

QUARTERLY PROGRESS REPORT NO. 5 Victoria ASR Demonstration Project

To:
Matthew L. Webb
Hydrologist
Texas Water Development Board

Copies:
Tim Andruss, VCGCD
Fred Blumberg, Arcadis
Ashley Evans, PE, Arcadis
Debbie Arizpe, Arcadis
Arcadis Team

ARCADIS U.S., Inc.
TX Engineering License # F-533

From:
Lynn Short (LSPS Solutions)—Project Manager
Donald Reese (City of Victoria)—Director of PW

Date:
January 19, 2018

ARCADIS Project No.:
25963002.0000

Subject:
Quarterly Progress Report for the Victoria ASR Demonstration Project (**Contract No. 1600011958**) for **October 1, 2017 through December 31, 2017**.

Introduction:

The Victoria Aquifer Storage and Recovery (ASR) Demonstration Project is being partially funded by the Texas Water Development Board (TWDB) under Rider 25 to HB 1 (General Appropriations Act) of the 84th Legislature. The “Project” generally consists of: permitting, designing, and constructing an ASR retrofit to an existing City of Victoria groundwater production well (Well No. 19); constructing a potable water pipeline for recharge and recovery purposes; conducting training and preparing an operation and maintenance (O&M) manual; cycle testing and assessment of the operational ASR well; and making presentations summarizing results. The Project Contractor is the Victoria County Groundwater Conservation District (the “Victoria County GCD”) and the primary Project Participant is the City of Victoria, Texas (the “City”). The Project consulting and engineering team consists of Arcadis U.S., Inc.; ASR Systems, LLC; and INTERA, Inc. (the “Arcadis Team”).

The purposes of this Quarterly Progress Report are to explain what work has been accomplished during the reporting period, and to describe any potential or anticipated challenges.



Figure 1: Existing Well 19 Pumphouse and Piping

Work Completed:

Task 1: Project Management. During this reporting period the Arcadis Team continued with project management activities. Arcadis began work on the next quarterly invoice and progress report which will be reviewed and commented upon by the City of Victoria and the Victoria County GCD.

In July the Arcadis Team decided that the scheduled internal calls could be held monthly, with special calls as needed to address specific topics. The Project participants also continued to hold monthly progress conference calls. The latest group call was held on December 21, 2017.

Task 2: Permitting. On April 28, 2017, the City received its authorization for a Class V Injection Well (Authorization No. 5X2500127). On July 17, 2017 the Arcadis Team received the letter of conditional approval for construction of the facilities from the TCEQ Plan Review Team.

Task 3: ASR Facilities Design. The Arcadis Team completed design of the ASR facilities in the previous reporting period. During this reporting period the Team addressed questions from the two contractors working on the Project.

Task 4: Retrofit of Well No. 19. On September 14, 2017 Weisinger Inc. conducted the video logging of Well 19. The video was reviewed by Weisinger, the City and the Arcadis Team to determine the best approach for rehabilitating the well prior to installing the new pump. The video showed extensive corrosion to the mild steel casing and the mild steel pipe base supporting the stainless-steel well screen, with what appeared to be integrity loss near 586 feet bgs.

On October 5, 2017 the City, the Arcadis Team and Weisinger conducted the first of a series of conference calls to discuss the results of the video and to determine how to best proceed with cleaning and rehabilitating the well. The participants agreed that: (i) the holes in the casing and pipe base could be enlarged with the well rehabilitation measures included in the project specifications and bid documents, which included sonic jetting, wire brushing, and swabbing; and (ii) the risk is high that larger casing and pipe base pieces could spall off and interfere with, or trap, the drill string and tools.

Therefore, Weisinger, the City and the Arcadis Team developed a modified rehabilitation approach that included aggressive treatment with 15 percent hydrochloric acid and an acid enhancer. This approach should provide sufficient surging without the risk of using downhole equipment and damaging the casing. On December 4, 2017 Weisinger began the well rehabilitation process by installing a temporary 10-inch pipe from about 410 feet bgs to the ground surface to act as an educator pipe for airlift surging and jetting. A frac tank was also moved on site. See photos below. In addition, a mud pump and diffuser pipe were used to move fluid downhole under pressure. By December 22, 2017, the well rehabilitation had been completed. The next step will be to conduct a second video log of the well to document the results of the rehabilitation and the condition of the well.

Task 5: Potable Water Line Construction. The City has completed construction of the 12-inch potable water pipeline and the 2-inch trickle feed pipeline.

Task 6: Training and Preparation of O&M Manual. To stay on schedule, the Arcadis Team began drafting the training program and O&M manual during this reporting period.

Task 7: Cycle Testing and Assessment. Following the rehabilitation of Well 19, the Arcadis team began discussing the approach to be used for well development and cycle testing.

Task 8: Draft and Final Reports. No work has been completed on this task in this reporting period.

Task 9: Presentations. In September 2017 Fred Blumberg submitted an abstract for a presentation on the ASR demonstration projects to *Texas Water 2018*. On December 15, 2017, Mr. Blumberg was notified that the abstract had been approved. The presentation will be given by members of the project team on April 26, 2018.

Challenges Identified:

Task 4: Retrofit of Well No. 19. The video of Well 19 conducted on September 14, 2017 showed extensive corrosion to the mild steel casing and the mild steel pipe base supporting the stainless-steel well screen, with what appeared to be integrity loss near 586 feet bgs. Therefore, the project team (including Weisinger, Inc., the City and the Arcadis Team) collaborated and developed a less aggressive approach to cleaning and rehabilitating the well, as discussed above.



Figure 2: Frac Tank—Used to Collect and Stabilize Acid From the Well



Figure 3: Piping Used For Acidization and Jetting of Well 19