

Septic Systems: How Close is Too Close?

By: *Scott Chase, Water Resources Manager*

Russell Urban-Mead, CPG, Senior Hydrogeologist, The Chazen Companies

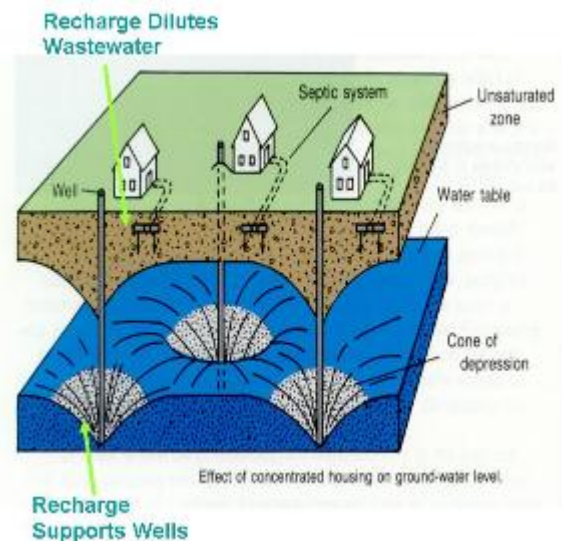
It should come as no surprise that when domestic wells and septic systems are placed too close together, ground water quality can suffer. But how close is too close? A report recently commissioned by Dutchess County's Water and Wastewater Authority provides updated countywide aquifer recharge rates. Aquifer recharge rates are used to calculate sustainable septic densities so that aquifers don't become contaminated.

Calculating aquifer recharge is a function of balancing "water in" (precipitation) and "water out". Dutchess County generally receives 38 to 46 inches of precipitation annually. Evaporation and plant transpiration use about half of that. The other half becomes either overland runoff or groundwater recharge. Where soils are clayey and less permeable, runoff is higher and groundwater recharge is restricted. But where soils are open and sandy, runoff rates are low and infiltration can be nearly half of annual precipitation.

How Does Your Soil Rate?

The recharge rates calculated were keyed to the nationwide system of Hydrologic Soil Groups (A, B, C and D) assigned to each soil by the Soil Conservation Service [[CLICK HERE for map of Dutchess County soils - 2.8 MB](#)]:

- A and A/D soils are very sandy and permeable, aiding recharge
- B, C and C/D soils are progressively more silty and less permeable
- D soils are usually clay-rich and inhibit recharge.



What Are Recharge Rates Used For?

Aquifer recharge rates are highest for A and A/D soils and lowest for D soils. These rates are used for several planning purposes including:

- Estimating how large of a groundwater recharge area is supplying water to an existing or proposed public water supply well.
- Calculating how many acres of recharge are needed to match a proposed well yield.
- Determining a water budget for Town planning studies.
- Calculating the local aquifer recharge rates and comparing them to proposed water uses for future Town expansions.
- Calculating dilution capabilities and sustainable septic densities for given areas.

How Close is Too Close?

The Department of Health (DOH) requires separation distances that only ensure adequate filtration for bacteria and most viruses. Conversations with DOH staff confirm that these separation distances were never intended to address adequate dilution for other wastewater components like nitrate, pharmaceutical residues, or caffeine from our morning cup of coffee. These parts of sanitary effluent are not easily broken down by natural processes and therefore remain persistent in the groundwater. They must be diluted to levels that do not pose a risk to water supplies. This can best be accomplished by considering recharge rates and the overall regional density of septic systems.

The report provides guidance for the sustainable densities of wells and septic systems [[CLICK HERE for map of Dutchess County Recharge Rates and Recommended Septic Densities](#) - 185 KB]:

Hydrologic Soil Group	Recommended Minimum Average Septic System Density (varies by location)
A and A/D	1.2 - 1.4 acres per parcel
B	1.6 - 1.9 acres per parcel
C and C/D	3.0 - 3.5 acres per parcel
D	5.4 - 6.2 acres per parcel

Since 83% of the County is covered by B and C soils, the majority of areas with no central water or sewer should plan for a minimum average parcel size of just under 2 acres for areas with B soils and up to 3.5 acres in size for areas with C soils. Conservation subdivisions or cluster subdivisions can still be built; but to protect aquifer water quality, the overall average density should meet these guidance values. Special care may be needed in cluster subdivisions to provide locations for compensatory recharge offsetting the cluster areas.

Want More Information?

Full REPORT: [Dutchess County Aquifer Recharge Rates & Sustainable Septic System Density Recommendations](#) [8.5 MB]

[Map of County Recharge Rates and Recommended Densities](#) [185 KB]

[Map of Soils in Dutchess County](#) [2.8 MB]

Request a Presentation: Municipal Boards may request a presentation of this report by contacting Scott Chase at 845-486-3601.

[CLICK HERE](#) to view past issues of the DCPF's newsletter, *Plan On It*.

This newsletter was developed by the Dutchess County Department of Planning and Development, in conjunction with the Dutchess County Planning Federation.

To unsubscribe from our e-newsletter mailing list, please send an email with the word "unsubscribe" in the subject line to DCPlanningFederation@co.dutchess.ny.us.