



Date: March 14, 2014

To: Water Utility Board

From: Al Larson, PE, BCEE

Re: Request to Advertise for Engineering Services

Project: Well 31 – Facility Design and Construction

I am writing to provide an update on the Well 31 project and to request that you approve advertising for proposals to solicit engineering design services. We submitted a request to advertise for engineering design services to the Water Utility Board at your September 2013 meeting. At that meeting the Board requested that we refer the request to a later meeting until the production well was completed, developed and water quality had been sampled and tested. We are happy to report that the well is finished and we are ready to move forward with design and construction of the facility.

Well Capacity

Following development to the production well, a 14 day pump test was completed. The pump was operated 24-hours per day at the target pumping rate of 2,100 gpm. Drawdown was measured continuously with a submerged transducer with a daily measurement using an air line. The pump test of the production well indicates a capacity of 2,100 gallons per minute with a drawdown of approximately 250 feet. This calculates to a specific capacity of approximately 8.4 gpm per foot of drawdown. This specific capacity is low for a Madison well but is well within working tolerances and is comparable to the McFarland municipal wells.

The production well was logged by the Wisconsin Geological Survey and we are in the process of evaluating the possibility of blasting the well to create some fractures in the sandstone and improve specific capacity.

Water Quality

Samples were taken from the well during the pump test at 11 days and 14 days for the purpose of evaluating water quality. Water quality samples indicate the presence of iron at 0.24 mg/l, manganese at 11 ug/l, and nothing else of concern. VOC levels were very low to non-detectable and radionuclides were within normal ranges for Dane County wells. An iron and manganese filter will be designed into the facility to mitigate the iron and manganese levels in the raw water and meet our water quality goals. A space will be designed into the system that would allow expansion to add a VOC air stripper in the future if necessary. This will not add to the cost of the facility.

Storage

A need for seasonal storage has been identified by Water Utility staff. Due to the industrial nature of the Well 31 area and the fact that we own approximately 75,000 square feet of property at the Tradewinds site, this is a good place for additional storage. It is proposed to construct a 2400 square foot semi-heated storage building in conjunction with Well 31 for general utility seasonal storage of

equipment. Examples would be snow plowing equipment in the summer, lawn equipment in the winter, the water wagon, and other equipment that has a seasonal function and use.

Facility Design Components

The Well 31 facility will include the following components:

1. 2,200 gpm deep well
2. Iron and Manganese Pressure Filters
3. Storage Reservoir: Minimum of 1.4 million gallons to accommodate equalizing storage and emergency reserves for pressure zone 4
4. Booster pumping station with redundant 2,100 gpm pumps
5. 2,400 square foot storage garage for general Utility use

Project Budget and Schedule

Total project budget for the construction of Well 31 has been established at \$5.8 million. Design will be completed during 2014 and the project will be constructed in 2015 to be fully operational in 2016.

Staff Availability

MWU Engineering staff does not have the expertise in foundation, structural, HVAC, electrical, and control engineering to complete this project. MWU will work closely with the selected consultant by leading the public participation effort and providing permitting assistance.

Project and MWU mission

This project corrects an identified fire protection and system redundancy deficiency in Pressure Zone 4. Construction of a second well in the zone will provide needed emergency backup supply capacity. The project would bring Pressure Zone 4 up to current Utility level of service standards.

We look forward to your favorable review of our request and to moving forward with this project.