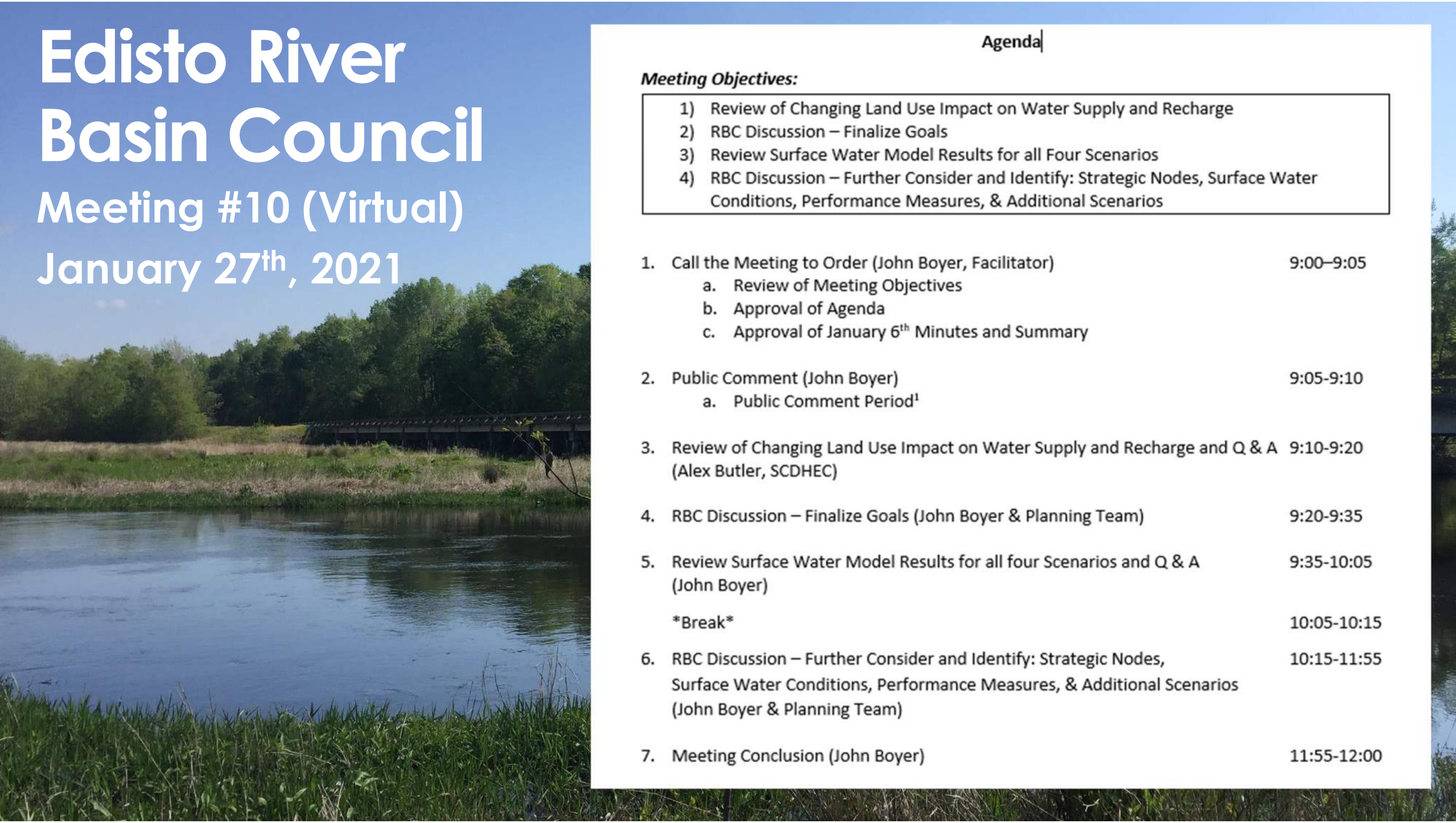


Edisto River Basin Council

Meeting #10 (Virtual)

January 27th, 2021

Agenda

Meeting Objectives:

1) Review of Changing Land Use Impact on Water Supply and Recharge
2) RBC Discussion – Finalize Goals
3) Review Surface Water Model Results for all Four Scenarios
4) RBC Discussion – Further Consider and Identify: Strategic Nodes, Surface Water Conditions, Performance Measures, & Additional Scenarios

1.	Call the Meeting to Order (John Boyer, Facilitator) a. Review of Meeting Objectives b. Approval of Agenda c. Approval of January 6th Minutes and Summary	9:00–9:05
2.	Public Comment (John Boyer) a. Public Comment Period[1]	9:05-9:10
3.	Review of Changing Land Use Impact on Water Supply and Recharge and Q & A (Alex Butler, SCDHEC)	9:10-9:20
4.	RBC Discussion – Finalize Goals (John Boyer & Planning Team)	9:20-9:35
5.	Review Surface Water Model Results for all four Scenarios and Q & A (John Boyer)	9:35-10:05
	Break	10:05-10:15
6.	RBC Discussion – Further Consider and Identify: Strategic Nodes, Surface Water Conditions, Performance Measures, & Additional Scenarios (John Boyer & Planning Team)	10:15-11:55
7.	Meeting Conclusion (John Boyer)	11:55-12:00

Finalizing Goals

Edisto RBC

Goals for Edisto River Basin

"Draft Final" goals to be voted on during Jan 27 meeting:

1. Utilize the input of all stakeholders and best available science to develop and promote strategies, policies and legislative recommendations that allow sustainable use of water resources while protecting water quantity and quality in the Edisto River Basin.

2. Collaboratively work to engage the public and enhance their understanding of regional water issues and water policy.

3. Plan for sufficient water supplies to support sustainable development. Request that the State and local governments consider and encourage future development in areas with adequate water resources.

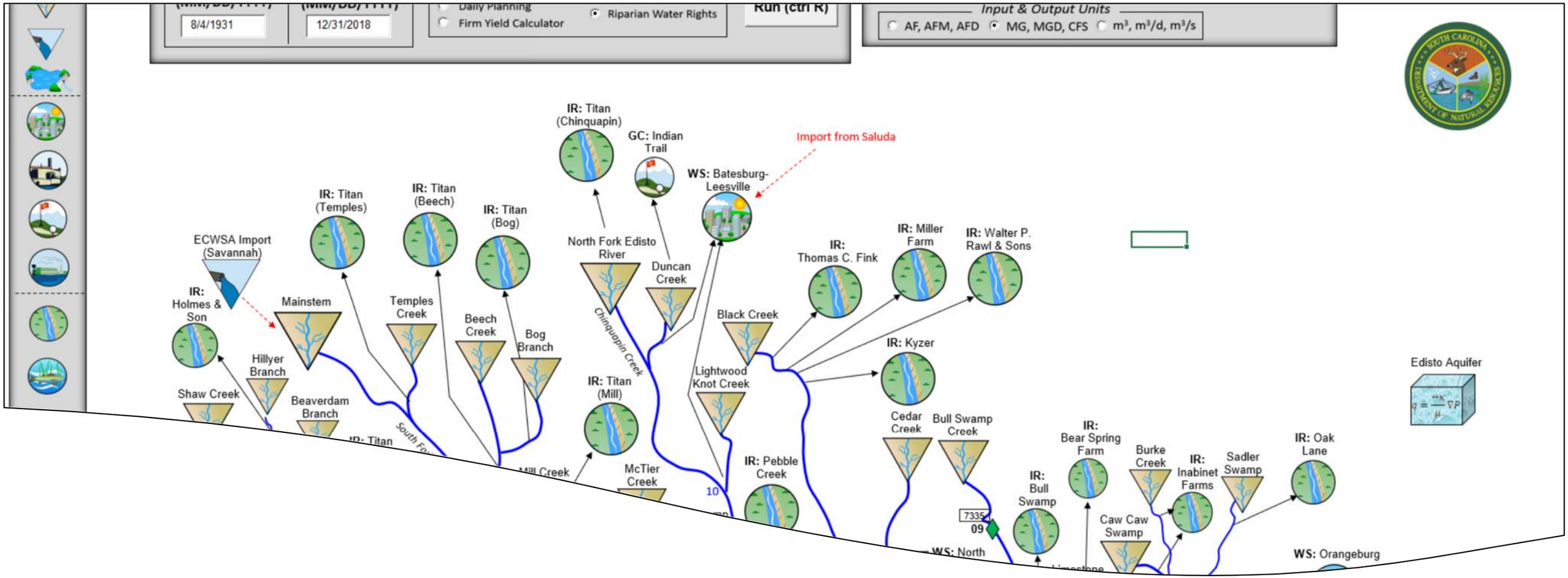
4. Ensure an adequate water supply of suitable quality to meet current and future human and ecosystem needs.

5. Encourage and recognize the value of land use practices that protect water resources.

6. Identify and promote strategies that improve resilience and minimize disruption in supply.

Final Goals for Edisto River Basin
RBC voted to accept the goals, as-written below

1. Develop water use strategies, policies and legislative recommendations for the Edisto River Basin in order to:
    a. Ensure water resources are maintained to support current and future human and ecosystem needs
    b. Improve the resiliency of the water resources and help minimize disruptions within the basin
    c. Promote future development in areas with adequate water resources
    d. Encourage responsible land use practices
2. Develop and implement a communication plan to promote the strategies, policies and recommendations developed for the Edisto River Basin.



Preliminary Surface Water Scenario Results Discussion

Outline of Discussion Topics

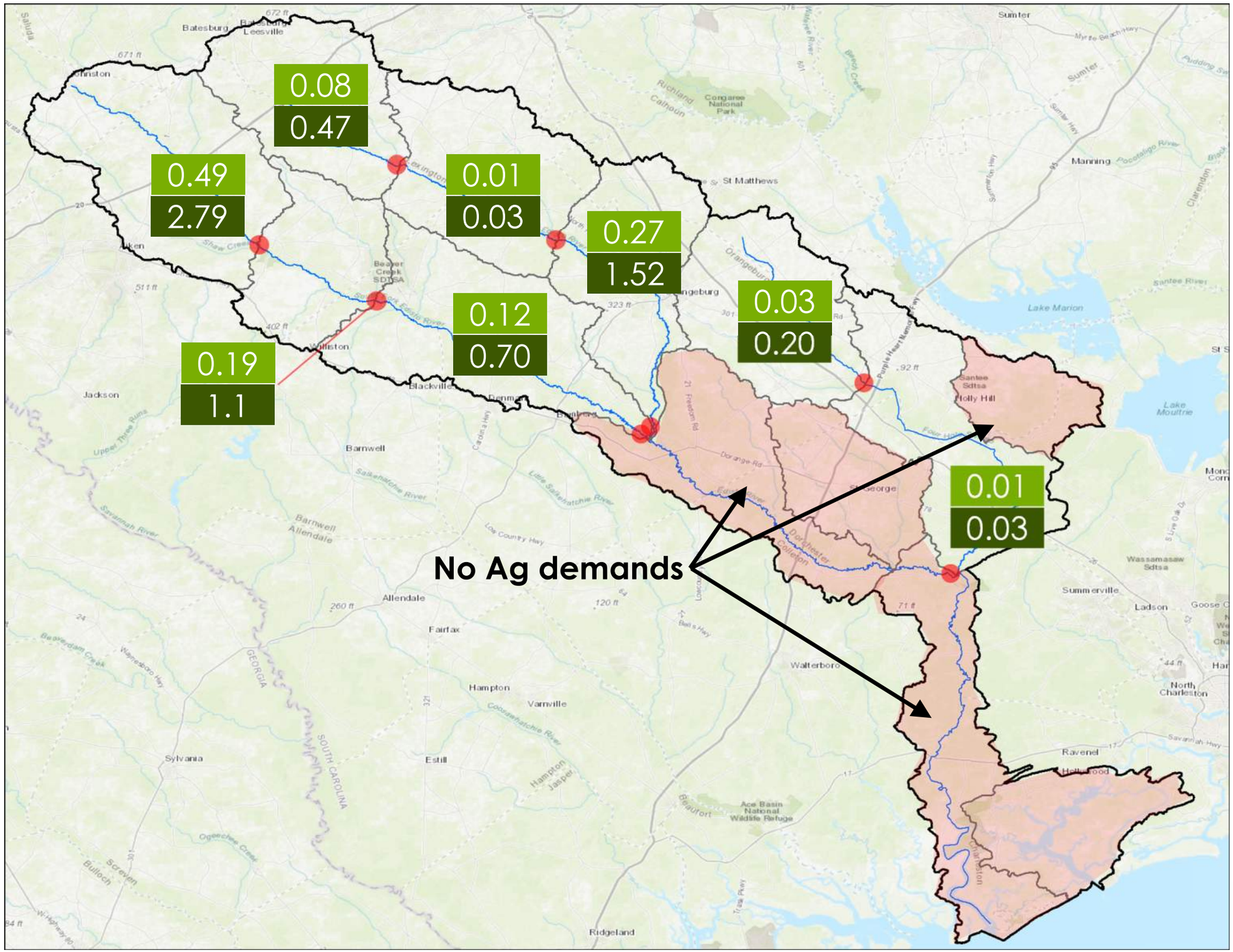
- Assignment of agriculture demand projections
- Notes and adjustments for next set of model runs
  - Approach to take when projected demands exceed permit limits
  - Assumptions for multiple sources of supply
  - Changes to demands and sources for select water users
  - Changes in performance measure calculations
- Discussion of preliminary scenario results
- Strategic Nodes for next set of model runs
- Discussion of potential additional scenarios

Projected Increase in Agricultural Demands

Business as Usual Scenario

Year	Added Ag Demand (mgd)
2030	0.19
2070	1.09

HUC 10 Outlet

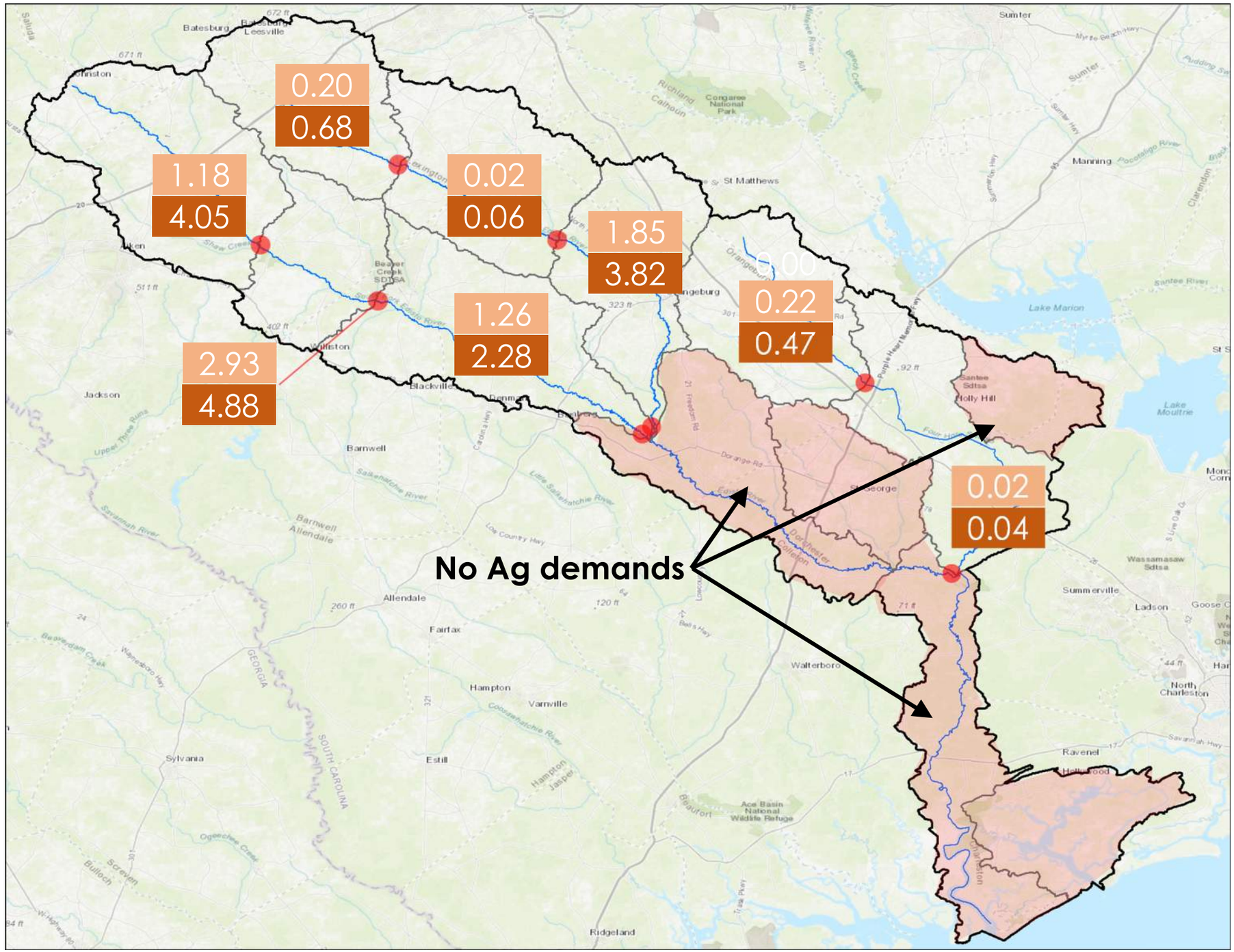


Projected Increase in Agricultural Demands

High Demand Scenario

Year	Added Ag Demand (mgd)
2030	0.19
2070	1.09

HUC 10 Outlet



Adjustments for Next Set of Model Runs

- Approach to take when projected demands exceed permit limits
- Assumptions for multiple sources of supply

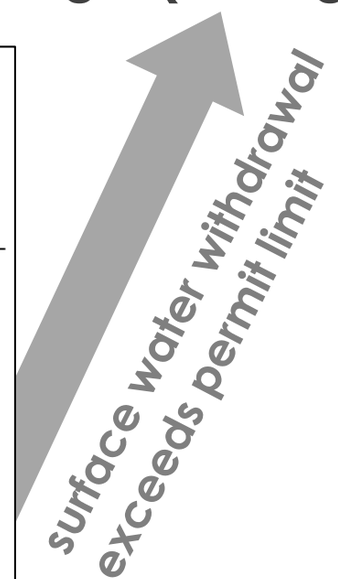
Example: City of Aiken with a surface water permit limit of 248 mgm (8.3 mgd)

Current Use Scenario

Month	Monthly Usage (mgd)	*Source 1* GW (mgd)	*Source 2* SW (mgd)
Jan	**5.52**	5.17	0.35
Feb	**5.55**	5.18	0.37
Mar	**6.08**	5.53	0.55
Apr	**7.53**	6.38	1.15
May	**8.82**	7.09	1.73
Jun	**9.66**	7.53	2.13
Jul	**9.68**	7.50	2.18
Aug	**9.42**	7.55	1.87
Sep	**9.06**	7.42	1.64
Oct	**7.8**	6.82	0.98
Nov	**6.34**	5.87	0.47
Dec	**5.35**	5.03	0.32

High Demand Scenario

Month	Monthly Usage (mgd)	*Source 1* GW (mgd)	*Source 2* SW (mgd)
Jan	**9.74**	5.17	4.57
Feb	**9.69**	5.18	4.51
Mar	**10.62**	5.53	5.09
Apr	**13.15**	6.38	6.77
May	**15.97**	7.09	8.88
Jun	**16.14**	7.53	8.61
Jul	**16.19**	7.5	8.69
Aug	**15.68**	7.55	8.13
Sep	**15.16**	7.42	7.74
Oct	**14.08**	6.82	7.26
Nov	**11.55**	5.87	5.68
Dec	**9.82**	5.03	4.79



Changes to Demands and Sources for Select Water Users

- ***Charleston Water System (CWS)***
  - **Current Use Scenario** generally reflects 2009-2018 average withdrawals
  - CWS has suggested a change to better reflect changes in operations

2009-2018 average withdrawal

Month	Monthly Demand (mgd)
Jan	**34.94**
Feb	**35.80**
Mar	**35.71**
Apr	**41.61**
May	**45.65**
Jun	**41.74**
Jul	**38.46**
Aug	**37.57**
Sep	**39.24**
Oct	**40.19**
Nov	**36.58**
Dec	**32.88**

Change to:

2014-2020 average withdrawal

Month	Monthly Demand (mgd)
Jan	**35.39**
Feb	**36.37**
Mar	**35.25**
Apr	**41.00**
May	**44.69**
Jun	**52.04**
Jul	**53.01**
Aug	**53.70**
Sep	**48.92**
Oct	**39.33**
Nov	**35.77**
Dec	**34.28**

Changes to Demands and Sources for Select Water Users

- ***Dominion Energy Cope Station***
  - Moving from 100% groundwater to a combination of surface and groundwater by 2028
  - Eventually will withdrawal ~90% from surface water and ~10% from groundwater when river conditions allow
  - During low flow conditions in the Edisto, all water use at the station will be groundwater
  - Model currently assumes groundwater as only source for all scenarios, but will be updated to reflect intent to pull mostly from surface water
  - Surface water permit limit of 670 mgm will be added

Changes in Performance Measure Calculations

- ***Percentage of Water Users Experience Shortage*** *revised to recognize rounding issue (insignificant shortages excluded)*
- ***Average frequency of shortage (%)*** *revised to only include those users with shortages, not all users*

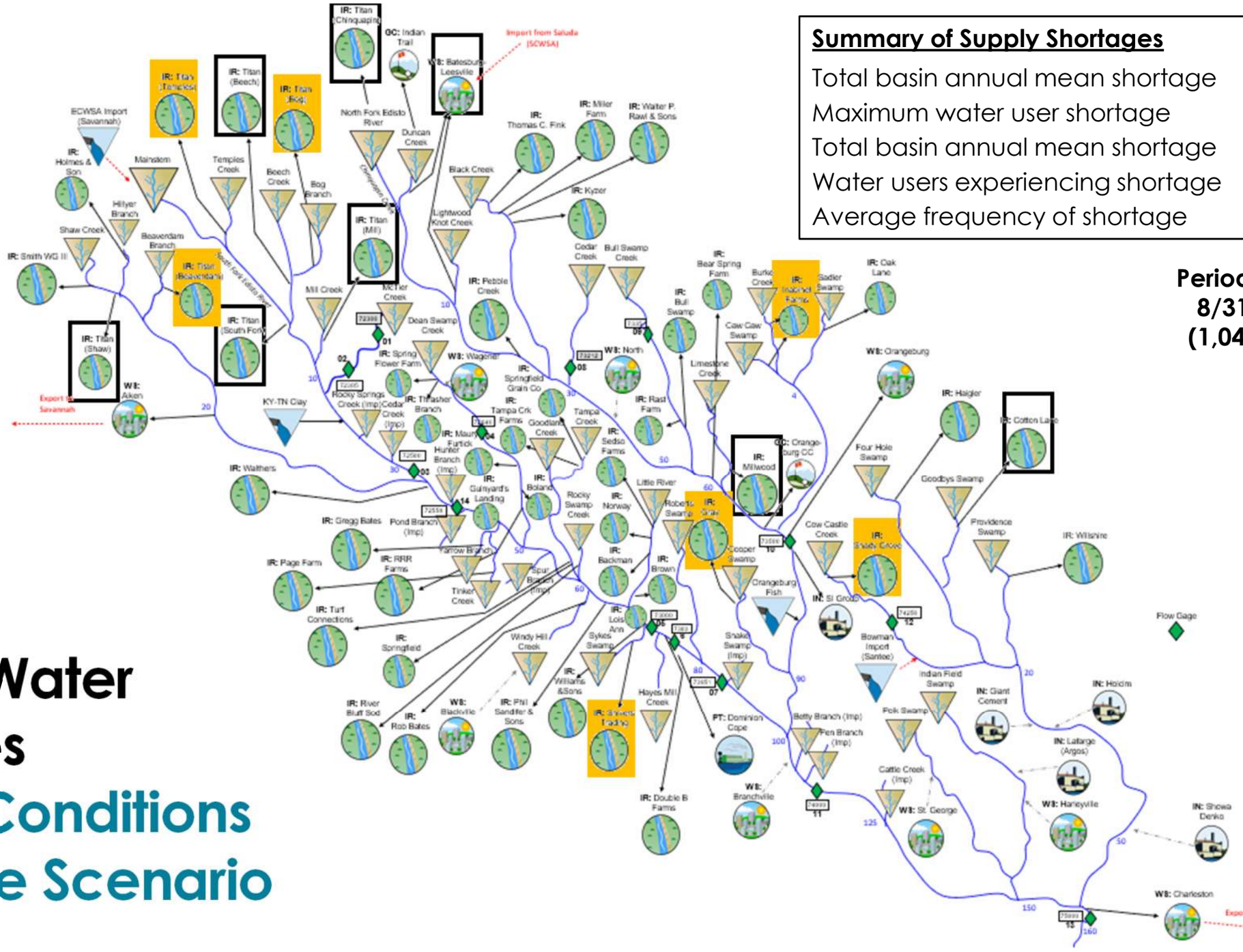
Supply Shortages:	
total basin annual mean shortage (MGD)	1.75
maximum water user shortage (MGD)	4.7
total basin annual mean shortage (%)	0.8%
percentage of water users experiencing shortage	23.7%
average frequency of shortage (%)	3.8%

Frequency of Shortage

< 10%

10-50%

> 50%



Summary of Supply Shortages

Total basin annual mean shortage	1.5 MGD
Maximum water user shortage	4.1 MGD
Total basin annual mean shortage	1.7%
Water users experiencing shortage	17.6%
Average frequency of shortage	16.7%

Period of record: 8/31 to 12/18 (1,049 months)

Surface Water Shortages

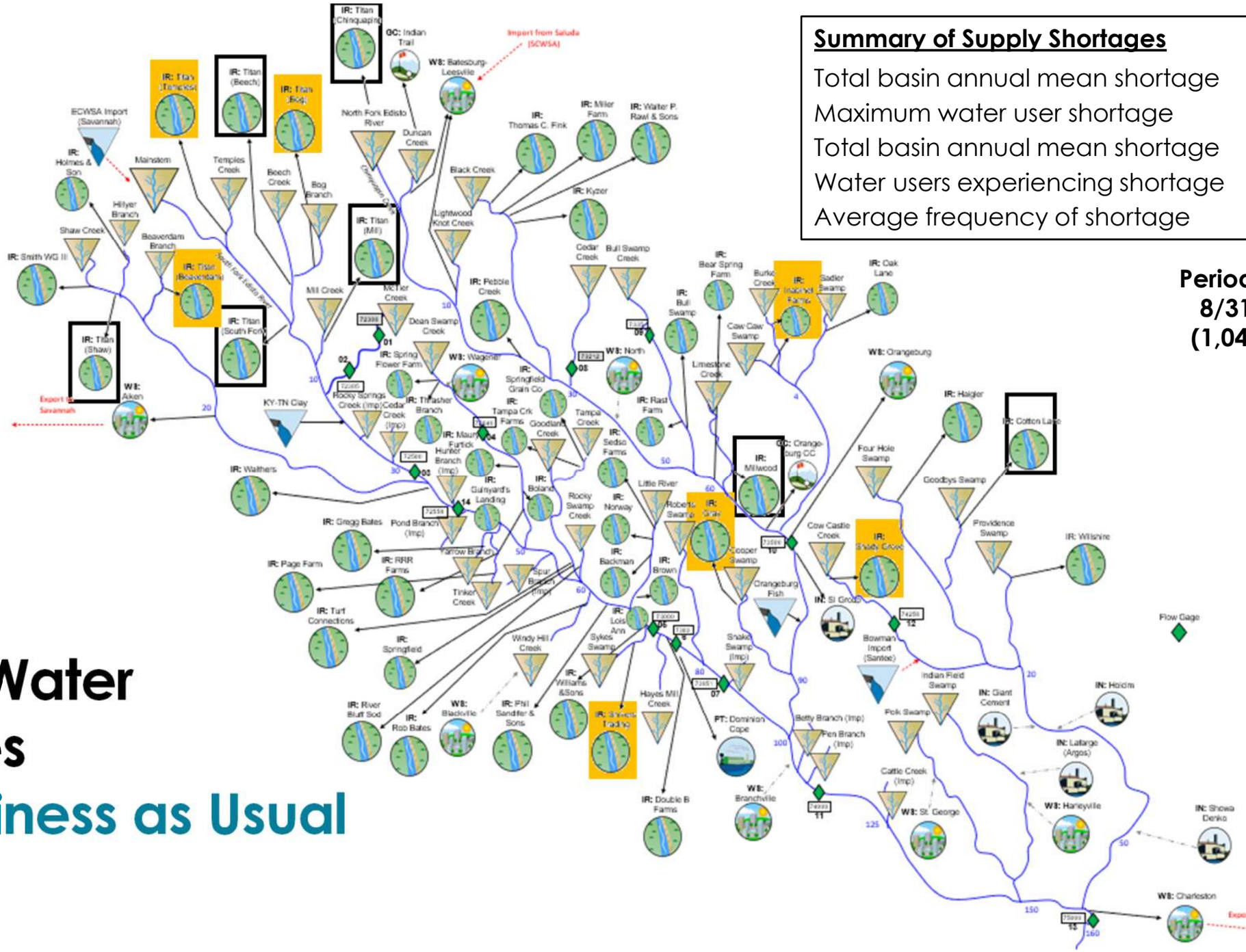
Current Conditions Water Use Scenario

Frequency of Shortage

< 10%

10-50%

> 50%



Summary of Supply Shortages	
Total basin annual mean shortage	1.5 MGD
Maximum water user shortage	4.1 MGD
Total basin annual mean shortage	1.0%
Water users experiencing shortage	16.2%
Average frequency of shortage	14.0%

Period of record: 8/31 to 12/18 (1,049 months)

Surface Water Shortages

2070 Business as Usual Scenario

Frequency of Shortage

< 10%

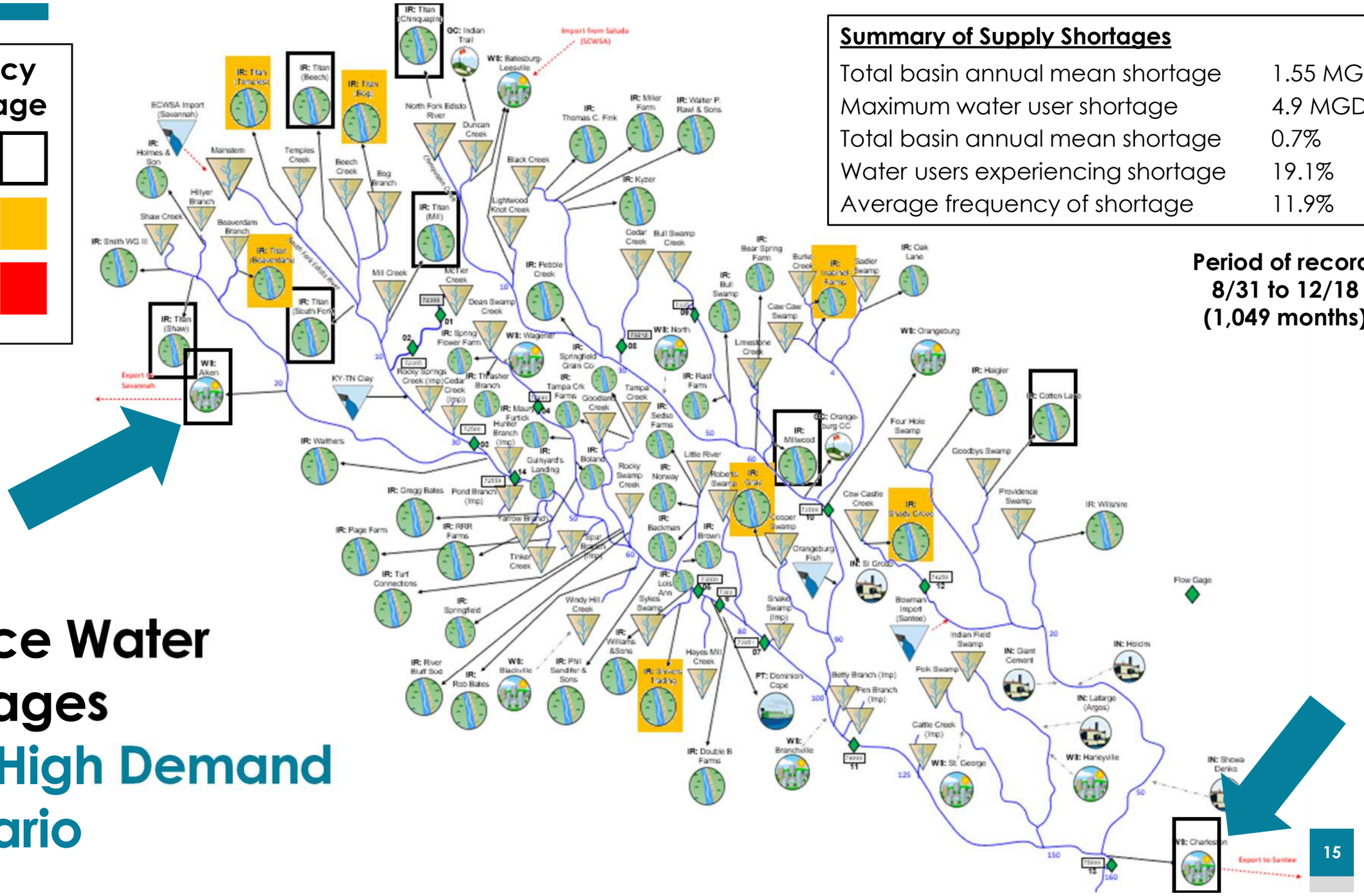
10-50%

> 50%

Summary of Supply Shortages

Total basin annual mean shortage	1.55 MGD
Maximum water user shortage	4.9 MGD
Total basin annual mean shortage	0.7%
Water users experiencing shortage	19.1%
Average frequency of shortage	11.9%

Period of record: 8/31 to 12/18 (1,049 months)



Surface Water Shortages

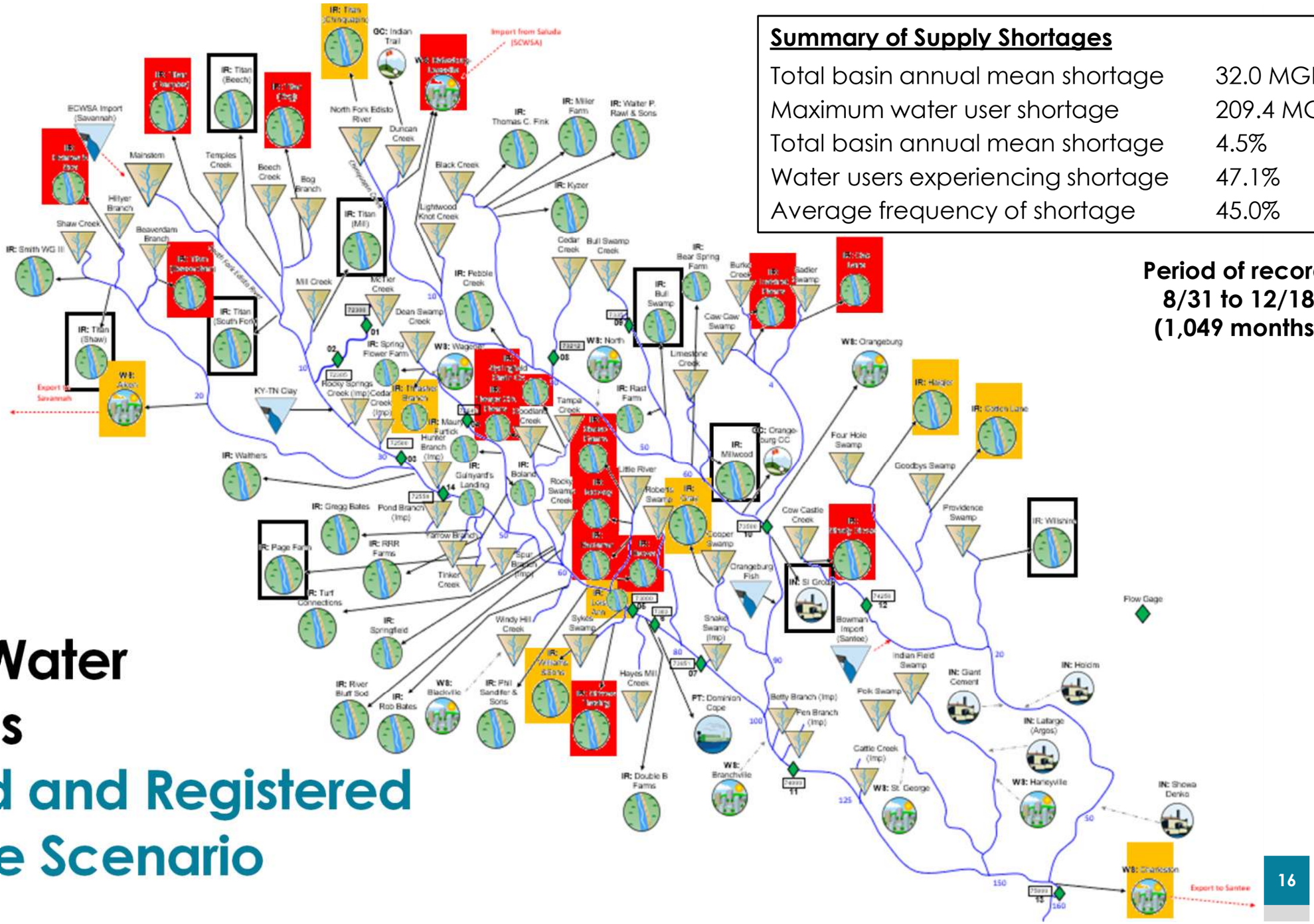
2070 High Demand Scenario

Frequency of Shortage

< 10%

10-50%

> 50%



Summary of Supply Shortages

Total basin annual mean shortage	32.0 MGD
Maximum water user shortage	209.4 MGD
Total basin annual mean shortage	4.5%
Water users experiencing shortage	47.1%
Average frequency of shortage	45.0%

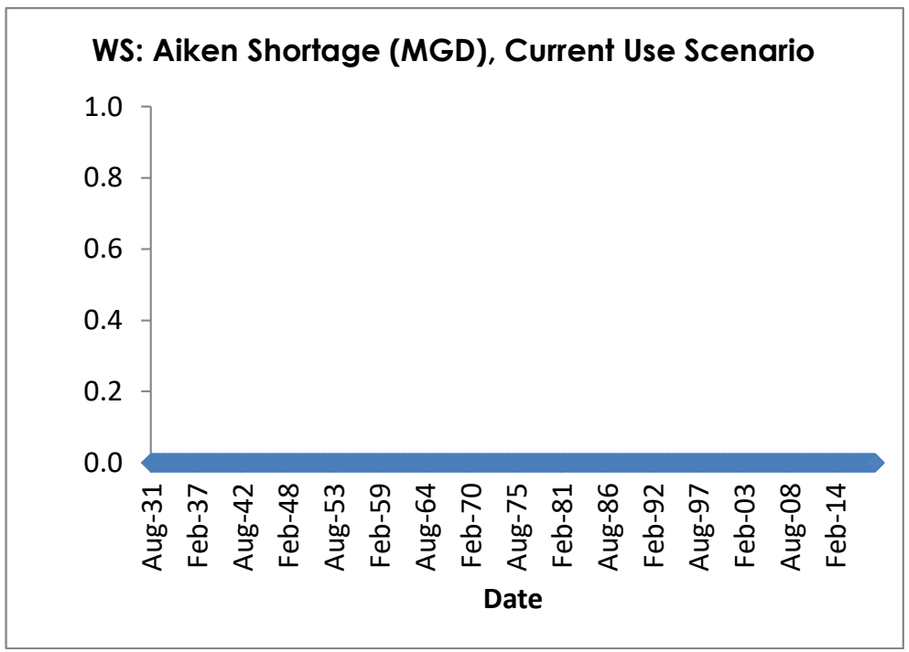
Period of record: 8/31 to 12/18 (1,049 months)

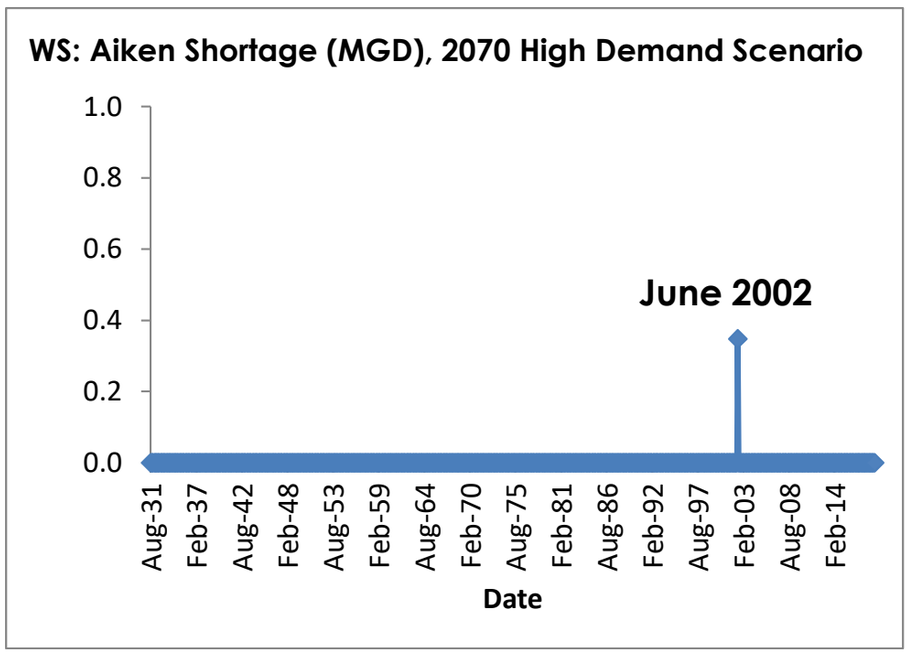
Surface Water Shortages

Permitted and Registered Water Use Scenario

Preliminary Results

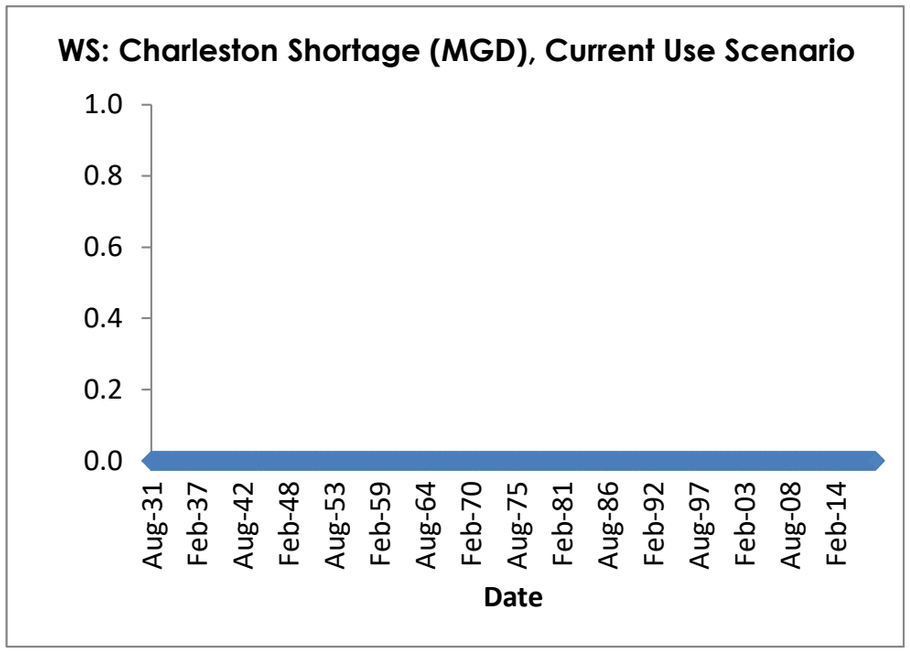
- *A closer look (shortages):*

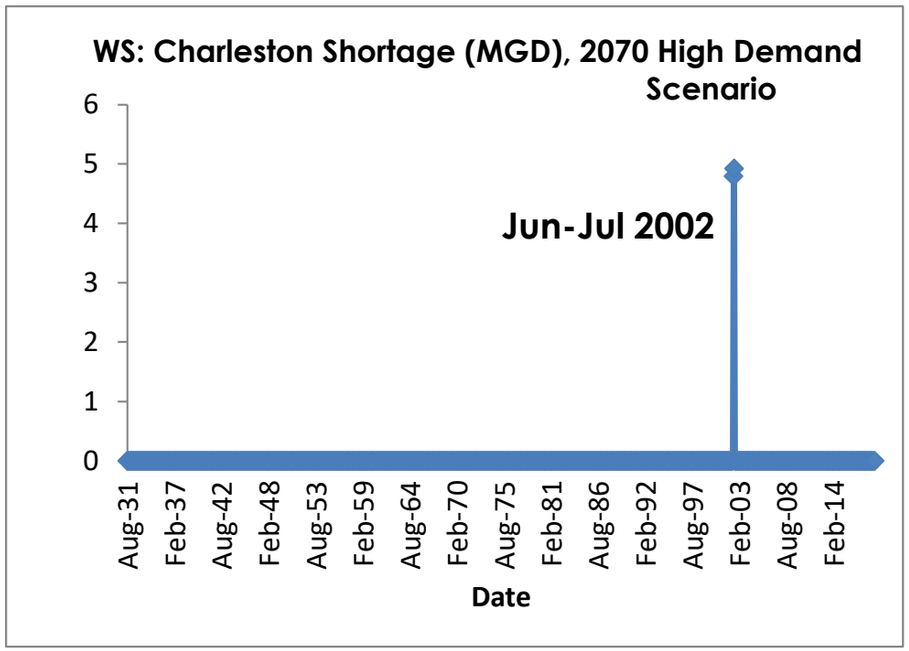




Preliminary Results

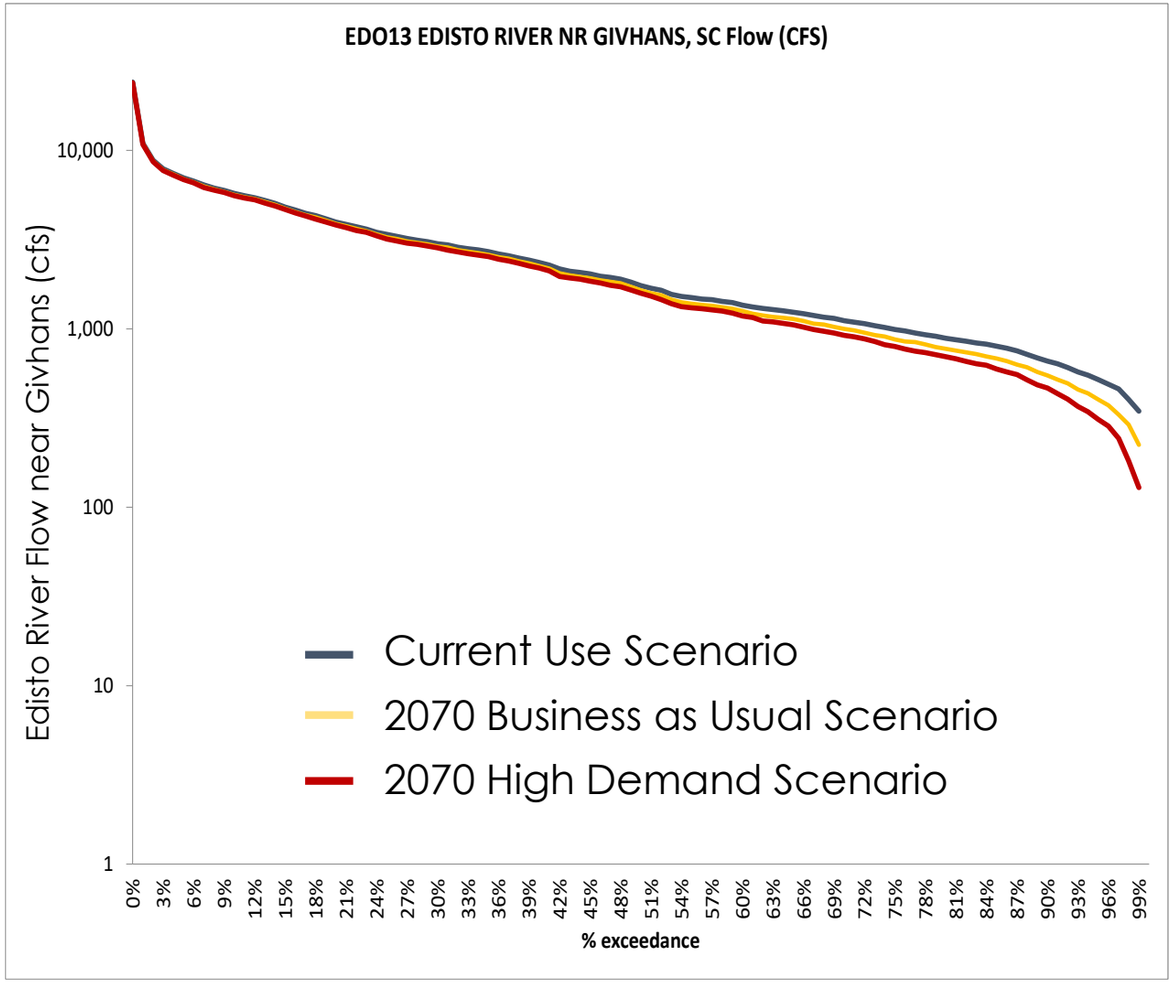
- *A closer look (shortages):*

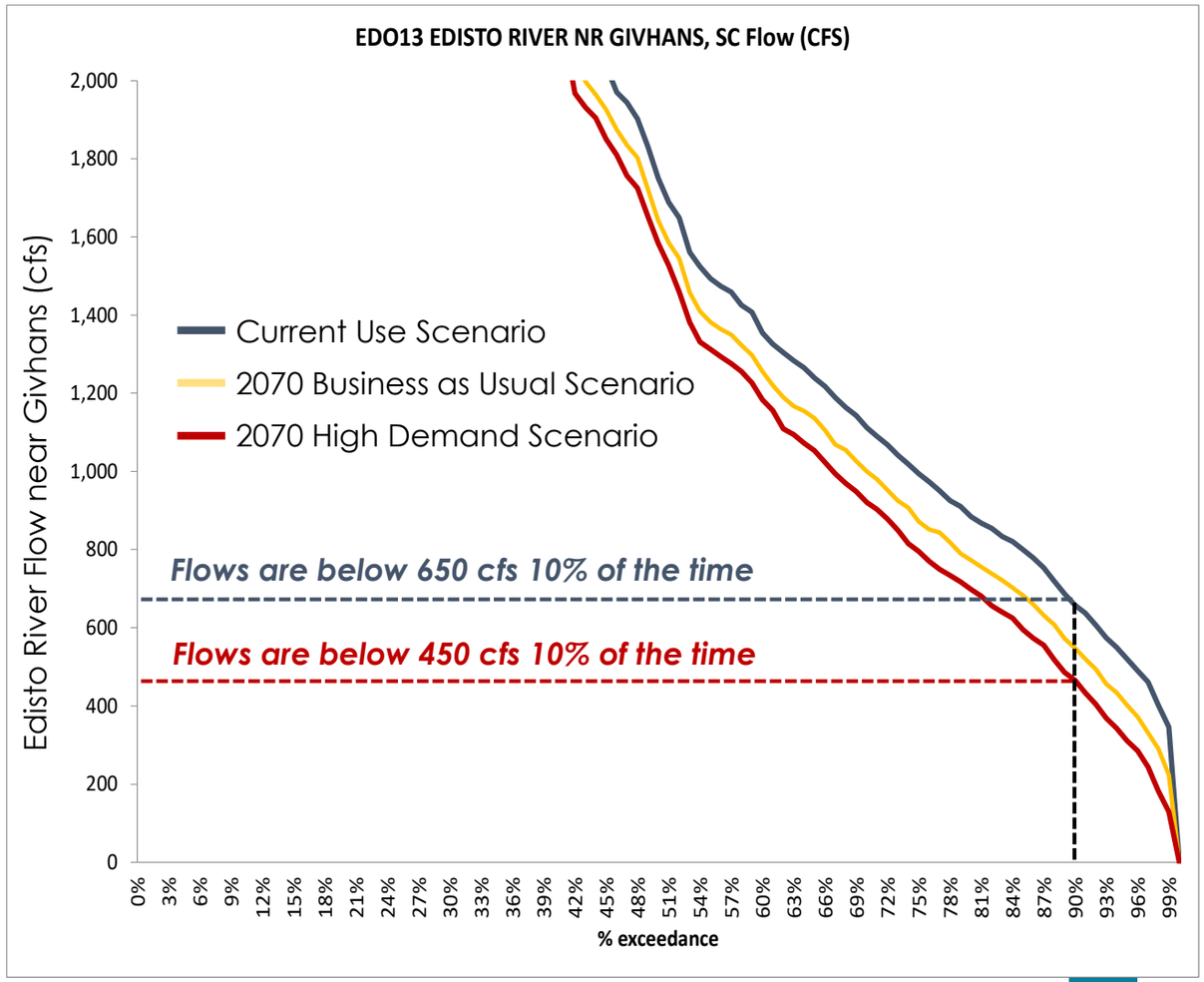




Preliminary Results

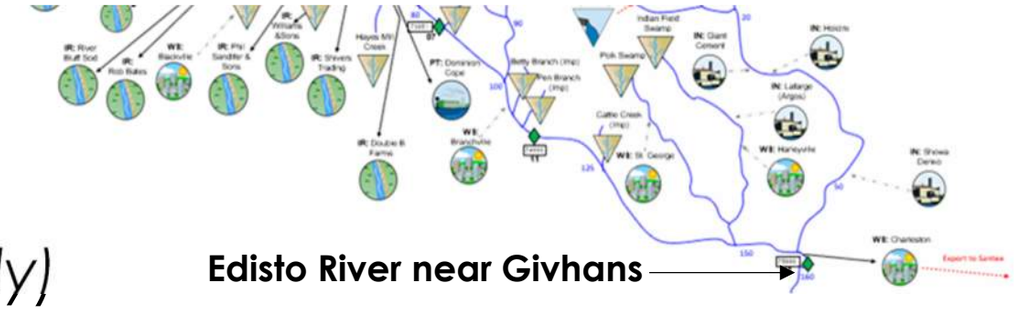
- *A closer look (exceedance graphs, monthly)*



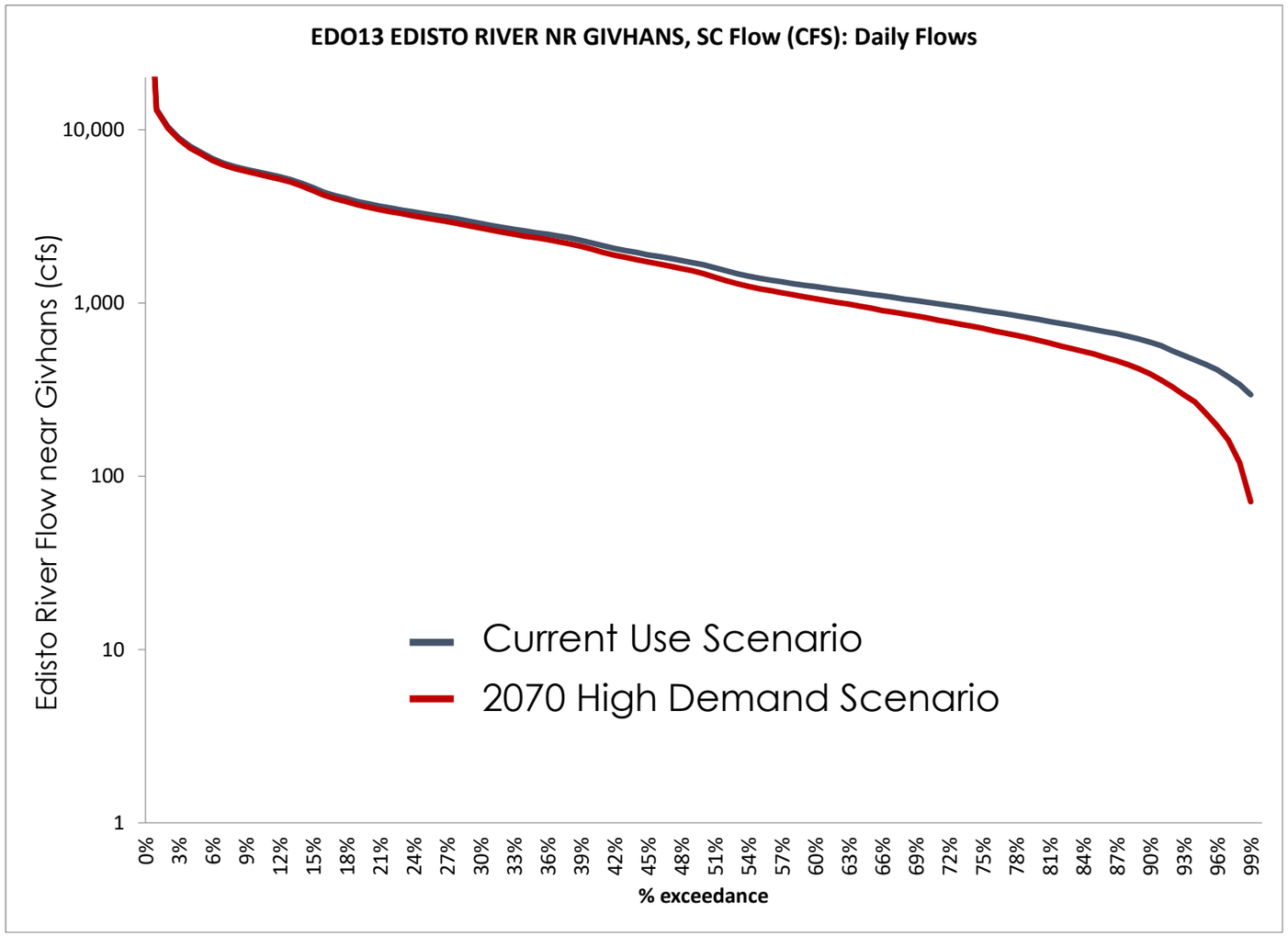


Preliminary Results

- *A closer look (exceedance graphs, daily)*



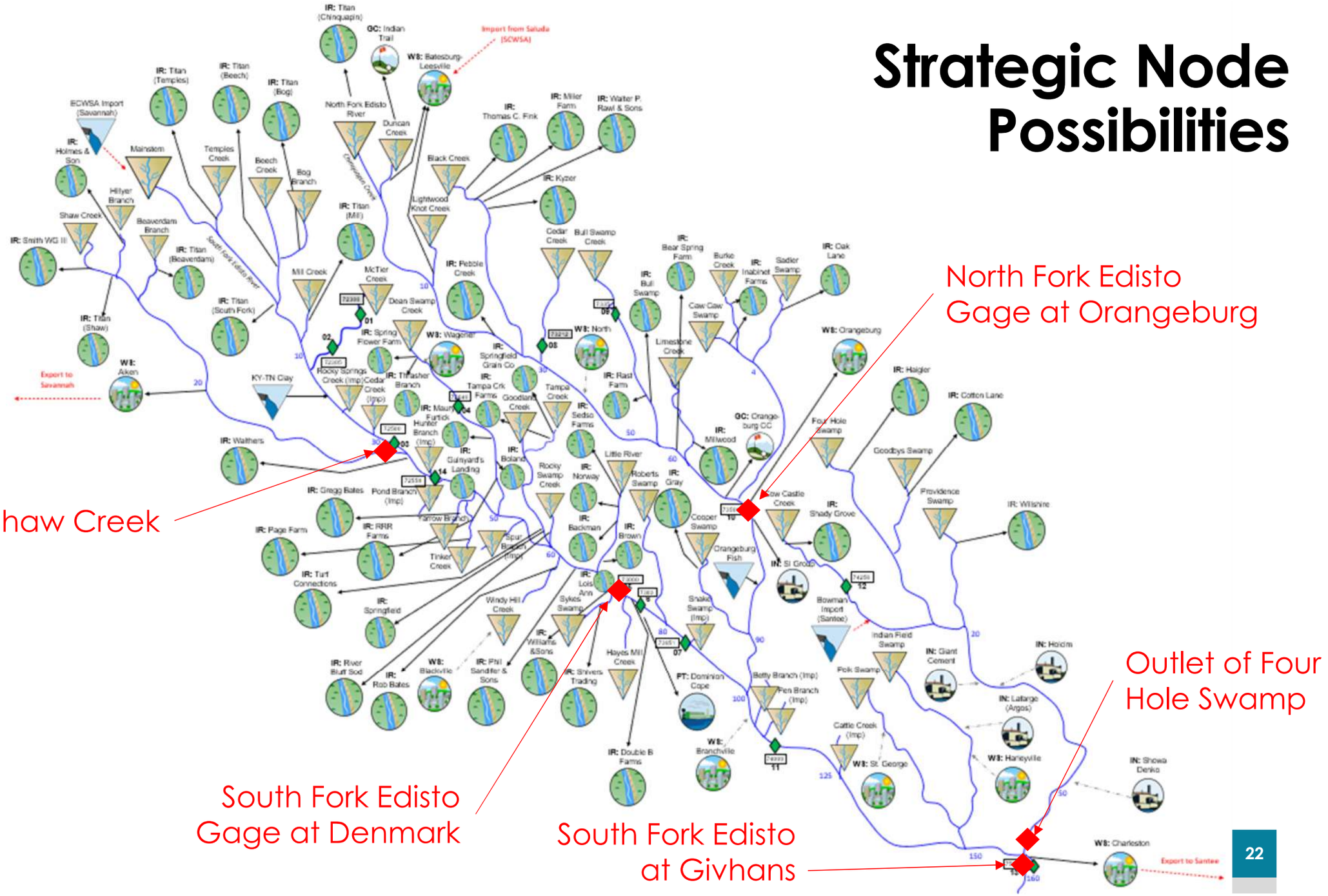
Edisto River near Givhans



Preliminary Conclusions

- Impacts of projected increasing demands appear minimal. Significant widespread shortages are not projected, as a function of projected demand increases. This includes new Ag demands.
- Impacts on river low flows are discernable:
  - Absolute low flow at Givhans during critical drought is projected to go to 0
  - Increase in frequency of low flows at Givhans
- Potential supply thresholds reached for Charleston and Aiken with 2070 High Demand scenario
- Climate could be a bigger driver of supply shortages than population demographics

Strategic Node Possibilities



Additional Surface Water Scenarios

Possible Options:

- Unimpaired Flow Scenario (e.g., natural conditions)
- Others?

Next Edisto RBC Meeting

Wed, Feb 17

Informational Topic

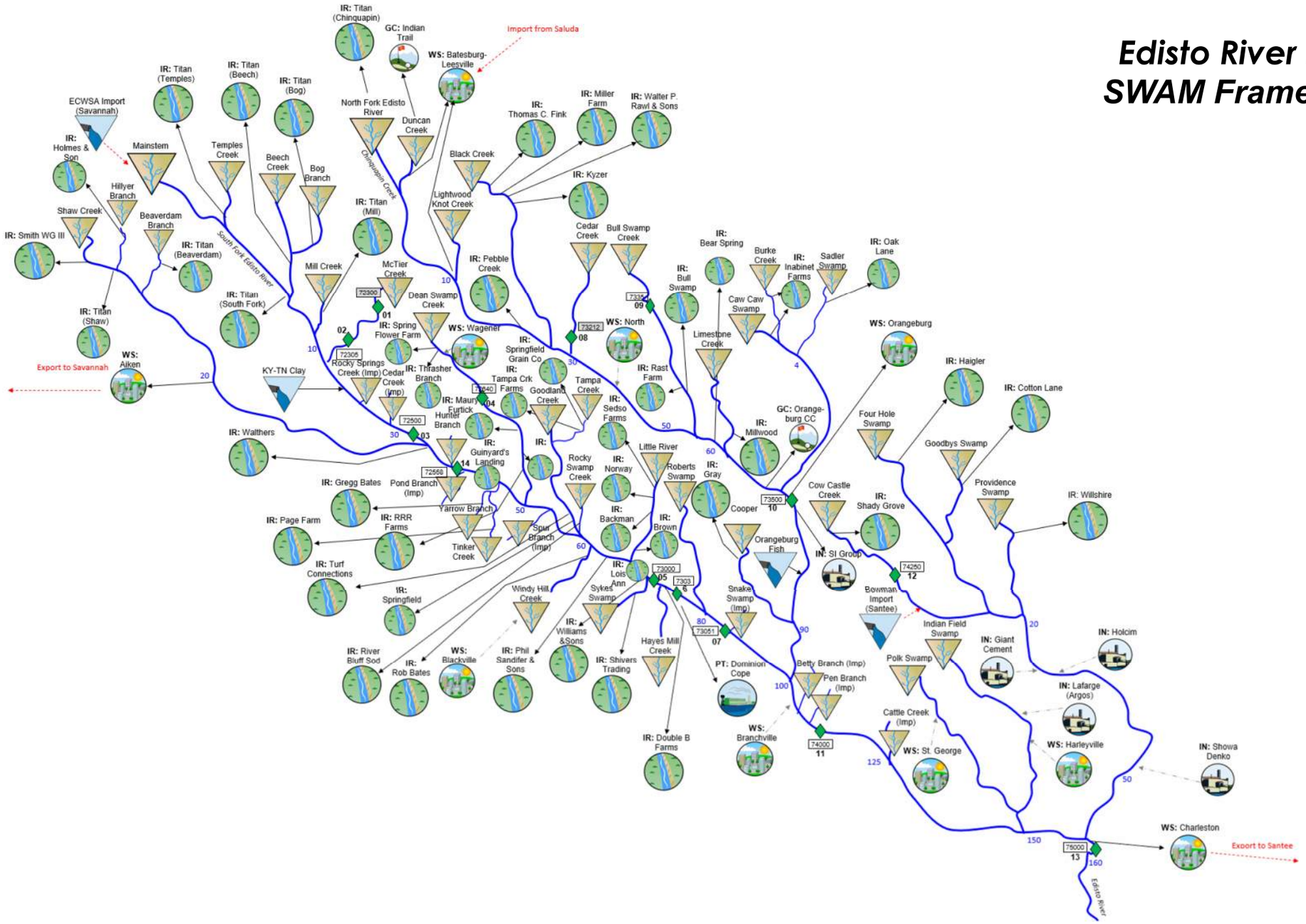
• Calculation of Sustainable Yield	Rob Devlin / Alex Butler, DHEC
• Edisto River - Hydrologic Statistics	Jason Thompson, Charleston Water Systems

RBC Discussion

- Surface Water Scenario Results Discussions

Additional Slides (as needed)

Edisto River Basin SWAM Framework



Performance Measures

Assessment of simulation results will focus on quantifying key performance measures for multiple reaches of interest across the basin.

Example / Suggestions:

- Percent change in a monthly minimum flow, 5th percentile flow, and/or median flow
- Percent change in seasonal or monthly flows
- Percent change in surface water supply
- Percent change in mean annual shortage or mean percent shortage
- Change in the number and magnitude of excursions below 20, 30 and 40 percent mean annual daily flows and/or 7Q10 flow
- Change in number of water users experience a shortage
- Change in the average frequency of shortage
- Percent of time recreational facilities were unavailable on a stream reach