

**PROGRESSIVE CONSULTING ENGINEERS, INC.**  
Civil • Water Supply • Municipal

# WATER BULLETIN

## Filter Rehabilitation, New Ulm Public Utilities

**N**ew Ulm Public Utilities selected PCE to provide engineering services for the rehabilitation of the water treatment plant filters.

The project includes pilot plant testing of three different types of media to determine the best performing media. Three different media types (Anthra-sand 0.6-0.8 mm effective size and Uniformity Coefficient of 1.6; Silica Sand 0.45-0.55 mm effective size and Uniformity Coefficient of 1.6; and Calgon GSR Plus) were tested in a pilot plant to determine the best media for the filters. The original media is one of the medias, which was tested.

The project will include removal and replacement of the media and wash

water troughs.

A filter evaluation study conducted by PCE in 2008 concluded that the filters were not being adequately cleaned by the present backwash system. Based on this subsequent evaluation the Utility decided to replace the existing media and troughs and change the backwash scheme to include simultaneous air water backwash through the entire backwash cycle.

To prevent loss of media and the existing infrastructure, the installation of General Filter Type ESSD Low Profile Washtroughs was chosen as the preferred option. The existing infrastructure was a deter-

minant in choosing this option particularly the size of the backwash recycle basins.

The washtroughs were bid and purchased in advance of the media and trough removal and installation contract because of their delivery timeline and the need to have the filters back in service by May 15, 2010. Sequencing of the construction has to be carefully planned as the plant has to remain in service at all times.

After reviewing the results of the pilot plant the City of New Ulm decided to replace the filter media and support gravel with a media and support gravel meeting the original specifications.

## Filter Evaluation, East Grand Forks, MN

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**T**he City of East Grand Forks has a lime softening plant, which provides softened water to its residents. Over the years, the under drain has become clogged resulting in maldistribution of the backwash water resulting in improper filter function. This requires the removal of the media and support gravel, cleaning the under drains and installation of new support gravel and media.

The City retained PCE to

evaluate the under drains and optimize the filter operation.

The project will include analysis of the cause of the under drain clogging, raw and treated water quality, measuring backwash rates and freeboards, developing a backwash water turbidity profile, measuring bed expansion, and filter coring. The floc analysis of the core samples shows the efficiency of the filter bed cleaning during backwash. The analysis of the data collected will

provide a means to optimize the filter operation. Recommendations to improve filter operation will be contained in a report.



## Goodview Water Plants Exceed Water Quality, Goodview, MN

Water Plants No. 1 and No. 2 were designed to remove iron, manganese and radium and went online in July 2009. A pre-mixed hydrous manganese oxide (HMO) feed is added to remove radium to below the standard of 5 picocuries per litre (pCi/L) of combined Radium 226 and Radium 228. The initial feed rate for HMO was set at 1 mg/L.

Test results completed in late August showed that the combined Ra-

dium 226 and Radium 228 was 0.161 pCi/L for Water Plant No.1 and 0.105 pCi/L for Water Plant No. 2. Iron and manganese levels were well below the standard of 0.30 mg/L for iron and 0.05 mg/L for manganese. In August, the HMO feed was reduced to 0.5 mg/L at both plants. The radium levels were retested in December 2009. The results showed that the combined Radium 226 and Radium 228 levels are 0.560 pCi/L at Water Plant No. 1 and 1.10 pCi/L at Water Plant No. 2. The HMO feed has since been reduced to 0.25 mg/L at both plants to reduce

chemical costs. The City is receiving an improved quality of water since Water Plants No. 1 and No. 2 went online.



Goodview Water Treatment Plant No. 2

## Article For Publication in Opflow Magazine

Jeny Shah and Naeem Qureshi from Progressive Consulting Engineers, Inc. (PCE) and Scott Anderson, from the City of St. Louis Park recently authored an article on “Cost-Effective Options of Reducing Vinyl Chloride In Water Treatment Plants” that will appear in the February issue of the Opflow



American Water Works Association (AWWA) publication.

This article describes a cost effective means of removing low levels of vinyl chloride from the water in a pressure water treatment plant. The raw water feed to the water treatment plant contained vinyl chloride above the standard of 2 parts per billion (ppb). By increasing the quantity of air in an atomerator from 12 cfm to

25 cfm and increasing the size of the air release valves the levels of vinyl chloride were reduced to below 2 ppb.



St. Louis Park Water Treatment Plant No. 1

## Jon Schelkoph, P.E.

Jon Schelkoph, P.E. has joined Progressive Consulting Engineers, Inc. (PCE) as a Project Manager. Jon has about



nine (9) years of experience in Environmental Systems Design as well as in Land Development. Jon is registered as a Professional Engineer (PE) in the State of Minnesota. Jon received his Master of Engineering in Civil Engineering from the Uni-

versity of North Dakota in 2001 and a Bachelor of Science in Civil Engineering from the same university in 2000.

Jon will be working on the civil design project for the U.S. Fish and Wildlife Service

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