# PROGRESS REPORT
# FOR PERIOD ENDING FEBRUARY 28, 2019

**PROJECT:** Development and maintenance of a computer model to simulate groundwater flow and saltwater encroachment in the Baton Rouge Sands, Louisiana.

**COOPERATING AGENCIES:** Capital Area Ground Water Conservation Commission, Louisiana Department of Transportation and Development, City of Baton Rouge and Parish of East Baton Rouge

**PROJECT CHIEFS:** Chuck Heywood and Max Lindaman

**PERIOD OF PROJECT:** Oct. 2012 to Sept. 2022

**PROBLEM:** Large water withdrawals from aquifers in East Baton Rouge Parish have resulted in northward encroachment of saltwater across the Baton Rouge fault toward the public and industrial supply wells. Groundwater flow and solute transport models are needed for the Baton Rouge sands to simulate the effects of past, current, and a variety of possible future pumping scenarios and provide a tool to evaluate possible management alternatives.

**OBJECTIVE:** To develop a computer model that can be used as a tool to simulate past, current, and possible future conditions in Baton Rouge area sands.

**PROGRESS AND SIGNIFICANT FINDINGS:**

1. Completed preliminary calibration of the updated groundwater flow model. Improved the fit of water levels simulated with MODFLOW to historic water-level observations by calibration of aquifer-system parameters with PEST++.
2. Utilizing the MODFLOW-computed groundwater flow field, simulated the movement of saltwater in the “600-ft” and “1,000-ft” sands with the solute transport code MT3D-USGS.
3. Began preparation of script to automate the process of running the flow model and creating visualizations of the output files to facilitate calibration and sharing of results.

**PLANS FOR NEXT QUARTER:**

1. Identify areas of model bias by plotting the spatial distribution of residuals (observed minus simulated water levels) at various times in the “400-ft,” “600-ft,” “800-ft,” and “1,000-ft” sands. Attempt to alleviate any systematic bias identified with boundary-condition modification and/or reparameterization.
2. Adjust model parameters to calibrate chloride concentrations simulated in the “600-ft” and “1,000-ft” sands to historic chloride measurements in those sands.
3. Identify cooperator concerns in the “400-ft,” “600-ft,” “800-ft,” and “1,000-ft” sands, and consider water-management alternatives amenable to analysis with the new groundwater model.
4. Prepare report “Simulation of Groundwater Flow and Chloride Transport in the “1,500-Foot”, “2,400-Foot”, and “2,800-Foot” Sands of the Baton Rouge Area, Louisiana” for publication.
5. Continue preparation of model visualization script.

**PROBLEMS/CONCERNS:**

None.