

Virginiatown-Kearns McGarry Township, Ontario

THE SITUATION

Unmanageable leakage from water and wastewater conveyance networks

Serious water leakage was causing major operational challenges for the small community of Virginiatown-Kearns in northeastern Ontario. The aging conveyance network was experiencing significant leakage from the water distribution pipes, along with heavy inflow and infiltration (I&I) of groundwater and stormwater into sanitary sewers. The problem had been escalating for several years, but in 2013, the Township of about 600 residents faced a crossroads.

Leakage was so severe that the water treatment plant was operating nearly at capacity to produce about 1,400L/person/day—approximately four times the provincial per capita average. Simultaneously, I&I was causing the wastewater treatment lagoon to approach its rated capacity and, on occasion, was dangerously close to overflow.

“We’ve been reactively patching leaks for years,” says Gord Caza, Public Works Superintendent. “We knew we had a lot of leaks, but our small community doesn’t have the resources to locate them and proactively repair or replace pipelines.”

As the economic, public health and environmental risks of the leaky conveyance system grew, the community faced a costly and difficult decision – replace the aging pipelines, or build new, larger treatment facilities to compensate for the inefficient conveyance system.

OCWA'S RESPONSE

Comprehensive services: inspection, design, construction, funding applications and reporting

Most of the pipelines in the former mining town were installed in the 1930s by the mining company that founded the town. When the Township assumed responsibility for the conveyance systems, it inherited a network that was not designed for longevity and installed improperly at many locations.

OCWA has operated the Township’s water and wastewater plants for over 20 years and has continually monitored and reported on the growing inefficiencies in the conveyance systems.

“McGarry Township does not use residential water meters so it’s very difficult to understand where leakage problems might be,” says Sonya Semanuik, Senior Project Manager - Studies and Condition Assessments, OCWA.



CCTV inspection showed several areas of concern in the sewers, including sections where water lines passed right through the sewer.

With few financial resources to tackle the problem, McGarry Township and OCWA looked to the province for help. During a site inspection in 2013 by the Ministry of the Environment (MOE), OCWA stressed the significant leakage in the conveyance systems and asked inspectors to note this in the MOE report.

This action enabled the Township, with OCWA's assistance, to apply for federal and provincial infrastructure funding to assess pipeline condition, identify areas of concern and develop a plan to address them.

"Once we received funding, OCWA's highly experienced team searched for leaks in the water lines using acoustic correlators," Semanuik says. "We also used closed-circuit cameras to inspect the wastewater lines and identified potential points of I&I with smoke testing and maintenance hole inspections."

The acoustic leak detection was critical to help us assess the condition of our conveyance systems and maximize the impact of the repairs that we can afford to make.

— Gord Caza, Public Works Superintendent, McGarry Township

THE IMPACT

Dramatic reductions in leakage and reduced demand on treatment facilities

"About 13 percent of the sewer was in condition five; the worst possible," Semanuik says. "We found several holes, areas where root masses had penetrated the sewer, and a watermain that was crossing right through the sewer. In another section the water and sewer lines were so badly deteriorated, water was gushing directly from the leaking main into the sewer."

In the water lines, four large leaks were found that required immediate attention. Municipal crews quickly performed spot repairs and in the month following the last repair, the average daily water consumption in the Township dropped by 42%.

"OCWA's leakage report was very accurate," says Caza. "Once we excavated the four locations to repair the water lines, we found holes exactly where OCWA said they would be."

For the wastewater pipelines, Semanuik and her team worked with the Township to prioritize the repairs and planned four replacement projects for the most serious areas. Remaining funds from the initial grant were used for some repair work and OCWA led the preparation of new grant applications for the other repairs.

Two major repairs to the wastewater lines were completed in October 2016, which reduced average daily flows to the treatment plant by at least 25 percent.

"OCWA knows our water and wastewater utilities better than anybody and is the ideal partner to help us repair defects and restore efficiency in the conveyance systems," Caza says. "The acoustic leak detection was critical to assess the condition of our conveyance systems and maximize the impact of the repairs that we can afford to make. We're very grateful for OCWA's experience and assistance with this project."



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