

## **FIRST AMENDMENT TO RESEARCH AGREEMENT**

THIS FIRST AMENDMENT TO RESEARCH AGREEMENT ("Amendment") made and entered into as of this \_\_\_\_\_ day of \_\_\_\_\_, 2017, amends the Research Agreement entered into between the CITY OF FRESNO, a municipal corporation ("City") and Virginia Polytechnic Institute and State University (hereinafter referred to as "Virginia Tech"), a ("Consultant").

### **RECITALS**

WHEREAS, City and Virginia Tech entered into a research agreement dated September 22, 2016, for specialty research and study services ("Research Agreement"); and

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

### **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 that the aforesaid Research Agreement is amended as follows:

1. Virginia Tech's compensation for the performance of services required in the original Research Agreement approved by Council was \$130,000.
2. Virginia Tech shall provide additional services as described in the Scope of Services, attached hereto as Exhibit A to Amendment No. 1.
3. Virginia Tech's compensation for the performance of services required in the attached Exhibit A is \$100,000.
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 Research 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 Research 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.

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

SPONSOR,  
a California municipal corporation

VIRGINIA TECH  
An agency of the State of Virginia

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

By: Linda Bucy  
Linda Bucy  
Assistant Vice President and Interim  
Director of Sponsored Programs

ATTEST:  
YVONNE SPENCE, CMC  
City Clerk

Date: 4-11-17

By: \_\_\_\_\_

APPROVED AS TO FORM:  
DOUGLAS T. SLOAN  
City Attorney

By: \_\_\_\_\_  
AMANDA B. FREEMAN  
Deputy City Attorney  
Date: \_\_\_\_\_

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

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

**Exhibit A**  
**Scope of Work – Amendment No. 1**  
**City of Fresno and Virginia Tech**

The additional work assigned to Virginia Tech will be comprised of two components.

**Work Component 1**

For the first component of work, Virginia Tech will continue to perform bench scale studies in parallel with the Pipe Loop Testing setups installed at the City's Northeast Surface Water Treatment Plant. The City has constructed and placed into operation a 9-loop, pipe testing apparatus to test alternative chemistry options for galvanized pipes. The water chemistry options selected for testing in the Pipe Loop Testing Setups were originally identified during bench-scale testing conducted by Virginia Tech. The additional bench scale testing to be conducted by Virginia Tech will provide the City with an additional data set for galvanized pipe to validate and confirm the findings of the Pipe Loop Testing setups. The additional bench scale testing shall also include coupons for brass and copper with solder, and lead pipe. These coupons will be used to validate that the optimum chemistry to reduce iron release will also be effective for Lead and Copper Rule compliance.

Work Component 1 shall also include destructive inspection and testing of galvanized pipe segments removed from residential homes in Fresno. The destructive inspection and testing shall be conducted to assess the composition, form, and structure of iron scale present in galvanized pipe removed from homes in Fresno.

Virginia Tech has prepared Final Phase I Bench Scale Testing Report for the original bench scale testing of alternative water chemistry options for galvanized pipe corrosion. The findings from the additional bench scale testing, which will be conducted in parallel with the Pipe Loop Testing, shall be incorporated as an Appendix to the Final Phase I Bench Scale Testing Report.

**Work Component 2**

For the second component of work, the Virginia Tech research team will be tasked with reviewing, evaluating, analyzing, and interpreting the results of 18 months of water quality and water quantity data collected by the City during the Discolored Water Investigation. The data to be provided to Virginia Tech for review, evaluation, analysis, and interpretation shall include the following:

- Residential water quality data (premise plumbing data)
- Residential property data
- Water Treatment Plant Operations Data
- Water Distribution System Monitoring Data
- Groundwater Well Quality and Quantity Data

Virginia Tech shall prepare a series of reports summarizing the results of the data review, evaluation, analysis and interpretation, and present the findings of correlations, patterns, and trends identified in the water quality and water quantity data. As necessary, the Virginia Tech team shall conduct spatial analysis using GIS technology to determine if correlations, patterns, and trends exist geographically in the City water quality and water quantity data. The findings shall be relied upon by the City to develop operational changes in groundwater production and surface water production to reduce the release of iron and zinc from inferior galvanized piped. This information and data analysis will be summarized for the City in the form of a technical memorandum.

**Exhibit A**  
Scope of Work – Amendment No. 1  
City of Fresno and Virginia Tech

**Schedule**

Component 1: The additional bench scale testing shall be substantially complete March 1, 2018, with a draft report provide April 1, 2018, and a final report provided June 1, 2018.

Component 2: The data review, evaluation, analysis, and interpretation shall be substantially complete January 1, 2018, with a draft report provided March 1, 2018, and a final report provided May 1, 2018.

**Compensation**

The agreed upon compensation for work performed as described in this Exhibit A shall be a not-to-exceed upper limit of \$100,000.