TITLE: THE RELATIONSHIP BETWEEN GROUNDWATER NITRATE AND LANDSCAPE CHARACTERISTICS IN THE LAMPREY RIVER WATERSHED
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RESEARCH OBJECTIVE: to determine if watershed characteristics affect groundwater nitrate concentrations in homeowner drinking wells in the Lamprey River watershed.

METHODS:
• Quantified watershed characteristics including land use and population density
• Collected groundwater samples from 188 homeowner wells from summer 2004 to spring 2005
• Compared differences in nitrate concentrations among seasons and locations

RESULTS:
• Some areas of the watershed had higher nitrate concentrations than others (Figure 1).
• Areas with higher population densities had higher average groundwater nitrate (Figure 2).
• One well exceeded the US EPA drinking water standard for nitrate (10 mg N/L), 10 wells were greater than levels associated with increased risk of gastric cancer (4 mg N/L; Ward et al. 1996), and 28 samples were elevated above 2 mg N/L (Figure 1).
• Groundwater nitrate concentrations did not show consistent seasonal variation.

APPLICATIONS:
• Homeowners within the watershed were given the results of this study along with general information about groundwater quality.
• Town planners, managers, conservation commission members, and citizens should consider impacts of population growth on groundwater quality when making future development decisions in each of the Lamprey River watershed towns.

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