

STAFF REPORT

Date: October 10, 2018

To: Mayor and City Council

Thru: Sabra Newby, City Manager

Subject: **Staff Report (For Possible Action): Approval of agreement with the University of Nevada, Reno (UNR) for assistance in process operation, testing and performance evaluation of the Truckee Meadows Water Reclamation Facility (TMWRF) enhanced DON removal pilot equipment in the amount of \$310,380.48, with the City of Reno's portion being \$213,014.12 (Sewer Fund).**

From: David Kershaw, Associated Civil Engineer

Summary: The attached agreement with the University of Nevada, Reno, is to provide development of an experimental and operations plan, assist with setup, operations, experimentation, testing and performance evaluation of a pilot scale enhanced nitrogen removal system at the Truckee Meadows Water Reclamation Facility (TMWRF) for 12 months. This pilot study will evaluate the efficiency of the coagulation / flocculation / sedimentation / filtration pilot system for the removal of dissolved organic nitrogen (DON) from TMWRF effluent. The results of this pilot study will help evaluate the full scale application of this technology to reduce DON concentrations in the effluent discharged from TMWRF. Reduction in DON concentration will help the facility maintain compliance with the NDEP discharge permit nitrogen discharge limits. Staff recommends Council approve the agreement with the University of Nevada, Reno (UNR) for assistance in process operation, testing and performance evaluation of the Truckee Meadows Water Reclamation Facility (TMWRF) enhanced DON removal pilot equipment in the amount of \$310,380.48, with the City of Reno's portion being \$213,014.12 (Sewer Fund).

Background: The Truckee Meadows Water Reclamation Facility (TMWRF) is jointly owned by the Cities of Reno and Sparks. The City of Reno oversees the Capital Improvement Program (CIP) for TMWRF, while the City of Sparks manages the operations.

TMWRF currently has a discharge permit that limits the daily mass of nitrogen that is released to the Truckee River. The current treatment technologies at TMWRF operate efficiently but do have limitations. One of the limitations is associated with the removal of dissolved organic nitrogen (DON) from the effluent. This is the majority of the total nitrogen currently being discharged via effluent leaving the plant. Therefore, in anticipation of increased sewer flows due to future regional growth, staff continues to investigate options for efficient removal of nitrogen from the effluent being discharged to the Truckee River.

A previous evaluation was completed by Carollo Engineers that considered the cost of several different methods for removal of DON from the effluent. Their analysis was based on available

literature. The options evaluated included activated carbon adsorption, ozone treatment and coagulation/filtration removal. To date the City of Reno has contracted with UNR to perform laboratory testing of the three treatment technologies using TMWRF effluent. Based on the results of the UNR laboratory testing, the most cost efficient and reliable enhanced nitrogen removal process is the coagulation / filtration process. Therefore, the next step in evaluating the preferred enhanced nitrogen removal technology is pilot scale testing at TMWRF for up to 12 months. The pilot testing will provide key data for the future design of a full scale treatment system. This effort will include development of cost estimates for full-scale implementation and operation of the treatment process.

Discussion: This agreement includes assistance from UNR staff to develop an experimental and operations plan for the enhanced nitrogen removal pilot system. It also includes assistance in setup, 12-month operation, experimentation, testing and performance evaluation of the pilot scale coagulation / filtration treatment facility. The pilot scale treatment equipment is comprised of pumps, pipes, valves, instrumentation, cleaning systems, contact tank, tube settlers, granular filters, and appurtenances contained in the WesTech Trident HS2/R199 pilot trailer. The equipment is contained in a mobile trailer that helps make it easier for relocation and provides protection from the weather. This equipment/trailer is currently being used by Washoe County at the South Truckee Meadows Water Reclamation Facility (STMWRF) for a pilot study associated with advanced effluent treatment. UNR staff is also involved with the pilot study at STMWRF and operation of the WesTech Engineering, Inc. equipment. It should be noted that both Washoe County Staff and UNR staff, that have been operating the equipment, will be available to assist in the efficient startup and operation of the relocated pilot test equipment.

A recommendation for award of a contract with Westech Engineering, Inc. for the rental of the Trident HS2/R199 pilot trailer is scheduled to be considered by Council on October 10, 2018, as a separate, but related item.

Financial Implications: The City of Reno will administer the agreement and will be reimbursed for a portion of the costs by the City of Sparks through the current cost sharing agreement for TMWRF operation and maintenance. The City of Reno and the City of Sparks share the cost of this project as follows: 68.63% for Reno and 31.37% for Sparks, as shown in Table 1. Costs for the City of Reno are budgeted in the Sewer Fund. This project is included in the TMWRF Capital Improvement Plan that was approved by the Joint Coordinating Committee (JCC).

Table 1 – Cost Sharing Between Reno and Sparks

| Total Cost of Contract | Reno Share | Sparks Share |
|-------------------------------|-------------------|---------------------|
| \$310,380.48 | \$213,014.12 | \$97,366.36 |
| Percentages | 68.63% | 31.37% |

Legal Implications: Legal review completed for compliance with City procedures and Nevada Law.

Recommendation: Staff recommends Council approve the agreement with the University of Nevada, Reno (UNR) for assistance in process operation, testing and performance evaluation of the Truckee Meadows Water Reclamation Facility (TMWRF) enhanced DON removal pilot

equipment in the amount of \$310,380.48, with the City of Reno's portion being \$213,014.12 (Sewer Fund), and authorize the Mayor to execute the attached Agreement.

Proposed Motion: I move to approve the staff recommendation.