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June 3, 2025

Nick Winkelmann
City of Corpus Christi
2726 Holly Road
Corpus Christi, TX 78415

RE: Development of a Groundwater Model to help Identify, Assess, and Manage Impacts Caused by Production from the Nueces Wellfield

Dear Mr. Winkelmann,

Attachment A provides a summary of the modeling work that INTERA is performing for Project 25072 – Nueces River New Ground Water Well Program – Emergency Declaration.

If the City of Corpus Christi has any questions or comments, please contact me. My contact information is: syoung@intera.com and (512)-635-0059.

Sincerely,

INTERA Incorporated

A handwritten signature in black ink that reads "Steven C. Young".

Steven Young
Project Manger

Cc:/ Shou Yang, INTERA
Andrew Osborne, INTERA

ATTACHMENT A

Development of a Groundwater Model to help Identify, Assess, and Manage Impacts Caused by Production from the Nueces Wellfield

INTERA Inc has been contracted by the City of Corpus Christi (“the City”) to develop a groundwater model to help identify, assess, and manage impacts to existing wells caused by the production from its Nueces wellfield. Figure 1 shows the model domain and the refinement of the grid cells in the vicinity of the Nueces River. Figure 2 shows the model ten layers used to represent the Chicot and Evangeline aquifers--the current TWDB Groundwater Availability Model (GAM uses only two layers. Refinements in the model grid cell sizes around the Nueces River and discretization of the model layers improves the models’ capability to accurately represent well locations and the site hydrogeology.

Any groundwater model must be properly calibrated with field data before it can provide useful predictions. Among the field data being used to calibrate the model are measured water levels from the TWDB groundwater database and aquifer pumping tests submitted to the TCEQ and conducted by the City at its newly installed Nueces wells. Although still preliminary, the model closely predicts the measured water levels and results of these pumping tests -- a result that confirms that the model is providing credible predictions.

As the model calibration proceeds, the preliminary model is being used to predict drawdown caused by three-years of pumping 13 MGD from the City’s Nueces wellfield. For this three-year period, INTERA simulates drawdown that is predicted to occur at 6,700 wells. As part of our search to continually locate existing wells, INTERA is currently adding wells from the San Patricio GCD well database to the project’s well database. Preliminary results predict that production from the wellfield will cause up to 450 feet of drawdown at depths near 400 feet below ground surface. However, the drawdowns predicted to occur at shallow domestic and livestock wells should not affect the wells’ production capability in any meaningful way.

In addition to using the groundwater model to a predict drawdowns, the City of Corpus Christi will monitor wells to measure real-world drawdowns. Currently, the City has five monitoring wells. In conjunction with INTERA, the City will develop a monitoring plan to develop safeguards for operating the wellfield in a responsible manner. In addition, the groundwater model has been developed so that as new field data becomes available, the new data can be readily used to improve the predictive accuracy of the model.

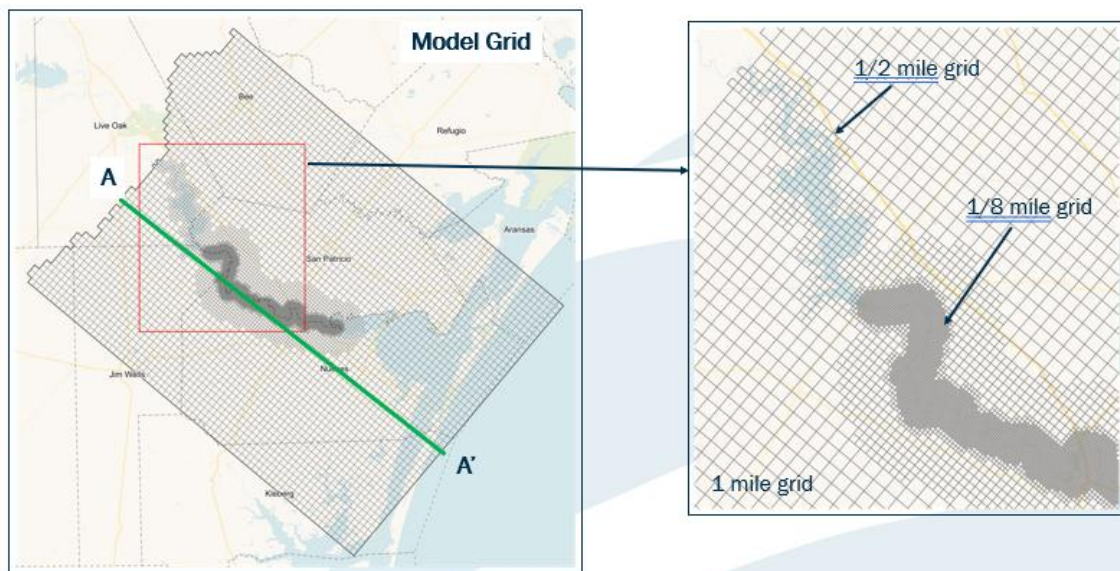


Figure 1. The model domain and numerical grid for the INTERA groundwater model.

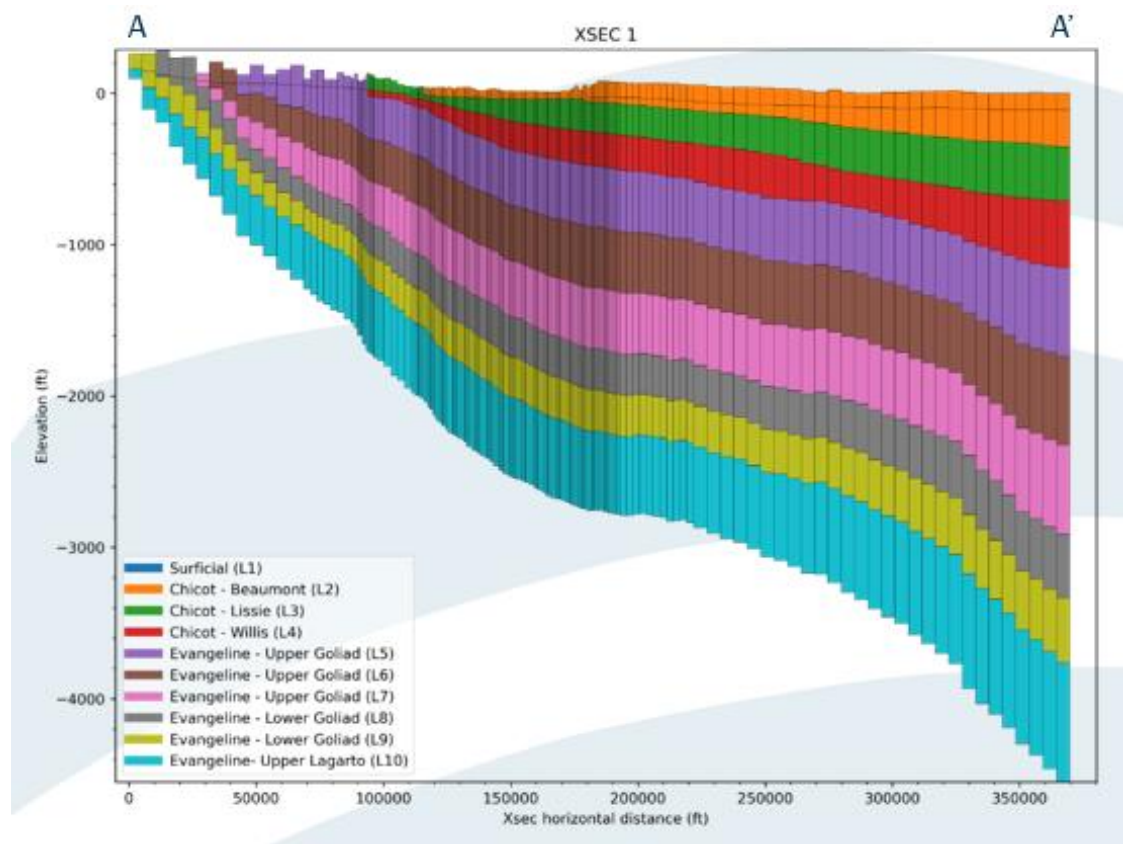


Figure 2. A vertical cross-section of the INTERA groundwater model along Transect A-A' showing the ten model layers that represent the Chicot and Evangeline Aquifers.