Ground Water Resources of the Upper Savannah River Basin

Upper Savannah River Basin Council – Meeting #4, November 8, 2023

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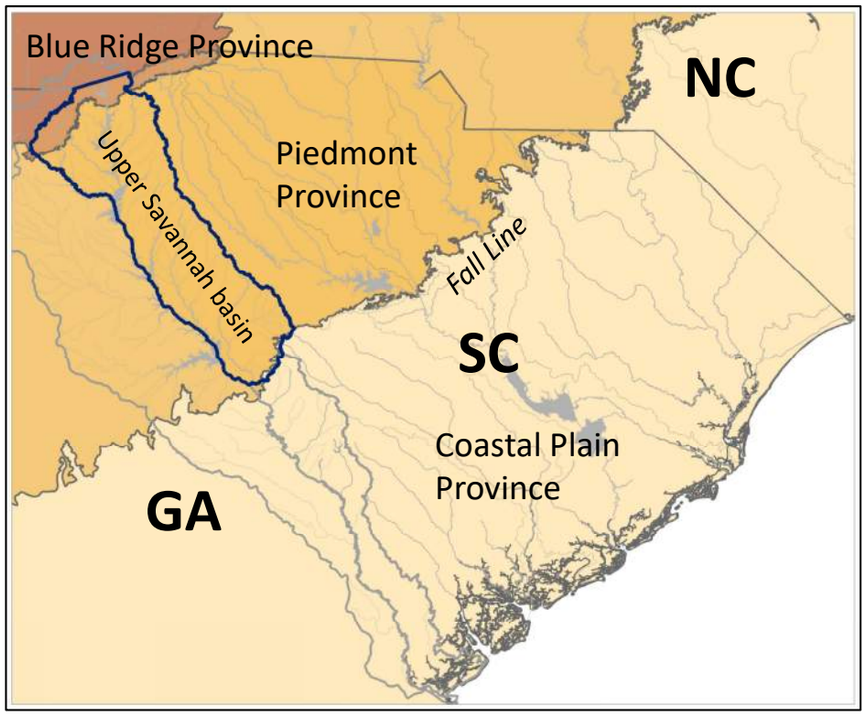
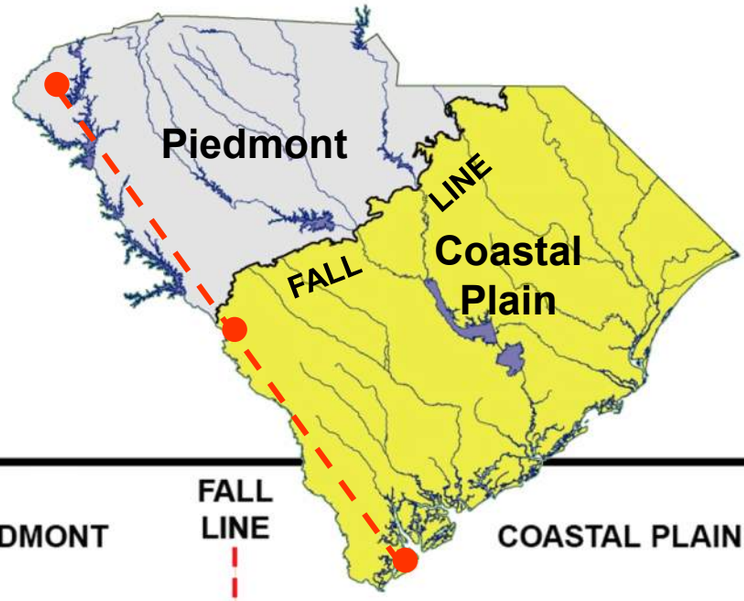
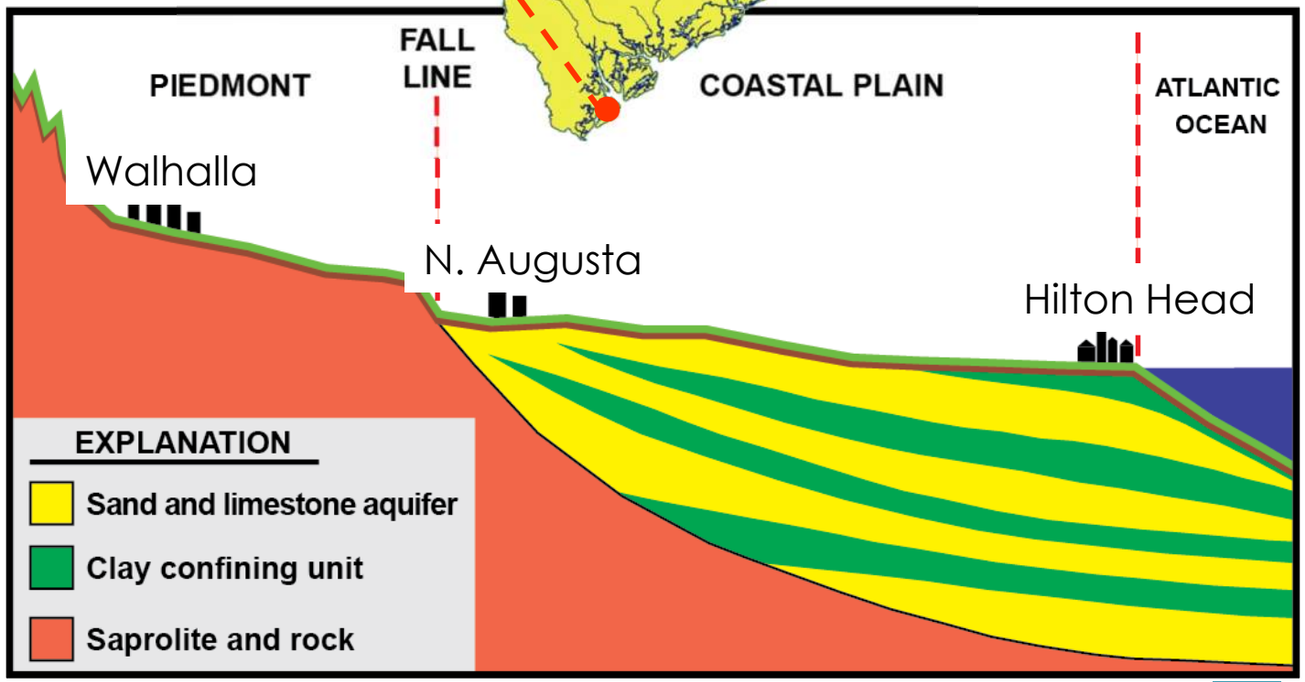
SC Department of Natural Resources

Agenda Item 9

Generalized Hydrogeologic Section through the State



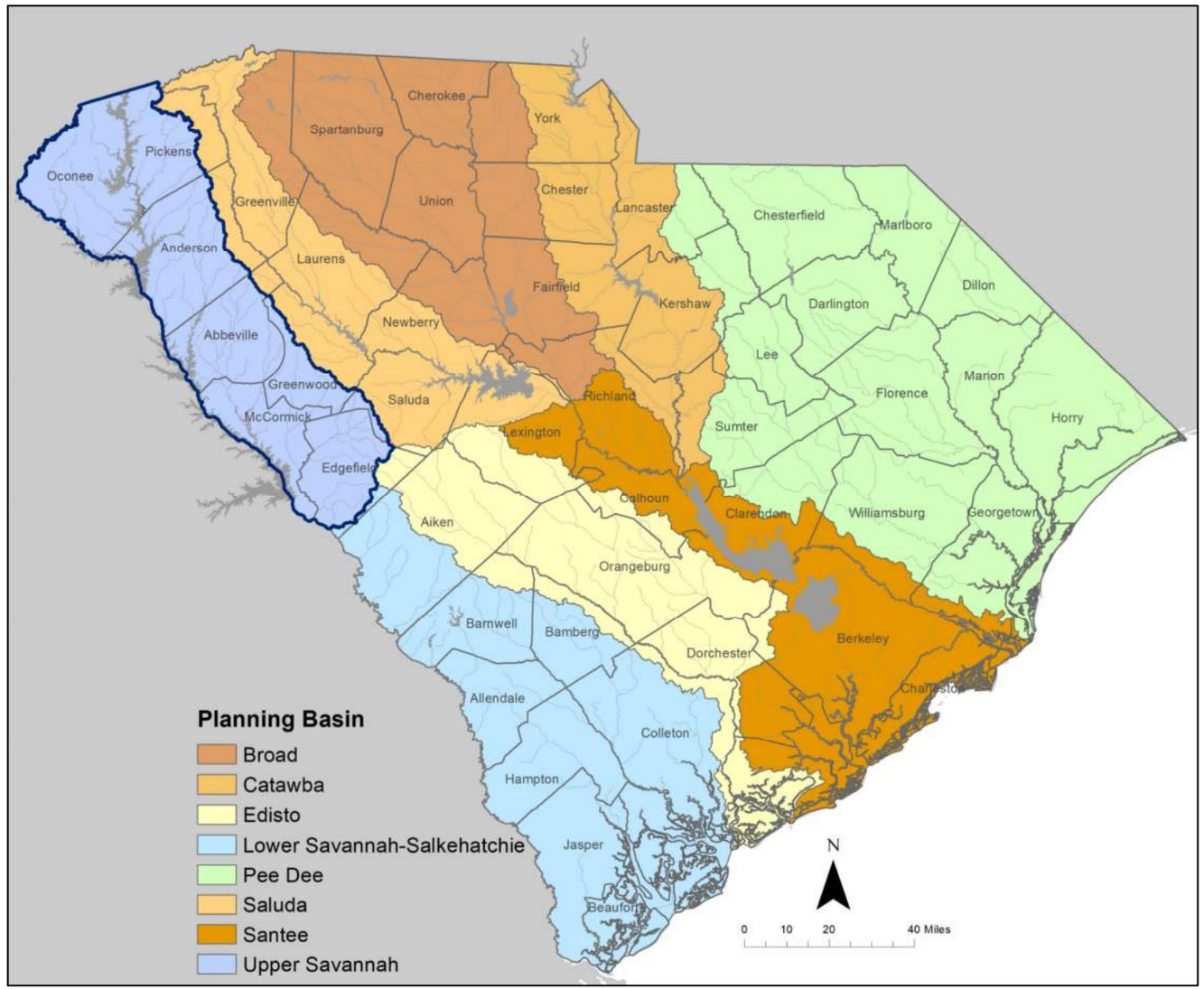




Most of our groundwater is located in the Coastal Plain Province.

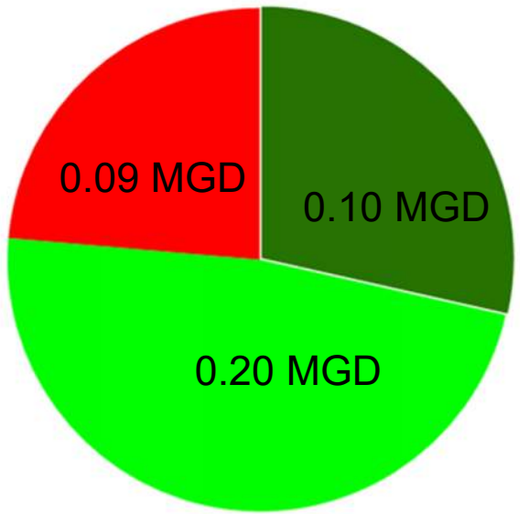
2022 Reported Groundwater Withdrawals in the State-Excluding Energy

Reported Groundwater Withdrawals (MGD)
1. Pee Dee 108.5 (39.6%)
2. Lower Savannah-Salkehatchie 71.0 (25.9%)
3. Edisto 60.0 (21.9%)
4. Santee 27.1 (9.9%)
5. Catawba 6.4 (2.3%)
6. Broad 0.5 (0.2%)
7. Upper Savannah 0.4 (0.1%)
8. Saluda 0.2 (0.1%)
Total 274.0 MGD



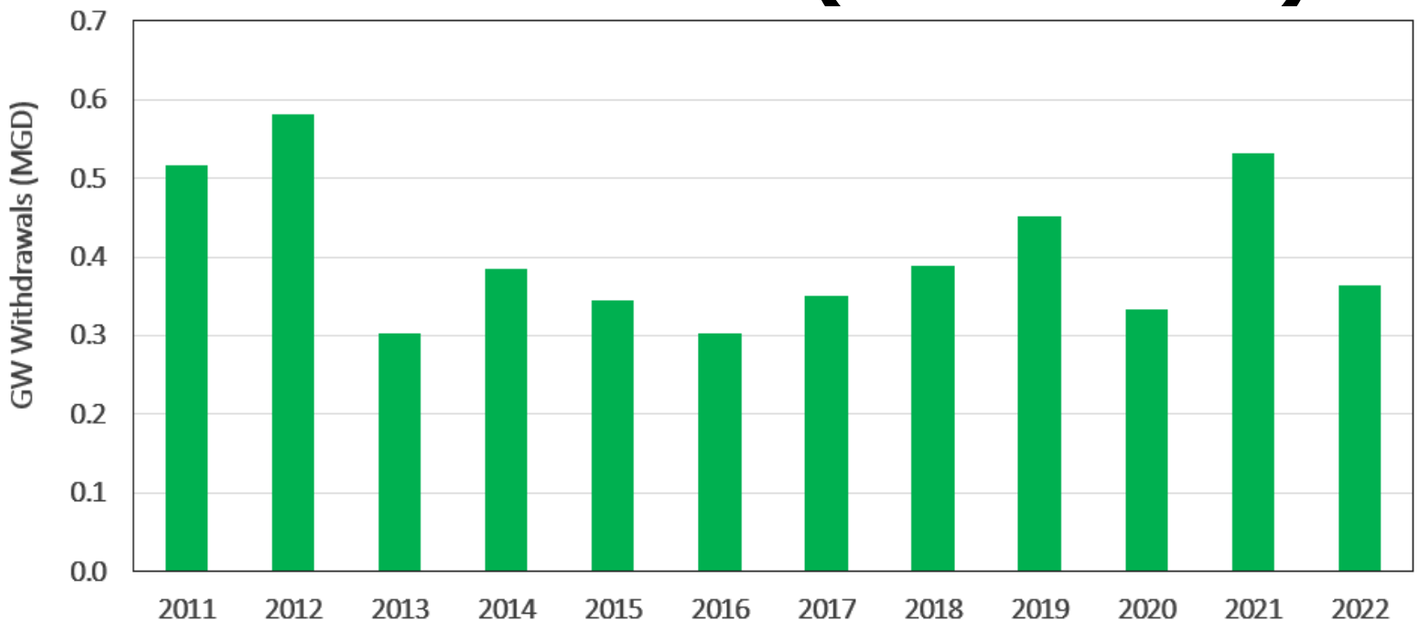
Source: SCDHEC Water Use Database

Reported Groundwater Withdrawals by Category (2022)



- Golf Course (47.8%)
- Agr. Irrigation (28.5%)
- Water Supply (23.6%)

Reported Groundwater Withdrawals (2011-2022)

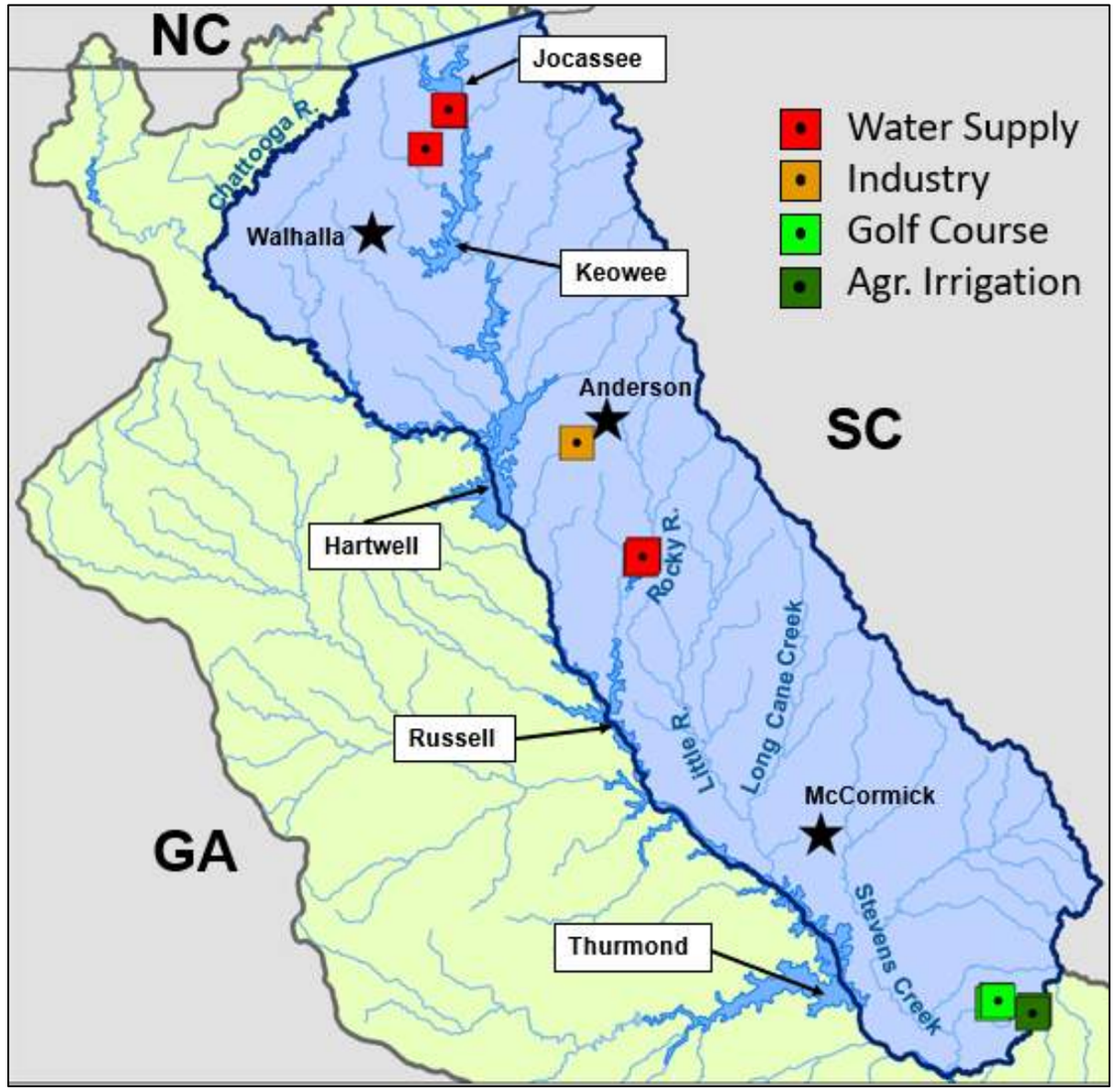


Source: SCDHEC Water Use Database

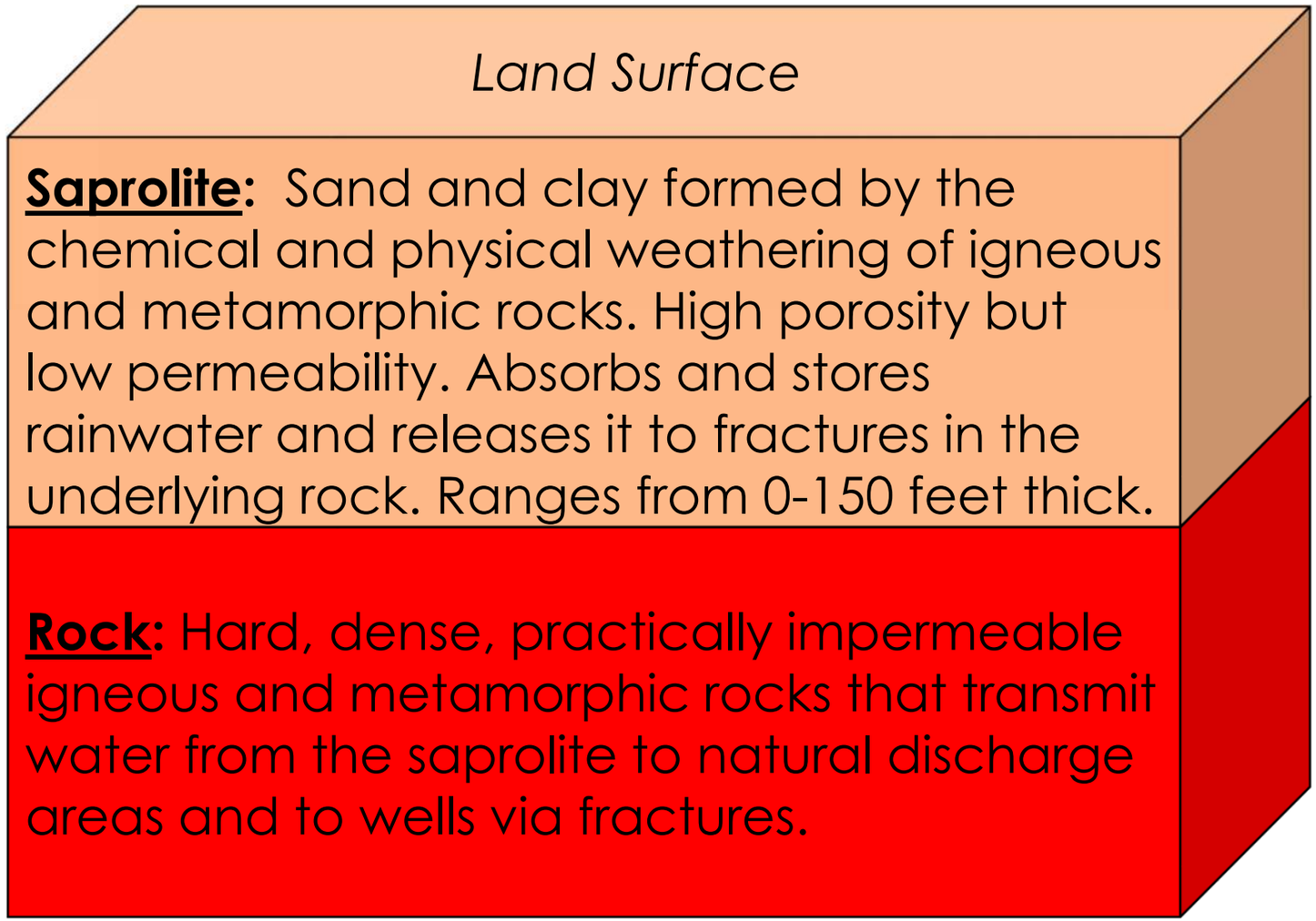
2022 Upper Savannah Reported Groundwater Withdrawers

Category	Facility	No. of wells	MGD
Golf Course	Mt. Vintage Golf Club	8	0.2
Ag. Irrigation	Layman Wholesale Nursery	2	0.1
Water Supply	Town of Salem	4	< 0.1
	Blue Granite Water Co.	3	0
Industry	Michelin	1	0

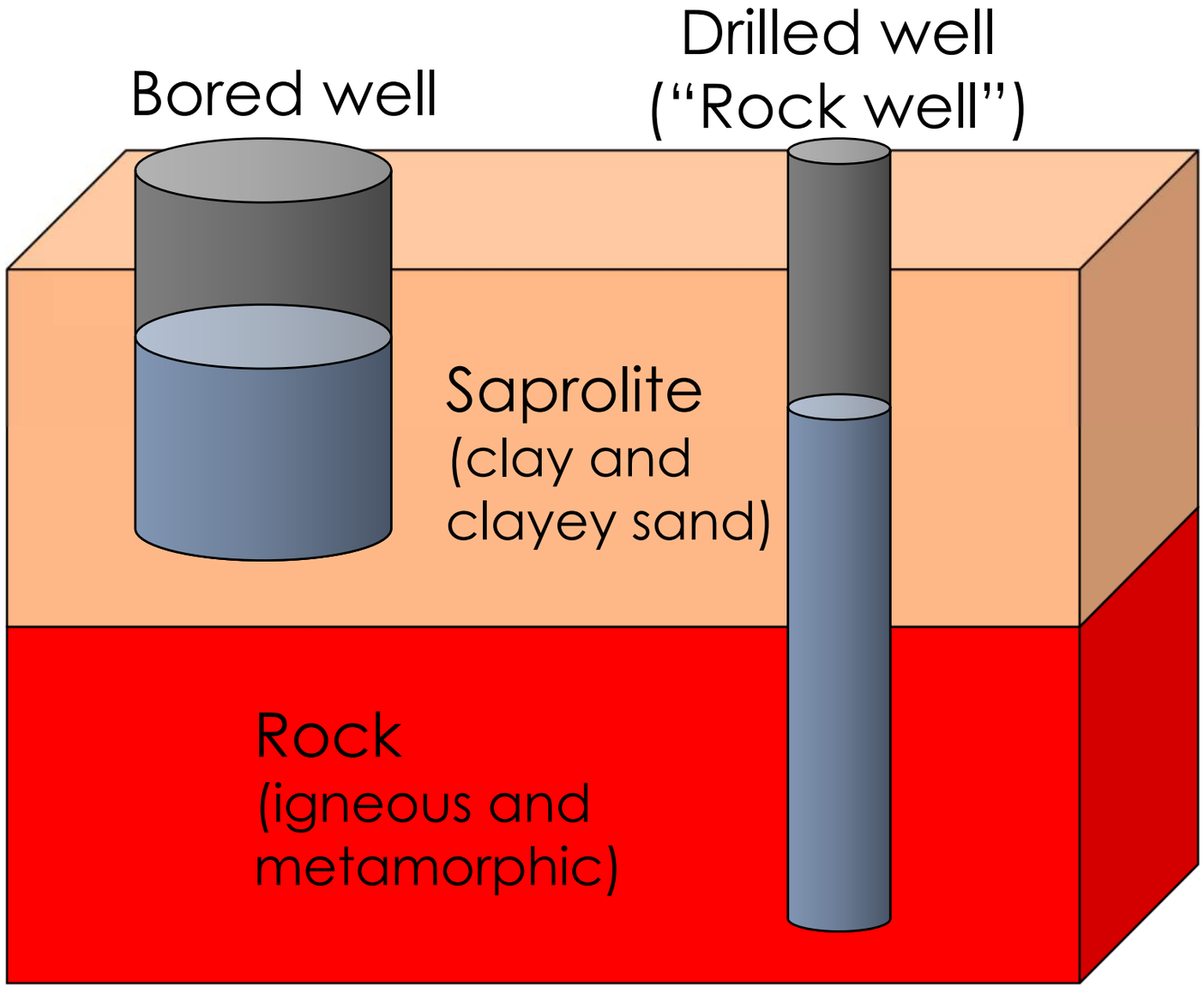
Source: SCDHEC Water Use Database



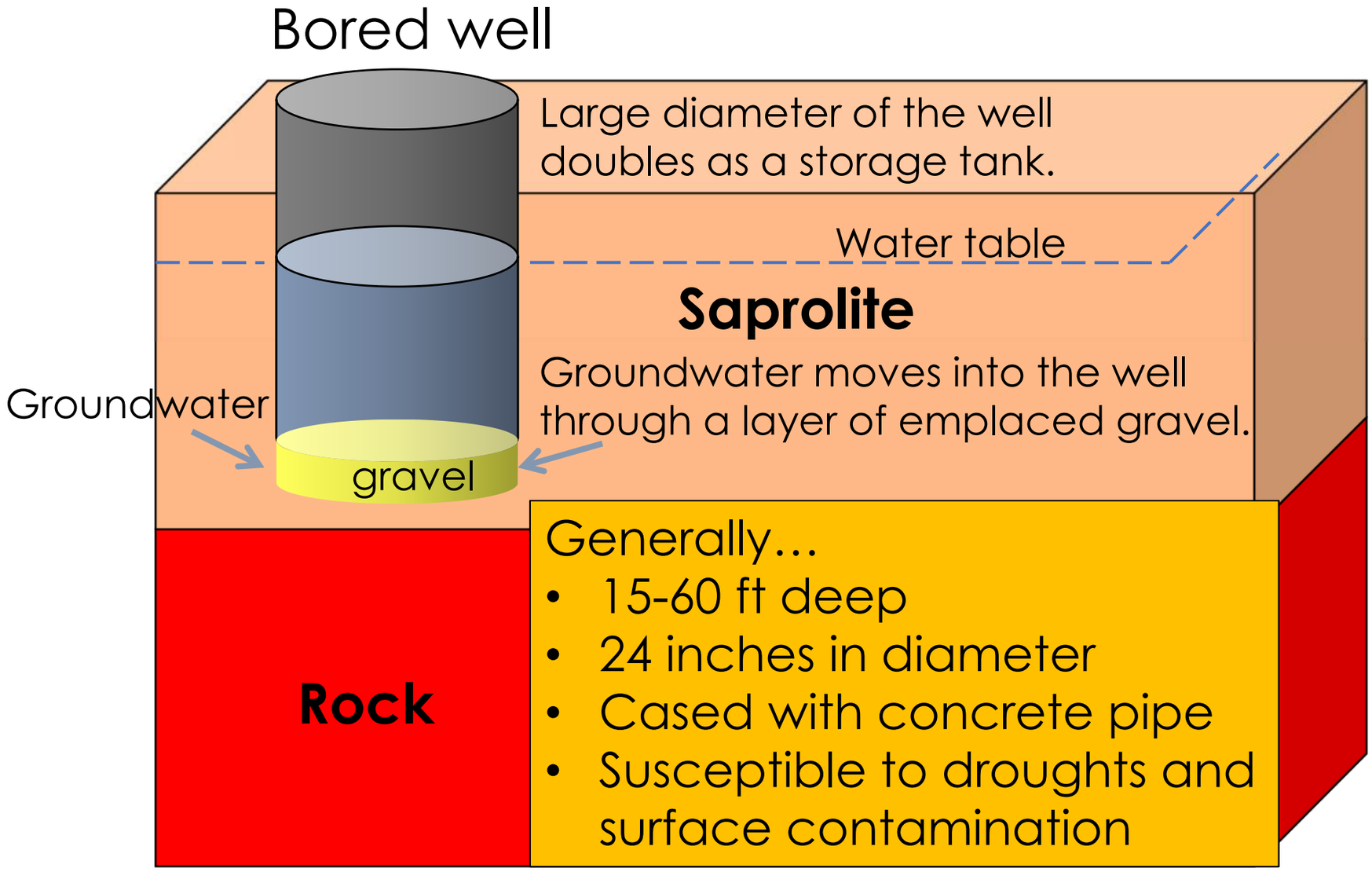
Piedmont Hydrogeologic Framework 2-Layered System



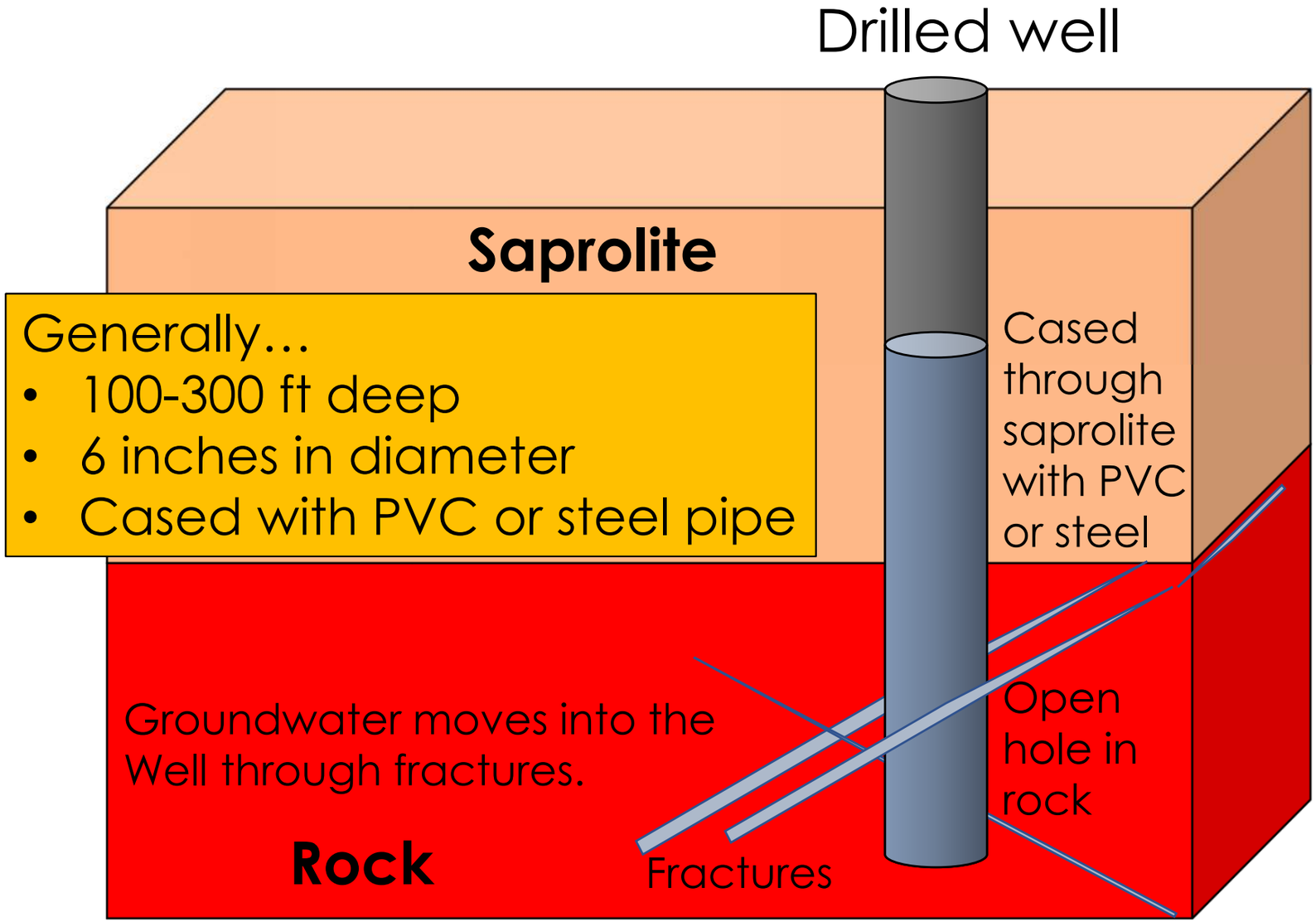
Two Types of Wells – Bored and Drilled



Bored Wells in the Piedmont



Drilled Wells in the Piedmont



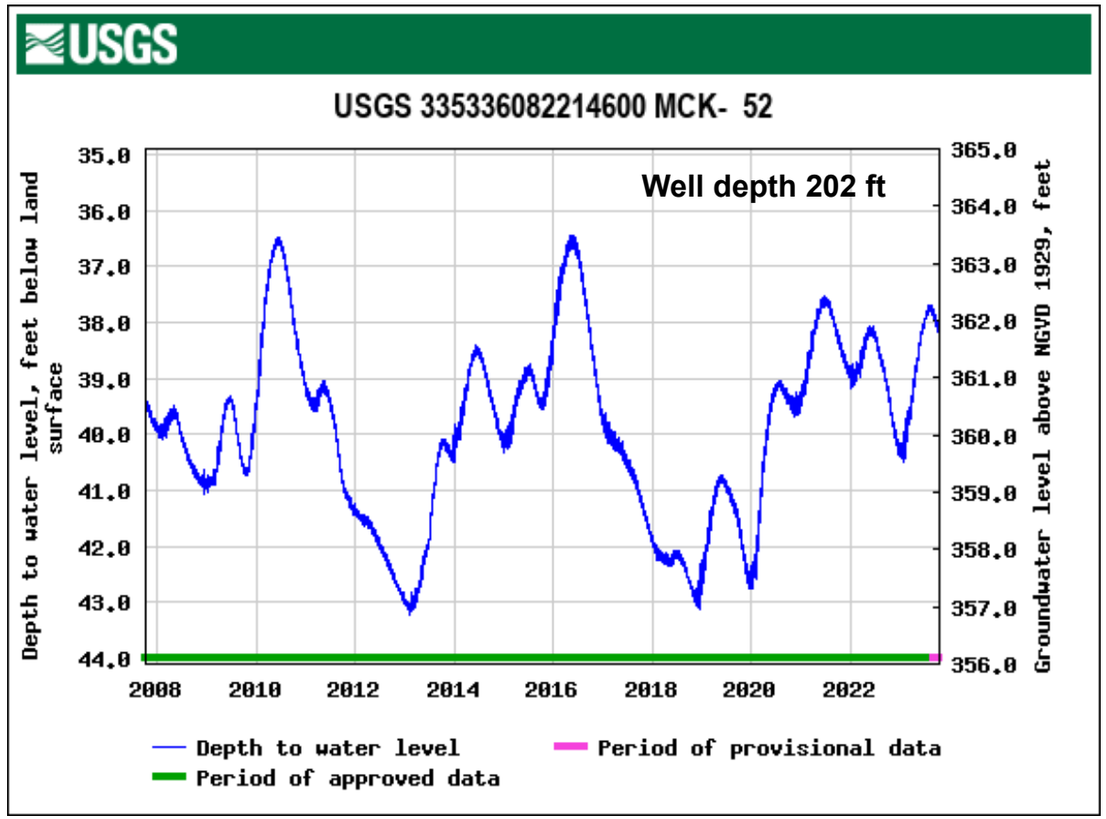
Well Depths and Yields by County in the Upper Savannah Basin

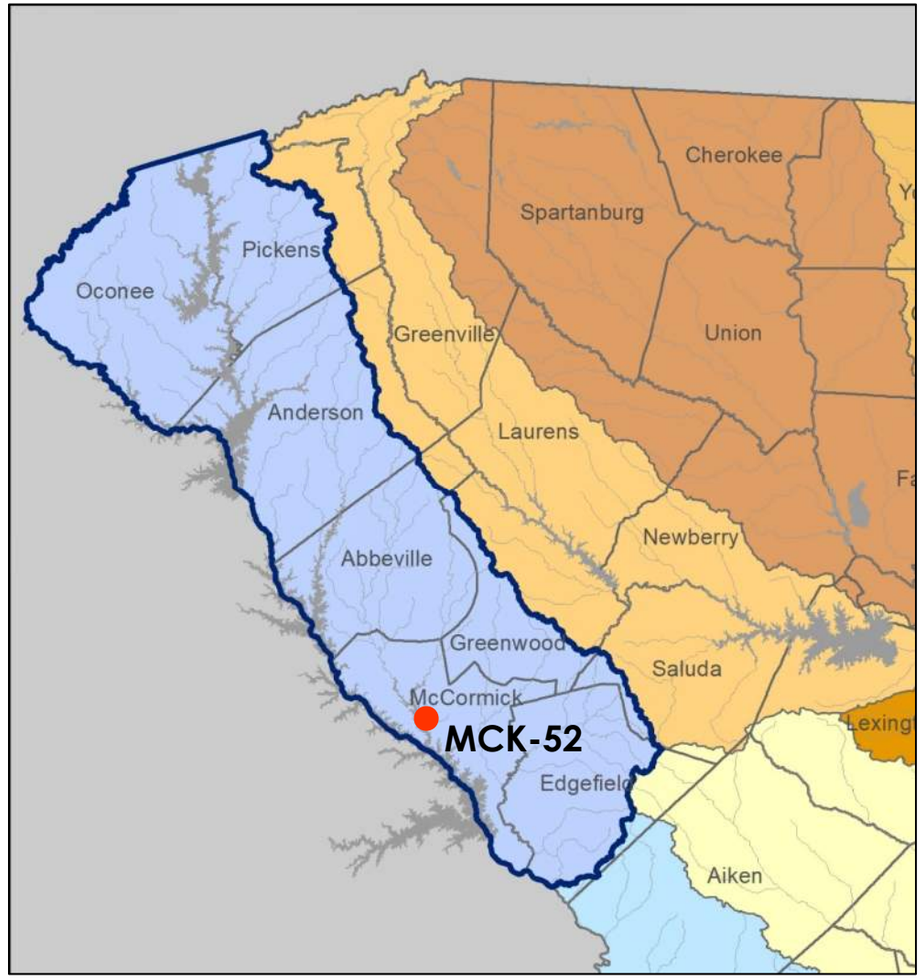
County	Well Depth (feet)		Well Yield (gpm)	
	Average	Maximum	Average	Maximum
Abbeville	259	730	22	300
Anderson	316	1,100	28	600
Edgefield	232	600	15	100
Greenwood	243	620	21	150
McCormick	220	325	23	47
Oconee	241	565	23	400
Pickens	296	885	21	200
Saluda	323	560	16	60
Total	277	1,100	24	600

Source: South Carolina State Water Assessment, Second Edition, 2009
gpm, gallons per minute

- The overall average well depth is 277 ft and the average well yield is 24 gallons per minute.
- Well yields are low but are high enough to support most domestic use in the basin.
- Yields are mainly a function of the number and size of fractures, and of the hydraulic connection between the fractures and saprolite.
- Higher yields are generally found:
  - in low lying areas, such as valleys and hillside ravines (draws), as opposed to hilltops and hillsides
  - where saprolite is thick
  - where wells penetrate certain geologic structures such as quartz veins, dikes, and lithologic contacts
  - in highly textured rocks, such as schist, as opposed to non-textured (massive) rocks, such as gneiss

Groundwater Monitoring Network





https://waterdata.usgs.gov/sc/nwis/gw

Summary of Groundwater Availability in the Upper Savannah Basin

- Groundwater is the principal source of water for rural homes in the basin.
- Low to moderate yields can be obtained from wells across the entire basin.
- Yields can usually satisfy the requirements of most domestic use and some small irrigation and industrial use.

References

Daniel, Charles C., III, White, Richard K., and Stone, Peter A., eds., **Ground Water in the Piedmont: Proceedings of a Conference On Ground Water in the Piedmont of the Eastern United States**, October 16-18, 1989, Charlotte, N.C., 693 p.

Mitchell, H. Lee, 1995, **Geology, Ground Water, and Wells of Greenville County, South Carolina**: South Carolina Department of Natural Resources, Water Resources Report 8, 66 p., 1 plate.