

March 14, 2017

Clece Aurelus, P.E.  
**CITY OF HOLLYWOOD**  
Department of Public Utilities  
Engineering and Construction Services Division  
Post Office Box 229045  
Hollywood, Florida 33022

Hollywood Southern Regional WWTP  
Injection Well MIT Amendment 1  
City Project No. 16-9938

Dear Mr. Aurelus:

As requested, Hazen and Sawyer, P.C. (H&S) is pleased to offer engineering services to assist the City with adding a well cleaning task and permit renewal task to the mechanical integrity testing of the effluent deep injection wells at the Hollywood Southern Regional Wastewater Treatment Plant (SRWWTP).

### **BACKGROUND**

A project for mechanical integrity testing (MIT) of the deep injection well system at the Hollywood Southern Regional Wastewater Treatment Plant (SRWWTP) is currently underway. Based on City identification of diminished capacity associated with the well casings which extend over 3,000 feet below land surface, the City has requested CONSULTANT to include services associated with cleaning the injection well casings in the MIT project while the wells are out of service for testing. Services outlined in this task order amendment consist of preparation of a well cleaning specification, testing oversight, and preparation of a memorandum summarizing the cleaning activities.

Additionally, operation of the injection wells is regulated by permit from the Florida Department of Environmental Protection (FDEP). The existing operating permit will expire September 27, 2017. The City has requested assistance in obtaining an operating permit from FDEP for the injection well. This amendment completion of the permit renewal application.

### **SCOPE OF SERVICES**

#### **Task 5 – Well Cleaning Specification Development**

CONSULTANT shall review the last ten years of injection well operating data (pressure and flow) for each of the two injection wells. CONSULTANT shall prepare specifications for cleaning of the injection wells and verification including video surveys. Cleaning activities will be recommended based on video findings during MIT and cleaning methods will include but not be limited to brushing and/or scraping of the well casing. A plan will be developed, with the assistance of the City, for the contractor to backflush the wells and dispose of waste waters to the SRWWTP.

CONSULTANT shall submit a draft specification to the City for review. Notification for approval of the intended work to be performed will be made to the FDEP.

### **Task 6 – Well Cleaning Verification**

CONSULTANT shall coordinate implementation of the cleaning services and provide general oversight and verification that the work was performed. The CONSULTANT shall conduct a pre-cleaning meeting with the City and the contractor, review work plan and schedule, pay requests, and other contractor submittals. The review shall be for conformance with the intent and compliance of the cleaning specification. Services to be provided during cleaning oversight include preparation of daily reports, coordination with well driller, witnessing testing (video surveys) and observations for conformance with cleaning requirements and post-cleaning injectivity testing. One additional project progress meeting is anticipated. Upon completion of the cleaning, CONSULTANT shall prepare a brief letter report that summarizes the results of the cleaning. The memorandum will provide the results and interpretation of the testing.

### **Task 7 – Deep Injection Well Permit Renewal**

CONSULTANT shall provide engineering services to apply for an operating permit renewal for the deep injection wells at the SRWWTP. CONSULTANT shall prepare an operating permit renewal application and supporting documentation including the following as appropriate:

1. Update FDEP: CONSULTANT shall update FDEP on any changes made since the last permit renewal.
2. Area of Review: CONSULTANT shall calculate the size of the Area of Review (AOR) based on previous and projected flows. CONSULTANT shall identify wells from appropriate sources within the existing AOR or the expanded AOR. CONSULTANT shall update the AOR maps.
3. Confining Interval: CONSULTANT shall identify confining interval cross sections based on information obtained from the Injection Well Construction permit application and FDEP RFI responses.
4. Operating Data: CONSULTANT shall review injection operating data, flow and pressure, since the last permit and present data in a manner acceptable to FDEP in tabular and graphical format.
5. Injectivity Testing: CONSULTANT shall review injectivity testing since the last permit and present the results in graphical format acceptable to FDEP.
6. Water Quality Analysis: CONSULTANT shall review monitor well and wastestream monthly water quality results since the last permit and present data in a manner acceptable to FDEP in tabular and graphical format. CONSULTANT shall review complete annual wastestream analysis.
7. Monitor Well Data: CONSULTANT shall review monitor well level data since the last permit and present the data in a manner acceptable to FDEP in tabular and graphical format.
8. Plugging and Abandonment Plan: CONSULTANT shall update the Plugging and Abandonment Plan, prepare appropriate drawings associated with the plugging of the injection and dual zone monitor wells and prepare a cost estimate for the plugging of the wells.

9. Financial Responsibility: CONSULTANT shall prepare a certificate of financial responsibility for City execution.
10. O&M Manual: CONSULTANT shall review the existing injection well section of the SRWWTP Operation and Maintenance (O&M) Manual for revisions made to the system since the last permit renewal and update as appropriate.

CONSULTANT services include response of up to one (1) timely request for information (RFI) from the FDEP.

## **KEY ASSUMPTIONS**

- It is understood that cleaning activities involve the insertion of cleaning equipment into the well casing while the well is out of service. As such there is an inherent risk associated with the performance of well cleaning activities which may impede use of one or more of the wells for an extended time, thereby requiring use of the open ocean outfall as the primary means of effluent disposal
- The compensation for this additional work is based upon the addition one technical specification section and two additional 8-1/2 x 11 inch drawings to the existing MIT contract documents being prepared for the MIT as part of the original scope of services
- Well cleaning work will necessitate use of a drill rig
- The City will competitively bid the project and enter into an agreement with an outside Contractor to complete the work. No prequalification of Contractors will be performed.
- The City will pay all required application and permit fees
- The Contractor shall be responsible for providing all materials and equipment necessary to complete all work, including all cleaning equipment
- City will provide, in Excel format, ten years of operational data from the injection wells and monitor well including pressures and flows
- City will assist in coordinating site access for well cleaning
- Permitting is not required and services are limited to notifying FDEP for approval of intended work
- Well cleaning activities will take place after completion of MIT activities
- Identification of confinement at the injection wells is limited to review of the previously identified confinement onsite and delineating intervals on drawings or sketches. Evaluation of the geological and hydrogeological properties of the formations to justify confinement, or to interpret confinement, is not anticipated to be necessary and is not included.
- The previous surge analysis will be submitted to FDEP, as required. Performance of a new surge analysis is not anticipated and is not included.
- City will provide operation data of the injection wells in Excel format, including injection well flows, injection well pressures, injectivity test results, monitor well levels, and monitor well chemical analysis for the past five years

- City will provide the previous permit renewal application, RFIs, and responses to RFIs.
- It is assumed that FDEP will prepare up to one timely (within forty five days from the submittal of the application) RFI for this project. It is recognized by City that neither City nor CONSULTANT can control the number of RFIs produced by the FDEP or the time that it takes for them to prepare RFIs. If additional RFIs are needed, or FDEP takes additional time to prepare a RFI, City and CONSULTANT will negotiate additional services as needed

## **COMPENSATION**

The engineering services for this project will be performed on a Not-to-Exceed basis in the amount of \$69,404. A fee breakdown is attached.

## **SCHEDULE**

Well cleaning activities are estimated to be completed approximately 60 days after performance of MIT.

Engineering services for the project will be performed as part of our Professional Services Agreement for General Engineering Consultant Services (Agreement) dated February 2003. Services provided by Hazen and Sawyer, P.C. shall be limited to those services specifically identified in this work order.

We look forward to your reply. In the meantime, should you have any questions, please contact us.

Very truly yours,

**HAZEN AND SAWYER, P.C.**



J. Philip Cooke, P.E.  
Senior Associate

c: File No. 4321-016/1.0  
M. Wengrenovich

*Attachment*

CITY OF HOLLYWOOD  
 SOUTHERN REGIONAL WASTEWATER TREATMENT PLANT  
 Injection Well Mechanical Integrity Testing - Amendment 1  
 Cost Breakdown

<u>Tasks</u>	Labor Hours					<u>Subtotal</u>	<u>Cost</u>
	<u>Senior Officer</u>	<u>Senior Associate</u>	<u>Engineer</u>	<u>Designer</u>	<u>Secretarial</u>		
LABOR							
Task 5 - Well Cleaning Specification Development	4	20	12	16	2	54	\$ 9,154
Task 6 - Cleaning Verification	4	80	40	2	4	130	\$ 24,067
Task 7 - DIW Permit Renewal	4	80	100	16	24	224	\$ 35,883
Subtotal	12	180	152	34	30	408	<b>\$ 69,104</b>
DIRECT EXPENSES							
Out-of-pocket							\$ 300
Subtotal							<b>\$ 300</b>
<b>Total (Not to Exceed)</b>							<b>\$ 69,404</b>
Maximum Hourly Raw Labor Rate*	\$69.11	\$66.34	\$44.02	\$42.74	\$22.64		
* Overall multiplier = 3.2							