

Hydrology - SCWRC Report 132

Report on Ground-Water Conditions in the Low Country Area, South Carolina

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ABSTRACT

The Low Country Capacity Use Investigation was initiated by the S. C. Water Resources Commission (SCWRC) in 1973 at the request of legislative and local officials in the four-county area. As required by the S. C. Ground Water Use Act of 1969, the SCWRC must report on ground-water problems in a capacity-use study area. The results of a technical ground-water investigation, made by the U. S. Geological Survey (WRD) in cooperation with the SCWRC, are contained in SCWRC Report Number 9 entitled, "The Ground-Water Resources of Beaufort, Colleton, Hampton, and Jasper Counties, South Carolina". Therefore, this report and SCWRC Report Number 9 are submitted to fulfill the requirement of the Act, and to make the findings of the investigation available to the public.

Ground water is the most important source of water supplies in the Low Country area. Six major aquifer systems have been identified. From the surface downward, these are: (1) the Hawthorne-Recent, (2) the Tertiary Limestone, (3) the Black Mingo, (4) the Peedee, (5) the Black Creek, and (6) the Tuscaloosa Aquifer Systems. Approximately 50 million gallons per day (Mgd) of ground water are withdrawn daily from these aquifer systems. The largest withdrawals, approximately 35 Mgd, are from the Tertiary Limestone Aquifer. In the adjacent Savannah area, approximately 75 Mgd to 90 Mgd of ground water are being pumped from this aquifer system for industrial and municipal water supplies.

There are several major ground-water problems that are occurring now in the Low Country area, and other problems that are likely to become major problems unless a comprehensive management plan is initiated. Documented problems include: (1) Regional water-level declines (loss of artesian pressure) throughout large areas of the Low Country and adjacent counties in Georgia; (2) Salt-water contamination of the Tertiary Limestone Aquifer in the coastal area, primarily in Beaufort County; (3) Local well interference, where water levels have been lowered below some intakes; (4) Interaquifer transfer, resulting in artesian pressure losses and/or water quality impairment; (5) Inadequate requirements relating to well location, spacing, construction, and abandonment; and (6) No requirements for proper water-use, well-construction, and hydraulic data reporting.

Potential problems include: (1) Subsidence of the land surface (compaction subsidence) caused by excessive, concentrated ground-water withdrawals; (2) Local dewatering of the Tertiary Limestone Aquifer; (3) Land-surface subsidence and collapse, if certain conditions are created

by improperly-planned well location and spacing, or by dewatering operations; and (4) Ground-water pollution of aquifers within the Hawthorne-Recent and in the Tertiary Limestone Aquifer Systems.

There are several administrative problems that have a bearing on an effective ground-water management program. These are: (1) Technical data acquisition and technology transfer; (2) Uncoordinated water resources development; and (3) Economics and financing of ground-water management.

An assessment of these technical and administrative problems indicates that (1) The major technical problems are related to ground-water withdrawals from the Tertiary Limestone Aquifer; (2) Many of the problems are interrelated, and the solution of one problem would permit the solution of another problem; (3) There is no local, state, or federal regulation which is capable of providing appropriate remedies for all of these ground-water problems; (4) A ground-water management program is urgently needed that will provide for the proper development of the ground-water resources, and aid in eliminating some of the current problems; and (5) The uses of ground water in the Low Country area have developed to a degree which requires coordination and regulation. Therefore, it is recommended that the Low Country area, which includes all of Beaufort, Jasper, Colleton, and Hampton Counties and Edisto Island in Charleston County, be declared a capacity use area.

If the Low Country area is declared a capacity use area, the SCWRC would have the authority to promulgate regulations concerning the drilling of wells and the withdrawal of ground water in the capacity use area. The following ground-water management methods are needed to protect the aquifers and ground-water users in the Low Country area: (1) Coordinated water-supply planning; (2) Regulations to limit ground-water withdrawals in areas where the supply is limited or where the movement of poor-quality water is degrading a fresh-water aquifer; (3) Regulations related to well spacing, well construction, and abandonment; (4) Regulations related to proper testing of aquifers during well-construction operations, and the proper reporting of this information; (5) Best practical management of ground-water systems; (6) Water conservation and alternative water-source selection; and (7) Proper ground-water monitoring.

Copies of this report are available in the SCDNR's Columbia office.