



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Massachusetts-Rhode Island Water Science Center
275 Promenade Street, Suite 150
Providence, RI 02908
Tel. (401) 331-9050
Fax (401) 331-9062

The Massachusetts-Rhode Island Water Science Center of the U.S. Geological Survey is pleased to present you a copy of Scientific Investigations Report 2006-5154, "Estimated Water Use and Availability in the Pawtuxet and Quinebaug River Basins, Rhode Island, 1995-99" by Emily C. Wild and Mark T. Nimiroski.

This study was part of a cooperative statewide assessment by the U.S. Geological Survey and the Rhode Island Water Resources Board to describe the average annual water-use components (for example, withdrawals, categorical use, and return flow) for the period from 1995 through 1999. In addition, monthly water withdrawals were assessed for the study period and compared to the estimated long-term water availability during times of little to no recharge in June, July, August, and September. A ratio of the monthly water withdrawals-to-availability were calculated and will be used by the Rhode Island Water Resources Board to compare the monthly withdrawals within each basin as a function of the estimated water available from ground-water and surface-water resources. The results will be used for planning and understanding the interaction between the water-use and hydrologic components.

This report identifies the annual water-use components, and assesses summer water withdrawals and availability for periods of little to no recharge in the Pawtuxet River Basin and its four subbasins, and the Quinebaug River Basin. During the study period in the Pawtuxet River Basin, it was estimated that the water withdrawn was 74.06 million gallons per day, the categorical water use was 18.07 million gallons per day, and the return flow was 30.64 million gallons per day in the basin. During the study period in the Quinebaug River Basin, it was estimated that the water withdrawn and categorical use was 0.363 million gallons per day, and the return flow was 0.283 million gallons per day in the basin. The ground-water availability for the study areas were calculated by a method of determining ground-water discharge during streamflow-recession periods for each month in the summer, June, July, August, and September. A previously determined safe yield for the Scituate Reservoir was used as the surface-water availability as part of the water availability in the Pawtuxet River Basin. A basin water budget was assessed for each basin and summarizes the inflows and outflows for selected annual water-use components for the 5-year study period and the hydrologic cycle on the basis of the long-term period of record. Ratios of water withdrawals-to-water availability, 75th, 50th, and 25th percentiles for the summer months, in the Pawtuxet River Basin ranged from 0.359 to 0.500 in June; 0.608 to 0.777 in July; 0.567 to 0.805 in August; and 0.544 to 0.653 in September; and in the Quinebaug River Basin ranged from 0.010 to 0.020 in June; 0.021 to 0.030 in July; 0.022 to 0.050 in August; and 0.015 to 0.032 in September.

Additional copies of this report are available at the U.S. Geological Survey, Rhode Island Water Science Center, 275 Promenade Street, Suite 150, Providence, RI 02908, while supplies last. Upon depletion of this local supply, copies may be purchased from the U.S. Geological Survey, Branch of Information Services, Box 25286, Federal Center, Denver, CO 80225-0286; telephone (303) 234-7476. Specify report number SIR-2006-5154. For online copies of publications, go to <http://ri.water.usgs.gov/>.

*Robert F. Breault, Deputy Director
U.S. Department of Interior,
U.S. Geological Survey,
Massachusetts-Rhode Island Water Science Center*