MEMORANDUM

To: Mayor and City Council

From: Kent Collins, P.E., Director of Public Works
Mike Garza, P.E., Assistant Director of Public Works

Date: April 14, 2020

Reference: Interlocal Cooperation Contract with the University of Texas at Arlington for Sanitary Sewer Inspection (I&I phase 3A)

2030: Sustainable City Government, Goal 3
Excellent and Well-maintained City Infrastructure and Facilities

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General Information:

- City of Coppell contracts with TRA for wastewater treatment
- In November 2014 city staff observed an increase in flow volume to TRA
- April 2015 City Council approved a contract for I&I study with RJN Group, Inc.(Phase I)
- From the study the collection system is in good shape, however 2 of 22 basins need immediate action
- December 2015 City Council approved a contract for detailed inspection of 2 basins. (Phase II)
- June 2017 City Council awarded a contract to repair about 1 mile of damaged pipe that was a large contributor to the high flows.
- Higher flows still occur during large rain events.
- This agreement is for a detailed inspection of approximately 150,000 feet of sanitary sewer mains, condition assessment, predictive analysis and report.
- The total cost of this interlocal cooperation contract is $895,150.00

Introduction:

This agenda item is being presented to enter into an Interlocal Cooperation Contract with the University of Texas at Arlington in an amount of $895,150.00, for sanitary sewer detailed inspection.

Analysis:

The City of Coppell operates and maintains approximately 965,000 feet of wastewater collection lines. These lines collect wastewater from all homes and businesses and deliver it to the collection

system of the Trinity River Authority (TRA). The TRA then transports Coppell's wastewater to their Grand Prairie plant for treatment. TRA charges the City of Coppell for this service based on the volume of flow that enters their system. This flow is metered at a meter station located in Carrollton, just beyond the city limits. All of Coppell wastewater flow passes through this one meter.

In November 2014 the city saw an increase in flow rate into the TRA collection system and a corresponding increase in cost to treat the wastewater. The increased volume of flow had continued for all of 2015. The average daily flow from the month of September 2014 was 3.34 million gallons per day (MGD), and in June of 2015 it was 7.05 MGD. The wastewater treatment costs for FY 14/15 were $1,100,000.00 more than anticipated, due to this issue.

As a result of these increased flows and costs, the city began investigating the cause of the increases. Based on discussions and inspections, TRA has demonstrated that it maintains and cleans their meter station on a consistent basis, so staff began looking in other areas. In comparing sewer flow rates against rainfall events, there was a significant spike in flow rates during wet weather. This increase is likely due to rainwater entering the collection system at one or more points.

During a rainfall event, the two modes for water to enter the sanitary sewer system are through inflow and infiltration (I&I). Inflow is where storm water enters the system directly through open pipes, missing manhole lids or cleanout covers, or separations in lines within the creeks and drainage ways in town. Infiltration is a process where groundwater enters collection pipes through smaller openings and is typically seen delayed from the actual rain event.

In early 2015, as a result of these increased flows and costs, the city contracted with RJN Group, Inc. to perform an I&I assessment and flow monitoring study. For the initial assessment and flow monitoring, RJN divided the collection system into 22 individual basins, and installed flow meters in each basin. They also installed rain gauges throughout the city. These gauges and meters were in place during the significant rain events of May and June 2015. The flow monitoring study identified two basins that were the highest contributors to the increased flow.

In December 2015, the city contracted with RJN, Inc, to do an investigation of the 2 basins that were identified to be contributing to high flows. During their investigation they did not find any "smoking guns", but they did find some small areas that needed attention and those have been addressed.

In June of 2017, the city discovered a large failure in the system that was directly contributing to the high flows. After replacing or lining this segment of sewer line flows have decreased significantly during heavy rainfall events. But the system still experiences increased flow during larger rain events, and over time that will continue to grow unless the proactive I&I reduction program is continued.

This item presents a contract to continue efforts to identify and eliminate sections of the collection system that allow water to enter during wet weather. The University of Texas at Arlington (UTA) utilizes RedZone Robotics who uses specialized robotic equipment to TV and inspect the sanitary sewer system. These robots can identify defects in the pipe that may not be visible with conventional inspection equipment. With the data collected, UTA then can run it through their predictive algorithms and provide an analysis of the remaining useful life for certain segments of pipe. This information will help staff identify specific segments that need repair and or replacement rather than replacing the entire length of pipe if unnecessary. UTA along with RedZone Robotics conducted a pilot project for the sewer system along South Belt Line and staff was pleased with the process and product. TRA also utilizes RedZone Robotics to inspect their systems.

This contract is for the inspection of approximately 150,000 feet of the wastewater system. RedZone will inspect the majority of the older systems (clay pipe) and those that were identified in the asset management plan as being high risk, such as the mains that are adjacent to creeks and waterways. These lines traditionally have the higher potential for inflow due to location and presence of flowing water. The deliverable for this phase is a list of defects and associated projects, programs, or repairs that are necessary to reduce the volume of storm water entering the collection system. This report will then be used as the basis of the continuation of Phase 3, which will be to design and construct the necessary repairs to the system to minimize I&I.

Legal Review:

The Interlocal Cooperation Contract has been reviewed by the City Attorney.

Fiscal Impact:

The fiscal impact of this Agenda item is $895,150.00, as available from the 2018 Certificate of Obligation issuance.

Recommendation:

The Public Works Department recommends approval of this Interlocal Cooperation Contract with The University of Texas at Arlington.