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Department of Utilities
Wastewater Treatment Plant
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To: Chairperson Vered Meltzer and Members of the Utilities Committee

From: Utilities Interim Director, Chris Stempa

Date: January 19, 2024

Re: Approve: Sole Source purchase of Final Clarifier Tank Underdrain and Tank Drain Pumps, Pump Rail Guide Systems, and Miscellaneous Pump Fittings from Quality Flow Systems in the amount of \$89,960 with a 5% contingency of \$4,500 for a total not to exceed \$94,460.

BACKGROUND:

There are six (6) final clarifiers at the Appleton Wastewater Treatment Plant (AWWTP) that are used to separate mixed liquor sludge solids from the treated effluent. Each final clarifier is 100 feet in diameter and 18 feet deep with a volume equal to 1,060,000 gallons. The final clarifiers provide a quiescent zone that allows for the separation of suspended solids (and floating scum) before treated wastewater enters the chlorine contact tank for seasonal disinfection basin where it eventually is discharged to the Lower Fox River.

The final clarifiers were constructed as part of the early 1990's plant upgrade. An underdrain network was constructed beneath the final clarifiers to collect groundwater and alleviate the buoyant force pressure exerted on these concrete structures. The groundwater is conveyed through perforated drainpipes by gravity to a centralized collection sump. The 33-foot-deep sump is dewatered using two 15 hp centrifugal pumps that cycle based on liquid levels within the wetwell (also known as a sump). In late 2022, one of the two original pumps failed. A new pump was purchased and installed in early 2023, which subsequently failed in November 2023 and was sent for warranty repair. The remaining original pump failed, and staff were unable to retrieve it for inspection after the pump cable retrieval system failed. A temporary submersible pump system was installed in the wetwell with an above grade discharge house to maintain liquid levels until rehabilitation work performed by an independent contractor (covered by a separate memorandum) and pump replacements could occur. It should be noted that there is urgency to complete this work in a timely manner. The inability to adequately relieve groundwater pressure exerted on an empty clarifier (e.g. emptied for reasons of emergency maintenance or process control) could generate enough buoyant force to lift or "float" a clarifier, resulting in catastrophic structural failure.

The final clarifier tank drainage wetwell is immediately adjacent and similar in design to the underdrain system. It is designed to pump out multiple or individual final clarifiers when cleaning or maintenance is required. Similar to the underdrain system, the pumps are original to the 1990's upgrade and there is evidence of significant exterior corrosion of steel components (e.g., cable guide/retrieval system and discharge pipe).

REQUEST FOR QUOTATIONS

The existing pumps in both the undertrain and tank drainage systems were manufactured by KSB. Quality Flow Systems is the sole manufacturer representative for our region. Crane Engineering is a vendor KSB pumps, parts, and service to a broader market but was asked to provide a quote to insure the City was receiving the least cost. Quality Flow Systems and Crane Engineering quoted four (4) replacement pumps, miscellaneous pump accessories, and a pump retrieval guide rail system (in lieu of cables). The RFQ review process was completed on January 17, 2024 following a desktop engineering analysis which confirmed that quoted replacement pumps matched system hydraulic needs. The quotations are summarized below in Table 1 below. Quality Flow Systems provided the least cost quote at \$89,960.

Table 1: RFQ Summary

Company	Total
Crane Engineering	\$104,056
Quality Flow Systems	\$89,960

RECOMMENDATION:

I am requesting approval of a sole source purchase for four replacement KSB pumps, pump rail guide systems, and miscellaneous pump fittings from Quality Flow Systems in the amount of \$89,960 with a 5% contingency of \$4,500 for a total not to exceed \$94,460. Funding for this contract would be provided under an existing Capital Improvement Program project that was established for this work in 2023.

If you have any questions or require additional information regarding this project please contact Chris Stempa at 920-832-5945.