Town of Bow Drinking Water Protection Committee

BROWN HILL ROAD AREA WATER QUALITY STUDY SUMMARY

May 2016

Residents from the Brown Hill Road area have voiced concerns since the 1990s regarding corrosion from salt contamination of their private wells. The Town evaluated this issue and implemented corrective actions at that time, including reduced salt application practices and assistance with water filtration systems, where applicable. In July 2013, residents again requested review of this issue such that the Board of Selectman assigned the Town's Drinking Water Protection Committee (BDWPC) to work through the Community Development Director and Town Manager to perform a new water quality study. Brown Hill Road resident and Professional Geologist Brandon Kernen also volunteered his time and expertise to support this study.

The BDWPC surveyed 158 area homeowners in June 2014 regarding their well water quality, water treatment, and requested permission to sample their private wells. Half (79) of the homeowners responded and granted permission for sampling. Water samples were collected between July and September, with results mailed to each homeowner in December 2014.

The BDWPC evaluated and prepared a report with these results for presentation to the Board of Selectman (April 26, 2016), and Town residents (June 8, 2016). The full report will be posted on the Town website www.bow-nh-com, Drinking Water Committee webpage following public comments.

General findings from this study are as follows:

- The sources of chloride contamination in well water in the study area include road salt drainage and softener brine from home treatment systems. Thirteen of the 79 wells (16%) exhibited chloride higher than the 250 mg/L Secondary Drinking Water Standard.
- Both low pH and high chloride contribute to water corrosivity. Twenty four of the 79 homeowners reported in the surveys that their water was corrosive. Twelve of the 24 exceeded the chloride secondary standard (that is 12 of the 13 wells >250 mg/L). Furthermore, 23 of the 24 residents reporting corrosion had pH levels less than 6.0.
- *Older (pre-1985) wells have higher chloride and lower pH*: wells known to be installed prior to the 1984 Water Well Board Construction Standards exhibited lower pH (higher acidity), compared to wells known to be constructed after these standards were adopted. This is likely because older wells were not sealed into bedrock, and therefore are more susceptible to recharge from acid rain and surface drainage including salt contamination. Average pH in pre-1985 wells was 6.0, compared to the average in newer wells which was 6.7. Average chloride concentrations older to newer were 175 and 63 mg/L respectively.[RK1]
- Wells installed in 1985 and later were required to be constructed with at least 10 ft of casing sealed into the bedrock. Most of the homeowners with post-1984 wells did not report corrosion issues; however, the newer wells exhibited naturally occurring contaminants *Arsenic* (30% of the

samples were above the drinking water standard) and *Uranium* (18% of the samples were above the drinking water standard).

- Current chloride levels were similar, and sometimes lower, than chloride levels tested in the 1990s, suggesting that road salt loading has not increased the concentrations found in groundwater.

General recommendations from this study are:

- **Health recommendation**: Homeowners should test for stagnant lead and copper which can leach from plumbing fixtures due to water corrosiveness. This is important for prevention of lead exposure, and requires testing the first flush of water from your sink in the morning.
- Homeowners may evaluate treatment solutions for water corrosivity such as water neutralizers, and treatment for arsenic and uranium such as Point of Use (POU) filters (as opposed to whole house systems). The NH Department of Environmental Services "Be Well Informed" web tool is available by a simple web search for guidance on the selection of water treatment options.
- Homeowners with softeners should consider alternative, non-salt treatment technologies, and/or volume-based regeneration to reduce brine discharges.
- The Town should continue its low road salt application practices and maintain vigilance for effective alternatives. All Town public works staff have received training under the NHDES Green SnowPro guidelines which promote best practices regarding road salt application.
- The Town should sample and evaluate the feasibility of implementing an engineering solution to reduce or eliminate infiltration of salt contaminated runoff in drainage ditches especially where this problem has been noted.
- The BDWPC should continue to provide information on the importance of private well testing, well construction standards, and water treatment guidance through public information sessions, and annual "water test day" events.

Questions regarding this study may be directed to the Bow Drinking Water Committee at Bowdrinkingwater@gmail.com. Additional information will be presented at a Public Information Session at **The Old Town Hall, 91 Center Rd, Bow, on Wednesday, June 8 2016, 7 PM.**