THE CONNECTICUT RIVER AIRSHED WATERSHED CONSORTIUM

UNIVERSITY of NEW HAMPSHIRE

NH WRRC

TITLE: THE RELATIONSHIP BETWEEN GROUNDWATER ARSENIC AND LANDSCAPE CHARACTERISTICS IN THE LAMPREY RIVER WATERSHED

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RESEARCH OBJECTIVES:

- Determine if groundwater arsenic varies over time and in different areas of the Lamprey River watershed
- Determine if differences in arsenic concentrations can be explained by landscape characteristics

METHODS:

- Quantify landscape characteristics such as bedrock type, land use and population density
- Collect groundwater samples from 188 homeowner wells in summer 2004 and spring 2005
- Compare differences in arsenic concentrations over time and among locations

RESULTS:

- Arsenic concentrations varied throughout the Lamprey watershed. One well exceeded the EPA limit of 50 µg/L prior to 2006, 15 wells were greater than the new 2006 EPA limit of 10 µg/L (Figure 1).
- Wells with higher arsenic concentrations tended to be clustered according to bedrock type (Figure 2).
- Even within a bedrock type, however, neighboring wells can vary dramatically.
- Groundwater arsenic concentrations did not vary over time.

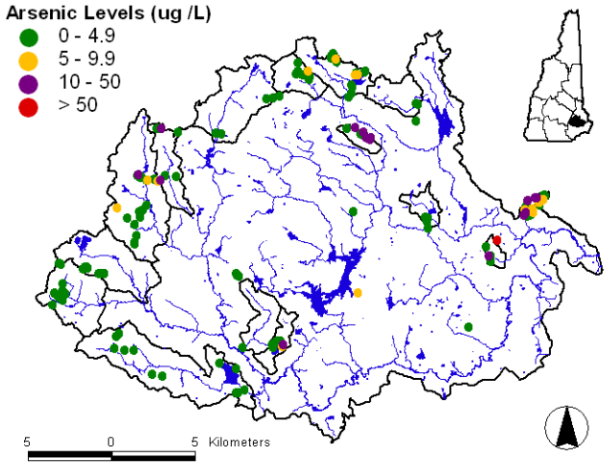

Figure 1. Map showing maximum arsenic concentrations measured in homeowner wells and areas of the Lamprey River watershed located in southeastern New Hampshire.

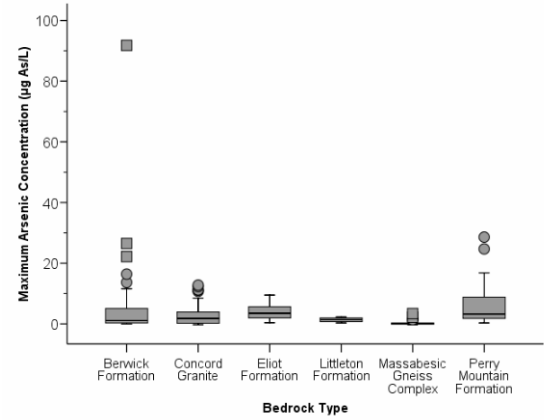

Figure 2. Arsenic concentrations grouped by bedrock type

APPLICATIONS:

Homeowners within the watershed were given the results of this study along with general information about groundwater quality. The results are also of direct interest to town planners, managers, conservation commission members, and citizens who will have to consider groundwater quality when making future development decisions in each of the Lamprey River watershed towns.

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