



*"...meeting community needs...enhancing quality of life."*

## MEMO

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**TO:** Utilities Committee

**FROM:** Paula Vandehey, Director of Public Works *PAN*

**DATE:** January 14, 2022

**SUBJECT:** AquaDuoscope Measuring Method Program.

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The City of Appleton has been working to address Inflow and Infiltration (I/I) into our sanitary sewer system for over 30 years. All of the major cross-connections and leaking sewer mains that we are aware of have been addressed. However, the amount of clear water (I/I) getting into the sanitary sewer system continues to be significant, and at times, creates challenges at the Wastewater Treatment Plant.

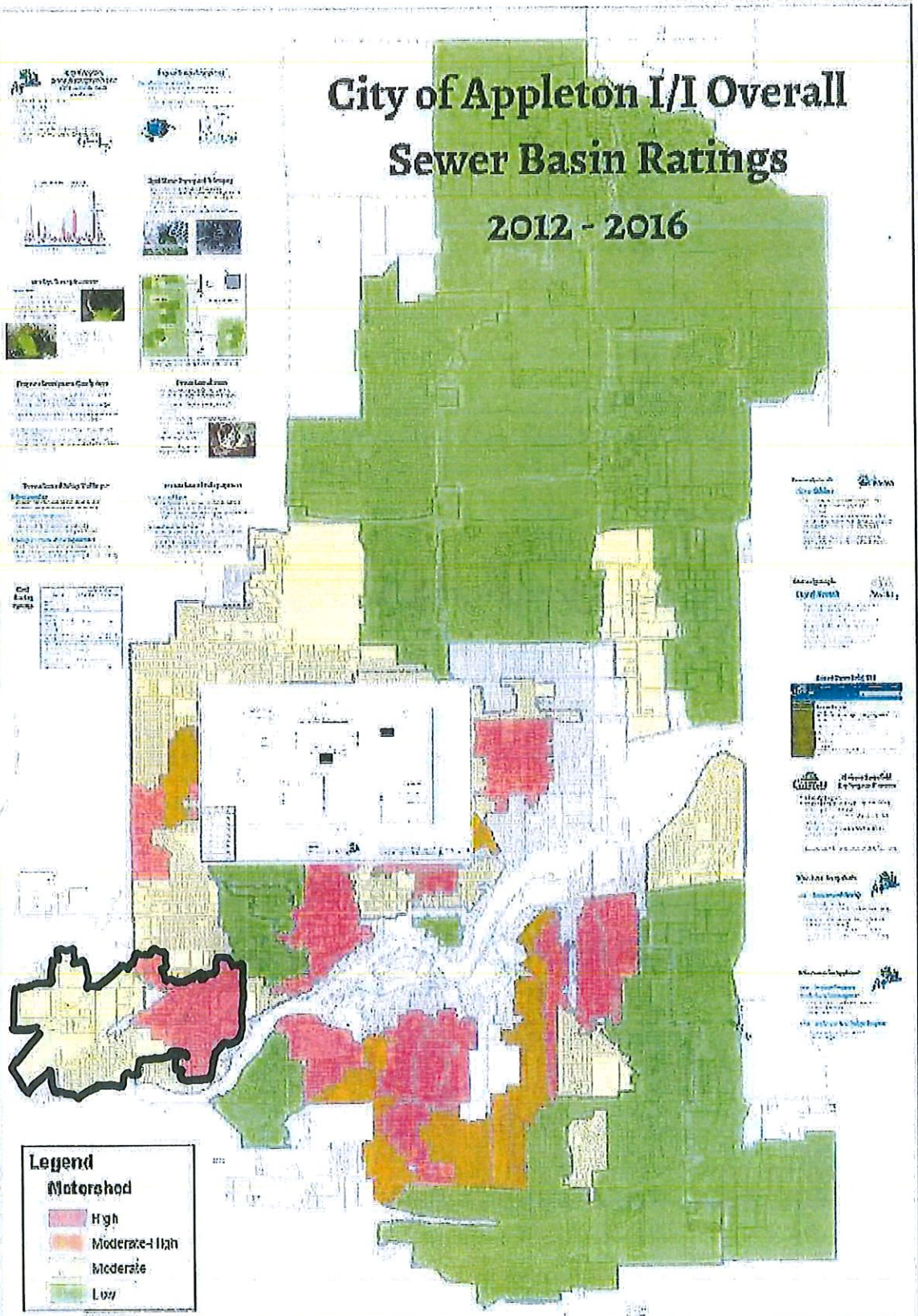
The City currently televises approximately 11% (35 miles) of our sanitary sewer system annually in an attempt to identify areas of I/I. Locations identified are then added to our 5-Year Capital Improvement Program to be addressed accordingly. Recently the City has implemented a sanitary lateral replacement program where we replace approximately 30 private laterals from the sewer main to the home.

A new technology that is now available to us is the AquaDuoscope Measuring Method Program. The company that invented this leakage detection system (Aquapriori) is located in Finland. In 2019 they performed their first ever demonstration project in the United States in Ashland, Wisconsin. They helped that community identify several "hot spots" which were then isolated and fixed accordingly, reducing the overall I/I in that community.

Aquapriori will be training Appleton staff this spring to use the AquaDuoscope Measuring Method on the area shown on the attached maps, which includes 11 miles of sanitary sewer main and one lift station. We are excited to utilize this new technology to help us identify locations of I/I, and we will keep the Committee updated on what we discover.

Attachments

# City of Appleton I/I Overall Sewer Basin Ratings 2012 - 2016



**Legend**

**Method**

High
Moderate-High
Moderate
Low

11 Miles  
1 lift station



2012-2016 Flow Monitoring I/I Quantification Overall Priority Ratings



# Aqua Duoscope 2020 Study Area

- Sanitary Main
- Sanitary Study Area

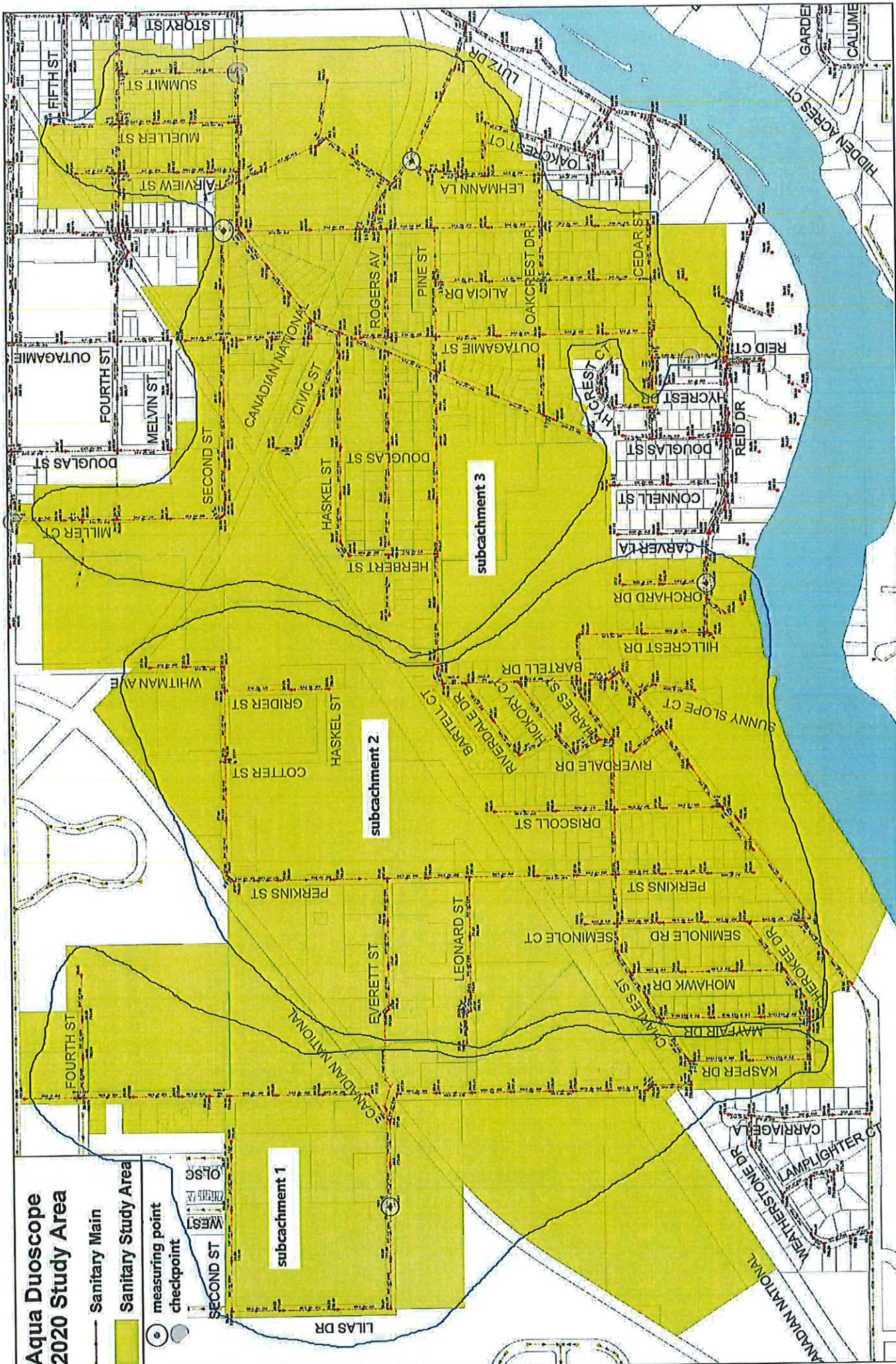
measuring point  
checkpoint

SECOND ST  
WEST  
OLPSC

subcatchment 1

subcatchment 2

subcatchment 3



## AQUA<sup>®</sup>DUO SCOPE

- AquaDuoscope<sup>®</sup>-measurements are used in the waste water network
- Measurements give us information about the inflow / infiltration leakages (I/I) in the waste water network
- AquaDuoscope<sup>®</sup>-softa counts the content of the inflow / infiltration of the sample taken from the sewer pipeline



## AQUA<sup>®</sup>DUO SCOPE

- We measure the flow rate and take a sample of the waste water. When surface or ground water gets into the sewer pipeline, it changes the measured quality parameters.
- With AquaDuoscope<sup>®</sup> - measurements we can determine the amount of leakage water in the waste water flow.
- With AquaDuoscope<sup>®</sup> it is possible to determine the sources of leakage. Our technique is fast and cost-efficient.
- Based on the results it is possible to prioritize renovations in the areas that most need to be renovated.



## AQUA<sup>®</sup>DUO SCOPE

- AquaDuoscope<sup>®</sup>-measurements can be cost-efficiently carried out in very large areas
  - AquaDuoscope<sup>®</sup>
    - is faster and cheaper implementing than TV inspections
    - gives a total picture of I/I (leakages) in a specific area
  - with **AquaDuoscope<sup>®</sup>** You can...
    - determine the amount of I/I (surface and ground water) in the waste water flow
    - determine the sources and exact places of I/I
    - prioritize renovations in the areas that most need to be renovated
    - target the sewer liner technologies
    - save money!
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