

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

- **Date:** March 23, 2010
- To: Honorable Sandra Colvin Roy, Chair Transportation & Public Works Committee
- Referral: Honorable Betsy Hodges, Chair Ways & Means Committee
- Subject: Agreement with the University of Minnesota for a Collaborative Drinking Water Research Project

Recommendation:

The proper City officials are authorized to enter into an agreement with the Board of Regents of the University of Minnesota to conduct research in determining the most effective type and use of powder activated carbon in drinking water for taste and odor control. The total fee for this research project will be \$170,000 funded over two years.

Prepared by: Annika M. Bankston, Senior Professional Engineer 661-4975

Approved by:

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

Presenters: Annika M. Bankston, Sr. Professional Engineer, Department of Public Works, Water Treatment & Distribution Services

Reviews

Permanent Review Committee (PRC):	Approval	Date
Civil Rights Approval	Approval	Date
Policy Review Group (PRG):	Approval	Date

Financial Impact

No financial impact.

Community Impact

<u>City Goal</u>: "Lifelong Learning – Second to None," strategic direction to "Embrace the U's Outreach & Land-Grant Expertise": the city will fully realize the benefits of having renowned educational and research institutions such as the U of M.

<u>Comprehensive Plan</u>: This project promotes the City's environmental stewardship in encouraging partnerships with other organizations within the City to make public operations more sustainable. Specifically, this research is consistent with the following policies:

- Policy 6.1.2: Promote efficient use of natural and limited resources when ... operating city facilities and in general city operations.
- Policy 6.9: Be a steward of clean water by protecting and enhancing its surface and groundwater systems.
- Policy 6.9.1: Continue to invest in maintaining excellent water quality for consumption, and ensure delivery of safe drinking water to customers.

Background/Supporting Information

The Division of Water Treatment & Distribution Services typically spends approximately \$1 Million each year for Powdered Activated Carbon (PAC). This treatment additive is used to address taste and odor challenges presented by our river source water supply and can be added at various locations in the treatment process. The research project will investigate the fundamental performance of this additive by evaluating PAC type, concentration, and dosing locations. Specifically, the research will evaluate impacts of the softening process on PAC effectiveness and provide insights to utilize this key additive more effectively. Water Division staff anticipates that this research will result in overall improvements in taste and odor control as well as cost reduction.

This research will be conducted by the University of Minnesota, Department of Civil Engineering in partnership and consultation with Division staff. Water Division contributions in labor and lab testing is anticipated to be an additional \$20,000 per year. Funding for this research partnership has been programmed in the 2010 and 2011 Division budgets.

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 but as of yet, untapped, knowledge resource for the Division of Water Treatment & Distribution Services. City staff anticipates this project will serve as a catalyst for an on-going collaborative research partnership with the University of Minnesota and local institutions to enable site-specific research yielding results that can be directly implemented in the City's water treatment operations.

Att.: July 19, 2006 Letter from Dr. Michael Semmens to Mayor R.T. Rybak

University of Minnesota

Twin Cities Campus

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July 19, 2006

Mayor R.T. Rybak Room 331, City Hall 350 South Fifth St. Minneapolis, MN 55415

Dear Mayor Rybak:

I am writing to ask for your assistance and support in renewing a research collaboration between the University of Minnesota Civil Engineering Department and the City of Minneapolis. The environmental engineering and science faculty within the Civil Engineering Department specialize in water quality control as well as water and wastewater treatment, and our faculty and students represent a valuable resource for the city. Historically, faculty within our department were instrumental in developing the water treatment plant at Fridley and optimizing the processing conditions that are used today. When I joined the faculty in the 1970's there was a close collaboration between the Water Plant and our department but over the years it has stopped as a result of financial cutbacks and a sense (at that time) that we had solved many of the problems. It is clear, however, that over the last 20 -30 years many new health concerns have caused us to implement new water treatment technologies, to explore new ways to improve drinking water quality and to reduce the risks associated with source water contamination. The city of Minneapolis has clearly made strides to improve its water quality with the new membrane filtration plants and recent upgrades.

For the past 10 years we have had a collaborative research program in place with the City of St Paul and our students have developed pilot plants for testing process performance, studied corrosion problems and water quality changes in the distribution system, examined different disinfection approaches to avoid disinfection byproduct formation in the treated water and conducted pilot studies on activated carbon for the treatment of taste and odor problems. The latter research provided the design basis for the current plant upgrade including the installation of activated carbon filters. The students that work on these projects typically complete a Masters Degree in a 1.5-2 year time frame and work on the research project during this time. They are required to write a thesis which details their work and most often the research results are published in reviewed scientific journals and presented at local conferences. The cost of this collaboration to the city of St Paul is approximately \$90,000 per year. \$70,000 comes to the University of Minnesota and includes all the costs for supporting a student and one month of faculty salary for project oversight. The remaining \$20,000 goes to the water treatment plant for research supplies, equipment and analytical support.

We would like to develop a similar relationship with the City of Minneapolis. Today, we have approximately 8 faculty who specialize in water treatment processes including

membrane technologies, water chemistry, environmental microbiology, process optimization, scale up, fluid mechanics, computational fluid dynamics and so on. We have many students who are very interested in water treatment research and who are eager to work on solving practical problems facing the water treatment industry today. I believe that it would be to our mutual benefit if we could redevelop our research relationship of old. The students would win because they receive funding for their graduate education, the City would win because you could take advantage of our brightest students and faculty resources to solve pressing problems, and we would all benefit from a closer working relationship between the University and the City Engineers.

I hope that you feel that there is merit in redeveloping this collaboration between the City and the University, and I would be happy to meet with you and discuss this further.

Yours sincerely,

Michael J. Semmens, Ph.D., P.E.

Professor of Environmental Engineering