

New tool arrives to fight salt water intrusion

By AMY WOLD, Advocate staff writer, July 17, 2013

The arrival of a new and long-awaited tool to help officials make difficult decisions on how to protect freshwater wells from saltwater intrusion in the greater Baton Rouge area was greeted with enthusiasm Tuesday.

The new tool is a computer model from the U.S. Geological Survey that allows officials to see what effects potential changes in water use would have on saltwater intrusion into several layers of the Southern Hills Aquifer.

The model has been five years in the making with funding from the Capital Area Groundwater Conservation Commission, state Department of Transportation and Development and the city-parish.

In at least the past several years, commissioners at multiple commission meetings on saltwater intrusion have pointed to the computer model as the tool needed to make informed decisions on how to fight the problem.

“We’ve been talking about this for a long time,” said David Guillory, acting director of the city-parish Department of Public Works. “I think with the information in this report, the groundwater district can really nail down the next step in protecting fresh water.”

Patrick Courreges, communications director with the state Department of Natural Resources, said staff is going through the report that describes the new model. John Adams, a DNR representative on the commission, also is sending a letter to other commissioners to get a technical committee appointed to start working on what they’ll do with the model.

“This is what we said we needed. We’ve got it, let’s go,” Courreges said.

The commission is charged with dealing with the long-standing problem of salt water coming across the Baton Rouge fault from the south.

As water is drawn from wells north of the Baton Rouge fault, it draws salt water from south of the fault closer to freshwater wells used for drinking and industry.

The salt comes from the salt domes located south of the Baton Rouge fault.

The 1,500-foot sand and the 2,000-foot sand are the two main layers in the Southern Hill Aquifer. In 2010, an average of 23.9 million gallons a day of water was taken from the 2,000-foot sand with about 66 percent of that going to industrial use, according to the report.

There are 10 different sands in the aquifer under the greater Baton Rouge area and there is at least some kind of saltwater intrusion into seven of those, said John Lovelace, deputy director of the Louisiana Water Science Center in Baton Rouge.

As part of a 10-year plan with the same partners that funded the recent model, the USGS will be expanding the modeling to include all 10 sands, he said.

Although the bulk of the USGS report explains how the computer model of water movement and saltwater intrusion in the 1,500-foot sand and 2,000-foot sand was built, it also includes a few scenarios that were run through the model, Lovelace said.

“That’s what most people will be interested in,” Lovelace said.

One scenario looks at what would happen if nothing is changed in pumping from the 2000-foot sand over a 40-year period using 2007 pumping levels as the base. What it shows is the salt water continues to move north into the industrial district in north Baton Rouge.

Another scenario looks at what would happen if scavenger wells, which help draw off salt water before it reaches freshwater wells, were placed in two locations in the Baton Rouge area.

“They do show they have some effect on salt water,” Lovelace said of the scavenger wells. One placement was better for the industrial district and another placement was better for other wells in the area.

Another scenario looks at what would happen if pumping from the 2,000-foot sand in the industrial district were reduced by 3.6 million gallons per day, or about a 20 percent decrease from 2007 numbers.

“Essentially, it didn’t have a very big impact,” Lovelace said.

A fourth scenario looked at what would happen if all of the pumping from the 2,000-foot sand in the industrial area was stopped.

“Which probably isn’t very realistic, but we wanted to see what it could do,” Lovelace said. “It had a pretty dramatic effect.”

In that scenario, the saltwater plume recedes south, but it also moves east and has a greater effect on Baton Rouge Water Company wells, he said.

The last scenario looks at just water levels, not salt water, in the 1,500-foot sand. Although the 1,500-foot sand isn’t used by the industrial district, there are industrial uses for that water in the northwest portion of the parish, Lovelace said.

This scenario looked at stopping withdrawals from seven industrial wells in the northwest corner of the parish and found that water levels would rise about 15 to 20 feet if no changes were made. However, Lovelace said, because the gradient — between this area and the Baton Rouge fault where the salt water enters the system — is still there, it’s unlikely that this increase in water levels would have an effect on saltwater intrusion rates.

The next meeting of the Capital Area Ground Water Conservation Commission is scheduled for September, but Director Anthony Duplechin said it’s possible commission members will want to meet earlier now that the model and report have been released.

“We’re going to look at results of the current scenarios that are run already,” Duplechin said.

The commission will discuss what other scenarios they’d like to see run through the model for decision-making purposes.

The next step will be looking at the flow of water in the 1,200-foot sand, he said.

The report from the U.S. Geological Society is available online at <http://pubs.usgs.gov/of/2013/1153/>.