

3

YORK REGION AND LOCAL MUNICIPAL SANITARY SEWER INFLOW AND INFILTRATION REDUCTION PROGRAM

The Transportation and Works Committee recommends the adoption of the recommendation contained in the following report, March 20, 2007, from the Commissioner of Transportation and Works:

1. RECOMMENDATION

It is recommended that:

1. The Regional Clerk forward this report to the Clerks of the local municipalities seeking local municipal participation in the proposed program to reduce inflow and infiltration.

2. PURPOSE

The purpose of this report is to provide information regarding the York Region and local municipal inflow infiltration reduction program and to encourage participation from the local municipalities.

3. BACKGROUND

Wastewater from our communities is collected through local and regional sewer systems. This collection system is extensive and varies in age and condition. As systems age, there is a higher chance that rainwater and groundwater will enter the system. These additional flows are referred to as inflow and infiltration and can contribute substantially to the amount of flow requiring treatment at wastewater treatment plants. The effects of inflow and infiltration are typically seen during large storm events when inflow from rainwater runoff enters the sewer system. The systems are designed to accommodate these events; however, there is always a need for ongoing maintenance and rehabilitation of the systems to minimize inflow and infiltration as much as possible.

The local wastewater collection system is the responsibility of the local municipalities and makes up a majority of the collection system infrastructure in the Region. The local systems also contribute a large portion of inflow and infiltration flows to the regional systems such as the YDSS. In the past, the Region and the local municipalities have worked cooperatively on studies to identify some of the sources of inflow and infiltration in the towns of Newmarket, Aurora, Richmond Hill and Whitchurch-Stouffville because there is a common interest to reduce inflow and infiltration flow. The Region's

contribution has been full funding for these studies and the implementation of study recommendations has then been the responsibility of the local municipality. This approach has been used to date with the goal of reducing the level of inflow and infiltration. Although successful to some degree, it has been challenging to coordinate all our efforts to completing our targets. Realizing the full benefits of an inflow and infiltration reduction program will require a more comprehensive approach for the Region and the local municipalities.

The Region has also committed to reducing effects of inflow and infiltration on the York Durham Sewage System by including inflow and infiltration reduction as part of the solution to address the problem statement in the Individual Environmental Assessment for the South East Collector Trunk Sewer. Inflow and infiltration reduction will be implemented in combination with the sewer routing alternatives being considered.

York Region is committed to minimizing the amount of inflow and infiltration within the wastewater conveyance system and this report outlines a Regional program that will further our efforts in improving the effectiveness of our infrastructure.

4. ANALYSIS AND OPTIONS

The following will describe the need for the inflow and infiltration reduction program and provide a description of the program.

4.1 Program Need

It has been recognized that inflow and infiltration is present in all sanitary systems, yet there is still benefit in identifying how this extraneous flow affects the system and what can be done to minimize it. Without this understanding, aging systems will continue to deteriorate and invariably result in increasing inflow and infiltration rates. This has a direct impact on all levels of government and the end users. Increasing amounts of inflow and infiltration in the system affect our performance in two ways, by reducing available transmission capacity in our existing pipe systems and by reducing treatment capacity.

The benefits of actively managing inflow and infiltration flows are to improve system efficiency, minimize environmental impacts and maximize the useful life of our assets.

4.2 Program Goal

The overall goal of the inflow and infiltration reduction program is to reduce peak inflow and infiltration in the Region through cooperative initiatives between the Region and the local municipalities. The program will focus on understanding, communication, cooperation and investment to ensuring that inflow and infiltration is managed to a level currently achievable through industry best practices.

4.3 Program Description

York Region is committing to inflow and infiltration reduction and is initiating a Regional inflow and infiltration reduction program with full participation from the area municipalities. The program will be focused on inflow and infiltration reduction strategies that would typically apply at the local level of the system but that work together to create beneficial results for the regional system as these local improvements begin to take affect.

The first step in the York Region and local municipal infiltration reduction program will be the formation of a steering committee made up of staff from York Region and the local municipalities. This steering committee will be involved in all aspects of the program from inception to final recommendations. It is important that each municipality provide input to the steering committee to ensure the success of the program in each municipality and to provide the necessary links to the public, especially when work is required on locally owned sewers.

The work plan for this program will consist of the following main components:

1. Flow Monitoring Program including development of standards for monitoring and assessing inflow and infiltration in all areas of the YDSS and satellite systems.
 - This component of the program will determine the amount of inflow and infiltration that is currently entering the system. Existing monitoring locations are at select regional locations and although these stations capture data from the entire system, they are not sufficient for local analysis. This monitoring component will provide the information needed to assess where inflow and infiltration concerns may exist.
2. Implementation of inflow and infiltration reduction pilot projects utilizing various technologies in selected areas of the Region and subsequent flow monitoring to determine effectiveness of the pilot project.
 - Once high inflow and infiltration flow areas are identified, small scale rehabilitation and mitigation projects will be identified and implemented. If successful, these pilot projects could then be rolled out across the system where warranted.
3. Cost/benefit analysis to determine best applications for inflow and infiltration reduction in York Region.
 - Results from the pilot projects in conjunction with a thorough understanding of deficient areas will form the basis for cost analysis to determine the extent and expected benefits of expanding the pilot projects to full scale rehabilitation projects.

4. Project recommendations and cost sharing methodology for further inflow and infiltration reduction projects.

- Once the analysis is completed, the scope of the full implementation will be defined and cost sharing approaches between the Region and the area municipalities will be defined prior to full scale implementation. The full implementation of works will be defined after analysing the monitored data collected upon completion of the pilot projects.

It is anticipated that this program will commence in 2007 with the selection of a consultant by mid year, and will conclude in 2013 with recommendations for the full scale implementation. A preliminary project schedule is attached (*see Attachment 1*).

5. FINANCIAL IMPLICATIONS

Funding in the amount of \$24 million has been allowed for the program in the proposed 2007 budget and 10 year capital plan and will be funded 80% from development charges and 20% from water rates. The Region has committed to fully funding this program through the pilot project stage to final full scale recommendations. A cost sharing strategy will be developed for additional remediation works if required.

6. LOCAL MUNICIPAL IMPACT

As infrastructure systems in York Region age, the challenges for inflow and infiltration management will be ever increasing. This program will provide important information to the local municipalities both with regard to the condition of their wastewater systems and how this understanding influences the activities planned at the Regional level. Implementation of the York Region and local municipal inflow and infiltration reduction program can then result in the availability of more secure, cost effective wastewater conveyance and treatment to meet the needs of future growth.

7. CONCLUSION

York Region is committed to reducing the amount of existing and future inflow and infiltration entering the collection and treatment systems. The York Region and local municipal inflow infiltration reduction program will build on this commitment through a coordinated effort between York Region and the local municipalities.

By taking the initiative to coordinate activities between the Region and local municipalities on inflow and infiltration challenges, both levels of government will benefit through shared knowledge, resources and a coordinated approach to maximizing the usefulness of our extensive infrastructure system.

For more information on this report contact Tracey McLean, extension 5095, Acting Manager Technical Support Group of the Water and Wastewater Branch in the Transportation and Works Department.

The Senior Management Group has reviewed this report.

(The attachment referred to in this clause is attached to this report.)