



Date: January 27, 2015
To: Water Utility Board
From: Al Larson, PE, BCEE
Pete Holmgren, PE
Re: **Request of Design Concept Approval**
Project: **Unit Well 12 Conversion to a Two Zone Well**

General Scope

Madison Water Utility (MWU) has been working alongside SEH, Inc. to produce plans and renderings for the upgrade of Unit Well 12. After working through several design options, MWU is recommending approval of an option that best addresses the goals and challenges of this project.

Background

The 2006 Water Master Plan recommended that Well 12 be converted to a two zone well. This conversion will provide operational flexibility and reliability to the west side supply system. Booster pumps and a pressure reducing valve will be added to the Well 12 facility to move water from Pressure Zone 7 to Pressure Zone 8 or from Pressure Zone 8 to Pressure Zone 7.

In addition to the pumps and piping, additional facility upgrades will include a new room each for chlorine storage, fluoride storage, and a restroom (Figure 1).

The facility work described here will coincide with a separate Public Works contract for the water main improvements, which will connect a pipeline from the facility to Pressure Zone 8 at the intersection of Whitney Way and Odana Road.

Project Description

The major components of the project will include:

- Replacement of the existing booster pump and the addition of a 2nd pump for pumping reliability and fire flow capacity.
- Installation of variable frequency drives on the new booster pumps to allow them to pump to either Zone 7 or Zone 8.
- Associated piping and motor operated valves to allow the station operation to be remotely controlled.
- Metering for the deep well, Zone 7 and Zone 8.
- Addition of a pressure-reducing valve to allow water to flow from Zone 8 to Zone 7 if necessary.
- Construction of new chemical feed rooms to bring the facility up to current code and DNR standards.
- Upgrade of the restroom facility.

- Repair of the well discharge piping.
- Expansion of the facility footprint to enclose the new chemical feed rooms, bathroom, and deep well piping/meter.
- Miscellaneous Station upgrades related to security, lighting, electrical controls, etc. as needed.

Challenges

Adding new building space and increasing the existing facility's footprint to accommodate the upgrades was anticipated. However, working within the existing space and managing the size of the new footprint to control costs has limited some options.

The pump and piping layout has gone through a number of iterations in order to meet the goals set by MWU. Placement of valves, meters, and fittings in the appropriate areas to allow for maximum flexibility between the Pressure Zones and the pumps was looked at very closely.

The façade on the existing facility is of a weathered stone that cannot be matched with the same materials on the addition. Therefore, MWU has discussed a number of options with SEH regarding the degree of contrast that should be considered with the new façade materials.

Coordination between the work at the Well 12 site with the upcoming pipeline improvement project is required to ensure that both projects will result in minimal disruption to the area.

Options

Two options are being presented for the architectural treatment of the building addition.

Option A1 features:

- Corner elements in a similar form to the existing building.
- A raised roof to match the elevation of the existing building.
- Smooth square stone (or precast concrete):
 - To match the color of the existing building (Figures 2a and 2b).
 - A darker color than the existing building (Figures 2c and 2d).

Option B1 features:

- A more contemporary look with no column element at the corners.
- Terra Cotta rain screen paneling (Figures 3a and 3b).

The interior layouts remain the same on all options. In addition to allowing flow between Pressure Zone 8 and Pressure Zone 7, the configuration includes a single meter for each zone and allows either pump to function for either zone. With the exception of a new length of pipe from the deep well, the pump/piping layout is entirely within the existing facility footprint. The building addition will be primarily used for the two chemical rooms required by the DNR, and the bathroom.

Cost Update

Within the budgeted estimate of \$670,000.

Schedule Update

Items that are completed or are in progress:

- Held one (1) public meeting
- Topo Survey
- Piping Layout Concept Drawings
- Architectural Concept Drawings
- Site Layout Concept
- Tech Memo

Items that are to be completed in the next month:

- Landscape Design
- Stormwater Site Design
- DAT Review Meeting
- Prepare Bid Documents

Recommendation

MWU is recommending concept option A1 for approval by the Water Utility Board.