

WEST BASIN MUNICIPAL WATER DISTRICT**JUNE 4, 2003 - Water Resources**
Little, Kwan**JUNE 23, 2003 - Board Meeting**

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ACTION CALENDAR

ALTERNATIVE REVERSE OSMOSIS MEMBRANE SUPPLIERSSUMMARY:

Through demonstration testing at the West Basin Water Recycling Facility, the District has determined that performance of various brands of reverse osmosis (RO) membranes vary substantially when operated on municipal wastewater. For this reason, the District has qualified RO membranes based on demonstration testing. Currently, the Hydranautics ESPA2 and the Koch Membrane Systems (formerly Fluid Systems) TFC-HR are the only two products approved for use on microfiltered secondary or tertiary effluent. Previously, a third product was approved (Dow BW30-FR). However, changes in this product's performance (presumably a result of manufacturing changes) were revealed in recent demonstration testing. The presence of only two bidders in recent procurements has not posed a problem to date, as the two vendors are highly competitive, but it is desirable to expand the field and recognize any improved membrane products that enter the market.

Demonstration testing of alternative RO membranes may result in the qualification of additional RO membranes for future procurements, which would broaden the base of RO membrane suppliers to the District and potentially lower capital and /or operating costs.

Prior Demonstration Testing of Alternative RO Membranes

Currently, two RO membranes, marketed as "low-fouling" are being tested at the West Basin Water Recycling Facility. These products were purported to experience less fouling on wastewater. One demonstrated an unacceptably high-fouling rate; the other offered no advantage over the currently approved ESPA2 membrane from the same manufacturer.

These initial demonstrations confirm the need to test RO membranes prior to consideration for full-scale installation.

Interested Suppliers

Trisep Corporation, Toray Membrane America and Osmonics (currently being purchased by GE) have approached the District and/or Separation Processes, Inc. (SPI) (the District's consultant for RO membrane technologies) to have other products approved for use in the District's wastewater projects. Additionally, Dow Chemical has proposed an alternative membrane for testing.

Alternative RO Membrane Demonstration Testing Specifics

The District's existing criteria for successful demonstration testing calls for operation of a minimum of 1,250 ft² membrane area in either 4- or 8-inch diameter membrane elements

for 5,000 hours, at 12 gfd with a 50% recovery or higher. Specific performance criteria for the proposed demonstration testing needs to be finalized, taking into consideration current and proposed water quality requirements (specifically ammonia and total organic carbon rejection requirements as well as permeate concentration limits need to be established). Specific criteria are established for minimum water permeability and removal efficiency of regulated constituents.

Proceeding with Alternative RO Membrane Demonstration Testing

To proceed with alternative membrane testing, the District would solicit vendors to provide membranes for qualification testing at the West Basin Water Recycling Facility. The solicitation would define the testing program and the criteria for success. SPI would assist with the development of the technical components of the solicitation document, with the testing program, test procedure, performance requirements, and test element requirements outlined. SPI would also perform data analysis, determination of compliance with acceptance criteria, and documentation of results.

FISCAL IMPACTS:

Funds for the demonstration testing of alternative RO membrane suppliers have been included in the fiscal year 2002-03 Water Recycling Operations Research and Development Program Budget.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on June 4, 2003 and recommended for approval at the June 23, 2003 Board meeting.

RECOMMENDED MOTION:

That the Board authorizes the General Manager to proceed with demonstration testing of alternative RO membrane suppliers in the following manner:

Contract SPI for an amount not-to-exceed \$35,000 to prepare a "Request for Participation" document, work with District staff to finalize the acceptable membrane performance criteria, update the existing testing protocol, perform data analysis, determine compliance with acceptance criteria, and document the results.

LIST OF EXHIBITS:

None.