



TOWN OF MILFORD
DEPARTMENT OF PUBLIC WORKS
Buildings ◦ Cemeteries ◦ Engineering ◦ Highway ◦ Parks
Recycling Center ◦ Transfer Station

DATE: 9/28/2023

TO: Terrence Dolan, Community Development Director

FROM: Nicole Crawford, Town Engineer, DPW

RE: **Summary of Groundwater Protection District Map and Zoning Ordinance Requirements Regarding Proposed Gas Station on South Street (Case #2023-02-Variance Request)**

The proposed Variance Application for a proposed gas station at the corner of South Street & Nathaniel Drive comes with some complexities that have resulted in confusion regarding the existing Groundwater Protection District Map and Zoning Ordinance. This memo is intended to provide a brief explanation of the Map and Ordinance requirements, as well as final conclusions and recommendations for moving forward based on those requirements:

- The **Groundwater Protection District Map** shows **Level I** and **Level II Protection Districts**.
 - There is a color-coded legend that corresponds to the shading on the Map, but there is also a written description that provides a definition of the two District Levels.
 - Looking at the color-coded legend, the circular areas of the **Level I Protection District** correspond to the **Wellhead Protection Areas** for public water system wells. The **Level II Protection District** corresponds to the **Stratified Drift Aquifer**.
 - Written in words, the Map indicates that a portion of **Stratified Drift Aquifer** is also considered **Level I**. Based on the written description, the difference between **Level I and Level II** is based on the “transmissivity (hydrological)” of the aquifer (i.e. rate of groundwater flow & movement rates through an aquifer).
 - **Level I Protection District** = Transmissivity greater than 8,000 SF per day
 - **Level II Protection District** = Transmissivity less than 8,000 SF per day
- The map shows that the site is within the **Level I Protection District** based on the **Wellhead Protection Area** for the public water system (**potable**) well at the *Little Arrows Daycare Facility*, located approximately 800 linear feet to the southwest of the nearest corner of the proposed gas station parcel.
- **Existing soil data from test pits already excavated on site indicate that the soils are also part of the aquifer, which would mean that the site is also within the Level II Protection District.**
 - Test pit data is from soils at a depth of a maximum of 6’.
 - The proposed underground tanks will be excavated to a depth of 8’-12’.

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- It should also be noted that the Seasonal High-Water Table (SHWT) on the site is higher than the depths of the proposed tanks.
- **Given the proposed use of the site, and potential risk for contamination at any time during the life of the use, it would be prudent to conduct additional investigations at the depth of the proposed petroleum storage tanks' bottom elevations to determine the transmissivity of the soils at that depth. This will assist in determining if the parcel is in fact considered to be in the Level II Groundwater Protection District. Soil tests/classification can determine if the soils meet the definition of an aquifer and the transmissivity can be determined based on soil type and layer depth.**
- If the parcel is within the **Level II District** based on the transmissivity of the soils (less than 8,000 SF per day), the proposed use may be allowed but would be subject to a Permit issued by the Code Administrator. The Permit would be dependent on the submission of a **Containment Plan**.
 - There are no guidelines in the Zoning Ordinance regarding what should be in a **Containment Plan**.
 - In consultation with a Professor at Northeastern who specializes in geotechnical subsurface technologies, it was suggested that there are technologies available to construct an impermeable layer around the location of the tanks (or possibly between the site and the aquifer); as well as install groundwater monitoring wells within these areas to minimize the risk of contaminating the aquifer should there be petroleum products in the soils surrounding the tanks. Exact details of the containment and monitoring would need to be discussed with the applicant.
- If the parcel is found to be within the **Level I District** based on the transmissivity of the soils (greater than 8,000 SF per day), the proposed use (i.e. the selling of petroleum products on site) would be considered a Prohibited Use based on the Zoning Ordinance.

Additional testing and Containment requirements are not intended to be, nor are they considered to be unreasonable requests when weighed against the proposed development costs, the expected long-term use of the site, and the potential risk of contamination of the groundwater.