

QUARTERLY PROGRESS REPORT NO. 5 (CY 2018)
NBU ASR Demonstration Project

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From:
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Date:
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ARCADIS Project No.:
40256004.0000

Subject:
Quarterly Progress Report for the NBU ASR Demonstration Project (**Contract No. 1600011957**) for **January 1, 2018 through March 31, 2018**.

Introduction:

The New Braunfels Utilities (NBU) 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: coordination with TCEQ; design for wireline coring in the brackish Edwards Aquifer; wireline coring; design of a monitor well in the brackish Edwards Aquifer; construction of the monitor well and collection of data; preparation of draft and final reports; and presentations on the Project.

The Project Contractor is the Edwards Aquifer Authority (EAA) and the primary Project Participant is NBU. 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.

Work Completed:

Task 1: Project Management. During this reporting period project management activities included communication with EAA and NBU, and among the Arcadis team. A TWDB demonstration project kickoff meeting was held in early 2018 as part of the Work Group Meetings with EAA.

NBU continues working on the authorizations necessary to use the New Braunfels Regional Airport as the location for NBU ASR program. In the meantime, NBU acquired a 1.067-acre tract of land adjacent to the Airport for purposes of completing the Project. NBU closed on the purchase of the property on October 23, 2017.

On December 7, 2017 NBU, EAA and the Arcadis Team held the third Work Group meeting required under the EAA-NBU Interlocal Agreement.

Task 2: Coordination with TCEQ. No work on this task has been completed in this reporting period. A meeting with TCEQ will be set after the coring and monitor well have been completed and preliminary data are available.

Task 3: Coring Design. ASR Systems completed work on the specifications, and those technical requirements were incorporated into the NBU Request for Bid (RFB) documents for the coring. Work during this period involved answering questions from the contractors.

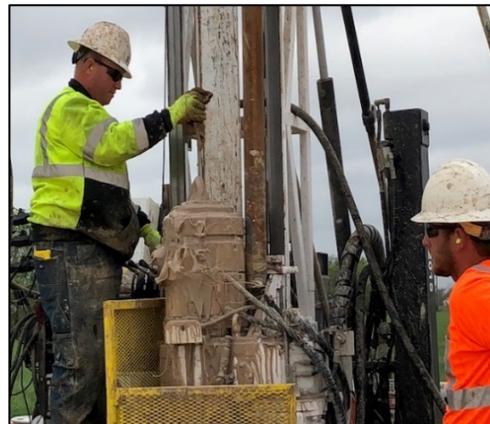
Task 4: Wireline Coring. Bids for the coring were opened on January 9, 2018. NBU received two bids on the wireline coring. The selected low bidder was Kutscher Drilling Ltd. A contract with Kutscher Drilling was approved by the NBU board of trustees on January 25, 2018. Notice to Proceed was issued to Kutscher on February 5, 2018. Preparation of the site, including construction of a gravel entrance road and drilling pad, was completed during the week of March 12, 2019. Kutscher's subcontractor Cascade Drilling began work on March 19, 2018. Initial logging of the core to a depth of 536.5 feet below ground surface (bgs) was completed by GeoCam on March 26, 2018.

Representatives of NBU were at the site during the coring, and the EAA had geologists on site on a daily basis when coring was ongoing.

Photographs of the coring and logging operations are shown below.



Cascade Drilling Rig



Closeup of Coring Operation



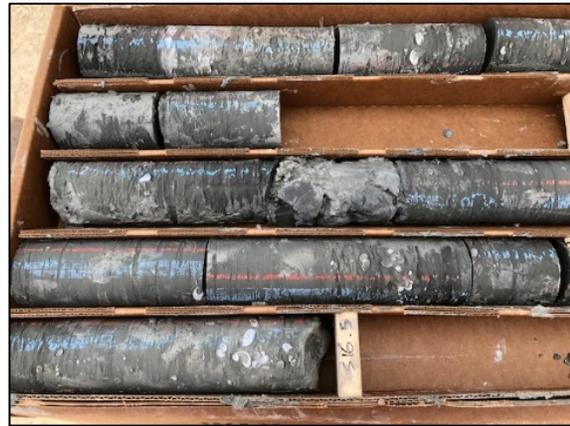
2.5-Inch Core Being Removed from Tool



Geologists Measuring and Analyzing 10-Ft Core



EAA Geologist Observing Core Analysis



Cores Labeled and Boxed for Storage



Initial Logging of Core Hole

Task 5: Monitor Well Design. INTERA completed the specifications, and those technical requirements were incorporated into the NBU RFB documents for the monitor well construction. Work during this period involved answering questions from the selected contractors and reviewing data from the coring activities.

Task 6: Monitor Well Construction and Data Collection. Bids for the monitoring well were opened on January 9, 2018. NBU received two bids on the monitoring well. The selected low bidder was Kutscher Drilling Ltd. A contract with Kutscher Drilling was approved by the NBU board of trustees on January 25, 2018. On March 27, 2018 EAA issued NBU a permit for construction of the monitor well.

Notice to Proceed was issued to Kutscher Drilling for the monitor well construction after the coring was completed and the core hole logged. When the coring reaches total depth, the Arcadis Team will decide if any changes need to be made to the monitor well specifications (i.e., depth of well; placement of packer).

Task 7: Draft and Final Reports. During this period the Arcadis Team began working on the early drafts of the required reports.

Task 8: Presentations. In September 2017 Fred Blumberg submitted an abstract for a presentation on the ASR demonstration projects to *Texas Water 2018*. The presentation will be given by members of the project team on April 26, 2018.

On February 22, 2018 Fred Blumberg gave a presentation on the status of the Project to the Capital Area sections of the American Water Works Association and the Water Environment Federation.

Challenges Identified:

NBU's land acquisition activities at the Regional Airport have taken longer than anticipated. On January 25, 2017 NBU and the City of New Braunfels submitted an application to the Texas Department of Transportation (TXDOT) Aviation Division. After the TXDOT review, the application has been forwarded to the Federal Aviation Administration (FAA) for final approval.

On January 18, 2018 representatives of NBU and the city of New Braunfels met with FAA officials in Fort Worth to discuss the use of the airport for the ASR program. The meeting was very positive, and a process for lease of Airport property was agreed upon. NBU and the City began working on the lease agreement immediately after the meeting with FAA.