



## Water Chemistry

Since 1997 researchers at Smith College have collected water temperature, flow rates, pH and other chemical measurements (Na, Cl, SO<sub>3</sub>, NO<sub>3</sub>) continuously at three gauging stations and on a biweekly basis at 10 additional sites in the Mill River Watershed. These data show that the water quality of the Mill River is generally pretty healthy, with fairly low temperatures and high oxygen levels even in its lower portions. Of the main tributaries, the best water is found in West Brook and Roaring Brook, while Running Gutter Brook has satisfactory water quality conditions. The worst water quality is found in Bloody Brook, which distinguishes itself by having the highest records for temperature, coliform counts, and nitrate concentrations and the lowest dissolved oxygen levels. Its poorer water quality conditions, however, are not surprising when the path of the water is traced. Like many of its smaller tributaries, Bloody Brook flows principally through agricultural fields and past suburban lawns. Where it enters South Deerfield, it is further impacted from runoff from streets, parking lots, Route 5 and Interstate 91.

One of the interesting findings has been the unusual water chemistry discovered in Great Swamp Brook. The brook has two arms, and although both flow through the same geologic material and have similar vegetation, the water in one is acidic, while the other is more basic. Smith College researchers Amy Rhodes and Bob Newton speculate that these differences are due to road salt runoff from Interstate 91, which has contaminated several private wells near the highway. The

higher than expected nitrate and sulfate levels, they report, suggests that some of the septic systems near Great Swamp Brook are leaking. Because groundwater is near the surface in the Great Swamp, the leach fields for the homes and businesses in this area may not be completely treating the effluent.