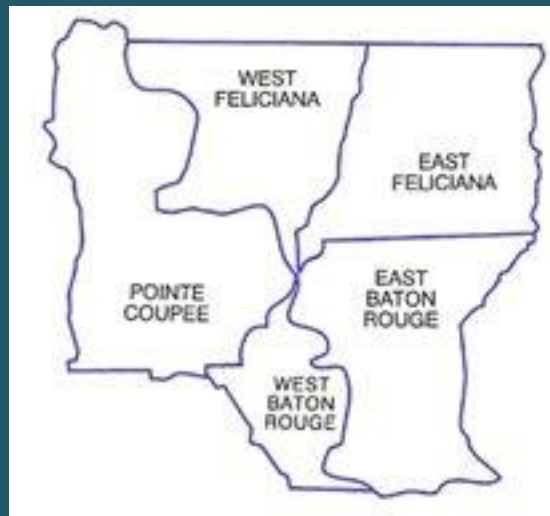


# Capital Area Ground Water Conservation Commission



Plan for Management of the  
Southern Hills Aquifer System  
in the Baton Rouge Area

# Purpose and Scope

- The Southern Hills Aquifer System extends from Vicksburg, Mississippi, south to Baton Rouge, west through West Baton Rouge and Pointe Coupee parishes, thence east through the rest of the Florida Parishes to the Pearl River.
- Supplies southeast Louisiana with a large quantity of water that is used for domestic, agricultural, light business, and industrial purposes.
- Approximately 150 million gallons of water per day is drawn from the aquifer system in East Baton Rouge Parish, primarily for public supply and industrial use.
- In the Baton Rouge area the aquifer system consists of 10 individual sands (aquifers) that are named according to depth.

# Purpose and Scope

- In the Baton Rouge area, pumping limits put in place by the Capital Area Ground Water Conservation Commission (CAGWCC) in the 1970's, 1990's, and in 2013, should assure adequate water levels, hence groundwater availability.
- Over the past 75 years, declines in water levels near the Baton Rouge fault, a leaky hydrologic barrier, are allowing movement of saltwater from south of the fault to the north into freshwater sands.
- Saltwater has reached some pumping wells in a portion of East Baton Rouge Parish near the fault, primarily in two of the aquifer system's 10 individual sands.

# Purpose and Scope

- This saltwater encroachment is directed at two major pumping centers.
  - In the 2,000-foot sand the pumping center is located in the industrial district north of downtown Baton Rouge.
  - In the 1,500-foot sand the pumping center is located at a public supply well field further southeast.
- It is the goal of the CAGWCC to effectively reduce and manage this saltwater encroachment in these two affected sands and to manage groundwater withdrawals to assure fresh groundwater availability from all 10 sands for the future.
- The purpose of this management plan is to describe the methods employed by the CAGWCC to achieve that goal.

# Management Authority of the Capital Area Ground Water Conservation Commission

- The Capital Area Ground Water Conservation District
  - East Baton Rouge      East Feliciana      Pointe Coupee
  - West Baton Rouge      West Feliciana
- created in 1974, to promote the orderly development and conservation of the District's groundwater resources
- The CAGWCC has wide authority to manage the District's groundwater resources through groundwater pumpage reporting, usage fees, well permitting, pumping limits and restrictions, and other regulatory tools.

# Management Authority of the Capital Area Ground Water Conservation Commission

- Capital Area Groundwater Conservation Commission (16 Members (8/1/14))
  - One representative from each parish in the District
  - One representative each from EBR Dept. of Public Works, DNR and DEQ
  - One representative from LA Farm Bureau/ LA Cattleman's Association
  - Three representatives from Public Supply
  - Three representatives from industry
  - One representative chosen by the Board

# Planning Goals of the CAGWCC

## Including New Scientific Models of the Aquifer System

- To meet its goals of managing saltwater encroachment in affected sands and managing groundwater withdrawals to assure future availability for all 10 individual sands, the CAGWCC has endorsed a strong plan of action based on sound and objective science, including:
  - Collecting and analyzing chloride, water level and water use data,
  - Pumping reductions from specific sands in specific areas,
  - Restrictions by use for particular sands in the District,

# Planning Goals of the CAGWCC

## Including New Scientific Models of the Aquifer System

- Supporting the installation of a saltwater “scavenger well” in the 1,500-foot sand, and potentially another in the 2,000-foot sand,
- Development of a long-term scientific model of the aquifer system through a contract with the U.S. Geological Survey (USGS), and
- Continued use of sound and objective science to determine other necessary management measures, including but not limited to the potential movement of wells and well fields to reduce and/or redistribute pumping in specific sands.



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# Planning Goals of the CAGWCC

**NOTE:** This plan is intended to be flexible and responsive to new information; dates and priorities may change as the CAGWCC gains more knowledge about the aquifer system in the Baton Rouge area.

# Alternative Management Techniques

- Freshwater Pumping Reductions - This option uses modeling to depict a pumping scenario that controls saltwater movement, ultimately returning pumping conditions to the state where hydraulic pressure is higher on the north side of the Baton Rouge fault than on the south side, thereby halting saltwater migration northward.
- Freshwater Injection - This option would inject freshwater on the north side of the fault to artificially raise hydraulic pressure so that saltwater does not migrate from south to north.

# Alternative Management Techniques

- Saltwater Removal South of the Baton Rouge Fault - This option pumps massive amounts of saltwater from the south side of the fault so that the hydraulic pressure is lower on that side, thereby halting northward migration.
- Saltwater Scavenging - This option removes saltwater from the sand at a rate that modeling indicates would halt northward movement. This option can include numerous small capacity wells or one or more high capacity wells.

# Alternative Management Techniques

- Combination of Saltwater Scavenging with some Fresh Water Pumping Reductions - This option would limit or offset water level declines to assure continued availability along with the effective management of saltwater encroachment.

Based on a review of available alternatives and practical considerations, such as land acquisition, legal issues, cost/benefits analyses, permitting and disposition of excess saltwater, among others, the CAGWCC develops and then implements a management strategy for that sand.

# Schedule for Modeling of the Aquifer System

- Modeling Schedule (Subject to Change)
- 1,500-foot Sand Availability Model (v)
- 2,000-foot Sand Availability and Saltwater-Vulnerability Models (v)
- 1,200-foot Sand September 2014
- 2,800-foot Sand September 2015
- 600-foot Sand September 2016
- 2,400-foot Sand September 2017
- 1,000-foot Sand September 2018
- 1,700-foot Sand September 2019
- 800-foot Sand September 2020
- 400-foot Sand September 2021

# Schedule for Modeling of the Aquifer System

- 1,500-foot Sand (v)

- Modeling results published in December 2013.

- The CAGWCC approved a management plan setting total annual water withdrawal limits in EBR.(10/17/2013)

- Users will limit production from the “1,500-foot” sand to 25 million gallons per day (MGD) averaged over each calendar year in East Baton Rouge Parish.
    - Users of the “1,500-foot” sand will install any new well northward away from the Baton Rouge Fault.

- Modeling results indicate these withdrawal limits will sustain water levels.

# Schedule for Modeling of the Aquifer System

- 1,500-foot Sand (v)
  - Review quarterly pumping information to ensure these pumping limits are met.
  - District Director will not approve new production wells over the established limit.

The Baton Rouge Water Company (BRWC) has installed a scavenger well system south of the Lula Street pumping station to address saltwater encroachment in this sand. This system is active, and an initial evaluation of effectiveness should be available by the end of 2014. The CAGWCC will continue to review water levels and the results from the scavenger well and will evaluate further management actions if required.



# Schedule for Modeling of the Aquifer System

- 2,000-foot Sand Availability Model (√)
- Modeling results published in December 2013.
- The model shows water levels to be relatively stable.
- Saltwater moving towards the industrial district pumping center and a public supply well field at Government Street.
- A scavenger well combined with fresh water pumping reductions appears to be the preferable approach to manage this saltwater migration.

# Schedule for Modeling of the Aquifer System

- 2,000-foot Sand Availability Model (√)
- The CAGWCC approved a management plan setting total annual water withdrawal limits in EBR and in the industrial area north of Chippewa Street. (10/17/2013)
- Through 2014
  - 24.5 MGD averaged over each calendar year in East Baton Rouge Parish.
  - 15.25 MGD averaged over each calendar year in the “Industrial District”
- Beyond 2014
  - 23.5 MGD in East Baton Rouge Parish
  - 15.25 MGD in the Industrial District
- Review quarterly pumping information to ensure these pumping limits are met.

# Schedule for Modeling of the Aquifer System

- **2,000-foot Sand Availability Model (√)**
- The CAGWCC recommends that a test boring (or multiple borings) be completed in that area of Baton Rouge to document the thickness of the sand and confirm the presence of saltwater and at what concentration.
- The CAGWCC will develop a plan to locate specific property for such test holes, secure preliminary access agreements, and determine costs and payment options, in anticipation of work moving forward upon the receipt and positive evaluation of data from the 1,500-foot scavenger well.
- Information gained from the test holes will be used to locate a scavenger well.

# Schedule for Modeling of the Aquifer System

- 1,200-foot Sand September 2014
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- Results are to be published by September 2014.
- This sand has saltwater near the Baton Rouge fault at a public supply well.
- Modeling work moved up to further evaluate pumping scenarios involving an increase in industrial pumping in this sand as a replacement for current and future use in the 2,000-foot sand.
- The CAGWCC will complete its evaluation of this information by July 2015, and report an updated plan, if required, by December 2015.

# Schedule for Modeling of the Aquifer System

- 2,800-foot Sand September 2015
- Results should be published by September 2015.
- This sand contains saltwater as far north as the industrial district.
- The source of this saltwater may not be the same as that in the 1,500-foot or 2,000-foot sands.
- Saltwater present before the development of the resource.

# Schedule for Modeling of the Aquifer System

- 2,800-foot Sand
- high degree of use
  - industrial district
  - public supply
    - Baker
    - Zachary
- The CAGWCC will complete its evaluation of the model results by March 2016, and report an updated plan by December 2016.

# Schedule for Modeling of the Aquifer System

- 600-foot Sand
- Large saltwater area in the downtown Baton Rouge area.
- Pumped at about 10 million gallons a day, 70 percent of which is used by industry.
- The 600-foot and 400-foot sands were modeled in 1989 for flow parameters, with flow direction centered in the industrial district.

# Schedule for Modeling of the Aquifer System

- 600-foot Sand
- Future use of this sand is important in the long term management strategy for the overall aquifer system at Baton Rouge as an option to increase industrial pumping in that sand while decreasing industrial pumping in deeper sands.
- The CAGWCC will complete its evaluation of the model results by March 2017, and report an updated plan by December 2017



# Schedule for Modeling of the Aquifer System

- 2,400-foot Sand
- results should be published by September 2017.
- Saltwater occurs along the Baton Rouge fault and in southeast Baton Rouge.
- ~ 12 percent of the total groundwater use in East Baton Rouge.
- CAGWCC will complete its evaluation of the model results by March 2018, and report an updated plan by December 2018.

# Schedule for Modeling of the Aquifer System

- **1,000-foot Sand**
- Modeling results should be published by September 2018.
- Saltwater occurs in this sand along the Baton Rouge fault and in southeast Baton Rouge.
- Pumping is about 10 million gallons a day, almost all from public supply.
- Water levels are declining in this sand.
- CAGWCC will complete its evaluation of the model results by March 2019, and report an updated plan by December 2019.

# Schedule for Modeling of the Aquifer System

- **1,700-foot Sand**
- Modeling results should be published by September 2019.
- This sand does not have a significant saltwater issue, but the water level is declining.
- May have some connection with the 1,500-foot sand
- As the pumping rates change in other sands, the 1,700-foot sand may contribute more total production if water levels can be sustained.
- CAGWCC will complete its evaluation of the model results by March 2020, and report an updated plan by December 2020.

# Schedule for Modeling of the Aquifer System

- 800-foot Sand
- Modeling results should be published by September 2020.
- Water levels are stable and there is only minor saltwater encroachment.
- CAGWCC will complete its evaluation of the model results by March 2021, and report an updated plan by December 2021.

# Schedule for Modeling of the Aquifer System

- 400-foot Sand
- Modeling results should be published by September 2021.
- Water levels are stable and there is no significant saltwater encroachment.
- CAGWCC will complete its evaluation of the model results by March 2022, and report an updated plan by December 2022.