DATE: December 12, 2017

TO: Mayor and City Council

FROM: Director of Utilities & Environmental Services

SUBJECT: Recycled Water Facility Treatment and Disinfection – Phase I: Authorization to Execute a Professional Services Agreement for Design of a Recycled Water Package Membrane Treatment System

RECOMMENDATION

That Council adopts the attached resolution authorizing the City Manager to execute a professional services agreement with HydroScience Engineers, Inc. (HydroScience) for engineering services related to the design of a recycled water package membrane treatment system, in an amount not to exceed $296,000.

SUMMARY

The City's current Capital Improvement Program includes the Recycled Water Storage and Distribution System Project (Recycled Water Project), which would provide a locally sustainable and drought-proof supply of recycled water to customers for irrigation and industrial uses. Staff from the City and Russell City Energy Company, LLC (RCEC) have been in discussions regarding a recycled water supply agreement for the City to receive surplus tertiary treated recycled water from RCEC as the source of supply for the City's project. Due to uncertainty in the timing of when a supply agreement with RCEC could be finalized and implemented, the City plans to proceed in parallel with development of a City-owned recycled water treatment option to ensure sufficient recycled water supplies are available to meet the demand for the first phase of the City's project. Because of the technical expertise and specialized nature of the work required, staff recommends executing an agreement with HydroScience for engineering services related to the design of a City-owned recycled water treatment facility, in an amount not to exceed $296,000.

Even if a supply agreement is executed with RCEC during the design phase for the City-owned recycled water treatment option, the City would still proceed with completing design of the City-owned treatment facility to provide the City with a second supply option in the event the agreement with RCEC cannot be fully implemented. After design of the City-owned treatment facility is complete, staff will evaluate the progress of RCEC's efforts to obtain the necessary approvals to supply recycled water for the City's project, and determine whether to request Council authorization to proceed with construction of the City-owned recycled water treatment facility to supply the initial phase of the project.

BACKROUND

The City's Recycled Water Project consists of constructing a one-million-gallon storage tank and pump station at the City's Water Pollution Control Facility (WPCF) and installing up to ten miles of distribution pipelines and customer connections to deliver an estimated 290 acre-feet per year, or about 260,000 gallons per day (gpd), of disinfected tertiary treated recycled water in this phase. Customers would include parks, schools, businesses and industrial parks within a three-mile radius of the WPCF. Once the initial distribution and storage system is constructed, there may be opportunities to expand the system and include more customers in future phases.

During the planning phase, staff evaluated two recycled water supply options for the project:

(A) Obtain recycled water from RCEC
(B) Construction of a new City-owned recycled water treatment facility

Both recycled water supply options were analyzed in the environmental documentation prepared for the project. The planning studies recommended that the City pursue a recycled water supply from RCEC for the initial phase of the Recycled Water Project. The Russell City Energy Center includes a Recycled Water Facility that takes secondary treated wastewater from the City and further treats it to produce disinfected treated tertiary recycled water that meets Title 22 of the California Code of Regulations (Title 22) requirements for unrestricted use for nonpotable purposes. Title 22 requirements are stringent water quality standards set by the State to ensure the safe production, distribution, and use of recycled water in California. Under the short-term arrangement being discussed by City and RCEC staff, the City would receive surplus recycled water produced at RCEC's Recycled Water Facility and distribute it for use by City customers.

Implementation of the Recycled Water Project is approaching a critical milestone. The City has successfully received regulatory approvals to distribute and use disinfected tertiary treated recycled water within the City and final design of the recycled water storage and distribution system is scheduled to be completed in December 2017. However, efforts to enter into a near-term supply agreement with RCEC have taken longer than anticipated and it is uncertain whether a final agreement can be executed and implemented in a timely manner. Although some progress has been made recently, even if a supply agreement can be executed with RCEC in the next few months, implementation of the agreement is still conditioned upon RCEC's ability to obtain all necessary permit approvals to supply recycled water to the City, including approval from the California Energy Commission, which could be a lengthy process.

On May 3, 2017, staff provided an update to the Council Sustainability Committee (CSC) on the Recycled Water Project, which included a discussion of the two recycled water supply options. The CSC expressed concerns that the Recycled Water Project could be substantially delayed if a supply agreement could not be worked out with RCEC and directed staff to begin planning efforts for the City-owned supply option. Staff evaluated the available recycled water treatment technologies and determined that the City's needs would be best served by a package membrane treatment system. This system, which is described in the Discussion section, would be sufficient

to supply the initial phase of the Recycled Water Project and could potentially be expanded, as the City's explores potential long-term recycled water supply options.

On November 13, 2017, staff provided the CSC with an update on the status of both recycled water supply options and reviewed the advantages of proceeding with final design of a City-owned recycled water treatment facility to provide the City with a supply option that is within its control and discretion to implement. Even if an agreement can be reached with RCEC, staff recommended proceeding with final design of the package membrane treatment system as a back-up supply option in the event RCEC cannot obtain permit approvals in a timely manner. Completing final design of a City-owned treatment facility also provides the City with flexibility to quickly implement a recycled water supply option if the City and RCEC elect not to continue the arrangement after the currently proposed two-year supply agreement concludes.

The CSC agreed with staff's recommendation to proceed with final design of a package membrane treatment system, while continuing efforts to reach agreement with RCEC, to avoid potential delays in implementing the project.

DISCUSSION

The proposed City-owned recycled water treatment facility would be a package membrane treatment system, capable of producing up to 500,000 gpd of disinfected tertiary treated recycled water meeting Title 22 requirements for the initial phase of the City's Recycled Water Project. The system would be sited at the WPCF, adjacent to the future recycled water storage tank and pump station, and consist of a feed pump station, a containerized microfiltration (MF) or ultrafiltration (UF) filtration system, and chlorine disinfection. Package membrane treatment systems are reliable, expandable, and can be installed in a relatively short time-frame of about nine months. Given their versatility and reliability, package membrane treatment systems are at times employed in situations where the permanent treatment system may be malfunctioning and needs to be taken out of service for repairs and upgrades.

A typical approach for a package membrane treatment system is to pre-select the membrane manufacturer so final design documents can be prepared for installing the selected membrane filtration system. This approach reduces time and the risk of change orders during construction. Staff has worked with a consultant to prepare draft procurement documents to pre-select the membrane manufacturer and is now proposing to move forward with final design of the package membrane system.

Package membrane treatment systems require specialized expertise and knowledge of recycled water treatment and regulations. Because of schedule constraints and the expertise required to perform this work, it is in the City's best interest to contract with a qualified and experienced firm to provide final engineering services to complete preparation of the procurement documents to pre-select the membrane supplier and install the package membrane treatment system. The following paragraphs describe in detail the work to be completed, the consultant selection process, and cost for the proposed services.

Scope of Work

The scope of work addresses the tasks necessary to pre-select the membrane manufacturer, complete final design documents for construction of the supporting facilities, and providing engineering services during construction. Specifically, the services provided would include:

- Completing the membrane procurement documents, including final specifications and project schedule, for pre-selection of the membrane manufacturer
- Preparing design submittals for the process, mechanical, structural and electrical facilities needed to support the membrane equipment, up to and including construction bid documents
- Providing bid phase services, design services during construction of the facilities, as well as start-up and commissioning assistance after construction, if City Council approves construction of the recycled water treatment facility.

Consultant Selection

The City issued a request for proposals (RFP) to four qualified firms on October 24, 2017. Two of the firms declined to propose based on the schedule and existing workload commitments on the part of their qualified staff. A third firm is currently designing the storage and distribution facilities for the project, and notified the City days before the proposals were due that they would not be proposing, citing available resources and the need to ensure that the City is adequately supported during construction of the storage and distribution system.

The City received one proposal from HydroScience. Staff evaluated HydroScience's proposal using defined criteria, such as experience with similar successful projects, knowledge and technical expertise, and appropriateness of the cost and level of effort given the project scope. HydroScience has specialized in planning, design, permitting and construction management for water, wastewater, and recycled water projects for twenty years, and has demonstrated experience with similar projects, including specialized expertise in membrane systems. The City has utilized HydroScience for other recycled water project tasks, specifically permitting assistance and customer retrofits, and has found the firm to be knowledgeable, technically capable, and responsive.

The proposed cost for services is not to exceed $296,000. Of this amount, $210,000 would be for preparation of the membrane procurement documents and design services for the recycled water membrane treatment system. An additional $86,000 would be for bid phase, construction and commissioning services and would only be authorized by staff if the City Council elects to move forward with installation of the City-owned treatment supply option.

Because the City received only a single proposal, staff evaluated the HydroScience proposal using several different approaches, described below, to determine if the proposed cost was reasonable:

- Percentage of estimated construction cost. The preliminary cost estimate to construct the package membrane treatment system is $2 million. Engineering costs to design treatment projects are typically in the range of 10 to 15% of the total project construction

cost, depending on the size and complexity of the treatment system. Smaller capacity projects are typically on the higher side of the percentage range due to the economies of scale with larger capacity projects. HydroScience's proposed design fee of $210,000 is approximately 10% of the preliminary estimate for installation of the package membrane treatment system, which is on the lower end of the typical range for design costs.

- Comparison to similar projects. Based on information obtained from other consultants, design fees can range from $250,000 to $500,000 for similarly sized treatment systems. HydroScience's proposed design fee, based on both total cost and anticipated number of drawings, is comparable to fees charged by other consultants for similar design projects.
- Hourly rates. Hourly rates for HydroScience staff that would be assigned to the City's project are comparable to rates charged by other engineering consulting firms that have specialized expertise with recycled water projects.

HydroScience's proposed cost for services reflects some savings to the City due to the firm's ability to leverage their knowledge and existing work on other portions of the Recycled Water Project. For example, HydroScience is already supporting the City's efforts to work with regulatory agencies to permit the project. Therefore, their fee does not include any additional costs to continue supporting the City in making any needed modifications to the City's permits that would be required for the City to produce and supply recycled water for the project. Based on an objective evaluation of the proposal, staff believes that the proposed level of effort, the hourly rates, and the total not to exceed cost for services are reasonable and recommends that the City execute an agreement with HydroScience.

Schedule

Final design is estimated to take nine months and construction of the package membrane treatment system could be ready to be advertised by fall of 2018. This schedule matches the schedule for construction of the storage and distribution system and would avoid the potential for significant delays to the project schedule, which could potentially affect outside funding that has been secured for the project. HydroScience has committed to meeting the City's schedule.

In parallel, staff will continue efforts to finalize and implement a recycled water supply agreement with RCEC. Even if a supply agreement is executed with RCEC during the design phase for the City-owned treatment option, staff recommends completing final design of the package membrane treatment system to provide the City with a supply option in the event RCEC is unable to secure permit approvals in a timely manner. RCEC staff has cautioned staff that securing approval from the California Energy Commission could be a lengthy process that is not anticipated to be completed before fall of 2018, when final design of the package membrane treatment system is targeted to be complete.

If the City and RCEC can execute a recycled water supply agreement, staff will evaluate the progress of implementing the RCEC supply option after design of the City-owned treatment facility is complete and provide a recommendation to the CSC and Council on how best to proceed. Depending on the progress of RCEC's ability to obtain necessary permit approvals, staff may request CSC and Council authorization to proceed with construction of the package membrane treatment system to supply the initial phase of the project.

ECONOMIC IMPACT

The economic impact of the Recycled Water Project on customers will, to some extent, depend on the total costs to implement the City's Recycled Water Project, which includes the capital and operating costs for the storage and distribution system, and the cost to either obtain recycled water from RCEC or construct, operate, and maintain a City-owned recycled water treatment facility. Over a twenty-year period, the costs to obtain recycled water from RCEC and the City-owned recycled water treatment facility are estimated to be roughly the same. To the extent that the project is partially funded by grants, the overall cost impact to customers will be reduced. Once the costs are finalized and funding sources are in place, staff will recommend a rate structure that would provide a balance between recovering costs over the life of the project and offering an incentive to customers who are able to receive recycled water. The community will benefit from this project through greater diversity and reliability of water supplies, especially during periods of drought.

FISCAL IMPACT

The current Ten-Year Capital Improvement Program (CIP) includes $1.3 million for the City to construct the City-owned recycled water treatment facility (Supply Option B). The maximum cost for the engineering services provided under the proposed professional services agreement is $296,000.

Although it is difficult to estimate the cost to implement Supply Option B with certainty until the design is further developed, staff's best estimate now is that the cost will total approximately $2 million. Staff expects that the costs will be refined prior to adoption of the FY2019 CIP. If additional monies are needed, staff will ask the Council to consider the increased funding in the Sewer Improvement Fund when the FY 2019 CIP is adopted. Implementation of both the Recycled Water Project and Supply Option B will not utilize any General Fund monies.

STRATEGIC INITIATIVES

Implementation of the Recycled Water Project supports the Tennyson Corridor Strategic Initiative. The purpose of this initiative is to develop an attractive, cohesive, thriving Tennyson Corridor through thoughtful engagement with residents, businesses and community partnerships. There are two sites located in the Tennyson Corridor that are proposed to be connected to the recycled water system, and would therefore support the following goal and objectives:

Goal 3: Improve Community Appearance

Objective 1: Enhance landscaping

Objective 3: Decrease blight

The use of recycled water will help create attractive outdoor spaces in the Tennyson Corridor. Since recycled water is a sustainable and drought-proof source of supply, customers will be able

to maintain their landscaping during water supply shortages when drinking water supplies are limited.

SUSTAINABILITY FEATURES

The use of recycled water will reduce the demand for drinking water and improve the reliability and availability of drinking water, while providing a sustainable and drought-proof water supply for some irrigation uses. It will also reduce the volume of wastewater and associated residual pollutants discharged to San Francisco Bay, which is required to meet increasingly stringent discharge regulations.

PUBLIC CONTACT

The City completed an environmental review of the Recycled Water Project in October 2014 and a draft Initial Study/Mitigated Negative Declaration (IS/MND) was circulated for a thirty-day public review from October 24, 2014 through November 24, 2014. Considering the potential uncertainties with the RCEC option, the IS/MND included environmental review of both obtaining a recycled water supply from RCEC and construction of a City-owned recycled water treatment facility. The IS/MND was adopted on December 16, 2014, incorporating all the comments that were received.

The Council Sustainability Committee was updated on the status of the water supply agreement with RCEC and the City-owned treatment option on May 8, 2017 and November 13, 2017. At both meetings, the Committee expressed support for proceeding with the City-owned recycled water treatment facility option to ensure a supply for the City's Recycled Water Project.

NEXT STEPS

If Council approves the staff recommendation, staff will move forward with execution of the professional services agreement for design of the recycled water package membrane treatment system. Staff will continue to keep the CSC and Council apprised of efforts to finalize the supply agreement with RCEC. If the agreement with RCEC cannot be executed and implemented in a timely manner, staff will return to Council to request authorization to proceed with construction of the recycled water package membrane treatment system.

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