

Project Identifier: SS-3

CIP Budget: \$518,000

Project Name: Well No. 6 Pumping Capacity and Backup Power Modifications

Funding Source: Rates

PROJECT DESCRIPTION: This project ensures the reliable supply of Well No. 6 and decreases reoccurring costly maintenance by replacing the existing pump and motor with a more efficient and reliable pumping system. The City drilled Well No. 6 in 1995, and it was deepened in 1998 to reduce drawdown during pumping. Several additional water-bearing zones were encountered when the well was deepened that substantially increased the well's supply capacity in the range of 1,600 gpm. However, it has been difficult to utilize this well to its full potential and has been expensive to operate due to the following deficiencies in construction and water characteristics:

3. **Excessive drift:** Well No. 6 was not drilled plumb. At the current pump setting depth, the well is approximately 29 feet out of plumb west to east, and 4.5 feet out north to south. Due to the amount of deviation, the conventional line shaft turbine pumps used at the City's other wells cannot be used in Well No. 6.
4. **Casing diameter:** The well was constructed using 16-inch casing to 625 feet and 13.375-inch casing to 990 feet. The static water level is at roughly 575 – 585 feet, and the well draws down approximately 15 - 20 feet during typical pumping operation. Due to the limited drawdown potential in the 16-inch casing, a unique a 3,600-rpm submersible turbine pump with an oil and gas industry motor is installed lower in the 13.375-inch casing. The existing pump and motor combination has not been reliable with several outages over the past few years.

As the City has already invested a substantial amount of money in the existing pump, motor, and electrical equipment in Well No. 6, Mountain Waterworks recommends continuing to utilize the well until the motor or pump fails, which may be several years or longer. Two primary options are available to resolve the existing pump and motor maintenance issues:

3. Replace the existing medium-voltage submersible motor; or
4. Replace the existing submersible pump and motor with a 480-V, 200-hp, 800-gpm submersible pump and motor.

NEED OR JUSTIFICATION: The City uses Well No. 6 to produce 1,600 gpm of water but at this capacity it requires a unique submersible pump and motor utilized in the oil and gas industry that is unreliable, expensive to operate, and expensive to replace.