Saint Paul Regional Water Services January 8, 2019

STAFF REPORT

SUBJECT

BOARD RESOLUTION NO. 19-82

Pertaining to an agreement with AECOM to provide professional services for further refining and investigating the risk of failure of the prestressed concrete cylinder pipe (PCCP) that serves the potable water distribution network of SPRWS.

BACKGROUND INFORMATION

Staff is seeking approval of an agreement with AECOM, in the amount of $199,860, to continue the risk-based assessment of the PCCP distribution piping SPRWS had AECOM begin developing last year. The primary objective is to create and implement a pilot program for that assessment.

Following Board approval, City Contracts and Analysis will prepare and execute an Agreement, which will include the City's standard terms and conditions, liability and insurance language, and the following:

Scope of Work:

1. Implement a pilot program for our higher risk inventory identified by AECOM.
   i. Perform a detailed load assessment on those pipes.
   ii. Collect soil samples for corrosion analysis.
2. Update the risk-based categories with the PCCP inventory based on the pilot program findings.
   i. Provide recommendations on the techniques and methods needed to carry out future assessments.
   ii. Create a ballpark annual budget dedicated to advanced non-destructive condition assessment of the highest risk PCCP inventory.
   iii. Create an estimate for the timing of future analysis of inventory from each risk category.

The work is further detailed in the attached November 7, 2018 Proposal.

Cost: Not to exceed $199,860

Term: January 1, 2019 - December 31, 2019

See attached AECOM Proposal.

RECOMMENDATION

Board approval is recommended.

REPORT
PCCP Condition Assessment

December 20, 2018

Staff recently completed work with AECOM to develop a risk-based prioritization analysis on the 48.4 miles of PCCP currently in use in our distribution network. That network has a range of pipe diameters from 16 inches to 90 inches and ages circa 1952 to 2001.

Fortunately, we have had very few issues with the pipe over the last 60+ years. However, with the history of numerous and significant failures on PCCP experienced by other cities around the country, we determined it would be prudent to further invest resources into analyzing our pipe in the hopes of better understanding its integrity and risk of future failures.

At the end of 2017, AECOM completed a risk-based analysis of the PCCP in our distribution system using a combination of factors such as industry statistics of pipe era and manufacturer, pressure, USDA soil survey information, number of service taps, and areas of exposure to heavy road salt application during winter. In summary, approximately 20 percent of the inventory was categorized into "high/moderate" and "high" probability of failure ranges, prompting this next phase of work.

There are several technologies available for assessing the condition of PCCP such as leak detection equipment, pipe x-raying, and pipe wall magnetic field scanners. Like most products and services, those that provide very accurate and precise data tend to be significantly more expensive. Given the lack of issues we have seen with our PCCP, we opted to go with a less costly and invasive method. The goal is to either determine our pipe is in good condition or narrow the focus to pipe segments that might be best suited for potential use of the more invasive and costly technologies. The current work requested of AECOM will include:

1. Implementation of a pilot program assessing the top 20% of pipe currently labeled at the higher risk of failure. The following are to be part of the pilot program:
    a. Performing a detailed load assessment of the highest risk pipes using information on file with SPRWS.
    b. Implementing a field investigation program that exposes pipes for visual inspection. SPRWS distribution crews have been offered to perform the excavation work for the consultant.
    c. Electromagnetically scanning the pipe ground cover and obtaining soil samples to test for corrosive properties.
    d. Updating the risk category inventory based on discoveries from the pilot program.

2. Development of a ballpark annual budget dedicated to further condition assessment of the highest risk pipe, based on result from the pilot program.

3. Creating a timeline for further assessments for pipe in all categories of risk failure.

Based on AECOM's work on phase one of our PCCP risk-based condition assessment, we believe they are fully knowledgeable on the techniques and methods needed to develop the pilot program described in their report. Our goal is to complete the hiring process by February 2019, perform field investigations of select PCCP segments during the spring and summer of 2019, and have a finalized report of the results by the end of the year.