

Corpus Christi Aquifer Storage  
& Recovery Conservation District

1201 Leopard St.  
Corpus Christi, TX 78401

## QUARTERLY PROJECT PERFORMANCE REPORT

**Date:** February 14, 2018

**Reporting Period:** Q4 CY17, October 1 – December 31, 2017

**Recipient:**  Corpus Christi Aquifer Storage and Recovery Conservation District  
Larijai Francis, CCASRCD Project Manager  
1201 Leopard Street  
Corpus Christi, Texas 78401-2825

**Executive Administrator**

**Designee:** Matthew Webb, TWDB Project Manager

**Subject:** Research Contract between the Corpus Christi Aquifer Storage and Recovery Conservation District and the Texas Development Board, Contract No. 1600011956

**Project:** Corpus Christi ASR Feasibility Study

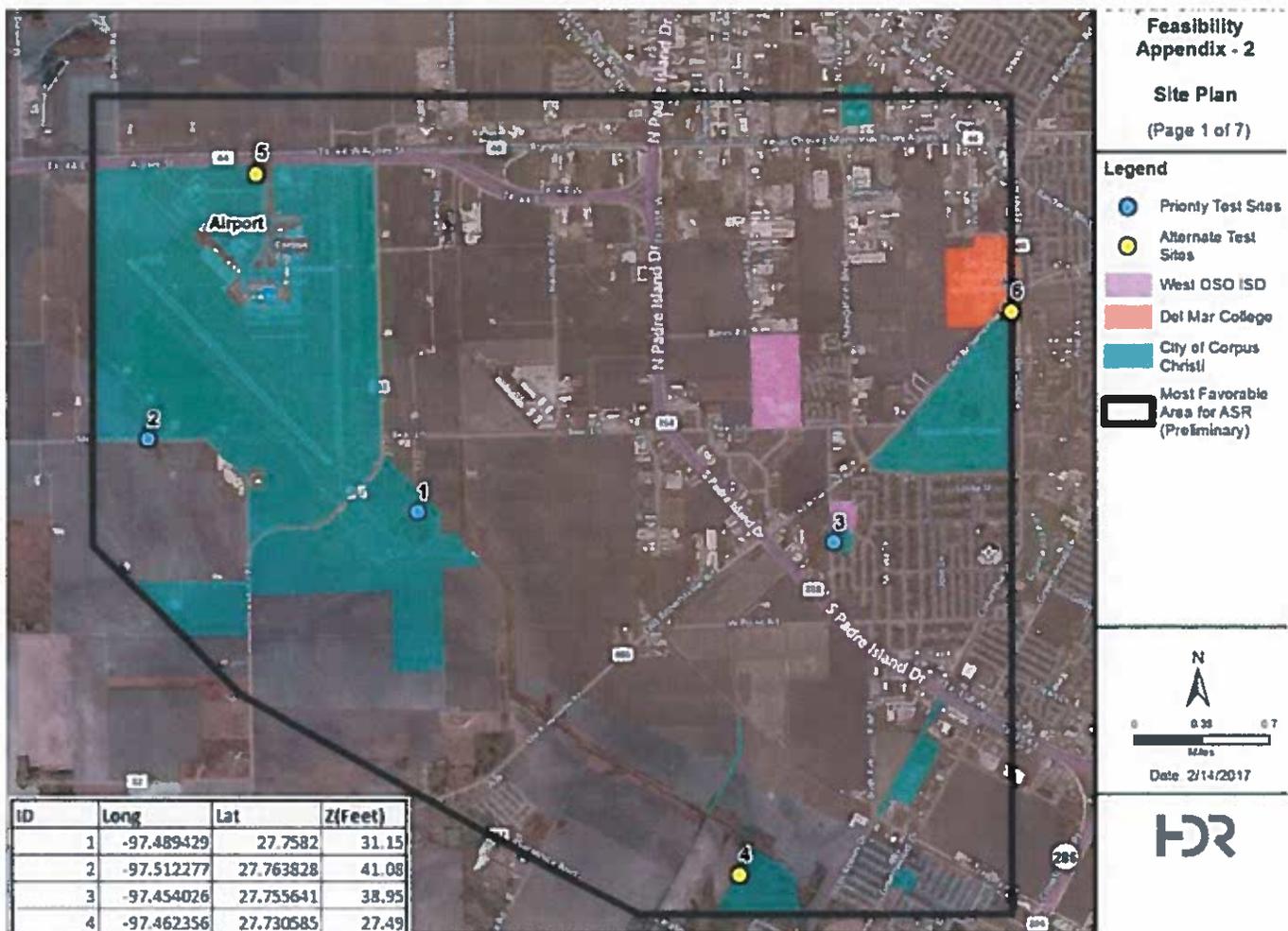
### **Work Completed:**

Pursuant to Section II, Article II, subsection 3 of the Contract this progress report represents a summary of work completed during the 4th Quarter 2017 for the Corpus Christi ASR Feasibility Study. Exhibit B of the TWDB contract includes the Scope of Work. Exhibit B contain six (6) distinct tasks with subtasks. An update to these tasks is provided overleaf and thus serves as the update mechanism for this contract. The drilling program began on 10/10/17 and activities have been proceeding according to the project plan, scope, and budget without any major or notable problems encountered this period. The drillers have completed Phase I testing at Sites 1, 2, 3, and 6, per the map in this document. The driller's notes and geophysical logs have correlated well. Phase I testing has been completed at all sites and Engineer recommends Phase II testing where aquifer parameters affecting storage and recovery and geochemical compatibility will be better defined for Sites 1 and 3.

**Project Financial Update**

The Corpus Christi Aquifer Storage and Recovery Conservation District have incurred expenditures for the Project in the amount of \$627,327.42. The responsibility for this expenditure has been distributed between the District and TWDB and is reflected on the payment request form for this quarter.

**Map**



Pictures



1. Site #1 TW-450 Constant rate test setup 24 minutes elapsed



**2. Site #1 MW air development**



**3. Core process wrapping**



**4. Core sampler with modified tip**



**5. Site #3 Set up area for drilling**



# Invoice

HDR Engineering, Inc.  
Austin, TX 78741  
Phone (512) 912-5100

HDR Invoice No. 1200081520  
Invoice Date 10/20/2017  
Month Ending 9/30/2017

## Corpus Christi ASR Feasibility Study - Invoice #12 <sup>u</sup>

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**Task 1 - Formulate Program**

No Work This period.

Problems Encountered this period: None

**Task 2 - Exploratory Test Drilling Program**

Coordination with City Staff on project kick-off activities, site planning, information needs from the driller, and schedule.

Response to driller inquiries regarding Site 1 access, Site 2 badging, and field lay down area.

Attendance at 9/26 pre-construction meeting.

Problems Encountered this period: None

**Task 3 - Geochemical Analysis**

No Work This period.

Problems Encountered this period: None

**Task 4 - Field Scale Groundwater Model**

No Work This period.

Problems Encountered this period: None

**Task 5 - ASR Operating Policies**

No Work This period.

Problems Encountered this period: None

**Task 6 - TWDB Coordination, Draft/Final Deliverables and Meetings**

No Work This period.

Problems Encountered this period: None

CF  
11/6/17  
Approved



Invoice

HDR Engineering, Inc.  
Austin, TX 78741  
Phone: (512) 912-5100

HDR Invoice No.  
Invoice Date  
Month Ending

1200087464  
11/17/2017  
10/28/2017

Corpus Christi ASR Feasibility Study - Invoice #13

Task 1 - Formulate Program

No Work This period.

Problems Encountered this period: None

Task 2 - Exploratory Test Drilling Program

Onsite field representative for owner from Oct 11 - Oct 20 during drilling to confirm protocol and procedure.

Intermittent field observation from HDR representative to support City Field PM from Oct 20 to 28, including preparing field notes.

Coordination with City PM and construction inspector based on field data collected. Preparation of recommendations based on data.

Coordination with driller on program updates, field related activities, and scheduling.

Problems Encountered this period: None

Task 3 - Geochemical Analysis

Project coordination with geochemists and confirmation of core program.

Problems Encountered this period: None

Task 4 - Field Scale Groundwater Model

No Work This period.

Problems Encountered this period: None

Task 5 - ASR Operating Policies

No Work This period.

Problems Encountered this period: None

Task 6 - TWDB Coordination, Draft/Final Deliverables and Meetings

No Work This period.

Problems Encountered this period: None

APPROVED

LF

12/7/17



HDR Engineering, Inc.  
 Austin, TX 78741  
 Phone: (512) 912-5100

Invoice

HDR Invoice No. 1200092815  
 Invoice Date 12/14/2017  
 Month Ending 11/25/2017

**Corpus Christi ASR Feasibility Study - Invoice #14**

**Task 1 - Formulate Program**

No Work This period.  
 Problems Encountered this period: None

**Task 2 - Exploratory Test Drilling Program**

Intermittent field visits by HDR representative to support City Field PM from Oct 29 to Nov 16 for Phase I testing at Site 3 & Site 6, and installation of MW 2 at Site 1, including preparing field notes.  
 Preliminary review of Phase I findings from Sites 1-3 and 6 and prepared recommendation to City Staff for Phase II testing program.  
 Communication and coordination between HDR geologist (remotely) and driller on stainless-steel MW 2 installation drilled Nov 13 - Nov 16.  
 PM coordination with driller on program updates, field related activities, and scheduling.  
 Follow-up with City Staff on progress reports/updates.  
 Problems Encountered this period: None

**Task 3 - Geochemical Analysis**

Coordination with geochemical specialists to confirm analyzes and sample collection method.  
 Geochemist follow-up to laboratories to confirm sample quantity, shipping, analytical tests, and costs.  
 Problems Encountered this period: None

**Task 4 - Field Scale Groundwater Model**

No Work This period.  
 Problems Encountered this period: None

**Task 5 - ASR Operating Policies**

No Work This period.  
 Problems Encountered this period: None

**Task 6 - TWDB Coordination, Draft/Final Deliverables and Meetings**

No Work This period.  
 Problems Encountered this period: None

APPROVED

GT

12/12/17



HDR Engineering, Inc.  
 Austin, TX 78741  
 Phone: (512) 912-5100

Invoice

HDR Invoice No. 1200099238  
 Invoice Date 1/22/2018  
 Month Ending 12/30/2017

**Corpus Christi ASR Feasibility Study - Invoice #14**

**Task 1 - Formulate Program**

No Work This period.  
 Problems Encountered this period: None

**Task 2 - Exploratory Test Drilling Program**

HDR senior geologist on-site from Dec 11 to Dec 20 to support City Construction Inspector for Phase II coring and testing at Site 1- intermediate zone (410-450' bgs), including water level monitoring at MW1S and MW1D during pump tests, core collection, and water quality sampling. Prepare field notes. Site photos.  
 Collected core composite on Dec 15th. Collected water quality sample on Dec 19 and delivered to CoCC water quality utilities lab. Prepared field notes. Site photos.  
 Communication and coordination between HDR field representatives and PM on field program.  
 In response to field conditions and poor recovery of unconsolidated sands, researched coring tool modifications including side wall coring method. Phone discussions with technical Geo Cam personnel about side water coring specifics. Discussed various approaches with technical advisors and developed plan forward for Site 1- deeper interval (570-850).  
 PM coordination with driller on program updates, field related activities, and scheduling.  
 Follow-up with City Staff on progress reports/updates.  
 Problems Encountered this period: None

**Task 3 - Geochemical Analysis**

No Work This period.  
 Problems Encountered this period: None

**Task 4 - Field Scale Groundwater Model**

No Work This period.  
 Problems Encountered this period: None

**Task 5 - ASR Operating Policies**

No Work This period.  
 Problems Encountered this period: None

**Task 6 - TWDB Coordination, Draft/Final Deliverables and Meetings**

No Work This period.  
 Problems Encountered this period: None

**APPROVED**  
 LF 1/29/18