## Request for City Council Committee Action
# From the Department of Public Works

**Date:** August 6, 2013

**To:** Honorable Sandra Colvin Roy, Chair Transportation & Public Works Committee

**Subject:** **Agreement with the University of Minnesota for a Collaborative Research Project**

**Recommendation:**

Authorize proper City officials to enter into an agreement with the University of Minnesota in an amount not to exceed $190,000 over two years, to conduct research, perform testing and analysis, and make recommendations for water distribution system improvements to maintain water quality from plant to tap. No additional appropriation is required.

**Previous Directives:**
None.

**Prepared by:** Marie P. Asgian, Principal Professional Engineer 673-5682

**Approved by:**

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Steven A. Kotke, P.E., City Engineer, Director of Public Works

**Presenters:** Marie P. Asgian, Principal Professional Engineer, Department of Public Works, Water Treatment & Distribution Services

**Reviews** Not Applicable

**Financial Impact**
Action is within current department budget

**Background/Supporting Information**

The City of Minneapolis water distribution system is comprised of 1,000 miles of water main that conveys safe drinking water to over 100,000 service connections that serve Minneapolis and suburban wholesale customers. The influence of water distribution systems on the quality of water at the consumer's tap is often overlooked.

The two main contributors to the degradation of water quality between the treatment plant and the resident's tap are mineral deposits on the interior of unlined cast iron pipe and residence time of the water in its transport from the plant to the customer. Although the Public Works Water Division has a water main lining program in place to address this, approximately 750 miles of unlined cast iron pipe still remain. Mineral deposits form on the interior walls of unlined cast iron pipe causing water discoloration. When compounded with location in an area of the distribution system with longer turnover rate (poor circulation), water quality changes can be aesthetically undesirable.

The goal of this research project is to maintain water quality and prolong the lifespan of the distribution system infrastructure by better understanding existing demands, flows, pressures, and water quality throughout the system and by utilizing the information to modify water treatment and distribution system maintenance and operation procedures.

Key components of this research include:

- Calibration of a water distribution system hydraulic model to provide improved understanding of demands, flows, pressures, and water quality throughout the system. This work will be performed in conjunction with a consultant (under a Standard Agreement with the City) that has specific expertise in analytical software used to determine water age at all locations in the distribution system. One component of the calibration will be a fluoride tracer study tracking the water from the plant to various parts of the system.
- Utilization of the model to recommend locations for real-time water quality monitoring locations to be installed and integrated with Public Works Water's SCADA (supervisory control and data acquisition) system.
- Analysis for characterization of water samples and scrapings from the interior walls of water mains. Investigation of the effects of potential design/control changes on system performance.

The fee for this research project is anticipated to be $190,000 over two years. Funding for this research partnership has been allocated in the Division budget. One of the core values of the Public Works Department is to develop collaborative partnerships that lead to a safe, clean, and beautiful urban environment. The University of Minnesota represents a unique and valuable knowledge resource for the Division of Water Treatment & Distribution Services.