

Recommendation of the MWPAAC Engineering and Planning Subcommittee on I/I Reduction Concepts for Further Evaluation

October 11, 2018

In 2015, King County Wastewater Treatment Division (WTD) began evaluating conceptual programs to reduce Inflow and Infiltration (I/I) in the separated sewer portion of the regional wastewater system. I/I reduction could lead to deferred or eliminated future planned capital projects, where parallel conveyance pipes could be reduced in size or even eliminated. In collaboration with the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC) Engineering and Planning (E&P) Subcommittee, WTD and E&P have been reviewing and discussing concepts to enhance the Regional I/I Control Program. The evaluated programs include: sewer and side sewer standards, inspector training, private side sewer inspection requirements, regional I/I reduction resource support, and grants and/or loans. This document presents recommended program options to advance to the next step of planning.

Problem

- As much as 3/4 of regional pipe capacity is used by I/I
- 50-70% of I/I is from private side sewers
- \$1.7 billion of new regional conveyance pipe projects are planned through 2060 to account for growth and I/I

Recommendation of Options for Further Evaluation

The Engineering and Planning (E&P) Subcommittee is submitting for MWPAAC's consideration the following recommendation to WTD regarding more in-depth evaluation of concepts to enhance the Regional I/I Control Program. MWPAAC can decide to accept these recommendations without change, accept recommendations with amendment, or reject these recommendations.

Summary of Recommendation

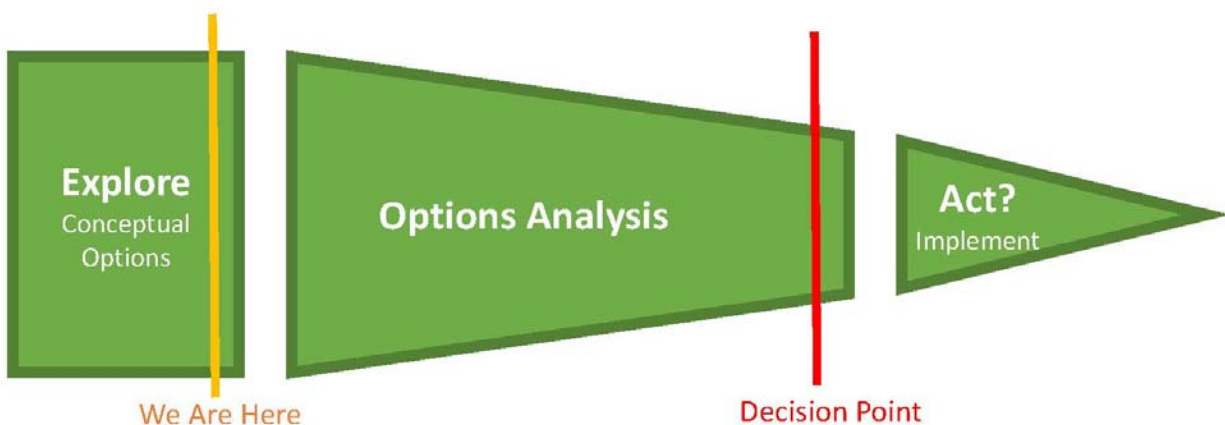
The E&P Subcommittee recommends that the following concepts be evaluated in more detail to define the scope, effectiveness, legal and political implications, public agency impacts, cost benefits, and social justice effects:

1. Focused regional standard best management practices (BMPs)
2. Regional inspection training and certification program
3. Private side sewer inspection program

What are the Next Steps?

There are many details that still need to be defined. The next phase of the evaluation will take these conceptual program ideas and develop details considering program components, roles and responsibilities, costs, implementation schedule, and the economic benefits of investing in I/I reduction to potentially reduce capital project costs for conveyance. Ultimately this step could develop a potential operating plan. It will not begin implementation itself. This evaluation will be completed in coordination with MWPAAC and the Rates and Finance Subcommittee.

Figure 1 below illustrates the overall planning process. This recommendation occurs in the “Explore” box on the left, and the next step of in-depth evaluation is shown in the “Options Analysis” box in the middle. The decision point of whether to proceed with any or all of the conceptual programs will come after major program components are recommended by MWPAAC, and may require interagency agreements or provisions in the new sewer contract. The timeline for the in-depth evaluation is unknown, but it is expected to take a few years. A detailed scope of work will need to be developed to initiate the options analysis phase.



* A timeline for future steps in the planning process is unknown, but is expected to take a few years.

**Figure 1. Overview of Planning Process
for Regional I/I Control Program Improvement**

Rationale for Recommendation

1. Focused Regional Standard BMPs

Description:

- Standardization of 3 to 5 regional BMPs spanning new construction, repair, rehabilitation, and/or demolition for use by local agencies
- Program addresses prevention of I/I but not reduction of existing I/I
- BMPs will be developed based on the findings in the Assessment of Existing Local Agency Sewer and Side Sewer Standards and the Evaluation of Current Inspection Programs at Cities and Sewer Districts technical memos completed during the Evaluation of I/I Reduction Concepts work
- Details would be developed such as which BMPs would be adopted, expectations for use and adoption, roles and responsibilities, and an implementation schedule

Rationale:

- Program would support minimizing future side sewer I/I by having standard side sewer construction practices
- Program is considered relatively easy to implement with medium impact to local agencies for program implementation
- Program would focus on BMPs that would have little to no direct cost burden on property owners
- Program would fit with WTD's role as a regional resource for I/I information and coordination

2. Regional Inspection Training and Certification

Description:

- Development and/or hosting of regional inspection training and a certification program on both new and existing construction inspections
- Program addresses prevention of I/I but not reduction of existing I/I
- Development of program would be based on findings in the Assessment of Existing Local Agency Sewer and Side Sewer Standards and the Evaluation of Current Inspection Programs at Cities and Sewer Districts technical memos completed during the Evaluation of I/I Reduction Concepts work
- Details would be developed such as minimum requirements for inspectors, potential modules and content for training, roles and responsibilities, and requirements for certification

Rationale:

- Program would support minimizing future side sewer I/I by having consistent inspection practices in the region
- Program is considered relatively easy to implement with medium impact to local agencies for program implementation
- Program is intended to have little to no direct cost burden on property owners

3. Private Side Sewer Inspection Program

Description:

- Development of private side sewer inspection program triggered by property transfer or potential other method along with a grant/loan program to mitigate financial burden on disadvantaged ratepayers
- Program addresses reduction of existing I/I, not just prevention
- Program development would consider interviews conducted and data collected during the Evaluation of I/I Reduction Concepts work, and a review of existing national private side sewer programs
- Program development would include details such as triggers for inspection, certification methods, model ordinance language, roles and responsibilities, program costs, financing methods, implementation schedule, and a plan to operate the program
- Specifically, the E&P Subcommittee recommends including, but not limiting the considerations to, the following:
 - Inspection triggers including point of sale, age of property, and/or set time frame
 - Methods to set up the program to maximize cost-effective reduction of I/I regionally including justification using qualitative and quantitative analysis of I/I as a driver and impacts on capital projects.
 - Administration by WTD, local agency(ies), and/or a hybrid of both local and WTD
 - Side sewer inspectors' role filled by independent contractors or employed by WTD or local agencies
 - The type of inspections accepted such as visual, air, or water testing
 - A financial plan that incorporates funding mechanisms such as grants and loans to mitigate financial burden on disadvantaged ratepayers

Rationale:

- Program supports reduction of I/I by addressing the largest contributor: private side sewers
- Program has the potential to offset the need for or reduce the size of future regional conveyance projects
- Program is considered difficult to implement given the impacts to property owners, local agencies, and WTD
- Program would have some impact or burden to the community (e.g., to property owners and real estate market), and possible positive benefit (e.g., work to local contractors)

Background

Summary of Process

The Evaluation of I/I Reduction Concepts project was designed to assist MWPAAC and WTD in considering new elements for the Regional I/I Control Program. This project builds on regional I/I reduction work performed to date and explores more comprehensive and system-wide I/I reduction. As part of the evaluation, the following actions were performed:

- Reviewed existing sewer and side sewer standards, assessed existing local agency standards compared to BMPs, and developed an approach to achieve common regional standards
- Reviewed existing city and utility district inspection programs for sewers and side sewers to identify inspection BMPs, and developed a framework for a regional inspection training program
- Identified the types of private side sewer programs currently administered in the United States; documented case studies of existing private side sewer programs; and evaluated frameworks for implementing private side sewer programs within WTD service areas, specifically for side sewer inspection and certification, grants or loans, and regional I/I support

To accomplish these actions, in-person interviews were conducted at 32 of the 34 local agencies, and technical memoranda were developed.

Through the interview process, there was consensus to not do further analysis on side sewer maintenance or insurance programs. This discussion was brought to the MWPAAC E&P Subcommittee for consideration and the subcommittee agreed to remove both items from further evaluation.

Ten program options were developed into program frameworks, and evaluation criteria were developed in collaboration with the E&P Subcommittee. The evaluation criteria were then applied to the program frameworks. Criteria considered regional effectiveness of reducing I/I, legal and political implications, property owner impacts, local agency impacts, WTD impacts and equity and social justice. The results of the evaluation informed and supported the subcommittee's recommendation along with group discussion. Four of the initial 10 program options were combined into one recommended framework: the private side sewer program. This, together with the other programs presented above, were selected to advance to further evaluation in next steps.

The four remaining program options that were not recommended for further evaluation are described below.

Programs Not Recommended for Further Evaluation

The following four program options were considered during the evaluation process but were not recommended for further evaluation:

- Scalable BMP program: For this program each local agency would perform a gap analysis on construction, repair, rehabilitation, and demolition standards, and develop individual plans for BMP adoption and implementation. The program was not recommended for further analysis as the impact to local agencies could be high and the overall effectiveness to I/I reduction was considered low.
- Voluntary regional inspection training program without certification: For this program, inspector training modules and materials would be developed, but use of the materials would be voluntary to the individual agencies. The program was not recommended for further analysis as it would not effectively reduce I/I. E&P Subcommittee members suggested that for this program to have any effectiveness on I/I reduction it would have to be mandatory and consistently implemented across the region.
- Regional I/I support by WTD: For this program, WTD would provide regional resources such as rainfall simulation toolkits, smoke testing kits, flow monitors, and rain gauges. WTD could also administer preferred vendor contracts to help agencies perform services (e.g., manhole and closed-circuit television [CCTV] inspection, etc.). The program was not recommended for further analysis. E&P Subcommittee members suggested that this program option was not considered an actual I/I reduction program, and WTD may be able provide this resource more effectively either through the upcoming flow monitoring project or in conjunction with the existing contracts with the MWPAAC agencies.
- Grant and/or loan program not connected to a private side sewer inspection program: This program would be available for property owners to use to voluntarily inspect, replace, and/or repair their private side sewers. The program was not recommended for further analysis. Many of the agencies currently have some type of grant or loan program, and a program not associated with a side sewer inspection program would have little to no effect on regional I/I reduction.