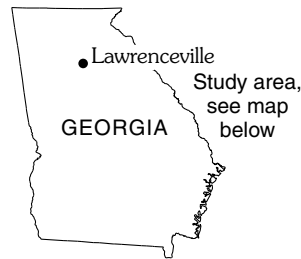


Sustainability of Ground-Water Resources in the City of Lawrenceville area

Study Chief Phillip N Albertson
 Cooperator City of Lawrenceville, Georgia
 Year Started 2002



Problem

The city of Lawrenceville overlies an igneous and metamorphic-rock aquifer that supplies about 6 percent of the city's current water use. Lawrenceville plans to increase ground-water withdrawal from wells located in the upper Alcovy River Basin and from wells in the Redland–Pew Creek River Basin. Long-term effects of the withdrawal of ground water in this area are largely unknown. For this reason the U.S Geological Survey (USGS), in cooperation with the city of Lawrenceville, began a study to investigate the sustainability of ground-water resources as additional municipal wells become operational.

Concern about the possible effects of ground-water withdrawal has led the city of Lawrenceville to install a monitoring network to assess changes in the hydrologic system that pumping may initiate. These changes possibly include a decrease in ground-water levels, cross-basin transfer of ground water, dewatering of the overlying saprolite, and a decline in streamflows. As ground-water development continues to increase in the Piedmont region of Georgia, it is important to monitor the effects of ground-water withdrawal to better manage the resource.

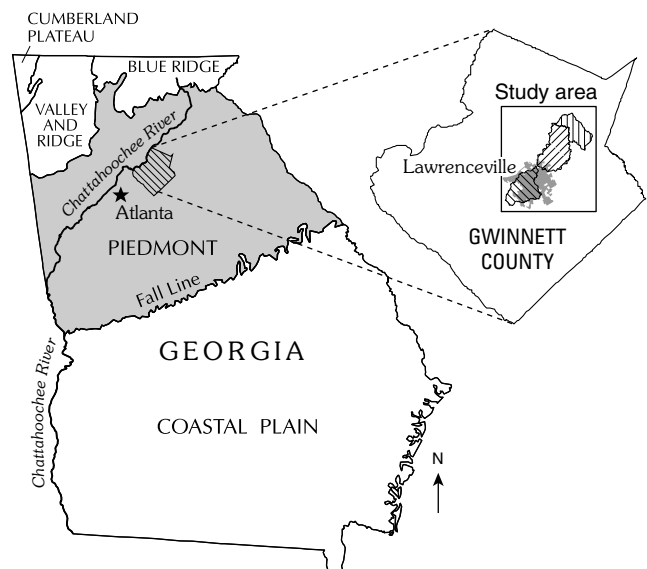
Objectives

- Monitor the effect of increased ground-water withdrawals by additional municipal wells on surrounding ground-water levels and streamflow.
- Determine pre- and postpumping hydrologic budgets of the Alcovy and Pew–Redland Creek Basins.
- Provide drawdown data from surrounding monitoring wells to the city of Lawrenceville and estimate the zone of influence of active municipal wells.

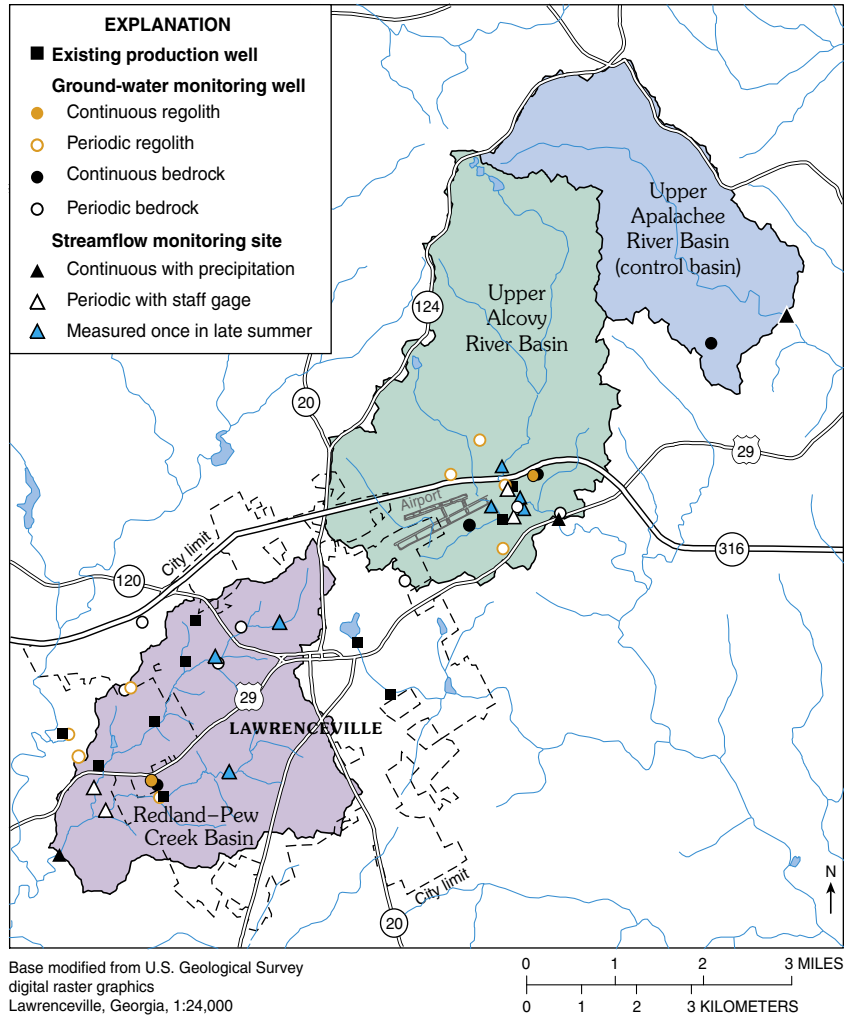
Progress and Significant Results, 2002–03

- Installed 11 new monitoring wells during July 2003 to form a network of 27 wells to monitor long-term water levels in areas of increased ground-water withdrawal.
- Installed continuous water-level recorders on a well pair in the upper Alcovy River Basin, on a well pair in the Redland–Pew Creek River Basin, and on a single well in the upper Apalachee River Basin.

- Obtained weekly water-level measurements at 21 monitoring wells.
- Installed continuous-recording streamgages at the outflow of both the upper Alcovy River and the Redland–Pew Creek River Basins.
- Installed staff gages at four additional streamflow monitoring sites.
- Obtained weekly staff-gage readings and streamflow measurements at the four periodic streamflow measurement sites.
- Obtained seepage measurements during the low-flow period in the fall of 2003 to quantify the ground-water contribution to streamflow in areas to be pumped.
- Developed a project internet site, that may be accessed at <http://ga.water.usgs.gov/projects/lawrencevillegw>



Location of the Lawrenceville study area in the Piedmont physiographic province of Georgia.



Ground-water wells and streamflow monitoring sites for three river basins located near Lawrenceville, Georgia.



The USGS is monitoring streamflow weekly at four sites in the study area, one of these being Redland Creek, shown above. Photo by Phillip N. Albertson, USGS.



Staff gage on Cedar Creek. Photo by Phillip N. Albertson, USGS.



Drillers install a new regolith monitoring well. Photo by Phillip N. Albertson, USGS.