

City of Elysian Water Treatment Plant

The City of Elysian is seeking funding for a new water treatment plant needed to address removal of radium, iron, and manganese from the city water supply. Elysian is supplied by two active wells, one of which serves as the primary well, with the other well typically not used because of issues with iron bacteria in the source water. The primary well contains radium levels exceeding the U.S. Environmental Protection Agency (EPA) National Primary Drinking Water Regulation (NPDWR) Maximum Contaminant Level (MCL), and radium levels at the other well are very close to the MCL. MCL's are the highest level of a contaminant that is allowed in drinking water. These levels are established to protect the public against consumption of drinking water contaminants that present a risk to human health.

Radium is a naturally occurring radioactive element present in the rocks and soil within the earth's crust. In places where groundwater flows through rock layers containing significant amounts of radium, the water absorbs radium from the rock. Consuming water with elevated radium levels over an extended period of time may result in an increased risk of some types of cancer.

The City of Elysian does not currently have a water treatment plant. Water from the city's two wells are pumped directly into the water distribution system. In order to provide water that meets EPA requirements for radium concentration, a water treatment plant (WTP) should be constructed and placed into service.

The City contracted with SEH to perform preliminary design of the proposed improvements. In completion of the preliminary design, SEH evaluated treatment requirements, sizing and siting of a WTP. The proposed WTP will be sized to provide up to 300 gallons per minute of treated water to the water distribution system, and new raw water lines will be constructed from both existing wells to the new WTP. To achieve radium, iron, and manganese removal, the new water treatment plant will include chemical addition, aeration, and gravity filtration. In addition, consideration was given to addition of reverse osmosis (RO) to provide centralized water softening and provide customers with improved water quality. The water from both wells is very hard and centralized softening would eliminate the need to flush the distribution system (cause of high demand days) and minimize the chlorides in the city's wastewater (use of point-of-use water softeners will not be necessary).

Based on a conceptual layout, the new WTP building footprint will need to be approximately 75 feet by 45 feet, equivalent to approximately 3,375 square feet. The building will be located on property that the City currently owns to provide cost and potential schedule savings. Four potential City owned locations were identified as potential sites, and a preferred location selected based on comparison and evaluation of the sites.

Based on cost estimates developed during preliminary design, the estimated construction cost for the new water treatment plant and raw water lines from both wells is \$5,420,000. Including Engineering and administrative costs (\$1,360,000), the estimated project cost is \$7,600,000 (see table below).

Description	Cost
Construction Cost	\$5,420,000
Engineering & Admin (25%)	\$1,360,000
Contingency (15%)	\$ 820,000
Total	\$7,600,000

The city applied to have the new WTP project listed on the Project Priority List (PPL) for Fiscal Year (FY) 2023. The project scored 30 points and ranked number 8 in the priority order. The project was listed as 'NOT FUNDABLE AT THIS TIME' because it was the first time the project was submitted for the PPL and no new projects were funded from the Drinking Water State Revolving Fund in FY 2023.