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Project: 32 Orchard Drive Subdivision
Town of North Castle

Scope: Well Suitability Assessment

Date: March 11, 2024

Introduction:

This is an assessment of the proposed subdivision of about 13 acres into 5 lots and its potential to affect the outlying, existing wells.

Methodology:

The initial method to evaluate the well suitability is to check the amount of water expected to be withdrawn versus groundwater recharge based on the annual rainfall. For this 13-acre site, a computation is made to estimate the amount of runoff, evaporation, and actual recharge to the subsurface water-bearing rock. Based on our earlier hydrologic study, the DEC 90% storm (1.5 inches) will contribute 0.4% of the annual stormwater runoff of 9 million gallons which will be captured in the infiltration basin as recharge.

The recharge occurs from natural seepage into the ground from rainfall, infiltration from the proposed septic systems, and infiltration from the stormwater system to be installed on the site.

Table: Estimates and Computation of Groundwater Recharge

Property Area (acres)	13
Annual Rainfall (inches)	42
Recharge by Water Demand by Septic System	0.9
Amount of Recharge by Septic systems (gallons)	1,575
Amount of Annual Recharge by Infiltration Basin (gallons)	36,836
Fraction to Aquifer	0.25
Fraction to interflow/evaporation	0.25
Fraction as Runoff	0.5
Recharge by Rainfall on Site (inches per year)	3.25
Recharge by Rainfall on Site (cubic feet per year)	153,368
Recharge (Net) by Rainfall (gallons per year) Minus Infiltration Basin	1,110,353
Recharge by Rainfall on Site (gallons per day)	**3,042**
Number of Homes	5
Demand (gallons per day per home)	350
Total Demand (gallons per day)	**1,750**
Net Positive Recharge verus Water Demand by 5 Homes	**174%**
Excess Allowable Water (gallons per day)	**1,292**

Discussion:

The water demand from the new wells at 32 Orchard Drive will not exceed the recharge from all sources. This indicates that the project demand for water from groundwater sources is reasonable. The computations indicate there would be a daily demand for water of 1,750 gallons which is below the recharge of 3,042 gallons per day. In general, this would indicate that the wells would have little or no impact on other wells in the area.

Recently, our office designed three new wells on the downslope from the 32 Orchard project. These wells are located at 25, 27, and 29 Orchard Drive. The Table below indicates information about those new wells.

Table: Local Well Information

Location	Total Well Depth (ft)	Pump Depth (ft)	Groundwater Static Depth (ft)
25 Orchard Drive	505	400	27
27 Orchard Drive	300	220	9
29 Orchard Drive	705	600	31

The wells on Orchard Drive are within about 120 to 140 feet of each other, this being the closest a single well on the 32 Orchard Drive subdivision is to any adjoining well. The well separation from Lot 3 to the northern adjoining well is about 130 feet and Lots 1, 2, and 4 are generally 300 to 500 feet away from an offsite well.

The groundwater depth of 9 to 31 feet for the three wells on Orchard Drive shows a high groundwater level that further indicates the presence of adequate reserves for any residential well nearby.

Summary:

There is no precedent in the Town for heightened testing for realty subdivisions as the Health Department must ultimately approve the well water system as a part of its regular review. There are no Health Department requirements for off-site well testing for this subdivision.

Accordingly, and based on the successful wells nearby, we believe this assessment is sufficient for this project to ensure there will be only limited, or no impacts to other wells.

Submitted by:

Ralph G. Mastromonaco