Metropolitan Domestic Water Improvement District
Board of Directors Meeting

December 9, 2019

Authorizing the Water Quality Blend Evaluation for
Northwest Recharge, Recovery, and Delivery System (NWRRDS) Implementation

Synopsis

The Board of Directors is requested to authorize utilizing Carollo Engineers to perform professional engineering services using the Arizona Department of Administration State Procurement Office annual professional services list. Work will include an investigation of the water quality and associated blending/operational impacts of introducing recovered Central Arizona Project (CAP) water into the Metro Main potable water distribution system and the development of operational guidance to meet the District's water quality goals for the blend.

Background

In April 2014, the Metropolitan Domestic Water Improvement District (District) Board of Directors considered the timeline to implement the Northwest Recharge, Recovery, and Delivery System (NWRRDS) and the acceptable range for Total Dissolved Solids (TDS) in the blended water delivered from the Herb Johnson Reservoir. NWRRDS involves the recovery wells, transmission lines, a Forebay reservoir, booster station, and blending the recovered CAP water at the Herb Johnson Reservoir.

The District desires to maximize use of its CAP water allocation through NWRRDS to reduce groundwater pumping within the Metro Main service area and stabilize the observed trends in declining groundwater levels.

Exploration wells have been completed and drilling of the recovery wells is anticipated to begin in 2020 in partnership with the Town of Oro Valley. Final design of the transmission lines and the forebay is expected to begin in early 2020 and will be completed in partnership with the Towns of Marana and Oro Valley. District staff is preparing the design of the transmission line between the booster station and the Herb Johnson Reservoir, where the District's portion of the recovered water will be blended for delivery to the Metro Main distribution system. Design of the associated booster station will be completed by the District's consultant beginning in early 2020. It is estimated that construction of NWRRDS infrastructure will be completed in Fiscal Year 2023.

Recovered water from NWRRDS will have higher levels of mineral content, measured as TDS, than wells currently serving the Metro Main system. Data from the exploratory wells indicates a TDS range of approximately 430 to 740 parts per million (ppm) may be anticipated in the recovered water. TDS within the existing wells feeding the Herb Johnson reservoir ranged between 135 and 802 ppm in 2018, while water delivered to the Metro Main system from the Herb Johnson reservoir ranged between 170 and 242 ppm during that same period. An evaluation of water quality and associated blending/operational impacts of introducing NWRRDS water into the Metro Main distribution system will ensure the Board-approved average annual range of between 400 and 500 mg/L TDS for the blended water to be delivered from the Herb Johnson Reservoir.

In September 2017, the Board authorized utilizing Carollo Engineers to complete an evaluation of alternatives related to blending water from multiple wells within the Metro Main distribution system. The hydraulic model previously updated by Carollo will be used to accomplish this effort.

Issues

Staff proposes an evaluation of the existing Metro Main potable distribution system hydraulic model to include NWRRDS and any well changes that may impact flow and TDS in the distribution system. The model will be configured to evaluate different flow and TDS scenarios that will impact distribution system TDS, including variations in NWRRDS usage and variations in well operation and blending requirements. The model will be configured to accommodate other individual constituents such as chloride, sulfate, and hardness that can impact the corrosivity of the water that may be evaluated in the future.

The evaluation will result in recommendations for well operations, blending, and required infrastructure; chemical stabilization; and monitoring. This effort is intended to provide additional certainty with respect to anticipated blend ranges and operational strategies prior to implementation of NWRRDS.

Recommendation

Staff recommends the Board authorize the General Manager to execute an agreement with Carollo Engineers to complete a water quality blend evaluation related to implementation of NWRRDS in the amount of $157,112.00 using the Arizona Department of Administration State Procurement Office annual professional services list. Staff also recommends the General Manager be authorized to increase the scope and fee by $5,000.00, if necessary, to accommodate unforeseen conditions encountered during the evaluation.

Suggested Motion

I move to authorize the General Manager to execute an agreement with Carollo Engineers to complete a water quality blend evaluation related to implementation of NWRRDS in the amount of $157,112.00 using the Arizona Department of Administration State Procurement Office annual professional services list and to authorize the General Manager to increase the scope and fee by $5,000.00, if necessary, to accommodate unforeseen conditions encountered during the evaluation.

Respectfully submitted,

Sheila M. Bowen, P.E.
District Engineer

I concur with the above-noted recommendation.

Respectfully submitted,

Joseph Olsen, P.E.
General Manager