In Massachusetts, the ability to inspect property connected to a regulated sewer system is required by state law (315 CMR 12.03.5.C). An example of public outreach notification is provided in Appendix C.

5.4.2 Construction on Private Property

Conducting construction on private property to remove I/I opens up liability to the utility not only to the infrastructure being repaired or installed, but also to the property in general by having a contractor on private property. Considerations when a utility is paying for the removal of a private I/I source are:

<u>Warranty:</u>

- How long is the installation guaranteed by the utility to perform as designed, if guaranteed at all?
- Who is responsible to repair any failures beyond the warranty date?
- How quickly after a failure is reported is the utility or homeowner required to fix the defect?

Damage Claims:

- Should a contractor for the utility conducting work on private property damage any features on the property, how liable is the Utility?
- If a sump pump fails during the warranty period and a basement floods, is the utility required to reimburse the homeowner for all damages?
- Should a property that is allowed to connect a private inflow source to the storm drain system discharge, by fault or accident, oils or other contaminated liquids to the stormwater system and causes environmental damage; who is at fault and what are the repercussions?

Public Money on Private Property

Many sewer utilities are part of a municipal or local government, subjecting the utility to procurement law, and laws related to the use of public funds. Before a private inflow removal project is funded by a public utility, especially during the construction phase, the utility should consider:

- *Will local policy or politics not allow for spending public money on private property?* Often times, directly spending public dollars on private property can be perceived as a misuse of funds, and may be illegal, especially if a public benefit is not ascertained as a result of the project. If no overflows or wastewater plant bypasses can be tied to private inflow sources, then a life-cycle cost reduction for transport and treat costs may need to be developed to justify the expenditure. Additionally, if the removal of private I/I from the system opens up capacity for additional connections to the sewer system, private I/I removal may be seen as "business friendly" by local political leaders and business owners.

5.5 Technical

Arguably the most effective and desirable method, from a maintenance and public nuisance perspective, for redirecting private inflow from the sanitary sewer system is to handle private inflow sources on the existing private property. Keeping water out of basements and reducing the need for sump pumps is an ideal situation for those properties that have basements above high groundwater and have drainage related basement flooding. Other options and technical challenges are further discussed below.

5.5.1 Storm Drain Systems

A direct connection to the storm drain system is typically provided by a lateral from the private dwelling and connecting to the storm system at a wye, catch basin, or at a manhole.

Although connecting to the storm drainage system seems to be straight-forward, numerous technical challenges exist, including the following:

- Storm drain depth: Storm drains are often installed at a depth of 3 to 7 feet deep. Many foundation drains for buildings are at a full basement depth of 8 feet, which would likely prohibit gravity flow from the building to the storm drain. Possible solutions include:
    - Pitching the drain laterals to “catch grade” further down the street, however this will likely lead to long runs of laterals and possibly utility conflicts crossing at angles.
    - Installing a sump pump system to lift groundwater infiltration from a perimeter drain to a new storm drain lateral. Difficulties can be attributed to locating the pump (and installing the sump pump pit). Bringing exterior perimeter drains into a sump inside a building’s basement and subsequently pumping the water to the exterior is counterintuitive and can lead to

basement inundation in the case of a power outage or pump failure (if power backup or pump redundancy is not provided). Locating a pump chamber on the exterior of a building can be cost prohibitive and be space limited, typically in densely developed urban areas.

- Lack of developed street drainage: Sanitary sewers are typically extended to the last home on a street, ending in a summit. Storm drains typically only extend to each catch basin on a street. In urban areas with short street lengths, catch basins are typically located at street intersections, while the sanitary sewer will often continue up a side street to server a small amount of homes on the side street. Solutions include:
    - Installing a drain line up side streets or extending storm drains where necessary.
    - Exploring a different alternative, such as surface discharge or dry well discharge.

- Contaminants:
    - Discharging to the storm drain system can introduce potential contaminants to receiving waters and can create problems for a municipality dealing with compliance of a MS4 system. Oil tank spills and possible groundwater contaminants that enter foundation perimeter drains will discharge to receiving waters.
    - If the sanitary system backs up into a property, the sewerage may enter a sump dedicated to I/I and be discharged to the storm drainage system.
    - Roof discharges - asphalt and metal roof run-off is known to contain heavy metals, which will enter a storm drainage system should a direct connection exist. Infiltration via a dry-well or discharging directly to a grassed/vegetated area on the property may be preferred. In urban areas, roof runoff likely enters the drainage system or Municipal Separate Storm Sewer System (MS4) via sheet flow due to highly impervious areas, making roof discharges less of an environmental concern.

5.5.2 On-Site Dry Wells

The alternative to direct discharge or surface discharge, is installing a dry-well. Dry-wells are often the solution requiring the largest footprint on a property, as typically a leaching manhole structure is used as the drywell.

A dry well is a viable solution where:

- Groundwater is located at a depth greater than the dry well, similar to a septic system. Otherwise the dry well could potentially surcharge and fail.
- The discharge location is downgradient from the dwelling's basement. Installing a drywell outside a home can lead to a cyclical action, where infiltration is discharged to a drywell, and then water leaches out of the drywell back into the basement.

Discharge of contaminated groundwater is a concern with dry well, similar to that of storm drain systems.

- Contaminant discharge is a concern with drywells. Leaking water tanks, sanitary backups, and paints or other liquids stored in a basement may inadvertently be pumped to the drywell, contaminating nearby groundwater.

5.5.3 Changes in System Operation and Capacity

Many municipalities utilize existing stormwater systems for conveyance of stormwater flow from new systems. This could be for a number of reasons including but not limited to separation for combined sewer systems, mitigation of upstream flooding areas or expansion of the system to capture areas without existing drainage. Discharge of larger stormwater flows to an existing system can create issues related to system operation and service levels, especially for existing connections that are tied in. This brings up the question of if a municipality performs separation work or expansion of the system to add more stormwater, are they liable if the sump pump fails to remove the water (e.g., system water levels inhibit pumping when previously it functioned normally).

In addition, when a property owner is required to disconnect a sump pump from the sewer, it may require extending discharge pipes from a basement to the outside. This can significantly change the total dynamic head of the pumping system and pump discharge rate. If this is the case, the question needs to be asked, who is responsible for a capacity failure or even a mechanical failure? How long should the warranty be for work performed?

Given these technical and legal challenges, it is recommended that a utility consult with their legal team prior to initiating private inflow removal programs or modifications of existing systems.

5.5.4 Moving Groundwater Between Water Basins

Discharging into a stormwater collection system versus the ground outside a property can simply transfer water from one water basin to another, if the stormwater collection system borders two water basins. This could trigger extensive permitting requirements.

5.5.5 Municipalities have restrictions on daylighting private inflow

The easiest and least costly method for removing private inflow is surface discharge. Surface discharge typically consists of redirecting roof downspouts to the ground surface or plumbing a sump pump to direct the discharge to the exterior of a building.

A drywell is a viable option for private removal where:

- Downspouts are located on the exterior of a building and can be cut and allowed to sheet-flow to a driveway or infiltration onto an impervious area.
- Sump pumps can be redirected to the exterior of a building and discharged in the same manner as roof-spouts.

Barriers to effective surface discharge of existing private inflow sources may include the following:

- In densely developed areas, surface discharge may become a public or neighborly nuisance. Runoff from downspouts or sump pumps can often run into neighboring properties, causing erosion and property damage, or possibly causing downstream flooding.
- In New England's cold climate, surface discharges during cold weather can often lead to icing conditions. In some larger communities, discharge over sidewalks is prohibited due to this concern, A community will have to consider existing regulations and the cost of salting a surface discharge during cold weather, versus transport and treat costs.
- Contaminant issues during a surface discharge are more easily noticeable than those with a dry well or direct storm drain discharge, as passersby may report suspect discharge to the municipality.

5.5.6 Prioritizing Areas – Phased Removal Programs

Areas with high groundwater can be targeted to get the best return on investment, since these areas are likely to be pumping the greater amount of private inflow. Neighborhoods along waterbodies, or along the coast (for coastal communities) are other locations that should be considered when prioritizing removal programs. Prioritizing such areas will be on a community specific basis. Flow monitoring data or system knowledge are good tools for prioritizing which areas should be targeted as high priority removal area.

6.0 SUMMARY

For communities dealing with capacity issues in their sanitary sewer system, private I/I can be a significant problem when trying to stay in compliance with permits and existing regulations. Sanitary Sewer Overflows (SSOs) reported by communities can lead to enforcement actions that put a community in reactive mode. A proactive thorough and organized I/I program will help alleviate extraneous flows in a sanitary collection system.

There are guidelines in place for identifying private inflow sources, however, there needs to be better definite guidelines for removing these illicit sources. Typically, regulators require all identified sump pumps to be disconnected from the sewer system. In some communities, disconnection is required, in as little as 3 months from identifying the illicit connection depending on how the existing regulations are written. This may be difficult for communities to implement, particularly if the work needs to go out for public bid or larger scale infrastructure projects are needed to help property owners remove the sources.

The number of challenges associated with private inflow removal will require a collaborative effort from state agencies and other entities (e.g., DEP, State Plumbing Board, municipalities, etc.) to develop regulations and funding to help communities navigate through the legal, political, and technical challenges of disconnecting private inflow sources from the sanitary sewer system.

7.0 REFERENCES

(1) http://www.homeimprovementeducator.com/basements/basement-sump-pumps.html
(2) http://www.wefppvl.org/WEF-PPVL-library/wp-content/uploads/2016/02/PPRR_SD1-Private-Source-Report.pdf
(3) https://www.resourcerecoverydata.org/WEFfactsheets/ppii-fact-sheet_sep-2015.pdf
(4) The Public Aspect of Private Inflow Removal; The Development and Implementation of a Private Inflow Removal Program; Marina S. Fernandes, PE, CDM Smith, Kara M. Johnston, PE, CDM Smith, Nick Rystrom, PE, City of Revere. NEWEA 2017 Spring Meeting and Exhibit.
(5) Includes MWRA Communities with Sump Pump Programs http://www.mwra.com/harbor/html/infinletter01.htm
(6) Costs http://www.homeimprovementeducator.com/basements/basement-sump-pumps.html

APPENDIX A

WEF Private Property Infiltration and Inflow Fact Sheet

FACT SHEET

Private Property Infiltration and Inflow

Felix Belanger, Phil Hubbard, Roger Lehman, Andy Lukas, Bob Swarner, Srini Vallabhaneni, and Jacqueline Zipkin

Water Environment Federation
the water quality people®

Infiltration and inflow (I/I) of extraneous stormwater and groundwater to sanitary sewers can overwhelm the conveyance capacity of sewers and is a significant cause of system overflows. Sewer laterals, which connect buildings on private properties to sewer mains, are often a significant source of I/I.

This fact sheet outlines key considerations for municipal utilities establishing a framework for private property I/I (PPII) mitigation activities. Cross references are made to a number of interrelated fact sheets that are either currently available or in development on a range of sanitary sewer I/I topics. The complete set of I/I fact sheets provides comprehensive information on I/I management.

Private Property Program Needs Assessment

A comprehensive I/I reduction program requires effectively addressing PPII sources. Figure 1 identifies potential I/I sources at a typical residential private property. Before embarking on a PPII removal program, which can be costly and challenging, it is important to ask the following questions:

- What is driving the utility to reduce I/I?
- How much I/I needs to be removed? Can it be removed through public system work alone?
- Is the problem system-wide or in specific basins or neighborhoods?
- Is there information to indicate whether the source of the problem is primarily inflow or infiltration?

Answers to these questions will begin to shape the approach and extent of a utility's private property strategy.

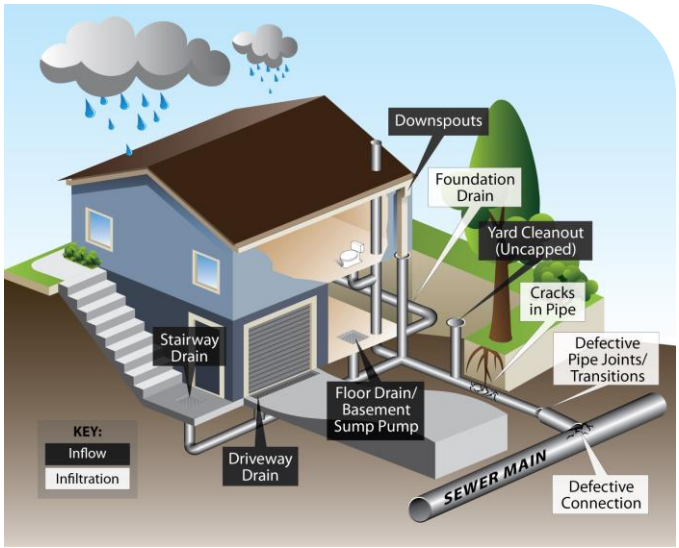

Figure 1. A diagram explaining I/I. Image by Tetra Tech

Program Approaches

There are many programmatic approaches to PPII correction. These include voluntary programs incentivized by utility-funded grants, rebates, or loans; mandatory programs that require action upon hitting certain triggers, such as selling a property; correction work implemented by the utility with permission from the property owner; insurance programs; and a variety of combinations or extensions of these approaches. The Water Environment Federation (WEF) Private Property Virtual Library provides many useful examples of these different approaches.

Policy and Legal Issues

Some of the greatest challenges to removing I/I from private property sources are not technical; rather, they are related to legal and policy issues. Therefore, it is critical for a utility considering PPII removal to involve their legal counsel early on in program development and to take into consideration Internal Revenue Service (IRS) rules.

Limits of Private Ownership

The first step is to understand the limits of private property in one's system; that is, does the utility have legal ownership of any part of the sewer lateral? As such, the following three scenarios are common:

1. The property owner owns and is responsible for the entire lateral from the building to the sewer main,
2. The utility owns the entire lateral, or
3. The utility owns the "lower lateral" from the property line to the sewer main, while the property owner owns the "upper lateral" from the property line to the house.

Scenarios may also include various combinations of easements and ownership, so it is important to first understand the limits of utility ownership and access. Then the utility can make any changes or clarifications needed through ordinance amendments. Regional utilities also may need to work with their satellite agencies to define responsibilities.

Legal Basis for Illicit Inflow Source Disconnection

When requiring a private property owner to disconnect direct I/I sources from the sanitary sewer system, the utility must have a sound legal basis that clearly states which stormwater (or "extraneous" water) sources are prohibited. This is typically included in the sewer use ordinance. Utility legal counsel should review the ordinance to ensure the utility has the authority to require disconnection of sources such as downspouts, foundation drains, sump pumps, area drains, stairwell drains, and driveway drains.

Use of Public Funds

Any time a utility spends money to correct or improve private property assets, questions will arise regarding the legality and equitability of such public investments. While determinations must be made on a utility-specific basis, it is important to consider whether existing local or state laws restrict use of public funds on private property or the use of utility rates to disproportionately benefit certain customers, such as California's Proposition 218. Some utilities have sought a determination from the state attorney general before embarking on a PPII removal program. If, from a legal standpoint, private owners will derive some benefit from the program— provided that it is incidental to public benefits—utilities may still need to consider the political implications of any perceived fairness issues among customers if funding or resources are made available to some, but not all. If a utility cannot demonstrate a broader public benefit, then public funds should not be expended on private properties.

Additionally, utilities have also sought guidance from the IRS or tax attorneys as to whether grants or other uses of public funds on private properties could be considered taxable. Recent responses to IRS inquiries indicate that determinations must be made on a case-by-case basis.

Right of Access

As with any improvements to private property, whether the utility is performing the work or funding it, access and limits of liability must be considered. Utilities use various strategies to obtain access to private laterals: from temporary easement or ownership of the lateral to a voluntarily signed liability waiver to specifying access rights in the municipal code. The level of permission needed may be dependent on the work performed. For example, some agencies have concluded that property owner permission is required to inspect private laterals. Other agencies require access for inspection as part of their ordinance, yet they seek property owner authorization before performing any work.

Funding

Another PPII removal challenge is funding. Some utilities determine that private property owners should bear the cost of private sewer improvements. Often, utilities determine that it is in their best interest to provide some level of funding to private property sewer improvements. However, some utilities may find it cost-prohibitive to assume responsibility for all PPII improvements while others may not. State and local laws govern how financial assistance can be applied to property owners. While wide policy latitude is often given to municipalities, care should be taken to consider precedent-setting policy decisions. In developing a private property improvement funding program, utilities should consider the following issues.

Purpose

Utilities will want to consider how much funding they provide to support or incentivize private property improvements. Some utilities have covered the full cost of improvements and others offer cost-matching programs where grants cover part of the overall cost. Cost coverage decisions will depend on the utilities' objectives. For instance, is the objective to provide support to customers who want to make the improvements, but do not have sufficient funds? Or is it to entice customers that would not otherwise consider upgrades? Another question could be, how much of a problem is I/I for the utility? The former question lends itself to a partial grant program while the latter two questions may point to full funding.

Funding Sources

Potential funding sources can include user fees, proceeds from bond sales, and program participant fees. Some communities have added a special sewer rate to fund the costs of PPII programs exclusively. State and federal funds may be available for some or all of the costs, including administrative, engineering, and construction costs. For example, some external funds may be available for "in-the-ground" infrastructure improvements, but not for utility staff time to administer the program. However, some state revolving funds may preclude financing of private improvements.

Funding Eligibility

Funding eligibility considers both the types of PPII removal activities that qualify and the level of financial assistance provided by the program. Some communities reimburse infiltration source corrections only while inflow source corrections are the property owner's responsibility. The level of financial assistance also can be a function of the property owner's financial strength, with some municipalities offering grants or forgivable loans to low-income participants. Municipalities may need a right-of-entry form for full funding.

Reimbursement

It is common to establish reimbursement limits on both types of repairs—inflow source disconnection and private sewer lateral rehabilitation—as well as total property limits. Utilities have allowed participants to repay their required contributions over time and in various ways, including through loans and incremental property assessments.

Cash Flow

The cash flow required for a program depends on a number of factors, including anticipated participation, duration, costs shared by participating property owners, and how costs will be repaid. Some utility PPII removal programs set annual limits on participation using a first-come, first-served approach, with unfunded properties waiting first in line for the subsequent funding year.

Satellite Systems

Funding approaches involving arrangements between a regional utility and satellite agencies also may warrant consideration. An interesting regional example comes from Milwaukee Metropolitan Sewerage District's Basement Connection program. The district established a 10-year, $62-million program to fund PPII improvements in its 28 satellite municipalities. A policy prescribed certain limits on how the funds must be spent, but decisions on many other details, including property owner financial participation, are the responsibility of the municipalities.

The Hampton Roads Sanitation District in southeastern Virginia elected to fund PPII improvements in 14 satellite agencies. The district's Sewer Lateral Investigation Program's estimated cost is $200 million. The utility hires the plumbers and inspects the work, the plumber warranties the work, and the property owner signs an agreement for both single-family and commercial properties.

Some utilities have covered the full cost of PPII improvements and others offer cost-matching programs where grants cover part of the overall cost.

Communication is critical to PPII removal efforts because direct interface with customers' properties is involved. Image by Tetra Tech

Public Outreach

A communication plan is essential to any successful public program. However, it is critical to PPII removal efforts because direct interface with the customer and his or her property is involved. Public outreach is multifaceted, starts at the conceptual stage, and continues throughout implementation. Once a utility decides to include private property as part of its comprehensive approach to reducing I/I, convincing local elected officials of the need for the project begins, followed closely by efforts to inform the public about what is proposed and why it is important. An informational video distributed via public news and utility outlets is one option to convey the message.

Stakeholder Input

During the program development phase, public meetings and Web sites are useful tools for informing the public about options local elected officials are evaluating. These forums also can serve as a means for gathering feedback to help craft a program that meets residents' needs. Another option is using door-hanger notices to inform residents about program implementation, pending inspections, and any problems that have been identified.

All stakeholders must be identified along with the appropriate form of communication needed to reach those groups. For example, local plumbers are an important stakeholder group. Additionally, if a point-of-sale approach is being pursued in which property owners are required to take action before transferring property titles, local realtors would be an important stakeholder group. In many communities, there is an existing local association of realtors that meets regularly. A presentation at one of these meetings illustrating key program details would be effective in eliminating confusion and misinformation as a new point-of-sale inspection program begins. If not informed early on in the process, realtors can delay a PPII program.

Once a program is established, a Web site is a good way to inform and educate residents about the program and its progress. It is important that the Web site outlines when and how the program will affect residents and that it be kept up to date to sustain an engaged public outreach program. The utility's ongoing communications program should provide contact information and keep customers informed of successes and changes. In addition to a Web site, bill stuffers can help inform residents of a program's status and the overall progress in eliminating I/I. Program brochures can also be made available at permit counters and community events. Finally, some communities have also used public service announcements on television or radio.

Smoke testing is used to detect sources of I/I. Image by Tetra Tech

Implementation

Identifying and Addressing Defects

Identifying defects on private property that contribute to I/I can be challenging, time consuming, and expensive. In most cases, the owner of the property must give permission for the local utility to access their property. Once that is granted, the local utility can begin the identification process. There are many lateral sewer system evaluation survey methods in use across the country, including, but not limited to, the following: building inspection, smoke testing, dye testing, closed-

circuit television, and wet-weather tests such as rainfall and I/I simulations. Results from these field surveys help identify defects and determine lateral sewer conditions. Subsequently, this information is used to formulate specific improvement plans to cost-effectively remove inflow sources and repair, rehabilitate, or replace lateral sewer systems. Additional resources about identifying and addressing defects are provided at the end of this fact sheet.

Evaluating Effectiveness

Periodic reports on program effectiveness to governance boards that approve funding, or otherwise authorize implementation, will likely be necessary. It is important to consider reporting needs when establishing the supporting flow-monitoring and modeling efforts, program controls, pre- and post-improvement data collection and management methods, and reporting protocols. When initially embarking on a PPII removal effort, many utilities find it useful to perform concentrated, relatively small pilot projects that include efforts to evaluate effectiveness in property owner participation, communication, cost, and I/I reduction. Such pilot projects can yield extremely important initial information to frame the expected long-term program costs and effectiveness.

Technical aspects of flow monitoring and data analysis are important for reliably characterizing the effectiveness of PPII removal. In addition, example programs with effectiveness evaluations can be found through the WEF Private Property Virtual Library, recent WEF conference proceedings, and in the "Additional Resources" section in this fact sheet.

Acknowledgments

WEF Collection Systems Committee

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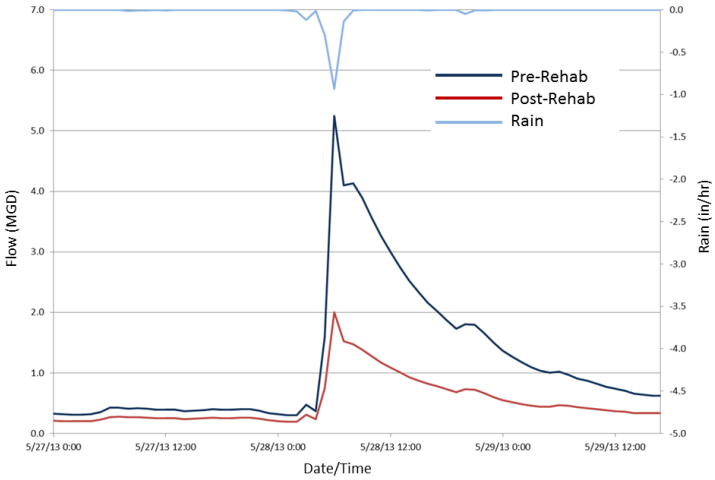

Figure 2. Flow before and after PPII rehabilitation. Image by Brown and Caldwell

Additional Resources

"Sanitary Sewers," a 2011 fact sheet developed by the WEF Collection Systems Committee

The Private Property Virtual Library, an online database by the WEF Collection Systems Committee

Existing Sewer Evaluation and Rehabilitation, MOP FD-6 (3rd Edition), a 2009 manual by WEF and the American Society of Civil Engineers

"Private Sewer Laterals," a 2014 resource by the U.S. Environmental Protection Agency (EPA)

State of Technology for Rehabilitation of Wastewater Collection Systems, a 2010 EPA publication. Reference chapter 5 "Sewer Lateral Renewal Technologies."

Report on Condition Assessment of Wastewater Collection Systems, a 2010 EPA publication

Sanitary Sewer Overflow Analysis and Planning (SSOAP) Toolbox, an online EPA resource

SSOAP Toolbox Enhancements and Case Study, a 2012 EPA publication

"Eliminating Private Sewer Lateral Inflow and Infiltration in Delaware County," a video by the Delaware County Regional Water Quality Control Authority

Private Sewer Lateral Program, an online resource of the East Bay Municipal Utility District

Also check out the resources of Springfield, Missouri's Clean Water Services' Private Sewer Repair Program and the City of South San Francisco, California's notice of sanitary sewer system service.

APPENDIX B

Examples of Sewer Ordinances and Regulations Language

Town of Marion's Sewer User Regulations can be found in the following link:
https://www.marionma.gov/sites/marionma/files/uploads/sewer_use_regulations.pdf

APPENDIX C

Examples of Public Outreach Media/Notification

«NamePrefix». «FirstName» «LastName»
«AddressNumber» «AddressStreet»
«City», «State» «Zip»

Dear «NamePrefix». «LastName»:

An illegal connection to the Sanitary Sewer System has been identified at your residence. The connection is a violation of M.G.L. c.83 § 5, 360 CMR 10.023, and City of XXXX Ordinance Title 13-17. The City is also under Administrative Consent Order from the Department of Environmental Protection to eliminate all illegal connections. This letter shall serve as notification that the illegal connection must be removed.

The illegal connection («SourceType») allows clean rain water and/or groundwater to enter the City's Sanitary Sewer System. The additional clean water discharged from this illegal source uses valuable pipe capacity and can cause sewer back-ups or sewer overflows during wet weather events. Specifically, your inflow source contributes to a sanitary sewer overflow into Horn Pond during severe wet weather events. In addition to the environmental impacts, this source costs the City, and in turn, XXXX residents, money. For example, one (1) sump pump connected to the Sanitary Sewer System costs rate payers an estimated $_____per year.

The City of XXXX has established a program to assist homeowners in the removal of these illegal connections.

The City will provide:

- design of an appropriate removal method
- a choice of competitively selected Contractors to perform the work
- inspection and certification of source removal
- payment of the removal cost if removal is scheduled within one year of the date of this letter

The Homeowner will be responsible for:

- contacting the City's Inflow Source Removal Coordinator to schedule an appointment
- scheduling a date to have the illegal inflow source removed
- sign an agreement with the contractor and waiver with the City for work on private property
- obtaining a signed "Certification of Removal" at the post removal inspection

The following procedure shall be implemented to remove the illegal connection.

1. Contact _____ at the Department of Public Works, (___) ___-____, to schedule a consultation appointment. The appointment will be at your home and will discuss the illegal connection removal procedure. The City's Inflow Source Removal Coordinator will inspect the illegal connection and recommend an appropriate removal strategy. The Coordinator will answer any questions you have about the program and schedule a date to have the construction completed.

2. Prior to the start of construction, you will be required to execute an agreement with the contract for performance of the work and a waiver with the City to cover liabilities associated with private property work.

3. The Contractor will arrive at the scheduled date and time and perform the work. You will need to be at home during the construction process.

   The Contractor who will perform the work was selected through a competitive bidding process. This process allowed the City to select a qualified and low-cost Contractor for your project.

4. The City's Inflow Coordinator will arrive at the completion of construction to inspect the work. If everything was done correctly the Coordinator will complete a "Certification of Removal" form that will be signed by the Contractor, Coordinator and you. You will receive a copy of this form for your records. The Coordinator will photograph the completed project for the City's records.

A one (1) year waiver period shall be granted to the owner of each illegal connection. During this one (1) year period the homeowner will be expected to obtain a "Certification of Removal" as described above. After the first six (6) months of the waiver period fines will begin to accrue at a rate of $_____ per day. If the illegal source is not removed by the end of the waiver period, the cumulative total of the fines become due. Fines will continue to accrue on a daily basis until the illegal source has been certified as removed. Failure to pay these fines will result in a lien against your property.

Illegal connections to the sewer system in XXXX substantially impact water quality locally, in the Charles River, and in Boston Harbor. The illegal connection at your home contributes directly to wet weather sewer overflows which discharge millions of gallons of untreated sewage to Greater Boston waterways each year. In addition to the environmental impacts, each illegal connection increases your water and sewer rates.

Your connection violates Massachusetts State Law and XXXX's Local Ordinance. Please contact _____ at the Department of Public Works, (XXX) XXX-XXXX, to schedule a consultation appointment.

XXX
Commissioner of Public Works