

CHAPTER 5

GREGGS LANDING RESERVOIR

BACKGROUND

The Greggs Landing Reservoir was constructed in 1999 and consists of a 500,000 gallon cast-in-place concrete reservoir with an attached pump station, as shown in Figures 5-1 and 5-2. The pumping station includes (4) 1,000 gpm water supply booster pumps.

RECOMMENDATIONS

Lighting

Record drawings of the Greggs Landing Reservoir facility indicate that 16 linear fluorescent fixtures provide the majority of the lighting within the pump gallery and the electrical room. Figure 5-3 shows the typical linear fluorescent fixture in the facility. Since one of the objectives of the study was to identify energy savings, LED fixtures were considered, but at the time of this report, were deemed too costly to justify the potential energy savings. However, upgrading to LED fixtures or the retrofitting of the existing fixtures with LEDs can be reevaluated during final design.

The lighting system was evaluated for replacement of the current T12 fixtures by energy-efficient T8 fixtures. This replacement was difficult to justify based solely on actual energy savings, as the limited use of the facility would make it difficult to recoup the costs of the new fixtures. However, since the manufacture and import of T12 bulbs and ballasts has been barred in the United States, the fixture upgrades are recommended to improve reliability and reduce maintenance issues. The recommended replacement for the linear fluorescent fixtures is the Lithonia EJS on a one-to-one basis for several reasons:

- Matches construction and look of existing fixtures
- Houses new energy efficient T8 bulbs
- Provides similar lighting levels



Figure 5-1
Greggs Landing Reservoir



Figure 5-2
Pump Station Mechanical Room



Figure 5-3
Pump Mechanical Room Lighting and Fans

In addition to the general purpose linear fluorescent fixtures, the record drawings indicate that the chlorine room at the facility has been fitted with special fixtures made of aluminum in order to prevent corrosion. Since the chlorine equipment at this location was no longer needed, it has been removed. With the removal of this equipment, the existing hazardous location lighting can be replaced with the general purpose Lithonia EJS fixtures recommended for the other areas of this structure.

Additional evaluations at this facility included exterior lighting, emergency lighting, and light switches. The record drawings indicate that the current emergency lighting system is past its useful life and should be replaced. For ease of ordering, maintenance, and length of life considerations, the Lithonia ELM2 LED emergency fixture is recommended.

For exterior lighting, the record drawings show (12) 70w High Pressure Sodium wall pack units spaced around the building's exterior. Replacement of these units with LED units will provide energy and maintenance cost savings due to the reduced wattage consumption and increased lifespan associated with the LED fixtures. The recommended replacement unit is the Hubbell LNC2 model. For the light switches, the Hubbell Occupancy Sensor is being recommended for consistency throughout the different water system facilities.

HVAC

The ceiling fans located in the pump gallery are from the original construction. They are past their useful lives and should be replaced. (These fans are also shown in Figure 5-3.) The characteristics and specifications of the existing fans found in the record drawings were used to determine a suitable replacement. The suggested replacement is the Emerson HF948W 48-inch industrial fan. It is similar in size, ratings, and aesthetics.

SCADA System

Figure 5-4 shows the existing control panel. As discussed in Chapter 3, all of the remote water system sites currently include telephone line telemetry systems transmitting back to the existing Water System Control Panel located in the operations building of the Vernon Hills WRF. The LCPWD installed a radio telemetry system in the Greggs Landing Reservoir control panel in 2013. It consists of MDS/GE 900 Mhz spread spectrum radio and an Ethernet switch. Though the radio is operational and links to the Vernon Hills WRF, there are no Programmable Logic Controllers (PLCs) or Remote Terminal Units (RTUs) connected to it. Switching over to the radio system will eliminate the need for the existing telephone line.



Figure 5-4
Existing Greggs Landing
Reservoir Control Panel

It is recommended that a new SCADA PLC panel be installed at the Greggs Landing Reservoir Facility. The panel would include:

- Allen-Bradley CompactLogix L33ER PLC
- (4) 16-point digital input cards
- (2) 4-point analog input card
- (2) 16-point digital output card

The existing Control Panel shown in Figure 5-4 can be removed from the MCC lineup and replaced with a new PLC panel or the front panel door can be replaced with a new door.

A 15-inch touchscreen on the front of the panel will provide control and display local data. An uninterruptible power supply (UPS) will maintain PLC function and data transmission in the event of a power failure. The existing Ethernet switch will be utilized to connect the new PLC to the SCADA network to provide control, status monitoring, and alarm monitoring data to the Master SCADA PLC at the Vernon Hills WRF.

Miscellaneous

The Greggs Landing Reservoir currently has a fire alarm system installed that the LCPWD subscribes to have serviced and monitored. We recommend adding SCADA annunciation from the fire panel, but leaving the fire panel connected to the Fire District for the time being. Similarly, the two existing 12” Venturi flow meters are 18 years old and should be replaced.

CAPITAL COSTS

The estimated capital costs for the recommended lighting, HVAC, SCADA system and miscellaneous improvements are shown in Table 5-1. It includes contingencies, engineering, and administration.