

Article 20 SOIL EROSION AND SEDIMENT CONTROL

20.01 Activities Affected

20.01.01 This Article pertains to the soil erosion and sediment control related to land-disturbing activities conducted within the Town's jurisdiction.

20.01.02 Pursuant to the application requirements in Article 4, plans and information shall be submitted that demonstrate compliance with this Article and Appendix A in regards to soil erosion and sediment control related to land-disturbing activities.

- A.** Single family and two family projects of less than 21,780 square feet (0.5 acre) or commercial site improvements that involve no more than 2,500 square feet of land disturbing activity though required to apply for a zoning permit with a site plan are not required to submit plans that demonstrate compliance with soil erosion and sediment control related to land-disturbing activities.
- B.** The waiver of plan approval requirements due to the size of activity contemplated, does not relieve the property owner of responsibility for following the requirements contained herein, or in any way limit their liability for the consequences of their land-disturbing activity under North Carolina state law or the administrative procedures and penalties outlined in this Ordinance.

20.01.03 The plan shall be accompanied by an authorized Financial Responsibility Ownership form. This form shall be signed by the person financially responsible for the land-disturbing activity or their attorney-in-fact.

- A.** The Administrator may require the property owner or the financially responsible party to provide a security deposit to ensure compliance with the soil erosion and sediment control provisions of the Ordinance.
 - 1. The applicant may, prior to commencing any land-disturbing activity, be required to file with the Town an improvement security in the form of an escrow account, surety bond, irrevocable letter of credit, or other surety satisfactory to the Town, in an amount deemed sufficient by the Administrator, to cover all costs of protection or other improvements required to establish protective cover on the site in conformity with this Ordinance. Such security shall remain in force until the improvements are completed in accordance with the approved plan and said improvements are finally inspected and approved.
 - 2. Upon completion of improvements required by this Ordinance, written notice thereof shall be given by the applicant to the Administrator and the department shall cause an inspection of the improvements to be made and, if approved, shall within thirty (30) days of the date of notice authorize in writing the release of the security given provided that the improvements have been made in accordance with the approved plan and this Ordinance

20.02 Exemptions to Soil Erosion and Sediment Control Requirements

20.02.01 The following land-disturbing activities are exempted from the requirements of this Section:

- A.** Those done for the purpose of fighting fires.
- B.** Those done in the stockpiling of raw or processed sand, stone, or gravel in material processing plants and storage yards (with a properly approved plan for this activity).
- C.** Those undertaken on agricultural land for the production of plants and animals.
- D.** Those undertaken on forest land for the production and harvesting of timber and timber products when conducted in accordance with Forest Practices Guidelines (15NCAC 11.0101-.0209).
- E.** Activity undertaken by persons as defined in N.C. Gen. Stat. § 113A-52 (8) who are otherwise regulated by the provisions of the Mining Act of 1971, N.C. Gen. Stat. §§ 74-46 through G.S. 74-68.
- F.** Land-disturbing activity over which the state by statute, has exclusive regulatory jurisdiction;
 - 1. Conducted by the State,
 - 2. Conducted by the United States,
 - 3. Conducted by persons having the power of eminent domain,
 - 4. Conducted by a local government,
 - 5. Licensed by the State or United States,
 - 6. Funded in whole or in part by the State or United States.

20.03 Basic Erosion Control Objectives

20.03.01 Persons conducting land-disturbing activity shall take all reasonable measures to protect all public and private property from damage caused by such activity.

20.03.02 On site areas which are subject to severe erosion, and off site areas which are especially vulnerable to damage from erosion and/or sedimentation, are to be identified and receive special attention.

20.03.03 All land disturbing activity is to be planned and conducted to limit exposure to the shortest feasible time.

20.03.04 All land disturbing activity is to be planned and conducted to minimize the size of the area to be exposed at any one time.

20.03.05 Surface water runoff originating upgrade of exposed areas should be controlled to reduce erosion and sediment loss during the period of exposure.

20.04 Soil Erosion Control Design Standards

20.04.01 Any land disturbing activity that includes alteration of existing topographic slope grades or natural ground cover shall conform to the soil erosion and sediment control design standards in this Article.

20.04.02 Erosion and sedimentation control measures, structures, and devices shall be so planned, designed, and constructed as to provide protection from the calculated maximum peak rate of runoff from the ten (10) year storm. Runoff rates shall be calculated using the procedures in the USDA, Soil Conservation Service, National Engineering Field Manual for Conservation Practice, the North Carolina Erosion and Sediment Control Planning and Design Manual, or other acceptable calculation procedures.

20.04.03 Erosion and sediment control measures must accomplish the following mandatory standards when land-disturbing activity is undertaken on a tract:

A. Containment: Installation of sufficient sedimentation and erosion control devices and practices to retain the sediment generated by the land disturbing activity within the boundaries of the tract during construction and upon completion of development.

B. Buffer Zone: No land-disturbing activity shall be permitted in proximity to a lake or natural watercourse unless an undisturbed buffer zone is provided along the margin of the watercourse. The buffer must be a minimum of twenty five feet (25') wide or of sufficient width to confine visible siltation within the twenty-five percent (25%) of the buffer zone nearest the land-disturbing activity, whichever is greater. If the slope perpendicular to the stream measured from the top of the stream bank is 3H:1V or steeper a detailed erosion control plan and calculations sufficient to support the proposed buffer width must be submitted for Town review. A temporary and minimal disturbance may be permitted if the applicant submits documentation that there is no reasonable alternative. The temporary and minimal disturbance shall be limited to a maximum of ten percent (10%) of the total length of the buffer zone within the tract to be distributed such that there is not more than one hundred linear feet (100 lf) of disturbance in each 1000 linear feet of buffer zone.

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C. Ground Cover: Groundcover (temporary or permanent depending on phase of grading) that is sufficient to restrain erosion must be placed on all disturbed areas within 21 calendar days of completion of any phase of grading. Specifications for groundcover must be listed on the erosion control plan and should be consistent with the NCDENR Erosion and Sedimentation Control Planning and Design Manual.

20.04.04 Land-disturbing activity in connection with construction in, on, over, or under a lake or natural watercourse shall be planned and conducted in such a manner as to minimize the extent and duration of disturbance of the stream channel. The relocation of a stream, where relocation is an essential part of the proposed activity, shall be planned and

executed so as to minimize changes in the stream flow characteristics, except when justification for significant alteration to flow characteristic is provided.

20.05 Soil Erosion Control Performance Standards

20.05.01 Any land disturbing activity that includes alteration of existing topographic slope grades or natural ground cover shall conform to the soil erosion and sediment control performance standards, in Subsection 20.05.02, for stormwater exiting the tract. Stream banks and channels downstream from any land-disturbing activity shall be protected from increased degradation by accelerated erosion caused by increased velocity of runoff from the land-disturbing activity.

20.05.02 The land-disturbing activity shall be planned and conducted such that the velocity of stormwater runoff in the receiving watercourse at the point of discharge resulting from a ten (10) year storm while undertaken, and after development, shall not exceed the lesser of:

- A.** The maximum permissible velocity for earth lined (unprotected soils) channels as determined from the table below, or
- B.** The velocity in the receiving watercourse determined for the ten (10) year storm prior to development.

Should conditions (A) or (B) of this Subsection not be met, the channel below the discharge point shall be designed and improvements constructed to withstand the expected velocity.

20.05.03 This performance standard can be waived if it can be clearly demonstrated that stormwater discharge velocities will not create an erosion problem in the receiving watercourse.

Soil Types	Maximum Permissible Velocity for Earth-Lined Channels	
	Feet per second	Meters per second
Fine sand (noncolloidal)	2.5	.8
Sandy loam (noncolloidal)	2.5	.8
Silt loam (noncolloidal)	3.0	.9
Ordinary firm loam	3.5	1.1
Fine gravel	5.0	1.5
Stiff clay (very colloidal)	5.0	1.5
Graded, loam to cobbles (noncolloidal)	5.0	1.5
Graded, silt to cobbles (colloidal)	5.5	1.7
Alluvial silts (noncolloidal)	3.5	1.1
Alluvial silts (colloidal)	5.0	1.5
Coarse gravel (noncolloidal)	6.0	1.8
Cobbles and shingles	5.5	1.7
Shales and hard pans	6.0	1.8

SOURCE: Adapted from recommendations by Special Committee on Irrigation Research, American Society of Civil Engineers, 1926, for channels with straight alignment. For sinuous channels multiply allowable velocity by 0.95 for slightly sinuous, 0.9 for moderately sinuous channels, and 0.8 for highly sinuous channels.

20.06 Acceptable Erosion Control Management Measures

20.06.01 Measures applied alone or in combination to satisfy the intent of this Section are acceptable if there are no objectionable secondary consequences. The Town recognizes that the management of stormwater runoff to minimize or control downstream channel and bank erosion is a developing technology. Innovative techniques and ideas will be considered and may be used when shown to have the potential to produce successful results by meeting the performance standards outlined above. Some alternatives are to:

- A. Compensate for increased surface water runoff volume and velocity by including measures to promote infiltration of excess runoff from areas rendered impervious.
- B. Reduce stormwater discharge velocities by using vegetated or roughened swales and waterways in lieu of closed drains and high velocity paved sections.
- C. Provide energy dissipaters at outlets of storm drainage facilities to reduce flow velocities at the point of discharge. These may range from simple rip rapped sections to complex structures.
- D. Protect watercourses subject to accelerated erosion by improving cross-sections and/or providing erosion resistant lining.

20.06.02 Most of the established “best” management practices for soil erosion and sediment control are detailed in the North Carolina Erosion and Sediment Control Planning and Design Manual.

20.07 Monitoring and Maintenance of Erosion Control Measures

20.07.01 During the development of a tract, the person conducting the land-disturbing activity shall install and maintain all temporary and permanent erosion and sedimentation control measures as required by the approved plan or any provision of this Ordinance, the Act, or any order adopted pursuant to this Ordinance or the Act.

20.07.02 During the development of a tract, the person conducting the land disturbing activity shall inspect all erosion and sediment control facilities and all stormwater management facilities including the discharge facility at least once every seven calendar days and within 24 hours after any storm event of greater than 0.5 inches of rain within a 24 hour period. These inspections shall determine the erosion control devices and stormwater facilities have not been damaged and are operating as designed. During this inspection the discharge from the site shall also be observed and a qualitative assessment of the discharge shall be made to determine clarity, presence of floating or suspended solids, presence of an oil sheen or other obvious indicators of stormwater pollution. If any evidence of deterioration of the system is present or there is evidence of any visible sedimentation outside the disturbed limits it shall be recorded and corrective measures

taken. The applicant shall maintain a record of inspections, findings and any corrective action. This record shall be available on site for the Administrator.

20.07.03 Whenever the Town determines that significant sedimentation is occurring as a result of land-disturbing activity, despite application and maintenance of protective practices, the person conducting the land-disturbing activity will be required to and shall take additional protective action to mitigate or eliminate the sedimentation.

20.07.04 After site development, the land owner or person in possession or control of the land shall install and/or maintain all necessary permanent erosion and sediment control measures, except those measures installed within a road, street right-of-way, or easement and accepted for maintenance by a governmental agency.

20.08 Existing Uncovered Areas

20.08.01 All uncovered areas existing on the effective date of this Ordinance which:

- A. Resulted from land-disturbing activity,
- B. Exceed one half contiguous acre,
- C. Are subject to continued accelerated erosion, and
- D. Are causing off site damage from sedimentation;

shall be provided with a ground cover or other protective measures, structures, or devices sufficient to restrain accelerated erosion and control off site sedimentation.

20.08.02 The Town reserves the right to require preparation and approval of an erosion control plan in any instance where extensive control measures are required.