



Water Use in the Lower Savannah-Salkehatchie River Basin

Lower Savannah-Salkehatchie River Basin Council – Meeting #5, March 07, 2024

Alexis Modzelesky

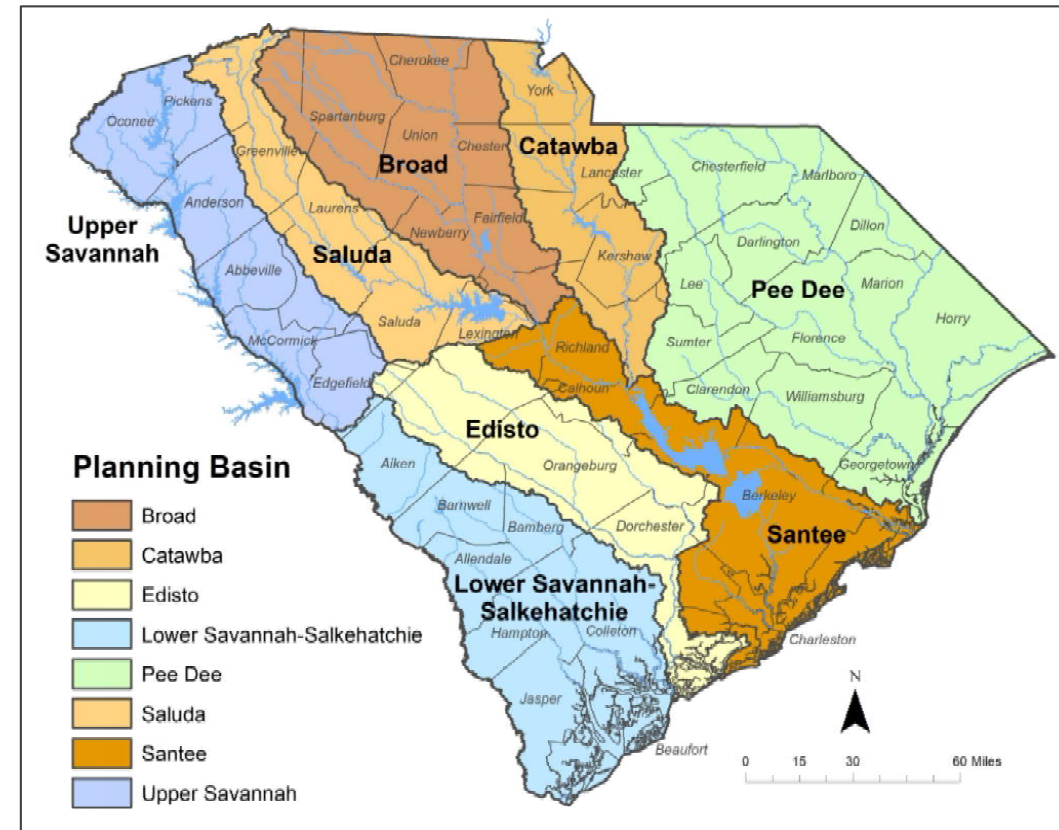
Hydrologist

SC Department of Natural Resources



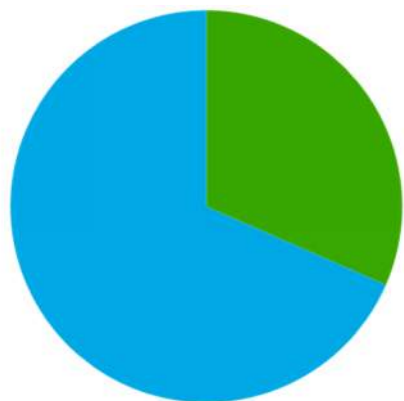
SC Water Withdrawal Reporting

- The South Carolina Department of Health and Environmental Control (SCDHEC) records water use through the South Carolina Surface Water Withdrawal and Reporting Act and the South Carolina Groundwater Use and Reporting Act.
- Regulations require water users that withdraw three (3) million gallons or greater in any month to register with and report their use annually to the Water Use Program at SCDHEC.
 - Exemptions include farm ponds, ponds filled only with surface water runoff, and wildlife habitat management (typically duck ponds).



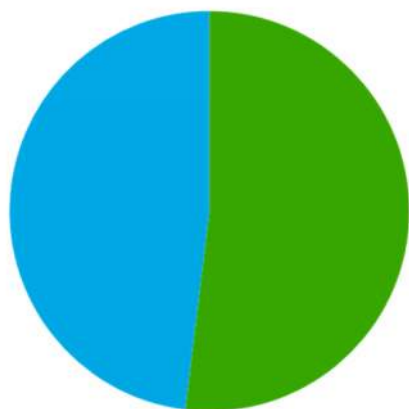
2022 Reported SC Water Withdrawals

Both surface water and groundwater are important resources in the basin.



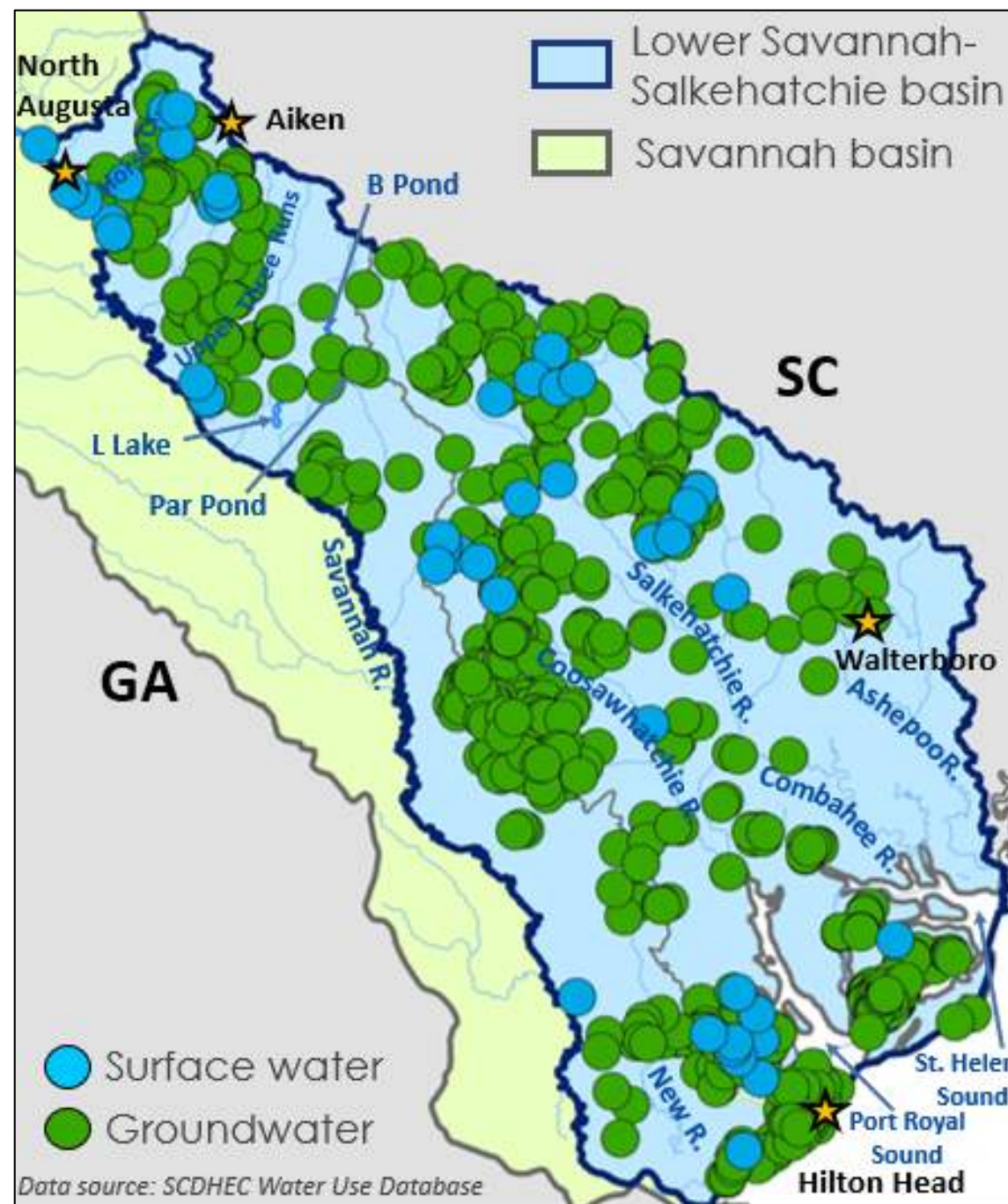
Including Energy

- SW: 68% 155 MGD
- GW: 32% 74 MGD

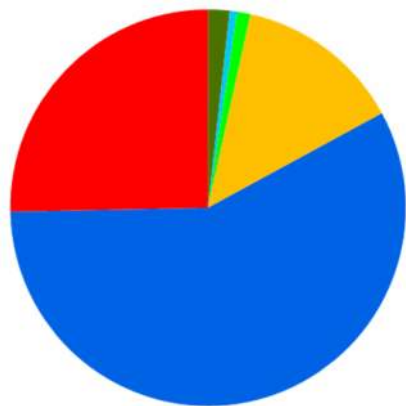


Excluding Energy

- SW: 47% 66 MGD
- GW: 53% 73 MGD



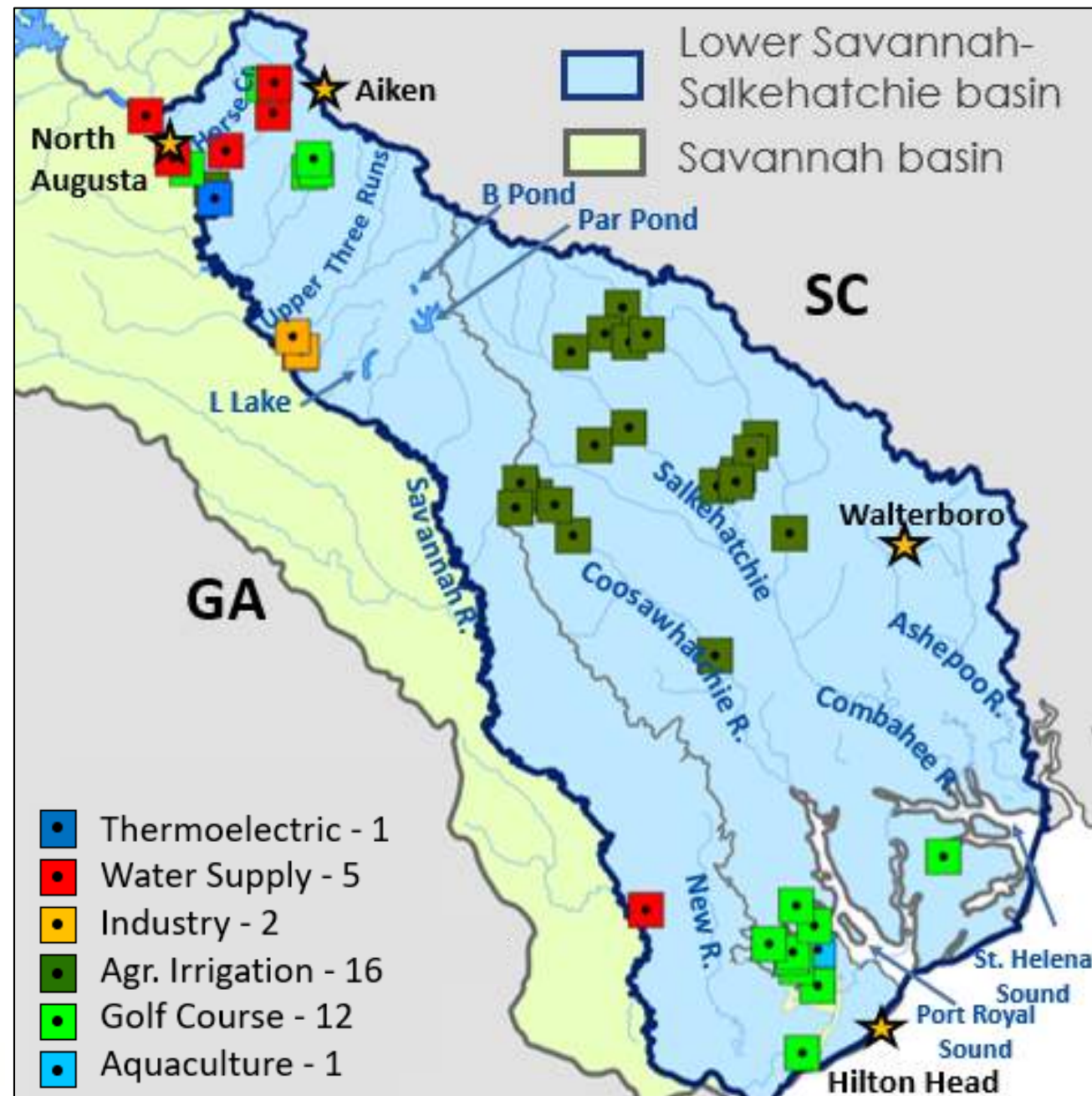
2022 Reported SC Surface Water Withdrawals



Including Energy

- Thermolectric (57%)
- Water Supply (25%)
- Industry (14%)
- Agr. Irrigation (2%)
- Golf Course (1%)
- Aquaculture (1%)

Category	SW Withdrawals (MGD)
Thermolectric – Fossil	89
Water Supply	39
Industry	21
Agr. Irrigation	3
Golf Course	2
Aquaculture	1
Total	155



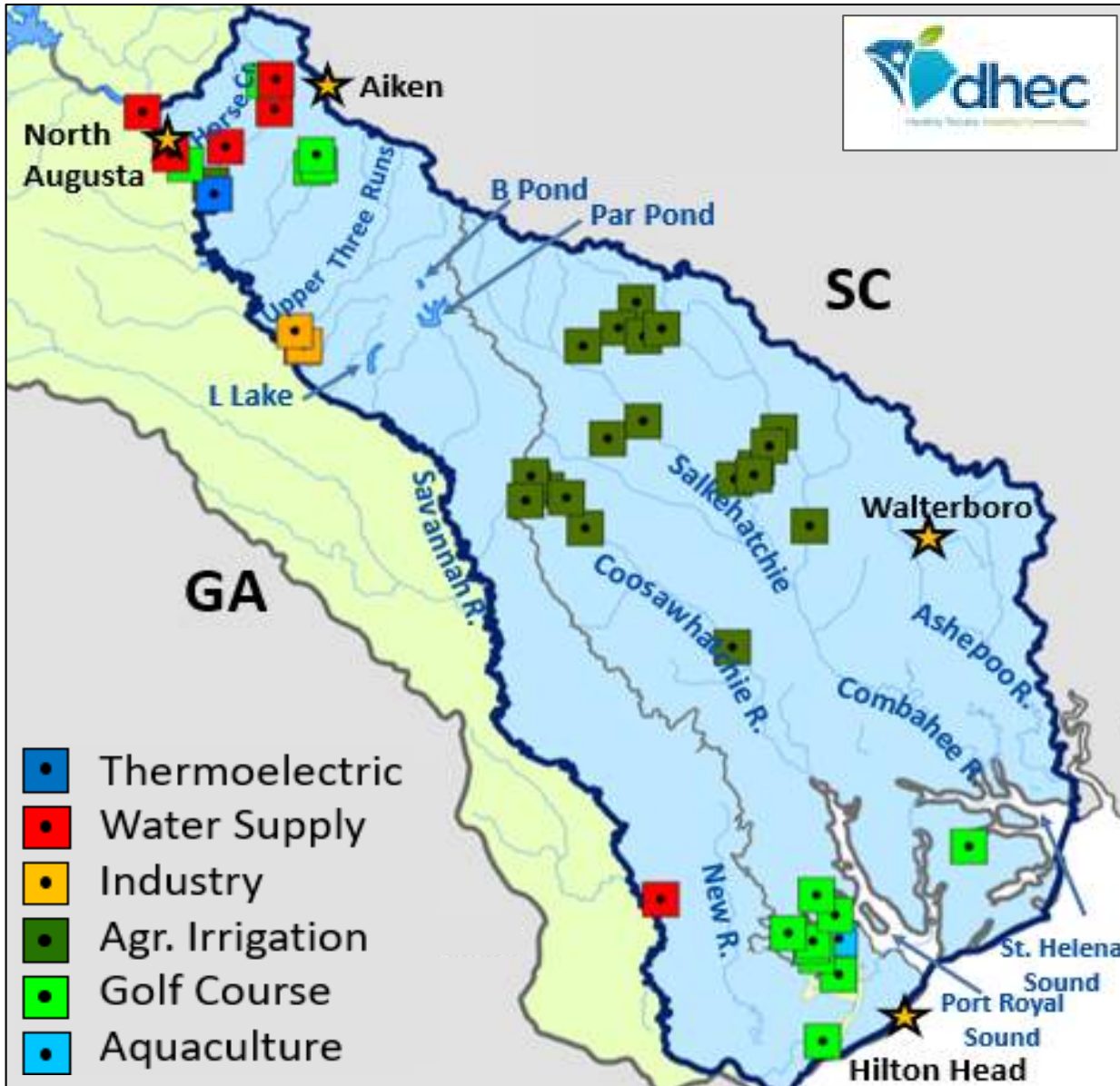
Slide 4

PM0

Values corrected with qaqc

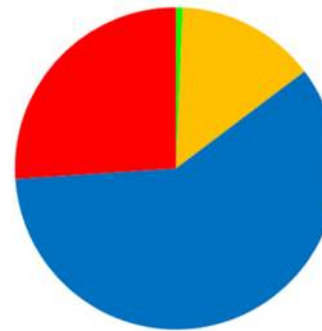
Priyanka More, 2024-02-22T16:14:20.801

2022 Reported SC Surface Water Withdrawals by Subbasin



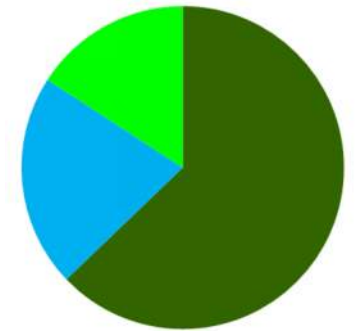
Category	Lower Savannah	Salkehatchie
Thermoelectric	89.3	--
Water Supply	39.2	--
Industry	21.2	--
Agr.Irrigation	--	2.7
Golf Course	1.0	0.7
Aquaculture	--	0.9
Total	150.7	4.3
Percent (%)	97	3

Lower Savannah



- Thermoelectric (59%)
- Water Supply (26%)
- Industry (14%)
- Golf Course (< 1%)

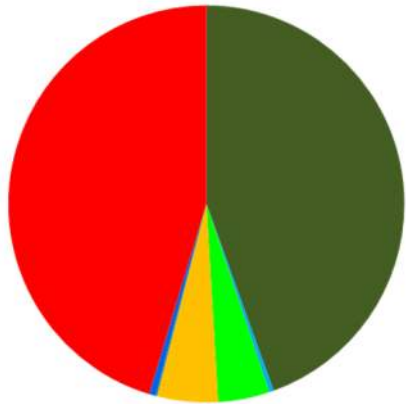
Salkehatchie



- Agr.Irrigation (63%)
- Aquaculture (21%)
- Golf Course (16%)

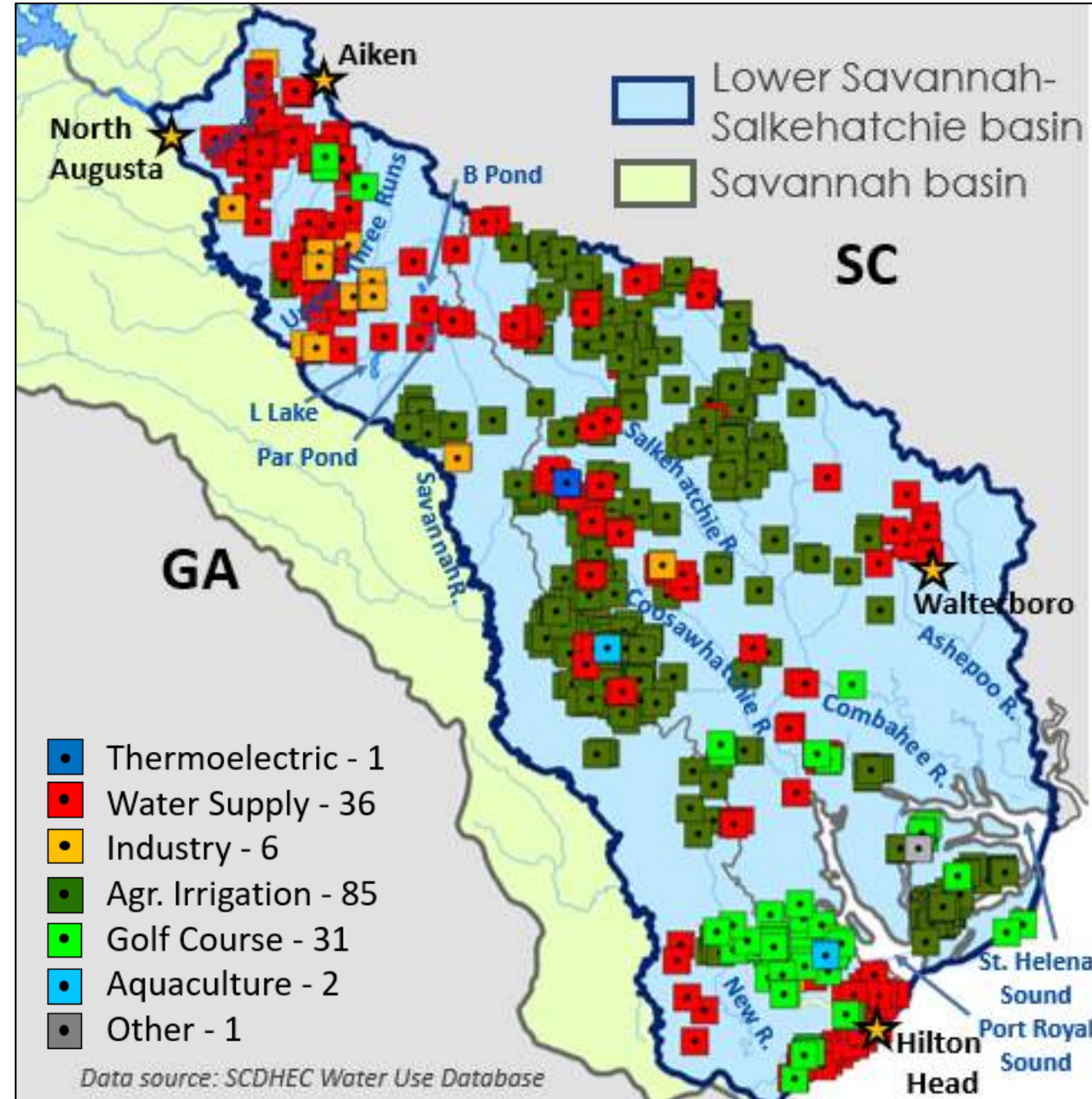
2022 Reported SC Groundwater Withdrawals

Including Energy



- Water Supply (46%)
- Agr. Irrigation (44%)
- Industry (5%)
- Golf Course (4%)
- Thermoelectric Power (1%)
- Aquaculture (<1%)
- Other (<1%)

Category	GW Withdrawals (MGD)
Water Supply	34
Agr. Irrigation	32
Industry	4
Golf Course	3
Thermoelectric Power	0.4
Aquaculture	0.3
Other	0.1
Total	74



Slide 6

PM0

Values corrected with QAQC data

Priyanka More, 2024-02-22T16:14:40.591

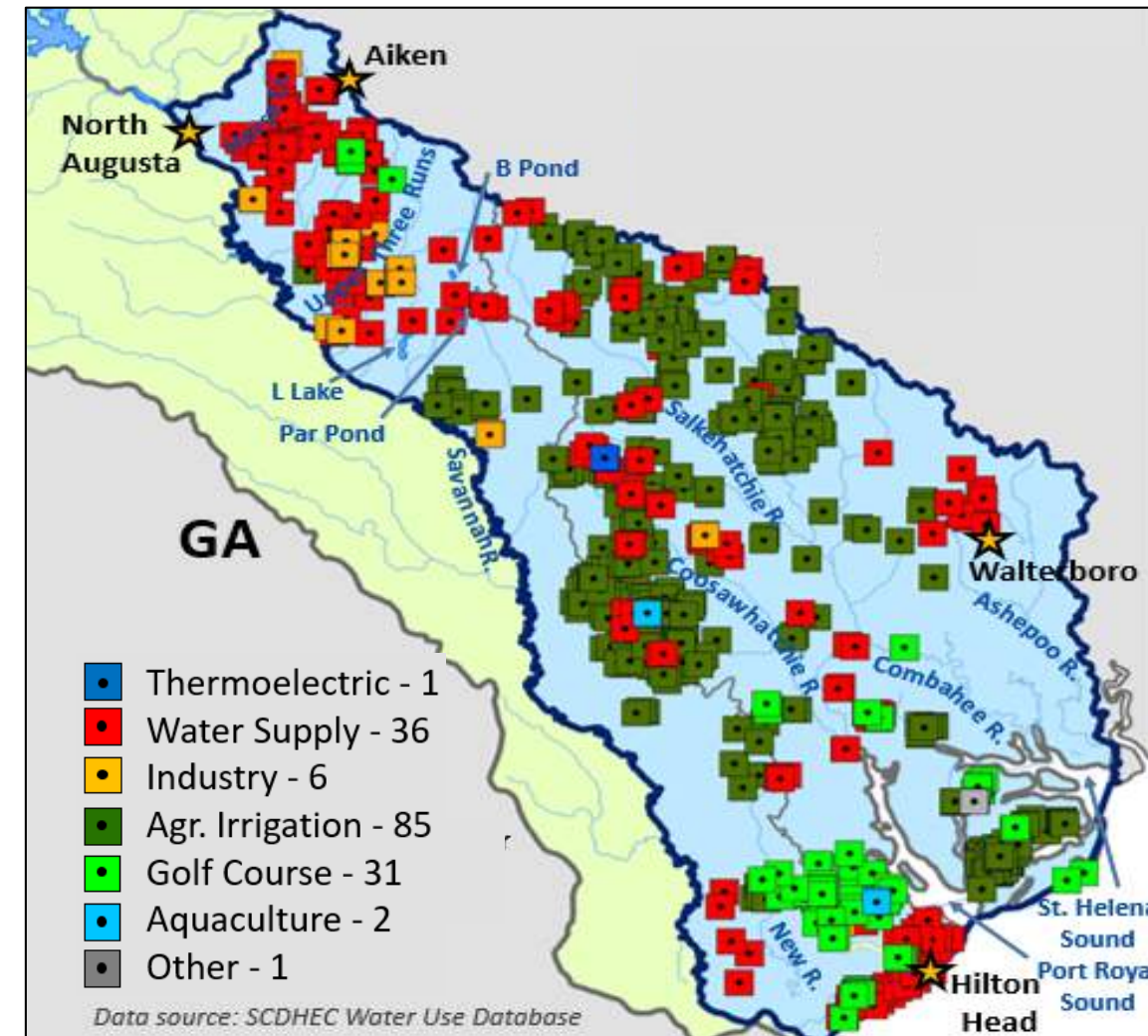
PM1

Add the no. of facilities

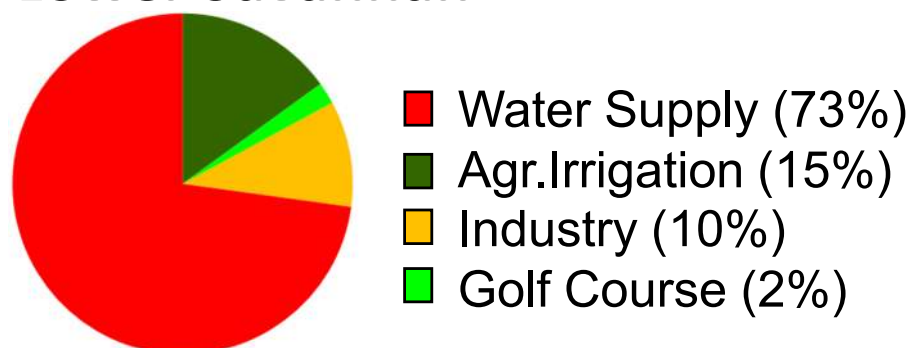
Priyanka More, 2024-02-28T22:07:39.879

2022 Reported SC Groundwater Withdrawals by Subbasin

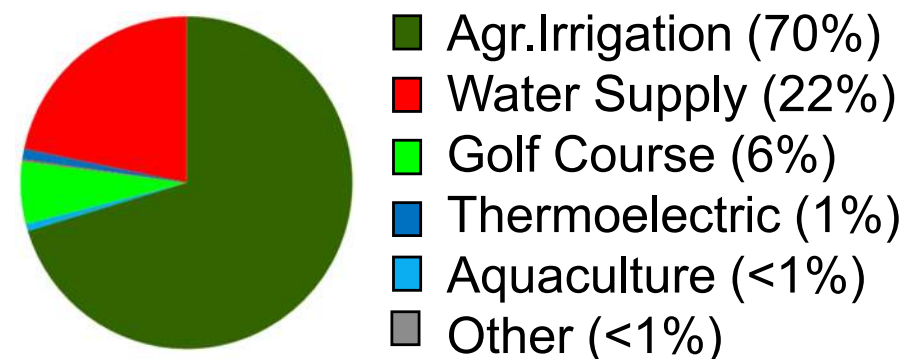
Category	Lower Savannah	Salkehatchie
Thermoelectric	--	0.4
Water Supply	25.7	8.3
Industry	3.6	--
Agr.Irrigation	5.3	26.9
Golf Course	0.8	2.3
Aquaculture	--	0.3
Other	--	0.1
Total	35.4	38.3
Percent (%)	48	52



Lower Savannah



Salkehatchie

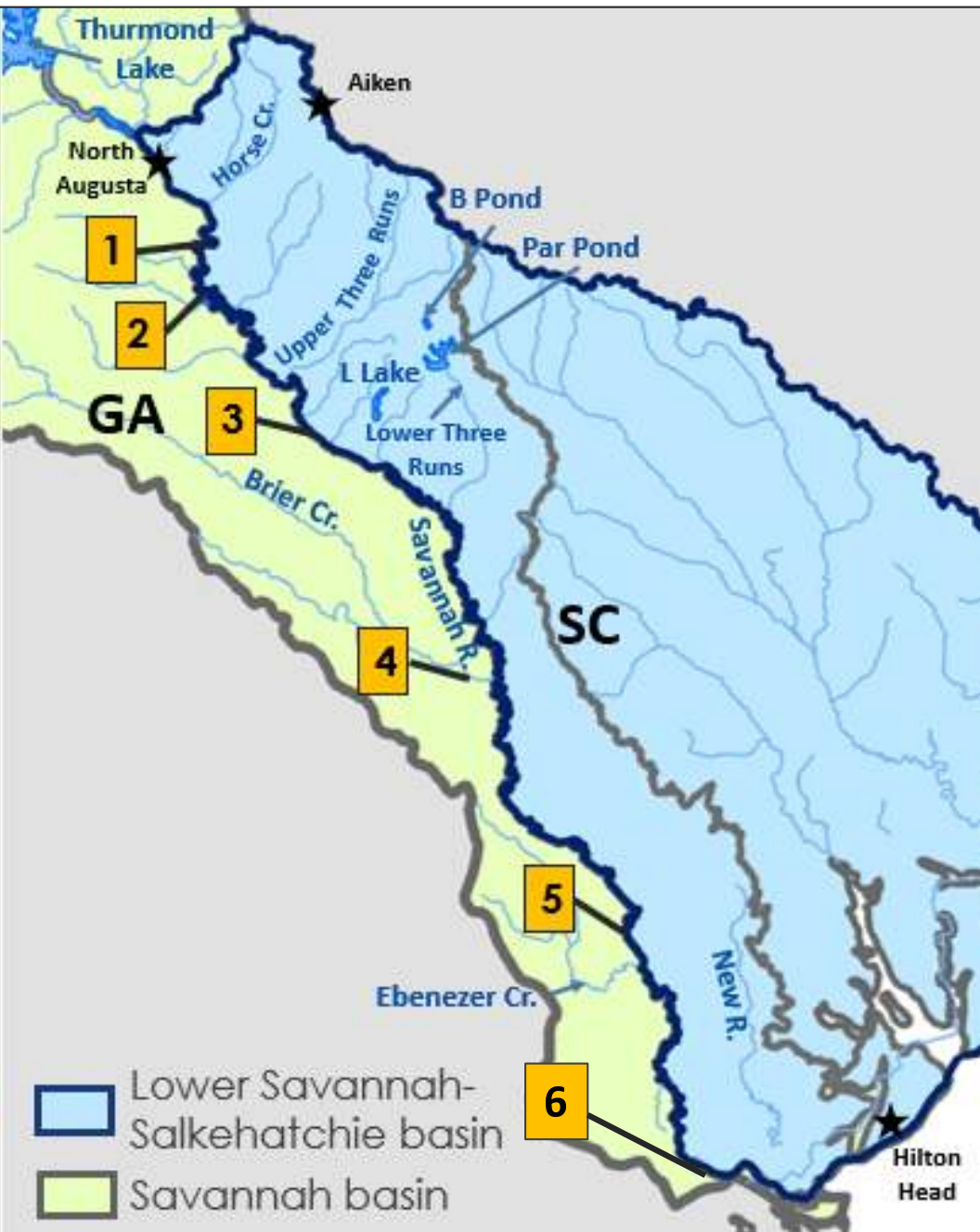


Consumptive Use by Categories

- Consumptive use is the amount of water withdrawn but not returned to the original source.
- Consumptive use estimates within the Simplified Water Allocation Model (SWAM) were developed using the SCDHEC reported water withdrawal and discharge data.

Water Use Category	SWAM-Average Annual Consumptive Use Percent Range (%)
Thermoelectric	2.5
Water Supply	44 - 84
Industry	10 - 11
Golf Course	100
Ag.Irrigation	100

2021 GA Surface Water Withdrawals



Users included in SWAM Model				
ID	Facility Name	Withdrawal Tributary	2021 Withdrawal (MGD)	Total (MGD)
1	Augusta-Richmond County	Mainstem	35.9	56.2
	Columbia County Water System		15.8	
	PCS Nitrogen Fertilizer, L.P		4.5	
	DSM Chemicals Augusta, Inc		--	
2	International Paper Corporation- Augusta Mill	Mainstem	1.9	1.9
3	Georgia Power Co- Plant Vogtle	Mainstem	43.5	43.5
4	JM Huber Corp	Brier Cr./Reedy Cr.	2.8	5.0
	Thompson-McDuffie County W/S Commission	Brier Creek	2.2	
5	Georgia Power Co- Plant McIntosh	Mainstem	6.3	21.1
	Georgia-Pacific Consumer Operations		14.8	
Outside SWAM Model				
6	Savannah Industrial & Domestic Water System	Abercorn Cr./ Mainstem	39.4	39.4
	Sulfco, LLC		7.1	7.1
	Weyerhaeuser NR Port Wentworth Mill		0.1	0.1
Total Surface Water Withdrawal in Lower Savannah basin-GA				174.3

Slide 9

PMO

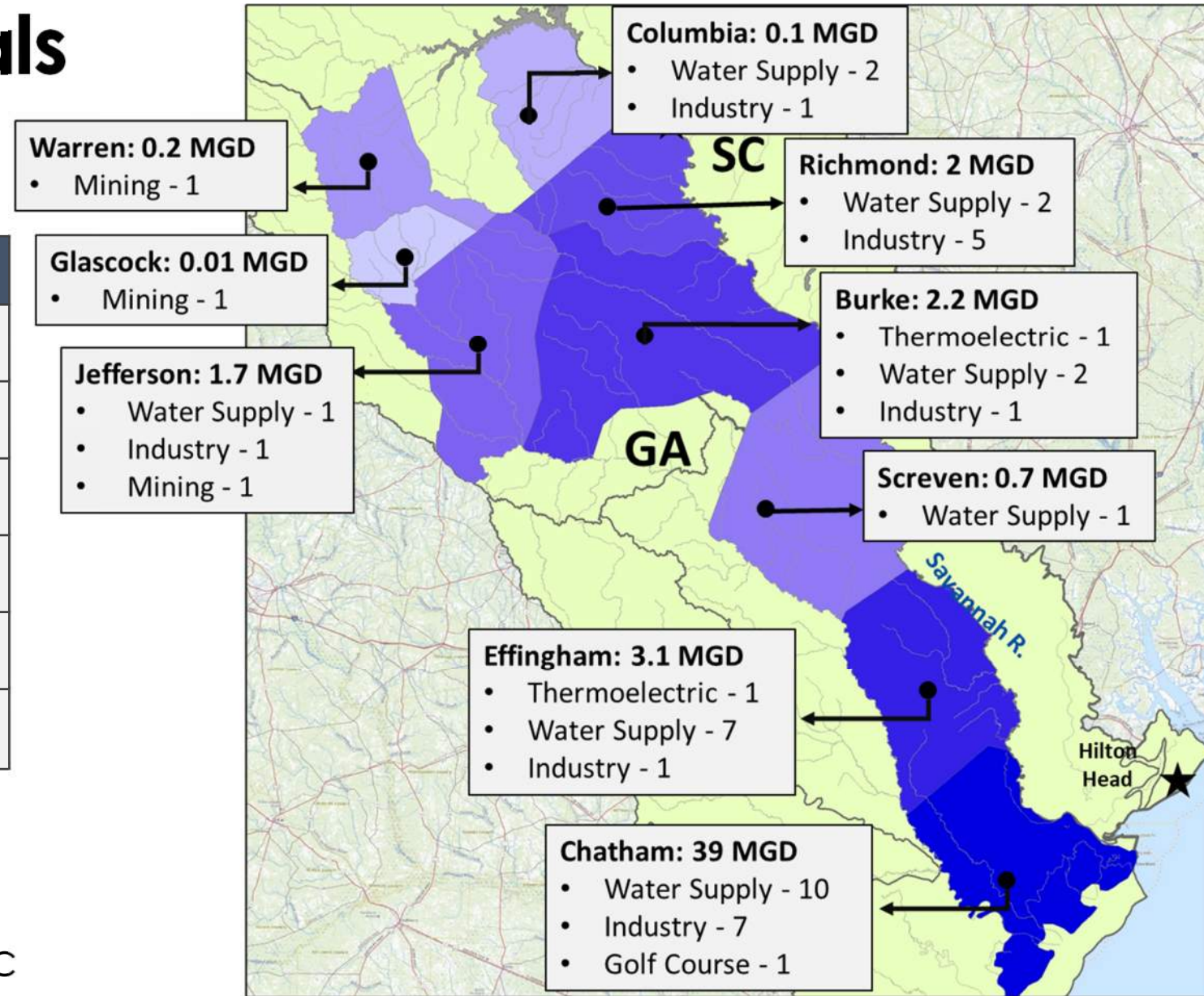
Check with CDM: For GA SW data (Brier Creek Use) Permit numbers 081-0111-01 and Permit nos. 149-0111-02 are labelled as J M Huber Corp. In GA's data both the permits are for KaMin, LLC

Priyanka More, 2024-03-01T21:07:22.572

2021 GA Savannah-Ogeechee Groundwater Withdrawals (excluding Agriculture)

Category	GW Withdrawals (MGD)
Water Supply	28.8
Thermoelectric Power	1.4
Mining	1.6
Industry	16.9
Golf Course	0.2
Total	48.9

- Intake locations were not provided by GA EPD.
 - Locations are exempt from public disclosure for security reasons.



Slide 10

PM0 Plant Vogtle included under Industrial use
Priyanka More, 2024-02-26T14:56:28.716

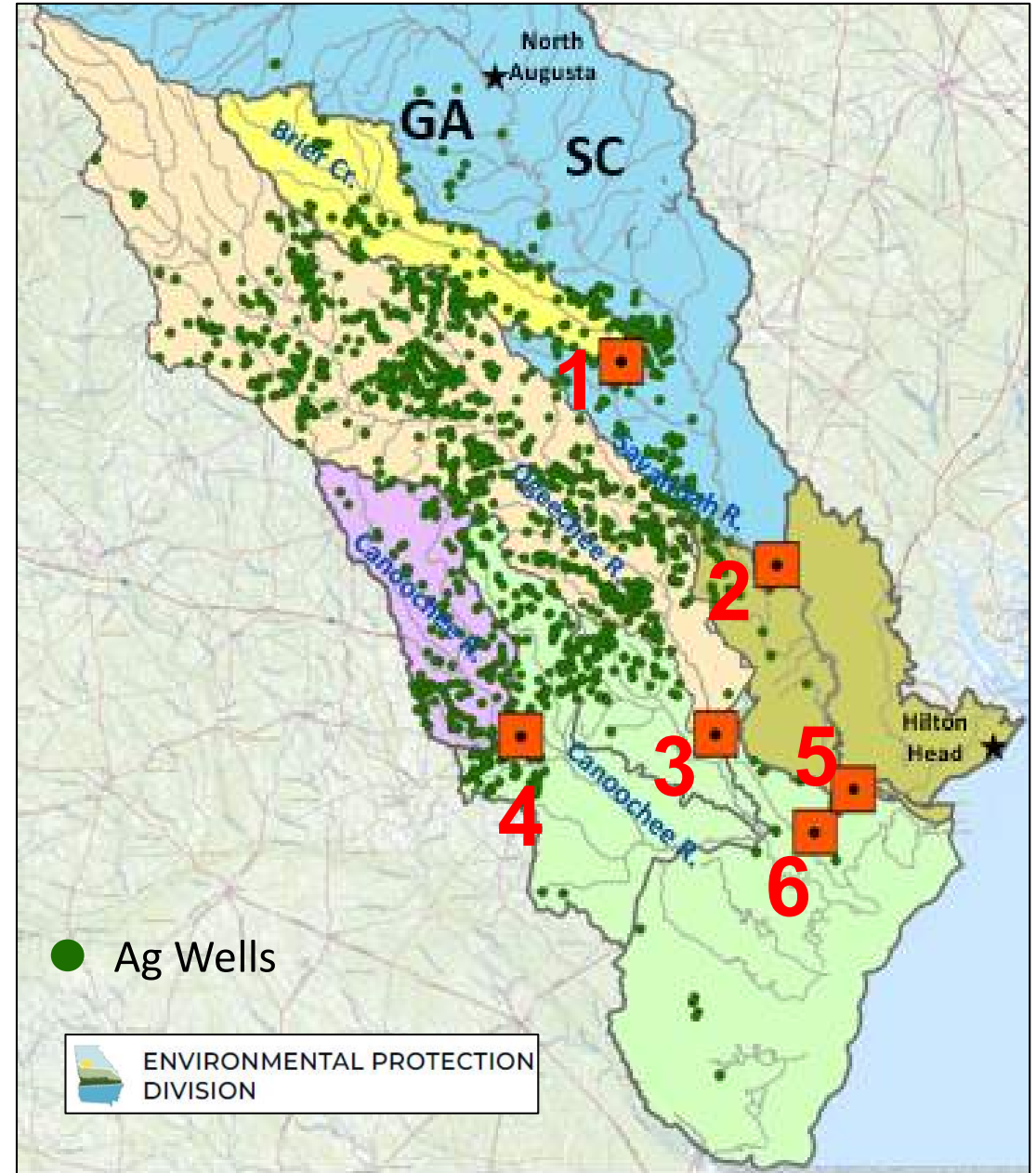
PM1 For 2021- Other category has two golf users
Priyanka More, 2024-02-26T15:33:12.880

PM2 Keep Agr. Or Ag.
Priyanka More, 2024-02-27T02:09:07.331

2021 GA Savannah-Ogeechee Groundwater Withdrawals for Agriculture

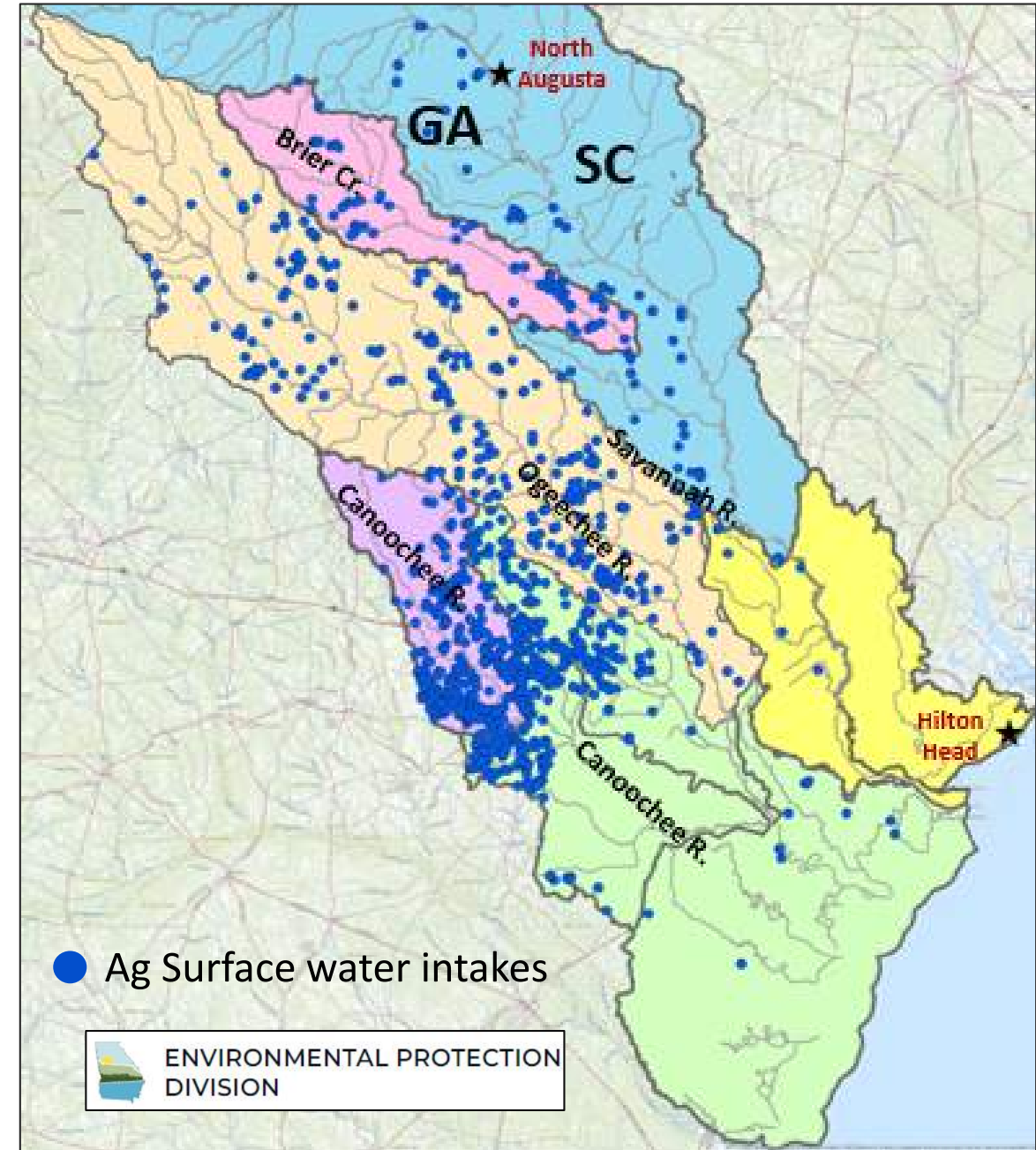
- Groundwater withdrawals are aggregated by drainage area in the table and map.
- Most of the withdrawals are from the Floridan aquifer.

	GW Avg Withdrawal (MGD)
1	6.9
2	10.6
3	44.2
4	4.4
5	0.9
6	5.8



GA Savannah-Ogeechee Surface Water Withdrawals for Agriculture

- Most of the surface water withdrawals in Lower Savannah are from farm ponds.
- SCDNR does not currently have data to calculate withdrawals per intake or per node.
- More information may be provided later.

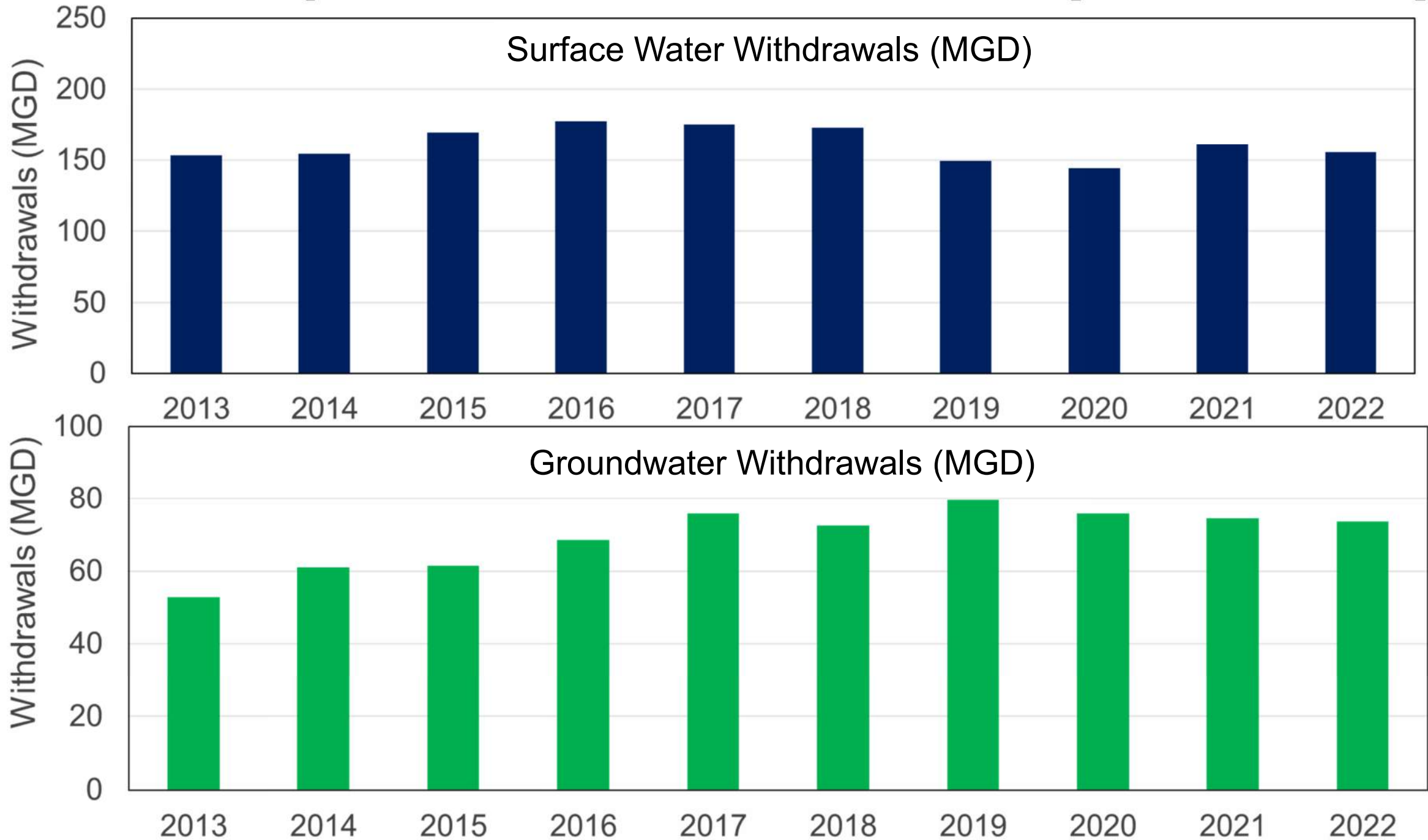


Historical Water Withdrawals

Data Limitations

- Withdrawals from private domestic wells, small surface water irrigation ponds, and any other water withdrawals less than the reporting threshold of 3 MGM are excluded from the SCDHEC's water withdrawal database.
- After passing of the South Carolina Surface Water Withdrawal, Permitting, Use, and Reporting Act in 2011, several facilities that met exemption criteria (withdrawal threshold or water source) were not required to report their withdrawals to SCDHEC (Golf Course, for example).
- Increasing trends in reported water withdrawals for some categories (Agriculture, for example) may in part be due to increased reporting compliance over the analysis period.
- Errors in reported water withdrawals or errors introduced during data input.
- Some users fail to add metadata such as longitude, latitude, county, and basin information for a surface water intake or groundwater well withdrawal. This can lead to some inaccuracies in the dataset.

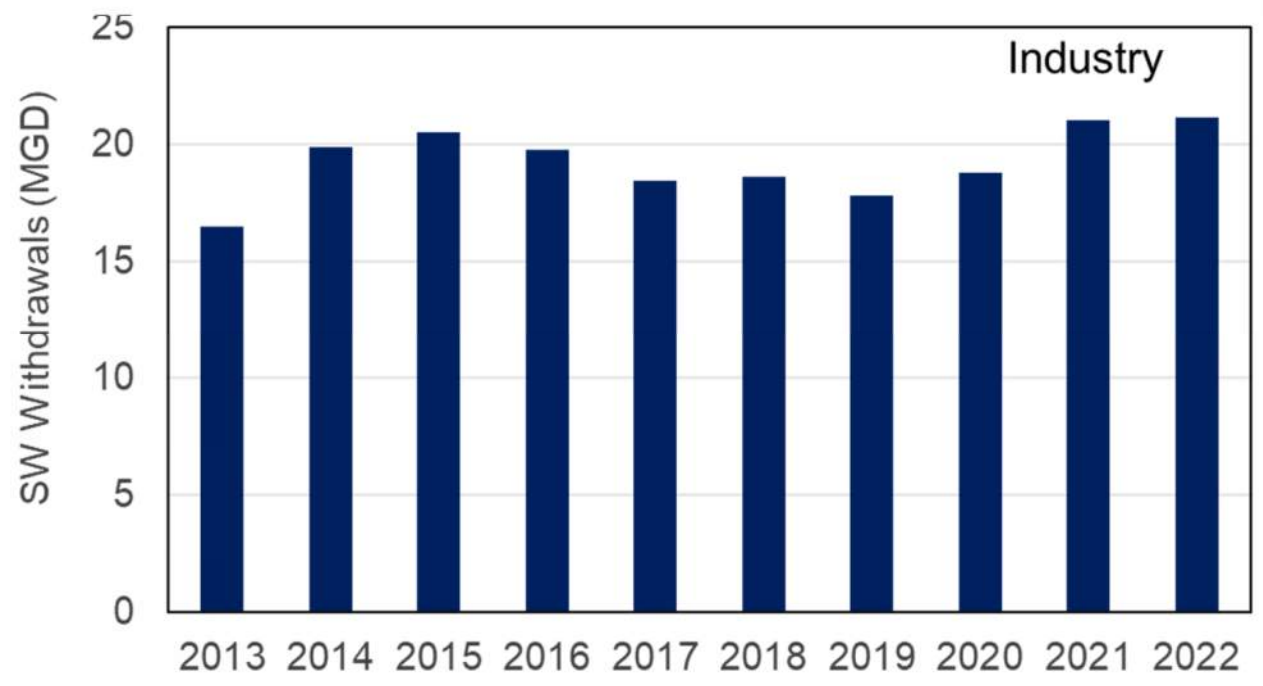
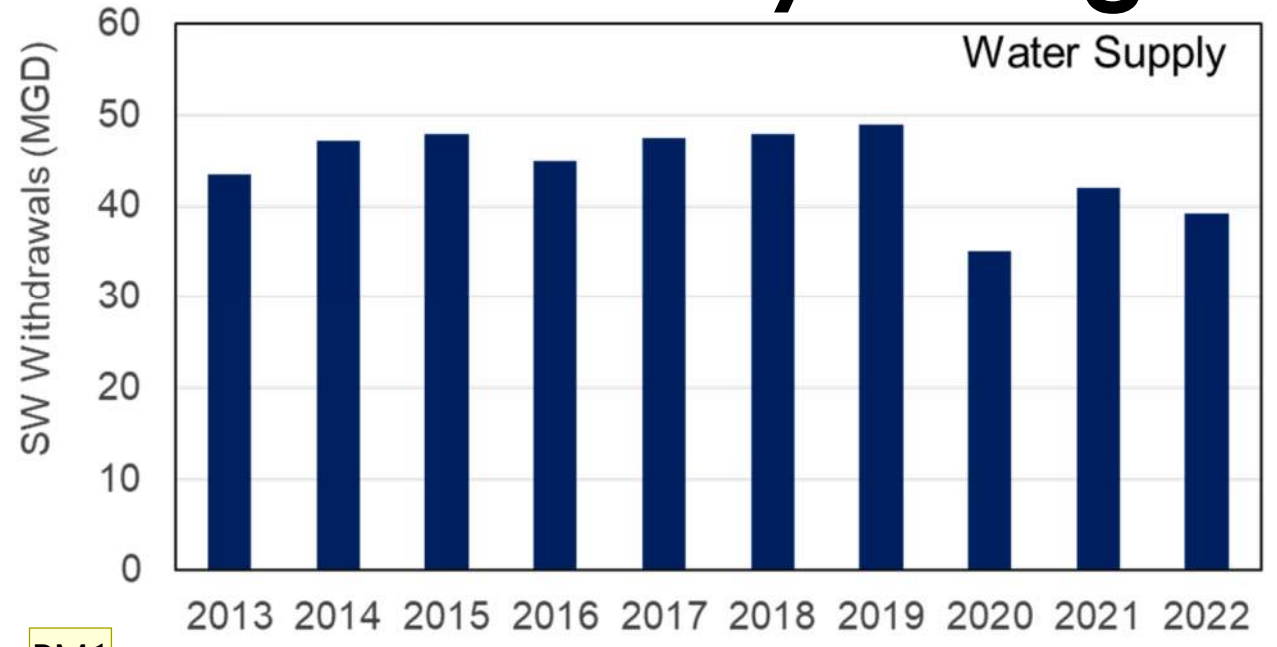
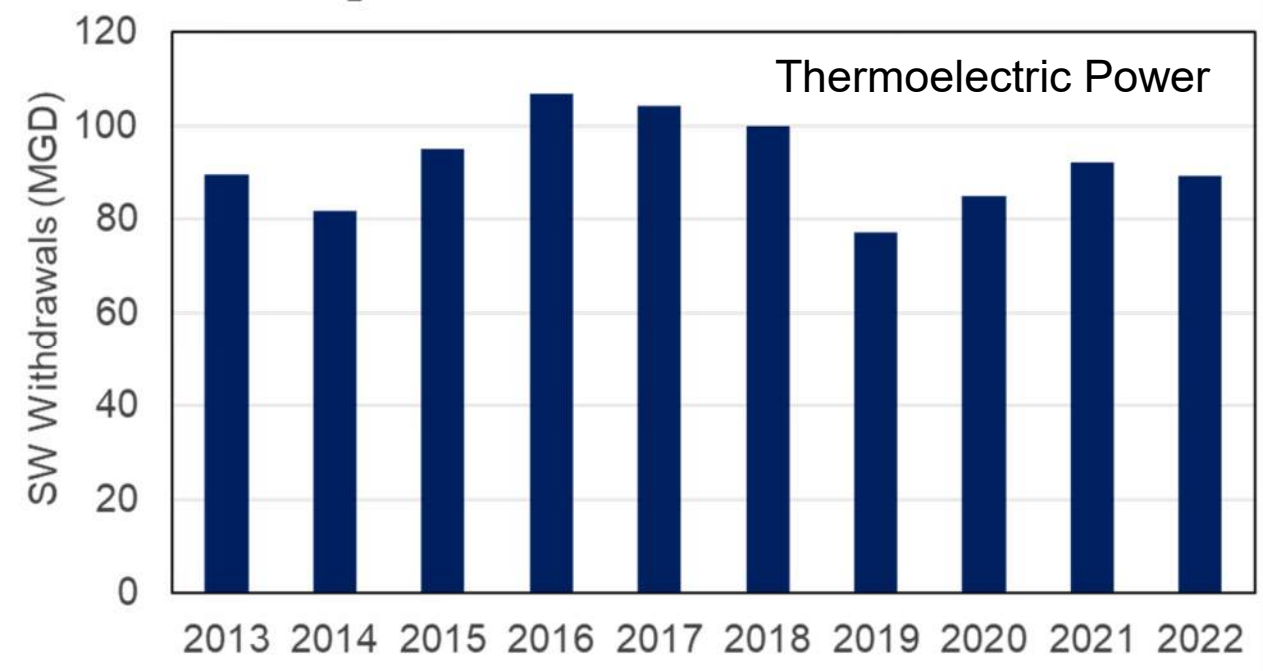
LSS SC Reported Water Withdrawals (2013 – 2022)



PM3

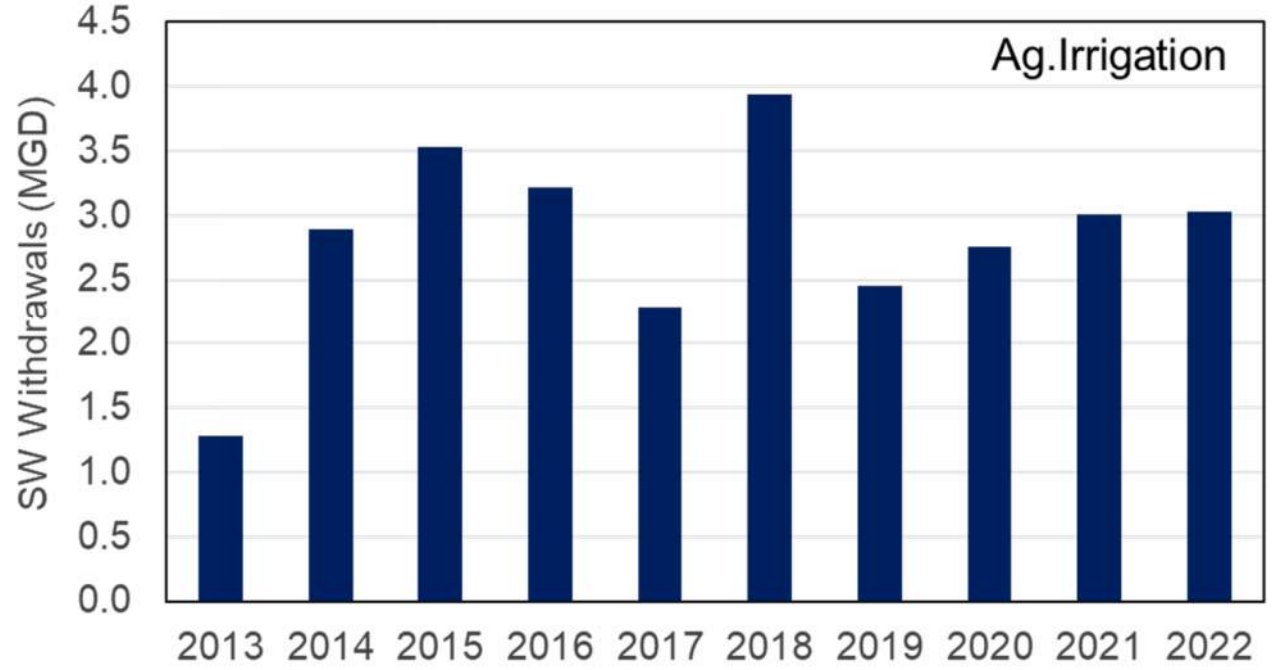
PM0

Reported Surface Water Withdrawals by Categories



PM1

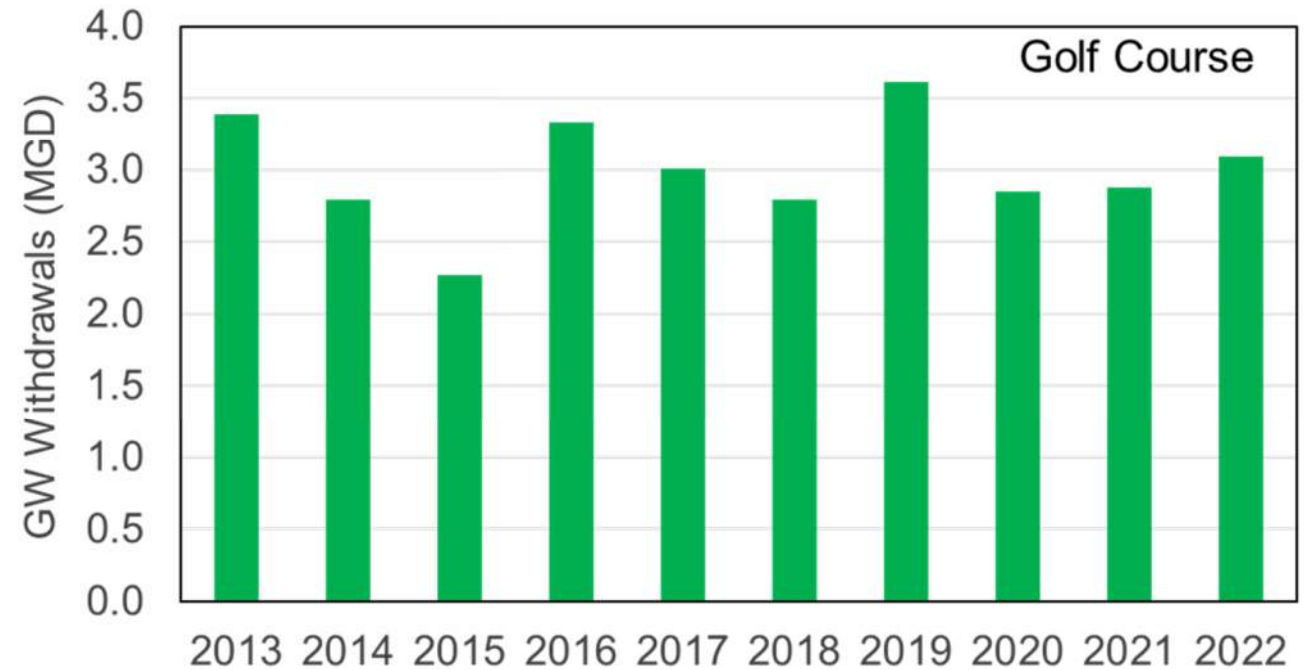
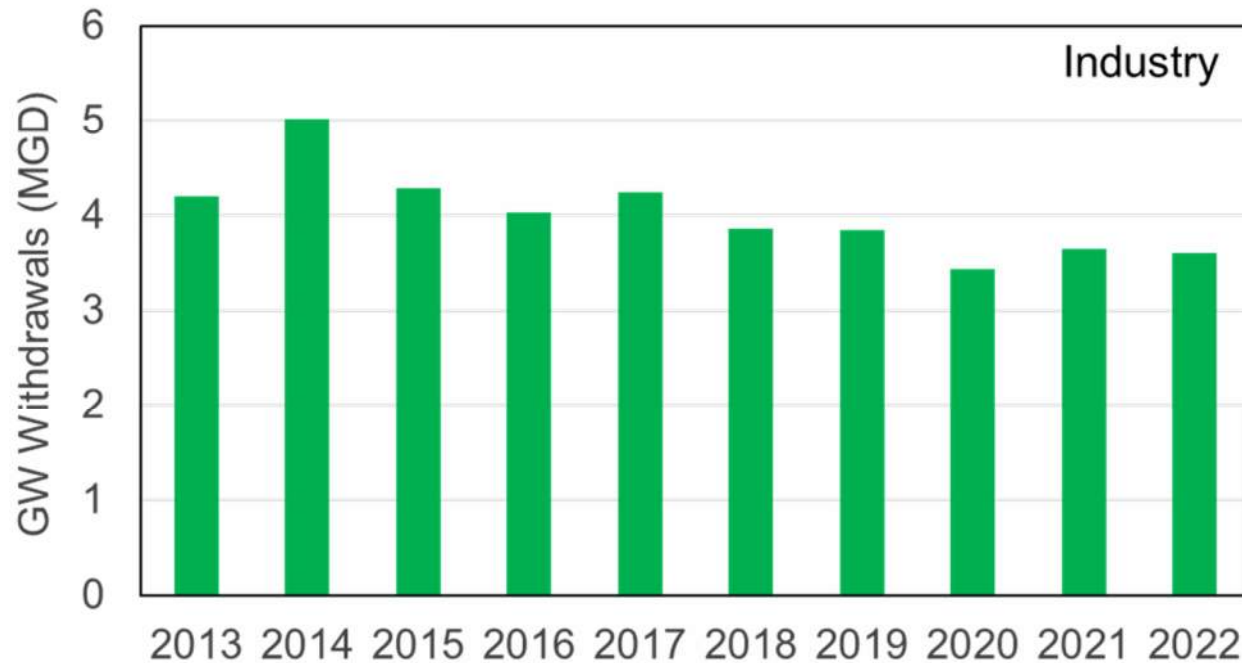
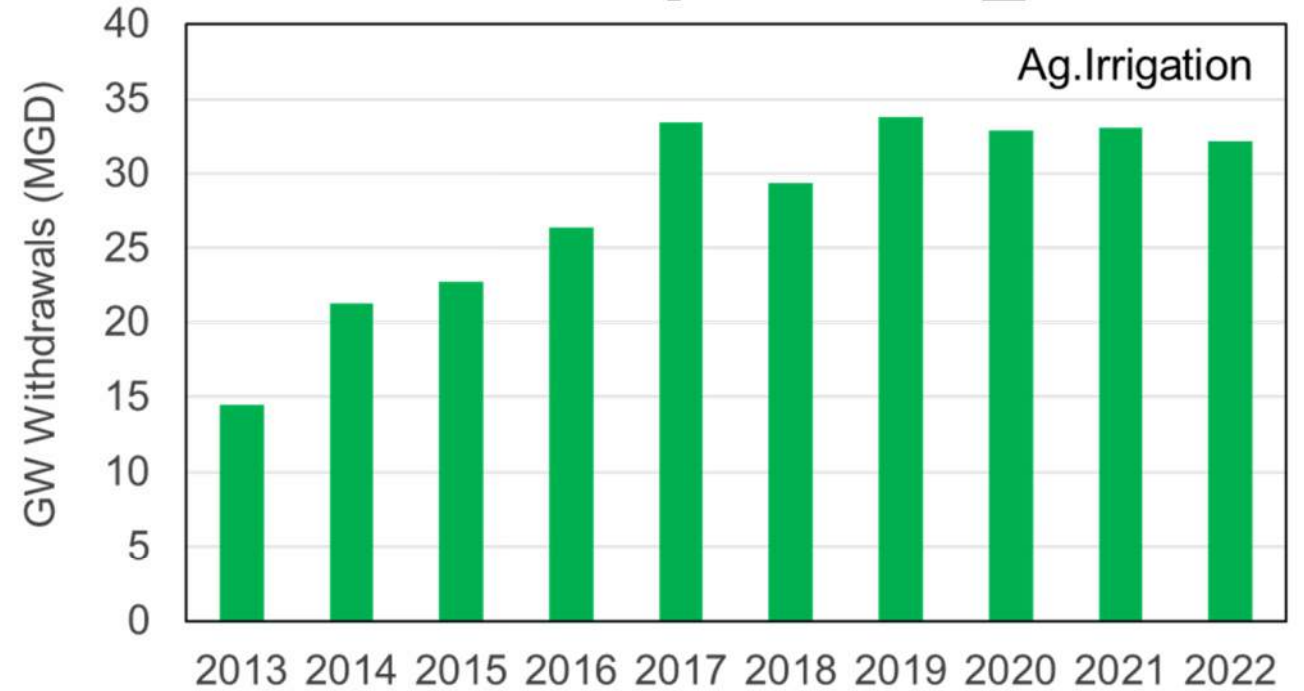
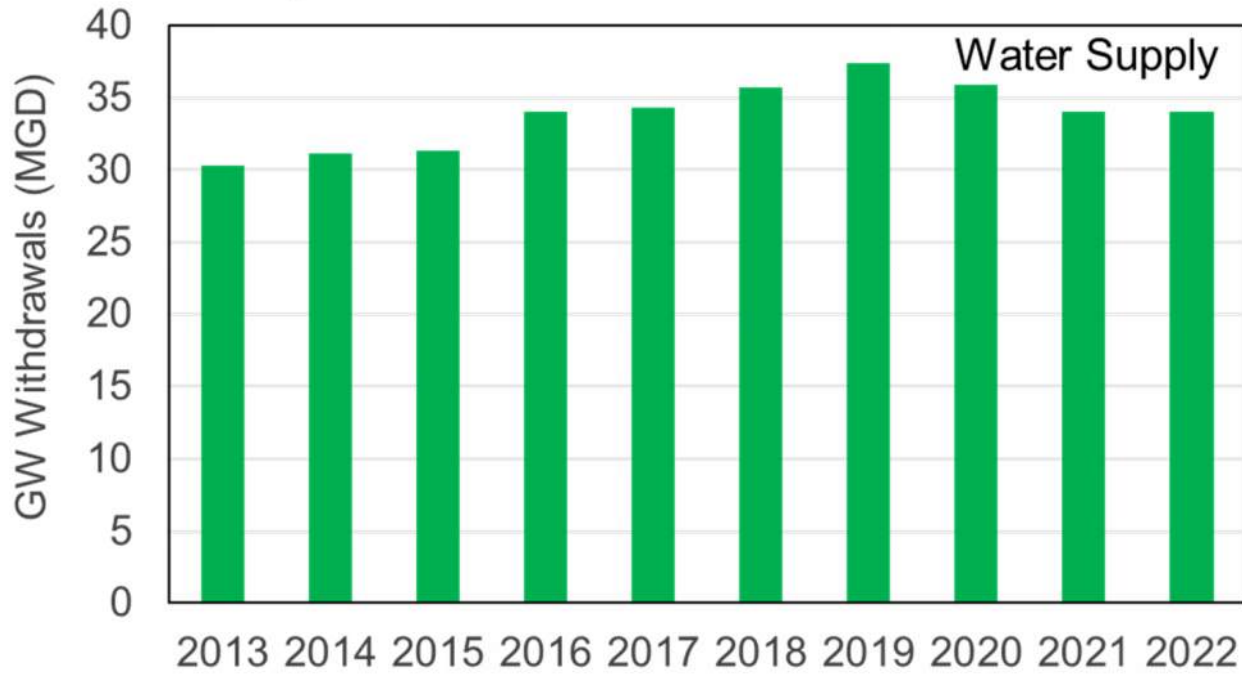
PM2



Slide 15

- PM0** Water Supply: The only possible explanation for the dip in 2020 is the Horse Creek Resources Trust Management (02WS029S01 and 02WS030S01 reported 0 MGD in 2020). On an average the facility withdraws about 5 MGD/year.
Priyanka More, 2024-03-01T16:36:00.835
- PM1** Industry: Kimberly Clark and SRS are the only industries in LSS (2013-2022). Kimberly Clark has bumped up their withdrawals in last three years.
Priyanka More, 2024-03-01T17:47:38.134
- PM2** Sharp and Sharp: 03IR006S01 higher values in 2018 vs 2017 and 2019. Check
Priyanka More, 2024-03-01T17:58:51.455
- PM3** Could be KaMin LLC
Priyanka More, 2024-03-01T20:59:19.882

Reported Groundwater Withdrawals by Categories



Slide 16

PMO

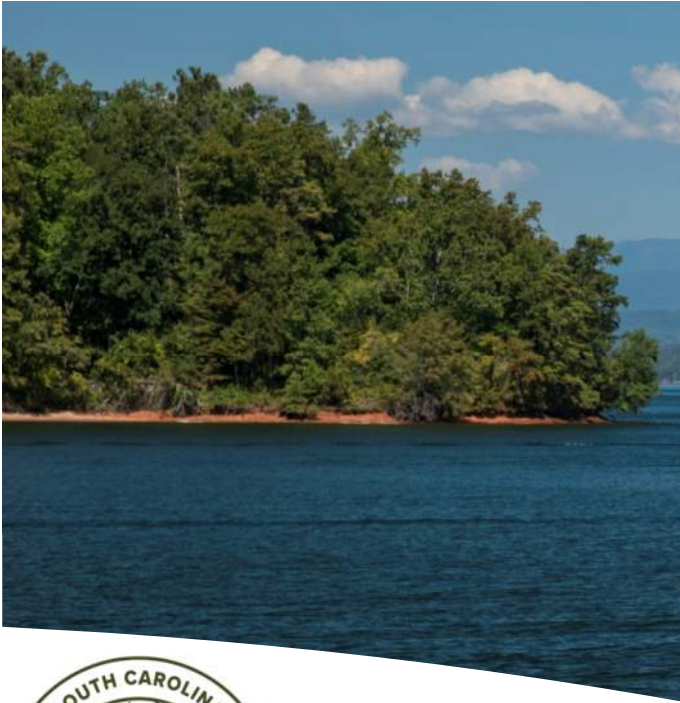
WS: Lost three wells in 2021, and about 8-9 wells in 2022.

Ag on avg gw withdrawals increasing by about 11% . Overall more wells reporting every year.

IN: SRS wells overall withdrawals decreasing.

Priyanka More, 2024-03-01T19:10:58.443

Summary



Data questions can be sent to Priyanka More
MoreP@dnr.sc.gov

- Both surface water and groundwater are important resources in the basin.
- Surface Water:
 - Top three categories: Thermoelectric (57%), Water Supply (25%), and Industry (14%).
 - Consumptive use of Thermoelectric power is 2.5%.
 - No strong trends observed in reported withdrawals (2013-2022).
- Groundwater:
 - Top three categories: Water Supply (46%), Ag.Irrigation (44%), and Industry (5%).
 - Slight increasing trend observed in reported data for Water Supply and Ag. Irrigation and decreasing trend in Industry.