

RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES

DATE: JULY 10, 2017

ITEM NO: 6

SUBJECT: **REPLACEMENT OF TWO JOHN W. NORTH TREATMENT PLANT TRAINS – APPROVE MEMBRANE REPLACEMENT PROPOSAL AGREEMENT AND THE AWARD OF A PURCHASE ORDER IN THE AMOUNT OF \$325,439 TO ZENON ENVIRONMENTAL CORP. OF ONTARIO CANADA FOR REPLACING TWO JOHN W. NORTH TREATMENT PLANT MEMBRANES – APPROVE WORK ORDER NO. 1727627 FOR \$368,000**

ISSUES:

Approve Membrane Replacement Proposal Agreement and award a purchase order in the amount of \$325,439 to Zenon Environmental Corp. of Ontario, Canada for replacing two John W. North treatment plant trains; and approve the expenditure in the amount of \$368,000 for Work Order No. 1727627.

RECOMMENDATIONS:

That the Board of Public Utilities:

1. Approve Membrane Replacement Proposal Agreement and the award of a purchase order in the amount of \$325,439 to Zenon Environmental Corp. of Ontario, Canada for replacing two John W. North treatment plant membranes;
2. Authorize the City Manager, or his designee, to execute the agreement and all related documents; and
3. Approve the expenditure in the amount of \$368,000 for Work Order No. 1727627, which includes the membrane replacement, onsite technical assistance, RPU staff support and contingency costs for the John W. North treatment plant membrane replacement.

BACKGROUND:

The John W. North Water Treatment Plant (JW North) began operating in September 2008. With a rated capacity of 10 Million gallons per day (MGD), JW North treats water from irrigation wells to drinking water standards. This project was key to the City of Riverside becoming wholly independent with the ability to serve our customers with local groundwater supplies. Furthermore, the high quality treated water coming from JW North helps improve the overall water quality that Riverside provides its customers, which meets and exceeds all State and Federal Standards.

Central to the JW North treatment process is the ZeeWeed 1000 treatment system manufactured by General Electric (GE), which uses an “ultrafiltration” treatment process. Ultrafiltration involves 0.02-micron wide pore openings that pass through water, but block viruses and most bacteria. Visually, the individual membranes look like thin hollow straws that are 0.8 mm in diameter. A vacuum is applied to the inside of the straws, drawing water through the pores while micro-contaminants are kept outside. Periodically, the straws are rinsed with clean water to remove any external build-up.

Each straw only produces a few drops each minute, so millions of straws are needed to produce 10 MGD. Thousands of straws are housed together in a module. Several modules are stacked together to form a cassette. As configured at JW North, a cassette consists of 64 modules arranged in two rows of 32. Cassettes can be lifted up and out of the basin via a crane. Finally, the cassettes within each basin form a treatment train. Each of the five trains at the JW North consists of two cassettes.

Over time, the trains produce less water as the membranes lose their effectiveness. Usually, one of two things happen: (1) the pore openings become too big and allow micro contaminants to pass or (2) the buildup on the outside of the membranes becomes too great reducing water through put. These membranes normally last five to seven years, but due to the its high quality source water, JW North's membranes last between seven and ten years.

Staff tests the membranes regularly to ensure that they meet all State and Federal Standards. In May of 2017, tests for Trains 4 and 5 indicated that they are no longer operating within specifications. These trains are now offline and JW North is running at a slightly reduced capacity. Although no water shortage is anticipated, these trains should be replaced as soon as possible in order to maintain a high level of reliability.

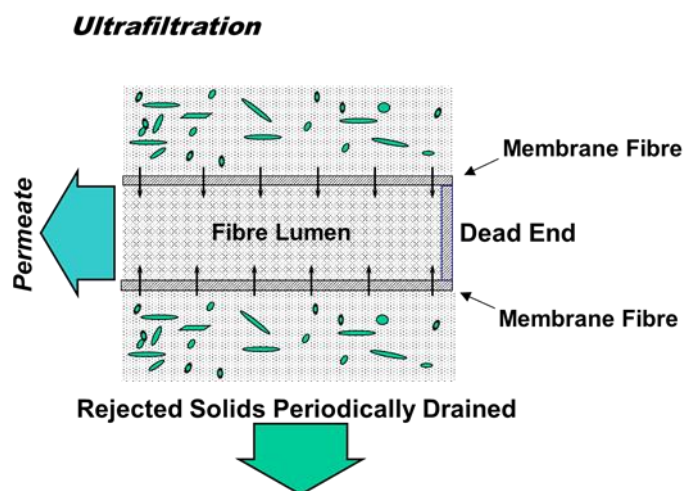


Figure 1 – Makeup of the membrane



Figure 2 – Photo of membrane fibres

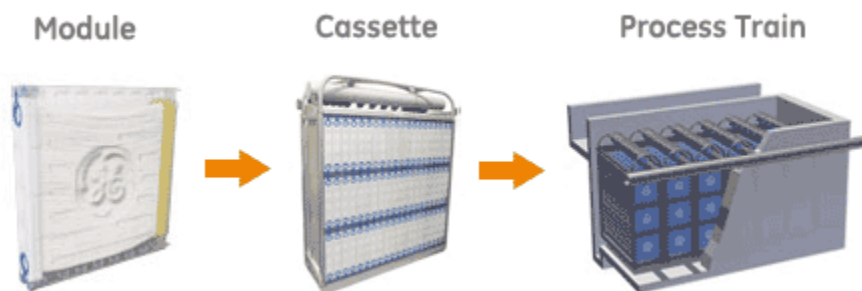


Figure 3 – Process train makeup

DISCUSSION:

The ZeeWeed membrane technology was developed by and is manufactured by Zenon Environmental Corp., a wholly owned business of GE Water & Process Technologies, and is proprietary to GE-ZENON and subject to patents. As a result, only GE can supply ZeeWeed membranes and components. Under Section 201(c) of City Council Resolution No. 22576, formal competitive procurement is not required if the procurement can only be obtained from a sole source or timely from a single source. Here, because of

the proprietary nature of the membrane and Zenon Environmental Corp.'s specialized knowledge of the City's JW North ZeeWeed 1000 treatment system, the Purchasing Services Manager has made such a finding and waived the formal bidding process.

The Purchasing Services Manager concurs that the recommended actions comply with the City of Riverside's Purchasing Resolution No. 22576.

The base price of a replacement membrane module for this project is \$1,081 per module. The Membrane Module Replacement Pricing (MMRP) took effect when JW North reached substantial completion on September 4, 2008 and is valid for 10 years (September 3, 2018). The price is subject to an inflation adjustment. Although the other three trains currently comply with all state and federal requirements, they are now approaching their limits. Because of this and in order to benefit from the MMRP, staff will present to the Board for its consideration a proposal to replace the remaining three trains (Trains No. 1 thru 3) in the first quarter of 2018.

The project breakdown is proposed as follows:

Project Breakdown	
Replacement Performed By:	Zenon Environmental Corp.
Anticipated Start Date:	September 2017
Anticipated Duration:	1 week
Coordination Required With:	RPU Water Operations staff
Reimbursements:	None

The total capital expenditure for Work Order No. 1727627 is estimated to be \$368,000, as summarized in the following table:

Description	Cost	Percent of Total
240 Membrane Modules	\$266,252.00	72.4%
Packaging, Freight, and Onsite Technical Services	\$59,187.00	16.1%
Water Operation Staff Support	\$10,018.00	2.7%
Contingencies	\$32,543.00	8.8%
Work Order Total	\$368,000.00	100.0%

FISCAL IMPACT:

Sufficient funds are available in Public Utilities' Facility Rehabilitation Account No. 6230000-470803.

Prepared by: Todd Jorgenson, Utilities Assistant General Manager/Water
Approved by: Girish Balachandran, Utilities General Manager
Approved by: John A. Russo, City Manager
Approved as to form: Gary G. Geuss, City Attorney

Certifies availability
of funds: Laura Chavez-Nomura, Utilities Assistant General Manager/Finance

Attachments:

1. Membrane Replacement Proposal Agreement with Zenon Environmental Corp.
2. Presentation

