

March 18, 2021 Report to the Town Council
Little Compton Conservation Commission Study
“Do We Have Enough Water in Little Compton?”

Background

Little Compton’s Comprehensive Plan, updated in 2018, highlights the importance of protecting our fresh water resources. Such protection is critical, given our town’s reliance on private wells and individual septic systems, and the prohibitive cost of installing public systems.

Further, surveys conducted among residents over the years have consistently ranked water protection and availability as the most important Town considerations, yet before the Conservation Commission’s study, there had been no systematic effort to try to understand the quantity of fresh water available in our wells for domestic and agricultural needs.

Conservation Commission Study

In collaboration with URI researchers, the Conservation Commission launched a multi-year research project in 2019 to better understand our fresh water resources. Little Compton sits almost entirely atop fractured bedrock, a geological condition that complicates efforts to predict the quantity of water available to our residents and farms. However, changes in water quality can serve as an indication of whether we have enough water for current use and future needs.

In the summer of 2020, we carried out the second year of our study, replicating the well sampling that we first did in 2019. In 2020, 154 Town residents volunteered their wells for water sampling, a 40% increase from the 110 residents that participated in 2019. Critically, 92 residents participated in both 2019 and 2020, allowing us to directly compare results from their wells across years.

We measured well water samples for their electrical conductivity, a simple and inexpensive way to estimate the amount of dissolved solids in the water. High levels of Total Dissolved Solids (TDS) in drinking water could indicate the presence of salt water, septic system waste, or run-off from fertilizers. By monitoring changes in TDS results over a period of years, we will better understand the relationship between precipitation and ground water quality, and be able to track any evidence of water quality degradation, which could signal water quantity concerns.

What Do 2020’s Results Tell Us?

First and foremost, we are grateful to the 154 residents who participated in our 2020 study. This allowed us to reach our goal of sampling well water from 10% of Little Compton’s households, geographically distributed all across town.

Second, the results appear to confirm just how critical precipitation is to the amount of ground water we have available for use across town. In our fractured bedrock setting, we do not have a water-laden aquifer from which to pull, nor is there water coming from “elsewhere” to feed our wells. Instead, whatever water we have available to us comes from precipitation (rain and snow) that has worked its way down into the cracks and fissures of our bedrock, eventually seeping into

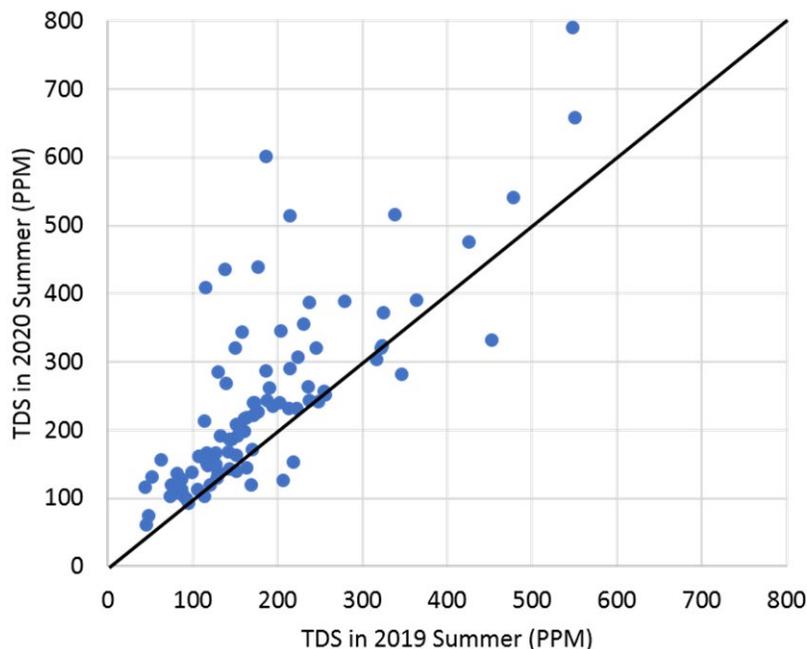
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our wells. When the amount of precipitation changes, the amount of fresh water available to us changes in relatively short order.

With precipitation down 33% in 2020 from the relatively wet 2018-2019 period, we hypothesized that Total Dissolved Solids would rise for two reasons. First, there would be less fresh water to hold back salt water from infiltrating bedrock cracks and fissures that feed wells close to the coast. Second, there would be less fresh water to dilute the impact of our septic system leach fields, and of home and farm fertilizer use. Thus, we anticipated that comparing actual TDS results from 2020 to 2019 would confirm the design of our study, the validity of the data collected, and the hypotheses with which we began our efforts.

And that is just what we saw.

Overall, TDS readings increased across town. This is best shown in the scatter diagram below. For the 92 wells that were sampled in both years, the diagram plots 2019 results against the ones from 2020. If TDS results were similar year to year, the dots would rest right on top of the diagonal black line. What we saw instead is that the bulk of dots came to rest above the line, indicating that TDS results in 2020 increased over 2019. In fact, the median TDS count increased almost 50 parts per million (ppm), from 165 ppm to 208 ppm.



Looked at another way, the EPA’s recommended standard for Total Dissolved Solids in drinking water is 500 ppm. In 2019, 3.6% of the wells we sampled registered a reading in excess of 500 ppm, thus failing to meet the EPA’s recommended standard; in 2020, that percentage doubled to 7.1%, representing a total of eleven wells. We have suggested that those eleven homeowners consider further laboratory testing of their well water, if they have not already done so.

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While a TDS measurement offers only limited information and is far from comprehensive, we do believe that the comparison of 2019 and 2020 results shows that our town’s water resources are finite in nature, and hints at our vulnerability to drought and, in coastal locations, to salt water intrusion exacerbated by sea level rise.

What Comes Next?

We do recommend that homeowners test their well water periodically. Continued diligence will help protect water quality. Please contact your plumber, or Alyson McCann at URI Cooperative Extension alyson@uri.edu to get more information on private well testing (<https://web.uri.edu/safewater/private-well-testing-and-protection/>).

With results from 2019 and 2020 now in place, we plan to continue our TDS sampling program in 2021 and hopefully beyond. With repeated sampling, we can better gauge if changes in the results indicate evidence of longer-term water quality degradation, and thus water quantity concerns.

For our upcoming 2021 program, to be conducted over the summer months, we welcome both new and repeat participants. If you participated in 2019 or 2020, we will contact you to ask your permission to again sample your well. If you are new to the study and would like to participate, please go to our website <https://littlecomptonwaterstudy.com/> where you will find a link to complete a short survey, or call one of the following Conservation Commission members: Rich Castenson (401-635-8586), Carol Trocki (401-952-2937), or Don McNaughton (401-230-7221).

In addition, we would like to begin to monitor TDS levels year-round to better understand seasonal variability. If you know of a well no longer in use in the Sakonnet Point area at which we could set up a monitoring station, please contact us by telephone at the numbers listed above.