



STAFF REPORT

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Mark Marlowe, P.E., Director of Castle Rock Water
Shawn Griffith, Assistant Director of Operations
John Chrestensen, Operations Manager

Title: **Resolution Waiving Formal Written Bidding Requirement on the Basis of Sole Source and Approving an Equipment and Services Agreement with Trojan Technologies Corp for the Plum Creek Water Purification Facility Aria Membrane Filter #2 Module Replacement Project** *[Serves entire Castle Rock Water Service Area with project occurring at Plum Creek Water Purification Facility, 1929 Liggett Road]*

Executive Summary

Castle Rock Water (CRW) seeks Town Council approval of a Resolution (**Attachment A**) approving an agreement (**Exhibit 1**) with Trojan Technologies Corp (Trojan), for the Plum Creek Water Purification Facility (PCWPF) Aria Filtra (Aria) Membrane Filter #2 Module Replacement Project, in the amount of \$369,986, plus a 10% contingency of \$36,999, for a total authorization amount of \$406,985, as well as a sole source justification, (**Attachment B**).

Trojan will provide the membranes and CRW staff will install the membranes. These modules will be ordered in December 2023, but due to supply chain issues, the modules will not be installed until after the 2024 demand season.

CRW has six water treatment plants within our overall service area. Aria membranes are included as part of the advanced treatment process at PCWPF and is the Town's only plant that treats surface water for our community. The other five plants treat groundwater only. PCWPF was opened in 2013 and the Aria membranes have a life span of 10 to 15 years. This agreement is the second of four phases to replace the membranes over the course of four years. CRW has budgeted \$450,000 annually through 2027 for this purpose.

Notification and Outreach Efforts

This project is security-sensitive and no public outreach is planned. Work will be performed at PCWPF and will be done out of the public eye.

History of Past Town Council, Boards & Commissions, or Other Discussions

The engineering contract for PCWPF, which included the Aria Membrane system, with Burns and McDonnell was approved by Council on January 20, 2011, and constructed by Moltz Construction. The plant began operations in 2013 with three Aria Membrane filtration system racks. The expansion of the original membrane system at PCWPF was approved by Council on September 20, 2016, which added another rack and increased capacity by 2 million gallons (MG).

Town Council approved the replacement of 78 modules in Aria Filter Rack #1 on January 17, 2023, at a cost of \$365,899. The replacement modules for Filter Rack #1 were delivered in August of 2023. These filters were installed at the end of the 2023 demand season.

Castle Rock Water staff presented this item to the Castle Rock Water Commission at their meeting held on October 25, 2023, and the Castle Rock Water Commission voted unanimously 6 to 0 to recommend Town Council approval of the Resolution as presented.

Discussion

The Trojan Aira membranes, formally known as Pall Corporation Aria membranes, at PCWPF, have been in continuous operation since 2013 and are nearing the end of their operational lifespans. PCWPF operates four module racks and all will need to be replaced over the next several years. Staff requested the replacement of all the modules in Aria Filter Rack #1 in 2023, and plans to replace all the modules in the other racks over the next few years, by replacing Rack #2 in 2024, Rack #3 in 2025, and Rack #4 in 2026. The membranes have an operating lifespan of 10-15 years and over time, lose filter performance due to age and irreversible fouling.

The Aria microfiltration system at PCWPF is designed to treat surface water to remove biological contaminants for drinking water treatment. The filters provide an absolute barrier to disease-causing organisms and particulate matter down to a pore size of one micron (0.0001 millimeter) in size. The system is highly effective at removing bacteria and parasites like giardia and cryptosporidium and receives removal credit to 99.9% (3 log) through the Colorado Department of Public Health and Environment. The membranes are also effective at removing coagulated organic carbon.

CRW operates and maintains four racks of Aria pressure membranes at PCWPF, with each rack having the capacity to treat 2 million gallons/day (mgd), for a total treatment capacity of 6 mgd, with a redundant capacity of 2 mgd. Individual racks can house up to 78 modules, each containing hundreds of hollow fiber membranes; constructed of polyvinylidene difluoride, a specialty plastic. The racks were originally installed with only 64 modules. In addition to replacing the original 64 modules, another 14 modules will be supplied to fill Rack #1. Adding the extra 14 modules will reduce the pressure across the membranes, improve efficiency, and extend the lifespan of the modules.

The scope of work includes:

- Delivery of 78 new filter modules and associated ancillary installation hardware

- A Trojan technician to provide onsite supervision of CRW plant maintenance personnel as modules are removed and replaced
- Technical support to perform startup and performance testing, certification, and documentation

The Aria microfiltration system is a custom system available only from Trojan. Other microfiltration membranes are not designed to fit within the modular racks manufactured by Trojan. As such, this replacement will need to be performed through a sole source contract.

Budget Impact

CRW has budgeted \$450,000 per year for these replacements through 2027. The first order placed in 2022 was \$ 365,899. The price this year is \$369,986. Staff is reaching out to Trojan Technologies to see if they can provide a confirmed pricing structure, with the possibility of a guaranteed price for the third and fourth rack module replacements. Funding for this purchase will come from the 2023 Water Resources Plant Operations Repair & Maintenance Equipment fund, after a budget transfer from various Water Resources accounts, as shown below:

Fund Name	Account Number	Cost	Budget Transfer Amount	Current Account Balance	Account Balance after Transfer
CIP Operations & Maintenance	211-4375-443.40-90		-\$72,307	\$72,307	\$0
CIP Machinery & Equipment	211-4375-443.70-30		-\$89,282	\$89,282	\$0
Engineering Professional Services	211-4340-443.30-70		-\$138,411	\$3,130,874	\$2,992,463
Plant Operations Repair & Maintenance	211-4360-443.40-32	\$406,985		\$154,320	\$454,320
Total Cost		\$406,985	\$300,000		

Staff Recommendation

Staff recommends approval of a services agreement with Trojan, for the PCWPF Aria Membrane Filter #2 Module Replacement Project, for the amount of \$369,986, plus a 10% contingency of \$36,999, for a total authorization amount of \$406,985.

Proposed Motion

“I move to approve the Resolution as introduced by title.”

Alternative Motions

"I move to approve the resolution as introduced by title, with the following conditions: (list conditions)."

"I move to continue this item to the Town Council meeting on _____ date to allow additional time to (list information needed)."

Attachments

Attachment A:	Resolution
Exhibit 1:	Contract
Attachment B:	Sole Source Justification Form