



## Memorandum

TO: Kevin J. Jackson, Village Manager *KJ*

FROM: Rob Sproule, Public Works Director *RS*

FOR: Village President and Board of Trustees

DATE: May 25, 2023

SUBJECT: Sensor-Based Leak Detection Pilot Program Update

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The purpose of this memorandum is to provide the Village Board an update on the Sensor-based Water Infrastructure Leak Detection Pilot Program.

### Background

In 2022, the Village experienced a non-revenue water loss of 19.3% costing the Village almost \$2 million in lost revenue and water costs. This loss is the result of a combination of factors, but a significant component of that loss is the result of leaks within the water distribution system. Since the infrastructure is below ground, unless leaks are significant enough to surface, they are very difficult to impossible to identify. Staff have been evaluating the implementation of a remote sensor-based leak detection system that sits on valves throughout the system and listens to the Water distribution system in an effort to identify and locate leaks.

In January of 2023, Staff request and the Village Board approved an Independent Contractor Agreement with Midwest Meters, Inc. for the Water Distribution Leak Detection System Pilot Program in an Amount Not to Exceed \$250,000.00. The proposed Agreement is for a six-month pilot program designed to test the effectiveness of leak detection listening devices on the Village's water distribution system. These devices are intended to aid the Village in the discovery of water distribution system leaks that do not come to surface and are not discoverable with current surface leak detection practices. Staff hope the outcome of the pilot program is confirmation of the effectiveness of the vendors product and system and the establishment of a long-term, collaborative relationship with the provider. Should the product and system prove effective, staff expect to launch a future full-scale implementation across the entire Village system.

In the first two weeks of April, 200 listening devices were installed across approximately one-third of the Village. See attached pilot area map. There were no significant issues with installation and data collection began immediately with positive results.

As of May 22, 2023, ten leaks have been discovered throughout the pilot program area. Without the leak detection sensors, these leaks would have continued to go undetected as there was no visual indication of the leaks at the surface. Leaks that never surface and are undetectable by current surface based acoustic detection may run in perpetuity, resulting in continuous and significant non-revenue water loss. Village Staff have worked with the contractor to verify six of these leaks and have already repaired one on Village infrastructure. The other five verified leaks are on private water services. Staff have notified the property owners of these leaks and are working with them on repairs. The four remaining leaks are still in the process of being verified by our staff and contractor. The Village budgets for costs associated with emergency repairs to the Village water infrastructure as part of the Water & Sewer fund annual budget. To date, there are sufficient funds to cover the possible leak repairs associated with the Pilot program. If repair costs were estimated to exceed the current budget at some point during the year, staff would submit a budget amendment to transfer funds from the Water & Sewer Fund Balance to the necessary accounts to make needed repairs.

The Public Works Department has seen positive results with this pilot program. The contractor has been very responsive to our questions and concerns. They are providing in-house staff guidance and training on the technology and leak identification and investigation.

### **Next Steps**

Staff will continue to evaluate the effectiveness of the current leak loggers in the pilot program area to determine if a full installation is warranted. Staff will include any recommended expansions to the leak detection network as part of the Fiscal Year 2024 Water & Sewer Fund Capital program if warranted. The approximate estimated cost for full implementation is an additional \$400,000 with an annual operating cost of approximately \$48,000. The detectors associated with the pilot program were purchased by the Village. An alternative to full implementation across the Village would be the institution of a pull and shift program where the existing sensors are moved around the Village on a regular schedule. While not as effective as a full implementation and not without some cost of its own, this could be an alternative if staff and the Board are not fully convinced on the value of the sensors. The current annual operating cost for the existing pilot program sensors is approximately \$30,000.

Sensor-based Leak Detection Pilot Program Update

May 25, 2023

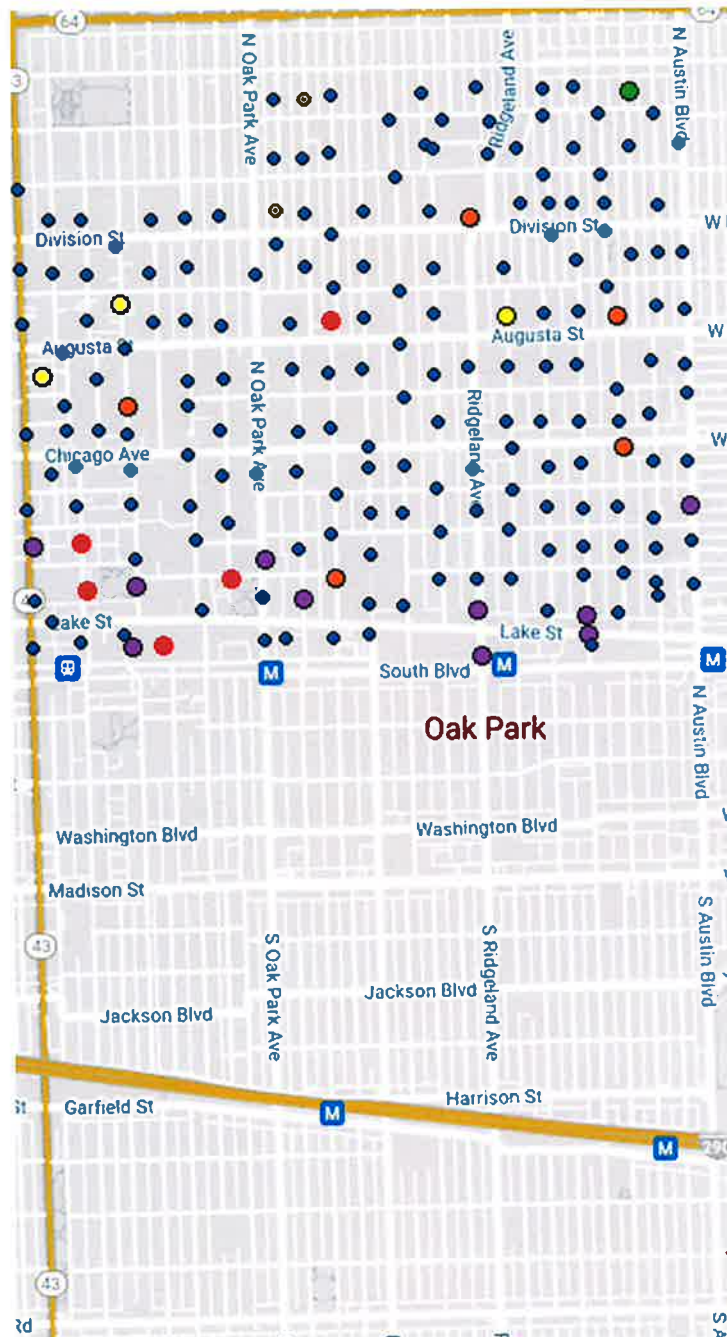
Page 3

If you have any questions, please feel free to contact Rob Sproule, Public Works Director, via email: [rsproule@oak-park.us](mailto:rsproule@oak-park.us) or phone: 708-358-5700.

Attachment:

cc: Lisa Shelley, Deputy Village Manager  
Ahmad Zayyad, Deputy Village Manager  
All Department Heads  
Christina M. Waters, Village Clerk

### Map of Pilot Area



\*Blue Dots Indicate Normal Status

- Leaks Not Categorised:
- Investigation Ongoing:
- Awaiting Repair:
- Investigation Cleared:
- Customer Side Leaks: