# 1. Basic Land Use Tools for Resiliency (Sections 1.5 – 1.6.2)

There are many tools available to local governments in New York State to regulate the use and development of land in accordance with a comprehensive plan. Basic tools include zoning, subdivision review, and site plan review. Statutory authority for municipalities to regulate development via zoning and special use permits, subdivision review, and site plan review is granted in New York State General City Law, Town Law, Village Law, and Municipal Home Rule Law.

Zoning can control the height of buildings, lot coverage, minimum distances (setbacks) from buildings to property lines or other features, the density of development, façade lines, building scale and bulk, allowable uses, requirements for certain uses, site access, utilities, parking, and more. The original intent of zoning was to avoid incompatible uses and nuisances, but it has developed into a powerful tool that can regulate the percentage of lot coverage and protect environmentally sensitive areas.

Carefully crafted land use laws can provide protection from erosion due to human actions; sea-level rise; storm surge; and flooding. Zoning allows the community to target regulations to areas at risk from damage. This can be done by creating discrete districts, amending existing districts, or by creating overlay districts that specifically address flooding issues. It can even be done by creating floating zoning districts with performance standards or specific criteria which would be applied in the event certain types of development were proposed.

Several basic tools can be used to reach the same goals. For example, to protect forested lands, which retain stormwater and reduce flood risks, the governing board of a municipality may:

• adopt a new subsection in the existing zoning law addressing woodland and forest protection and make those requirements applicable to all zones;

• draft similar protection language but add the new requirements only to specific districts through amendments to those chapters of the zoning law; or

• create a new chapter or subsection creating a “forest protection zone” and then amend the zoning map to show where the forest protection zone is located.

Without adequate zoning, development and redevelopment can continue in ways that place people, property, and critical infrastructure at risk from storm damage. Large structures in at-risk areas create damages, increase emergency costs, impact adjacent properties and are difficult to relocate or restore. Local coastal laws that establish setbacks based on rates of coastal erosion help secure community assets, reduce exposure to damages, and provide adaptive capacity for both human uses and environmental assets.

# 1.5 [Subdivision Regulations](#Subdivision_Regulations)

The regulation of the subdivision of land is authorized by Town Law §277, Village Law §7-730, and General City Law §33. In authorizing subdivision review, the statutes require planning boards to “require that the land shown on the plat be of such character that it can be used safely for building purposes without danger to health or peril from fire, flood, drainage or other menace to neighboring properties or the public health, safety and welfare.”[[1]](#endnote-1)

Subdivision regulations govern the division of land and provide for adequate sewers, drainage, parks, streets, sidewalks, and lighting. They may also be used to conserve natural protective features, green infrastructure, and environmentally sensitive areas.

The design of a subdivision plat is constrained by the physical characteristics of the site. When reviewing a subdivision plat, the planning board considers the topography of the site, the slopes, drainage, land cover types, environmentally sensitive areas, soils and other factors such as roadway and sewer system capacities. For greater resiliency, it is a wise best management practice to ensure that developers design subdivision layouts in a manner that:

* + Minimizes land disturbance (tree clearing, land grading, soil compaction);
	+ Avoids steep slopes, flood-prone areas and wetlands;
	+ Protects important natural areas and habitats;
	+ Limits impervious surfaces;
	+ Does not negatively impact public infrastructure;
	+ Does not overload the roadway system, and
	+ Provides effective stormwater control.

To address sea-level rise and increased flooding from more severe storm events, local subdivision review laws may need to be updated to reflect the potential for wetland migration, to reserve areas for inland migration of natural resource areas, or to increase the horizontal extent of the riverine floodplain to absorb floodwaters.

Open space or cluster development provides the most flexible approach to drawing lot lines, and the use of conservation easements, recreational or open space dedication, or proper land management would facilitate the location of physical development further away from hazards or sensitive resources. These approaches can be combined with clear methods of determining lot yields, including elimination of underwater lands from the calculation; and establishing setbacks from waterbodies. (See *Wetland and Watercourse Protection Measures* chapter.)

Several techniques related to subdivision are presented. They should be coordinated with municipal zoning laws and supported by municipal plans.

|  |
| --- |
| Subdivision Techniques |
| Technique | Description |
| Subdivisions in Flood Prone Areas  | Prohibits the subdivision of land in flood prone areas for residential use while allowing residential uses on existing lots. |
| Consideration of Long-Term Risk | Enhances disaster resilience by incorporating provisions in local subdivision regulations to account for long term risk. |
| Drainage Improvements in a Subdivision | Requires subdivision applicants to make adequate provision onsite for stormwater runoff. |
| Protection of Natural Features in a Subdivision | Requires building lots on a subdivision plat to be laid out in a way that avoids impacts on natural features that would have increased flood risk, erosion, or additional stormwater runoff.  |
| Subdivision Woodlands | Restricts land clearance activities prior to the approval of a subdivision plat. |
| Lot Yield Calculations | A method of calculating the number of allowed lots in a subdivision which subtracts land which is unsuitable for development or which provides important natural protective functions. The result is fewer lots, which provides greater ability to design a subdivision plat in a way that protects natural features that minimize risks from flooding and erosion. |
| Cluster Open Space and Conservation Development | Providing for or requiring more compact development of home sites in a subdivision in order to preserve important environmental or cultural features. |
| Environmental Constraint Disclosures | A consumer protection measure to alert potential buyers to environmental constraints on the land; and the impact of those constraints on subdivision plat design and construction costs. |

RESOURCES

*Subdivision Review in New York State*. (2015) New York State Department of State[[2]](#endnote-2)

*Subdivision Design and Flood Hazard Areas*. PAS Report 584. American Planning Association.[[3]](#endnote-3)

# 1.5.1 Subdivision in Flood Prone Areas

The American Planning Association publication “*Subdivision Design and Flood Hazard Areas*” lists five general principles for mitigating flood hazards within subdivision design:

1. Maintain natural and beneficial functions of the floodplain.

2. Adopt a No Adverse Impact approach to floodplain management.

3. Avoid new development in the floodplain whenever feasible

4. Focus on data-driven decision making, using only the best available data to assess risk and inform decisions.

5. Consider future conditions of the floodplain, including development impacts and climate change.[[4]](#endnote-4)

The National Flood Insurance Program does not prohibit new buildings, development or lots from being built in floodplains. Municipalities, however, may restrict land subject to flooding from being subdivided for residential or commercial development, or for any other use that may increase danger to life, health, or property or aggravate the flood hazard.[[5]](#endnote-5) The natural limitations of land, such as the existence of flood hazard areas, stream beds, wetlands, or steep slopes should be considered by the planning board in its review of a subdivision plat.

The approach below does not prohibit new residential uses on existing lots, assuming such uses can comply with building code requirements, nor does it make existing residential uses nonconforming or prohibit the use of the property.

USAGE

Insert text into the design standards of a standalone subdivision law or the section of the zoning law dealing with subdivision.

ADAPTED FROM THE FOLLOWING SOURCE

Town of Pendleton (NY) Municipal Code, Chapter 220 Subdivision of Land, Article V General Requirements and Design Standards for Major Subdivision, Section 220-27 Drainage improvements[[6]](#endnote-6)

Douglas County (OR) Municipal Code, Article 30 (FP) Floodplain Overlay, Section 3.30.440 Subdivision and Partitioning Proposals[[7]](#endnote-7)

LANGUAGE

X. Land subject to flooding. Land subject to flooding or land deemed by the [*city/town/village*] to be uninhabitable shall not be platted for residential occupancy nor for such other uses as may increase danger to health, life or property or aggravate the flood hazard. All lots approved only for nonresidential uses shall have the explanation "Not for residential use" printed on the face of the final survey map or plat.

# 1.5.2 Consideration of Long-Term Risk

To enhance disaster resilience, a municipality can incorporate provisions in local subdivision regulations to account for long term risk. For example, the local subdivision law can require that lots in flood prone areas include land of adequate size and elevation to provide building sites that will keep structures out of the floodplain and secure from erosion and storm surge, and can also require that such lots provide adequate space for future adaptation in flood or erosion prone areas.

The *Wetland and Watercourse Protection Measures* chapter of the Model Local Laws has examples of buffer requirements that would put distance between a structure and a flood hazard, and in the case of stream migration, provide a wider buffer to address shifts in the stream over time. Review of plats for this purpose should be coordinated with the local flood plain administrator. Before choosing this approach, the municipality should consider the potential costs associated with the utility services and infrastructure needed to serve flood prone building sites.

USAGE

Amend the design or general requirements standards of the subdivision law.

Amend the definitions section of the zoning law and the table of dimensional requirements.

ADAPTED FROM THE FOLLOWING SOURCE

Town of Watertown (CT) Subdivision Regulations, Section 5 Design Standards, 5.16 Requirements Regarding Flooding[[8]](#endnote-8)

Village of Homer (NE) Zoning Law, Article 13 Subdivision Design Standards, Section 13.05 Subdivision Design Standards; Lots[[9]](#endnote-9)

LANGUAGE

*Amend the subdivision regulations by adding the following language to the design or general requirement standards.*

A. Requirements regarding flooding. Land subject to flooding, as identified on the Federal Flood Insurance Rate Map (FIRM) on file with the [*City/Town/Village*] Clerk and Planning and Zoning Office, shall not be subdivided unless the following conditions are met:

(1) The Planning Board determines that the proposed subdivision is reasonably safe from flooding. Such determination does not imply such land or uses permitted within the subdivision will be free from flooding or flood damage. When a proposed subdivision is all or partially in an Area of Special Flood Hazard as shown on the FIRM the Planning Board shall review the subdivision plan to assure that:

(a) All proposals are consistent with the need to minimize flood damage within the flood-prone area.

(b) All public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage.

(c) Adequate drainage is provided to reduce exposure to flood hazards.

(d) New and replacement water supply systems are designed to minimize or eliminate infiltration of flood waters into systems.

e) New and replacement sanitary systems are designed to minimize or eliminate infiltration of flood waters into systems and discharges from the systems into flood waters.

(f) On-site disposal systems are located to avoid impairment of them or contamination from them during flooding.

(2) Applicants for subdivisions within Special Flood Hazard Areas shown on the Federal Flood Insurance Rate Map (FIRM) shall be required to submit within their applications the following additional materials:

(a) Elevation and flood profiles sufficient to demonstrate that the house sites will be completely free from the danger of flooding.

(b) The plat plan shall provide for an easement or right-of-way along the stream for a floodway if a stream flows through or adjacent to the proposed subdivision. The floodway easement shall be wide enough to provide for future enlargement of the stream channel as adjacent areas become more highly developed and run-off rates are increased.

(c) Materials demonstrating that the flood-carrying capacity shall be maintained with any altered or relocated portion of any water course.

# 1.5.3 Drainage Improvements in a Subdivision

A subdivision plat with a drainageway or a small stream can present special problems. Lots should be laid out so that the drainage way will not be near the center of a lot. More desirable and usable lots can be created by letting the side lot line follow the center of the drainage way and by providing drainage easements on each side. The lot width can be increased to allow for the easement and still provide a suitable building site. This type of site should not be extensively graded if the water flow and runoff patterns as altered will be directed to neighboring properties or public streets.

When a small stream traverses a subdivision site, desirable lots can be created by providing a drainage right-of-way or easement on each side of the stream and backing the lots up to it. This treatment tends to preserve the stream bed in its natural state, provide continuous public or private open space and eliminates the need for costly and undesirable driveway culverts that would be required if lots were fronted on the stream. A drainageway at the back of the property may offer a more natural and sustainable stormwater management system for the property owner and the community, and the easement provides additional legal protection, which safeguards this environmentally sensitive area against disruption or encroachment. A municipality can include in its subdivision law a provision relating to drainage from storms or floods.

USAGE

Insert text into a stand-alone subdivision law or the zoning law section establishing general requirements and standards for subdivisions.

ADAPTED FROM THE FOLLOWING SOURCE

Town of Middleburgh (NY) Subdivision Regulations, Article IX General Requirements and Design Standards, Section F Drainage Improvements [[10]](#endnote-10)

LANGUAGE

Section X: Drainage Improvements.

The Planning Board may require that the applicant make adequate provision for storm or flood water runoff channels or basins. The storm water drainage system shall be separate and independent of any sanitary sewer system.

A. Removal of spring and surface water. The applicant may be required by the Planning Board to protect an existing stream bed, or to carry away by pipe or open ditch any spring or surface water that may exist either previous to, or as a result of, the subdivision. Preservation of natural watercourses and drainage patterns is generally preferable to the construction of drainage channels or the diversion of flow into other drainageways. Such drainage facilities shall be located in the road right-of-way where feasible, or in perpetual unobstructed easements of appropriate width, and shall be constructed in accordance with the town construction standards and specifications.

B. Accommodation of upstream drainage areas. Drainage facilities shall be large enough to accommodate potential runoff from the upstream drainage area, whether inside or outside of the subdivision, based on a fifty (50) year storm and assuming conditions of maximum potential development within the water shed. The applicant shall be responsible for submitting such computations to the Planning Board in sufficient detail to make possible the ready determination of the adequacy of the proposed drainage installations. Concentrated drainage from lots onto the road right-of-way shall not be permitted.

C. Effect on downstream drainage area. The Planning Board may also require a study of the effects of the subdivision on existing downstream drainage facilities. Where it is anticipated that the additional runoff incident to the development of the subdivision will overload an existing downstream drainage facility, the Planning Board shall notify the owner of such downstream facility and the [*City Council/Town Board/Village Board of Trustees*] of such potential condition and may withhold approval of the subdivision until provision has been made for the correction of said potential condition.

D. Drainage easements. Where a subdivision is traversed by a watercourse, drainageway, channel or stream, there shall be provided a storm water easement or drainage right-of-way conforming substantially to the lines of such watercourse, and of such width and construction as will be adequate for the purpose as required by the [*name body*] Committee, and in no case less than twenty feet in width. Where topography or other conditions are such as to make impractical the inclusion of drainage facilities within road right-of-way, perpetual unobstructed easements shall be provided for such across properties outside the road lines and with satisfactory access to the road. A note to this effect shall be shown on the Final Plat.

# 1.5.4 Protection of Natural Features in a Subdivision

Important natural features and areas such as undisturbed forested and native vegetated areas, natural terrain, riparian corridors, wetlands and other important site features, help to preserve a site’s natural hydrology and water balance, and can act as a non-structural stormwater feature to promote additional filtration and infiltration. Municipalities can require that subdivision plats be laid out in a way that avoids interfering with the natural processes of a floodplain in order to avoid an increase in flood risk from erosion or additional stormwater runoff.

One way a municipality may avoid disturbance in such areas is to include in its subdivision law provisions related to the protection of natural features. These standards can apply to both new subdivisions and redevelopment of previously subdivided land. The language below represents an approach which is both simple and general. Protection of natural features could be strengthened by more detailed standards relating to specific natural features, such as those presented in the *Wetland and Watercourse Protection Measures* chapter of the Model Local Laws. The municipality may also authorize a cluster or “conservation” subdivision in which a subdivision applicant must avoid developing natural areas and environmentally sensitive areas by incorporating those areas into common open space on the subdivision plat.

RESOURCES

*Better Site Design.* (2008). Division of Water, NYS Department of Environmental Conservation[[11]](#endnote-11)

*Town of Clinton Recommended Model Development Principles for Protection of Natural Resources in the Hudson River Estuary Watershed*. (2006). Town of Clinton et al[[12]](#endnote-12)

# 1.5.4.1 Design Standards to Protect Natural Features

The example below includes general design standards to protect natural features.

USAGE

Insert text as a new paragraph in the design standards section into a standalone subdivision law or the municipal section of the zoning law dealing with subdivision.

It could also be used in conjunction with conservation subdivision review.

ADAPTED FROM THE FOLLOWING SOURCE

Town of North Salem (NY) Municipal Code, Chapter 200 Subdivision of Land, Article III Design Standards and Required Improvements, Section 200-21 Natural Features[[13]](#endnote-13)

LANGUAGE

Section X. Natural features.

The planning and design of the plat, including related infrastructure, streets, drainage, parks and other improvements, shall provide for preservation of significant natural features of the tract as follows, provided that the Planning Board may approve plans which modify such natural features after consideration of the alternatives to such modification and the community benefits which may be achieved and when any required permission for modification has been obtained by the applicant from any regulatory agency having jurisdiction:

A. By avoiding cuts or fills which result in potential soil erosion and excessive tree removal or which disturb water resources.

B. By avoiding construction which results in relocation of or encroachment upon watercourses and water bodies.

C. By avoiding filling or excavation of or encroachment upon wetlands, floodplains and other land subject to potential flooding.

D. By avoiding removal of large isolated trees and mature woods and other desirable vegetation and removal of stone walls.

E. By providing for preservation of wetlands, watercourses and water bodies and for the protection thereof by easement, reservation area or other controls to prevent excavation, filling or encroachment.

F. By avoiding rock excavation by blasting which may cause unintended damage or injury to property or persons in the vicinity.

# 1.5.4.2 Subdivision Woodlands

Clearing of trees may occur in advance of a subdivision or site plan review proposal, eliminating trees and damaging undergrowth that played an important role in retaining stormwater; reducing flood risk; and providing wildlife habitat. Adoption of land clearance standards will provide more options later as a subdivision is platted, and potentially minimize the need for structural stormwater solutions. For example, subdivision and site plan review standards can require the retention of specified minimum-diameter trees on site or may require the replacement of any such trees that are removed with new trees of a specified minimum diameter.

Because land clearing may occur in advance of a subdivision or site plan review proposal, municipalities should consider adoption of a timber harvesting law to ensure sustainable site development. Applicants could be required to implement a selected harvest rather than land clear their property, thereby minimizing any environmental damage should the property later be developed.[[14]](#endnote-14) Because the objectives of land clearing differ from that of sustainable forestry management, review standards should be separate from a planned timber harvesting review process.

Land clearing standards can help reduce erosion and stormwater discharges and may help a municipality demonstrate compliance with the Phase II Stormwater requirements of the Clean Water Act. The Clean Water Act requires permits for stormwater discharges from land clearing that disturbs one or more acres.

RESOURCES

*A Municipal Official’s Guide to Forestry in New York State*. (2005). New York Planning Federation, Department of Environmental Conservation, and Empire State Forest Products Association.[[15]](#endnote-15)

USAGE

Insert in the zoning section of the municipal code, including references to the requirements in the subdivision review and site plan review sections of the municipal code. Most effective if used in conjunction with required permits for timber harvesting.

ADAPTED FROM THE FOLLOWING SOURCE

Town of Corning (NY) Subdivision Law, Article IV Design Standards and Required Improvements, Section 4.12 Woodlands[[16]](#endnote-16)

LANGUAGE

Section X. Woodlands.

A. Woodlands as resource. Woodlands occur extensively throughout the [*city/town/village*], often in association with stream valleys and wet areas, poor and erodible soils, and moderate to steep slopes. Woodland conditions within the [*city/town/village*] vary with respect to species composition, age, stocking, and health. Most woodlands in the [*city/town/village*] represent one or more of the following resource values:

1. Erosion Control. As soil stabilizers, particularly on moderate to steep slopes, thereby controlling erosion into nearby streams, ponds, impoundments and roads. A closely related function is their enhancement of ground water recharge.
2. Climate Moderation. As a means of ameliorating harsh microclimatic conditions, in both summer and winter.
3. Economic Value. As a source of wood products, i.e., poles, saw timber, veneer and firewood.
4. Habitat. As habitats for woodland birds, mammals and other wildlife.
5. Recreation. As recreation resources for pedestrians, equestrians, birders, photographers, artists and others engaging in similar outdoor activities.
6. Visual Buffers. As visual buffers between areas of development and adjacent roads and properties

B. Evaluation required. Because of their resource values, all woodlands on any tract proposed for subdivision or land development shall be evaluated by the applicant to determine the extent to which such woodlands should be designated partly or entirely as open space or buildable lands. Evaluation criteria may include:

1. Configuration and Size.
2. Present Conditions, i.e., stocking health and species composition.
3. Site Potential, i.e., the site's capabilities to support woodlands, based upon its topographic, soil and hydrologic characteristics.
4. Ecological Functions, i.e., in protecting steep slopes, erodible soils, maintaining stream quality and providing for wildlife habitats.
5. Relationship to woodlands on adjoining and nearby properties and the potential for maintaining continuous woodland areas.

C. Report required. The evaluation of the tract's woodlands shall be undertaken by a forester, landscape architect, horticulturist or another qualified professional acceptable to the [*city/town/village*]. This evaluation shall be submitted as a report and made a part of the application for a final plat, if requested by the [*City/Town/Village*] Planning Board. At a minimum, that report shall include one or more maps indicating boundaries and conditions of woodland areas accompanied by a report addressing the criteria in paragraph (1) above.

D. Standards. In designing a subdivision plat, the applicant shall be guided by the following standards:

(1) Over One Acre. Healthy woodlands exceeding one acre shall be preserved and designated as open space areas, the maximum extent possible. Proposed site improvements shall be located, designed and constructed to minimize the loss or degradation of woodland areas.

(2) Buffer Requirements. Subdivisions shall be designed to preserved woodland along roadways, property lines and lines occurring within a site such as streams, swales, stone fences and hedgerows. Such lines and the native vegetation associated with them shall be preserved as buffers between adjacent properties and between areas being subdivided within a property. Preservation shall include ground, shrub, understory and canopy vegetation.

(3) Sensitive Areas. Disturbance or removal of woodlands occupying environmentally sensitive areas shall be undertaken only when approved by the Board and on a limited, selective basis to minimize the adverse impacts of such actions. This shall include but not necessarily be limited to, vegetation performing important soil stabilizing functions on wet soils, stream banks and sloping lands.

(4) Clearing Restrictions. No clearing or earth disturbance (except for soil analysis for proposed sewage disposal systems) shall be permitted on a site before the completion of subdivision agreements. The determination of sight distance clearances along roadways shall be made graphically and not by clearing on-site prior to final plan approval.

# 1.5.5 Lot Yield Calculations

Lot yield calculations are used to determine the number of allowable lots in a subdivision application. Zoning dictates the density of development in each zoning district (for example, an R2 district may require a minimum lot size of 0.5 acre). The simplest calculation would be to divide the size of the parcel by the minimum lot size for the zoning district to get the number of allowed lots. For example, using a minimum lot size requirement of 0.5 acre in a 10-acre parcel to be subdivided would result in 20 half-acre lots. However, that simple calculation does not take into account roads and other infrastructure, or environmental constraints like wetlands and steep slopes.

In the absence of a state or local regulation prohibiting development of environmentally sensitive lands, a planning board has no authority to exclude environmentally sensitive lands from lot count computations or the buildable area on the site. This doesn’t mean that sensitive land can be built upon; rather, it cannot be excluded from computing density or buildable area. As a result, the subdivision applicant may be entitled to more lots (i.e. higher density) than would be ideal from an environmental standpoint.[[17]](#endnote-17) The overall number of lots in a cluster or conservation subdivision should be the same as for conventional subdivisions in the applicable zoning district.

Subtracting from density calculations land that is unsuitable for development or that provides an important natural protective function will reduce the number of allowed lots in a subdivision and protect natural features that minimize risks from flooding and erosion. It will also reduce developer’s soft costs by eliminating potential lots that would require extra engineering to be buildable.

While not presented here, a sliding scale method of determining the number of lots in a subdivision can also be used. While more commonly applied as a means of preserving agricultural land, it could also be used to help preserve a site’s natural hydrology and water balance. This approach tracks development of the original, or “parent” parcel. Examples can be found in the Town of Ogden (NY)[[18]](#endnote-18) and Town of Seneca (NY)[[19]](#endnote-19) zoning laws.

RESOURCES

*Design Guidelines for Conservation Subdivisions in Wallkill, New York*. (2009). Behan Planning Associates[[20]](#endnote-20)

*Conservation Subdivision Handbook: A Guide for North Carolina Communities in the use of Conservation Design for Land Use Planning.* (2011). Department of Forestry & Environmental Services, North Carolina State University. [[21]](#endnote-21)

*Conservation Subdivision*. (2018) GREENPLAN, Inc.[[22]](#endnote-22)

# 1.5.5.1 Simple Density Calculation

The following approach may be taken to calculate the number of lots that may be created in either a conventional subdivision or cluster/open space subdivision. The description of unbuildable land could be expanded to include, for example, rock outcroppings of a certain size or other natural features.

USAGE

Insert text into a standalone subdivision law or the municipal section of the zoning law dealing with subdivision.

ADAPTED FROM THE FOLLOWING SOURCE

Town of Hornby (NY), Subdivision Regulations, Section 1.5 General Policy for Subdivision Design and Review[[23]](#endnote-23)

LANGUAGE

Section X. Buildable Land Calculations.

A. Density of a subdivision is calculated on net acreage, not gross acreage, of buildable land according to the following guidelines:

(1) Unbuildable Land. To determine net buildable acreage, the applicant shall identify and subtract all acreage considered to be unbuildable as follows:

(a) Steep slopes [*insert percentage, such as 25%*] or greater;

(b) Areas within the Federal Emergency Management Agency designated one-hundred- and five-hundred-year floodplains and floodways;

(c) Wetlands, including New York State designated wetlands, those regulated by the US Army Corps of Engineers and those on the National Wetlands Inventory;

(d) Lands covered by water bodies;

(e) Stream corridors, defined for this calculation as [*insert number of feet, such as fifty feet, or use a methodology described in the Wetlands and Watercourses Chapter of the Model Local Laws*] setback from each streambank of any perennial or intermittent stream indicated in blue on the US Geological Survey topographic quadrangle map); and

(f) Hydric soils as mapped in the Soil Survey of [insert county name] County, New York, U.S. Soil Conservation Service, as revised. These are defined as Alden (Aa), Atherton (At), Canandaigua (Ca), Carlisle (Cc), Chippewa (Ck), Edwards (Ed), Fluvaquents (FL), Kanona (Ka,A, KaB, KaC), Palms (Pa), Warners (We) and Wayland (Wn).

(2) Density calculation. The applicant shall then calculate the acreage that is determined to be buildable and apply the bulk density control schedule minimum square footage per dwelling units or principal buildings as defined in the [*City/Town/Village of \_\_\_\_\_\_*] Zoning Law to the net acreage. All density values shall be rounded to the nearest whole number of dwelling units or principal buildings.

# 1.5.5.2 Buildable Yield Formula

This calculation determines the buildable yield for a major subdivision. Once the amount of buildable land area is determined (the buildable yield), the zoning law and map must be consulted to determine the number of units which are allowed in the district in which the property is located.

USAGE

Insert text into a standalone subdivision law or the municipal section of the zoning law dealing with subdivision.

Add to the list of definitions in the subdivision and/or zoning law a definition for “buildable yield.””

ADAPTED FROM THE FOLLOWING SOURCE

Town of Bethlehem (NY) Municipal Code, Chapter 103 Subdivision Regulations, Section 103-25 Maximum density unit calculation for major subdivisions and Section 103-8 Terms defined [[24]](#endnote-24)

LANGUAGE

*Add the following definitions to the list of definitions in the [select one or both Zoning Law section \_\_\_\_ and/or Subdivision Law section \_\_\_]:*

(x) Buildable yield is the maximum unit density for a proposed subdivision after deduction of constrained land areas.

Section X. Buildable Yield Calculation.

A. The maximum number of density units (i.e., units per acre or DU) shall not exceed the maximum allowable DU for a subdivision in the district in which the property is located. Any regulations contained in this chapter and in the zoning law restricting the number of dwelling units permitted in a subdivision shall apply. The calculation of buildable yield for a [*major*] subdivision shall be based on the formula herein. The buildable yield (BY) shall be used to determine the allowable density units per the area, yard and bulk charts in Section \_\_\_\_\_ of the Zoning Law.

B. The buildable yield (BY) calculation shall be determined by subtracting the constrained land areas of the property (New York State designated wetlands, US Army Corps of Engineers regulated wetlands, lands within the one-hundred-year floodplain area, and steep slope areas of greater than 20%) for which the applicant has not secured and has not submitted to the Planning Board permits or approvals that would allow development in such constrained land areas, as follows:

T - (W+F+S) = BY

Where:

T = Total acreage inside the boundary lines of the project parcel.

W = Total acreage inside the boundary lines of the project parcel and within a NYSDEC or USACOE regulated wetland (exclusive of any buffer area).

F = Total acreage inside the boundary lines of the project parcel and within the one-hundred-year floodplain area where the base elevations and flood hazard are determined exclusive of any flood area within a regulated state or federal wetland or wetland.

S = Total acreage inside the boundary lines of the project parcel and containing slopes of twenty percent (20%) or greater.

BY = Maximum number of acres that can be developed and that form the basis for determining the maximum number of residential dwellings that may be created per the area, yard and bulk chart.

C. The buildable yield calculation set forth in Paragraph B above shall be adjusted to include, in whole or in part, the constrained land area(s) for which the applicant has secured the necessary permits or approvals from applicable local, state or federal agencies authorizing development in such area(s) and has submitted copies of said permits or approvals to the Planning Board. If the parcel is not proposed for connections to central sewage disposal facilities, the plan shall also include an assessment and certification by a professional engineer as to the suitability of the soils to accommodate individual sewage disposal systems. The [*Planning Board/Department of Planning and Economic Development]*, in its sole discretion, shall determine whether the plan is realistic and reflects a development pattern that could reasonably be implemented.

# 1.5.6 Cluster, Open Space and Conservation Development

As described in the Department of State’s publication, *Subdivision Review in New York State*, a conservation subdivision is a type of cluster subdivision designed to permanently protect a large portion of a site with important environmental or cultural features, while compact building lots are clustered on the remainder of the land. In New York State, the cluster subdivision process is used to achieve conservation subdivisions; State statutes do not specifically mention conservation subdivisions.[[25]](#endnote-25)

 “As with cluster subdivisions, conservation subdivisions typically result in more compact development and can reduce the cost to the developer of installing and maintaining roadways, sewer lines, and other infrastructure. The approach to creating a conservation subdivision is one of building within and around the natural landscape rather than building on top of it. The environmental benefits of a conservation subdivision - where, for example, stream corridors, woodlands, fields, wildlife habitat, steep slopes and/or wetlands, are protected and storm water is managed entirely onsite - can be significant.”[[26]](#endnote-26)

“Cluster subdivision” is a technique authorized by State Statute whereby the local legislative body empowers the planning board, when approving subdivision plats, to modify the dimensional requirements of the zoning law to group or “cluster” structures or lots at a higher density on the most suitable portion of the land, leaving other areas open “to preserve the natural and scenic qualities of open lands.”

A “conservation subdivision” is a type of cluster subdivision designed to permanently protect a large portion of a site with important environmental areas or cultural features, while clustering compact building lots on the remainder of the land.

Source of Definitions: NYS Department of State, *Subdivision Review in New York State*

Key benefits include preserving:

* Conservation areas on a development site;
* Natural hydrology and drainageways;
* Natural conservation areas and other site features;
* Topography, with reduced need for grading and land disturbance;
* Resilience, with reduced infrastructure needs and overall development costs; and
* Flexibility for developers to implement creative site designs including better stormwater management practices.

“Along with reduced impervious surfaces, conservation design provides a host of other environmental benefits lacking in most conventional designs. These benefits reduce potential pressure to encroach on conservation and buffer areas because enough open space is usually reserved to accommodate these protection areas. As less land is cleared during the construction process, alteration of the natural hydrology and the potential for soil erosion are also greatly diminished. Conservation design reserves 25 to 50 percent of the development site in conservation areas that might not otherwise be protected.”[[27]](#endnote-27)

“A sound open space planning process can lay the foundation for a community’s application of conservation subdivision regulations. Foundations of the plan include:

* Inventory of natural and scenic resources for preservation - This may include identification of resources by the community through meetings, surveys or planning charettes; the inventory of environmental resources (such as significant wetlands and stream corridors); and integration of resource information identified by state or regional agencies (such as floodplains and productive agricultural lands) into the comprehensive plan for local systems.
* Open space plan or component of comprehensive plan - This includes the development of an open space plan and its components, which may include a community vision plan, recreation plan, bikeway plan, and farmland preservation plan.
* Recreation and trail planning - This includes the development of a recreational lands master plan or component of comprehensive plan, a recreational access plan for the disabled, a recreational facility plan for a neighborhood, or a system of trails (both intra- and inter-community). It may also include the assessment of the impact of new development on such resources, or the development of strategies for obtaining land or easements on land for recreation and trail purposes.”[[28]](#endnote-28)

Once established, natural conservation areas must be protected during construction and managed after occupancy by a responsible party able to maintain the areas in a natural state in perpetuity. Typically, conservation areas are protected by legally enforceable deed restrictions, conservation easements, or a maintenance agreement.[[29]](#endnote-29)

Sometimes, a municipality will allow higher densities than permitted under the regular zoning district as an incentive to keep new construction out of flood-prone areas.

The model language below is based on subdivision regulations from the City of Saratoga Springs (NY), which describes itself as the “City in the Country.” While the model addresses conservation subdivisions, the source regulations address both conservation subdivisions and cluster development with cluster development applied in more densely developed areas.[[30]](#endnote-30)

RESOURCES

Arendt, Randall. *Enhancing Subdivision Value through Conservation Design*. (2001). Oncommonground.[[31]](#endnote-31)

*Local Open Space Planning Guide*. (2004). New York State Department of State.[[32]](#endnote-32)

Lacy, Jeffrey R.; Ritchie, Robert W; and Russell, Joel S. *Natural Resource Protection Zoning: The Green Side of Smart Growth*. [[33]](#endnote-33)

Subdivision Review in New York State. (2015) New York State Department of State. [[34]](#endnote-34)

*New York State Stormwater Management Design Manual*. (2015). NYS Department of Environmental Conservation.[[35]](#endnote-35)

*Conservation Subdivision Handbook: A Guide for North Carolina Communities in the use of Conservation Design for Land Use Planning*. (2011). Department of Forestry & Environmental Services, North Carolina State University.[[36]](#endnote-36)

USAGE

Insert text as a new section into a standalone subdivision law or the municipal section of the zoning law dealing with subdivision. The text would include authorization to review and approve cluster subdivision plats either at the developer’s option (discretionary cluster), at the municipality’s option (mandatory cluster), or a combination of both (optional in some areas but required in others such as rural zoning districts, flood-prone areas, or other natural resource areas).

ADAPTED FROM THE FOLLOWING SOURCE

City of Saratoga Springs (NY) Municipal Code, Chapter 241 Subdivision Regulations, Article IV Conservation Subdivision Regulations.[[37]](#endnote-37) Omitted here are provisions related to submission requirements; permanent open space; and rural design and siting standards.

LANGUAGE

Add the following to the definitions section of the subdivision or zoning law:

CLUSTER: A development design technique that concentrates buildings and structures on a limited area of a parcel to allow the remaining parcel area to be permanently left as open space.

CONSERVATION EASEMENT: A perpetual restriction on the use of land, created in accordance with the provisions of Section 49, Title 3 of the Environmental Conservation Law and/or Section 247 of the General Municipal Law, for the purposes of conservation of open space, agricultural land, and natural, cultural, historic, and scenic resources.

CONSERVATION SUBDIVISION: A pattern of development that places housing units on those portions of a property most suitable for development, while leaving substantial portions as undeveloped open space. Such subdivisions may include a variety of lot sizes, ranging from large farms or estate lots to lots similar in size to those found in hamlet or village settings.

CONSTRAINED LAND: As used in the conservation subdivisions, land classified as wetlands, watercourses, 100-year floodplains, and slopes over twenty-five percent (25%) (2,000 square feet or more of contiguous sloped area).

CONVENTIONAL SUBDIVISION: Any subdivision that is not a clustered or conservation subdivision and that satisfies the area requirements in [insert article number] of the Zoning ordinance.

Chapter X. Conservation Subdivision Regulations

Section 1. General Regulations

A. Purpose and Applicability:

(1) The purpose of this article is to achieve a balance between well-designed residential development, meaningful open space conservation, and natural resource protection by requiring conservation subdivisions instead of conventional subdivisions.



(2) These regulations apply to all properties within the *[insert rural and/or conservation zoning districts in the municipality]* Districts, which encompass most of the area described in the [*City/Town/Village of \_\_\_\_\_\_\_*] Comprehensive Plan as the [*insert references to rural and natural resource areas*]. The use of conservation subdivisions is intended to preserve tracts of environmentally and scenically significant undeveloped land in the [*insert references to rural and natural resource areas*] part of the [*city/town/village*], including road corridors and buffers, in order to maintain the historic settlement pattern and implement the Comprehensive Plan’s vision. Conservation subdivisions result in the preservation of contiguous open space and important scenic and environmental resources, while allowing compact development, more walkable neighborhoods, and more design flexibility than conventional subdivisions. Conservation subdivisionsmust satisfy the standards in Sections 1, Paragraphs B, C, and D herein. The procedure for approving conservation subdivisions is described in Section 2. Graphics in these regulations are included for illustrative purposes only.

B. Standards for Conservation Subdivisions:

(1) Density Calculation. The maximum density allowed for residential units is calculated by a formula based upon the acreage of unconstrained land on the property.

(a) To determine unconstrained acreage, subtract from the total or gross acreage of the proposed development parcel, the acreage of constrained land.

(b) To determine the number of allowable residential units or “base density” on the site, divide the unconstrained acreage by the allowable number of acres per unit required within the zoning district. Round down fractional units of 0.5 or less and round up fractional units greater than 0.5. Figure IV.1a through Figure IV.1c illustrates a density calculation on a site in a hypothetical conservation subdivision in a *[insert name(s) of rural or conservation zoning district in the municipality]* District.

**Figure IV.1c**

**Density Calculation Example for Rural Residential District**

Total Site Acreage: 41.0 Acres

Constrained Acreage: 10.5 Acres

Floodplain: 8.0 Acres

Wetlands: 2.5 Acres (1.0 acre overlaps with Floodplain)

Steep Slopes: 1.0 Acre

Unconstrained Acreage: 30.5 Acres

Base Units Allowable: 30.5 ÷ 2 = 15.25

 (c) The base density in Paragraph B(1)(b) may be increased by up to twenty percent (20%) at the sole discretion of the Planning Board if permanent public access will be granted to the protected open space land and any associated improvements as described in Section 1 Paragraph C below.

(d) The density permitted by this section shall not be reduced as a result of the conservation analysis required in Section 1 Paragraph B(2) below, or as a result of the reservation of parkland during the subdivision process.

(2) Conservation Analysis.

(a) As part of a preliminary subdivision platapplication procedure, an applicant shall prepare a conservation analysis, consisting of inventory maps, description of the land, and an analysis of the conservation value of various site features. [*The municipality should develop a conservation analysis checklist. See the City of Saratoga Springs law for an example.*] The conservation analysis shall show lands with conservation value, including but not limited to the following:

 [i] Constrained land;

[ii] Open space and recreational resources described in the [C*ity/Town/Village of \_\_\_\_\_\_]* Open Space Plan;

[iii] Buffers to provide an area for installation of screening to obscure and enhance the view of new development from adjoining parcels; and

[iv] Land exhibiting present or potential recreational, historic, ecological, agricultural, water resource, scenic or other natural resource value.

(b) The conservation analysis shall describe the importance and the current and potential conservation value of all land on the site. In the course of its initial preliminary subdivision platreview, the Board shall indicate to the applicant which of the lands identified as being of conservation value are most important to preserve.

(c) The outcome of the conservation analysis and the Planning Board’s determination shall be incorporated into the approved preliminary subdivision plat showing land to be permanently preserved by a conservation easement. The preliminary subdivision plat shall also show preferred locations for intensive development as well as acceptable locations for less dense development.

(d) The Planning Board shall make the final determination as to which land has the most conservation value and should be protected from development by conservation easement. Whenever the Board approves a plan with protected open space, it shall make written findings identifying the specific conservation values protected and the reasons for protecting such land (the “conservation findings”). The Planning Board shall deny an application that does not include a complete conservation analysis sufficient for the Board to make its conservation findings.

(e) The preliminary subdivision plat shall show the following as land to be preserved by conservation easement:

[i] An amount of land no smaller than the total amount of constrained landidentified in the analysis in Section1 Paragraph B(2); and

[ii] In the [*insert name of rural or conservation zoning district*] District, at least fifty percent (50%) of the land not preserved in Section 1 Paragraph B(2). In the [*insert name of residential district*] at least thirty-five percent (35%) of the land not preserved in Section 1 Paragraph B(2).

(f) If, based upon the conservation analysis, the Planning Board determines in its conservation findings that there is no reasonable basis for requiring a conservation subdivision; the Planning Board may approve a conventional development of the site. In order for the Board to make such a determination, the applicant must demonstrate at least one of the following:

[i] The land contains no substantial resources with conservation value; or

[ii] The acreage is too small to preserve a substantial amount of land with conservation value (this criterion shall not be evaded by piecemeal subdivision of larger tracts); or

[iii] The lot configuration is unique and precludes preservation of a substantial amount of land with conservation value; or

[iv] That there are extraordinary circumstances unique to the parcel that demonstrates that conventional subdivision is in the best interest of the adjacent neighborhoods.

(g) An approval of a conventional subdivision shall refer to the conservation findings and may be conditioned upon the protection by conservation easementof portions of the site identified in the conservation analysis and findings as having conservation value.

(3) Types of Development in a Conservation subdivision. The allowable residential units may be developed as single-family or two-family residences. Within a conservation subdivision, a maximum of [*indicate percentage, such as 25%*] of the units may be placed in structures containing two units.

(4) Lot Sizes in Conservation Subdivisions. There shall be no minimum lot size in a conservation subdivision. The Planning Board shall determine appropriate lot sizes in the course of its review of a conservation subdivision based upon the purposes and design criteria established in this Article. In order to permit a clustered lot configuration, wells and septic systems may be located in areas of protected open space, provided that necessary easements are provided for maintenance of these facilities.

(5) Other Area and Dimensional Requirements

(a) There shall be no required area, bulk, or dimensional standards in a conservation subdivision, except that where such subdivision abuts an existing residence in a residentially zoned area, a suitable buffer area with suitable screening shall be required by the Board. This buffer shall be at least the same distance as the minimum rear or side yard setback in the district in which the abutting land is located.

(b) The applicant shall specify dimensional requirements for a proposed conservation subdivision by identifying setbacks and other lot dimensions to be incorporated into the final subdivision plat.

(6) Conservation Subdivision of a Portion of Larger Tract. The Planning Board may entertain an application to develop a portion of a parcel if a conservation analysis is provided for the entire parcel and the approval to develop a portion of the parcel is not a basis for the applicant or successor in interest to subsequently request an exception under Section 1, Paragraph B(2)of this Article for the remainder of the parcel.

(7) Conservation Subdivision Design Guidelines. Lots shall be arranged in a manner that protects land of conservation value and facilitates pedestrian and bicycle circulation. The lot layout shall to the extent feasible comply with the design guidelines in Section 1, Paragraph D of this Article. Permitted building locations or areas (“building envelopes”) shall be shown on the final subdivision plat.

(8) Permanent Open Space. [*Omitted, see City of Saratoga Springs Subdivision Regulations*]

(9) Rural Design and Siting Standards. [*Omitted, see City of Saratoga Springs Subdivision Regulations*]

Section 2. Procedures for Review of a Conservation Subdivision

A. Review Process

(1) The conservation subdivision review process may involve the following two steps with an optional sketch plan review:

(a) Preliminary subdivision plat review

(b) Final subdivision plat review

(2) Optional sketch plan review. An applicant may request a sketch plan discussion with the Planning Board prior to the applicant making any formal subdivision submission.

(a) The submission of a sketch plan is an option available to the applicant. It is a pre-application procedure. The applicant may exercise this option for a pre-application discussion for the purpose of seeking advice and direction.

(b) During the sketch plan discussion, the applicant and the Planning Board may discuss the possible requirements of the project in relation to standards for street improvements, grading, drainage, sewerage, water supply, fire protection and similar aspects, as well as the availability of existing services and other pertinent information.

(3) Preliminary subdivision plat review. Review of a preliminary plat is mandatory for conservation subdivisions containing four or more lots.

(a) The preliminary subdivision plat shall be reviewed by the Planning Board, which shall hold a public hearing and make its conservation findings as required by [*insert article number*], Section 1, Paragraph B.2. The notice and hearing procedures shall be the same as those for a conventional subdivision contained in [*site section number*]. In order to approve a preliminary subdivision plat, the Planning Board must find that it complies with all relevant provisions of the Zoning Ordinance.

(b) SEQRA compliance for the preliminary subdivision plat shall be the same as required by these regulations for a preliminary subdivision plat application for a conventional subdivision.

(c) Preliminary subdivision plat approval shall expire one (1) year from the date of approval if final plat approval has not been granted. Upon a written request from the applicant, the Board at its discretion may grant an extension of the approval. The length of the extension will vary depending on the basis of the request made.

(4) Final subdivision plat review. The procedure for final subdivision plat review, including notice and hearing procedures, shall be the same as those for a conventional subdivision plan contained in [*site section number*]. In order to approve a final subdivision plat, the Planning Board must find that it is consistent with the preliminary subdivision plat and complies with all relevant provisions of the Zoning Ordinance.

(a) SEQRA compliance for the final subdivision plat shall be the same as required for a conventional subdivision plat. Final subdivision plat approval shall expire one (1) year from the date of the approval. Upon a written request from the applicant, the Planning Board at its discretion may grant an extension of the approval. The length of the extension will vary depending on the basis of the request made.

# 1.5.7 Environmental Constraint Disclosures

Local officials are occasionally asked by new property owners to make exceptions for their property by not enforcing land use laws or by somehow curing a problem discovered after the property was purchased. Most prospective buyers do not take the time (or know how) to investigate whether a property is subject to a hazard. In many cases a property may not be near a stream or shoreline; past flooding may have been minor; or there may be no history of flooding since the area was settled. As a result, many people are caught by surprise when their property is flooded. One of the best times to learn of a flood hazard is at the time when the purchase of property is being considered. The result may be avoidance of the flood prone areas; awareness of higher flood insurance premiums; fewer headaches for municipal officials; and more resilient construction.[[38]](#endnote-38)

In New York State, sellers are required to either provide a form disclosing environmental constraints on their property, such as the presences of floodplains or wetlands, or provide a $500 credit toward the purchase price.[[39]](#endnote-39) Municipalities may not require real estate agents to make those disclosures in their real estate listings. However, municipalities may provide other avenues for that information to be discovered by prospective purchasers. The model law provides two ways to provide notice to prospective buyers: a note on the subdivision plat and a notification covenant attached to the deed.

Municipalities may require a number of items to be shown on a subdivision plat, such as streets, water supply and sewage disposal systems, street lights, electric lines, telecommunication cables, lot lines, topographic lines, and drainage ways. More recently, to alert prospective lot owners and head off potential conflicts between neighbors, some municipalities have required subdivision plats to indicate the presence of adjacent land that is part of a working farm. A similar consumer awareness and protection action a municipality can enact is a requirement that the applicant for a subdivision of land show the presence of flood hazard areas on the subdivision plat, with accompanying base flood elevations.

Municipalities may also establish various requirements regarding deeds for lots created by the subdivision, such as submission of a draft of all proposed restrictions which will become covenants in the deed for the lots. For example, deeds may disclose drainage easements, paper streets (streets that may be built in the future), or nearby farm operations. In the model below, the deed must note the existence of special flood hazard areas and coastal erosion hazard areas.

Requiring the types of disclosures above may qualify a community participating in the Community Rating System for credit points under the category of initiatives that will reduce future flooding damages. (See the *Management of Floodplain Development* chapter of the Model Local Laws for more information on the Community Rating System.) With enough credit points, flood insurance premiums for the residents in the community may be reduced.

USAGE

Insert text into the municipal subdivision law or the section of the municipal zoning law dealing with subdivision.

Paragraphs X and Y should be added to the section which lists items which must appear on a subdivision plat.

Paragraph Z should be added to the requirements for final plat approval.

ADAPTED FROM THE FOLLOWING SOURCE

Gallatin County (MT) Subdivision Regulations, Section 10: Flood Hazard Evaluation[[40]](#endnote-40)

Maine Model Floodplain Management Ordinance (ME), Article IX Review of Subdivision and Development Proposals[[41]](#endnote-41)

LANGUAGE

*Add to Section of Subdivision Law listing what must appear on subdivision plat*

X. Flood hazard data. The preliminary and final plats of all new subdivisions within any land located in a 100-year floodplain shall show the Base Flood elevations and the limits of the 100-year floodplain based on where the Base Flood elevations intersect surveyed ground elevations. The municipal Floodplain Administrator may require additional flood data and flood hazard notes to be shown on the final plats or other applicable development document (final site plan, covenants, etc.). Such information includes, but is not limited to, the elevation of the existing ground, flood water depth, lowest permissible floor elevations, and the boundary of the 100-year floodplain and floodway through the subdivision.

Y. Construction standards in Special Flood Hazard Areas. Where any portion of a proposed subdivision lies within a special flood hazard area, the subdivision plat shall include a notation stating that structures on any lot in the development having any portion of its land within a Special Flood Hazard Area, are to be constructed in accordance with the development standards of the Municipal Flood Damage Prevention Law. The note shall clearly articulate that the [*City/Town/Village*] may enforce any violation of the construction requirement.

*Add to Section of Subdivision Law on Final Plat Approval*

Z. Covenants. The [*City/Town/Village*] Planning Board shall have the authority to require that the applicant or owner execute covenants as it may deem to be required in order to notify prospective buyers that a lot is in a special flood hazard area as determined by the Flood Insurance Rate Map in effect on the date the deed is filed [*optional: or in a coastal erosion hazard area as determined by the New York State Department of Environmental Conservation*], and such lot may be subject to federal, state and local regulations on limitations regarding construction and flood insurance. Said covenants shall be recorded in the office of the [\_\_\_\_\_\_\_\_\_\_] County Clerk and constitute a covenant running with the land. Such covenant or agreement may be modified or released only as set forth in said covenant or agreement or by the Planning Board.

# 1.6 Site Plan Review

While subdivision review can be used to control the division of land and the layout of new lots, site plan review is a technique that allows local review boards to review the development of individual lots. When reviewing site plans, local review boards may be given authority to look at parking, means of access, screening, signage, landscaping, architectural features, location and dimensions of buildings, adjacent land uses and physical features meant to protect adjacent land uses as well as any additional elements specified in a local law.

With proper authorization, review boards can also consider vulnerability to disaster, stormwater control, erosion control, future conditions, lighting, and public service needs. They may also incorporate flood mitigation requirements into conditions placed on site plan approval.

Site plan review may also be a vehicle for applying natural resource protection standards. For example, the Town of Coxsackie zoning law contains natural resource protection standards that address steep slopes, watercourses, wetlands, and wildlife habitat.[[42]](#endnote-42) The standards apply to all development activities within the Town after the effective date of the law, except land alteration activities that improve single-family or two-family residential lots in single lot ownership, or minor subdivisions (generally 5 or fewer lots on existing streets).

Municipal authorization for site plan review is contained in Town Law 274-a, Village Law 7-725-a, and General City Law 27-a.

RESOURCES

*Recommended Residential Construction for Coastal Areas: Building on Strong and Safe Foundations (Second Edition)*. (2009). FEMA P-550.[[43]](#endnote-43)

*Coastal Construction Manual: Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas,* FEMA P-55 (2011)[[44]](#endnote-44)

National Flood Insurance Program, Floodplain Management Bulletin: Historic Structures. FEMA P-467-2 (May 2008)[[45]](#endnote-45)

# 1.6.1 Stormwater Site Design Plans

Stormwater management is another issue that can be addressed through site plan review. Municipalities may consider the extent to which the proposed site plan addresses higher volumes of stormwater that result from buildings, walkways, parking, roads and other impermeable surfaces. As alternatives or in conjunction with structural solutions, site design practices that can avoid or reduce the impacts of stormwater fall into three categories:

Preservation of Natural Features and Conservation Design: Preservation of natural features includes techniques to foster the identification and preservation of natural areas that can be used in the protection of water resources. Conservation design includes laying out the elements of a development project in such a way that the site design takes advantage of a site’s natural features, preserves the more sensitive areas and identifies any site constraints and opportunities to prevent or reduce effects.

Reduction of Impervious Cover: Reduction of impervious cover includes methods to reduce the amount of rooftops, parking lots, roadways, sidewalks and other surfaces that do not allow rainfall to infiltrate into the soil, in order to reduce the volume of stormwater runoff, increase groundwater recharge, and reduce pollutant loadings that are generated from a site.

Use of Natural Features and Source Control for Stormwater Management: Use of natural features for stormwater management includes design strategies rather than structural stormwater controls to help manage and mitigate runoff. Source control for stormwater management includes elements to mitigate or manage stormwater in a natural or lower-impact manner.[[46]](#endnote-46)

Additional examples of model local law provisions may be found in the *Stormwater Control Measures* chapter.

RESOURCES

*Stormwater Management Guidance Manual for Local Officials*. (2004). NYS Department of Environmental Conservation.[[47]](#endnote-47)

*New York State Stormwater Management Design Manual*. (2015). NYS Department of Environmental Conservation.[[48]](#endnote-48)

*Draft Green Infrastructure Guide*. (2015). City of Newburgh Conservation Advisory Council.[[49]](#endnote-49)

*Better Site Design*. (2008). Division of Water, NYS Department of Environmental Conservation.[[50]](#endnote-50)

USAGE

Insert text in section of zoning law or separate site plan review law which lists the requirements for a site plan.

ADAPTED FROM THE FOLLOWING SOURCE

Village of Voorheesville (NY) Zoning Law, Article XIX Special Regulations, Site Plan Review[[51]](#endnote-51)

LANGUAGE

Section X. Stormwater Site Design Practices; uses, restrictions, and regulations.

A. Site Plan and special use permit applications to the [*insert name of board reviewing such applications, such as the Planning Board*] shall be subject to review and approval for conformance to stormwater site design practices.

B. The site owner/applicant/designer shall submit a Stormwater Site Design Plan (SSDP) to the [*Planning Board*]. The standard used to meet the requirements of this local law shall be the *New York State Stormwater Management Design Manual* (NYSSDM). The applicant shall submit a conceptual SSDP to the [*Planning Board*] for review and conceptual approval prior to the submission of the actual site plan or plans associated with a special use permit.

The conceptual SSDP shall include a narrative outlining the how the conceptual SSDP addresses the initial steps in the process for stormwater site planning and practice as expressed in the NYSSDM, including Step 1 Site Planning, Step 2 Determine Water Quality Treatment Volume (WQv), and Step 3 Apply Runoff Reduction Techniques and Standard SMPs with RRv Capacity to Reduce Total WQv.

C. Where such practices are deemed applicable and practical to the site by the [Planning Board], the final SSDP shall incorporate the practices and techniques listed below.

1. Practices for preservation of undisturbed areas and buffers; reduction of clearing and grading; locating development in less sensitive areas; open space design, soil restoration, roadway reduction, sidewalk reduction, driveway reduction, cul-de-sac reduction, building footprint reduction and parking reduction.
2. Techniques for green infrastructure and standard stormwater management practices with Runoff Reduction Volume capacity incorporating conservation of natural areas, sheetflow to riparian buffers or filter strips, vegetated open swales, tree planting or tree box, disconnection of rooftop runoff, stream day-lighting, rain gardens, green roofs, stormwater planters, rain tanks/cisterns, porous pavement, infiltration practices, bioretention practices and or dry swales (open channel practices).

A narrative addressing the listed practices and techniques shall accompany the final SSDP for review and approval by the [*Planning Board*], and also outline how the final SSDP addresses the following steps in the process for stormwater site planning and practice as expressed in the NYSSDM: Step 4 Determine the minimum RRv required and Step 5 Apply Standard Stormwater Management Practices to Address Remaining Water Quality Volume.

D. The [Planning Board] shall review the final SSDP and narratives and determine whether or not the SSDP conforms to the purpose and intent of the local law.

E. The [*City/Town/Village*] may retain an engineer to review and make recommendations to the [*Planning Board*] regarding runoff reduction criteria, water quality volume, application of stormwater management practices, peak rate control practices and whether or not quantity control requirements have been met. The [*City Council/Town Board/Village Board of Trustees*] shall establish a fee schedule related to such review.

# 1.6.2 Encroachments on Drainageways

Planning board review should include the potential for offsite impacts such as localized flooding. Localized flooding can result from even minor storms. Runoff overloads drainageways and flows into streets and low-lying areas. Sewers back up; yards are inundated; and basements or first floors are flooded. Damage may even occur to sidewalks, streets, and other public property.

Many lots have utility or drainage easements designed to carry surface water away from the buildings and to the street, storm sewer, or other drainage facility. To function properly, drainage easements must be kept open. Unfortunately, many property owners do not know that drainage easements exist or understand why they are needed. They install garages, playsets, sheds, planters, stone walls, fences, or swimming pools in the drainage easements, disrupting the drainage pattern and pushing surface water onto other properties.

Municipalities may address the problem of encroachment in easements through education, regulation, and enforcement.

RESOURCE

*Reducing Damage from Localized Flooding: A Guide for Communities*. (2005). FEMA 511.[[52]](#endnote-52)

*Site Plan Review*. (2012). New York State Department of State.[[53]](#endnote-53)

USAGE

Insert text in section of zoning law which regulates encroachments. If encroachments are not addressed separately, add to a section in the zoning law on supplemental uses or accessory uses.

ADAPTED FROM THE FOLLOWING SOURCE

Orland Hill (IL) Municipal Ordinance, Title 15 Land Usage, Chapter 152 Fences[[54]](#endnote-54)

LANGUAGE

A. Encroachments on drainageways. No structure may be erected without complying with the following:

(1) Construction. No structure or barrier shall be constructed in such a manner as to impede or alter the natural surface water drainage of the property upon which the structure or barrier is constructed or any adjoining property. The bottom of the structure or barrier shall be a minimum of three inches above the drainage area.

(2) Enforcement. If the [*Code Enforcement Officer or Building Inspector*] considers a structure or barrier to be a public safety hazard, either prior to, during, or after construction or placement he or she may issue a stop work order. The property owner may appeal the stop work order and the [*Code Enforcement Officer’s or Building Inspector’s*] interpretation that the structure or barrier constitutes a public safety hazard to the Zoning Board of Appeals. If the Zoning Board of Appeals upholds the decision of the [*Code Enforcement Officer or Building Inspector*], they may direct that such structure or barrier be removed or reinstalled in compliance with Paragraph X(1).

1.7 Local Road Standards

Transportation infrastructure including roads, bridges and culverts often require costly repairs or replacements if damaged by extreme weather events. With a changing climate, the Northeast is experiencing more frequent heavy precipitation events, increasing the risk of failure for transportation infrastructure, especially assets nearing the end of their design life. To reduce such risk and increase resiliency, transportation infrastructure replacements should be built to the most current engineering standards and appropriate design flows. “Resiliency” is defined as “the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.”[[55]](#endnote-55)

Municipalities should consider incorporating current and resilient design standards into their transportation infrastructure engineering approaches through adoption of road design standards. Such design standards should be appropriate to the location and needs. A local roads classification system based on traffic volume such as average daily traffic (ADT) counts, can help determine appropriate design standards to use. For these purposes and in general, low volume roads are defined by the Cornell Local Roads Program as having a current Average Daily Traffic (ADT) count of 400 vehicles per day or less. Roads with a greater than 400 ADT count are considered high volume roads. By adopting appropriate standards for low- and high-volume roads, a local government can assure consistent design approaches.

In addition to having a set of design standards to improve the flood resiliency of transportation infrastructure, municipalities should consider adopting such design standards for the additional benefits standards they can bring, such as greater overall safety for the general public, improved planning and scheduling, reduced future impacts to transportation assets and the ability to provide consistent information to the public. In addition, reasonable design standards can be used to help identify where such design standards are not met and develop transportation infrastructure management plans to address these conditions.

Several options for highway standards are available to municipalities in New York State. To incorporate resiliency, the following standards explained below, are recommended:

* New York State Department of Transportation (NYSDOT) Highway Design Manual, Chapter 4 and Chapter 8;[[56]](#endnote-56)
* NYSDOT Bridge Manual[[57]](#endnote-57)
* Cornell Local Roads Program Highway Standards for Low-Volume Roads in New York State[[58]](#endnote-58) or
* Or equivalent locally developed municipal-specific standards.

NYSDOT Highway Design Manual

The NYSDOT Highway Design Manual (HDM) provides requirements and guidance on highway design methods and policies which are as current as practicable and assures uniformity of design practice consistent with the collective experience of the NYS Department of Transportation (NYSDOT), the American Association of State Highway and Transportation Officials (AASHTO), and the Federal Highway Administration (FHWA). The objective of the design process is the construction of highways which provide adequate safety and convenience to all highway users while maintaining proper balance among highway functional classifications, environmental concerns and fiscal restraints. The HDM was developed taking into consideration national references. Portions of the manual may be superseded by subsequent Official Issuances of the NYSDOT. The HDM Chapter 4 is titled “Design Criteria & Guidance for Bridge Projects on Low Volume Highways” and Chapter 8 is “Highway Drainage.”

NYSDOT Bridge Manual

The NYSDOT Bridge Manual (BM) provides guidance for decisions in the bridge project process, documents or references policies and standards that need to be considered and provides a commentary on good bridge engineering practice. The manual is intended to provide assistance to designers to ensure that “quality” bridges are constructed. “Quality” bridges are durable, economical, aesthetically pleasing, safe, and environmentally sound. Although the manual provides guidance on design procedure, many subjects presented only highlight criteria and practice. A complete analysis and design to produce a safe, economical and maintainable structure is the responsibility of the designer. This manual applies to all bridges constructed under contracts with the NYSDOT. In addition, its use is encouraged for all bridges in New York State.

The NYSDOT BM was developed taking into consideration national references. Bridge designers consider these references and their provisions where applicable.

Highway Standards for Low-Volume Roads (LVRs) in New York State

Using a set of standards originally developed in 1992 by the NYS Local Roads Research and Coordination Council, the Cornell Local Roads Program (CLRP) developed a full set of standards for roads. *The Manual:* *Guidelines for Rural Town and County Roads* was developed specifically for classification and management of low-volume roads (i.e., less than 400 average number of vehicles per day, also known as “average daily traffic” or ADT) in New York State. These guidelines establish appropriate standards for speed, construction and maintenance which are consistent with the needs and uses of these low-volume roads (LVRs). The Highway Standards for LVRs in NYS can be adopted by any municipality or agency but are not recommended on highways with more than 400 ADT. The standards include common options used by municipalities in New York State.

Locally Developed Municipal-Specific Standards

A municipality may elect to develop its own standards and adopt them as the official municipal policy. They must be legally sufficient so as to survive a legal challenge. The municipality should have the standards developed by a Professional Engineer and reviewed by the municipal attorney. A municipality may elect to use portions of the above standards but should include an order of precedence to avoid any potential conflicts.

Which Standard to Use

Unless a municipality develops its own standards, it should choose among the standards listed below. For roads with more than 400 average number of vehicles per day (400 ADT), the NYSDOT Manuals are the standards that should be followed. Local governments can adopt standards for low-volume and high-volume roads.

|  |  |  |
| --- | --- | --- |
| Traffic Volume | Closed Drainage/Culverts/Ditches | Bridges |
| ≤ 400 ADT | * NYSDOT Highway Design Manual (Chapter 4 and 8), or
* Highway Standards for Low Volume Roads (Cornell Local Roads Program)
 | NYSDOT Bridge Manual |
| > 400 ADT | * NYSDOT Highway Design Manual (Chapter 8)
 | NYSDOT Bridge Manual |
| *Note: It is acceptable to add municipal specific options in highway standards if reviewed and properly vetted.* |

Implementation Process for Roadway Standards

Having standards will provide consistent requirements for new construction of roads, bridges and culverts. The standards will also support the development of a transportation infrastructure management plan and consistency in repairing deficiencies in construction. Requiring that such a plan be followed would reduce the risk of future damages to transportation assets, provide greater overall safety for the traveling public and provide consistent information to the public.

Standards should be adopted by local law. As with any legislation, a public hearing must be held prior to adoption. Additionally, the law should be reviewed for legality, completeness and proper language by the municipal attorney. After the law is passed by the county, city, town, or village, it must be filed with the New York State Department of State. Instructions and necessary forms for filing local laws are available online from the New York State Department of State. For more information, the municipality may contact the Cornell Local Roads Program.

Following adoption, the following implementation process is recommended:

* Classify local roads by volume. Additional classifications evaluating factors such as types of vehicles, land use, and seasonality of use are further refined in the cited standards.
* Determine existing conditions of pavement, roadside, signs, drainage, and alignment.
* Identify what work needs to be completed to meet adopted highway standards.
* Rank the needs and prioritize the work.
* Develop and implement an action plan.
* Identify funding needs and obtain funding.

The model local law presented here will be useful to municipalities that are considering adopting and incorporating resilient design standards into their engineering infrastructure approaches for their local roads, including low-volume roads. Adopting the design standards referenced hereby will help municipalities increase infrastructure resilience.

This model local law and background narrative was prepared by the Cornell Local Road Program, NYS Department of Transportation, and NYS Department of State.

RESOURCES

*Guidelines for Geometric Design of Very Low-Volume Local Roads.* AASHTO.[[59]](#endnote-59)

*Manual: Guidelines for Rural Town and County Road.* Local Roads Research and Coordination Council.[[60]](#endnote-60)

*A Policy on Geometric Design of Highways and Streets* (known as the *AASHTO* *Greenbook*). AASHTO.[[61]](#endnote-61)

*Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤400), 1st Edition*. AASHTO.[[62]](#endnote-62)

*Local Roads Research and Coordination Council Manual: Guidelines for Rural Town and County Roads.* Cornell Local Roads Program.[[63]](#endnote-63)

*Highway Standards for Low-Volume Roads in New York State.* Cornell Local Roads Program.[[64]](#endnote-64)

*Resilience and Transportation Planning.* (2017). Federal Highways Administration. FHWA-HEP-17-028.[[65]](#endnote-65)

USAGE

While road standards may be adopted by regulation or resolution, it is strongly recommended that they be passed as law.

ADAPTED FROM THE FOLLOWING SOURCE

Model prepared by the NYS Department of Transportation in cooperation with the Cornell Local Roads Program.

LANGUAGE

Section 1. Legislative purpose.

The [*County/City/Town/Village*] hereby enacts this local law for the purpose of adopting design standards for transportation infrastructure including [*insert as appropriate - highways, roads, culverts, bridges, drainage systems*] on its local roads including low-volume roads. While there are generally accepted standards for the design rehabilitation and repair of roads, bridges, culverts and drainage systems on high-volume roads, there are no such comparable standards for roads, bridges, culverts and drainage systems for low-volume roads. Adopting standards that support the design of resilient transportation assets for local roads including low-volume roads could result in greater overall safety for the general public and reduce future impacts to transportation assets. The [*County/City/Town/Village*] recognizes that resilient design standards should be incorporated as appropriate to the location and needs. A local roads classification system based on traffic volumes defined in Section 3 below will help determine appropriate standards to use.

In addition to having a set of standards to improve the flood resiliency of local transportation infrastructure, the [*county/city/town/village*] is adopting such standards (per Section 2) for added benefits such as improving planning and scheduling transportation infrastructure improvements, reducing impacts to the traveling public and providing consistent information to the public. In addition, reasonable standards will be useful to help define deficiencies and develop transportation infrastructure management plans.

The increase in heavy precipitation and flooding events is subjecting transportation assets to greater hydraulic stressors, resulting in greater need for maintenance, repair and/or replacement of infrastructure. Given the need to manage this risk, it is incumbent upon the [*County/City/Town/Village*] to target investments to the most applicable, practical and cost-effective solutions using consistent engineering standards and a risk-based engineering approach.

 Section 2. Adoption of Standards.

The [*County/City/Town/Village*] hereby adopts by reference the following standard(s): [*select as appropriate - New York State Department of Transportation (NYSDOT) Highway Design Manual (Chapter 4 and Chapter 8); NYSDOT Bridge Manual; Highway Standards for Low-Volume Roads in New York State, 2017, Cornell Local Roads Program; or equivalent locally developed municipal-specific standards*.]

Section 3. Classification of Local Roads by Volume**.**

The [*County/City/Town/Village*] [*identify position of* *Responsible Official*] in consideration of the best interests of the [*County/City/Town/Village*], may classify one or more (or all) roads, or portions thereof, as one of the following types of roads by volume meaning “average daily traffic” (ADT): either less or equal to (≤ ) 400 ADT (low-volume), or greater than (>) 400 ADT (high volume).

The classification of any road or designated portion thereof shall be based on available data or the working knowledge and records of the [*County/City/Town/Village*] [*highway superintendent/director of public works*]. Upon the classification of any road or portion thereof by the [*County/City/Town/Village*] [*Responsible Official*], such designation shall be filed in the office of the [*County/City/Town/Village*] clerk and a copy shall be presented to each member of the [*County Legislature/City Council/Town Board/Village Board of Trustees*] by the [*County/City/Town/Village*] clerk within 10 days of such filing. Such designation shall be accompanied by a finding by the [*Responsible Official*], which shall contain the information upon which the [*Responsible Official*] relied when designating such road or portion thereof. The [*County Legislature/City Council/Town Board/Village Board of Trustees*] may at a [*County Legislature/City Council/Town Board/Village Board of Trustees*] meeting following the filing of such designations adopt a resolution accepting such designations. Upon the adoption of such resolution, the road or roads or portion thereof shall be classified as determined by the [*County/City/Town/Village*] [*Responsible Official*] and such [*County/City/Town/Village*] [*Responsible Official*] shall take into consideration the guidelines for designing, repairing and constructing transportation infrastructure [*insert as appropriate - roads, bridges, culverts, drainage systems or portion thereof*] as set forth in section two of this local law.

Section 4. Traffic Volumes and Standards.

The following tables and accompanying data shall be used as guides by the [*County/City/Town/Village*] [*Responsible Official*] to assign adopted standards of Section 2 to local roads in the [*County/City/Town/Village*]. Such standards shall be used to enable the [*County/City/Town/Village*] [*Responsible Official*] to determine the guidelines he or she may follow to enable him or her to determine the manner in which low-volume rural roads may be designed, maintained and operated.

|  |  |  |
| --- | --- | --- |
| Road Traffic Volumes | Standards: Closed Drainage/ Culverts/Ditches | Standards: Bridges |
| ≤ 400 ADT | * NYSDOT Highway Design Manual (Chapters 4 and 8)
* Highway Standards for Low Volume Roads, Cornell Local Roads Program
 |  NYSDOT Bridge Manual |
| > 400 ADT | * NYSDOT Highway Design Manual (Chapter 8)
 | NYSDOT Bridge Manual |

Section 5. Certification by Others.

All roadways to be adopted by the [*County/City/Town/Village*] shall be certified that they are in compliance with these standards by a professional engineer licensed to practice in New York State.

Section 6. Acceptance of Roadways.

Before a roadway is to be adopted by the [*County/City/Town/Village*], a set of as-built plans approved by the project engineer shall be submitted to the [*County/City/Town/Village*] [*Responsible Official*]. Approval by the [*County/City/Town/Village*] [*Responsible Official*] that the road project including roadways, culverts, bridges, drainage systems and appurtenances meets the above standards then in effect shall be required prior to acceptance by the [*County Legislature/City Council/Town Board/Village Board of Trustees*]. The [*County/City/Town/Village*] reserves the right to not to accept any roadway project, notwithstanding that all portions of these standards have been met.

Section 7. Discontinuance.

The [*County Legislature/City Council/Town Board/Village Board of Trustees*] may adopt a local law discontinuing such design standards contained in Section 2 and such road classifications contained in Section 3 in the event it determines such discontinuance to be in the public interest.

# Endnotes

1. See Town Law Section 277 (1), Village Law Section 7-730 (1), and General City Law Section 33 (1) [↑](#endnote-ref-1)
2. Subdivision Review in New York State. (2015) New York State Department of State. Retrieved 12/10/18 from <https://www.dos.ny.gov/lg/publications/Subdivision_Review_in_NYS.pdf> [↑](#endnote-ref-2)
3. Subdivision Design and Flood Hazard Areas. PAS Report 584. American Planning Association. Retrieved 1/30/19 from <https://www.fema.gov/media-library-data/1477942538916-25aa685572bdd20758da7bccb3de8905/5-PAS584_SubdivisionDesignAndFloodHazardAreas1.pdf> [↑](#endnote-ref-3)
4. Ibid. [↑](#endnote-ref-4)
5. Town Law § 277(1), Village Law § 7-730 (1), General City Law § 33(1). If a proposed subdivision will cause flooding, a town planning board has a duty either to deny approval of the plans or condition its approval upon correction of the deficiencies. 26 Op.State Compt. 98, 1970 [↑](#endnote-ref-5)
6. Town of Pendleton (NY) Municipal Code, Chapter 220 Subdivision of Land, Article V General Requirements and Design Standards for Major Subdivision, Section 220-27 Drainage improvements. Retrieved 12/11/18 from <http://www.ecode360.com/5124353?highlight=flooding,flood&_sm_au_=iVVkkMLvJS5085Tq> [↑](#endnote-ref-6)
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15. [Ibid.](http://www.dec.ny.gov/docs/lands_forests_pdf/guidetoforestry.pdf) [↑](#endnote-ref-15)
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26. Ibid. [↑](#endnote-ref-26)
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60. *The Manual: Guidelines for Rural Town and County Road.* Local Roads Research and Coordination Council can be obtained from the Cornell Local Roads Program via the web at [www.clrp.cornell.edu](http://www.clrp.cornell.edu) or by calling (607)255-8033. [↑](#endnote-ref-60)
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