

## **FIRST AMENDMENT TO AGREEMENT**

THIS FIRST AMENDMENT TO AGREEMENT ("Amendment") made and entered into as of this \_\_\_\_\_ day of \_\_\_\_\_, 2017, amends the Agreement entered into between the CITY OF FRESNO, a municipal corporation ("City") and Water Quality And Treatment Solutions, Inc., a California corporation ("Consultant").

### **RECITALS**

WHEREAS, City and Consultant entered into an agreement dated September 22, 2016, for professional research and study services ("Agreement"); and

WHEREAS, City and Consultant now desire to modify the Agreement by expanding the scope of services as set forth within, modify the term date, and provide additional compensation to Consultant.

### **AMENDMENT**

NOW, THEREFORE, in consideration of the above recitals, which recitals are contractual in nature, the mutual promises herein, and for good and valuable consideration hereby acknowledged, the Parties hereby agree as follows:

1. Consultant's compensation for the performance of services required in the original Agreement approved by Council was \$200,000.
2. Consultant shall provide additional services as described in the Scope of Services, attached hereto as Exhibit A.
3. Consultant's compensation for the performance of services required in the attached Exhibit A is an additional \$330,000.
4. The Termination date for the Agreement shall be changed to July 1, 2018.
5. This Amendment shall become part of and subject to the terms and conditions of the Agreement, which except as modified herein, remains unchanged and in full force and effect.
6. Should any term or condition expressly set forth in this Amendment conflict with the terms and conditions of the Agreement, the terms and conditions expressly set forth in this Amendment will prevail.
7. By signing below, the undersigned certify that they have read and understand, and agree to be legally bound by, this Amendment.

//

//

IN WITNESS WHEREOF, the Parties have executed this First Amendment to Agreement at Fresno, California, on the day and year first above written.

CITY OF FRESNO,  
a California municipal corporation

WATER QUALITY AND TREATMENT  
SOLUTIONS, Inc.,  
A California Corporation

By: \_\_\_\_\_  
THOMAS C. ESQUEDA  
Director of Public Utilities


By:   
Issam Najm  
President

ATTEST:  
YVONNE SPENCE, CMC  
City Clerk

By:   
Helen Najm  
Secretary

By: \_\_\_\_\_  
APPROVED AS TO FORM:  
DOUGLAS T. SLOAN  
City Attorney

Applicable Professional License:  
Number: C57496  
Date of Issuance: 1997

By:   
AMANDA B. FREEMAN  
Deputy City Attorney  
Date: 3/24/17

Addresses:  
CITY:  
City of Fresno  
Attention: Thomas C. Esqueda  
Director of Public Utilities  
2600 Fresno Street, Room 4019  
Fresno, CA 93721  
Phone: (559) 621-7119  
FAX: (559) 457-1045

CONSULTANT:  
WATER QUALITY AND TREATMENT  
SOLUTIONS, Inc.  
Attention: Issam Najm, President  
21018 Osborne Street, Suite 1  
Canoga Park, CA, 91304  
Phone: 818-366-8340  
FAX: 818-484-3100

Attachments:  
Exhibit A –Scope of Services, Schedule, and Compensation for Amendment No. 1

March 13, 2017

Mr. Thomas Esqueda  
Director of Public Utilities  
City of Fresno  
2600 Fresno Street, Rm 4019  
Fresno CA 93721

Subject: Proposal for *Technical Support During Pilot Scale Testing of Corrosion Mitigation at the Northeast Water Treatment Plant*

Dear Mr. Esqueda:

On behalf of Water Quality & Treatment Solutions, Inc. (WQTS) and Dr. Vern Snoeyink, I am pleased to submit to you the attached proposal for technical support during the pilot scale testing of corrosion mitigation strategies for the City's groundwater and surface water supplies. Our proposal also includes a task to provide as needed support for future monitoring and data collection under the Lead and Copper Rule. A description of the technical approach is presented in the proposal, along with the anticipated project schedule and cost.

We hope this proposal is acceptable to you, and we look forward to working with you on this effort. In the meantime, if you have any questions, please contact me at (818) 366-8340 or via email at [issam.najm@wqts.com](mailto:issam.najm@wqts.com).

Respectfully Yours,  
**Water Quality & Treatment Solutions, Inc.**



Issam Najm, Ph.D., P.E.  
President

cc: Dr. Vern Snoeyink

# **TECHNICAL SUPPORT DURING PILOT SCALE TESTING OF CORROSION MITIGATION MEASURES AT THE NORTHEAST WATER TREATMENT PLANT**

## **Technical Proposal**

February 17, 2017

### **BACKGROUND**

For several months prior to 2016, the City of Fresno's Department of Utilities received reports of an increased number of discolored water occurrences and corroded pipes from customers. In January 2016, Water Department staff initiated an extensive water quality monitoring program to gather data on the problem. Under Phase I of this effort, WQTS evaluated the water quality and pipe condition data and provided a report to the City of Fresno in September 2016. Analysis of the data suggested that the increase in discolored water incidents was most likely caused by the corrosion of galvanized iron pipes used either as service laterals or in indoor plumbing. WQTS recommended that the City supply more uniform water quality in the affected region; continue use of phosphate inhibitor; replace galvanized pipes that are causing discolored water; and conduct a pilot testing program.

Under Phase II, WQTS prepared a Corrosion Mitigation Pilot Study Testing Plan and submitted it to the City of Fresno on December 30, 2016. The plan was subsequently revised based on communications with the City, with the final Testing Plan submitted on February 2, 2017. The Plan was designed to evaluate the impact of changing water quality on corrosion and iron release from galvanized pipes, evaluate corrosion control strategies, and determine the length of time for discolored water control measures to take effect. The Plan also included design drawings for the corrosion mitigation pilot plant in conformance with the specifics of the Plan. The City requested that WQTS fabricate and deliver to the City one chemical feed module and one pipe rack unit, with the idea that the City will replicate them to complete the fabrication of the pilot plant. On February 14, 2017, WQTS delivered the chemical feed unit and the pipe rack unit to the City.

As the City prepares to proceed with the implementation of the Testing Plan under Phase III of this effort, it requested that WQTS provide technical support and oversight of the data collection and analysis effort. This document provides WQTS' proposed activities under this Phase III effort.

In January 2017 the US Environmental Protection Agency (USEPA) submitted to the State Water Resources Control Board Division of Drinking Water (DDW) an assessment of the City's compliance with the Lead and Copper Rule (LCR). While the USEPA report indicated that the City is in compliance with the LCR and that, in fact, lead levels have been consistently low, USEPA requested that DDW have the City conduct two rounds of "initial" monitoring as described under the LCR. In February 2017 the City received a letter from DDW incorporating the USEPA recommendations. The City requested that WQTS provide support as needed for the upcoming LCR monitoring effort.

## **GENERAL APPROACH**

After the City completes the fabrication of the remaining pilot plant components, City staff will set up the pilot plant at the Northeast Water Treatment Facility (NEWTF) in accordance with the Testing Plan developed under Phase II. WQTS staff member(s) will be onsite to assist with the equipment installation, connections, and hydraulic testing. At the same time, WQTS will prepare an Operations Plan to be implemented by the City's designated pilot plant operator(s). The intent of the Ops Plan is to provide the operators with step-by-step instructions on unit operations, sample collection, and sample handling. The Operations Plan will also include daily Log Sheets to be used by the operator to enter operational data.

Once the pilot units are fabricated, installed, and hydraulically tested, galvanized pipe sections will be harvested from the City's system and installed in the pilot units. WQTS staff will also be present onsite during the pipe harvesting and installation effort.

It is anticipated that the City will operate the pilot plant and collect water quality and operations data for a period of 12 months. During this period, WQTS will receive the data from the City's pilot operator and the analytical laboratory on a weekly basis and maintain them in a comprehensive database for analysis. WQTS will provide the City with monthly progress updates, and participate in monthly meetings with the City to discuss the results and any modifications that may be necessary based on the analysis of the results. WQTS will also prepare quarterly technical progress reports that will provide an analysis of the results obtained to date, and these reports will be suitable for presentation to City management and DDW staff.

After the testing is completed, WQTS will present the results in a technical report along with a recommendation for the most plausible mitigation measure.

## **SCOPE OF WORK**

This section identifies the specific tasks to be conducted and includes some discussion of the activities to be conducted under each task. This information is primarily provided as a basis for the cost information provided in the next section.

### **Task 1 – Develop Operations Plan**

WQTS will develop a detailed Operations Plan for use by operators of the pilot plant. The Operations Plan will include information on the how the various equipment, components, and chemicals within the pilot plant are operated, ensuring consistency among operators. In addition, details on monitoring procedures, including sample collection procedures and frequency, will be included, along with log sheets for recording operational and water quality data. A typical Operations Plan for a pilot system could include the following chapters:

1. Description of Pilot Plant Facilities
2. Personnel

3. Monitoring (operational and performance)
4. Operation of Facilities
5. Start up and Shut Down Procedures
6. Chemicals and Dosing
7. Maintenance
8. Alarms
9. Recordkeeping

The Operations Plan will be submitted to the City prior to the kick-off meeting.

### **Task 2 – Kick-off Meeting**

WQTS will coordinate with the City to schedule and hold the project kick-off meeting, which occur after the submittal of the Operations Plan. WQTS will prepare an agenda for the meeting, and then prepare and distribute meeting minutes. During the kick-off meeting, WQTS will present the Operations Plan for the pilot study, and discuss monitoring, maintenance, and record keeping, among other aspects. If necessary, revisions to the Operations Plan can be made based on discussions with the City. WQTS staff will review plans for Tasks 3 through 6 of the pilot testing effort.

### **Task 3 – Pipe Harvesting & Pilot Plant Startup**

The pilot testing program will evaluate corrosion using harvested galvanized iron pipes from homes experiencing discolored water. It is critical that extreme care be exercised in the collection, handling, transportation, and storage of the harvested pipes, with specific emphasis on ensuring that little to no disturbance of the corrosion scales takes place. Therefore, WQTS will prepare a brief Technical Memorandum describing recommended procedure for pipe harvesting protocols as well as recommendations for pipe sampling for analysis using advanced techniques such as Electron Scanning Microscopy and Energy Dispersive X-ray Spectrometry.

After the pipe harvesting is complete, WQTS staff will be on site for pilot plant start up. This will include installing the corroded test pipes in the pilot plant, conducting hydraulic testing of the equipment, calibrating the chemical feed pumps, and setting each instrument to its operating condition. A component of this calibration will be to set the flow control valve on each test pipe run to ensure that the flowrate through it will be limited to 0.5 to 0.7 gpm when the solenoid valve is fully open. WQTS staff will ensure that City operators are prepared for continued operation and maintenance of the pilot facility.

### **Task 4 – Data Collection and Analysis**

City staff will operate the pilot plant, record the data, and collect the samples for analysis. Some analyses, such as pH and alkalinity, can be analyzed by the operator, while other analyses will be conducted by a certified laboratory (either the City's laboratory or an outside commercial

laboratory). The operator will transmit the results to WQTS on a weekly basis. WQTS staff will enter the results in an EXCEL database, and organize them for continued graphing and analysis. The WQTS project engineer will be in weekly contact with the pilot operator to check on the condition of the study and discuss any challenges encountered or any needs that the operator may have. WQTS will provide the necessary technical support to the Operator to ensure smooth system operation and performance.

#### **Task 5 – Progress Updates**

On a monthly basis, WQTS will prepare and submit to the City brief progress updates describing the activities completed during the past month and the results obtained.

#### **Task 6 – Quarterly Progress Meetings**

WQTS will participate in quarterly progress meetings with the City to discuss the progress of the work and make any decisions.

#### **Task 7 – Technical Report**

At the conclusion of the testing effort, WQTS will prepare a Technical Report that documents the details of the study and its results. The report will also include a recommended mitigation measure based on the pilot testing results. The report will be submitted to the City as a draft document for review and comments. WQTS staff will also meet with the City to discuss the overall findings and the contents of the report. Once the City's comments on the report are received, WQTS will finalize the report and submit it to the City in hard copy and as a PDF document.

#### **Task 8 – LCR Regulatory Support**

The City will conduct a number of steps as described under the LCR “initial” monitoring requirements. These activities include updating the home tap sample pool, collecting two rounds of home tap samples and conducting water quality parameter monitoring at points of entry and in the distribution system. As requested by City staff, WQTS will assist with all facets of this effort including identifying sample tap locations, preparation of a sample plan, data collection, organization and evaluation, and preparation of progress reports and memorandum. To ensure ongoing communication, WQTS will contact and update DDW staff on the status of the City's activities on a quarterly basis.

### **SCHEDULE & BUDGET**

Figure 1 presents the schedule for the project. The project will be completed over a 18 month period. The Operations Plan will be developed within 2 weeks of receiving the notice-to-proceed from the City, followed by the kick-off meeting with the City. It is anticipated that harvesting of pipes and startup activities will be conducted over a 4 week period. Once the pilot plant operation

has been started, the plant will be operated continuously for 12 months. The Technical Report will be prepared and the final meeting will take place within two months of completing the pilot testing.

Table 1 presents a breakdown of the projects labor hours per person, and costs for Phase III of the pilot testing program. This includes all anticipated labor and non-labor costs incurred by WQTS, with the exception of analytical costs. It is expected that the cost of these services will be incurred by the City directly. The total cost for the services provided by WQTS is projected at \$330,000.

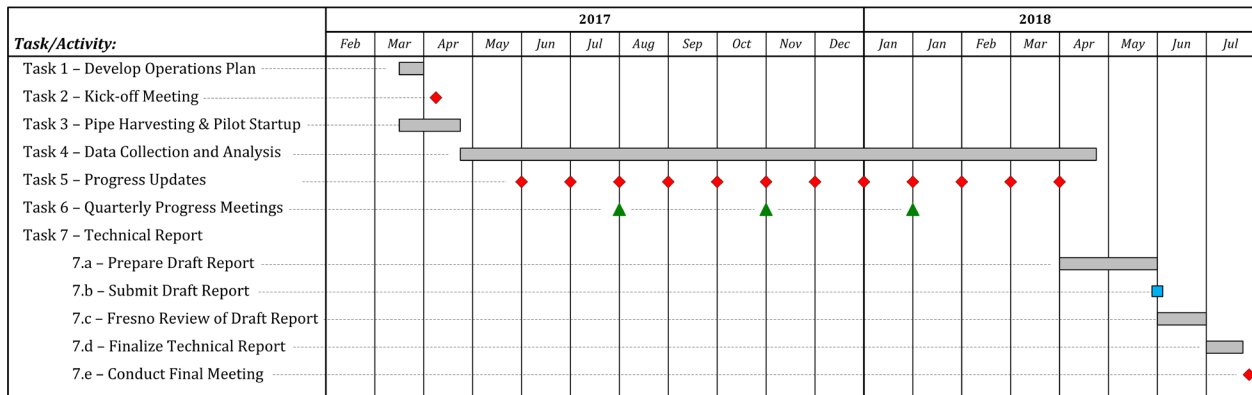


Figure 1 – Phase III Schedule

Table 1 – Breakdown of Phase III Projects Costs

| Task  | Issam Najm | Jeanine Plummer | Vern Snoeyink | Brian Gallagher | Ofelia Romero | Dan Askenaizer | Admin. Assistant | Labor            | Non-Labor      | Task Total       |
|---|------------|-----------------|---------------|-----------------|---------------|----------------|------------------|------------------|----------------|------------------|
| Project Admin & Billing                       | 36         | 36              |               |                 |               |                | 36               | \$18,400         |                | \$18,400         |
| 1 Operations Plan                             | 8          | 24              | 8             | 24              | 16            |                |                  | \$15,100         |                | \$15,100         |
| 2 Kick-off Mtng                               | 12         |                 |               |                 | 12            |                |                  | \$4,300          | \$500          | \$4,800          |
| 3 Pipe Harvesting & Pilot Plant Startup       | 20         | 16              | 4             | 24              | 40            |                |                  | \$18,200         | \$1,200        | \$19,400         |
| 4 Pilot Operation Support                     | 96         | 192             | 48            | 48              | 144           |                |                  | \$101,200        |                | \$101,200        |
| 5 Progress Updates                            | 48         | 48              | 24            |                 | 96            |                |                  | \$40,500         |                | \$40,500         |
| 6 Quarterly Progress Meetings                 | 48         |                 |               |                 | 72            |                |                  | \$20,500         |                | \$20,500         |
| 7 Project Report & Final Presentation/Meeting | 128        | 88              | 32            |                 | 128           |                |                  | \$73,100         | \$1,400        | \$74,500         |
| 8 LCR Regulatory Support                      |            |                 |               |                 | 12            | 174            |                  | \$35,600         |                | \$35,600         |
| <b>Total =</b>                                | <b>396</b> | <b>404</b>      | <b>116</b>    | <b>96</b>       | <b>508</b>    | <b>174</b>     | <b>36</b>        | <b>\$326,900</b> | <b>\$3,100</b> | <b>\$330,000</b> |