Drilling for natural gas in the Marcellus Shale geological formation is occurring at unprecedented rates across the Mid-Atlantic Region of the United States. Establishing baseline data prior to drilling is essential in order to quantify impacts. Studying leaf decomposition offers a holistic approach because nutrient leaching, microbial colonization, and macroinvertebrate shredders all play key roles. In this study, we measured leaf decomposition rates, community structure, and water chemistry in two perennial streams in Southwestern PA. The two streams differed in $k$-values, water temperature, and shredder biomass, while no differences occurred in total macroinvertebrate biomass, abundance, or taxa richness. Mean Total Dissolved Solids (mg/l) ranged from 224-325 and Conductivity (uS/cm) ranged from 385 to 608. Drilling under these streams is scheduled to occur in early 2010.