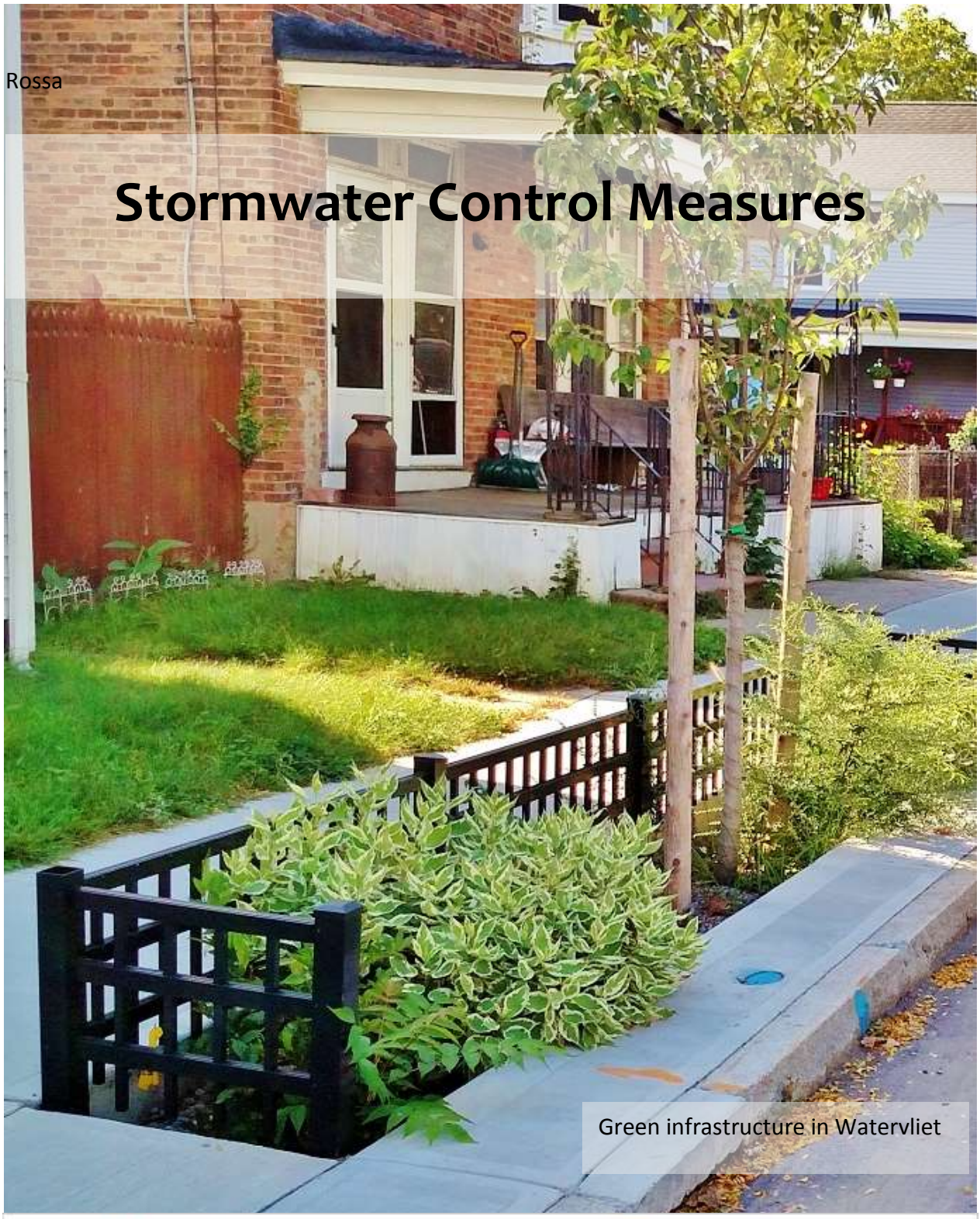
Rossa

Stormwater Control Measures



Green infrastructure in Watervliet

Rossana Rosado, Secretary of State

Andrew M. Cuomo, Governor

NEW YORK STATE OF OPPORTUNITY. Department of State

New York State Department of State
Office of Planning, Development and Community Infrastructure
99 Washington Avenue
Albany, NY 12231-0001
http://www.dos.ny.gov

Publication Date: June 2019

Contents

The New York State Department of State (DOS) has prepared a collection of model local laws, in consultation with the New York State Department of Environmental Conservation (NYSDEC) and other stakeholders, that include consideration of future risk due to sea-level rise, storm surge and/or flooding as a result of climate change as required in the New York State Community Risk and Resiliency Act of 2014.

Municipal adoption of model local laws is intended to help local governments and their communities increase resiliency. This publication does not establish any legally binding standards or required criteria for state or municipal government to follow. Use of this guidance by a municipality is not a substitute for consultation with an attorney working on behalf of the municipality and municipal officials should consult with an attorney prior to adoption of any local law.

5. Stormwater Control Measures

Stormwater is an important water resource. As rain falls, some water runs off overland and most soaks into the soil, recharging groundwater as it makes its way to lakes and streams. Numerous features of the natural landscape trap runoff and allow rainwater to filter into the ground. These natural features remove pollutants and slow the rate of surface runoff. However, land development often eliminates features that moderate stormwater runoff, exposing soil to erosion. After construction is finished, parts of the site are usually covered by pavement, buildings and other impervious surfaces. Water can no longer be absorbed into these areas, so more stormwater remains on the land surface, picking up pollutants as it runs off overland or through storm drains. Downstream, bank erosion and flooding increase, and even upstream communities begin to experience road washouts and flooded basements. Instead of a valuable resource, stormwater becomes a costly and sometimes dangerous problem.

Preventing these problems requires both temporary and permanent stormwater management controls. Temporary erosion and sediment control measures and site planning are important during construction to prevent soil erosion and impacts to local water resources. Permanent stormwater management practices are installed during development of the site, but their purpose is to keep soil in place, treat pollutants in stormwater and control flooding after land development is complete for the long-term benefit of the community.

Because local governments have the principal responsibility for controlling land use and development, federal and state law require urbanized communities designated as Municipal Separate Storm Sewer Systems (MS4s)[1] to establish stormwater management programs. The goal of these programs is to retain or absorb stormwater on developed sites wherever possible, with the quantity, rate and quality of runoff remaining as they were before the sites were developed. The state/federal stormwater management program is set up to allow flexibility for local governments to manage stormwater in a way that suits their own individual conditions.

Throughout New York State, owners or operators of most construction projects that involve soil disturbance of one or more acres must obtain coverage under the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity, and meet the standards in the State's two engineering specifications: New York State Standards and Specifications for Erosion and Sediment Control, and the New York State Stormwater Management Design Manual. In the New York City East of Hudson watershed, this requirement is triggered by construction projects involving soil disturbance of 5,000 square feet or more, as compared to projects involving an acre (43,560 square feet) or more of land. These requirements exist whether or not a municipality is a designated MS4. Therefore, the model and sample local laws in this Chapter have been designed or revised to reflect the more stringent New York State standards for erosion and sediment control and stormwater management.

Stormwater Management Options	
Technique	Description
Steep Slopes	Amends the zoning ordinance, subdivision law, or creates a standalone law to regulate the amount of land that can be disturbed in any project; the activities that can occur within the bluff area; the vegetation that must remain on and around the slope; and the amount of impervious surfaces. Such laws can also provide standards designed to control erosion of the slope.
Stormwater Management and Reducing Impervious Surfaces	Regulate the amount of impervious area in new development and reduce the impact of necessary impervious surfaces associated with that development. Changes to zoning can incorporate impervious surface coverage limits by district; basic stormwater management laws can include incentives for reducing impervious surfaces; and stormwater management laws can add provisions to require green infrastructure.
Mitigation for Failure to Reduce Impermeable Surface Coverage	Through amendments to the zoning law or stormwater management law, allow the planning board to require mitigation of stormwater issues prior to approving redevelopment or expansion of nonconforming uses/structures/lots. Mitigation could occur through conservation easement or monetary contribution to a local fund.
Erosion and Sediment Control and Stormwater Management	Implement construction site and post-construction stormwater management activities through a stormwater management and erosion and sediment control law.
Stormwater Utility	A funding mechanism which enables a municipality to assess a fee on all property-owners to pay for the management of stormwater. It can also incentivize the use of green infrastructure by residents and businesses alike through credits.
Examples from other Chapters in the Model Local Law Publication	
Maximum Lot Coverage	Establishes bulk standards related to the amount of land in a developable lot that can be covered by buildings, structures and impermeable areas such as asphalt and concrete. See example in *Basic Land Use Tools for Resiliency* Chapter.

Nonconformance of Impermeable Surface Coverage	Allows legal nonconforming lots in a lake front district to be redeveloped by special use permit where impermeable surface coverage on the lot is reduced, and runoff is mitigated. Among the mitigation measures is acquisition of a conservation easement on land in the zoning district, or contribution toward a fund for acquisition of development rights. See example in *Basic Land Use Tools for Resiliency* Chapter.
Drainage Improvements in a Subdivision	Require subdivision lot lines to be drawn so that drainage patterns are not disturbed and lots are buildable. See example in *Basic Land Use Tools for Resiliency* Chapter.
Subdivision Woodlands	Incorporate into zoning, subdivision, and site plan laws language to limit land clearance in advance of development in favor of selective clearance of land. This can reduce stormwater runoff, thus reducing flood risk. See example in *Basic Land Use Tools for Resiliency* Chapter.

RESOURCES

Stormwater Management Guidance Manual for Local Officials. (2004). NYS Department of Environmental Conservation.[2]

New York State Standards and Specifications for Erosion and Sediment Control (Blue Book). (2016). NYS Department of Environmental Conservation.[3]

New York State Stormwater Management Design Manual. (2015) NYS Department of Environmental Conservation.[4]

Green Infrastructure Guide. (2015). City of Newburgh, NY: Conservation Advisory Council.[5]

Better Site Design. (2008). NYS Department of Environmental Conservation Division of Water.[6]

Scott, Geoffrey. (2014). *Stormwater Management*. Ithaca: Cornell Local Roads Program.[7]

5.1 Steep Slopes

Steep slopes add beauty to an area, but they also present environmental challenges. If not properly maintained, they can lead to serious environmental harm. Steep slopes with impervious surfaces, or slopes that lack sufficient vegetation are more likely to erode and become unstable. Slopes with no or little vegetation allow water to rush downhill carrying debris and sometimes washing out roads and trails. If a waterbody is at the bottom of the slope, soil erosion can impact the quality of the water. Unstable slopes can also lead to landslides, wash-outs, stormwater redirection, pollution, and significant property damage.

The Westchester County Planning Department has provided some guidance related to steep slopes (see box), which they define as areas with an average slope equal to or greater than 15% with a minimum 500 square feet. [8]

Key Elements of a Steep Slopes Ordinance
Source: Flooding and Land Use Planning: A Guidance Document for Municipal Officials and Planners (Westchester County)

Steep Slope Definition:
Those areas with an average slope equal to or greater than 15%, as measured in accordance with the slope measurement criteria, with minimum 500 sq ft.

Steep Slope Restrictions:
Land that includes a slope equal to or greater than 15% that has a request to be developed and/or regraded or stripped of vegetation will require a permit. The percentage of land that can be possibly developed should vary depending on the steepness of the land.

Ideal Recommendations:
- Sloped land slope = 15% requires permit;
- Sloped area from 15%-20% not more than 25% of the area may be disturbed;
- Sloped area slope = 20%, no more than 10% of that area may be disturbed;
- Sloped area slope = 25% may not be disturbed.

Cut and Fill of Steep Slopes:
Cut and Fill provisions should be included for all steep slope activity. Cut and fill slopes does not exceed a slope of one vertical to three horizontal except where retaining walls, structural stabilization, or other methods acceptable to the Town Engineer are used.

Mitigation Measure:
Proper completion of the proposed activity in accordance with the approved plans. The restoration of the area to its natural condition as far as practicable and protection of adjoining property owners from damage resulting from steep slope disturbances.

Permit Requirements:
Permits should be required when developing, regrading or stripping land slope is equal to or greater than 15% slope.

Preserving steep slopes and building on flatter areas helps to prevent soil erosion and minimizes stormwater runoff, to stabilize hillsides and soils, and to reduce the need for cut-and-fill and

grading. Avoiding development on erodible soils can prevent sedimentation problems and water-quality degradation. Areas with highly permeable soils can be used as nonstructural stormwater infiltration zones.

Laws applying to steep slopes can regulate the amount of land that can be disturbed in any project; the activities that can occur within the bluff area; the vegetation that must remain on and around the slope; and the amount of impervious surfaces. They can also provide standards designed to control erosion of the slope.

Three examples are provided here for regulating steep slopes. The first regulates frontage and pavement standards based on the slope of a driveway. The second example incorporates performance standards into the supplemental regulations portion of the zoning law. It would apply throughout the municipality wherever slopes greater than fifteen percent, or some other locally determined slope, exist. The third example establishes a steep slope protection district to address development in special resource areas.

Example	Description
Lot Frontage and Driveways on Steep Slopes	Requires an increasing amount of frontage based on slope of 15% and above and establishes maximum slopes and pavement standards for driveways.
Steep Slope and Erosion Control Performance Standards	Would apply throughout the municipality wherever slopes greater than a designated amount exist. Describes general best management standards for control of erosion.
Steep Slope Protection Overlay District	Regulates activities on lands with slopes of 15% or greater as designated on an official map and requires a permit prior to undertaking regulated activities.

RESOURCES

New York State Standards and Specifications for Erosion and Sediment Control (Blue Book). (2016). NYS Department of Environmental Conservation.[9]

5.1.1 Lot Frontage and Driveways on Steep Slopes

One way in which slopes are disturbed is by the construction of roads or driveways. This disturbance can result in unsafe lot access, increased erosion, and sedimentation on adjoining roads. By requiring an increasing minimum frontage for building lots with a significant slope perpendicular to the street, a municipality can minimize or mitigate stormwater runoff and soil erosion and reduce the number of lots developed along a slope. Increased frontage can provide greater opportunities for the installation of driveways with the appropriate slope and drainage, which might be achieved through longer drives or switchbacks parallel with the road. Driveways that access state or county roads are subject to conditions established through permit requirements, which may be more stringent than local requirements.[10] [11]

APPLICATION

Include this language in subdivision regulations in a section containing standards for lot development.

ADAPTED FROM THE FOLLOWING SOURCE

Buncombe County (NC) Land Development and Subdivision Ordinance, Chapter 70 Subdivisions, Article III Standards, Section 70-66 General Requirements[12]

City of Hendersonville (TN) Subdivision Regulations, Article III Design Standards and Improvement Requirements, 3-102 Lot Requirements, 3-102.6 Driveways/Access to Lots, Section 3-102. 605 Design Standards for Residential Driveways[13]

LANGUAGE

(x) Lot frontage. Lot frontage shall be regulated when the average land slope perpendicular to the street exceeds 15 percent [*original law said 18 percent*]. Any residential subdivision lot where the side slope of the land, at a right angle to the frontage street, is in excess of 15 percent slope shall have a minimum of 50 feet street frontage, and the lot street frontage shall be increased four feet for each side slope percentage point over the 15 percent base for such calculations. Example: A side slope of 50 percent requires lot frontage of 178 feet (50 feet, plus 128 feet for the excess side slope of 32 percent).

(y) Residential driveways. Any driveway should be constructed in a manner such that the drive has a maximum slope of eight percent for the first fifteen feet (measured from the back of the city approved sidewalk). Driveways greater than eight percent slope shall be reviewed and approved by the [*City/Town/Village*] [*highway department/engineer*] prior to a building permit being issued. In no case shall the driveway slope exceed ten percent in the first 15 feet from the street. Where the potential exists for gravel or soil to be washed from a driveway onto the public right-of-way such driveways shall be paved or otherwise stabilized for a distance sufficient to

prevent material from migrating onto public property. Where the driveway design and standards listed above are not in conformance with the standards of the state or county departments of transportation, the [*city/town/village*] [*highway department/engineer*] may require conformance with whichever standard is more restrictive.

5.1.2 Steep Slope and Erosion Control Performance Standards

Performance standards may be developed that apply anywhere in the municipality where steep slopes exist.

APPLICATION

Most municipalities will already have a section of the zoning law called supplementary use regulations or performance standards. The text below can be incorporated into existing sections or added as a new section under the suggested heading. The language used should be compatible with and complementary to a more robust stormwater sediment and erosion control local law.

ADAPTED FROM THE FOLLOWING SOURCE

City of Newburgh (NY) Municipal Code, Chapter 300: Zoning Law, Section 300-52 Environmental Constraints[14]

Town of Ayer (MA) Proposed Zoning Bylaw (March 2017). Section 9: General Regulations, Subsection 9.4: Environmental Performance Standards[15]

LANGUAGE

Section X. Supplementary Regulations; Environmental Constraints

A. Purpose. The provisions within this Section are designed to protect the natural resources and environmentally sensitive areas in all applicable areas of the [*City/Town/Village of* _____], within all zoning districts. The standards are intended to define and conserve selected natural resources by minimizing adverse impacts to them, thereby protecting the rights of the residents of the [*city/town/village*] to clean air, pure water, and the natural, scenic, historic and aesthetic values of the environment.

B. Resource Types. The following subsections address individual natural resource types by prescribing performance standards governing land disturbance where the resources exist.

(1) Steep Slopes.

(a) For any subdivision, special use permit, site plan, building permit, zoning permit, or variance that involves the disturbance of slopes greater than 15%, conditions shall be attached to ensure that:

[i] Adequate erosion control and drainage measures will be in place so that erosion and sedimentation do not occur during or after construction, as determined by the Planning Board.

[ii] Cutting of trees, shrubs, and other natural vegetation will be minimized, as determined by the Planning Board.

[iii] Safety hazards will not be created due to excessive road or driveway grades or due to potential subsidence, road washouts, landslides, flooding or avalanches, as determined by the Planning Board.

[iv] Proper engineering review of plans and construction activities will be conducted by the *[City/Town/Village]* to ensure compliance with this section, paid for by escrow deposits paid by the Applicant.

[v] No Certificate of Occupancy will be granted until all erosion control and drainage measures required pursuant to this section have been satisfactorily completed.

[vi] There will be no building allowed within the one hundred (100) feet of a waterbody within the *[insert name of district, such as the Water Overlay District]*.

(b) Slope determinations shall be made based upon the topographic information required for a particular approval, along with such other topographic information as a reviewing board or official shall reasonably require or the Applicant shall offer. In cases of uncertainty or dispute, a qualified professional retained by the *[City/Town/Village]*, at the Applicant's expense, shall determine the location of regulated slopes.

(2) Erosion Control.

(a) Erosion of soil and sedimentation of watercourses and waterbodies shall be minimized by employing the following "best management" practices [*if applicable, add "and the requirements of the stormwater and erosion control provisions contained in Section ____of this law"*]:

[i] Exposed or disturbed areas due to stripping of vegetation, soil removal, and regrading shall have achieved final stabilization within six months of occupancy of a structure, or when the Notice of Termination for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activities is filed with the New York State Department of Environmental Conservation, whichever occurs first.

[ii] During construction, temporary vegetation and/or mulching shall be used to protect exposed areas from erosion. Until a disturbed area is permanently stabilized, sediment in runoff shall be trapped by using silt fence or sedimentation traps. All temporary erosion and sediment control measures shall be designed and installed according to the most current version of the New York State Standards and Specifications for Erosion and Sediment Control.

[iii] Permanent erosion control and vegetative measures shall be in accordance with erosion/sedimentation vegetative practices in the most current version of the New York State Standards and Specifications for Erosion and Sediment Control.

[iv] All slopes exceeding fifteen (15) percent resulting from the site grading shall be stabilized with practices designed and installed according to the most current version of the New York State Standards and Specifications for Erosion and Sediment Control.

[v] Dust control shall be used during grading operations if the grading is to occur within 200 feet of an occupied residence or place of business. Dust control methods and conditions are provided in New York Standards and Specifications for Erosion and Sediment Control. The most current version is the version that should be followed.

Add to definition section of zoning law:

"Final Stabilization" means that all soil disturbance activities have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

5.1.3 Steep Slope Protection Overlay District

Overlay districts may be established to provide special controls over land development located in sensitive environmental areas. The regulations contained in an environmental overlay district would not be a substitute for the zoning regulations of the underlying primary zoning districts but are additional requirements that shall be met by an applicant or developer prior to project approval. The purpose of overlay districts is to provide the municipality with an additional level of review and regulation that controls how land development permitted by the municipality's primary zoning districts should occur in or near sensitive or unique environmental areas.

A comprehensive plan can support the adoption of steep slope protection overlay districts as a technique to:

- Enhance flood protection.
- Maintain and improve surface water quality.
- Preserve wildlife habitats.
- Preserve aesthetics.
- Maintain soils and slope stability.
- Control adverse impacts of existing development.

APPLICATION

Identify the area(s) of the municipality that would be included in a steep slope protection overlay district and a map showing those areas as an overlay to the municipal zoning map. Amend the section of the municipal zoning law which establishes zoning districts to include a new overlay district.

ADAPTED FROM THE FOLLOWING SOURCE

Town of Owasco (NY) Municipal Code, Chapter 150: Zoning, Article IIA: Environmental Protection Overlay Districts, Section 150-9.20[16]

LANGUAGE

Section X. Steep Slope Protection District

A. Purpose. The purpose of the Steep Slope Protection Overlay District is to minimize the impacts of development activities on steep slopes in the [*City/Town/Village of* ____] by regulating activities in such areas and by requiring review and permit approval prior to project commencement. The development impacts include soil erosion and sedimentation, destruction of vegetation, increased stormwater runoff rates and landslides. The regulations contained in this district are designed to minimize the disturbance or removal of existing vegetation, prevent increased erosion and stormwater runoff, maintain established drainage systems, locate

development where it is less likely to cause future slope failures and to retain, as much as possible, the natural character of these areas.

B. Delineation of district boundaries. The boundaries of the Steep Slope Protection Overlay District shall be delineated on the [*City/Town/Village of* ____] Official Maps and shall include all areas of fifteen-percent or greater slopes, and all areas within 50 feet of the toe or top of such slopes. The Planning Board may consult other information, including but not limited to the Soil Survey Map of [*insert name of county*] County, topographic maps produced by the United State Geological Survey, filed surveys and other appropriate sources, in order to more accurately locate and delineate Steep Slope Protection Overlay District boundaries.

C. Permit application.

(1) Permit required. A steep slope development permit shall be required subject to the provisions of this section and prior to the commencement of any regulated activity or the issuance of any building permit for regulated development in a designated Steep Slope Protection Overlay District.

(2) Approvals required. Steep slope development permits may be authorized by the Planning Board concurrently with subdivision and site plan approvals for which the Planning Board has jurisdiction.

(3) Application procedures.

(a) Applications for steep slope development permits shall be made in writing and filed with the Zoning Enforcement Officer on application forms available in the [*Code Enforcement/Zoning Enforcement*] office. Application packets provided to applicants shall contain an application form and instructions which shall include submittal requirements, fees, procedures and approval criteria. Application shall be made by the property owner or his/her agent and shall be accompanied by the materials and fees specified. If the [*Code Enforcement Officer/Zoning Enforcement Officer*] determines the application to be complete, the application shall be submitted to the Planning Board at its next duly called meeting following the date of the submission of the complete application. If the application is deemed to be incomplete, the [*Code Enforcement Officer/Zoning Enforcement Officer*] shall return the application to the applicant and identify the deficiencies of the application.

(b) The applicant shall submit a scaled (one inch equals 50 feet or one inch equals 100 feet) site plan, prepared and certified by a licensed engineer or land surveyor, that contains the following minimum information:

[i] A location plan and boundary line survey of the property.

[ii] The location of all [*insert name of special environmental districts, such as the Conservation District*], designated municipal open space, municipal, county or state parks.

[iii] The location of all existing and proposed buildings, structures, utility lines, sewers, water and storm drains on the property or within 200 feet of the proposed work site.

[iv] The location of all existing and proposed impervious surfaces, such as driveways, sidewalks, etc., on the property or within 200 feet of the proposed work site.

[v] Existing and proposed contour levels at two-foot intervals for the property.

[vi] Soil types on the property including erosion hazard ratings.

[vii] The location and types of all existing and proposed vegetation and shrub masses, as well as all trees with a diameter of eight inches or more within and/or adjacent to the property.

[viii] The location of all existing and proposed drainage patterns, drainageways, swales, etc., within and/or adjacent to the property.

(4) Fees. The [*City Council/Town Board/Village Board of Trustees*] may, from time to time, by resolution, establish and amend the fees for steep slope development permits. The steep slope development permit fees shall be in addition to any other fees required.

(5) Review procedures. Whenever possible, the review of activities within Steep Slope Protection Overlay Districts shall be performed concurrently with other required approvals. The Planning Board may refer the application to other appropriate boards and agencies for their review and recommendations. Such boards or agencies shall have 30 days from the date of their receipt of a completed application in which to report their recommendations. Failure for any board or agency to respond within this time frame shall not be cause for the Planning Board to postpone processing such application or action thereon. The time line for Planning Board review shall be consistent with the review time line prescribed for subdivision review if subdivision approval is required for the subject property. If subdivision approval is not required, the time line for Planning Board approval shall be consistent with the review time line prescribed for site plan review. The Planning Board shall have the authority to approve, approve with conditions or deny steep slope development permit for regulated activities subject to the standards, criteria, and other factors contained in this article.

D. Regulated activities.

(1) Clearing of or constructing on any land area within the Steep Slope Protection Overlay District, including construction or clearing activities related to providing equipment access on the site, except for those activities exempted from regulations as enumerated in Paragraph E herein.

(2) The construction or placement of any sewage disposal system, including individual sewage disposal systems septic tanks, septic drainage or leach fields.

(3) Filling, cutting or excavation operations.

(4) Discharge of stormwater and/or construction and placement of stormwater runoff systems.

E. Exempt activities. The following activities are exempt from the permit procedures of this section:

(1) Lawn care and maintenance.

(2) Noncommercial gardening activities.

(3) Tree and shrub care and maintenance.

(4) Select cutting and removal of trees in woodlots that are not located on steep slopes, for the personal use of the property owner and not for commercial purposes.

(5) Removal of dead or deteriorating vegetation.

(6) Maintenance and repair of existing structures and buildings.

(7) Emergency repair and maintenance of faulty or deteriorating sewage facilities or utility lines.

(8) Reconstruction of structures damaged by a natural disaster, provided that the new construction is of the same size and at the same location.

(9) Customary agricultural activities such as tilling of the soil, dairying, pasture, animal and poultry husbandry, apiculture, arboriculture, horticulture, floriculture, viticulture, and accessory uses secondary to that of the principal agricultural production activities, except for new or expanded structures.

(10) Public health activities, orders and regulations of the New York State Department of Health, [*insert name of county*] County Department of Health or other related agency.

(11) Drilling a water well to serve a single residence.

(12) An actual or ongoing emergency activity which is immediately necessary for the protection of life, property or natural resources.

(13) Removal of structures.

(14) Installing utility service from an existing distribution facility to a structure, where no major modifications or construction is necessary.

(15) Repair and maintenance of faulty or deteriorating sewage facilities or utility lines.

(16) Any activities associated with normal, outdoor recreational activity

(17) Activities subject to the review jurisdiction of the New York State Public Service Commission or the New York State Board on Electric Generation Siting and the Environment under the provisions of Article 7 of the New York State Public Service Law.

[*Note: Activities 13 through 17 may need coverage under the SPDES General Permit for Construction Activity if they result in a disturbance of one or more acres.]*

F. Standards for permit review.

(1) General regulations. No permit to undertake a regulated activity within a Steep Slope Protection Overlay District in the [*City/Town/Village of* ____] shall be issued unless the project complies with the following additional standards:

(a) The stable angle of repose of the soil classes found on the site shall be used to determine the proper placement of structures and other development-related facilities within the plateau area. Site-specific calculations of the stable angle of repose for the site shall be determined by an engineer or certified professional soil scientist using the soil classes and nomenclature contained in the Soil Survey of [*insert name of county*] County and obtained for the site by borings, as well as high-intensity soil survey data provided by the applicant.

(b) The stability of soils will be maintained or increased to adequately support any construction thereon or to support any landscaping, agricultural or similar activities. This shall be documented by soil bearing data provided by a qualified testing laboratory or engineer and paid for by the developer.

(c) No proposed activity will cause erosion or slipping of soil or cause sedimentation to be discharged into any stream, brook, tributary, wetlands or into [*insert name of major river or lake*].

(d) Plant life located on the slopes outside the minimum area that need to be disturbed for carrying on approved activities shall not be destroyed. Plants or other acceptable ground cover shall be reestablished in disturbed areas immediately upon completion of development activity so as to prevent any of the harmful effects set forth above to maintain the natural scenic characteristics of any steep slope.

(e) Access down steep slopes shall be provided with ramp slopes no greater than one to six and side slopes not greater than one to three if not terraced or otherwise structurally stabilized. Disturbed non-roadway areas shall be stabilized and adequately drained.

(f) There is no reasonable alternative for the proposed regulated activity on that portion of the site not containing steep slopes.

(2) Specific standards. Construction of erosion protection structures shall be permitted according to the following standards:

(a) All erosion protection structures shall be designed and constructed according to generally accepted engineering principles and the most current version of the New York State Standards and Specifications for Erosion and Sediment Control.

(b) A long-term maintenance program shall be included in any application for construction, modification or restoration of an erosion protection structure until ground cover has been reestablished. Such program shall include specifications for normal maintenance of degradable materials and the periodic removal of materials.

(c) The construction, modification or restoration of erosion protection structures shall not be likely to cause any measurable increase in erosion at the development site or other locations and prevent adverse effects to natural protective features, existing erosion protection structures and natural resources such as significant fish and wildlife habitats.

(d) Temporary erosion controls, i.e., silt fences, hydro seeding and mulching, and sediment basins as needed shall be provided for all disturbed areas, shall be installed before work begins according to New York State Standards and Specifications for Erosion and Sediment control, most current version, and shall be maintained until restoration is complete. The site plan and Stormwater Pollution Prevention Plan (SWPPP), if required, shall identify the locations and methods of erosion/siltation controls.

(e) A construction and erosion control schedule should be required from the applicant as part of the permit application. Where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the

date the current soil disturbance activity ceased. If five acres or more have been disturbed at one time and soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased.

(f) Drainage of stormwater shall not cause erosion or siltation, contribute to slope failures, pollute groundwater or cause damage to, or flooding of, property. Drainage systems shall be designed and located to ensure slope stability.

(g) Any grading, excavating or other soil disturbance conducted on a steep slope shall not direct surface water runoff over the receding (downhill) edge during construction.

(h) Removal of existing mature trees from steep slope areas will be permitted only where absolutely necessary to allow the subject construction. All trees larger than three inches in diameter to be removed shall be shown on the site plan.

(3) Prior to receiving any approval or imposing any conditions of approval, the applicant for a development permit shall have the burden of demonstrating that the proposed regulated activity will be conducted in accordance with the standards and requirements of this section, as well as any additional requirements which may be imposed by the Planning Board.

5.2 Stormwater Management and Reducing Impervious Surfaces

As impervious surfaces increase in a community, stormwater runoff also increases, carrying pollutants and causing localized flooding during storm events. There are several ways that communities can regulate the amount of impervious surfaces in new development and reduce the impact of impervious surfaces associated with that development.

First, a community can incorporate impervious surface coverage limits by district in the zoning law. A rural conservation district would have a lower percentage of impervious coverage limits than a commercial or industrial district, preferably including undisturbed natural areas. The impervious cover limits help the community realize both natural resource protection and economic development goals for their community, while reducing the impacts of stormwater runoff.

Second, a basic stormwater management local law includes incentives for reducing impervious surfaces by incorporating imperviousness in the calculation of the amount of stormwater runoff from a site. The more the designer reduces impervious surfaces in the site layout, the less cost there will be for the developer to install permanent stormwater management practices.

Third, a stormwater management law can be enhanced by adding provisions to require green infrastructure planning on a site. The New York State Stormwater Management Design Manual, Chapter 5, includes green infrastructure planning practices and design techniques that are acceptable for runoff reduction. Green infrastructure planning includes measures for preservation of natural features of the site and reduction of proposed impervious cover. While New York State has minimum requirements for use of green infrastructure in development projects of a certain size, a municipality can require green infrastructure planning and design for smaller projects or in certain resource areas important to the community. Green infrastructure captures, treats and reuses stormwater; maintains and restores the natural hydrology of a site; promotes infiltration using pervious surfaces; encourages evapotranspiration through establishment of natural vegetative features; absorbs carbon dioxide; and can provide flood control through protection of riparian buffers, floodplains and open space.

APPLICATION

Incorporate into the zoning area and bulk table a standard listing the maximum percent of impervious surface per lot (or minimum percent to remain pervious per lot) for each zoning district.

ADAPTED FROM THE FOLLOWING SOURCE

City of Saratoga Springs (NY) Zoning Ordinance, 2.0 Base Zoning Districts, Table 3: Area and Bulk Schedule[17]

LANGUAGE

Section X. Districts Area and Bulk Schedule.

Lot and building dimensional requirements are established in each zoning district as provided in Table X.

[*Note: there are additional zoning districts in the City of Saratoga Springs, these were provided for illustrative purposes only*.]

Zoning Table X: Bulk and Area Schedule		
Zoning District	Minimum Lot Size (sq. ft.)	Minimum % to Remain Permeable
RR (Rural Residential)	2 acres	80
SR-1 (Suburban Residential-1)	40,000	40
SR-2 (Suburban Residential-2)	20,000	30
UR-1 (Urban Residential-1)	12,500	30
UR-2 (Urban Residential-2)	6,000	25
HGB (Highway General Business)	20,000	15

5.3 Mitigation for Failure to Reduce Impermeable Surface Coverage

See the Basic Land Use Tools for Resiliency Chapter, Section 1.3.2 Nonconformance of Impermeable Surface Coverage.

5.4 Erosion and Sediment Control and Stormwater Management

The Federal Clean Water Act, administered by the NYS Department of Environmental Conservation (DEC) in New York State, mandates that all construction activities that disturb one acre or more of soil (or 5,000 square feet or more in the New York City watershed east of the Hudson River) must demonstrate how the site work will prevent erosion and sedimentation. Procedurally, this is accomplished by having the owner of the parcel being developed file what is called a 'Notice of Intent' (NOI) with the DEC.

In New York, local land use regulations are the framework for carrying out the construction/post-construction stormwater management program. Municipalities in urbanized areas classified as regulated Municipal Separate Storm Sewer communities or "MS4s" are required to adopt a local law or other regulatory mechanism that controls construction site erosion and post-construction stormwater runoff. Non-regulated municipalities are encouraged to adopt a similar law to reduce the impact of land development activities on stormwater runoff which causes erosion and sedimentation, and which increases flood risk. By implementing a local permitting process, a municipality can enforce good development practices and ideally protect water quality and reduce flood hazards.

To help implement stormwater controls, the DEC and the NYS Department of State (DOS) collaborated to produce the Stormwater Management Gap Analysis Workbook for Local Officials. Originally designed to evaluate Regulated MS4 local laws that were not identical to the State's Sample Local Law for Stormwater Management and Erosion & Sediment Control, it can be used by other municipalities to evaluate gaps in how they regulate stormwater.[18]

A model law was originally developed by the DEC and DOS in 2006 so that municipalities could implement local oversight of construction site and post-construction stormwater management activities. For this publication, the agencies prepared two new versions of the model law to update DEC stormwater general permit requirements, to add plug-in provisions for municipalities in impaired watersheds, and to provide optional language for municipalities desiring to increase the use of green infrastructure to improve community resiliency. For regulated MS4s municipalities, one of the two models may be used to update the required stormwater law that they currently have on the books; for non-regulated municipalities, the models are optional but are still applicable. The sample local laws may be adopted as stand-alone local laws or as amendments to existing local land use laws and ordinances and are designed to be applicable to the wide variety of existing local land use regulatory provisions found in the state.

In this section we also provide another option for communities not designated as MS4s but are desiring to provide management of stream corridors within a local erosion and sediment control law. This local law provides for more integration of an erosion and sediment control plan and stream corridor management within the local planning and approval process.

Approaches	Description
Model Stormwater Management and Erosion & Sediment Control for a Regulated MS4 Community, includes Plug-in Provisions for Impaired Waters and Enhanced Phosphorus Removal Watersheds	Designed to ensure compliance with the minimum control measures of the Stormwater Phase II Regulations for regulated MS4s, this model law could be adopted by any municipality in New York State. This model includes additional sections designed for municipalities that have impaired waterbodies within their borders that can be plugged into the model Stormwater Management and Erosion and Sediment Control Law for a Regulated MS4 Community.
Model Stormwater Management and Erosion and Sediment Control Law with Additional Provisions for Community Resiliency	Optional provisions to promote use of green infrastructure and management of riparian areas for stormwater management were developed for communities interested in addressing long-term community resilience to meet the challenges of climate change and potentially more frequent storm and flooding events. These are designed as add-ins for the State Model Stormwater Management and Erosion and Sediment Control Law.
Model Stormwater Management and Erosion and Sediment Control Law with Additional Provisions for Community Resiliency with Stream Corridor Management Provisions	An example of a sediment and erosion control law for a non-regulated MS4 that includes provisions for stream corridor management and streambank stabilization.

RESOURCES

Green Infrastructure Model Local Law Project Summary Report: Process, Findings, and Implementation. (2013). Stormwater Coalition of Albany County.[19]

5.4.1 Model Stormwater Management and Erosion & Sediment Control with Plug-in Provisions for Impaired Waters and Enhanced Phosphorus Removal Watersheds

This model local law is intended to be a guidance tool for municipalities interested in adopting a local stormwater law. The model law includes the basic requirements needed for location regulation of both erosion and sediment control during construction and installation of post-construction stormwater practices that provide long-term water quality and quantity control of stormwater runoff. This law should be used by municipalities subject to the Municipal Separate Storm Sewer System (MS4) Phase II stormwater management requirements of the National Pollutant Discharge Elimination System (NPDES) regulations, administered by New York State through the State Pollutant Discharge Elimination System (SPDES) regulations. This law may also be used by non-MS4 municipalities to regulate erosion and sediment control and stormwater management during development and redevelopment.

This model law includes additional plug-in sections included in text boxes developed specifically for adoption by municipalities with three categories of impaired waterbodies within their borders:

1. Impaired waterbodies WITHOUT watershed improvement strategies or total maximum daily load (TMDL) requirements;

2. Impaired waterbodies WITH watershed improvement strategies and/or TMDLs;

3. Certain provisions required for municipalities in the New York City Watershed East of the Hudson River.

The following link provides a PDF of this draft model law:

https://www.dec.ny.gov/docs/water_pdf/smpllocllawsedctrl.pdf

Please note that there may be revisions made to this draft when the MS4 General Permit renewal is issued by DEC. During the public review period and issuance of the MS4 General Permit renewal, please check the DEC "MS4 Toolbox" web page for the most up to date text for this Model Law at:

http://www.dec.ny.gov/chemical/8695.html

5.4.2 Model Stormwater Management and Erosion and Sediment Control Law with Additional Provisions for Community Resiliency

This model local law is intended to be a guidance tool for municipalities interested in adopting a local stormwater law that includes additional provisions to encourage site planning for green infrastructure, prevent flooding impacts, increase community resilience, and address the potential impacts of climate change. The model stormwater law includes both standard language and concepts that a good stormwater management program should contain, as well as resiliency provisions identified with a footnote to explain the purpose and/or source of the added language.

This model local law includes a review process requiring green infrastructure planning as a regular component of development approval and encourages the use of large and small-scale green infrastructure to manage stormwater. Practices include management of riparian areas such as stream buffers and floodplains, protection and conservation of natural areas, and installation of rain gardens, vegetated swales, and green roofs.

Note for Municipal Separate Storm Sewer System (MS4) Communities

There is an alternate model available with plug-in sections for impaired waters and phosphorus removal watersheds. MS4 communities may either use this model local law or "Sample Local Law for Stormwater Management and Erosion & Sediment Control with Plug-in Provisions for Impaired Waters and Enhanced Phosphorus Removal Watersheds," a separate document, as a basis for their model law. However, if a municipality that contains impaired waterbodies or enhanced phosphorus removal watersheds as identified by DEC uses this model law with resiliency provisions as a basis, they should ALSO cut and paste the applicable water quality provisions from the "Sample Local Law for Stormwater Management and Erosion & Sediment Control with Plug-in Provisions for Impaired Waters and Enhanced Phosphorus Removal Watersheds," to ensure compliance with permit requirements. (See section 5.4.3.) Alternatively, a municipality that uses the "Sample Local Law for Stormwater Management and Erosion & Sediment Control with Plug-in Provisions for Impaired Waters and Enhanced Phosphorus Removal Watersheds" as a basis for their local law can add additional provisions from this model law for green infrastructure planning, preventing flood impacts, and community resilience as desired.

The following link provides a PDF of this draft model law:

https://www.dec.ny.gov/docs/water_pdf/smplloclawresilncy.pdf

Please note that there may be revisions made to this draft when the MS4 General Permit renewal is issued by DEC. During the public review period and issuance of the MS4 General Permit renewal, please check the DEC "MS4 Toolbox" web page for the most up to date text for this model law at:

http://www.dec.ny.gov/chemical/8695.html

5.4.3 Erosion and Sediment Control Law with Stream Corridor Management Provisions

The model below is an example of a sediment and erosion control law for a municipality not regulated under the MS4 general permit that includes provisions for stream bank stabilization and stream corridor management. Chapter 2 of this document, Wetland and Watercourse Protection Measures, and Chapter 3, Management of Floodplain Development, provide more information and additional local laws on these subjects. This model does not fulfill the requirements for regulated MS4s. However, for non-regulated municipalities, this model may be useful to achieve greater oversight of construction activities and riparian protection in the community.[20]

APPLICATION

Adopt as a standalone section of the municipal code.

ADAPTED FROM THE FOLLOWING SOURCE

Town of Geneseo (NY) Municipal Code, Chapter 54 Erosion and Sediment Control[21]

LANGUAGE

Chapter X. Erosion and Sediment Control

A. Findings of fact. The [*City Council/Town Board/Village Board of Trustees of the City/Town/Village of* _____] finds that uncontrolled drainage and runoff associated with land development has a significant impact upon the health, safety and welfare of the community by potentially causing substantial recreational, aesthetic, environmental and economic losses resulting from adverse impacts on community waters, specifically:

(1) Construction requiring land clearing and the alteration of natural topography tends to increase erosion;
(2) Stormwater runoff can carry pollutants into receiving water bodies, degrading water quality;
(3) The increase in nutrients in stormwater runoff such as phosphorus and nitrogen accelerates eutrophication of receiving waters;
(4) Improper design and construction of erosion control devices can increase the velocity of runoff thereby increasing stream bank erosion and sedimentation;
(5) Siltation of water bodies resulting from increased erosion decreases their capacity to hold and transport water, interferes with navigation, and harms flora and fauna;

(6) Development as defined in this chapter and activities associated with development, as well as land grading and earth moving can have a significant and potentially adverse impact on the environment.

B. Purpose. The purpose of this chapter is to safeguard persons, protect property, prevent damage to the environment within the [*City/Town/Village of* _____], as well as all bodies of water or watercourses in the [*City/Town/Village*], and to promote the public welfare by guiding and regulating the design, construction, and maintenance of any development or other activity which disturbs or breaks the topsoil or results in the movement of earth on land in the [*insert name of watershed*], or any other watershed potentially impacted by such activities in the [*City/Town/Village of* _____].

C. Conformance required. All site preparation, construction and development activities as defined hereinafter occurring in the [*City/Town/Village of* _____] shall be in conformance with the provisions set forth herein.

D. Word usage; definitions.

(1) Unless specifically defined below, words or phrases shall be interpreted so as to give them the meanings they have in common usage and to give this chapter its most effective application. Words used in the singular shall include the plural and the plural the singular; words used in the present tense shall include the future tense. The word "shall" connotes mandatory and not discretionary; the word "may" is permissive.

(2) As used in this chapter, the following terms shall have the meanings indicated:

Agricultural Operations (as defined in Article 25AA of the NYS Agriculture and Markets Law): Land and on-farm buildings, equipment and practices which contribute to the production, preparation and marketing of crops, livestock and livestock products as a commercial enterprise.

Certificate of Compliance: A written certificate that is issued to the applicant by the Code Enforcement Officer after all final grading and seeding is completed and all permanent erosion control measures are established as specified in the erosion control permit and to the satisfaction of the Code Enforcement Officer.

Certified Professional: A licensed engineer, a licensed landscape architect, or an International Erosion Control Association (IECA) certified professional in erosion and sediment control.

Develop: To make a site or area available for use by physical alteration.

Development: Any physical alteration of a site or area, including, but not limited to, providing access to a site, clearing of vegetation, grading, earth moving, providing utilities

and other services such as parking facilities, stormwater management and erosion control systems, and sewage disposal systems, altering landforms, or construction of a structure on the land.

Erosion: The removal of soil particles by the action of the water, wind, ice or other geological agents.

Erosion Control Permit: A permit that is issued by the Code Enforcement Officer before any development and/or land clearing activities can occur on a site.

Erosion Control Plan: A document prepared by a certified professional that identifies predevelopment and postdevelopment conditions on a site and outlines the erosion control measures that will be used on a site. This document is required for projects exposing more than 10,000 square feet of soil.

Floodplain: For a given flood event, that area of land temporarily covered by water which adjoins a watercourse. [*The municipality may wish to substitute a more specific definition for defined flood events]*

Garden: A plot of ground where herbs, fruits, flowers, or vegetables are cultivated, excluding agricultural operations as defined herein.

Gabion: A galvanized wire basket filled with stone used for structural purposes. When they are fastened together, they are used as retaining walls, slope protection and similar structures.

Grading: Excavation or fill of material, including the resulting conditions thereof.

Natural Drainage Channel: A swale, watercourse in a gully, or an unprotected stream.

Performance Standards: The set of standards outlining the erosion control requirements for construction and soil disturbing activities.

Perimeter Control: A barrier that prevents sediment from leaving a site either by filtering sediment laden runoff or diverting it to a sediment trap or basin.

Phasing: Clearing a parcel of land in distinct phases, with the stabilization of each phase occurring before the clearing of the next.

Riprap: A combination of large stone, cobbles and boulders used to line channels, stabilize stream banks, and reduce run off velocities.

Stabilization: The use of practices that prevent exposed soil from eroding.

Start of Construction: The first land disturbing activity associated with a development, including land preparation such as clearing, grading and filling; installation of streets, driveways, parking areas and walkways; excavation for basements, footings, piers or foundations; erection of temporary forms; and installation of accessory buildings such as garages.

Steep Slope: Grade change of 15% or more.

Stop-Work Order: A written order issued by the Code Enforcement Officer to cease and desist all activity and development on a site until such time as the violation is corrected.

Stream Corridor: The landscape features on both sides of a stream, including soils, slope and vegetation, whose alteration can directly impact the stream's physical characteristics and biological properties.

Swale: A natural or man-made depression or wide shallow ditch used to temporarily route or filter runoff.

Utilities: Public and private services, including, but not limited to, public water and sewer connection, private wells and septic systems, and telephone, natural gas, electric, and cable television services.

Watershed: A region or area bounded by a greater elevation and draining ultimately to a particular body of water.

E. Applicability of provisions.

(1) This chapter shall apply to all development, as defined herein, which involves the uncovering, exposure or disturbance of 500 or more square feet of soil. Excepted herefrom are agricultural operations, whether or not within an agricultural district, as defined in Article 25AA of the New York State Agriculture and Market Laws, and private gardens.

(2) No person, corporation, entity, organization, or public agency shall initiate any development activities, land clearing, land grading, or earthmoving activities (hereinafter also collectively referred to as "land disturbance activity") unless in conformity with the regulations of this chapter.

(3) No person, agency, corporation or other entity shall commence any development or land disturbing activities without obtaining an erosion control permit issued by the Code Enforcement Officer.

(4) No person shall be granted an erosion control permit for land disturbing activity that would require the disturbance or uncovering of 10,000 or more square feet without the approval of an erosion control plan by the Planning Board.

(5) Exemptions. The following activities are exempt from the erosion control plan requirements but must comply with the performance standards listed in Paragraph I herein and have the applicable erosion control measures approved by the Code Enforcement Officer:

(a) Development or land disturbing activities involving at least 500 square feet of soil, but less than 10,000 square feet of soil;
(b) Development involving less than one acre of soil disturbance of one single-family residential structure or one duplex unit and accessory structures and utilities thereto;
(c) The installation of a lawn involving less than one acre of soil disturbance for one single-family residential structure; and
(d) The installation of a driveway involving less than one acre of soil disturbance for one single-family residential structure.
(e) The installation of all septic systems which are subject to the review, inspection and/or approval of the [*insert name of county*] County Department of Health.

(6) NYSDEC Phase II stormwater requirements. Developing an erosion control permit or plan that complies with the requirements of this chapter herein does not relieve an operator from the obligation of complying with stormwater management requirements of the NYSDEC Phase II Stormwater Program having jurisdiction over the project.

F. Erosion control permit; inspections; certificate of compliance; certificate of occupancy.

(1) Erosion control permit.

(a) An applicant shall submit an erosion control permit application to the Code Enforcement Officer, who shall inform the applicant within [*insert number of days, such as ten*] if the application is incomplete.

(b) The Code Enforcement Officer shall refer all complete erosion control permit applications for lands within the [*insert name of watershed district*] to the [*insert name of watershed district*] Inspector within seven days of receipt for review and comment.

[i] The Watershed Inspector shall have *[insert number of days, such as fourteen*] to comment on the application and return those comments to the Code Enforcement Officer; and

[ii] The Code Enforcement Officer shall consider comments from the Watershed Inspector if the comments are received within this period of time.

(c) If an erosion control plan is not required, the Code Enforcement Officer shall review the application to determine whether the proposed erosion control measures comply with the performance standards outlined in Paragraph I hereof and approve or deny the erosion control permit based on that review. A preconstruction meeting with the Code Enforcement Officer, the Watershed Inspector, and the applicant may be required prior to the issuance of an erosion control permit.

(d) If an erosion control plan is not required, an erosion control permit must be approved or denied within 60 days of receipt of a complete erosion control application by the Code Enforcement Officer.

(e) Issuance of an erosion control permit does not authorize development of the site unless and until all other applicable permits or approvals, including a building permit, are issued pursuant to federal, state and local law.

(2) Inspections. The applicant shall arrange with the Code Enforcement Officer for scheduling inspections of the site. The Code Enforcement Officer shall inspect the work and either approve it or notify the applicant in writing of any failure to comply with the requirements of the approved erosion control plan and/or erosion control permit. The Code Enforcement Officer and the Watershed Inspector may conduct inspections at reasonable times to ensure effective control of erosion and sedimentation during all phases of construction. The Code Enforcement Officer may have the [*City/Town/Village*] Engineer assist with onsite inspections. If the [*City/Town/Village*] engages an engineer to consult on an inspection, the applicant shall be responsible for the cost of such consultation, pursuant to [*insert section number of municipal code allowing for charging of fees*] of the [*City/Town/Village of* _____].

(3) A certificate of compliance shall be issued by the Code Enforcement Officer after all final grading and seeding are completed and all permanent erosion control measures are established as specified in the erosion control permit and to the satisfaction of the Code Enforcement Officer.

(4) A permanent certificate of occupancy shall not be issued until a certificate of compliance is issued for the satisfactory installation and/or completion of erosion control measures.

G. Contents of erosion control plan.

(1) Erosion control plans shall be prepared by a person that is knowledgeable in the principals
and practices of erosion and sediment control, and stormwater management; such as a licensed professional engineer, Certified Professional in Erosion and Sediment Control (CPESC), or a licensed landscape architect. Plans must contain the information set forth in this section to enable the [*City/Town/Village*] Planning Board to determine whether the plan will prevent the development from adversely affecting the water quality of the surface water due to erosion. In making this determination, plans shall be evaluated pursuant to the performance standards in Paragraph I hereof and must therefore contain sufficient information to permit such evaluation.

(2) The erosion control plan shall contain the name, address, and telephone number of the owner, contractor, and developer. In addition, the legal description of the property shall be provided, and its location with reference to such landmarks as major water bodies, adjoining roads, railroads, subdivisions, or municipalities shall be clearly identified on a map.

(3) The structure and content of the erosion control plan shall be as follows:

(a) Background information.

[i] Project description which shall include, but not be limited to, a sequence of construction of the development site, including stripping and clearing, rough grading, construction of utilities, infrastructure, and buildings, and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, and the sequence of clearing, installation of temporary erosion and sediment measures, and establishment of permanent vegetation.
[ii] Existing (predevelopment) conditions, including, but not limited to, an identification of soils, slopes, and existing vegetative cover and drainage conditions.
[iii] Proposed future (development) conditions, including, but not limited to, an identification of drainage conditions and changes in vegetative cover anticipated to result from the proposed activity.

(b)Erosion and sediment control.

[i] Identification of temporary erosion and sediment control measures, including, but not limited to, seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, and type and quantity of mulching for both temporary and permanent vegetative control measures.
[ii] Identification of permanent erosion and sediment control measures.

[iii] Implementation schedule and maintenance, including, but not limited to, easements and estimates of the cost of maintenance.
[iv] All erosion and sediment control measures shall be designed and installed according to the most current version of the New York State Standards for Erosion and Sediment Control.

H. Erosion control plan review process.

(1) The applicant shall submit a complete erosion control plan to the Code Enforcement Officer.

(2) The Code Enforcement Officer shall inform the applicant in writing within 14 days if the erosion control plan is incomplete. The erosion control plan shall automatically be deemed complete if the Code Enforcement Officer does not inform the applicant within 14 days.

(3) When the erosion control plan is determined to be complete, the Code Enforcement Officer shall then schedule it for review at the next available Planning Board meeting, to be held not later than 31 days after the erosion control plan is determined to be complete.

(4) All erosion control plans for development in the [*insert name of watershed*] must be referred to the [*insert name of watershed*] Inspector for review and comment within seven days of Code Enforcement Officer receipt of the plan. Comments received from the [*insert name of watershed*] Inspector prior to the Planning Board meeting will be considered by the Code Enforcement Officer and the Planning Board.

(5) The applicant shall receive written notice of the time and place of the Planning Board meeting where the erosion control plan will be reviewed no less than five days prior to the Planning Board meeting.

(6) An erosion control plan shall also be reviewed by the [*City/Town/Village*] Engineer or any other certified professional retained by the [*city/town/village*]. The Engineer or certified professional may then recommend approval or disapproval of the plan to the Planning Board prior to the scheduled Planning Board meeting where the plan will be discussed. A recommendation for approval or disapproval of the plan must be based on conformance to the performance standards listed in Paragraph I.

(7) The Planning Board shall have the authority to impose reasonable conditions to ensure that the objectives of this chapter are met.

(8) The Planning Board shall approve or disapprove the erosion control plan. Approval or disapproval of the plan must be based on conformance to the performance standards listed in Paragraph I, so as to protect the water quality of waterbodies in the

[*city/town/village*], and should clearly identify why it does not, in the instance of a disapproval, conform to the performance standards.

(9) The Planning Board shall report the decision to the Code Enforcement Officer and the applicant within 10 days of approval or disapproval of the plan.

(10) If the erosion control plan is approved, the Code Enforcement Officer shall issue the applicant an erosion control permit within 10 days of receipt of the Planning Board decision.

I. Performance standards. The following performance standards must be applied to all land disturbing activities described in this chapter, including those exempted under Paragraph C hereof, as well as those for which a permit is required hereunder:

(1) Existing vegetation on a project site shall be retained and protected as much as possible to minimize soil loss from the project site.

(2) Sediment control practices/measures shall be designed to protect the natural character of water bodies on-site as well as off-site. The practices must be in place before the start of land disturbance activities until the establishment of permanent stabilization.

(a) The off-site impacts of erosion and sedimentation from the development site shall not be any greater during and following land disturbance activities than under predevelopment conditions.

(b) Water in stream reaches on-site and downstream of construction areas shall not have substantial visible contrast relative to color, taste, odor, turbidity and sediment deposition from the water in reaches upstream of the construction area.

(c) Sediment laden runoff shall not be allowed to enter any water body and result in deposition on the bottom of the water body, degrade its natural biological functions, or be deleterious to the classified usage of the water.

(3) All erosion and sediment control measures shall be constructed prior to beginning any land disturbance activities. All runoff from disturbed areas shall be directed to sediment control devices. These devices shall not be removed until the disturbed land areas are stabilized.

(4) Specific guidance.

(a) Exposure restrictions. No more than five acres of unprotected soil shall be exposed at any one time. Previous earthwork shall be stabilized in accord with approved design standards and specifications referenced in Paragraph I (4)(h) before additional area is exposed.

(b) Grading. Perimeter grading shall blend with adjoining properties.

(c) Vegetative protection. Where protection of trees and/or other vegetation is required, the location shall be shown on the erosion control plan or on the drawings for the proposed development project. The method of protecting vegetation during construction shall conform to the design specifications referenced in Paragraph I (4)(h).

(d) Drainage control.

[i] Surface runoff that is relatively clean and sediment free shall be diverted or otherwise prevented from flowing through areas of construction activity on the project site. (This will greatly reduce sediment loading in surface runoff.)

[ii] A fill associated with an approved temporary sediment control structure or permanent stormwater management structure shall not be created which causes water to pond off-site on adjacent property, without first having obtained ownership or permanent easement for such use from the owner of the off-site or adjacent property.

[iii] Natural drainage channels shall not be altered. Pursuant to Article 15 of the Environmental Conservation Law, a protected stream and banks thereof shall not be altered or relocated without the approval of the Department of Environmental Conservation.

[iv] Runoff from any land disturbing activity shall not be discharged or have the potential to be discharged off-site or into storm drains or into watercourses unless such discharge is directed through a properly designed, installed and maintained structure, such as a sediment trap, to retain sediment on-site. Accumulated sediment shall be removed when it takes up 50% of the storage capacity of the sediment retention structure, or as specified according to Paragraph I (4)(h) below.

[v] For finished grading, adequate gradients shall be provided so as to prevent water from standing on the surface of lawns for more than 24 hours after the end of a rainfall, except in a swale flow area which may drain as long as 48 hours after the end of rainfall.

[vi] Permanent swales or other points of concentrated water flow shall be stabilized. Biotechnical approaches using certain types of grasses, such as reed canary grass, are preferable to using sod, gabions and riprap where water quality enhancement is a high priority and the swale design allows. However, sod, gabions, or riprap may be used to stabilize swales where soils and gradient preclude the use of grasses. Use of grasses may require an erosion control matting as provided for in the design specifications referenced in Paragraph I (4)(h) below.

[vii] Surface lows over cut and fill slopes shall be controlled as provided for in the design specifications for vegetating waterways referenced in Paragraph I (4)(h).

(e) Timing.

[i] Except as noted below, all sites in sensitive areas, including, but not limited to, the [*insert watershed name*], may be required to be seeded and mulched with erosion control materials such as rye grass, straw mulch, jute, or excelsior (wood shavings) within 14 days of initial disturbance. If construction has been suspended, or sections completed, areas shall be seeded immediately and stabilized with erosion control materials. Maintenance shall be performed as necessary to ensure continued stabilization.

[ii] For active construction areas, such as borrow or stockpile areas, roadway improvements, and areas within fifty (50) feet of a building under construction, a perimeter sediment control system consisting of silt fencing as provided for in the design specifications referenced in Paragraph I (4)(h) below shall be installed and maintained to contain soil.

[iii] On cut sides of roads, ditches shall be stabilized immediately with rock riprap or other nonerodible liners or, where appropriate, vegetative measures such as sod. When seeding is approved, an anchor mulch shall be used and soil shall be limed and fertilized in accord with recommendations referenced in Paragraph I (4)(h).

[iv] Permanent seeding shall optimally be undertaken in the spring from April 1 through June 15, and in late summer from August 1 to October 15. During the peak summer months and in the fall after October 15 when seeding is found to be impracticable, an appropriate mulch shall be applied. Permanent seeding may be undertaken during summer if plans provide for adequate watering of the seedbed.

[v] All slopes steeper than 15%, as well as basin or trap embankments, and perimeter dikes shall, upon completion, be stabilized with sod, seed and anchored straw mulch, or other approved stabilization measures. Areas outside of the perimeter sediment control system shall not be disturbed. Maintenance shall be performed as necessary to ensure continued stabilization.

[vi] Temporary sediment trapping devices shall be removed within 30 calendar days following establishment of permanent stabilization in all contributory drainage areas. Stormwater management structures used temporarily for sediment control shall be converted to permanent stormwater management practices using the standards referenced in Paragraph I (4)(h) within this time period as well. Accumulated sediments removed from temporary sediment traps or permanent stormwater

management facilities shall be disposed in a manner so as not to erode and enter a water body.

(f) Stream corridor management. The bed and banks of all on-site and off-site streams which may be impacted by land clearing, grading, and construction activities shall be protected to prevent sedimentation, stream bank erosion, stream enlargement, or degradation or loss of fisheries habitat. Measures for protecting the bed and/or banks of a stream may include gabion baskets, riprap, log cribbing, and vegetative measures. Whenever possible, vegetative stream bank stabilization practices are recommended over structural practices, such as riprap and gabion linings, that may unnecessarily alter the existing stream ecosystem. Native species of vegetation shall be used for stream bank stabilization wherever practical. In undertaking stream bank stabilization activities for protected streams, the applicant shall comply with appropriate protection of water provisions in Article 15 of the Environmental Conservation Law of the State of New York.

(g) Maintenance.

[i] All points of construction ingress and egress shall be protected to prevent the deposition of materials onto traversed public thoroughfares either by installing and maintaining a stabilized construction entrance or by maintaining a vehicle wash area in a safe disposal area to wash vehicle shells and undercarriage. All materials deposited onto public thoroughfares shall be removed immediately. Proper precaution shall be taken to assure that the removal of materials deposited onto public thoroughfares will not enter catch basins, storm sewers, or water bodies.
[ii] Accumulated sediment shall be removed when 50% of the storage capacity of sediment retention structures is reached, or according to the specifications in Paragraph I 4(h) below. All removed sediment shall be disposed of in a spoil area where it can be graded, mulched and seeded to prevent erosion and sedimentation.

(h) Design standards/documents. The designs, standards and specifications for controlling erosion and sedimentation found in the most recent version of the following publication should be used and shall be identified and shown in the Erosion Control Plan: NYS Standards and Specifications for Erosion and Sediment Control. For conversion of temporary sediment control structures to permanent practices the standards in the New York State Stormwater Management Design Manual should be used.

K. Performance bond.

(1) In order to ensure the full and faithful completion of all construction activities related to compliance with all conditions set forth by the Planning Board in its approval of the erosion control plan, the Planning Board may require the applicant and/or the applicant's contractor to provide, prior to construction, a performance bond, escrow account certification, or irrevocable letter of credit from an appropriate financial or surety institution which guarantees satisfactory completion of the project and names the [*city/town/village*] as the beneficiary. The security shall be in an amount to be determined by the Planning Board based on submission of final design plans, with reference to actual construction costs.

(2) Where erosion and sediment control facilities are to be operated and maintained by the applicant or by any person or entity that owns or manages a commercial or industrial facility, the applicant, prior to construction, may be required to provide the [*city/town/village*] with a performance bond or an irrevocable letter of credit from an appropriate financial institution or noted surety to ensure proper operation and maintenance of all erosion control facilities for the life of the project.

(3) The performance bond or letter of credit shall remain in force until the surety is released from liability by the [*city/town/village*].

(4) Per annum interest on the performance bond or letter of credit shall be reinvested in the account until the surety is released from liability.

(5) If the developer or owner fails to properly operate and maintain erosion and sediment control facilities, the [*city/town/village*] may draw upon the account or notify the surety to cover the costs of proper operation and maintenance.

L. Enforcement.

(1) Any development activity that is commenced without first being granted an erosion control permit, or which is conducted contrary to an approved erosion control plan, or contrary to the performance standards listed in Paragraph I hereof may be issued a notice of violation and restrained by a stop-work order issued by the Code Enforcement Officer.

(2) Service of a notice of violation shall be sufficient if directed to the owner, agent of the owner or contractor and left at his or her last known place of business or residence, if within the municipality; and if no place of business or residence can be found, then the notice shall be served by posting in a conspicuous place on the premises which is the subject of the violation.

(3) A stop-work order shall also be issued on the project if any of the following conditions are not met during development of the land:

(a) There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
(b) There shall be no suspended, colloidal and settleable solids that will cause deposition or impair waters in the area for their best usages; and
(c) There shall be no residue from oil and floating substances, visible oil film, globules, or grease (6 NYCRR, Part 703, Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations).

(4) Civil and criminal penalties. In addition to or as an alternative to any penalty provided herein or by law, any person who violates the provisions of this chapter shall be punished by a fine of not less than $200 per day nor more than $1,000 per day or by imprisonment for a period not to exceed 60 days, or by both such fine and imprisonment. Such person shall be guilty of a separate offense for each day during which the violation occurs or continues.

(5) Any violator may be required to restore land to its undisturbed condition. In the event that restoration is not undertaken within a reasonable time after notice, the [*city/town/village*] may institute an action or proceeding in a court of competent jurisdiction to compel compliance with this chapter, including restoration of land to its undisturbed condition, or for any other legal remedy available at law.

M. Appeals. Any person aggrieved by the action of any official charged with the enforcement of this chapter, as the result of the disapproval or approval of an erosion control permit or an alleged failure by the Code Enforcement Officer to properly enforce the chapter in regard to a specific application, shall have the right to appeal the action to the Zoning Board of Appeals. The appeal shall be filed in writing within 20 days of the date of official transmittal of the final decision or determination to the applicant, shall state clearly the grounds on which the appeal is based, and shall be processed in the manner prescribed for hearing appeals under State law.

N. Variances. The Zoning Board of Appeals may grant a written variance from any requirement of this chapter using the following criteria:

(1) There are special circumstances uniquely applicable to the subject property or its intended use; and
(2) Such special circumstances render it impossible or impracticable for the applicant to develop the subject lands in compliance with some or all of the provisions of this chapter; and
(3) The granting of the variance shall not:

(a)Result in an increase or decrease in the rate or volume of surface water run-off;
(b) Result in an adverse impact on a wetland, watercourse or water body;
(c) Result in degradation of water quality; or
(d) Otherwise impair attainment of the objectives of this chapter.

5.5 Stormwater Utility

To raise money to help offset, or completely offset, the costs of stormwater management programs, municipalities may establish a stormwater utility under the authority given in New York State Municipal Home Rule Law. This funding mechanism enables a municipality to assess a fee on property-owners to pay for the management of stormwater. It is an alternative to relying on property taxes, which don't accurately reflect stormwater generated by the property, and which exclude tax-exempt properties from contributing toward the costs of managing stormwater flowing off their properties. In addition to establishing a dedicated fund, a stormwater utility program can be set up to incentivize the use of green infrastructure by residents and businesses alike through credits.

There are four components that municipalities must carefully consider: (1) What kind of fee will be charged, (2) What the fee rate will be, (3) Whether credits will be provided, (4) Public support.

There should be a reasonable relationship between the costs incurred in providing stormwater services and fee charged to the rate payer. Because it is impractical to measure stormwater runoff, and because there is usually no relationship between metered water flow and stormwater runoff generated on a property, stormwater charges are established based on other measures such as a property's pervious and/or impervious areas. According to a national stormwater utility survey conducted in 2014 by Black & Veatch, over 90% of the survey participants indicated that they use actual and/or effective impervious area as the basis of charges.[22]

Credits and exemptions built into a stormwater utility law can promote best management practices and increased acceptance of stormwater utility fees. Utility fee credits can be offered to reward stormwater management practices such as the use of porous or permeable surfaces or installation of rain gardens. They can also be tied to the maintenance of stormwater management structures by requiring certification on an annual basis that the improvements exist in working order to maintain eligibility for the credit. The municipality determines the amount of the credit, the kinds of properties it will apply to, and eligible types of interventions. Credits should be clearly described and can include installation of approved best management practices such as retention/detention basins, rainspout disconnections and porous pavers.

A credit is a percentage reduction (the credit rate) in the yearly fee for landowners who install eligible improvements. Municipalities may offer them to nonresidential parcels (including multifamily and condominiums), residential parcels, or both. However, as the number of residential lots often greatly exceeds the number of nonresidential lots, some municipalities may find that including residential lots in the credit system would be too great an administrative burden. An alternative might be to only make residential lots above a certain square footage eligible for credits. The City of Ithaca, from where this model law was adapted, chooses not to offer residential credits due to the administrative burden of calculating these credits.

In determining credits, the municipality must weigh the benefits associated with public participation in the credit program against the corresponding revenue loss. Ideally, credits should be valuable so that they encourage a desirable level of public engagement in the credit program, but not too valuable as to significantly cut the stormwater utility's revenue.

The credit rate is unique to each municipality, as it depends on the municipality's stormwater utility fees and cost of stormwater management. Credit rates commonly range from 50 to 75 percent, but higher or lower percentages were also reported in the Black & Veatch survey cited above.

Mitigation Measures on List of Approved Stormwater User Fee Credits in the City of Ithaca (NY)

Rain Garden	Porous Pavement	Stormwater Wetland
Green Roof	Bioretention	Stormwater Infiltration
Stormwater Planter	Stormwater Pond	Stormwater Filters
		Open Channel

Mitigation measures are reviewed and approved by the city Board of Public Works. Approved mitigation measures are described in the application with reference to the NYS Stormwater Management Design Manual. Access the application at: https://www.cityofithaca.org/DocumentCenter/View/2111/Stormwater-User-Fee-and-Credit-Application-FINAL-1?bidId&_sm_au_=iVVwQqRjvMPwMnjf

Certain types of land uses can be exempted from the fees in recognition of their contribution to an effective stormwater system. For example, municipalities that calculate the utility fee using impervious area could offer an exemption to undeveloped (100 percent pervious) land. The following model law establishes a utility fee that only applies to developed lots.

When enacting a local law, the municipality should include a section on findings or intent. These findings don't typically show up in the municipal code book but become an important part of the public record in the event the local law is challenged. The findings portion of a stormwater utility local law should include the following items:

- Reference to the authority to enact the ordinance. New York State Municipal Home Rule Law Section 10(1)(ii)(a)(9-a) enables the municipality to provide for the "The fixing, levy, collection and administration of local government rentals, charges, rates or fees, penalties and rates of interest thereon, liens on local property in connection therewith and charges thereon." In addition, Town Law, Article 12 authorizes towns to establish watershed protection improvement district(s), and Town Law, Article 12-C authorizes town boards to provide for water and drainage improvements and establishes procedure

for taking action. Similarly, Village Law, Article 4, Section 4-412(3)(1) authorizes village boards of trustees to construct and maintain drains, culverts, dams, bulkheads, and dredge channels, and to regulate watercourses, for the purpose of arresting and preventing damage to property resulting from floods or erosion.

- The cost of managing stormwater incurred by the municipality.

- A discussion of equity that will be achieved through the stormwater utility. The City of Ithaca (NY), from which this model was adapted, found that "[e]very parcel of real property that contains impervious surface areas, both public and private, uses and benefits from the maintenance of the stormwater system. . . Properties with large, impervious surfaces, such as parking lots, are often assessed at a lower value for property tax purposes than smaller properties with a residential building surrounded largely by pervious surfaces, even though the former properties have a much larger effect on the City's stormwater infrastructure. As a result, the costs of stormwater services required to meet the City's regulatory obligations, increase waterway quality, and protect City residents and businesses from flooding are not currently shared by each property in proportion to the demands it places on such services."[23]

- A discussion of future need. Ithaca described in its local law findings, intent, and purpose the need for a dedicated source of funds to pay the costs incurred by the city for stormwater services and infrastructure, compliance with new federal and state stormwater regulations, and increases in overall precipitation and heavy precipitation events that have occurred and are anticipated due to climate change.

When considering a stormwater utility, municipalities should undertake extensive public outreach and education at the beginning of the process to demonstrate why a proposed fee is necessary, and how a well-funded stormwater program can help reduce flooding, improve drought conditions, create better fishing and recreation, and improve water quality. Public support has proved to be extremely important for the success of a new stormwater utility fee.[24] After adoption of the stormwater utility, the municipality should make customers aware of their estimated fees well before the first bills are issued and provide a means to address customer inquiries.

RESOURCES

Stormwater User Fee FAQs. City of Ithaca. [25]

City of Ithaca Stormwater User Fee Revision/Credit Application. City of Ithaca, NY. [26]

Funding Stormwater Programs. (2009). EPA 901-F-09-004.[27]

Stormwater Utility Fees: Considerations and Options for Interlocal Stormwater Working Group (ISWG). (2005). New England Environmental Finance Center.[28]

APPLICATION

Adopt as a standalone chapter in the municipal code

ADAPTED FROM THE FOLLOWING SOURCE

City of Ithaca (NY) Municipal Code, Chapter 283: Stormwater Utility[29]

LANGUAGE

Chapter X. Stormwater Utility

Section 1. Definitions.

Credit Rate. The scaling factor that shall be applied in the calculation of stormwater user fee credits. For structures or practices that, as determined by the superintendent, are anticipated to provide:

(i) both treatment quality and quantity attenuation, the credit rate shall be [*insert percent, such as 20%*];

(ii) either treatment quality or quantity attenuation, the credit rate shall be [*insert percent, such as 10%*].

Developed Lot. A lot which has an impervious surface area greater than or equal to [*insert percent, such as 25%*] of an Equivalent Residential Unit.

Equivalent Residential Unit ("ERU"). The average amount of impervious surface area on a residential property in the [*City/Town/Village*], as determined by the [*City Council/Town Board/Village Board of Trustees*].

Impervious Surface. Any surface on a lot that, because of the surface's composition or compacted nature, impedes or prevents natural infiltration of water into the soil, including, but not limited to, roofs, solid decks, driveways, patios, sidewalks (other than public walks located in the [*City/Town/Village*]'s right-of-way), parking areas, tennis courts, concrete, asphalt, or crusher/run streets or paths, or compacted gravel or dirt surfaces, as determined by the [*insert name of department, such as Planning or Public Works Department*].

Impervious Surface Area. As recorded or calculated by the [*insert name of department, such as Planning or Public Works Department*], the number of square feet of horizontal surface on a Lot covered by an impervious surface.

Lot. Lot or parcel of land, as set forth by the current [*City/Town/Village*] Tax Maps on file with the _____County Department of Assessment.

Non-Residential Lot. All developed lots other than residential lots.

Property Class Code. The property type classification code, as defined by the New York State Office of Real Property Services in the Assessors' Manual, assigned to a lot by the _____County Department of Assessment, as may be updated by that Department from time to time.

Property Owner or Owner. The owner of a lot as shown on the ____County tax records.

Note: Identifying Impervious Surface Area

A combination of data is used to identify impervious surface area.

- Geographic Information System (GIS) data and aerial photos are used to distinguish impervious surfaces and pervious surfaces
- Building permit data is used to update lot records between aerial photo updates
- Property owners can contest the amount of impervious surface area by submitting drawings showing revised calculations. If verified by the Department of Public Works, lot records will be updated.

Residential Lot. A developed lot with a property class code of 210, 215, 220, 230, 240, 250, or 270, or substantially identical successor designations.

Stormwater. The runoff from all forms of precipitation that travels over natural or developed surfaces to the nearest stream, other conduit, or impoundment and appears in lakes, rivers, ponds, or other bodies of water.

Stormwater Services. The [*City/Town/Village*]program for protection of stormwater quality and for the partial control and conveyance of stormwater, including, but not limited to: public education; monitoring, removing, and regulating stormwater pollutants; other activities described in the [*City/Town/Village*]'s SPDES permit; mapping; planning; regulating, reviewing and inspecting private stormwater infrastructure; operating, constructing, improving, cleaning, and maintaining the [*City/Town/Village*]'s stormwater system; and any and all expenses deemed reasonably necessary to the management of stormwater within the [*City/Town/Village*] in the judgment of the [*insert title of local official, such as Director of Public Works*], as instructed from time to time by the Stormwater Utility Board, including but not limited to the payment of debt principal and debt service, and the establishment of a reserve fund, to pay for these services.

Stormwater System. The system of natural and constructed conveyances for collecting and transporting stormwater, including but not limited to lakes, ponds, rivers, perennial, intermittent, and/or channeled streams, connected wetlands, open ditches, catch basins and other inlets, pipes, sewers, drains, culverts, and created stormwater management facilities that provide partial treatment by passive means such as wet detention ponds, detention basins, and stormwater wetlands.

Stormwater User Fee. The fee charged for costs incurred by the [*City/Town/Village*] in providing stormwater services.

Stormwater Utility Board. A board comprised of [*insert description of board, such as members of the City Council/Town Board/Village Board of Trustees*].

Superintendent. The [*insert title of official in charge of the Public Works Department]*, or his or her designee.

Treatment Efficiency. As determined by the Superintendent, the calculated effectiveness, expressed as a percentage of total possible effectiveness of an ideal stormwater management practice or structure, of a stormwater management practice or structure designed to remove a desired component through quality treatment, quantity attenuation, or both, as applicable.

Section 2. Stormwater User Fees.

A. Each developed lot in the [*City/Town/Village*] shall be subject to a monthly stormwater user fee equal to the product of [*insert number in dollars*] and the number of ERUs of impervious surface area on the lot as calculated below, less any credits for the lot approved by the Superintendent pursuant to Section 3.

(1) Every residential lot, and each non-residential lot with an Impervious Surface Area less than or equal to one ERU, shall be deemed to have an impervious surface area equal to one ERU.

(2) The number of ERUs of impervious surface area on a non-residential lot with an impervious surface area greater than one ERU shall be calculated by dividing the lot's impervious surface area by the value of one ERU, and rounding the result up to the nearest one-quarter of an ERU.

(3) At least once every five years the municipality will revisit the user fee to adjust for inflation, changes in the cost of stormwater management, and other factors.

B. Equivalent Residential Unit.

(1) An Equivalent Residential Unit is equal to [*insert number*] square feet.

(2) At least once every five years, the Superintendent shall report to the [*City Council/Town Board/Village Board of Trustees*] and Stormwater Utility Board regarding changes in the average impervious surface areas of residential lots. [*Note: delete if not measuring impervious surfaces.]*

C. Measurement of Impervious Surfaces. The amount of impervious surface area shall be recorded or calculated by the [*insert name of department, such as Planning or Public Works Department*].

(1) Any owner may file an application with the Superintendent contesting the calculation of impervious surface area on the lot as of the date of the application. The applicant must submit satisfactory evidence as required by the Superintendent, such as square footage measurements and descriptions of the relevant buildings or materials. For applications submitted prior to [*insert date*], any approved changes in calculations will take effect retroactive to [*insert date*]. For all other applications, any approved changes in calculations will take effect on the first day of the billing period beginning after the application was submitted, even if retroactive as of date of

Note: User Fees

Choosing an Appropriate User Fee Structure

The approach used in this model local law is based on impervious surface area and ERU and is a combination of flat and variable rate fees. In this model, each residential property pays a flat fee, regardless of impervious surface area, and every non-residential property has a fee based on the ratio between existing impervious surface area and one ERU. In order to calculate the fee in this way, geographic information systems (GIS) analysis will be needed.

In the United States, the average fee for a single-family residence ranges from $2 to $40 per quarter.

Setting an Appropriate User Fee

Under this model, the municipality must set a user fee for each ERU. Two broad principles provide guidance in setting the fee:

- The aggregate fee should equal the cost of providing stormwater services to the community.
- The fee per ERU can be calculated by dividing the stormwater budget by the total number of ERUs of impervious space in the area.

For example:

Stormwater Budget = $5000

Total Impervious Space within municipal borders = 1000 ERUs

$5000 Budget/1000 ERUs = $5 per ERU stormwater fee

approval; no refunds or credits shall be granted for amounts billed prior to submission of the application. The applicant may appeal the determination of the Superintendent as set forth in Section 5(A).

(2) The Superintendent shall endeavor to update the impervious surface data in the [*City/Town/Village*]'s geographic information systems at least once every five years.

(3) Upon close-out of any building permit under which the associated documentation or other data indicates that at least one quarter of an ERU of impervious surface has been constructed upon a lot, the [*insert title, such as Director of Planning and Development or Planning Board*] or authorized code enforcement personnel shall provide to the Superintendent notice of the number of square feet of impervious surface added, in net, to the lot, as indicated on documentation associated with said permit, together with the applicable tax lot number. The Superintendent shall thereafter update the data in the [*City/Town/Village*]'s geographic information systems to reflect the adjusted impervious surface area on the lot.

Section 3. Stormwater User Fee Credits.

A. The stormwater user fee for a non-residential lot shall be reduced as provided herein if the Superintendent certifies that the lot is eligible for one or more credits in accord with this section.

B. Calculation of Credits. The credit for a practice or structure shall be the product of: the lot's stormwater user fee, the percentage of the total impervious surface area on a lot mitigated by the practice or structure, the practice or structure's credit rate, and the practice or structure's treatment efficiency.

C. Eligible Practices. Credits are available for those stormwater management practices or structures enumerated in a detailed list entitled "Approved Stormwater User Fee Credits," maintained by the Superintendent, established by resolution of the Stormwater Utility Board, and updated from time to time by additional resolution of the Stormwater Utility Board on consultation with the Superintendent. Such updates shall only be effective in conjunction with this chapter if, at least fourteen days before the Stormwater Utility Board finally votes on any such update, the Superintendent provides to the Stormwater Utility Board and to the [*Comptroller/Budget Officer/Chief Financial Officer*] an estimate of the probable annualized budget impact of such updates upon the stormwater account maintained by the [*Comptroller/Budget Officer/Chief Financial Officer*].

D. Review Criteria. An engineered structure or practice that provides quality treatment and/or quantity attenuation shall be considered by the Superintendent using the criteria set forth herein.

(1) The proposal must demonstrate that the practice will provide a quantifiable treatment and/or runoff control benefit to the site through engineered design principles.

(2) The watershed subcatchment leading to the practice must be clearly defined including the area, amount of impervious cover, flowpath, and existing and proposed land use.

(3) The credit for a structure will be prorated based on that structure's Treatment Efficiency. For example, the credit for an otherwise qualifying structure that is designed for ten percent (10%) water quality volume treatment efficiency will be reduced by ninety percent (90%), as compared with a structure designed for 100% efficiency.

(4) Designs must follow the New York State Department of Environmental Conservation's Stormwater Management Design Manual guidelines, as amended or replaced by substantially identical guidelines.

(5) The owner must assume all responsibility for practice operation and maintenance. Failure to maintain the structure shall result in cancellation of the credit pursuant to Section 3(E).

E. Administration of Credits.

(1) In order to obtain a credit, an owner must apply in a form satisfactory to the Superintendent.

(2) If an application is approved by the Superintendent, the resulting reduction in the stormwater user fee shall take effect with the beginning of the next billing period that begins at least thirty days after the application was approved. The Superintendent shall have the discretion to make the credit retroactive to the next billing period beginning after the application was submitted if the interests of justice so require. Unless otherwise specified, an approved credit shall continue to be applied on each future bill so long as the lot continues to be eligible for the credit; provided, however, that the Superintendent shall cancel any credit for failure to provide the [*City/Town/Village*] with access to inspect and confirm the lot's continuing eligibility for a particular recurring credit.

(3) The applicant may appeal the Superintendent's denial of an application or cancellation of a previously-approved credit as set forth in Section 5(A).

Section 4. Stormwater Account and Billing.

A. The [*Comptroller/Chief Financial Officer*] shall create and maintain a dedicated stormwater account separate from all other [*City/Town/Village*] accounts or funds. All stormwater user fees,

and any penalties or interest on such user fees, shall be deposited into that account, and shall be used by the [*City/Town/Village*] solely to provide stormwater services.

B. Billing.

(1) The [*Treasurer/Receiver of Taxes and Assessments/Receiver*] shall issue bills for stormwater user fees on a quarterly basis, or another regular, periodic basis, not less regularly than annually. The stormwater user fees may be billed on a combined utility bill that contains other charges, including for water and/or sewer service. Stormwater user fees that are shown on a combined bill may be for a different service period than that used for other utility services.

(2) Bill Recipient.

(a) Single Water and/or Sewer Account. For a lot associated with only one water and/or sewer account, the [*City/Town/Village*] will bill the stormwater user fee to the individual or entity receiving the utility bill for such account. The owner may elect to receive the bill or redirect the bill to a third-party, with the third-party's consent, by executing and submitting a form provided by the [*Treasurer/Receiver of Taxes and Assessments/Receiver*].

(b) All Other Lots. For all other lots, the [*City/Town/Village*] will bill the stormwater user fee to the owner on a separate utility bill. The owner may elect to redirect the bill to a third-party, with the third-party's consent, by executing and submitting a form provided by the [*City/Town/Village*].

(c) In all cases, the owner is finally responsible for any unpaid stormwater user fees, including penalties and/or interest.

(3) If a lot is incorrectly billed, or not billed, or a bill is sent to the wrong party, the [*City/Town/Village*] may backbill a property for a period not to exceed two years.

(4) The Superintendent, the [*Comptroller/Chief Financial Officer*], and the [*Treasurer/Receiver of Taxes and Assessments/Receiver*] are authorized to develop billing forms, guidelines, and practices not inconsistent with this Section.

C. Effect of Nonpayment.

(1) No certificate of occupancy or certificate of compliance shall be issued by the [*insert title, such as Director of Planning and Development or Planning Board*] or authorized code enforcement personnel for any building or structure located on a lot if the stormwater user fee for such portion of the lot is in arrears.

(2) The stormwater user fee shall be payable without penalty for thirty days following the billing date. On all amounts unpaid at the expiration of such period, five percent of the amounts unpaid shall be added and collected. On all amounts remaining unpaid after thirty days following the expiration of such period, and after each period of thirty days or portion thereof thereafter, one percent of the amounts unpaid shall be added and collected, up through and including [*insert month*] of each year.

(3) The [*city/town/village*] may institute an action or proceeding in a court of competent jurisdiction to compel compliance with this chapter, for collection of nonpayment of stormwater user fees with any added penalty or interest, or for any other legal remedy available at law.

D. The Stormwater Utility Board shall prescribe, in its discretion, a schedule of application and/or inspection fees to be charged in connection with this chapter. Such fees shall be deposited in the stormwater account.

Section 5. Appeals and Reissuance of Fees.

A. Any applicant aggrieved by the Superintendent's determination pursuant to Sections 2(C)(1) or 3(E) may appeal such decision to the Stormwater Utility Board at an open meeting thereafter. Such appeal must be in writing and explain why the Superintendent's decision should be reversed. The applicant may present evidence to the Stormwater Utility Board at the open meeting at which the appeal is considered, but such evidence must be limited to the matters stated in the written appeal.

B. Whenever any stormwater user fee charged under the provisions of this section shall be set aside or shall be decided by any court having jurisdiction thereof to have been improperly or illegally charged or whenever it shall be ascertained that the proceedings under which said fee has been issued shall have been so far irregular and erroneous as to make the collection of such fee illegal, then the [*Treasurer/Receiver of Taxes and Assessments/Receiver*] is authorized to issue a new fee with the same force and effect as if it had been the original fee.

Section 6. Retention of Existing Powers.

Nothing herein shall be construed to modify or alter any power of the [*City Council/Town Board/Village Board of Trustees*], Superintendent of Public Works, Planning Board, or Code Enforcement Officer to require the construction, maintenance, or repair of privately-maintained stormwater infrastructure at the cost of the property owner as part of site plan review or other applicable regulation.

Endnotes

[1] For more information see the New York State Department of Environmental Conservation stormwater website at: http://www.dec.ny.gov/chemical/8468.html

[2] *Stormwater Management Guidance Manual for Local Officials.* (2004). NYS Department of Environmental Conservation. Retrieved 6/1/18 from http://www.dec.ny.gov/docs/water_pdf/localall.pdf

[3] *New York State Standards and Specifications for Erosion and Sediment Control (Blue Book)*. (2016). NYS Department of Environmental Conservation. Retrieved 6/1/18 from https://www.dec.ny.gov/chemical/29066.html

[4] *New York State Stormwater Management Design Manual.* (2015) NYS Department of Environmental Conservation. Retrieved 6/1/18 from http://www.dec.ny.gov/docs/water_pdf/swdm2015entire.pdf

[5] *Green Infrastructure Guide*. (2015). City of Newburgh, NY: Conservation Advisory Council. Retrieved 6/1/18 from http://www.cityofnewburgh-ny.gov/sites/newburghny/files/u576/cac_green_infrastructure_guide_final_2-28-2015.pdf

[6] *Better Site Design*. (2008). NYS Department of Environmental Conservation Division of Water. Retrieved 6/1/18 from http://www.dec.ny.gov/docs/water_pdf/bsdcomplete.pdf

[7] Scott, Geoffrey. (2014). *Stormwater Management*. Ithaca: Cornell Local Roads Program. Retrieved 6/1/18 from https://cornell.app.box.com/v/clrp-ws-sm

[8] *Flooding and Land Use Planning: A Guidance Document for Municipal Officials and Planners*. (2010). Westchester County Department of Planning. Retrieved 6/1/18 from http://planning.westchestergov.com/images/stories/reports/FLOODGUIDE.pdf

[9] *New York State Standards and Specifications for Erosion and Sediment Control (Blue Book)*. (2016). NYS Department of Environmental Conservation. Retrieved 6/1/18 from https://www.dec.ny.gov/chemical/29066.html

[10] *Policy and Standards for the Design of Entrances to State Highways.* (2017). NYS Department of Transportation. Retrieved 7/5/18 from https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm/hdm-repository/HDM_Ch_5_Appendix_5A.pdf

[11] For an example of county highway department driveway standards, see Policy & Standards: Permit Work Within County Right of Way. (2016). Orange County (NY) Department of Public Works. Retrieved 7/5/18 from

https://www.orangecountygov.com/DocumentCenter/View/8268/_Policy_Standards-Revised-Jan-2015_no-fee-changes---ONLY-2018-CHANGE-WAS-REMOCE-VIEBROCK?bidId=

[12] Buncombe County (NC) Land Development and Subdivision Ordinance. Retrieved 6/1/18 from http://www.buncombecounty.org/common/planning/SubdivisionOrdinance.pdf

[13] City of Hendersonville (TN) Subdivision Regulations. Retrieved 6/1/18 from https://www.hvilletn.org/residents/code-and-regulation-information/subdivision-regulations

[14] City of Newburgh (NY) Municipal Code, Chapter 300: Zoning Law, Section 300-52 Environmental Constraints. Retrieved 6/1/18 from http://ecode360.com/30538014

[15] Town of Ayer (MA) Proposed Zoning Bylaw (March 2017). Section 9: General Regulations, Subsection 9.4: Environmental Performance Standards. Retrieved 7/5/18 from https://www.ayer.ma.us/sites/ayerma/files/uploads/ayer_zoning_bylaw_proposed_for_adoption_03-2017_final_0.pdf

[16] Town of Owasco (NY) Municipal Code, Chapter 150: Zoning, Article IIA: Environmental Protection Overlay Districts, Section 150-9.20. Retrieved 6/1/18 from http://ecode360.com/10888954

[17] City of Saratoga Springs (NY) Zoning Ordinance, 2.0 Base Zoning Districts, Table 3: Area and Bulk Schedule https://saratoga-springs.org/DocumentCenter/View/243/20-Base-Zoning-Districts-PDF

[18] *Stormwater Management Gap Analysis Workbook for Local Officials*. (2006). NYS Department of Environmental Conservation. Retrieved 6/1/18 from ftp://ftp.dec.state.ny.us/dow/stormdocuments/ms4/construction_post_construction_stormwater_management/gap%20analysis%20introduction.pdf

[19] *Green Infrastructure Model Local Law Project Summary Report: Process, Findings, and Implementation*. (2013). Stormwater Coalition of Albany County. Retrieved 6/1/18 from http://www.stormwateralbanycounty.org/wp-content/uploads/2011/12/A_GrnInfModLocLawProj_SWCoalAlbCntyNY_2013_Nov_ForDistribution.pdf

[20] *Protecting Water Resources through Local Controls and Practices: An Assessment Manual for New York Municipalities.* (2006). Genesee/Finger Lakes Regional Planning Council. Retrieved 6/1/18 from http://www.dos.ny.gov/opd/programs/pdfs/Protecting_Water_Resources.pdf

[21] Town of Geneseo (NY) Municipal Code, Chapter 54: Erosion and Sediment Control. Retrieved 6/1/18 from https://ecode360.com/10488432

[22] *2014 Stormwater Utility Survey*. (2014). Overland Park, KS: Black & Veatch. Retrieved 6/1/18 from http://bv.com/docs/default-source/management-consulting-brochures/2014-stormwater-utility-survey

[23] City of Ithaca (NY) Local Law #3 of 2014. Retrieved 6/1/18 from http://locallaws.dos.ny.gov/sites/default/files/drop_laws_here/ECMMDIS_appid_DOS20150218075530_2/Content/09021343800b8020.pdf

[24] *Funding Stormwater Programs*. (2009). EPA 901-F-09-004. Retrieved 6/1/18 from https://www.epa.gov/sites/production/files/2015-10/documents/fundingstormwater.pdf

[25] *Stormwater User Fee FAQs*. City of Ithaca. Retrieved 6/1/18 from http://www.cityofithaca.org/520/Stormwater-User-Fee-FAQs

[26] *City of Ithaca Stormwater User Fee Revision/Credit Application*. City of Ithaca, NY. Retrieved 6/1/18 from http://www.cityofithaca.org/DocumentCenter/View/2111/Stormwater-User-Fee-and-Credit-Application-FINAL-1

[27] *Funding Stormwater Programs*. (2009). EPA 901-F-09-004. Retrieved 6/1/18 from https://www.epa.gov/sites/production/files/2015-10/documents/fundingstormwater.pdf

[28] *Stormwater Utility Fees: Considerations and Options for Interlocal Stormwater Working Group (ISWG*). (2005). New England Environmental Finance Center. Retrieved 6/1/18 from http://efc.muskie.usm.maine.edu/docs/StormwaterUtilityFeeReport.pdf

[29] City of Ithaca (NY) Municipal Code, Chapter 283: Stormwater Utility. Retrieved 6/1/18 from http://ecode360.com/29575853