Comments to Weston P&Z re: Weston Water Study

INTRODUCTION

- Good Evening P&Z members, THANK YOU for the opportunity to address the Commission. I'm a 35 year resident of Weston, a former Civil Engineer with design and construction experience with storm drainage systems, earthen dams, and landfills. Former member of P&Z, and the Weston Water Study; currently a member of the Board of Finance.
- You are probably wondering what the Weston Water Study from 1988-89 has to do with your deliberations for the 2020 Town Plan of Conservation and Development. That study – motivated by recognition that protecting Weston's private drinking water resources was vital to sustaining the life-style and ambience of this community – offered a blueprint for preserving the Town's drinking water and is as relevant today (possibly more so) as it was then. My goal here is to educate the Commission about that study and its implications for the updated Town Plan.
- I'll begin with the background for the study, the study approach, results, and its recommendations. We can than have an open Q&A to the extent necessary or as time permits. I've provided copies of my comments so you can follow along.

BACKGROUND

- In 1985, the state of CT mandated that local P&Z Commissions consider water supply protection. The Town Plan of Development from 1987 recommended (as a major planning concern) that the town conduct a Ground Water Study. The Selectmen established a task force made up of citizens of the town both in and out of public office. The first meeting was held in May 1987.
- The objectives for the Ground Water Study was to better understand the water-related pollutants that might prevent Weston from continuing to use its aquifers, to establish a baseline of water quality through testing, to confirm the quantity of water available to households and, validate then current land use policies in protecting the Town's water supply.

STUDY APPROACH

- A multi-phase approach was followed for the Weston Water Study. In the first phase, the task force conducted research and invited guest speakers to establish its knowledgebase and form the water study program. Speakers from the WWHD, State Dept. of Health Services, Well Drillers, water treatment companies, and test labs made presentations and answered members' questions.
- The second phase focused on deep well water testing. An obstacle to the testing program was the virtual vacuum regarding guidelines for private well water quality. There was no consensus at Federal or at the State level as to what tests were

appropriate. Input from regulars, professionals and others resulted in a set of water quality standards custom-tailored to Weston. The final test battery included US EPA-compliant analytical protocols for microbiology, heavy metals, inorganic constituents, pesticides, herbicides and volatile organic chemicals.

- Testing areas were identified throughout the town based on geology, topography, and history (activities, problems, well types). Letters were sent to homeowners in each area inviting them to participate in the testing. A total of 65 homes agreed to participate.
- Three testing labs were invited to submit proposals to conduct the tests – The Environmental Monitoring Laboratory from Wallingford, CT was selected.
- Two samples were taken from each location, upstream from any residential water treatment systems. One sample was taken in the early fall of 1988 to reflect low water table and a second sample in early spring of 1989 to coincide with a high water table.
- The third phase of the study focused on the analysis of the test results, preparing a study report, and presenting the findings to the community.

STUDY RESULTS

- Advance instrumentation such as gas chromatography, combined chromatography-mass spectrometry, graphite furnace atomic absorption spectrophotometry and others were used to measure water constituents to the parts-per-billion level.
- The most frequently observed water quality problems were due to excessive levels of iron and manganese (Note: these are non-health, esthetic quality). Sodium and pH values were outside of the established limits in about a third of these samples. Other concerns were noted with metals (Lead), bacteria (contamination from surface water) and, surprisingly, with volatile organics in a small number of clustered samples. For all of these unfavorable findings, specific corrective measures were implemented or recommended to remedy the observed problems.
- It was not physically possible to assess water quantity available to individual wells. However it was possible to construct a theoretical model of ground water mechanics. There are three main limitations to the quantity of water that is available to support the population of Weston: 1. the amount of water that falls on Weston's watersheds (average 46.5 inches per year), 2. the amount of precipitation that percolates into the soil and underlying strata to become ground water (about 21% of the annual precipitation – Domiski/Oakrock Assoc. 1976 report). 3. Our local geology (e.g., aquifers along the Saugatuck and the West Branch of the Saugatuck or impervious strata of granite, schist, and gneiss). Most of Weston is underlain by the later and depends on fractured bedrock wells to derive their yield. It's not unusual to find wells in Weston 300 to 600 feet deep producing less than 1 gpm.
- The 21% infiltration rate mentioned above translates to 300-400 gallons per acre per day, or that a typical two-acre lot can support a single dwelling using 600-800 gallons of water per day. This, however, is a town-wide average and should only be used for long-

range planning. (Note: average daily water consumption is 90-125 gallons per day per capita for similar communities.)

- It is estimated that 85% of the total daily water consumption is discharged into the septic system which clean and recycle this used water back into the ground where it is potentially available to our well and our neighbors.

STUDY RECOMMENDATIONS

- The study concluded with recommendations in three areas:
  - Natural Resources – implement policies designed to conserve groundwater and mitigate contamination, study private water treatment systems and disposal of discharges, and seek "approved as safe" chemicals for household exterior use.
  - Community Facilities – maintain existing limited municipally operated water supplies, sponsor tank pumping drives with help in locating septic tanks for individual homeowners, avoid heavy road salts for snow removal, and limit the use of fertilizers and pesticides on home lawn and gardens.
  - Residential Development – continue selected ground water studies, review septic suitability as it relates to water supply, protect natural sites, inland wetlands, and water courses, and regulate use of in-ground and above-ground fuel oil tanks.

  These recommendations have been carried forward in subsequent Town Plans.

- The 2000 Town Plan of Conservation and Development recommended implementing an ongoing "program of regular testing of wells and surface water for purity." The 2010 Town Plan of Conservation and Development recommended instituting a "water potability monitoring program and a water volume monitoring program." To my knowledge, none for these recommendations have been implemented.
- Farsighted conservation planning requires the ability to prevent the incremental effects of environmental deterioration which are inconspicuous except in the aggregate. I urge the Commission to do everything in its power to maintain an adequate supply of potable groundwater to serve all the community's needs through land use policies that avoid over fertilized streams, unregulated use of herbicides/pesticides and other chemicals for household exterior use, septic outbreaks, dried up wells, stripped vegetation, and increased flooding. I also ask that the Commission include a recommendation in the 2020 Town Plan of Conservation and Development for (as well as sponsor) a follow-up water study to ensure the continued quality and quantity of Weston's most precious asset – its groundwater.

QUESTIONS & ANSWERS

Jeff Farr

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