

# 8 ENVIRONMENTAL STANDARDS

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## 8.1 FLOODPLAIN AND STREAM PROTECTION STANDARDS

### 8.1.1 INTENT

The primary purposes of the Floodplain and Stream Protection Standards are to protect public health, safety and welfare by ensuring streams and land adjacent to streams fulfill their natural functions: These functions include protecting the physical integrity of the stream ecosystem and its flood storage capabilities; preventing encroachment upon stream ecosystems; and improving and maintaining water quality by filtering runoff before detrimental materials reach streams, by requiring minimum vegetated stream buffers on all perennial and intermittent streams within the Town's Planning Jurisdiction.

### 8.1.2 APPLICABILITY

Floodplain and Stream Protection Standards apply to all land within the corporate limits and extraterritorial jurisdiction (ETJ) of Elon designated as being within the 100-year floodplain, inclusive of both the floodway and flood fringe (as shown on the most recent version of the FEMA Flood Insurance Rate Maps), and to all perennial or intermittent streams within the Town's jurisdiction.

#### A. EXCEPTIONS

1. Expansions of existing non-conforming structures shall not increase the nonconformity of the existing situation.
2. Placement of necessary public utilities.

B. Specific regulations for stream protection are contained in the Town of Elon Riparian Buffer Protection Ordinance, effective November 11, 2010 and as amended, and as also referenced in Section 8.2, Jordan Lake Buffer Protection Standards.

### 8.1.3 BASIS FOR ESTABLISHING SPECIAL FLOOD HAZARD AREAS

Special Flood Hazard Areas are those identified under the Cooperating Technical State (CTS) agreement between the State of North Carolina and FEMA in its Flood Insurance Study (FIS) dated November 17, 2017 for Alamance County and associated DFIRM panels, including any digital data developed as part of the FIS, which are adopted automatically by reference and declared to be a part of this ordinance. Any subsequent updates to the FIS and DFIRM panels shall automatically be incorporated into this ordinance by reference as well.

The initial Flood Insurance Rate Maps are as follows for the jurisdictional areas at the initial date:  
Elon Extra-Territorial Jurisdiction (ETJ), dated June 5, 1989  
Town of Elon Incorporated Area, dated June 5, 1989.

### 8.1.4 ESTABLISHMENT OF FLOODPLAIN DEVELOPMENT PERMIT

A Floodplain Development Permit shall be required in conformance with the provisions of this ordinance prior to the commencement of any development activities within Special Flood Hazard Areas determined in accordance with the provisions of this Ordinance.

### 8.1.5 COMPLIANCE

No structure or land shall hereafter be located, extended, converted, altered, or developed in any way without full compliance with the terms of this ordinance and other applicable regulations.

### 8.1.6 ABROGATION AND GREATER RESTRICTIONS

This section is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance and another conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

### 8.1.7 INTERPRETATION

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In the interpretation and application of this ordinance, all provisions shall be:

- A. Considered as minimum requirements.
- B. Liberally construed in favor of the governing body; and
- C. Deemed neither to limit nor repeal any other powers granted under State statutes.

### 8.1.8 WARNING AND DISCLAIMER OF LIABILITY

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The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering consideration. Larger floods can and will occur. Actual flood heights may be increased by man-made or natural causes. This ordinance does not imply that land outside the Special Flood Hazard Areas or uses permitted within such areas will be free from flooding or flood damages. This ordinance shall not create liability on the part of the Town of Elon or by any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

### 8.1.9 DESIGNATION OF THE FLOODPLAIN ADMINISTRATOR

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The Planning Director or his/her designee, hereinafter referred to as the "Floodplain Administrator", is hereby appointed to administer and implement the provisions of this ordinance.

### 8.1.10 DUTIES AND RESPONSIBILITIES OF THE FLOODPLAIN ADMINISTRATOR

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- A. Review all floodplain development applications and issue permits for all proposed development within Special Flood Hazard Areas to assure that the requirements of this ordinance have been satisfied.
- B. Review all proposed development within Special Flood Hazard Areas to assure that all necessary Local, State and Federal permits have been received, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.
- C. Notify adjacent communities and the North Carolina Department of Crime Control and Public Safety, Division of Emergency Management, State Coordinator for the National Flood Insurance Program prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA).
- D. Assure that maintenance is provided within the altered or relocated portion of said watercourse so that the flood-carrying capacity is maintained.
- E. Prevent encroachments into floodways and non-encroachment areas unless the certification and flood hazard reduction provisions of Section 8.1.19 are met.
- F. Obtain actual elevation (in NAVD 88) of the reference level (including basement) and all attendant utilities of all new and substantially improved structures.
- G. Obtain actual elevation (in NAVD 88) to which all new and substantially improved structures and utilities have been floodproofed.
- H. Obtain actual elevation (in NAVD 88) of all public utilities.
- I. When floodproofing is utilized for a particular structure, obtain certifications from a registered professional engineer or surveyor in accordance with the provisions of 8.1.11.C and 8.1.15.B.
- J. Where interpretation is needed as to the exact location of boundaries of the Special Flood Hazard Areas, floodways, or non-encroachment areas (for example, where there appears to be a conflict between a mapped boundary and actual field conditions), make the necessary interpretation. The person contesting

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- the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in subsection 8.1.21.
- K. When Base Flood Elevation (BFE) data has not been provided in accordance with the provisions of Section 8.1.3, obtain, review, and reasonably utilize any BFE data, along with floodway data or non-encroachment area data available from a Federal, State, or other source, including data developed pursuant to Section 8.1.16.B.2, in order to administer the provisions of this Ordinance.
  - L. When Base Flood Elevation (BFE) data is provided but no floodway or non-encroachment area data has been provided in accordance with the provisions of Section 8.1.3, obtain, review, and reasonably utilize any floodway data or non-encroachment area data available from a Federal, State, or other source in order to administer the provisions of this Ordinance.
  - M. When the existence of a property where the lowest floor and the lowest adjacent grade of a structure or the lowest ground elevation of a parcel in a Special Flood Hazard Area is above the Regulatory Flood Elevation becomes known to the Floodplain Administrator, the Floodplain Administrator shall advise the property owner of the option to apply for a Letter of Map Amendment (LOMA) from FEMA. A copy of the Letter of Map Amendment (LOMA) issued by FEMA shall be maintained in the floodplain development permit file.
  - N. Permanently maintain all records that pertain to the administration of this ordinance and make these records available for public inspection, recognizing that such information may be subject to the Privacy Act of 1974, as amended.
  - O. Make on-site inspections of work in progress. As the work pursuant to a floodplain development permit progresses, the Floodplain Administrator shall make as many inspections of the work as may be necessary to ensure that the work is being done according to the provisions of this section and the terms of the permit. In exercising this power, the Floodplain Administrator has a right, upon presentation of proper credentials, to enter on any premises within the jurisdiction of the community at any reasonable hour for the purposes of inspection or other enforcement action.
  - P. Issue stop-work orders as required. Whenever a building or part thereof is being constructed, reconstructed, altered, or repaired in violation of this ordinance, the Floodplain Administrator may order the work to be immediately stopped. The stop-work order shall be in writing and directed to the person doing or in charge of the work, the permit holder, if applicable, and the property owner provided by personal delivery, electronic delivery, or first-class mail. The stop-work order shall state the specific work to be stopped, the specific reason(s) for the stoppage, and the condition(s) under which the work may be resumed. Violation of a stop-work order constitutes a misdemeanor.
  - Q. Revoke floodplain development permits as required. The Floodplain Administrator may revoke and require the return of the floodplain development permit by notifying the permit holder in writing stating the reason(s) for the revocation. Permits shall be revoked for any substantial departure from the approved application, plans, and specifications; for refusal or failure to comply with the requirements of State or local laws; or for false statements or misrepresentations made in securing the permit. Any floodplain development permit mistakenly issued in violation of an applicable State or local law may also be revoked. Revocations shall be noted in writing and delivered to the holder of the development approval stating the reason thereof. Staff shall follow the same development review and approval process required for the issuance of the approval for any revocation.
  - R. Make periodic inspections throughout the special flood hazard areas within the jurisdiction of the community. The Floodplain Administrator or designee shall have a right, upon presentation of proper credentials, to enter on any premises within the territorial jurisdiction of the department at any reasonable hour for the purposes of inspection or other enforcement action.

- S. Follow through with corrective procedures of Section 8.1.21.
- T. Review, provide input, and make recommendations for floodplain variance requests.
- U. Maintain a current map repository to include, but not limited to, the FIS Report, historical and effective FIRM and other official flood maps and studies adopted in accordance with the provisions this Ordinance, including any revisions thereto including Letters of Map Change issued by FEMA; notify State and FEMA of mapping needs.
- V. Coordinate revisions to FIS reports and FIRMs, including Letters of Map Revision Based on Fill (LOMR-F) and Letters of Map Revision (LOMR).

### **8.1.11 FLOODPLAIN DEVELOPMENT APPLICATION**

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Application for a Floodplain Development Permit shall be made to the Floodplain Administrator prior to any development activities located within or adjacent to Special Flood Hazard Areas. All elevations referenced must use NAVD 88. The following items shall be presented to the Floodplain Administrator to apply for a floodplain development permit:

- A. A plot plan drawn to scale which shall include, but shall not be limited to, the following specific details of the proposed floodplain development:
  - 1. The nature, location, dimensions, and elevations of the area of development/disturbance; existing and proposed structures, utility systems, grading/pavement areas, fill materials, storage areas, drainage facilities, and other development;
  - 2. The boundary of the Special Flood Hazard Area as delineated on the FIRM or other flood map as determined in 8.1.3, or a statement that the entire lot is within the Special Flood Hazard Area;
  - 3. Flood zone(s) designation of the proposed development area as determined on the FIRM or other flood map as determined in 8.1.3;
  - 4. The boundary of the floodway(s) or non-encroachment area(s) as determined in 8.1.3;
  - 5. The Base Flood Elevation (BFE) where provided as set forth in 8.1.3; 8.1.10; or 8.1.16;
  - 6. The old and new location of any watercourse that will be altered or relocated as a result of proposed development;
  - 7. The certification of the plot plan by a professional land surveyor or professional engineer. In lieu of this requirement, the Floodplain Administrator may provide necessary certifications for development adjacent to but not within the Special Flood Hazard Area.
- B. Proposed elevation, and method thereof, of all development within a Special Flood Hazard Area including but not limited to:
  - 1. Elevation (in NAVD 1988) of the proposed reference level (including basement) of all structures;
  - 2. Elevation (in NAVD 1988) to which any non-residential structure in Zone AE or A will be floodproofed; and;
  - 3. Elevation (in NAVD 1988) to which any proposed utility systems will be elevated or floodproofed.
- C. If floodproofing, a Floodproofing Certificate (FEMA Form 086-0-34) with supporting data, an operational plan, and an inspection and maintenance plan that includes, but is not limited to, installation, exercise, and maintenance of flood proofing measures).
- D. A Foundation Plan, drawn to scale, which shall include details of the proposed foundation system to ensure all provisions of this ordinance are met. These details include but are not limited to:
  - 1. The proposed method of elevation, if applicable (i.e., fill, solid foundation perimeter wall, solid backfilled foundation, open foundation on columns/posts/piers/piles/shear walls); and
  - 2. Openings to facilitate automatic equalization of hydrostatic flood forces on walls in accordance with 8.1.15.E.3 when solid foundation perimeter walls are used in Zones A, or AE.

3. Usage details of any enclosed areas below the lowest floor.
4. Plans and/or details for the protection of public utilities and facilities such as sewer, gas, electrical, and water systems to be located and constructed to minimize flood damage.
5. Certification that all other Local, State and Federal permits required prior to floodplain development permit issuance have been received.
6. Documentation for placement of Recreational Vehicles and/or Temporary Structures, when applicable, to ensure that the provisions of 8.1.15.F and G of this Ordinance are met.
7. A description of proposed watercourse alteration or relocation, when applicable, including an engineering report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to properties located both upstream and downstream; and a map (if not shown on plot plan) showing the location of the proposed watercourse alteration or relocation.

### 8.1.12 FLOODPLAIN PERMIT REQUIREMENTS

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The floodplain development permit shall include, but not be limited to:

- A. A complete description of the development to be permitted under the floodplain development permit (e.g., house, garage, pool, septic, bulkhead, cabana, bridge, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials, etc.).
- B. The Special Flood Hazard Area determination for the proposed development in accordance with available data specified in 8.1.3.
- C. The regulatory flood protection elevation required for the reference level and all attendant utilities.
- D. The regulatory flood protection elevation required for the protection of all public utilities.
- E. All certification submittal requirements with timelines.
- F. A statement that no fill material or other development shall encroach into the floodway or non-encroachment area of any watercourse, unless the requirements of 8.1.19 have been met.
- G. The flood openings requirements, if in Zones A, or AE.
- H. Limitations of below BFE enclosure uses (if applicable). (i.e., parking, building access and limited storage only).
- I. Any conditions to be applied to the approval, where applicable.

### 8.1.13 CERTIFICATION REQUIREMENTS

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#### A. ELEVATION CERTIFICATES

1. An Elevation Certificate (FEMA Form 086-0-33) completed, signed and sealed by a licensed surveyor or professional engineer is required prior to the actual start of any new construction. It shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of the elevation of the reference level, NAVD 88. The Floodplain Administrator shall review the certificate data submitted. Deficiencies detected by such review shall be corrected by the permit holder prior to the beginning of construction. Failure to submit the certification or failure to make required corrections shall be cause to deny a floodplain development permit. In lieu of this requirement, the floodplain administrator may accept elevation data from a professional land surveyor sufficient to document current conditions and ensure proposed development will comply with this Chapter.
2. An Elevation Certificate (FEMA 086-00-33) completed, signed and sealed by a licensed surveyor or professional engineer is required after the reference level is established. Within seven (7) calendar days of establishment of the reference level elevation, it shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of the elevation of the reference level, NAVD 88. Any work done within the seven (7) days calendar period and prior to submission of the

certification shall be at the permit holder's risk. The Floodplain Administrator shall review the certificate data submitted. Deficiencies detected by such review shall be corrected by the permit holder immediately and prior to further work being permitted to proceed. Failure to submit the certification or failure to make required corrections shall be cause to issue a stop-work order for the project. In lieu of this requirement, the floodplain administrator may accept elevation data from a professional land surveyor sufficient to document current conditions and ensure proposed development will comply with this Chapter.

3. A final as-built Elevation Certificate (FEMA Form 086-0-33) completed, signed and sealed by a licensed surveyor or professional engineer is required after construction is completed and prior to Certificate of Compliance/Occupancy issuance. It shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of final as-built construction of the elevation of the reference level and all attendant utilities. The Floodplain Administrator shall review the certificate data submitted. Deficiencies detected by such review shall be corrected by the permit holder immediately and prior to Certificate of Compliance/Occupancy issuance. In some instances, another certification may be required to certify corrected as-built construction. Failure to submit the certification or failure to make required corrections shall be cause to withhold the issuance of a Certificate of Compliance/Occupancy. The Finished Construction Elevation Certificate certifier shall provide at least 2 photographs showing the front and rear of the building taken within 90 days from the date of certification. The photographs must be taken with views confirming the building description and diagram number provided in Section A of the certificate. To the extent possible, these photographs should show the entire building including foundation. If the building has split-level or multi-level areas, provide at least 2 additional photographs showing side views of the building. In addition, when applicable, provide a photograph of the foundation showing a representative example of the flood openings or vents. All photographs must be in color and measure at least 3" x 3". Digital photographs are acceptable.

### B. FLOODPROOFING CERTIFICATE

1. If non-residential floodproofing is used to meet the regulatory flood protection elevation requirements, a Floodproofing Certificate (FEMA Form 086-0-34), with supporting data, an operational plan, and an inspection and maintenance plan are required prior to the actual start of any new construction. It shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of the floodproofed design elevation of the reference level and all attendant utilities, in relation to mean sea level. Floodproofing certification shall be prepared by or under the direct supervision of a professional engineer or architect and certified by same. The Floodplain Administrator shall review the certificate data, the operational plan, and the inspection and maintenance plan. Deficiencies detected by such review shall be corrected by the applicant prior to permit approval. Failure to submit the certification or failure to make required corrections shall be cause to deny a floodplain development permit. Failure to construct in accordance with the certified design shall be cause to withhold the issuance of a Certificate of Compliance/Occupancy.
2. A final Finished Construction Floodproofing Certificate (FEMA Form 086-0-34), with supporting data, an operational plan, and an inspection and maintenance plan are required prior to the issuance of a Certificate of Compliance/Occupancy. It shall be the duty of the permit holder to submit to the Floodplain Administrator a certification of the floodproofed design elevation of the reference level and all attendant utilities, using NAVD 1988. Floodproofing certificate shall be prepared by or under the direct supervision of professional engineer or architect and certified by the same. The Floodplain Administrator shall review the certificate data, the operational plan, and the inspection and maintenance plan. Deficiencies detected by such review shall be corrected by the applicant prior to Certificate of Occupancy. Failure to submit the certification or failure to make required corrections shall be cause to deny a Floodplain Development Permit. Failure to construct in accordance with the certified design shall be cause to deny a Certificate of Compliance/Occupancy.



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- C. If a manufactured home is placed within Zone A, or AE, and the elevation of the chassis is more than 36 inches in height above grade, an engineered foundation certification is required in accordance with the provisions of 8.1.15.D.2.
- D. If a watercourse is to be altered or relocated, a written description of the extent of watercourse alteration or relocation; a professional engineer's certified report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to properties located both upstream and downstream; and a map showing the location of the proposed watercourse alteration or relocation shall all be submitted by the permit applicant prior to issuance of a floodplain development permit.

### E. CERTIFICATION EXEMPTIONS

The following structures, if located within Zone A, or AE are exempt from the elevation/floodproofing certification requirements specified in items 1 and 2 of this subsection:

1. Recreational Vehicles meeting requirements of 8.1.15.G.1;
2. Temporary Structures meeting requirements of 8.1.15.H; and
3. Determinations for existing buildings and structures:  
For applications for zoning compliance permits to improve buildings and structures, including alterations, movement, enlargement, replacement, repair, change of occupancy, additions, rehabilitations, renovations, substantial improvements, repairs of substantial damage, and any other improvement of or work on such buildings and structures, the Floodplain Administrator, in coordination with the Alamance County Inspections Department shall:
  - a. Estimate the market value, or require the applicant to obtain an appraisal of the market value prepared by a qualified independent appraiser, of the building or structure before the start of construction of the proposed work; in the case of repair, the market value of the building or structure shall be the market value before the damage occurred and before any repairs are made;
  - b. Compare the cost to perform the improvement, the cost to repair a damaged building to its pre-damaged condition, or the combined costs of improvements and repairs, if applicable, to the market value of the building or structure;
  - c. Determine and document whether the proposed work constitutes substantial improvement or repair of substantial damage; and
  - d. Notify the applicant if it is determined that the work constitutes substantial improvement or repair of substantial damage and that compliance with the flood resistant construction requirements of the NC Building Code and this ordinance is required.

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### 8.1.14 STANDARDS FOR ALL SPECIAL FLOOD HAZARD AREAS

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In all Special Flood Hazard Areas the following provisions shall apply:

- A. Development within the floodway fringe area may be allowed in accordance with the provisions of this Ordinance. Only the following LMO uses, constructed in accordance with the relevant standards of this Chapter, shall be allowed within the floodway:
  1. Agricultural Production
  2. Horticulture
  3. Animal Husbandry
  4. Golf Course
  5. Golf Driving Range
  6. Sports Facility, Outdoor
  7. Arboretum or Formal Garden
  8. Community Garden
  9. Park (public or private)

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10. Greenway
- B. All new construction and substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, and lateral movement of the structure.
  - C. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage in accordance with the FEMA Technical Bulletin 2, Flood Damage-Resistant Materials Requirements.
  - D. All new construction and substantial improvements shall be constructed by methods and practices that minimize flood damages.
  - E. All new electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be located at or above the RFPE or be designed and/or located so as to prevent water from entering or accumulating within the components during occurrence of the base flood. These include, but shall not be limited to, HVAC equipment, water softener units, bath/kitchen fixtures, ductwork, electric/gas meter panels/boxes, utility/cable boxes, hot water heaters, and electric outlets/switches.
    - 1. Replacements part of a substantial improvement, electrical, heating, ventilation, plumbing, air conditioning equipment, and other service equipment shall also meet the above provisions.
    - 2. Replacements that are for maintenance and not part of a substantial improvement, may be installed at the original location provided the addition and/or improvements only comply with the standard for new construction consistent with the code and requirements for the original structure.
  - F. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
  - G. All new and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into flood waters.
  - H. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.
  - I. Nothing in this ordinance shall prevent the repair, reconstruction, or replacement of a building or structure existing on the effective date of this ordinance and located totally or partially within the floodway, non-encroachment area, or stream setback, provided there is no additional encroachment below the regulatory flood protection elevation in the floodway, non-encroachment area, or stream setback, and provided that such repair, reconstruction, or replacement meets all of the other requirements of this ordinance.
  - J. New solid waste disposal facilities and sites, hazardous waste management facilities, salvage yards, and chemical storage facilities shall not be permitted, except by floodplain variance. A structure or tank for chemical or fuel storage incidental to an allowed use or to the operation of a water treatment plant or wastewater treatment facility may be located in a Special Flood Hazard Area only if the structure or tank is either elevated or floodproofed to at least the regulatory flood protection elevation and certified in accordance with the provisions of 8.1.13.
  - K. All subdivision proposals and other development proposals shall be consistent with the need to minimize flood damage.
  - L. All subdivision proposals and other development proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.
  - M. All subdivision proposals and other development proposals shall have adequate drainage provided to reduce exposure to flood hazards.
  - N. All subdivision proposals and other development proposals shall have received all necessary permits from those governmental agencies for which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.

- O. When a structure is partially located in a Special Flood Hazard Area, the entire structure shall meet the requirements for new construction and substantial improvements.
- P. When a structure is located in multiple flood hazard zones or in a flood hazard risk zone with multiple base flood elevations, the provisions for the more restrictive flood hazard risk zone and the highest base flood elevation shall apply.

### **8.1.15 STANDARDS FOR SPECIAL FLOOD HAZARD AREAS WHERE BASE FLOOD ELEVATION DATA IS PROVIDED**

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In all Special Flood Hazard Areas where BFE data has been provided, as set forth in Section 8.1.3, the following provisions, in addition to the provisions of Section 8.1.14, are required:

- A. Limits of Encroachment:
  - 1. Encroachments which include fifty percent (50%) or less of the area of the floodway fringe on the zoning lot where such encroachments are located, and which do not extend toward the stream channel more than one-half (½) the distance between the outer edge of the floodway fringe and the outer edge of the floodway at any point, may be approved without a certified engineering study, provided the encroachment meets all other standards of this Ordinance.
  - 2. Encroachments which include more than fifty percent (50%) of the area of the floodway fringe on the zoning lot where such encroachments are located, and/or which extend toward the stream channel more than one-half (½) the distance between the outer edge of the floodway fringe and the outer edge of the floodway at any point may only be approved if a certified engineering study demonstrates that such encroachments result in no more than a one-half foot rise in flood elevation.
  - 3. Encroachments into the floodway fringe resulting from utilities maintenance projects, or greenway projects identified in plans or policies adopted by the Town of Elon or Alamance County may exceed the one-half (½) foot rise in elevation if said project also meets the requirements of 8.1.19, Floodways and Non-Encroachment Areas.
  - 4. Measurement of the fifty percent (50%) area and one-half distance of floodway fringe encroachment are calculated from each outside edge of the floodway to the edge of the floodway fringe.
- B. Residential Construction. New construction and substantial improvement of any residential structure (including manufactured homes) shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation, as defined in Chapter 2 of this Ordinance.
- C. Non-Residential Construction. New construction and substantial improvement of any commercial, industrial, or other non-residential structure shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation, as defined in Chapter 2 of this Ordinance. Structures located in A, AE, and A1-30 Zones may be floodproofed to the regulatory flood protection elevation in lieu of elevation provided that all areas of the structure, together with attendant utility and sanitary facilities, below the regulatory flood protection elevation are watertight with walls substantially impermeable to the passage of water, using structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the floodproofing standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator as set forth in this Ordinance along with the required operational plan and maintenance and inspection plans.
- D. Manufactured Homes:
  - 1. New and replacement manufactured homes shall be elevated so that the reference level of the manufactured home is no lower than the regulatory flood protection elevation, as defined in Chapter 2 of this Ordinance.
  - 2. Manufactured homes shall be securely anchored to an adequately anchored foundation to resist flotation, collapse, and lateral movement, either by certified engineered foundation system, or in

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accordance with the most current edition of the State of North Carolina Regulations for Manufactured Homes adopted by the Commissioner of Insurance pursuant to NCGS 143-143.15. Additionally, when the elevation would be met by an elevation of the chassis thirty-six (36) inches or less above the grade at the site, the chassis shall be supported by reinforced piers or engineered foundation. When the elevation of the chassis is above thirty-six (36) inches in height, an engineering certification is required.

3. All enclosures or skirting below the lowest floor shall meet the requirements of 8.1.15.D.
  4. An evacuation plan must be developed for evacuation of all residents of all new, substantially improved or substantially damaged manufactured home parks or subdivisions located within flood prone areas. This plan shall be filed with and approved by the Floodplain Administrator and the local Emergency Management coordinator.
- E. Elevated Buildings. Fully enclosed area, of new construction and substantially improved structures, which is below the lowest floor:
1. Shall not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator). The interior portion of such enclosed area shall not be finished or partitioned into separate rooms, except to enclose storage areas;
  2. Shall be constructed entirely of flood resistant materials at least to the regulatory flood protection elevation; and
  3. Shall include flood openings to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet or exceed the following minimum design criteria:
    - a. A minimum of two flood openings on different sides of each enclosed area subject to flooding;
    - b. The total net area of all flood openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding;
    - c. If a building has more than one enclosed area, each enclosed area must have flood openings to allow floodwaters to automatically enter and exit;
    - d. The bottom of all required flood openings shall be no higher than one (1) foot above the adjacent grade;
    - e. Flood openings may be equipped with screens, louvers, or other coverings or devices, provided they permit the automatic flow of floodwaters in both directions; and
    - f. Enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require flood openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires flood openings as outlined above.
- F. Additions/Improvements
1. Additions and/or improvements to pre-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structures area:
    - a. Not a substantial improvement, the addition and/or improvements must be designed to minimize flood damages and must not be any more non-conforming than the existing structure.
    - b. A substantial improvement, with modifications/rehabilitations/improvements to the existing structure or the common wall is structurally modified more than installing a doorway, both the existing structure and the addition and/or improvements must comply with the standards for new construction.
  2. Additions to pre-FIRM or post-FIRM structures that are a substantial improvement with no modifications to the existing structure other than a standard door in the common wall shall require only the addition to comply with the standards for new construction.

## CHAPTER 8: ENVIRONMENTAL STANDARDS

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3. Additions and/or improvements to post-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structure are:
    - a. Not a substantial improvement, the addition and/or improvements only must comply with the standards for new construction.
    - b. A substantial improvement, both the existing structure and the addition and/or improvements must comply with the standards for new construction.
  4. Any combination of repair, reconstruction, rehabilitation addition or improvement of a building or structure taking place during a one (1) year period, the cumulative cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started must comply with the standards for new construction. For each building or structure, the one (1) year period begins on the date of the first improvement or repair of that building or structure subsequent to the effective date of this ordinance. If the structure has sustained substantial damage, any repairs are considered substantial improvements regardless of the actual repair work performed. The requirement does not, however, include either:
    - a. Any project for improvement of a building required to correct existing by the building official and that are minimum necessary to assume safe living conditions.
    - b. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.
- G. Recreational Vehicles. Recreational vehicles shall either:
1. Be on site for fewer than 180 consecutive days and be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities, and has no permanently attached additions); or
  2. Meet all the requirements for new construction.
- H. Temporary Non-Residential Structures. Prior to the issuance of a floodplain development permit for a temporary structure, the applicant must submit to the Floodplain Administrator a plan for the removal of such structure(s) in the event of a hurricane, flash flood or other type of flood warning notification. The following information shall be submitted in writing to the Floodplain Administrator for review and written approval:
1. A specified time period for which the temporary use will be permitted. Time specified may not exceed three (3) months, renewable up to one (1) year;
  2. The name, address, and phone number of the individual responsible for the removal of the temporary structure;
  3. The time frame prior to the event at which a structure will be removed (i.e., minimum of 72 hours before landfall of a hurricane or immediately upon flood warning notification);
  4. A copy of the contract or other suitable instrument with the entity responsible for physical removal of the structure; and
  5. Designation, accompanied by documentation, of a location outside the Special Flood Hazard Area, to which the temporary structure will be moved;
- I. Accessory Structures. When accessory structures (sheds, detached garages, etc.) are to be placed within a Special Flood Hazard Area, the following criteria shall be met:
1. Accessory structures shall not be used for human habitation (including working, sleeping, living, cooking or restroom areas);
  2. Accessory structures shall not be temperature-controlled;
  3. Accessory structures shall be designed to have low flood damage potential;
  4. Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters;

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5. Accessory structures shall be firmly anchored in accordance with the provisions of 8.1.14.B;
6. All service facilities such as electrical shall be installed in accordance with the provisions of 8.1.14.B; and
7. Flood openings to facilitate automatic equalization of hydrostatic flood forces shall be provided below regulatory flood protection elevation in conformance with the provisions of 8.1.15.E.3;

An accessory structure with a footprint less than 150 square feet that satisfies the criteria outlined above does not require an elevation or floodproofing certificate. Elevation or floodproofing certifications are required for all other accessory structures in accordance with 8.1.15.C.

- J. Tanks. When gas and liquid storage tanks are to be placed within a Special Flood Hazard Area, the following criteria shall be met:
1. Underground tanks. Underground tanks in flood hazard areas shall be anchored to prevent flotation, collapse or lateral movement resulting from hydrodynamic and hydrostatic loads during conditions of the design flood, including the effects of buoyancy assuming the tank is empty;
  2. Above-ground tanks, elevated. Above-ground tanks in flood hazard areas shall be elevated to or above the Regulatory Flood Protection Elevation on a supporting structure that is designed to prevent flotation, collapse or lateral movement during conditions of the design flood. Tank-supporting structures shall meet the foundation requirements of the applicable flood hazard area;
  3. Above-ground tanks, not elevated. Above-ground tanks that do not meet the elevation requirements of this ordinance shall be permitted in flood hazard areas provided the tanks are designed, constructed, installed, and anchored to resist all flood-related and other loads, including the effects of buoyancy, during conditions of the design flood and without release of contents in the floodwaters or infiltration by floodwaters into the tanks. Tanks shall be designed, constructed, installed, and anchored to resist the potential buoyant and other flood forces acting on an empty tank during design flood conditions.
  4. Tank inlets and vents. Tank inlets, fill openings, outlets and vents shall be:
    - a. At or above the Regulatory Flood Protection Elevation or fitted with covers designed to prevent the inflow of floodwater or outflow of the contents of the tanks during conditions of the design flood, and.
    - b. Anchored to prevent lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the design flood.
- K. Other Development.
1. Fences in regulated floodways and NEAs that have the potential to block the passage of floodwaters, such as stockade fences and wire mesh fences, shall meet the limitations of Section 8.1.19 of this ordinance.
  2. Retaining walls, sidewalks and driveways in regulated floodways and NEAs. Retaining walls and sidewalks and driveways that involve the placement of fill in regulated floodways shall meet the limitations of Section 8.1.19 of this ordinance.
  3. Roads and watercourse crossings in regulated floodways and NEAs. Roads and watercourse crossings, including roads, bridges, culverts, low-water crossings and similar means for vehicles or pedestrians to travel from one side of a watercourse to the other side, that encroach into regulated floodways shall meet the limitations of Section 8.1.19 of this ordinance.
  4. Commercial storage facilities are not considered "limited storage" as noted in this ordinance, and shall be protected to the Regulatory Flood Protection Elevation as required for commercial structures.

### 8.1.16 STANDARDS FOR FLOODPLAINS WITHOUT ESTABLISHED BASE FLOOD ELEVATIONS

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Within the Special Flood Hazard Areas designated as Approximate Zone A and established in Section 8.1.3, where no Base Flood Elevation (BFE) data has been provided by FEMA, the following provisions, in addition to the provisions of Section 8.1.14, shall apply:

- A. No encroachments, including fill, new construction, substantial improvements or new development shall be permitted within a distance of twenty (20) feet each side from top of bank or five times the width of the stream, whichever is greater, unless certification with supporting technical data by a registered professional engineer is provided demonstrating that such encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.
- B. The BFE used in determining the regulatory flood protection elevation shall be determined based on the following criteria:
  - 1. When Base Flood Elevation (BFE) data is available from other sources, all new construction and substantial improvements within such areas shall also comply with all applicable provisions of this ordinance and shall be elevated or floodproofed in accordance with standards in Sections 8.1.14 and 8.1.15.
  - 2. When floodway or non-encroachment data is available from a Federal, State, or other source, all new construction and substantial improvements within floodway and non-encroachment areas shall also comply with the requirements of Sections 8.1.14 and 8.1.19.
  - 3. All subdivision, manufactured dwelling park and other development proposals shall provide Base Flood Elevation (BFE) data if development is greater than five (5) acres or has more than twenty (20) lots/manufactured home sites. Such BFE data shall be adopted by reference in accordance with Section 8.1.3 and utilized in implementing this ordinance.
  - 4. When Base Flood Elevation (BFE) data is not available from a Federal, State, or other source as outlined above, the reference level shall be elevated or floodproofed (nonresidential) to or above the regulatory flood protection elevation, as defined in Chapter 2. All other applicable provisions of Section 8.1.14 shall also apply.

### 8.1.17 STANDARDS FOR RIVERINE FLOODPLAINS WITH BASE FLOOD ELEVATIONS BUT WITHOUT FLOODWAYS OR NON-ENCROACHMENT AREAS

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Along rivers and streams where BFE data is provided by FEMA or is available from another source but neither floodway nor non-encroachment areas are identified for a Special Flood Hazard Area on the FIRM or in the FIS report, the following requirements shall apply to all development within such areas:

- A. Standards of Sections 8.1.14 and 8.1.15; and
- B. Until a regulatory floodway or non-encroachment area is designated, no encroachments, including fill, new construction, substantial improvements, or other development, shall be permitted unless certification with supporting technical data by a registered professional engineer is provided demonstrating that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point within the community.

### 8.1.18 STANDARDS FOR NON-FEMA REGULATED AREAS

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All drainage features have a natural floodplain but not all are shown on the FEMA Flood Insurance Rate Maps (FIRMs). The Town may require additional flood studies or restrictions on these Non-FEMA regulated floodplains. Standards for Non-FEMA regulated areas shall include a flood study that complies with the Town's Storm Sewer



Design Manual for developments that are five (5) acres or more in size, that are adjacent to, traversed by, or cross a drainageway or storm drainage system that has five (5) acres or more of contributing drainage area. Finished floor elevations shall be a minimum of 24" higher than the established flood elevation for the 1% annual storm event. This requirement may be waived by the Town Engineer if, in his or her professional opinion, the development will have minimal impact on flood levels:

### 8.1.19 STANDARDS FOR FLOODWAYS AND NON-ENCROACHMENT AREAS

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Areas designated as floodways or non-encroachment areas are located within the Special Flood Hazard Areas established in 8.1.3. Floodways and non-encroachment areas are extremely hazardous areas due to the velocity of floodwaters that have erosion potential and carry debris and potential projectiles. The following provisions shall apply to all development within such areas:

- A. No encroachments, including fill, new construction, substantial improvements and other developments shall be permitted unless:
  - 1. It is demonstrated that the proposed encroachment would not result in any increase in the flood levels during the occurrence of the base flood, based on hydrologic and hydraulic analyses performed in accordance with standard engineering practice and presented to the Floodplain Administrator prior to issuance of floodplain development permit, or
  - 2. A Conditional Letter of Map Revision (CLOMR) has been approved by FEMA. A Letter of Map Revision (LOMR) must also be obtained upon completion of the proposed encroachment
- B. If the requirements of Section 8.1.19.A is satisfied, all development shall comply with all applicable flood hazard reduction provisions of this ordinance.

### 8.1.20 PENALTIES FOR VIOLATION

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Violation of the provisions of this Section or failure to comply with any of its requirements, including violation of conditions and safeguards established in connection with grants of variance or special exceptions, shall constitute a Class 1 misdemeanor pursuant to NCGS 143-215.58. Any person who violates this ordinance or fails to comply with any of its requirements shall, upon conviction thereof, be fined not more than \$50.00 or imprisoned for not more than thirty (30) days, or both. Each day such violation continues shall be considered a separate offense. Nothing herein contained shall prevent the Town of Elon from taking such other lawful action as is necessary to prevent or remedy any violation.

### 8.1.21 CORRECTIVE PROCEDURES

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#### A. VIOLATIONS TO BE CORRECTED

When the Floodplain Administrator finds violations of applicable State and local laws, it shall be his or her duty to notify the owner or occupant of the building of the violation. The owner or occupant shall immediately remedy each of the violations of law cited in such notification.

#### B. ACTIONS IN EVENT OF FAILURE TO TAKE CORRECTIVE ACTION

If the owner of a building or property shall fail to take prompt corrective action, the Floodplain Administrator shall give the owner written notice, by certified or registered mail to the owner's last known address or by personal service, stating:

- 1. That the building or property is in violation of the floodplain management regulations;
- 2. That a hearing will be held before the Floodplain Administrator at a designated place and time, not later than ten (10) days after the date of the notice, at which time the owner shall be entitled to be heard in person or by counsel and to present arguments and evidence pertaining to the matter; and



3. That following the hearing, the Floodplain Administrator may issue an order to alter, vacate, or demolish the building; or to remove fill as applicable.

**C. ORDER TO TAKE CORRECTIVE ACTION**

If, upon a hearing held pursuant to the notice prescribed above, the Floodplain Administrator shall find that the building or development is in violation of the Flood Damage Prevention Standards, he or she shall issue an order in writing to the owner, requiring the owner to remedy the violation within a specified time period, not less than sixty (60) calendar days, nor more than one hundred eighty (180) calendar days. Where the Floodplain Administrator finds that there is imminent danger to life or other property, he or she may order that corrective action be taken in such lesser period as may be feasible.

**D. APPEAL**

Any person with standing under G.S. 160D-1402(c) may appeal the order to the Board of Adjustment by giving notice of appeal in writing to the Town Clerk within thirty (30) days of receiving actual or constructive notice of the decision. Appeals from an administrative decision of this Chapter shall follow the procedure outlined in Section 5.2.3. In the absence of an appeal, the order of the Floodplain Administrator shall be final. The Board of Adjustment shall hear an appeal within a reasonable time and may affirm, modify and affirm, or revoke the order.

**E. FAILURE TO COMPLY WITH ORDER**

If the owner of a building or property fails to comply with an order to take corrective action for which no appeal has been made or fails to comply with an order of the governing body following an appeal, the owner shall be guilty of a misdemeanor and shall be punished at the discretion of the court.

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**8.1.22 EFFECT ON RIGHTS AND LIABILITIES UNDER THE EXISTING FLOOD DAMAGE PREVENTION ORDINANCE**

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This Section in part comes forward by re-enactment of some of the provisions of the Flood Damage Prevention Ordinance enacted on October 10, 2017, as amended, and it is not the intention to repeal but rather to re-enact and continue to enforce without interruption of such existing provisions, so that all rights and liabilities that have accrued thereunder are reserved and may be enforced. The enactment of this section shall not affect any action, suit, or proceeding instituted or pending. All provisions of the Flood Damage Prevention Ordinance of The Town of Elon enacted on October 10, 2017, as amended, which are not reenacted herein are repealed.

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**8.1.23 EFFECT ON OUTSTANDING FLOODPLAIN DEVELOPMENT PERMITS**

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Nothing in this Section shall require any change in the plans, construction, size, or designated use of any development or any part thereof for which a floodplain development permit has been granted by the Floodplain Administrator or his or her authorized agents before the time of passage of this ordinance; provided, however, that when construction is not begun under such outstanding permit within a period of six (6) months subsequent to the date of issuance of the outstanding permit, construction or use shall be in conformity with the provisions of this ordinance.

## 8.2 JORDAN LAKE BUFFER PROTECTION STANDARDS

### 8.2.1 INTENT

The Jordan Lake Riparian Buffer Protection standards are intended to establish a protected buffer along surface waters (primarily perennial and intermittent streams but also ponds and other surface waters) shown on USGS Quad maps or NRCS Soil Survey Maps within the Jordan Lake Watershed.

The buffer consists of 2 zones, with Zone 1 encompassing the closest 30' from the top of bank in all directions, and Zone 2 containing 30' to 50' from the top of bank in all directions.

### 8.2.2 APPLICABILITY

All land within the Town of Elon's Planning Jurisdiction shall comply with these standards, contained in the *Town of Elon Riparian Buffer Protection Ordinance*, effective November 11, 2010 and as amended.

### 8.2.3 CONFLICT OF PROVISIONS

Where the Jordan Lake Riparian Buffer Protection Standards are in conflict with the standards of this Ordinance, the Jordan Lake Riparian Buffer Protection Standards shall control.

### 8.2.4 ADMINISTRATION

These standards shall be administered by the Stormwater Administrator or designee, including review of development plans and enforcement of related Ordinance violations.

## 8.3 STORMWATER STANDARDS

### 8.3.1 INTENT

This Ordinance seeks to satisfy the requirements of the Town of Elon's National Pollutant Discharge Elimination System (NPDES) stormwater discharge permit. The Town seeks to address post-development stormwater runoff; nonpoint and point source discharges; and illicit discharges into municipal stormwater systems, to protect public health; safety; the environment; and the general welfare of citizens. Management of stormwater runoff during and after construction help prevent surface water quality degradation and increased flooding within the Town's jurisdiction.

### 8.3.2 APPLICABILITY

All land within the Town of Elon's Planning Jurisdiction shall comply with these standards, contained in the *Town of Elon Phase II Stormwater Post-Construction Ordinance*, enacted on July 1, 2007 and as amended.

### 8.3.3 CONFLICT OF PROVISIONS

Where the Phase II Stormwater Post-Construction Ordinance Standards are in conflict with the standards of this Ordinance, the Phase II Stormwater Post-Construction Ordinance Standards shall control.

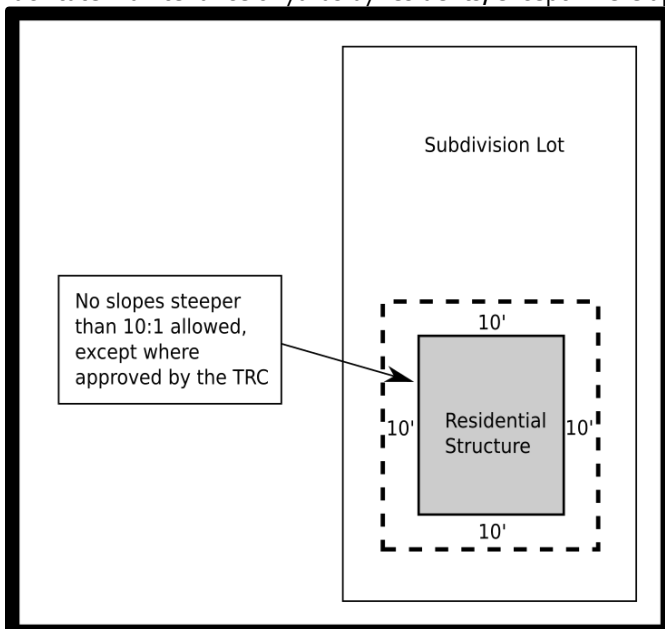
### 8.3.4 ADMINISTRATION

Stormwater standards for the Town of Elon shall be administered by the Stormwater Administrator or Designee, including review of development plans and enforcement of related Ordinance violations.

**8.4 GRADING STANDARDS**

The following standards shall apply to development-related grading of sites within the Town:

- A. No grading, clearing, or grubbing of sites shall be permitted without an approved zoning compliance permit.
- B. Development shall be designed and constructed with a positive drainage flow away from buildings towards approved stormwater management facilities. Plans for drainage facilities shall be approved by the Town Engineer.
- C. All impervious surfaces in the proposed development (including off-street parking) shall be considered in the site grading plan.
- D. Site grading and drainage facilities shall protect sinkholes, wetlands, ponds, and lakes from increased sediment loading.
- E. Mass grading of land in preparation for development of residential subdivisions larger than one acre in size is strongly discouraged and shall only be undertaken when no practical. Mass grading shall describe any sitework which leads to dramatic changes in existing topography, where slopes are cut and depressions are filled in order to establish a relatively level development area, often involving the removal of all trees on site and significant revisions to existing drainage patterns.
- F. Grading activity shall be prohibited within 5' of the perimeter of the property being developed, except where approved by the TRC. A site shall not be graded to create a slope greater than 2:1 at adjacent properties unless the slope already existed on the undeveloped land. In no case shall the slope be made steeper than it was on the undeveloped land within the perimeter setbacks. Terraced or stepped slopes that achieve the overall slope requirement may be considered by the TRC on a case-by-case basis.
- G. Slopes steeper than 3:1 shall be prohibited on lots within subdivisions, except where approved by the TRC.
- H. Slopes steeper than 10:1 shall be prohibited within 10' of the exterior walls of residential structures to facilitate maintenance of yards by residents, except where approved by the TRC.



- I. Development of residential structures should incorporate the use of minimal excavation foundations such as piers; piles; masonry curtain walls on footers; pin foundations; or other techniques that do not require mass grading, where practicable.

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- J. All disturbed areas within the dedicated right-of-way and easements of any subdivision street shall be restored with vegetation meeting the requirements of Section 7.3.8, Street Tree Requirements.
- K. Road grading and any associated stormwater management shall follow the most current standards of the Town and the North Carolina Department of Transportation (NCDOT).