





Memorandum

TO: Kevin J. Jackson, Village Manager 

FROM: Rob Sproule, Public Works Director 

FOR: Village President and Board of Trustees

DATE: February 9, 2024

SUBJECT: **Water Year 2023: Water Audit and Non-Revenue Water Improvements**

Purpose

The purpose of this memo is to relay information included in the Water Year 2023 water audit submitted to the Illinois Department of Natural Resources.

Update

Each January, the Village of Oak Park is required to submit a water year (WY) water audit LMO-2 form and progress report to the Illinois Department of Natural Resources. The report identifies the water year's percentage of water loss and the efforts made to reduce water loss in the Village. WY2023's report, covering October 2022 through September 2023, identified the Village's water loss as 20.1%. This is an increase of 0.8% from WY2022's (October 2021-September 2022) water loss of 19.3%.

The Public Works Department Water & Sewer Division staff attribute the Village's increase in non-revenue water (NRW) in WY2023 to the increased number of main breaks that occurred in comparison to the previous year (29 in 2023 compared to 19 in 2022). These additional main breaks occurred outside the boundaries of the Village's acoustic logger pilot program detection area installed in the north half of the Village in April and May of 2023. Staff believe these additional leaks would have been located and repaired sooner had they occurred in the acoustic logger pilot area. For example, a June 2023 blowout leak (pipe failure resulting in a substantial hole and water loss) at 934 S. Maple lost an estimated 3.5 million gallons of water. Based on pump station data, the blowout leak is estimated to have occurred approximately a week before surfacing and repair. Without acoustical sensors, Village staff have no effective means of determining the location of water leaks until they surface. Staff believe that the 10 additional leaks are a primary factor in the WY2023 NRW increase and if not for those leaks, the NRW for the year may have been lower than WY2022.

Since the completion of WY2023 at the end of September 2023, the Village closed out the first quarter of WY2024 (October 2023-December 2024) with water loss of 14%, a 7% decrease compared to WY2023's first quarter of 21%.

In 2024, the Water & Sewer Division staff continue efforts to reduce water loss. These efforts include the following infrastructure improvements:

Leak Detection System – Since installation was completed in May 2023 in the north half of the Village, this system has effectively alerted staff of potential leaks that would otherwise have gone unidentified. While only in place for 5 months of the 2023 water year (May 2023-September 2023), the acoustic logger found 17 verified leaks without water ever surfacing. These leaks were quickly repaired by staff and potentially saved the Village millions of gallons of water lost. While the pilot evaluation continues through April of 2024, staff plan to take advantage of the acoustic loggers' design flexibility by lifting thirty loggers from the north half of the Village and temporarily relocating them to survey a portion of the southeast corner of the Village. This exercise will help Water & Sewer staff potentially detect additional leaks and further evaluate if the purchase of additional loggers would be effective for reducing NRW.

Advanced Metering Infrastructure – In 2023, the Water & Sewer Division continued the installation of equipment associated with Advanced Metering Infrastructure (AMI) throughout the water system. At this time, staff expect the AMI system will be completed in 2024 following the installation of the remaining six gateways. Supply chain issues have severely hampered the completion of this project and delivery of the remaining gateways is currently expected in June 2024. The completion of the AMI system will enable the Village to gather more accurate billed metered data from customers for internal auditing purposes and the annual IDNR Water Use Audit Form (LMO-2). This more accurate and timely data will create a better comparison between the data collected from the Village's master meters and that collected from the commercial and residential meters and allow the Village to implement monthly water billing.

Meter Changeouts – Beginning with 2024, as part of the annual meter replacement program, the Water & Sewer Division will start to phase out positive displacement meters and transition to ultrasonic meters. Unlike a positive displacement meter which requires fluid to mechanically displace wearable components in the meter in order to measure flow, an ultrasonic meter measures the flow rate of a liquid using acoustic vibrations. Ultrasonic meters feature no moving parts, ensuring continued accuracy and performance over the life of the meter (approximately 20 years). The ultrasonic meter's high-resolution measurement also allows it to accurately capture extremely low flow rates, an area in which positive displacement meters struggle as their moving parts begin to wear. Ultrasonic meters are becoming the industry standard for residential water metering.

Water Year 2023: Water Audit and Non-Revenue Water Improvements
February 6, 2024

For questions, please contact Rob Sproule, Public Works Director, via email at rsproule@oak-park.us or by phone at 708-358-5700.

Attachments:

IDNR Progress Report

LMO-2 Form

cc: Lisa Shelley, Deputy Village Manager
Ahmad Zayyad, Deputy Village Manager
Erin Baynes, Assistant to the Village Manager
Erin Duffy, Deputy Public Works Director
Mike Bills, Water & Sewer Superintendent
Christina M. Waters, Village Clerk
All Department Heads