

**Metropolitan Domestic Water Improvement District
Board of Directors Meeting**

May 13, 2024

Approval of Bids for Granular Activated Carbon (GAC) Replacement

Synopsis

The Board of Directors is being requested to approve the quotes submitted for the replacement of the Granular Activated Carbon (GAC) in Fiscal Year 2025.

Background

The District currently operates a GAC treatment system at the South Shannon facility to remove volatile organic compounds (VOCs) from the groundwater. The GAC system is comprised of two vessels set in series. Each vessel contains 20,000 pounds of burnt coconut shell GAC. The well pushes water through the carbon bed from the top down. As the water flows through the bed, the VOCs attach to the GAC. The GAC in the lead vessel adsorbs as much of the VOCs as it can before breakthrough occurs. Breakthrough is when small amounts of the constituent being treated start to be detected after the lead treatment vessel. The levels will increase as more of the GAC is used to the point where the VOC will pass through as if there was no treatment in place.

As of August 2017, Arizona Department of Environmental Quality (ADEQ) requested that the operation methodology of the GAC system be modified so that a GAC change out does not occur until a regulated VOC is detected at 50 percent of the published maximum contaminant level (MCL). Since the two vessels are in series, the lag vessel will continue to remove the majority of the VOCs. Not all VOCs respond to GAC treatment the same way allowing some to pass through the treatment faster than others. Operating the treatment system using the 50 percent criteria does allow some VOCs (well below the MCL) to be delivered.

The District is currently adding an advanced oxidation process (AOP) at South Shannon to remove additional VOCs, including 1,4-dioxane. While the AOP will remove VOCs ahead of the GAC vessels, a different demand will be placed on the existing coconut shell GAC to quench the hydrogen peroxide and further reduce Per-and-Polyfluoroalkyl (PFAS) from the water.

With the future additions of GAC treatment to remove PFAS from Riverside and DeConcini, a second type of GAC was added to this year's annual quote for GAC replacement: Bituminous Coal. This is the recommended type of GAC for PFAS treatment and will be installed in these vessels at start up. Bituminous Coal may also be a better fit for South Shannon should the District see a noticeable difference in the coconut shell longevity after the addition of the AOP.

Issues

It is anticipated that there will be one to two carbon change outs during Fiscal Year 2025 due to VOC exposure to existing GAC. The number of change outs will vary depending on the gallons treated and the VOC levels in the raw water. The number of change outs will also depend on the AOP operation, hydrogen peroxide quench, and PFAS treatment levels. The AOP is expected to reduce the number of GAC change outs per year and possibly over multiple years. ADEQ reimburses the District for the GAC change outs. In order to expedite the process, without having the system shut down for extended periods of time, the District requested quotes that would be valid from July 1, 2024 thru June 30, 2025.

A request for sealed bids was sent to the District's current supplier and a public notice was also placed in the Daily Territorial on March 25, 2024 and ran for four consecutive publications. Sealed bids were due on April 18, 2024.

All bids were received by email. Bidders were asked to put "GAC Bid" in the subject line of their email. Emails were not opened until 2:00 p.m. on the bid opening date. Staff established a GoToMeeting session to allow remote access to the bid opening. Two vendors submitted bids for both types of GAC: Calgon Carbon Corp and Carbon Supply Inc. Carbon Activated Corp submitted a bid for coconut shell GAC only. An example of the lowest bid for coconut shell is Carbon Supply Inc at \$1.23 per pound plus cost of change out service, which is a total of \$34,938.00 for a 20,000-pound change out at South Shannon. Should the need arise in Fiscal Year 2025, Carbon Supply Inc's price for a Bituminous Coal is \$1.38 per pound plus cost of change out service, which is a total of \$38,251.00 for a 20,000-pound change out.

Recommendation

Due to potential product availability issues, staff is recommending that the Board of Directors approve all pricing submitted for the GAC replacements.

Suggested Motion

I move to approve all pricing submitted for the Granular Activated Carbon and direct staff to use the lowest responsible bidder first. If the lowest bidder is unable to meet District requirements, then staff is authorized to use the next lowest bidder.

Respectfully Submitted,

I concur with the above recommendation.
Respectfully submitted,

Steven D. Shepard
Utility Superintendent

Joseph Olsen, P.E.
General Manager