Planning Board Well Subcommittee Meeting November 13th, 2020

13 Attendees Present:
Caroline Siverson, Emily Moose, Clyde Frazier, Phil Bradley, Rick Bolic, Jason Sullivan, Kimberly Tyson, Mark Ashness, Hunter Glenn, Anne Lowry, Cindy Schmidt
Ben Shields, Bobby Tucker

- The meeting started at 10:39am. Chair Siverson wanted to wait for any attendees that may have been having technical issues.
- Jason Sullivan discussed the Virtual Meeting Guidelines and reminded all attendees to please remain muted unless they were presenting or speaking on an item.
- Caroline Siverson Introduced Phil Bradley to the meeting participants. Phil Bradley is the Assistant Section Chief Senior Piedmont Geologist for the North Carolina Geological Survey (NCGS).
- Phil Bradley started the presentation on the groundwater features map of Chatham County. Phil started by explaining that the NCGS is part of the Department of Environmental Quality (DEG) and that the NCGS is rare in that it is not a regulatory authority. Their job is to categorize, curate and make reports on the geology of the state. Mr. Bradley explained that the NCGS was currently mapping the geology of Chatham County with the use of federal funds. According to Mr. Bradley this project will be finishing soon and the groundwater features map will be available June of 2021.
- In the presentation Mr. Bradley used the destination of Mt. Vernon Spring, just south of Siler City, as an example of the groundwater mapping. Mount Vernon Springs was a wellness destination in the late 19th century.
- Mr. Bradley explained that the maps utilize lidar data topography to obtain accurate elevation data. If you look at the lidar images long enough you can see pronounced valleys that have a distinctive orientation, and some of those valleys intersect with the spring.
- Mr. Bradley's main duties are bedrock geologic mapping by driving all the roads and looking for chunks of outcrop that are characteristic of the true bedrock and walk the perennial streams to see the characteristics of the bedrock geology. He showed the two types of bedrock that are intersected at the spring site. On the map he was showing, the Green color represented Ancient Metamorphosed Andesite Basalt and the Brown color represented Ancient Metamorphosed Sedimentary rock. The way we see the Andesite Basalt stop does not usually occur in nature and is indicative of a fault. Mr. Bradley also explained that the little red areas on the map represented Diabase which is also indicative of a fault.
- He was comfortable interpreting that there was a fault system through the area and that is why the spring is there.

- Mr. Bradley showed features on the map such as Diabase Dikes, Lineaments, and Faults. These represent groundwater features. Chatham county has lots of faults because of its geologic history. A fault is a planar fracture in the rocks of the earth's crust. Faults can range from a couple centimeters to hundreds of kilometers in size. Mr. Bradley showed a picture of the San Andreas Fault. A Dike, also called a Geologic Dike is a tabular or sheetlike igneous body that is often oriented vertically or steeply inclined to the bedding of prehistoric intruded rocks. A lineament is a topographic feature that reveals a characteristic, such as a fault or the subsurface structure.
- The presentation lasted a little over 30 minutes and then Mr. Bradley took questions from the attendees.
- Jason Sullivan explained the subcommittee's concerns regarding a large quantity of individual wells located near agricultural areas and what effect those wells would have on the groundwater. He also asked if Mr. Bradley had any data, or could use the data provided by the well survey, to touch on the impact of residential wells. Mr. Sullivan asked if Mr. Bradley was aware of any research with places that have similar geology that we have in the county and would he be able to share that?
- Mr. Bradley said that might be a better question for Rick Bolich if he was on the line, but that he could go over the data that we sent him the best he could as it was limited.
- Before that, Jason Sullivan asked if Mr. Bradley would answer a question from Cindy Schmidt who asked what was a recharge area? Mr. Bradley had spoken about recharge areas towards the end of his presentation.
- Mr. Bradley, admitting that he was not a groundwater professional, said he would try his best to answer the question. He explained that a recharge area is an area in which rain water will infiltrate down and replenish the groundwater that is in a bedrock aquifer or any other aquifer. There are areas in the state that are set aside as recharge areas that are designated as protected areas.
- Mr. Bradley then pulled up his GIS file to look at some of the well data we sent him. He zomed into the Abeyance Subdivision. And he said that something that always shocked him was the difference in GPM between wells located close together in a subdivision.
- Mr. Bradley also explained that GPM tested on the day or day after a well is drilled may not be accurate, and that a pump test would be a better measure. A pump test can really figure out what the well can produce, because it takes a longer time to measure. While the data is good to have, it may be better to have a comprehensive list of pump tests as well.
- Mr. Bradley showed the attendants the well data and explained that the data was centered around very specific neighborhoods, and he said that it would be better

to have more evenly spread out data to get a more statistically significant analysis.

- Caroline Siverson, noting that Abeyance was a subdivision with larger lots, asked if he had data from a subdivision with denser lots?
- Mr. Bradley pulled up shambley meadows with 1.5 to 2 acre lots. He said that we would need to have the casing information for the wells. The casing information is really good information to have.
- Emily Moose said that was really interesting and that she lived just a few blocks to the west, and that anecdotally there was an agricultural well that went dry right after the shambley meadows went in.
- As Mr. Bradley was trying to find a water source on the map to start to address Mrs. Moose's question and observation, Ben Shields said that over to the west there was landrum creek. His well went dry after shambley meadows went in. He explained to Mr. Bradely where his property was on the map, and Mr. Bradley tried to pull up groundwater features on the map using the lidar data. Mr. Bradley explained that none of the answers he was giving could be scientifically proven right then, but he looked at Mr. Shield's property and identified what he thought could indicate a ground water feature, is it a fault or a dike? There were smaller features that could intersect with those.
- Mr. Bradley explained that distance is very important when you're talking about wells interfering with each other. A mile or a little less than a mile between groundwater features, according to Mr. Bradley, is a significant amount.
- Mr. Bradley explained that the scale of his groundwater data cannot know every groundwater feature.
- Rick Bolich spoke up to also discuss the scale of the groundwater data. He said he would encourage people to do a detailed survey of their property to show some of those groundwater features, such as diabase dikes, that might not show at the scale of a groundwater features Map.
- Ben Shields asked if he would be correct in assuming that this type of data was generally not available for Chatham County and that we would need more well data to assess the impact of concentrated well drilling?
- Mr. Bradley answered that the groundwater features map will be provided when the NCGS is finished in the middle of 2021. Yes for a thorough hydro-geologic survey there would need much more well data.
- Mrs. Siverson asked what the casing depth had to do with well yield?
- Mr. Bradley explained that you do want to have your well cased somewhat deep so that you don't get runoff, but if you case a well to deep you may miss out on some of the groundwater.

- Mrs. Siverson said that the presentation was very interesting and wanted to confirm that Mr. Bradley and Mr. Bolich and would be at the next meeting on the 25th of November. Mr. Bradley and Mr. Bolich both said they would attend.
- Mr. Bolich put in the chat box a new online form for counties and well drillers to utilize and gather data more efficiently and accurately.
- Mrs. Siverson thanked everyone and ended the meeting.