RBDMS-Environmental: A Foundation for Water Budgets and Shaping Policy in Alabama

Ground Water Protection Council 2019 Annual Forum

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Alabama geology controls hydrologic flow regimes.

Alabama is divided into several distinctive GEOLOGIC PROVINCES on AL Geologic Map.

- **EAST GULF COASTAL PLAIN** (Cretaceous-Tertiary Sedimentary rocks); large Unconfined & Confined aquifers
- **PIEDMONT UPLAND** (Crystalline & Metamorphic Rocks: Paleozoic, some Precambrian); *Surface Water primary*
- **VALLEY & RIDGE** (Paleozoic folded, faulted sedimentary rocks); Aquifers mostly in limestone units
- **CUMBERLAND PLATEAU** (Paleozoic sedimentary rocks); *Surface Water primary*
- **HIGHLAND RIM** (Paleozoic limestone); Karstic conduit Unconfined prolific aquifers (hit or miss); *Strong surface water - groundwater interconnection*
Alabama Groundwater Well Networks:
- **PERIODIC** (Spring & Fall)
- **REAL-TIME** (Continuous)

**BACKGROUND** Observation Wells
Not likely influenced by GW Pumping

Piedmont and Plateau provinces are not prolific groundwater producing regions. *These 2 geologic regions RELY mostly on surface water sources.*
USGS National Ground Water Network

NGWMN PLANS ARE BIG FOR 2019... AND BEYOND

• Currently GSA operates 32 Real-Time monitoring wells across the State

• Plan to add 5 more continuously measured wells (FY 2019). If integrated 3G units are not feasible, will install pressure transducers that can be downloaded every 6 mos.

• Water levels measured every 2 hours, transmitted office daily

• Data linked to online hydrographs

• Existing data available to USGS National Ground Water Network by August 2020
Site selection for groundwater monitoring to evaluate USE:

First, look at groundwater use. Then assess current observation monitoring points, to select network classification. AL OWR maintains Certificates of Use (COU). These are self-reported, no metered data.

**Red Circles:** Areas of potential impact due to groundwater withdrawal.

**Blue Polygons:** Potential Background Areas, with less anthropogenic influence due to groundwater withdrawal.

NGWMN classification will be based on hydrograph analyses.
RBDMS-Environmental provides simple organization for detailed well information.

**BENEFITS:**

- Relational database for water wells, accessible via a desktop
- Verify data quality before it is uploaded
- Multiple people using the system can be granted different level of access privileges (i.e., 5 users can edit; 2 can approve prior to upload)
- Useful data architecture for storage, retrieval and future needs, especially for outside agency data
Alabama Water Wells: a work-in-progress

Alabama Wells: entered by county

No. 1 public info request is “how many wells & detail within a given radius?”
## RBDMS Search by Project: Real-Time Wells

### Browse Facilities

**Facility List**

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Hydrograph of Real-Time Well Chilton 1

Location: Chilton County
Aquifer: Coker
Depth of Well: 253 feet BLS
Land Surface Elevation: 379 feet AMSL
RBDMS SEARCH BY COUNTY, SHOW AQUIFER

Browse Facilities

Facility List  Reports  Map  Help

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WHY ALABAMA WANTS TO EXPAND USE OF RBDMS

Why flexible report production and data management are so important in real-time:

- **DROUGHTS**
- **FLOODS**
- **STORMS**: especially Hurricane impacts along coast

Where work needs development:

- Improved report compilation.
- Need for data conformity, since we may add other agencies data.
AQUIFER RECHARGE POTENTIAL IN ALABAMA

BLUE = HIGH
RED = LOW
LOOKING FOR SELECT WELLS/DATA ON PUBLIC LANDS TO EXPAND REAL-TIME NETWORK

ADEM
Monitor Wells for UST, Landfills, RCRA sites, etc

Oil & Gas Local water supply wells

DCNR State Lands

Dept of Transportation Wells

EXPAND Real-Time Network

Drought purpose evaluated

AL Real-Time Wells: more frequent measurements (daily averages) over a longer term, Assess shorter-term affects, seasonal variation, and long-term TRENDS
ADEM UST Wells: public data
Year 2000 Drought

Year 2016 Drought
DROUGHT IN ALABAMA IS **NOT** A WATER SUPPLY PROBLEM. IT IS A WATER MANAGEMENT PROBLEM.

ALABAMA HAS ONE WATER MANAGEMENT DISTRICT IN SOUTHEAST PART OF STATE.

ALABAMA NEEDS TO CREATE LEGISLATION TO BECOME A REGULATED RIPARIAN STATE.

GSA’S GOAL IS TO BUILD & COMMUNICATE THE SCIENCE TO SUPPORT INFORMED SCIENCE-BASED POLICY-MAKING.
Ground- and Surface-Water Use Percentages of Total Public Water Supply Use

Sources of water-use data, GSA, AOWR, USGS
CIRCLE OF LIFE

COMPETITION for RESOURCES: Need to Collaborate and Build Consensus
WRAP UP

• Alabama has water: rainfall, groundwater
• We need to plan for climate fluctuations.
• Drought and flood are big water issues to manage.
• In times of drought (water need), people will pump more, draining both groundwater and surface water bodies, that we know are interconnected. We want to document connectivity with data.
• Water scarcity is an issue that is growing with the population growth. Competition for use and legal development.
RBDMS-Environmental: collaborate & finish strong

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THANK YOU

QUESTIONS ?