

A Model Local Zoning Law for Municipal Water Resource Management

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Background

Dutchess County government previously worked with communities in eastern Dutchess County to develop a model aquifer protection law for municipal adoption. The ordinance was intended to provide protection where gaps existed in State or Federal protection programs. Based on discussion with community members and legal and hydrogeologic experts, the ordinance was crafted to provide town-wide aquifer protection, with a higher level of protection for priority areas (present or future high-capacity aquifer areas and the recharge areas for particular wells or well clusters) and more modest protection throughout all other areas. This ordinance language has been adopted within Amenia's new zoning and is currently being considered by several other communities.

This model law has now been expanded to include several broader water resource aspects. The revised model zoning law now addresses site infiltration capacity, pumping test requirements, and guidance on how to position septic systems and wells in cluster subdivisions. These changes make this a more a comprehensive water resource zoning section, which can be merged with a local wetland or riparian corridor law to provide a full watershed protection program in any municipality.

The following brief description of the model law does not precisely follow the format of the model law but briefly describes key components and how they function.

Groundwater protection:

- a. Two versions of the model zoning law are now available for adoption. The first adheres to the original concept of town-wide aquifer protection with priority protection for heavily used areas and/or high capacity aquifers. Adoption of this version of the model law requires preparation of a reference aquifer map, usually completed collaboratively with a town committee and a hydrogeologist. The second version of the model zoning law has been simplified to extend one set of rules throughout a town. This alleviates the need for a map but may place unnecessary administrative burdens on less-densely developed areas and provides weaker protection in areas which might warrant priority protection. Table 1 contrasts how different proposed land uses receive more or less management under the two-zone versus the one-zone aquifer protection ordinance.
- b. The groundwater section of either model law provides the following types of Groundwater Quality protection:
 - i. No new buried heating oil tanks under 1100 gallons are allowed.
 - ii. Various uses are protected in the two-zone option, see Table
 - iii. Special permits are needed for many land uses under both options, see Table
 - iv. A process for applying for special permits is given is provided, and Special Conditions are suggested for some uses.
- c. The groundwater portion of both model laws provide protection of Aquifer Capacity:
 - i. Any project that consumes more groundwater than is recharged on the site is designated a SEQRA Type I action. A method for calculating recharge and consumption is provided in the ordinance based on Dutchess County's Aquifer Recharge Rate Study and based on estimated water consumption rates for

residential, commercial & irrigation. Consumption of water is defined to include the volumes of groundwater needed to adequately dilute septic system discharges.

2. Flooding & Recharge Management - the model law has been expanded to include techniques to alleviate flooding and which preserve recharge capacity which both extends aquifer capacity and supports dry-season discharges of groundwater to support wetlands and streams. Infiltration practices are also recognized to filter sediments from stormwater runoff:
 - a. The model law requires total runoff volume not to change during precipitation events up to the 10-year storm for any new land use in most zoning districts in the town. Only in dense hamlet or town center zones is this requirement relaxed for practical purposes. Over 80% of precipitation falls during events of less than 1-inch, so preserving infiltration of most rainfall events protects a majority of recharge necessary to support wells and to provide groundwater flows to wetlands and streams. Only in core zoning districts (usually mixed use core districts) is this recharge requirement loosened somewhat.
 - b. Peak stormwater discharges must not change from undeveloped condition during +10-year storm events in any district.
3. Cluster Subdivision Layout Guidance – the model law has been expanded to provide guidance intended to limit well water quality risks when wells and septic systems are placed close together in clustered subdivisions.
 - a. Avoid parcels with wells and subdivision under 1 acre
 - b. Where landscape, access and biodiversity allow, consider using several small clusters over one large cluster
 - c. Arrange clusters along a hillside rather than up-and-down the hillside so discharges from septic systems do not migrate directly to an adjacent well.
 - d. Consider extending the protective steel casings used in wells within clusters near aquifer discharge areas. Septic system discharges near surfacewater bodies typically migrate directly to these waterbodies such that wells designed to draw water from deeper aquifer horizons may avoid withdrawing sanitary wastes.
 - e. Consider mandating enhanced septic system treatments or community wells for cluster developments that are located a short distance from aquifer discharge areas, since sanitary discharge will probably travel downward toward well intakes.
4. Pumping Test Criteria
The NYSDEC and NYSDOH have specific responsibilities for certain types of well tests. The following additional requirements fill program gaps between NYSDEC and NYSDOH review authorities.
 - a. For any proposed development project where withdrawals exceed 1,500 gpd and exceed recharge, well pumping tests must include monitoring of off-site wells, and surface water takings must include evaluation of wetland and open water body impacts.
 - b. For Community Water System wells, applicants must provide the following in addition to satisfying NYSDOH and NYSDEC:
 - i. Monitor wetlands and open water bodies on and abutting the site from before to after the pumping test period.
 - ii. Monitor available off-site existing wells from before to after the pumping test period.
 - iii. Increase the test flow rate used for testing if weather before and during the test period is unusually wet. The increased test premium may be proportional to the above-average precipitation experienced in prior 4 months.
 - iv. For comparison purposes, evaluate recharge and consumption using the method provided in the ordinance.
 - c. For major subdivisions with undersized lots as defined in the ordinance, a pumping test is required using wells pre-drilled to satisfy NYSDOH. The test must involve wells on 10%

of site parcels, all pumped simultaneously at 5 gpm for a minimum of 24 hours or until stabilization occurs. Preparation of a water budget and monitoring of wetlands, surface waters and off-site wells for a period beginning before and ending after the well tests are required.

* There are two aquifer protection versions of the model ordinance available for adoption. One provides a common level of protection throughout a municipality (Single Aquifer). The other provides high priority (High Priority) protection to key aquifer areas and mapped wellhead protection areas, and moderate protection elsewhere (Moderate). The version with two levels of protection provides more focused and area-sensitive protection but requires preparation of an aquifer zone map. The different levels of protection between the two-layer and the unified approaches in prohibited and special permit uses are identified below.

Land Use	Single Aquifer	High Priority	Moderate
Landfills (C&D & municipal)	Special Permit	Prohibited	Not Addressed
Burial of Haz Wastes	Special Permit	Prohibited	Special Permit
Large Capacity Haz Waste Generators	Special Permit	Prohibited	Special Permit
Gas Stations & Major Oil Storage Facilities	Special Permit	Prohibited	Special Permit
Junk Yards	Special Permit	Prohibited	Special Permit
Dry Cleaners (on site)	Special Permit	Prohibited	Not Addressed
Photo labs	Special Permit	Special Permit	Not Addressed
Auto Repair	Special Permit	Special Permit	Not Addressed
Furniture stripper/metal	Special Permit	Special Permit	Not Addressed
Printing presses	Special Permit	Special Permit	Not Addressed
Small Haz Waste Generators	Special Permit	Special Permit	Special Permit
Solid Waste Handling Facilities	Special Permit	Special Permit	Not Addressed
Salt Storage	Special Permit	Special Permit	Special Permit
Water uses where consumption > recharge	Special Permit	Special Permit	Special Permit
Cemeteries	Special Permit	Special Permit	Special Permit
Veterinary hospitals	Special Permit	Special Permit	Special Permit
Funeral Homes with Embalming	Special Permit	Special Permit	Special Permit
Pesticides/herbicides/manures	Special Permit	Special Permit	Special Permit

Model local laws are currently available (free) from CCEDC offices in Millbrook and from Russell Urban-Mead at The Chazen Companies (rum@chazencompanies.com) Dutchess County's aquifer recharge report providing precipitation, recharge rate and recommended minimum average parcel size data can be downloaded from the Dutchess County Water & Wastewater Authority home page on the Dutchess County website.