MEMORANDUM

TO: JEFFREY HERCZEG, DIRECTOR OF PUBLIC W
FROM: BEN CROY, CITY ENGINEER
SUBJECT: 2024 PCCP WATER MAIN INSPECTION
DATE: APRIL 4, 2024

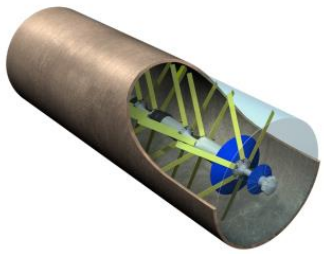
Mayor and Council –

This is for your information concerning the inspection efforts of our water distribution system.

- Victor

The City of Novi's water distribution system has approximately 4.5 Miles of large diameter (24" and larger) Prestressed Concrete Cylinder Pipe (PCCP), which is a common pipe material for large-diameter water mains. However, PCCP pipe can develop defects resulting in catastrophic failures and water main breaks. A break of this nature occurred in the GLWA distribution system in October 2017 on 14 Mile, east of Novi, where the water main failure impacted service of seven communities and took five days to repair.

Following the 2017 water main break, the Great Lakes Water Authority recognized the need to inspect the remainder of the PCCP in their water system. This inspection method involves the use of specialized insertion equipment that can identify specific defects within the pipe. This inspection is a proprietary method conducted by Xylem (fka Pure Technologies), which sends two pieces of equipment **(Smart Ball and Pipe Diver)** through the live water main. (see attached 2019 presentation). The results of the inspection can identify specific areas of concern and estimate the criticality of any defects.



Pipe Diver Cross Section

City Council approved a contract for Xylem to inspect Novi's PCCP using the same method in 2020. The Smart Ball inspection was completed for all 4.5 miles of PCCP pipe, but the Pipe Diver inspection was only completed on 1.8 miles of pipe. The Pipe Diver equipment was impeded by a damaged valve/half open valve discovered in the inspection. Xylem had to perform an emergency extraction of the Pipe Diver at that location.

The initial inspection resulted in two major findings: the Smart Ball did not identify any leaks that warranted maintenance, and the Pipe Diver identified four segments of pipe exhibiting distress to the extent that repair was recommended. The repairs of these pipe segments, located in the Novi Road and 13 Mile Road area, were completed in March of this year. The City's repair contractor, LGC Global, hired Structural Technologies to install an internal repair method called Carbon Fiber Reinforced Polymer. This is applied by a worker crawling

into the pipe following a secure shut down of the water main. The same repair method was used on GLWA's water mains on 14 Mile Road.

COVID and Pipe Diver availability delayed the project from resuming and staff are now preparing to complete the remaining 2.5 miles of PCCP pipe that wasn't inspected because of the broken valve. Xylem has provided the attached proposal for the upcoming inspection which is scheduled to take place in mid-April. Following the inspection, Xylem will provide a report summarizing and an analysis providing recommendations to proactively manage the water mains and develop a plan for future rehabilitation projects as appropriate.