



Santee River Basin Plan SUMMARY SHEET

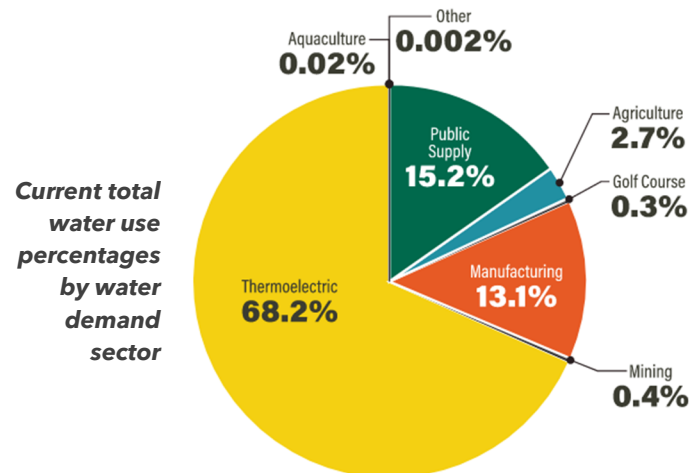
River Basin Planning Process

The Santee River Basin Plan is one of eight river basin plans under development for South Carolina. Once completed, the eight basin plans will converge into an updated South Carolina State Water Plan. The Santee River Basin Plan includes data, analysis, and water management strategies to guide water resource development in the basin for a planning horizon of 50 years. It was developed by the Santee River Basin Council (RBC), a group of 14 volunteer stakeholders representing water and sewer utilities; electric power utilities; industry and economic development interests; environmental interests and conservation groups; agriculture, forestry, and irrigation interests; and at-large water-based interests (public).

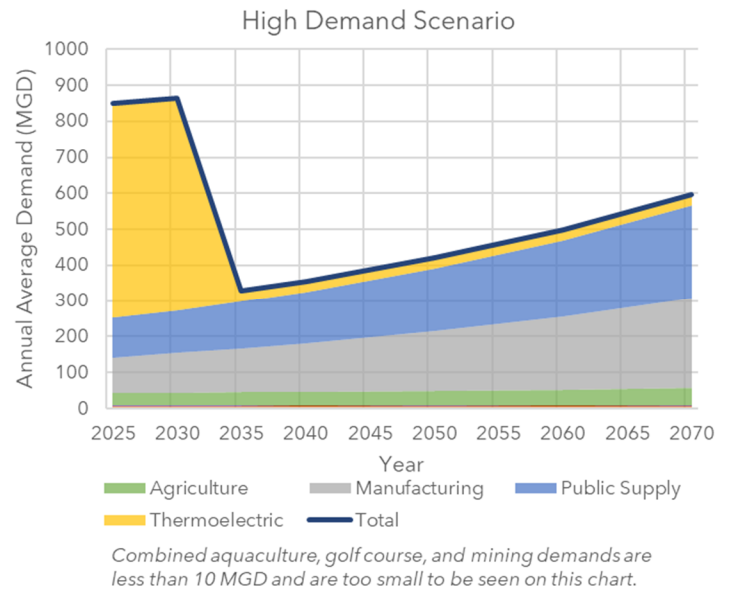
Current and Future Water Use

Current water withdrawal from permitted and registered users in the Santee River basin is approximately 547 million gallons per day (MGD). Approximately 30 MGD of this total demand is withdrawn from groundwater, with the rest coming from surface water. Of the 517 MGD of total basin surface water withdrawal, an estimated 24 percent (126 MGD) of the water is consumptively used and 76 percent (391 MGD) is returned to streams and rivers after use.

Current surface water and groundwater withdrawals are only 31 percent of the 1,750 MGD that has been approved through permits and registrations. Most of the water used in the Santee River basin comes from surface water sources and is used for thermoelectric energy and public water supply, as shown in the chart below.



To identify whether surface water supplies are likely to meet demands up to 50 years in the future, the Santee RBC investigated two planning scenarios that covered a range of surface water demand projections: (1) a *Moderate Demand Scenario*, which assumed normal weather conditions (average irrigation) and moderate growth projections, and (2) a *High Demand Scenario*, which assumed hot and dry conditions (high irrigation) and high population and economic growth. The *High Demand Scenario* was used as the basis for selecting water management strategies. With a projected 2070 surface water and groundwater demand of 596 MGD, the *High Demand Scenario* withdrawals account for 34 percent of the currently permitted and registered amount of surface water and groundwater in the basin. The *High Demand Scenario* projections are shown in the chart below. Thermoelectric demands are projected to significantly decrease because of the planned closure of the Winyah and Williams thermoelectric stations on the Santee and Cooper Rivers.



Key Findings

The Santee RBC used a surface water quantity model to evaluate whether existing surface water supplies were sufficient to meet projected water demands through 2070, assuming the same hydrologic conditions experienced over the 37-year period of record from 1982 through 2019. Some of the most significant findings include:

- Current Water Use:** There is a risk of surface water shortages for two golf courses, two agricultural operations, and two public water suppliers during periods

Santee River Basin Council Vision:
*A resilient and sustainably managed Santee River Basin that
balances human and ecological needs now and in the future.*



SANTEE RIVER BASIN PLAN

of severe drought. The potential for short-duration shortages was identified when current demands were compared to surface water availability experienced during the drought of record that occurred in 2007 to 2008. Effective management of Lakes Marion and Moultrie during drought may resolve the short-duration shortages under current conditions for the two public water suppliers and one golf course.

- **Growth Projection Impacts:** Modeling results also indicate the possibility of short-duration surface water shortages during periods of severe drought for the same six surface water users for both the moderate and high economic growth assumptions through 2070.
- **Overall allocation:** There may not always be enough water in every stream reach to satisfy all demands if all users withdrew their full permitted or registered amount 100 percent of the time. While this is unlikely, it is allowed by existing regulation.

Although a groundwater model was not available for this phase of planning, groundwater conditions were evaluated based on available groundwater monitoring data, current groundwater demand, and considering estimates of future water demand. Groundwater levels are relatively stable basin-wide across all aquifers in response to groundwater development, and for a majority of the basin, especially in the upper portion, declines in aquifer levels from predevelopment have been minimal. The greatest concern in the Santee River basin exists in the Charleston aquifer, which has historically been affected by a large cone of depression. Recent reductions in pumping have allowed the cone of depression to stabilize and continued monitoring and management is necessary to prevent additional groundwater declines in the Charleston aquifer.

Recommendations

The RBC developed a range of recommendations related to water management, planning, data collection, regulation, legislation, and policy. Some of the key recommendations are summarized below.

Water Management Strategy Recommendations

- **Supply-side Strategies:** The RBC recommended continued use of key supply-side strategies such as recycled water programs, conjunctive use of surface and groundwater, aquifer storage and recovery, and drought contingency plans. The RBC recommended expansion of water reuse programs for new golf courses, agriculture, and industry.
- **Demand-side Strategies:** The RBC recommended a toolbox of municipal and agricultural demand management strategies such as education, conservation

pricing structures, smart irrigation systems, soil management, cover cropping, and leak detection/water loss control programs.

- **Adaptive Management:** The RBC emphasized that future uncertainties should not be ignored (climate, population, industrial growth, emerging contaminants, etc.). In keeping with a predominant trend throughout the United States, an adaptive approach to water resources management is recommended.

Planning Process Recommendations

- SCDES should organize an annual state-wide meeting of RBCs and State agencies.
- SCDES, the RBC Planning Teams, and the RBCs should conduct regular reviews of the RBC membership to make sure all interest categories are adequately represented.

Technical Recommendations

- Work on the groundwater model developed by the U.S. Geological Survey should be completed.
- Future planning efforts should include evaluation of surface water quality.

Regulatory, Legislative, and Policy Recommendations

- Review periods for groundwater and surface water permit renewal should be re-evaluated, to facilitate long-term planning efforts, support bond issuance, protect withdrawers' investment in infrastructure, and protect the biological, physical and chemical integrity of the source.
- Current laws that allow for regulation of water use should be improved so that they are enforceable and effective.
- The safe yield definition should be updated using median statistics (80 percent median rather than 80 percent mean or average) in recognition that median statistics more accurately characterize typical water availability in stream flows that are non-normally distributed.
- The Surface Water Withdrawal, Permitting, Use and Reporting Act should be amended to require all surface water withdrawals (existing, new, and registrants) over 3,000,000 gallons a month to be subject to permit requirements and review. The Act should also allow for reasonable use criteria to be applied to all surface water withdrawals.

Call to Action

The Santee RBC developed an implementation plan that includes five primary objectives for the next 5 years. Each objective is linked to actions and strategies that rely on support from state, local, and federal agencies, water users, conservation groups, and other stakeholders. The RBC recognized that future funding from a variety of sources is critical to implementation of the Santee River Basin Plan.