



Sewer Backup Prevention and Response Plan

May 31, 2017

Contents

1	Statement of Purpose.....	3
2	Terminology.....	4
3	Operations and Maintenance Program	5
3.1	Receiving and Responding to Complaints.....	5
3.1.1	Field Operations and Maintenance	5
3.2	Programmatic Inspection and Maintenance	7
3.2.1	SBU Operations and Analysis Program (SOAP).....	7
3.2.2	Identifying Sewer Segments with Recurring Confirmed SBUs	7
3.2.3	Inspect, Determine Root Cause, Initiate Remedial Action.....	7
3.2.4	Capacity, Management, Operation, and Maintenance (CMOM) Section.....	8
4	Targeted Sewer Inspection Pilot (TSIP).....	9
4.1	Pilot Development Phase (October 2016 through March 2017)	9
4.2	Pilot Phase (July 1, 2017 through June 30, 2020).....	9
4.3	TSIP Implementation and Potential Expansion.....	10
5	Fats, Oils, and Grease	12
5.1	Grease Interceptors	12
5.2	FOG Remediation	12
5.3	Public Outreach	13
5.3.1	General Outreach to the Public	13
5.3.2	Outreach to Professionals.....	13
5.3.3	Residential Grease Outreach.....	13
5.3.4	Education Outreach	14
5.3.5	Intergovernmental	15
5.3.6	Sewer Report.....	15
	Appendix	16
	Appendix 1: SBU Response Checklist	16
	Appendix 2: SBU Procedure Flowchart.....	17
	Appendix 3: TSIP Pilot Development Phase Methodology	18

1 Statement of Purpose

As New York City's water and wastewater utility, the Department of Environmental Protection (DEP) provides vital services to more than eight million New Yorkers: delivering over one billion gallons of fresh drinking water and treating approximately 1.3 billion gallons of wastewater. To reliably treat this volume of wastewater DEP utilizes a network of more than 7,500 miles of sewers to convey wastewater to one of its 14 wastewater treatment plants. To operate and maintain the many components of this extensive sewer system, DEP has five repair yards, seven sewer maintenance yards, a fleet of specialized vehicles, and a staff of laborers, supervisors, engineers, and analysts.

Over the last decade, DEP has shifted from a reactive approach to an adaptive, data-driven, proactive approach to operate and maintain the sewer system. DEP employs the principles of adaptive management to continually improve our sewer maintenance program, while balancing the Department's overarching responsibility to deliver high quality drinking water and treat wastewater every day in an affordable and sustainable manner. DEP's rigorous sewer inspection, analysis, and cleaning program has produced tangible improvements to the level of sewer service citywide. In the last five years, we have achieved significant improvements in many of our key indicators, demonstrating the enhanced reliability of our system. For example, between Fiscal Year 2012 and Fiscal Year 2016, total sewer backup (SBU) complaints dropped 25% and Confirmed SBUs dropped 49%.

This plan outlines the steps DEP takes to manage SBUs and reduce their occurrence, from responding to and resolving SBU complaints to educating all New Yorkers about actions they can take to prevent the improper disposal of grease into the system, a primary cause of SBUs. This plan also describes a new pilot program DEP is implementing to conduct targeted sewer inspections in parts of the City that have a relatively higher rate of SBUs. Using the principles of adaptive management, DEP will evaluate the results of this pilot and identify additional opportunities to improve our overall sewer maintenance program.

2 Terminology

As used in this Plan, these terms are defined as follows:

Sewer Backup (SBU) complaint: A customer service request (CSR) by a property owner or other individual alleging that a problem with a City sewer is impacting the property and causing an SBU.

Confirmed SBU: DEP deems an SBU as confirmed when a backup complaint, upon field investigation, is determined to be associated with a condition in DEP's sewer system. Such conditions include surcharging, temporary overtaxing, blockages, and collapses.

Unconfirmed SBU: DEP deems an SBU as unconfirmed when a backup complaint, upon field investigation, exhibits none of the factors of a Confirmed SBU. In such situations, the SBU is found to be associated with an internal condition, a problem with the private sewer connection, or otherwise unfounded.

SBU Operations and Analysis Program (SOAP): A geospatial analysis of 311 data produced quarterly that indicates areas in the city experiencing repeated Confirmed SBU complaints and the actions associated with addressing those instances.

SBU Recurring After SOAP (SRAS): Once DEP completes remedial measures through SOAP, the sewer segment enters a one-year monitoring period. During that time, if an additional Confirmed SBU occurs on that segment, DEP identifies the segment as an SRAS segment and assigns it to DEP's Capacity, Management, Operation and Maintenance (CMOM) section to develop and implement an action plan tailored to site-specific conditions.

Sewer segment: the length of sewer from one manhole to the adjacent manhole. In cases where multiple barrels are present, the sewer segment generally includes all barrels.

Street segment: the portion of the street from one intersection to the next; may also be referred to as one street block.

3 Operations and Maintenance Program

DEP's program to ensure that the sewer system functions as designed relies on both reactive and proactive management tools. DEP both responds to complaints (reactive maintenance) and engages in data-driven analysis to undertake programmatic efforts to prevent problems (proactive maintenance). DEP uses a computerized maintenance management system and a geographic information system (GIS) to manage and track CSRs. DEP responds to CSRs generated externally through the 311 system, and can initiate a CSR internally to schedule preventative, corrective, or programmatic maintenance. DEP uses Infor Public Sector (IPS), previously known as Hansen, to track CSRs and any resulting work orders; DEP processes work orders in the same way regardless of the CSR's source or root cause.

When responding to a CSR or performing scheduled maintenance, DEP field crews are guided by DEP's Standard Operating Procedures (SOPs) and Guidelines. In addition to ensuring consistency and reliability across operations, these tools improve reporting by standardizing the collection of information about the root causes of SBU complaints.

3.1 Receiving and Responding to Complaints

Anyone can report observed or suspected SBUs to DEP through 311, New York City's government information and non-emergency services hotline. Operators at the 311 Call Center gather necessary information from the caller and enter the information into the online 311 system. Such reports may also be made electronically through the City's 311 website, and the IPS system will generate a CSR based on the complaint. Once IPS generates a CSR, it is routed to the appropriate maintenance yard. In addition to responding to individual CSRs, DEP also uses the IPS complaint data to target areas requiring maintenance and to evaluate the effectiveness of maintenance activities. DEP also employs GIS to analyze CSRs spatially.

3.1.1 Field Operations and Maintenance

DEP field crews perform investigations and respond to all sewer-related CSRs received from the City's 311 system. DEP evaluates conditions and takes immediate remedial action where conditions warrant using a variety of techniques and specialized equipment. Our forces maintain and operate some of the most sophisticated equipment in the industry to perform remedial work.

Field crews report to and are dispatched from one of seven maintenance yards located in the five boroughs. The yards are equipped with truck-mounted crane vehicles (catch basin cleaning trucks), power jet flushing vehicles, power-rodding auger trucks, and combined flusher/vacuum trucks. In response to an SBU complaint, a DEP field crew performs an initial inspection. This inspection includes visually surveying the downstream and upstream manholes nearest to the complaint location and collecting all data relevant to the incident. The field crews utilize a checklist during a response (see Appendix 1); a workflow chart is also used to assist crews (see Appendix 2).

The following summarizes how DEP field crews respond to an SBU complaint; the SBU Response SOP (December 2012), sets forth in detail the steps that field staff follow:

- If the manhole inspection determines that the SBU complaint was unconfirmed, the field crew may perform hydraulic cleaning for at least two sections of sewer as a “courtesy flush.” If a courtesy flush is not possible due to operational constraints or other extenuating circumstances during the initial response, the crew may return to the site at another time.
- If there is a Confirmed SBU, the field crew will perform hydraulic cleaning, i.e., flushing of the sewer line.
- If the flushing does not alleviate the condition, the crew performs mechanical cleaning (such as dragging, rodding, or vactoring) to remove material potentially obstructing flow in the sewer. The crew usually accomplishes this cleaning with the use of either a power-rodding auger truck or a combined flusher/vacuum truck.
- If the blockage is still not relieved, a pump around, which diverts flow around the sewer section experiencing the blockage, may be required. Pumping may be continuous or periodic depending on the amount of flow. If sewage is flowing past the blockage, pumping may not be required.
- If the crew determines that the sewer is broken, DEP will typically direct its on-call contractor to make the appropriate repair. In certain circumstances, broken sewers may be repaired by DEP field crews or as part of a capital project.
- If the crew determines that additional attention at the location will be required, it will so note and direct the work appropriately. For example, if the crew finds a location impacted by a significant amount of residential grease, it may recommend programmatic liquid degreasing; if commercial establishments are the suspected source, the crew may refer the location for inspections and possible grease enforcement. If the field crew has evidence that a problem exists but is unable to make a firm determination as to cause, it will refer the issue for further review by technical or senior engineering staff.
- Once the crew completes the appropriate steps outlined above, it will attempt to contact the complainant at the property. The crew will inform the complainant of whether the problem was resolved through the above actions, needs further action, or the backup relates to conditions within the property owner’s service line. If no one is available at the property, the crew will leave a door tag indicating what actions the crew took on-site.

Finally, as further described below in section 3.2, field crews routinely perform programmatic cleaning and degreasing of sewers in areas where data have indicated this to be necessary to maintain effective operations. Our processes are tiered to direct our resources as effectively and efficiently as possible, including referrals to specialized units that investigate and enforce issues such as grease conditions or perform more sophisticated analysis by engineering staff.

3.2 Programmatic Inspection and Maintenance

In addition to responding to complaints, DEP proactively analyzes Confirmed SBU data to identify and address areas where there are recurring Confirmed SBUs.

3.2.1 SBU Operations and Analysis Program (SOAP)

SOAP is an important element of DEP's sewer maintenance approach. SOAP consists of a series of analyses and activities that strategically target DEP's resources toward areas that most require attention. SOAP analyzes the geospatial distribution of Confirmed SBUs and highlights those street segments that have a higher frequency of Confirmed SBUs. Those segments that have the highest frequencies enter into the SOAP program for a more refined analysis, as described in more detail below.

3.2.2 Identifying Sewer Segments with Recurring Confirmed SBUs

DEP reviews Confirmed SBU IPS data on a quarterly basis to determine which sewer segments experienced the greatest number of Confirmed SBUs during that period. DEP identifies areas meeting criteria for further analysis, maintenance or engineering study as described in the *Management and Tracking of Recurring Sewer Backups SOP* and designates them as "SOAP Segments." DEP defines SOAP Segments as those street segments that have more than one Confirmed SBU within a rolling three-month period. DEP then issues CSRs on these locations to initiate the inspection and remedial process described in the following section, which includes a root cause analysis to determine the cause of the Confirmed SBUs and any appropriate remedial actions.

3.2.3 Inspect, Determine Root Cause, Initiate Remedial Action

Once DEP identifies a SOAP segment, it assigns the segment to the maintenance and operations staff for further review, inspection, and identification of actions that could potentially address the cause of the repeated Confirmed SBUs. A typical analysis includes the following steps:

1. **Inspection:** DEP undertakes additional inspections to analyze underlying factors that might be causing recurring Confirmed SBUs. DEP chooses an inspection method based on the nature of the sewer's history, physical surroundings of the sewer, and the sewer's size. Inspection methods include surface inspection using visual inspection or pole cameras, closed circuit television, SONAR, and walkthrough inspections by staff.
2. **Root cause identification:** Based on the results of the inspection, DEP identifies the most likely cause of the recurring Confirmed SBUs. A root cause may include obstruction from grease or debris build-up or from tree roots, a condition that requires repair, or the presence of an illegal connection that protrudes into the sewer and obstructs flow. DEP records any identified root cause in IPS, enhancing DEP's ability to analyze data and identify trends.

3. Remedial measures application: Once DEP identifies the root cause, it applies appropriate strategies to address the sewer issue. These actions may include application of liquid degreaser; cleaning on a one-time or scheduled programmatic basis; repairs, rehabilitation, replacement; and enforcement. Sewer cleaning methods include hydraulic flushing, mechanical dragging, rodding, or vactoring, and chemical degreasing procedures. DEP adds sewer segments that require cleaning on a programmatic basis to a Liquid Degreasing (“LDG”) list.

3.2.4 Capacity, Management, Operation, and Maintenance (CMOM) Section

DEP’s CMOM Section is a specialized unit that targets in-house engineering and contract resources to address sewer system performance issues. The CMOM section receives referrals concerning Confirmed SBUs via two main processes:

- 1.If, during initial CSR response, DEP determines that the condition warrants further investigation (requiring engineering services or closed circuit television [CCTV] inspection) to determine the cause of the issue; for example, when flow in the sewer is elevated above normal conditions but there is no obvious blockage or other defect causing the problem; or
- 2.By referral from SOAP when, after completion of the SOAP analysis and implementation of all prescribed remedial actions, the location experiences a Confirmed SBU within one year of the completion of those actions (an “SBU Recurring After SOAP” or “SRAS”).

For SRAS locations, the CMOM section conducts analyses tailored to the history of the location and the surrounding area to develop an appropriate corrective action plan. When evaluating the SRAS locations, DEP may enlarge the area subject to analyses if, through engineering judgment, DEP identifies potentially related Confirmed SBUs within a reasonable geographic area around the SRAS location.

Engineering personnel from CMOM conduct the evaluation and analysis of the SRAS location. The CMOM analysis uses tools such as CCTV to evaluate the structural integrity of the sewer, and uses engineering analysis of drainage plans and as-built drawings to ensure that the system is functioning as designed; CMOM personnel may also perform walkthrough inspections of larger sewers. In accordance with the results of its analysis, the CMOM section develops an action plan that recommends correction of any issues identified. Corrective actions recommended by CMOM may include programmatic degreasing, flushing, or repair or replacement of a portion of the sewer.

4 Targeted Sewer Inspection Pilot (TSIP)

To reduce further the number of Confirmed SBUs in the sanitary sewer system, DEP is piloting a proactive, data-driven sewer inspection program in targeted areas, which will include three phases. TSIP will supplement DEP's current SBU response system, including the existing SOAP, SRAS, and LDG maintenance programs, as described above (see sections 3.2.1, 3.2.3 and 3.2.4). TSIP is intended to (i) identify sewer segments that may benefit from frequent inspection and (ii) establish an appropriate cycle to conduct such inspections on an ongoing basis. By conducting proactive inspections of sanitary sewers in these sewer segments, DEP seeks to identify and undertake maintenance activities before a Confirmed SBU occurs with the goal of reducing the frequency of Confirmed SBUs. The two TSIP phases are:

1. Pilot Development Phase (completed) – DEP conducted inspections in areas selected for TSIP to determine the efficacy of various inspection methods and make preliminary resource projections for later phases of TSIP.
2. Pilot Phase – DEP will complete two cycles of regular inspections of all sanitary sewers in the selected geographic areas to collect data on the sewers' condition and establish an appropriate frequency of ongoing inspections for specific sewer segments.

After completion of the pilot phase, DEP will use the data collected and lessons learned to determine future implementation and potential expansion of TSIP.

4.1 Pilot Development Phase (October 2016 through March 2017)

DEP conducted a pilot development phase from October 2016 through March 2017. Additional details regarding this phase are presented in Appendix 3. During the pilot development phase, DEP compared two different methods of sewer inspection (visual inspection and pole camera inspection) to identify the most efficient method to conduct programmatic sewer inspections and to estimate the level of resources required for later inspection phases. DEP determined that more frequent visual inspections would net greater reductions in SBUs than the more sensitive, but more time-intensive pole camera inspections. Over time, DEP believes that the increase in the number of inspections through visual inspection will reduce the difference between visual and pole camera inspections in the rate of identifying recommended maintenance activities, and will allow for better identification of immediate maintenance needs or earlier identification of sewer surcharge conditions.

4.2 Pilot Phase (July 1, 2017 through June 30, 2020)

Using the information gathered in the pilot development phase, DEP will launch the pilot phase in July 2017, and perform two cycles of regular visual inspections of the sanitary sewers across geographic areas with the highest number of SBUs. To ensure that inspection crews can conduct a more detailed inspection if they deem such detailed inspection prudent, crews will have a pole

camera available during visual inspections. DEP anticipates, based on the pilot development phase, that it will take approximately three years to complete two full inspections of all sanitary sewer segments within the selected geographic areas.

DEP intends to conduct approximately 55,000 sewer segment inspections over the three-year pilot period. Based upon experience in the field and other relevant factors, DEP may adjust the number of annual inspections, but will seek to complete all 55,000 by June 2020. The current projected pace of annual inspections is:

1. Fiscal Year 2018 (July 2017 – June 2018) – 10,000 sewer segment inspections
2. Fiscal Year 2019 (July 2018 – June 2019) – 20,000 sewer segment inspections
3. Fiscal Year 2020 (July 2019 – June 2020) – 25,000 sewer segment inspections

To identify the sequence for sewer segment inspections, DEP will divide geographic areas into smaller drainage areas. DEP will inspect each sewer segment twice within the three-year pilot phase to establish the necessary inspection cycle. DEP will then conduct a detailed analysis of the inspection results to establish the appropriate ongoing inspection cycle for each segment. This analysis could include the consideration of factors such as age, material, and size of the infrastructure, the occurrence of Confirmed SBUs during the pilot phase, the observed conditions in sewers, the proactive maintenance performed, and clustering of geographic areas. DEP may add or remove some segments as appropriate. DEP will analyze the data on an ongoing basis throughout the pilot phase; DEP anticipates completing the analysis in October 2020, three months after the inspections are completed.

Once DEP has established the inspection schedule for sewer segments, DEP will initiate the implementation phase as described below. DEP will also analyze the inspection results and Confirmed SBUs throughout the TSIP to determine patterns of Confirmed SBUs against factors such as sewer size, age, design standard, and material to guide inspection protocols to target the City's sewer system, or areas within the system, that will most effectively reduce Confirmed SBUs.

4.3 TSIP Implementation and Potential Expansion

Beginning in November 2020, DEP will perform sewer inspections in the selected geographic areas in accordance with the inspection schedule established during the pilot phase. DEP will continue to evaluate the results of the inspections and make necessary changes to the inspection schedule to prevent Confirmed SBUs and utilize resources efficiently.

DEP will also consider the data collected during TSIP to evaluate how the lessons learned from this Pilot may be used to reduce SBUs in other parts of the City. In some cases, DEP may decide to conduct additional rounds of area-wide inspections, in accordance with the TSIP methodology, to identify the appropriate inspection cycles for the area. DEP may identify areas

in which the sewer conditions and root causes of SBUs mimic those in areas where DEP has already conducted TSIP. In these cases, DEP may elect to use the inspection frequencies already developed, rather than conduct additional rounds of area-wide inspections.

5 Fats, Oils, and Grease

Fats, oils, and grease (“FOG” or “grease”) buildup causes the majority of Confirmed SBUs in New York City sewers. DEP has a comprehensive grease management program to implement source controls for grease discharge, remediate sewer segments with grease buildup, and educate the public and plumbing professionals on best management practices for grease disposal.

5.1 Grease Interceptors

For Food Service Establishments (FSE), DEP’s sewer use regulations require all commercial establishments that generate fats, oils, and grease to install, operate, and maintain properly sized grease interceptors.¹ Upon the FSE’s installation of a grease interceptor, DEP inspects the establishment to verify the proper sizing, installation, and maintenance of the interceptor; periodic maintenance inspections then evaluate whether proper maintenance and cleaning of grease interceptors is occurring. When an inspector determines that an establishment is not complying with the regulations, DEP issues a Commissioner’s Order and/or Notice of Violation. Maximum penalties for non-compliance are \$10,000 per day. The Compliance Engineering Unit works with the Field Operations and CMOM units to identify commercial zones that correspond to segments with grease-related recurring SBUs and targets inspections accordingly.

DEP conducts random inspections of grease interceptors at FSEs throughout the city on a rolling basis. DEP also conducts targeted inspections when there are 311 complaints and when inspections within the sewer collection system determine that commercial grease is a problem. For the targeted inspections, DEP inspects all FSEs that might be contributing to an SBU. When violations are discovered (typically, an undersized grease interceptor or failure to maintain a grease interceptor), an enforcement action is initiated with a Commissioner’s Order and/or a Notice of Violation. The inspector will conduct follow-up inspections at the FSE until the property is in compliance. DEP may impose escalating penalties and requirements for increased interceptor cleaning frequency to ensure ongoing compliance and proper grease interceptor maintenance in the future.

5.2 FOG Remediation

When responding to an SBU complaint, field crews use a checklist to determine and record the primary cause of all Confirmed SBUs as described above. If the field crews determine the cause of a Confirmed SBU to be FOG deposits, they trigger the *FOG Referrals and Programmatic Scheduling* SOP. This SOP provides guidelines for relieving the sewer blockage using liquid degreaser, determining the severity of the deposit and source of the grease, and, if applicable, adding the segments to the LDG list. Field crews also distribute “Cease the Grease” flyers and door hangers to properties immediately surrounding the impacted segment or segments, as described below.

¹ 15 RCNY §19-11

5.3 Public Outreach

5.3.1 General Outreach to the Public

DEP has a broad community outreach program that includes all aspects of DEP's mission, including the operation of the City's sewer system. Through its website and social media tools, DEP provides a broad range of information to New Yorkers to assist them in maintaining their internal plumbing in a state of good repair. This information includes: instructions on best practices for proper home plumbing and service line maintenance; tips for preventing service line or sewer blockages and for cleaning up if sewage enters the home; and instructions on how to report an SBU complaint. The City also has a process in place through which a private property owner may file a claim with the New York City Comptroller for damage the property owner ascribes to sewer overflow.

5.3.2 Outreach to Professionals

DEP designs targeted outreach aimed at businesses, professional industrial and commercial support organizations, and business service providers such as Local Development Corporations, Business Improvement Districts, Chambers of Commerce, Economic Development Corporations, and Merchant Associations. DEP also communicates with licensed professionals, trade groups, and property owners about rules and regulations regarding discharges into New York City sewers. DEP hosts continuing education courses for Licensed Master Plumbers and regularly publishes articles in trade publications on updated rules and regulations related to sewer connections.

In conjunction with the proactive sewer inspection program described in Section 4, DEP offers consultation visits and compliance workshops to FSEs in the select geographic areas through Community Boards and elected officials. DEP also develops literature to alert the targeted community partners and residents about other deleterious items that can lead to SBUs, such as baby wipes, sanitary napkins, dental floss, and paper towels.

5.3.3 Residential Grease Outreach

DEP has a comprehensive public outreach program to complement the Grease Interceptor and FOG Remediation programs described above. The program aims to educate residents about proper grease handling and disposal.

DEP's residential grease prevention program, titled "Cease the Grease," focuses on educating property owners and residents about the negative impacts of grease discharge on the sewer system and building plumbing. DEP staff meets with property managers, co-op boards, tenants associations, and community groups to distribute "Cease the Grease" campaign materials, including flyers and messaged promotional items. Residents can request program materials through the DEP website and at DEP's borough offices.

Property managers, owners, and co-op boards of large residential buildings often experience the negative impacts of grease discharge in their private sewer lines and internal building plumbing

systems. DEP works with these groups to provide flyers and grease management tools to building residents. DEP also partners with the New York City Housing Authority (NYCHA) to distribute information across many NYCHA developments.

In addition to these community outreach efforts, in 2016, DEP launched an enhanced “Cease the Grease” outreach effort in Community Boards 412 and 413 in Queens, which have experienced an elevated number of SBUs, the primary root cause of which is grease deposits in the sewer system. As part of this effort, DEP reached 55,000 households in those Community Boards to distribute information and educate residents about the implications of improper grease disposal. DEP will consider expanding this enhanced program into other geographic areas, as appropriate.

In addition to door-to-door outreach to neighborhood residents, DEP offers community partners, including all NYCHA developments, presentations and workshops and/or literature.

5.3.4 Education Outreach

As part of the 2016 enhanced “Cease the Grease” outreach, DEP conducted a variety of programs at area schools. These initiatives included:

1. Consulting with school administrators and teachers regarding content and curriculum connections.
2. Teaching pre-K through 12th grade students during the school day, including hands-on activities and critical thinking exercises.
3. Developing online educational materials that included background information, teacher lessons, student activities, and additional resources including a glossary, bibliography, and descriptive list of organizations to support teachers and students.
4. Creating items for distribution to students to encourage community engagement and personal action to reduce grease in the sewers. These items included Grease Patrol Inspector badges (for distribution to elementary school students), MetroCard holders with a grease reduction message (for middle and high school students), and bookmarks (for all ages, including adults).
5. Constructing a working model of the inside of a home, with working plumbing to demonstrate the function of a fully working internal sewer pipe in contrast to a sewer pipe clogged by FOG.
6. Providing students with the opportunity to express themselves creatively about grease, urban infrastructure, and other water issues by participating in the annual Water Resources Art and Poetry Contest and focusing on this new theme.

DEP also plans to expand our education program to reach additional college and graduate students and non-formal educators from youth and community organizations, after-school

programs, libraries, cultural institutions, environmental groups, botanical gardens, parks, and other neighborhood resources.

5.3.5 Intergovernmental

DEP has built relationships with other New York City agencies to promote proper grease disposal and reuse. Grease interceptor installation is one of many components of the Small Business Services (SBS) program for FSEs. SBS coordinates the multi-agency permitting and inspection process for participating new businesses. The coordinated SBS inspection includes grease interceptor installation in addition to building, fire, and health code regulations. Likewise, grease interceptor installation and maintenance is included as a component in the NYC Business portal on how to start and maintain sustainable businesses.

The Business Integrity Commission (BIC) regulates haulers of yellow and brown grease in the City of New York. DEP partners with BIC to perform coordinated inspections of yellow (fryer) grease disposal practices as well as proper grease interceptor cleaning and maintenance.

5.3.6 Sewer Report

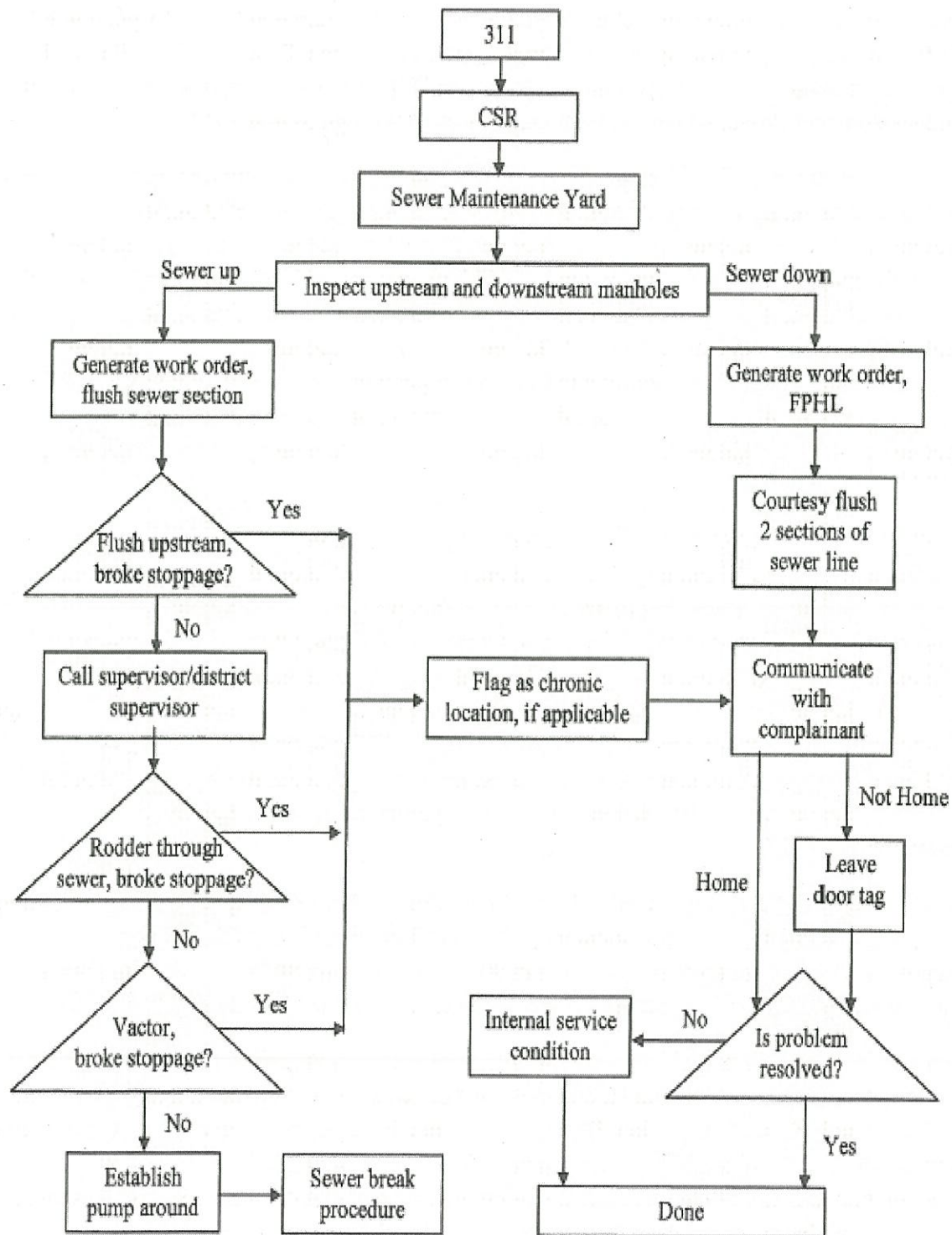
In November 2012, DEP released its first *State of the Sewers* report, most recently updated in 2016. The reports describe the history, components, and operation of all aspects of New York City's sewer system, focusing on the analytical tools and performance metrics that guide the agency's decision-making process, including those used to identify SOAP segments and to target programmatic cleaning schedules. Past reports have also highlighted many of the innovative tools and technologies that DEP employs to improve the operation and management of the sewer system. DEP will continue to publish an annual *State of the Sewer* report on our website that outlines performance by borough on key indicators.

Appendix

Appendix 1: SBU Response Checklist

Date: _____	Time Start/End: _____/_____
CSR #: _____	WO#: _____
Address: _____	
Nearest Manhole ID (upstream/downstream) _____/_____	
Manhole Condition	<input type="checkbox"/> Good <input type="checkbox"/> Poor <input type="checkbox"/> Needs Repair
Segment ID: _____	Sewer Diameter: _____
Responsibility: <input type="checkbox"/> DEP <input type="checkbox"/> Private	Details: _____
CONFIRMED SBU (check one cause only):	
<input type="checkbox"/> SBRGR:	<input type="checkbox"/> Residential Grease <input type="checkbox"/> Commercial Grease
<input type="checkbox"/> SBUBR:	<input type="checkbox"/> Roots <input type="checkbox"/> Debris <input type="checkbox"/> Vandalism
<input type="checkbox"/> SBUDF:	<input type="checkbox"/> Collapse/Break <input type="checkbox"/> Protruding Connection <input type="checkbox"/> Root Infiltration
<input type="checkbox"/> SSTORN:	<input type="checkbox"/> Heavy <input type="checkbox"/> Moderate <input type="checkbox"/> Light
<input type="checkbox"/> STOTH:	<input type="checkbox"/> Water main <input type="checkbox"/> Pump Station <input type="checkbox"/> High Tide <input type="checkbox"/> Other: _____ Break Malfunction
<input type="checkbox"/> SUPINV:	<input type="checkbox"/> Referral to CMOM Group <input type="checkbox"/> Re-Inspection Required
UNCONFIRMED SBU:	
<input type="checkbox"/> SSUN (Use when no condition found in city sewer)	
<input type="checkbox"/> SBUNCI (Use when no condition found in city sewer and issue verified w/ homeowner)	
<input type="checkbox"/> STEL (Use when resolved by telephone call)	
<input type="checkbox"/> SCND (Cease and Desist) <input type="checkbox"/> SCNDI (Request Cease and Desist Investigation)	
<input type="checkbox"/> SRHOI (Request Health Order Investigation)	
EFFECTS AND OTHER RELEVANT DATA (ALL INCIDENTS):	
<input type="checkbox"/> Basement Flooding (Number of properties affected): _____	
<input type="checkbox"/> Low Lying Area: _____ <input type="checkbox"/> Suspected High Groundwater: _____	
COMPLETED BY:	
Name: _____ (Print)	_____ (Sign)
Date: _____	

Appendix 2: SBU Procedure Flowchart



Appendix 3: TSIP Pilot Development Phase Methodology

As set forth in DEP's Sewer Backup Prevention and Response Plan, in order to reduce further the number of Confirmed SBUs in the sanitary sewer system, DEP is piloting in targeted areas a proactive, data-driven sewer inspection program known as the Targeted Sewer Inspection Pilot (TSIP). The TSIP is proceeding in two phases: Pilot Development Phase and Pilot Phase. This Appendix provides further detail on the methodology DEP used to develop the TSIP during the Pilot Development Phase, which ran from October 2016 through March 2017.

The purpose of the Pilot Development Phase was to identify the most efficient method to inspect sewers and to estimate the level of resources required for later phases. DEP inspected a representative sample of sewer segments in two Community Boards in Brooklyn and two Community Boards in Queens, which represent neighborhoods with relatively higher rates of Confirmed SBUs. In this phase, DEP compared two different methods of sewer inspection: visual inspection and pole camera inspection. Pole camera inspections require additional equipment and are more time-intensive than visual inspections, but may identify additional maintenance needs in the sewers. The Pilot Development Phase sought to evaluate each inspection method and determine the best inspection protocol to employ during the Pilot Phase of the TSIP.

To collect enough data to make informed decisions about resource needs, DEP decided to inspect a minimum of 2.5% of all sanitary sewer segments in these Community Boards. The areas selected within these Community Boards are representative samples, with an average rate of SBUs compared to the rest of the Community Board. In addition, DEP selected areas that were not immediately adjacent to the Field Operations facility to ensure that it would not over-estimate productivity due to short travel times. DEP designated the representative areas near the top of the sewer system and drainage area to mimic how DEP will conduct inspections during the Pilot Phase of the program: inspection and maintenance will proceed from the highest portions of the sewer system to the lowest portion of the sewer system to mirror the most efficient maintenance protocol.

Inspections conducted during the pilot development phase utilized an inspection checklist, which DEP updated during the pilot development phase to reflect lessons learned. DEP has incorporated this inspection checklist into a mobile application to allow inspectors to record results on a tablet during the inspections and to create work orders directly in DEP's system.

To ensure that the field crews' inspection results were entirely independent, two different DEP crews inspected each sewer segment; one crew completed a visual inspection and the other crew completed a pole camera inspection. During both inspections, the field crews evaluated the sewer condition and identified necessary maintenance. DEP then compared the results of the two inspection methods to evaluate whether the more time-intensive pole camera inspections yielded significantly different results from those obtained by the visual inspections.

During the pilot development phase, DEP inspected approximately 870 sewer segments, identifying 182 maintenance activities via visual inspection and 213 maintenance activities via pole camera inspection. While the number of maintenance issues found with the pole camera, inspection method was 17% greater than the number of issues found with the visual inspection method, the pole camera inspections took approximately 48% longer to complete than visual inspections. Thus, utilizing the visual inspection method will allow DEP's field crews to conduct more inspections over a shorter time period than the pole camera inspection method would allow. However, inspection crews will have a pole camera available to them during the visual inspection to ensure that they can conduct a more detailed inspection if necessary. Therefore, DEP will utilize the visual inspection method for TSIP.

By conducting more frequent sewer inspections, DEP will have the opportunity to identify more maintenance activities over the course of TSIP. Over time, these more frequent inspections will reduce the difference in the number of identified maintenance activities between visual and pole camera inspections. In addition, more frequent visual inspections will allow for better identification of immediate maintenance needs, which will help to identify, prevent, and reduce the frequency of SBUs.

Testimony of Anastasios Georgelis, P.E.
Acting Deputy Commissioner, Water and Sewer Operations
New York City Department of Environmental Protection
before the
New York City Council Committee on Environmental Protection
concerning
Intros. 821, 972, 1731, 1425 and 1468 - in relation to backflow prevention devices, fire
hydrant signage, fire hydrant repair standards and sewer system backups
250 Broadway
October 30, 2017

Good afternoon, Chairman Constantinides and Members of the Committee. I am Anastasios Georgelis, Acting Deputy Commissioner for Water and Sewer Operations in the New York City Department of Environmental Protection (DEP). With me are Michael DeLoach, Deputy Commissioner of Public Affairs at DEP, John J. Hodgens, Deputy Assistant Chief in the Bureau of Operations of the New York Fire Department, and other DEP staff.

Thank you for the opportunity to testify on these five bills: Introduction 821, relating to reporting on backflow prevention devices; Introduction 972, relating to fire hydrant signage; Introduction 1731, relating to fire hydrant repair standards; and Introductions 1425 and 1468, relating to sewer backups.

The Bureau of Water and Sewer Operations (BWSO) oversees approximately 14,000 miles of water and sewer mains and 150,000 catch basins, and over 109,000 fire hydrants in New York City. Our work includes day-to-day management of the underground water and sewer infrastructure, emergency response to events like water main breaks, as well as capital planning and oversight of water and sewer infrastructure projects.

Intro. 821 of 2015 would repeal and replace existing provisions in the Administrative Code relating to reporting on the installation and testing of backflow prevention devices (BPDs). An annual report would replace semiannual reports, and an estimate of the total number of facilities requiring BPDs, as well as the number of test reports submitted, are added requirements. The number of new notifications issued by DEP that a BPD is required to be installed has been deleted, but the number of facilities, including hazardous and non-hazardous, requiring the installation of BPDs, has been retained. Finally, the number of notices of violation issued for failure to file has been added to the number of violations for failure to install.

Protecting New York City's public water supply is of paramount importance, and backflow prevention is one aspect of affording this protection. I would like to mention that DEP's extensive water quality testing and monitoring program is the front-line defense in ensuring the quality of water in the distribution system. New York City tests its drinking water in the distribution system for approximately 240 chemical constituents, well above regulatory requirements. We perform more than 1,100 tests daily; 34,000 monthly; and 400,000 on an annual basis on over 36,000 samples collected from about 1,000 sampling locations throughout the City. Test results are reported to our regulators and are summarized in our annual report on the quality of New York City's drinking water.

Backflow prevention devices, also known as cross connection controls, prevent potential contamination within premises from entering the public water supply. The possibility of contamination is caused by various kinds of plumbing configurations and/or equipment that use water under pressure. If the water pressure in the internal system in a medical facility like a hospital, for example, is greater than the pressure in the public water supply system, dangerous chemicals can be inadvertently forced back into the public supply unless a properly functioning backflow prevention device is in place to keep that from happening.

Protection of our drinking water through the mandated Cross Connection Control Program, which is required by Subpart 5-1.31 of the New York State Sanitary Code (Code), is a primary element of BWSO's mission. The Code, contained in the Public Health Law, mandates that public water suppliers such as DEP require certain users to install cross connection controls, for which they must submit plans for the installation of the devices, as well as annual testing and reporting once the devices have been installed. This program is approved and reviewed annually by the State and City Departments of Health, and is reportable to the United States Environmental Protection Agency and the New York State Health Department (DOH) as one of the Filtration Avoidance Determination deliverables.

DOH's guidance for the Code divides users into three categories: non-hazardous, such as a one- or two-family home or a "dry" commercial establishment (i.e., cell phone or computer shop); aesthetically objectionable, such as a residential building with an elevated storage tank; and hazardous, such as an auto repair shop or dry cleaner. DOH's Cross Connection Guidance defines a "Hazardous Facility" as "A building that potentially contains substances that if introduced into the public water supply would or may endanger or have an adverse effect on the health of other water consumers." Typical examples in addition to those previously mentioned are laboratories, sewage treatment plants, industrial or chemical plants, and mortuaries.

DEP has developed a comprehensive Cross Connection Control Program (Program) in which we initially concentrated on those facilities representing the highest risk of possible contamination of our public water supply through cross connections. To assist building owners, we are constantly upgrading our Program guidelines, most recently in May 2017. We have made extensive efforts in the identification, inspection, enforcement and reporting of backflow prevention devices. Since 2012, we have reorganized the Program by setting up individual units within BWSO that focus on specific areas of expertise. The three units are Inspection, Enforcement, and Cross Connection Review. Our active program far exceeds our commitments to DOH and we continue our progress towards ensuring that any facility that requires a backflow prevention device has one.

DEP maintains an active database comprising records on some 101,033 properties. The number of properties tracked in this database is dynamic, shifting both upward and downward with changes in the nature of the property's usage profile. We have been compiling more detailed and current information about the number of buildings in the City that require backflow prevention devices via both data mining and field inspection. Residential properties are not a subject of concern except where there are large boilers that use chemically treated water. Our approach has been to target our inspection resources more efficiently by identifying the types of commercial

and residential properties that are most likely to pose a risk. Our Inspection Unit uses a GIS mapping system along with information from the Department of City Planning to generate a Citywide map that targets potential high-risk areas and buildings. Each year we aim to inspect 3,000 to 4,000 properties Citywide. We continue to fill the gaps in our knowledge by getting inspectors into the field and doing the labor-intensive job of going to previously identified properties.

As a follow-up to our field inspections, our Enforcement Unit takes action where necessary. The Administrative Code provides for various enforcement measures, from issuance of Notices of Violation (NOVs) returnable to the Environmental Control Board and associated penalties, to termination of water service and disabling of equipment that creates risk to the public water supply. Our enforcement efforts do not stop with the issuance of an NOV. In addition to the penalties and enforcement actions, the unit reviews the list of properties cited to evaluate whether re-inspection is warranted based on failure to submit a report or install a device.

Once a property owner is notified and hires a licensed master plumber for the installation of a BPD, our Review Unit is responsible for the review and approval of the backflow prevention plans, the initial installation testing report, and all subsequent annual testing reports.

It is significant to point out that since 1987 all new construction is subject to evaluation of the need for a backflow prevention device in order to obtain a Certificate of Occupancy from the Department of Buildings. Consequently, post-1987 construction protocols assure compliance with the intent of Subpart 5-1.31 referenced above.

A decade ago, the number of “so-called” high-hazard facilities was estimated at 22,765. This number represented a presumptive list generated based on Department of Finance usage class categories and was intended to establish a starting point for identifying locations that had the highest probability of requiring BPDs. These inspections were completed in 2011 with a consultant inspection contract that began in January 2010.

There are currently 43,230 locations that have one or more backflow prevention devices (BPD) installed. There are a total of 92,308 devices installed at these properties. The reason there are more devices installed than the number of locations is that some properties require more than one device. Of the universe of 101,033 properties inspected, 51,015 either have a device installed currently or have been notified of the need to install a device.

DEP would be able to comply with the reporting requirements of this bill with the exception of the first: the estimated number of hazardous and non-hazardous facilities requiring a BPD. As mentioned, these numbers change with the uses that buildings and facilities are put to. The number of properties tracked is dynamic, shifting both upward and downward with changes in the property’s usage profile. Properties can be reclassified from a status of need, to one of no need if the nature of the activity at the property changes. For example, if a gas station that uses hazardous chemicals and pressurized equipment were to be converted to a retail business supply store, the requirements regarding backflow prevention for that distinct property could change. These assessments are subject to continual evaluation on the part of DEP staff. As such, it should be understood that any reporting statistic represents a “snapshot” in time, subject to adjustment.

Intro. 972 of 2015 would require DEP to place signage on fire hydrants indicating that opening or tampering with hydrants is prohibited, and provide information on penalties and how to request that a hydrant be opened, such as for a spray cap.

Illegally opened fire hydrants release up to 1,000 gallons of water per minute and can reduce water pressure in neighborhoods, making it difficult to fight fires. Hydrants can be opened legally if equipped with a City-approved spray cap, which releases only 20 to 25 gallons per minute, ensuring adequate water pressure and reducing the risk that a child could be knocked over and injured by the force of the water. Spray caps can be obtained by an adult 18 or over, free of charge, at local firehouses.

When a resident goes to the local firehouse to request a spray cap, she or he fills out the required paperwork and an officer installs the spray cap in accordance with safety protocols. Depending on demand, weather, fire activity, water pressure and other factors, the officer in charge may vary the protocols. FDNY then turns the hydrant on and off at designated times.

This past summer, DEP joined with the Department of Youth and Community Development (DYCD), FDNY, and the South Bronx Overall Economic Development Corporation (SoBRO) to celebrate the 10th anniversary of the Hydrant Education Action Team (HEAT) Program. HEAT has helped reduce reports of illegally opened hydrants. HEAT deploys teams of teens hired through DYCD's Summer Youth Employment program to inform New Yorkers about the dangers of illegally opening fire hydrants.

In partnership with SoBRO, DEP deploys four teams of 10–12 young adults who distribute literature, posters, and other informational materials about fire hydrant safety at community events, parades, greenmarkets, churches and libraries. The outreach campaign focuses on neighborhoods in northern Manhattan and the Bronx that have historically seen high rates of unauthorized fire hydrant use during heat waves. In addition to literature, the teams distribute reusable water bottles and other souvenirs that promote the safe operation of fire hydrants. Opening a hydrant illegally can result in fines of up to \$1,000, imprisonment for up to 30 days, or both.

We do not believe installation of signage Citywide is warranted. We are concerned about the cost of producing and maintaining signage on 109,000 hydrants throughout the City; we are not sure that information about enforcement placed on a sign will act as a deterrent; and we are concerned that warnings about enforcement would tend to undermine the collaborative nature of our HEAT outreach efforts. We believe the success of our community outreach efforts confirms that this approach to reducing unlawful use is preferable. We would be willing to discuss with the Committee expanded community outreach or other ideas to further encourage and enhance compliance with the law.

Intro. 1731 of 2017 would establish standards for fire hydrant repairs. In addition to rulemaking and reporting requirements, high-priority hydrants, including those near a hospital, school, senior-citizen housing and others as determined by DEP, would have to be repaired within seven calendar days of receiving a complaint and non-priority hydrants within 10 calendar days.

There are 109,000 hydrants in the City over which DEP and FDNY have oversight; there are also hydrants that belong to the Department of Parks and Recreation, the Metropolitan Transportation Authority, The Port Authority of New York and New Jersey, the Triborough Bridge and Tunnel Authority, and other entities. The primary purpose of a fire hydrant is fire suppression. However, hydrants also serve other useful functions. For example, hydrants provide a method of testing the distribution system's flow capabilities. They also provide a means for flushing the system mains.

FDNY and DEP have a long and successful relationship when it comes to public safety. In fact, DEP personnel and units respond to fire notifications of varying severity by FDNY. Upon a fire event, FDNY notifies DEP's Emergency Communication Center (ECC), which then notifies the appropriate DEP Water Maintenance Yard. DEP personnel are dispatched to every fire two alarms and above to ensure that FDNY has the water pressure and resources they require in emergencies. In some cases at the request of FDNY, DEP personnel will also respond to one-alarm fire events. In addition, DEP personnel stay on site throughout the fire event until released by FDNY. Overall DEP's role in response to fire events is to provide assistance and guidance to FDNY regarding their use of the water system in firefighting operations and to assess system pressures and performance.

To ensure that a hydrant will work properly when it is needed, a periodic testing and maintenance program must be followed. Although hydrants are operated by members of the Fire Department, it is generally the water utility's responsibility to maintain them in working order. As recommended in the Manual of Water Supply Practices, all hydrants should be inspected regularly, at least once a year, to ensure their satisfactory operation. In freezing climates, dry-barrel hydrants may require two inspections per year. A common technique is to perform one inspection in the fall and another in the spring.

FDNY inspects the more than 109,000 hydrants twice a year, in spring and fall. FDNY inspectors record results of their inspection in BWSO's database and designate whether the hydrant repair is priority or non-priority. This information is then automatically routed in the database to our repair crew.

To strive for continuous improvement, DEP has started a Hydrant Inspection Tablet Mobile Inspection Pilot Program with FDNY. This program uses a web-based mobile application on tablets so FDNY inspectors can locate hydrants in a map view, enter inspection results in the field and automatically upload them to the database. This will help reduce FDNY's effort and inspection times even further.

As specified in FDNY's All Units Circulars 205, a priority hydrant is defined as a hydrant that is the only hydrant in a block or a hydrant that is vital to the protection of high-profile locations or critical infrastructure locations such as hospitals, schools, senior housing, bridges, tunnels and mass transit systems. In addition, two adjacent hydrants in a block that are out of service are both reported as requiring priority repair.

In an effort begun in 2009 to improve response times, DEP set an ambitious but achievable target of 10 days to repair high-priority hydrants. As a result of discussions with the Mayor's Office of Operations, effective January 2014, the target has been changed to seven days in the Mayor's Management Report (MMR). Reported in the September 2017 (FY18) MMR, as shown in the table below, DEP's average time to repair high-priority hydrants has been three days since FY 2015, which is significantly lower than our target of seven days.

Inoperative hydrants are generally reported by FDNY through local fire company surveys of neighborhood hydrants; less than 1% of the City's 109,000 hydrants are inoperative at any given time. As you can see from the September 2017 MMR, DEP aims to ensure that there are fewer than 1% of broken and inoperative hydrants Citywide. We work hard with FDNY to address high-priority hydrant repairs immediately to ensure that there is an adequate supply of water for firefighting operations.

September 2017 (FY2018) MMR

Hydrants	FY2015	FY2016	FY2017	Year to Date FY2017	Year to Date FY2018	% Δ	MMR Annual Target	Sept - 16	Sept - 17
Actual backlog of broken and Inoperative Hydrants	0.50%	0.52%	0.54%	0.42%	0.38%	-0.04%	1.00%	0.39%	0.40%
Avg. Time to Repair/Replace High Priority B&I hydrants (days)	2.5	2.9	2.5	3.5	2.8	-20%	7.0	2.7	2.9

The actual backlog of broken and inoperative hydrants citywide from FY2015 to FY2017 was between 0.50% to 0.54%. The current year-to-date backlog in FY2018 is 0.38%, which is a significant decrease compared to the past three fiscal years. Most importantly, we are far below the MMR's annual target of 1%.

The average time to repair high-priority broken and inoperative hydrants from FY2015 to FY2017 was between 2.5 and 2.9 days. The current FY2018 year-to-date is 2.8 days, which is significantly lower than the MMR's annual target of seven days.

While DEP already meets the proposed target on the time to repair high-priority hydrants, which is the paramount criterion for public safety, we do not believe that dedication of additional resources required to reduce the backlog of non-priority hydrants further is warranted, given the needs of all the components of the system that demand our attention.

Finally, the real-time reporting requirements in the bill are infeasible and of doubtful utility in light of the repair protocols we have outlined above, the close coordination between FDNY and DEP, and our exemplary record, which exceeds the MMR targets by as much as or more than 100%.

Intro. 1425 of 2017 would require that, by December 31, 2018, DEP submit and post on its website a plan to prevent sewer backups (SBUs). Also addressing sewer system backups is Intro.

1468 of 2017, which would amend the Administrative Code to require that, where an SBU occurs more than once at the same location within a 12-month period, the portion of the sewer system causing the second or subsequent backup is identified and cleaned within 10 days of such subsequent backup.

As New York City's water and wastewater utility, DEP provides vital services to more than eight million New Yorkers: delivering over one billion gallons of fresh drinking water and treating approximately 1.3 billion gallons of wastewater daily. To reliably treat this volume of wastewater DEP utilizes a network of more than 7,500 miles of sewers to convey wastewater to one of its 14 wastewater treatment plants. To operate and maintain the many components of this extensive sewer system, DEP has five repair yards, seven sewer maintenance yards, a fleet of specialized vehicles, and a staff of laborers, supervisors, engineers, and analysts.

Over the last decade, DEP has shifted from a reactive to a proactive, data-driven approach to operating and maintaining the sewer system. DEP employs the principles of adaptive management to continually improve our sewer maintenance program, while balancing our overarching responsibility to deliver high quality drinking water and treat wastewater every day in an affordable and sustainable manner. DEP's rigorous sewer inspection, analysis, and cleaning program has produced tangible improvements to the level of sewer service Citywide. In the last five years, we have achieved significant improvements in many of our key indicators, demonstrating the enhanced reliability of our system. For example, between Fiscal Year 2012 and Fiscal Year 2016, total SBU complaints dropped 25% and confirmed SBUs dropped 49%.

These reductions are a result of DEP's ongoing operations and maintenance program, which relies on both responding to complaints and utilizing programmatic efforts to prevent backups. DEP also targets its efforts on reducing the amount of fats, oil and grease (FOG) discharged to the sewer system. These efforts include regulations that mandate the use of grease interceptors in certain commercial establishments, such as restaurants, as well as extensive public outreach to inform New Yorkers about actions they can take to prevent the improper disposal of grease into the system, a primary cause of SBUs.

DEP stepped up its FOG outreach efforts in 2015 to inform the public about grease problems in the sewer infrastructure. To date, the outreach effort has reached over 60,000 households in targeted communities through a combination of activities including door-to-door canvassing and workshops with community organizations and local houses of worship. The outreach program is also closely coordinated with the New York City Housing Authority where similar issues exist. Additionally, our education staff conduct classroom and assembly programs and has developed a special curriculum for teachers on the topic of grease and its proper disposal.

Most recently, in July 2017, we augmented our proactive approach by implementing a three-year pilot program to conduct targeted sewer inspections in parts of the City that have a relatively higher rate of SBUs. Using the principles of adaptive management, DEP will evaluate the results of this pilot and identify additional opportunities to improve our overall sewer maintenance program. All of DEP's efforts, including the pilot program, are set forth in DEP's Sewer Backup Prevention and Response plan, copies of which I am glad to provide to you today.

DEP performs these proactive sewer inspections and response through its Sewer Operations and Analysis Program (SOAP). This program was instituted in 2011 in an effort to reduce the number of recurring SBUs. SOAP locations are defined as sewer segments that experienced a recurring confirmed SBU in a three-month period. A sewer segment is defined as a City block. Once we identify the SOAP locations, these locations are referred to Field Operations for investigation and analysis of the sewer segments. The investigation may lead to cleaning, spot repair, or referral for capital replacement.

At times, field crews identify sewer conditions that require cleaning beyond their capabilities or determine that the sewer needs to be televised. For example, the size and condition of the sewer or a record of recent repeated cleanings may limit the crew's ability to take effective action. In these instances, the work is transferred to DEP's Capacity, Management, Operations, and Maintenance (CMOM) Section. CMOM then delineates the specific needs and boundaries of the work via more robust field inspection. Once the scope is defined, it can be assigned to DEP's Citywide contractors for cleaning, debris removal, and internal visual inspection utilizing a sewer camera. Once cleaning and televising work is completed, CMOM inspectors report findings to Field Operations and Emergency Reconstruction staff as needed.

Once DEP completes remedial measures through the SOAP program, the sewer segment enters a 12-month monitoring period. During that time if an additional confirmed SBU occurs on that segment, DEP identifies and elevates this segment to our SBU Recurring after SOAP (SRAS) program and assigns it to the CMOM Section to develop and implement an action plan tailored to site-specific conditions. The CMOM analysis uses tools such as closed-circuit TV to evaluate the structural integrity of the sewer and engineering analysis of drainage plans and as-built drawings to ensure that the system is functioning as designed. CMOM personnel may also perform walkthrough inspections of larger sewers. Corrective action plans recommended by CMOM may include programmatic degreasing, flushing, or repair or replacement of a portion of the sewer.

BWSO has improved its program to address FOG. We identify liquid degreasing (LDG) locations, which are locations that have recurring or chronic SBUs where grease is the contributing cause. Sewer segments experiencing two or more SBUs where grease is the contributing factor are flagged to the respective borough managers for assessment and consideration to add to the programmatic LDG cleaning locations.

Both Intro. 1468 and Intro. 1425 address identification and cleaning of locations with more than one SBU during a 12-month period, so my comments apply to both bills. DEP has a robust plan to address SBUs and has recently commenced a three-year pilot program to further determine appropriate and effective enhancements to our Plan. We would ask that the Council either defer legislative action on these bills until the pilot has been completed, or amend the requirements of the bill to reflect DEP's commitment to update the Council on its progress in implementing the Plan, including the pilot. We look forward to working with the Committee to most effectively and efficiently reduce further sewer system backups.

Again, thank you for this opportunity to testify. I would be glad to answer any questions.



Testimony of Stewart O'Brien,
Executive Director of the Plumbing Foundation
City of New York, Inc. Before the Committee on
Environmental Protection, City Council of New
York City, October 30, 2017
Regarding Intro. 821

I am Stewart O'Brien Executive Director of the Plumbing Foundation, City of New York Inc., a non-profit organization of small and large, union and non-union plumbing contractors, engineering associations, supply houses and manufacturers whose mission is to protect the public health through the enactment and enforcement of safe plumbing and health codes.

We are in support of Intro 821, the backflow law. What is backflow? Normally, street pressure pushes water into buildings so if there are any dangerous materials or chemicals in the building, contaminated water cannot "backflow" into the City water supply. Sometimes the water flow can be reversed due to a main water break, a mistaken or accidental cross connection between the building's water distribution and drainage systems or for some other reason.

There is a 1981 New York State law which requires that the suppliers of water (in New York City that is the Department of Environmental Protection) classify all buildings as to the degree of "hazard" and assure that appropriate devices (mechanical fixtures that prevent the fresh water in a building from flowing back into the City's water supply) be installed. The 1981 law also requires an annual test to assure that the devices are working properly.

In 2007 the *New York Times* reported that close to 100,000 large residential and commercial buildings in NYC lacked these devices and that 26,000 of these are especially at "high risk" because they include factories, gasoline stations, funeral homes, hospitals or otherwise house businesses that handle hazardous materials. An internal 2000 DEP report concluded that even in the "high risk" pool only 30% were in compliance by installing a device.

The 2007 *New York Times* article entitled "Many Buildings Lack Required Water Valve" reported that as many as 85,000 large residential buildings and commercial buildings lacked the device, with approximately 26,000 being classified as high risk. After the *New York Times* article this

Committee held hearings in 2009 on ways to assure better compliance with this important health law, which had then been in effect for 28 years.

One proposed solution was to create a simple transparent reporting system by which DEP informs the Council on the City's efforts to achieve compliance. What was requested was simple – DEP was to establish the number of buildings that required the device, the number that had the device installed and the number of annual testing reports filed with DEP on those installed devices. DEP objected. Rather, what resulted was Local Law 76/2009 which required DEP to report, to the Council, among other things, the number of buildings with devices installed and, thereafter twice each year, the number of new devices installed since the previous report.

First, this was a flawed reporting system since there was no requirement to establish an actual universe of buildings where installation of a device was required. It is fairly useless to know, for example, that 100 buildings installed a device in the past 6 months. Is that 100 out of a universe of 1,000 buildings outstanding or 20,000? You can't determine a compliance rate unless the universe is established. Also, since virtually all brand newly constructed large structures require the device before a certificate of

occupancy can be issued, the report on new installations is inflated because it mixed “existing” and “new” buildings. Is the 100 installations mostly in new buildings with little increase in compliance in “existing” buildings?

Second, the semi-annual report to the City Council is still on the books. While DEP initially fulfilled its reporting obligation we believe that it has failed to submit those Reports to the City Council and comply with the law the last few years. We encourage the Council to discuss with the Administration why it appears DEP isn’t following the law.

Before the Committee today is Intro 821 which is designed to tighten up the reporting requirements of Local Law 76 of 2009. It requires DEP to report to the Council on definitive milestones so the Council and the public can determine whether compliance of this health law is being achieved. In particular, it requires DEP to establish a universe of buildings requiring compliance and a running total of those buildings that have actually installed devices. One suggestion, we believe the Intro should be amended so that the universe is not an “estimate”. It should be an actual number. Other agencies have established actual databases of buildings requiring inspections of boilers, elevators, facades, cooling towers, etc. After decades, DEP should be required to establish how many buildings require this safety device.

The public and the City Council deserve to know compliance rates on this 36 year old health and safety law. There is no valid reason not to.



President, Kim Lawton

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To: The Environmental Protection Committee

From: Kim Lawton, President of Spring Jam Block Association

Good afternoon Councilman Richards, Chairman, Members of the Environmental Protection Committee, Community Members and Advocates, Spring Jam Block Association, The Gateway JFK Constituents formerly known as the JFK IBID, and all vested Stakeholders. My name is Kim Lawton, and I stand before you today as the President of Spring Jam Block Association, the Secretary of the JFK IBID, a resident homeowner and IBID Board member but most importantly a member of the community who is in favor of the proposed changes with respect to the enhancements regarding sewer and infrastructure systems and protocols in Southeast Queens but of course specifically with respect to the community I live in which is located off of Rockaway Blvd. and South Conduit Avenue, 155th Street to 159th Streets, currently included in the JFK IBID catch man area. As you are aware, Southeast Queens has had a flooding problem for many years and the infrastructure that currently exists has not been a sufficient installation to handle all of the business that comes its way. Actually, the infrastructure is outdated, over capacitated, and has been sufficient to handle the flooding in Queens reportedly for several decades.

Actually, during Hurricane Irene, even before Hurricane Sandy, members of our community and the surrounding areas, including myself were flooded up to our knees in water, sewage, garbage, and feces which prompted us to not only challenge



Senator Sanders who was the Councilman at the time to cure this situation but also resulted in us going on the News because we felt at the time that the criticalness of the flooding in our community was not being taken seriously, and that although we had made complaints to DEP, 311, the Councilman's office, and to other City Officials our cries for help with the flooding, sewer and catch basin problems, as well as other aspects of the infrastructure nightmare wasn't being heard! However, since then with the initial stages being put in motion by Senator Sanders, and with the urgency of Spring Jam Block Association, UNCA, and other Civics, as well as the commitment and leadership of Councilman Richards, we are here today to not only thank you again for letting our voices be heard, for allocating billions of dollars to deal with this crisis, but to also support the legislation that would implement a plan for upgrades, temporary enhancements leading to permanent enhancements, reporting, and other protocols that are not only desperately needed and long overdue, but will enhance our quality of life, and address a long standing problem that has been overlooked for decades. In summary, I thank you for your time, effort, consideration, and action towards this matter and I strongly urge and respectfully request that you approve these specific pieces of legislation that are here before you today, with respect to the flooding that exist in Southeast Queens

Respectfully submitted,

STATEMENT OF ARTHUR KLOCK IN SUPPORT OF INTRO 821

My name is Arthur Klock, and I am the Training Director for the Plumbers Local Union No.1 Trade Education Fund. This jointly administered Labor and Management Fund operates a 40,000 square foot Training Center located in Queens. In that facility we operate the Cross Connection Control Bureau, a New York State Department of Health regulated training program to certify Backflow Prevention Device testers. In fact, it is the most active certifying program of this type in New York State, and it is open to any individual who needs this New York State Department of Health certification. Students in this program study the causes and effects of backflow in the water supply system, and learn the skills necessary to keep the equipment which prevents backflow in good working order.

I am here today because I want to raise awareness of the fact that the public health risks associated with backflow are increasing due to new systems being installed throughout the city, while at the same time, our Department of Environmental Protection is still not doing enough to prevent opportunities for contamination which already exist.

A large concern of the DEP is sustainability and conservation of our water resources. Another major concern of the DEP is Combined Sewer Overflows which threaten the health of our waterways. For these reasons and others, the DEP has encouraged, and even funded through direct grants, private projects for re-use of wastewater in buildings, as well projects for capture and use of rainwater. Many residential and commercial buildings in New York City have recently installed such captured rainwater systems in accordance with the Green Buildings initiative and DEP financing. However, these systems, while environmentally friendly, can be extremely dangerous if not handled carefully. The potential for hazardous cross-connections can increase where re-used water systems and drinking water systems are close together.

Potential for Backflow

The greatest threat posed by re-use of wastewater or captured rainwater is the potential for cross-connections between the drinking water system and the re-used water system. Of course, there are rules that prohibit cross-connections. Our plumbing code prohibits cross-connections in plumbing systems. However, a code book without enforcement to ensure compliance or data collection to judge results doesn't protect anyone.

Backflow as a Serious Hazard

The best defense against illness or death from hazardous backflow is a good backflow prevention program. In fact, a rigorous program prosecuted diligently and effectively, is the only defense there is, which is why it is mandated by our State and Federal Governments.

Our New York City Department of Environmental Protection has shown through its own calculations that installation, testing and maintenance of these safety devices in New York City has been inadequate over many years. In light of these figures, a more aggressive and effective enforcement of the requirements would seem the best course of action; however, the DEP has no plans to prosecute its backflow prevention program in the diligent manner required. In fact, statistics show that they have allowed the current situation to deteriorate by their lax oversight and enforcement policies.

Potable versus Non-Potable water

Plumbers, Engineers, Doctors, and the DEP call safe drinkable water - POTABLE water.

Just what is the hazard level of reclaimed water? Frequently we hear that reclaimed water is good for all sorts of Non-Potable uses. There are different treatment levels for reclaimed water depending upon the intended use. Reclaimed water systems in buildings supply water for non-drinking uses like irrigation, sidewalk washing, makeup water for boilers and cooling towers and most notably, for flushing toilets in private and public restrooms.

However, make no mistake; even reclaimed water that receives disinfection could pose an acute health risk if it mixed accidentally into drinking water. Disinfection, (hopefully effective) against present bacteria and viruses, doesn't even take into consideration the long list of chemical contaminants likely present in reclaimed water systems. These may include: lead and other heavy metals, nitrogen, phosphorus, volatile organic compounds, and even prescription medication residue, among a host of other pollutants.

It is the express responsibility under the law for the "purveyor of water" (the DEP) to operate an effective backflow prevention program. Failure to do so opens the City to tremendous legal exposure if a catastrophic backflow event should occur.

Do Cross-Connection Backflows Really Happen?

Cross-connections can occur no matter how diligently we try to prevent them and, backflow preventers remain the best defense against backflow. The American Water Works Association is the best source of guidance for matching the backflow preventer to the application or the hazard conditions at the site. The AWWA identifies reclaimed water as a health hazard and recommends the use of a reduced pressure zone (RPZ) backflow preventer for buildings served by reclaimed water systems.

**Approved backflow prevention assemblies should be tested at least annually,
as outlined by the American Water Works Association (AWWA),
and all manufacturers' literature.**

The annual failure rates of approved assemblies varies from 10% to 40% and the AWWA and the manufacturers of these valves recommend testing at least every year to be sure of proper function. Based on the failure rates of approved assemblies, it should be assumed that valves in most backflow prevention assemblies will fail sometime within 5 years. Under these circumstances, just installing these devices and then failing to enforce the requirements for testing or replacing them, gives the public a false sense of security. It also leaves the purveyor of water (the City of New York) open to tremendous legal exposure if a catastrophic backflow event should occur.

Summation

We already had a host of possible Cross-Connection hazards to worry about before we added re-claiming wastewater and capturing rainwater. These risks increase significantly if we fail to recognize and acknowledge them. The potential for cross-connections and backflow will increase as reclaimed water lines are installed in buildings. The best defense against backflow is a well-developed backflow prevention program. Preventing cross-connections, via plan and site review of new construction, and surveying and retrofitting of existing facilities, should be a major focus of that program. The DEP has not kept true to this mission. The ongoing failure is particularly true for the maintenance and repair piece of the program.

Re-claiming wastewater and capturing rainwater are great ideas on many levels, but it is important to bear in mind, that this is not drinking water, and if ingested, represents a recognized health hazard. We already had an existing universe of possible sources of contamination in any building, and we are adding more.

Intro 821, if enacted into law, will help keep New York a Healthy City.

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I represent: Plumbing Foundation

Address: 44 W 28th NY, NY

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Name: Anastasios (Tasos) Georgidis

Address: Acting Deputy Commissioner

I represent: DEP

Address: _____

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Name: MARK SAFARI

Address: 431 COTTRELL RD, MATAWAN NJ

I represent: DEP

Address: 9606 Horace Ave.

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Name: Michael Delgado

Address: 306 W 92ND ST, Apt 2R 10025

I represent: DEP

Address: 59-17 Union Blvd., Queens

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Name: Kim Lawton

Address: 145-42 159th Street

I represent: Spring Jam Block Assoc, JFICS/BIP,

Address: same as above SE Homeowners

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Name: ARTHUR KLOCK

Address: 37-1147th AVE LIC NY

I represent: PLUMBERS LOCAL 9

Address: 50-02 FIFTH ST. LIC

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