

# The Ossipee Aquifer Water Quality Preliminary Report

By Dr. Robert Newton

Presentation Notes from 9/26/16

## ***Slides 1-5***

The Ossipee Aquifer is a stratified drift aquifer which is primarily sand and gravel deposits left by meltwater streams of glaciers- there are some fractured bedrock aquifers which are dense, relatively impermeable and are not very porous but they store and transmit water mostly through intersecting fractures

## ***Slides 6-12***

***Types of wells- Driven wells-*** a point is driven down into the sand/gravel. Some have **dug wells** which have the advantage of being lower cost, storage and surface area to recharge but it is also easily contaminated. Most people in the study have **drilled wells**. The amount of casing on a well indicates how deep the sand and gravel is at the surface. Casing is used to hold the sand and gravel out of the well before it reaches the bedrock where water flows through the fractures (mainly near the surface) then pumped up for use. Fracking increases yield. **Artisan well-**drill until you hit a water bearing formation where water flows out of the ground without a pump

## ***Slides 13-25***

### ***Results Summary***

***Please see slides for: measured parameters, the results of water hardness, pH and Alkalinity, road salt impacts, lead, copper, floride and volatile organic compounds. There were about 70 participants in this study. Below are some notes from the slides that include the results.***

- Stable water isotopes tell where your water is coming from
- Water hardness- about 57 wells had soft water with about 11 moderate and 2 hard. Water softeners create a brine that goes into the septic and you cannot differentiate it from road salt
- pH – acidity is associated with shallow or dug wells. Higher alkalinity (buffering capacity) associated with metamorphic rock which is calcite bearing.
- Road Salt – about 12 samples were above the recommendation. Salt in our drinking water can come from road salt but it can also come from rain, sea spray (even here) and some from feldspar. The state can use as much road salt as they want for health and safety but, except for the state roads, the municipalities decide how much and what to use. Brine before a storm helps reduce the amount needed. Aspen, Colorado uses cinder. Wetlands can filter out some organic compounds but cannot filter out sodium chloride. It becomes concentrated at the bottom.
- Lead - 5% have initial lead values above the standard however this was before flushing the tap. Lead problems are associated with lower pH and alkaline groundwater and can be very harmful to kids

Lead in water can be reduced by letting the water run or using a charcoal filter.

- Copper- comes from older pipes. 18 samples exceeded the standard of 1.3 ppm with the average of these being about 3.5 ppb but this was before the water was run for the allotted time
- Fluoride- none exceeded the standard but if you have children, you should know the levels in your water We live in a high fluoride area due to geology
- VOCs- Disinfection byproducts, comes from treated town water or treating or bleaching your own well. MTBE (gas) was found in some samples. It can move long distances. BTEX is an organic compound and is from fuels, gas or anything fuel based. 10% of wells had VOCs but none above the standard. As development expands over the aquifer, VOCs become more prevalent in our water
- Best management practices (BMPs) should always be in place such as collecting and treating water from paved areas
- All well participants will receive a personal report but this may take some time as this is also a research project for Smith College students
- The next Aquifer Protection Steering Committee will be held sometime in January with details to come. Please contact Corey if you have not signed up and would like to be included on the committee
- GMCG volunteer Carol will be visiting your well site to gps the location of your well and take a photo for Dr. Newton's research. You will receive an email from Corey prior to this happening but please call the gmcg office with any questions at 539-1859

Thank you!