

INFLOW AND INFILTRATION REDUCTION

2020 ANNUAL REPORT ON ACTIVITIES AND ACCOMPLISHMENTS



2020 INFLOW AND INFILTRATION REDUCTION & PROGRESS SINCE 2011

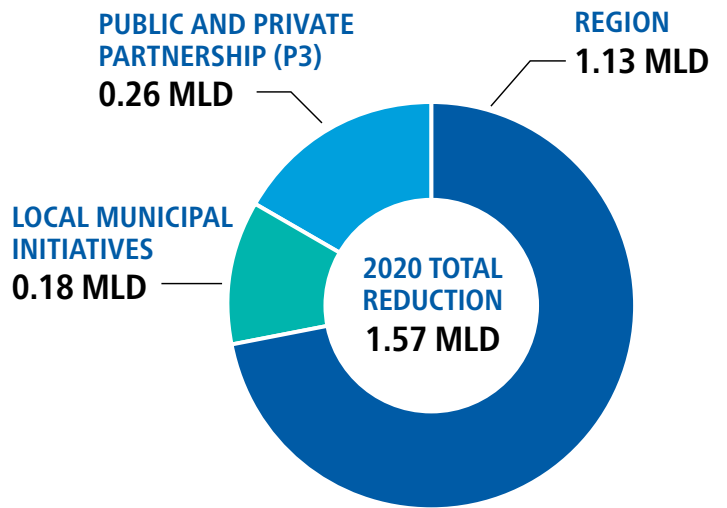
This Annual Report presents progress and results achieved in 2020 through York Region's Inflow and Infiltration Reduction Strategy (the Strategy), last updated March 31, 2016.

The Region is on track toward meeting the overall Inflow and Infiltration Reduction target of 40MLD by 2031.

Through close partnerships with its nine local municipalities and the development community, the Region has reduced 1.57 million litres per day (MLD) of inflow and infiltration in the York Durham Sewage System (YDSS) in 2020.

This brings the overall total reduction, since 2011, to 22.11 MLD or 55.3% of the 2031 reduction target of 40 MLD. When including reduction efforts completed in the Stand-alone systems and Georgina wastewater system (not contributing to the YDSS) from satellite communities, the cumulative reduction adds up to 22.87 MLD or 57.2% of the 2031 reduction target.

With the cumulative reduction to date, the Region has exceeded its 2020 interim reduction target of 50% (or 20 MLD). Reductions were quantified through continuous flow monitoring, hydraulic modeling, field observations, CCTV reviews and investigative studies. Table 1 (page 3) provides further details on the remedial work and estimated reductions reported for 2020.



INFLOW & INFILTRATION REDUCTION STRATEGY

TARGET
Reduce 40 MLD I&I by 2031

INTERIM TARGET
Reduce 20 MLD I&I by 2021

EXCEEDED

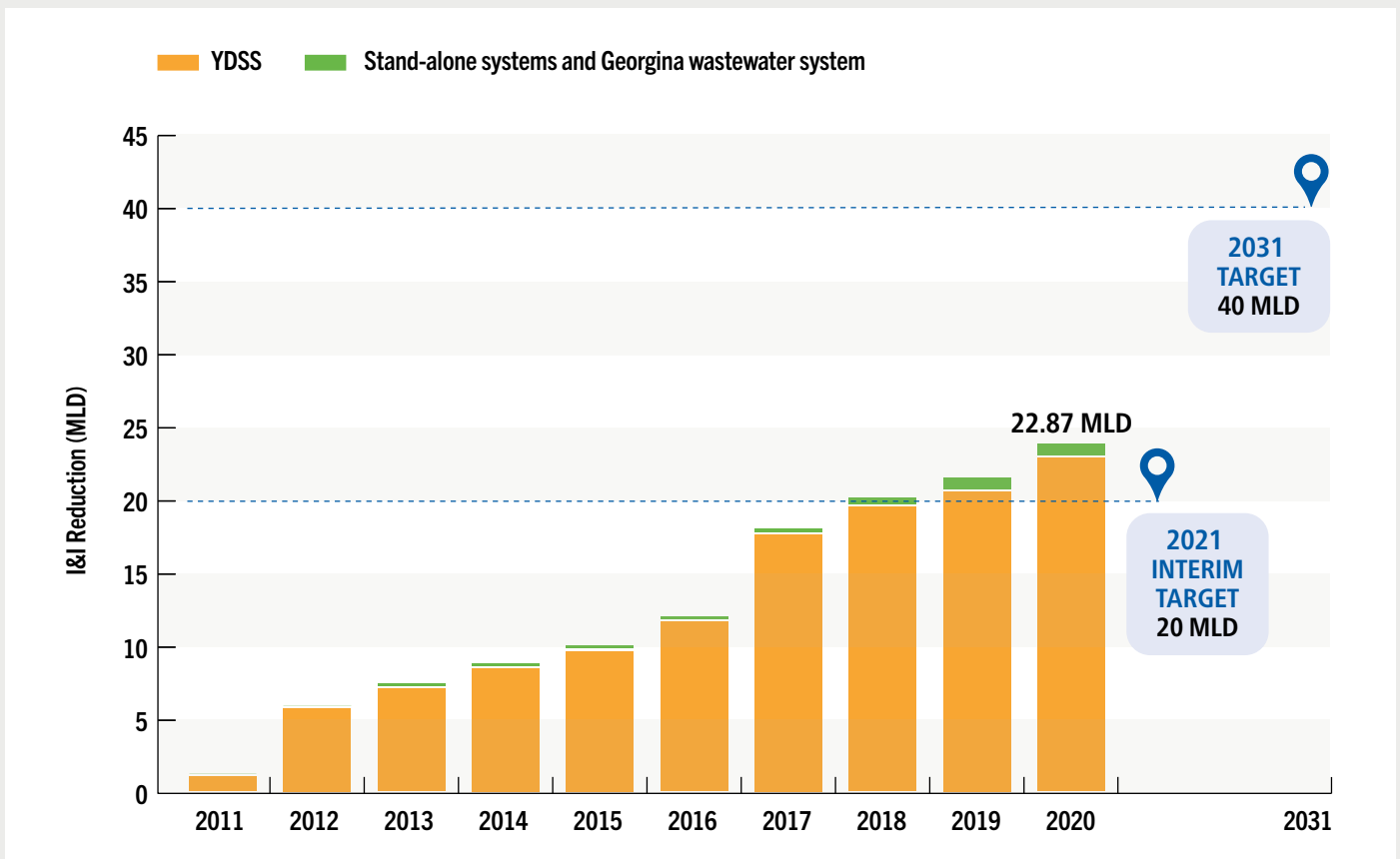
2020 interim target

2
Years Ahead of Schedule

TOTAL REDUCTION OF
22.87 MLD
(22.11 in YDSS)

EQUIVALENT TO DAILY
Wastewater from
Approx **24,000** Homes

Figure 1: Inflow and Infiltration Annual Reduction Progress Chart



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2020 PROGRAM INITIATIVES



FLOW AND RAINFALL MONITORING AND ANALYSIS

Region's Flow and Rainfall Long Term Monitoring Program continued and expanded to support wastewater system capacity planning, locate inflow and infiltration sources requiring remediation and inform analyses models.

71
rain
gauges



294
flow monitoring locations
collecting data

13
monitoring
locations
added in 2020

27
inflow and
infiltration priority
maps created



DESIGN AND COMMISSIONING

I&I Reduction Standard for New Construction, Design, Inspection and Acceptance Draft at **90%**, completed and circulated to the industry and local municipal partners for commenting. Implementation phase will run from 2022-2024.



9 virtual workshops conducted to develop the Inflow and Infiltration Reductions Standards in New Developments

3 conformity reports approved for new subdivisions under SIP*, SDIP** and LEED*** with lower inflow and infiltration design allowance rates



*Servicing Incentive Program

**Sustainable Development Incentive Program

***Leadership in Energy and Environmental Design



INFLOW AND INFILTRATION (I&I) EVALUATION STUDIES, INVESTIGATIONS AND REHABILITATION

CIPP* installation on the 9th Line trunk sewer

Private property inflow and infiltration reduction pilot projects in two study areas

1

in Town of Aurora

1

in Town of Newmarket

Local municipalities continue to tackle I&I on private properties

- ▶ Basement Flooding Protection Program (City of Markham)
- ▶ Downspout Disconnection Program (City of Markham)
- ▶ Backflow Prevention Subsidy Program (City of Richmond Hill and Town of Newmarket)

Public and Private Partnership (P3) initiatives:



1

agreement executed in the Town of Aurora

1

amendment prepared in the Town of Newmarket

Local Municipalities' Rehabilitation and inspection of:

27
sanitary sewer
mainlines

31
laterals

7
maintenance
holes

*Cured-in-place pipe



INNOVATION AND ADAPTATION

York Region explored options to expand the RDII* analysis machine-learning model.

Other initiatives:

- ▶ RDII source modeling
- ▶ Manhole plugging reductions evaluation
- ▶ Cost benefit analysis model/tool development



*Rainfall Derived Inflow and Infiltration

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Table 1: 2020 Inflow and Infiltration Annual Reduction Highlights

Type of Initiative	Reduction Achieved	Highlights of Remedial Work
Regional Initiatives	1.13 MLD	<p>9th Line Sanitary Sewer Extension to Stouffville: Rehabilitation of 49 infiltration sources (i.e. drippers, runners and gushers) along 9th Line Sanitary Sewer Extension to Stouffville.</p> <p>Leslie Street Sanitary Sewer: Rehabilitation of two infiltration sources (i.e. runner and gusher) within Leslie Street Sanitary Sewer.</p> <p>North Don Collector: Rehabilitation of 22 sources of infiltration (i.e. drippers, runners and gushers) within sections 3, 4 and 5 of the North Don Collector.</p>
Local Municipal Initiatives	0.18 MLD	<p>City of Markham: Disconnection and rehabilitation of multiple I&I sources on private property (i.e. downspouts, weeping tiles, sump pumps and sanitary lateral) as part of Phase 5 of Citywide Multi Phase Sanitary System Disconnection Program and Flood Control Remediation Study¹.</p> <p>City of Vaughan: Rehabilitation of multiple infiltration sources within 27 sanitary sewer mainlines and 7 maintenance holes as part of the City's 2020 trenchless repairs.</p>
Public and Private Partnership (P3) Initiatives	0.26 MLD	<p>Servicing Incentive Program (SIP) and Sustainable Development Incentive Program (SDIP): Inflow and infiltration reduction within three subdivisions located in the Town of East Gwillimbury by adopting design and commissioning standards for new development via SIP and SDIP.</p> <p>Developer Funded Projects in study areas located within the North, East and South side of the Town of Newmarket.</p>
Total Reduction in the YDSS	1.57 MLD	

¹ Results estimated from Flood Protection Program and Downspout Disconnection Program are rough estimates and will be further verified through continuous monitoring and/or hydraulic modeling.