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Wireless Sensor Networks for Real-Time Continuous Monitoring And Assessment Of Water And Wastewater Pipes

Objectives

To develop wireless sensor networks and decision support tools for cost-effective, large-scale, real-time, continuous monitoring and assessment of water and wastewater pipes to support operation and maintenance decisions.

Background

The efficient operation and proactive management of water and wastewater networks largely depends on the availability and efficient use of accurate, reliable, and real-time information about their performance characteristics. This information is critical for improving network reliability and reducing the risks of catastrophic failures. It can also help reduce leakage and breakage of water distribution pipes, and may also mitigate damage due to sewer backup, collapse, blockages, excessive infiltration/inflow, and flooding.

Statement of Work

- Design, implement, and demonstrate two wireless sensor networks (WSN) prototypes: one for real-time flow monitoring in sewers, and another for acoustic leak monitoring in water distribution pipes.
- Design and prototype a low-cost and low-power sewer-flow meter.
- Develop analytical methods and decision-support tools for efficient interpretation and analysis of sensor data to support operation and maintenance decisions.
- Develop practical guidelines to help municipalities implement and use these new technologies.

Expected Outcomes

- Technologies and techniques for the development and deployment of cost-effective wireless sensor networks for large-scale real-time monitoring of water and wastewater networks.
- Decision-support tools for data interpretation and analysis to support operation and maintenance decisions.

Partner

City of Regina

Start/Expected Completion Dates

This project began in 2005 and will be completed in 2009.

Project Manager

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For more information, see http://irc.nrc-cnrc.gc.ca/csir/projects/networks_e.html

Factsheet 61, October 2007