

Click a Chapter Section
to jump to that page.



Chapter 9. Environmental Protection Standards

9.1. Purpose and Intent 1

9.2. Neuse River Basin Riparian Buffers (NRBs) 1

9.3. Sediment and Erosion Control 2

9.4. Stormwater Management 3

9.5. Flood Damage Prevention.27

9.1. Purpose and Intent

The purpose of this Section is to protect, maintain, and enhance public health, safety, environment, and general welfare by establishing minimum requirements and procedures to control adverse effects of sediment and erosion control, grading, post-construction stormwater runoff, illicit discharges, and flood damage. Proper management of stormwater runoff will minimize damage to public and private property and infrastructure; safeguard the public health, safety, and general welfare; and protect water and aquatic life.

9.2. Neuse River Basin Riparian Buffers (NRBs)

- A. Both the corporate limits and the Extra Territorial Jurisdiction (ETJ) of the Town of Knightdale fall completely within the Neuse River basin and are therefore subject to the riparian buffer rules as governed by North Carolina Administrative Code (NCAC), Title 15A, Chapter 2, Sub-Chapter B as amended.
- B. NRBs are a form of open space, and as such, may only be retained in private ownership if the necessary conservation easements are recorded with the Wake County Register of Deeds in a form approved by the Town. Otherwise, NRBs shall be separately deeded to a homeowner’s association, a non-profit land trust or conservancy, Wake County, or the Town of Knightdale (upon approval by the Town Council).
- C. NRBs cannot be located on any single-family residential building lot (detached or attached) within a major subdivision as defined in Section 12.2 (D)(6). In general terms, NRBs in major subdivisions must be platted as separate lots where the responsibility of maintaining (in a natural state) said riparian buffers in perpetuity is typically designated to a homeowner’s association or non-profit land conservation agency. Lots that have received Construction Drawing approval (Section 12.3 (G)) prior to March 1, 2010 shall be exempt from this requirement.

9.3. Sediment and Erosion Control

- A. **General Requirements.** All new development and redevelopment shall be required to take measures to minimize erosion during construction and after development. All new development and redevelopment shall comply with the provisions of the latest adopted amendment to Town of Knightdale Erosion and Sedimentation Control Ordinance. A land disturbance permit or exemption from the plan requirements of such regulations shall be submitted to the Stormwater Administrator prior to issuance of a construction improvement permit (CIP) for a subdivision, or part thereof. Furthermore, no infrastructure or individual lot grading shall commence prior to the completion or exemption from the requirements of the environmental survey as stated in Section 12.3 (B).
- B. **Residential Clearing and Grading.** In order to promote land development practices that minimize disturbance to vegetation and soils, limit alteration of the natural topography, minimize surface water and ground water runoff and diversion, minimize the need for additional storm drainage facilities, reduce sedimentation in surrounding waters and promote land development and site planning practices that are responsive to the town's scenic character without preventing the reasonable development of land; the initial clearing and grading of all residential major subdivisions shall be limited to dedicated public rights-of-way and easements for the installation of streets, utilities, and other infrastructure. All grading activities shall be done in accordance with all applicable federal, state and local laws, rules and regulations; including those pertaining to air and water pollution and noise control.
1. **Infrastructure.** Grading for infrastructure improvements (streets, sidewalks, curb, gutter, water, sewer, utilities, stormwater, spoil and borrow areas, etc.) shall be phased according to the Master Plan. Prior to proceeding to another phase, the developer shall stabilize the present phase with adequate ground cover sufficient to restrain erosion and have all infrastructure installed.
 2. **Lots.** Grading of individual lots within the major subdivision shall not begin without having first obtained a building permit from the Stormwater Administrator and shall be limited to those areas comprising the building footprint, driveway and a minimal area surrounding the building footprint to accommodate construction equipment.
 3. **Exemptions.** Exemptions to the requirements of Section 9.3 (B) are as follows:
 - a. Residential subdivisions with lots less than sixty (60) feet wide.
 - b. Grading and clearing in emergency situations involving immediate danger to life or property or substantial fire hazards.

9.4. Stormwater Management

A. General Provisions.

1. Findings.

- a. It is hereby determined that:
 - i. Development and redevelopment alter the hydrologic response of local watersheds and increases stormwater runoff rates and volumes, flooding, soil erosion, stream channel erosion, nonpoint and point source pollution, and sediment transport and deposition, as well as reducing groundwater recharge;
 - ii. These changes in stormwater runoff contribute to increased quantities of water-borne pollutants and alterations in hydrology that are harmful to public health and safety as well as to the natural environment; and
 - iii. These effects can be managed and minimized by applying proper design and well-planned controls to manage stormwater runoff from development and redevelopment sites.
- b. It is further determined that the Federal Water Pollution Control Act of 1972 (“Clean Water Act”) and federal Phase II Stormwater Rules promulgated under it, as well as rules of the North Carolina Environmental Management Commission promulgated in response to federal Phase II requirements, compel certain urbanized areas, including this jurisdiction, to adopt minimum stormwater controls such as those included in this Ordinance.
- c. Additionally, the North Carolina Environmental Management Commission has identified and has promulgated rules that have been amended and affirmed by the North Carolina General Assembly (Neuse River Nutrient Management Strategy) to reduce the average annual loads of nitrogen and phosphorus delivered to the Neuse River from all point and nonpoint sources of these nutrients located within its watershed, including stormwater from new development in this jurisdiction;
- d. Therefore, the Knightdale Town Council establishes this set of water quality and quantity regulations to meet the requirements of state and federal law regarding control of stormwater runoff and discharge for development and redevelopment.

2. Purpose.

- a. The purpose of this article is to protect, maintain and enhance the public health, safety, environment, and general welfare by establishing minimum requirements and procedures to control the adverse effects of: increased post-development stormwater runoff, nitrogen; phosphorus, and total suspended solids in stormwater runoff; nonpoint and point source pollution associated with new development and redevelopment; and illicit discharges into municipal stormwater systems. It has been determined that proper management of construction-related and post-development stormwater runoff will: minimize damage to public and private property and infrastructure; safeguard the public health, safety, and general welfare; and protect water and aquatic resources.
- b. This article seeks to meet its general purpose through the following specific objectives and means:
 - i. Establishing decision-making processes for development and redevelopment that protects the integrity of watersheds and preserves the health of water resources;
 - ii. Requiring that new development and redevelopment maintain the pre-development hydrologic response in their post-development state for the applicable design storm to

reduce flooding, streambank erosion, nonpoint and point source pollution, and increases in stream temperature, and to maintain the integrity of stream channels and aquatic habitats;

- iii. Establishing minimum post-development stormwater management standards and design criteria for the regulation and control of stormwater runoff quantity and quality;
 - iv. Establishing design and review criteria for the construction, function, and use of structural stormwater best management practices (BMPs) and Stormwater Control Devices (SCMs) that may be used to meet the minimum post-development stormwater management standards;
 - v. Encouraging the use of better management and site design practices, such as the use of vegetated conveyances for stormwater and the preservation of greenspace, riparian buffers, and other conservation areas to the maximum extent practicable;
 - vi. Establishing provisions for the long-term responsibility for and maintenance of structural and nonstructural stormwater BMPs and SCMs to ensure that they continue to function as designed, are maintained appropriately, and pose no threat to public safety;
 - vii. Establishing administrative procedures for the submission, review, approval, and disapproval of stormwater management plans, for the inspection of approved projects, and to assure appropriate long-term maintenance.
 - viii. Controlling illicit discharges into the municipal separate stormwater system.
3. **Authority.** The Knightdale Town Council is authorized to adopt this article pursuant to North Carolina law, including but not limited to Article 14, Section 5 of the Constitution of North Carolina; North Carolina General Statutes Chapter 143-214.7 and rules promulgated by the Environmental Management Commission thereunder; Chapter 143-215.6A; Session Laws 2009-216, 2009-484; Chapter 153A-454; Chapter 160A, § 174, 185, 459; NCAC 02B.0711; NCAC 02B.0731.
4. **Applicability and Jurisdiction.**
- a. **General.** Beginning with and subsequent to its effective date, this article shall be applicable to all development and redevelopment—including, but not limited to, applications for Site Plan Approval, Subdivision Approval, Construction Drawing Approval, and grading approval—unless exempt pursuant to this article.
 - b. **Exemptions.**
 - i. Projects disturbing less than:
 - a) one acre for single family and duplex residential property and recreational facilities; and
 - b) one-half acre for commercial, industrial, institutional, multifamily residential, or local government land uses with the following exception: projects below one half acre that would replace or expand existing structures on a parcel, resulting in a cumulative built-upon area for the parcel exceeding twenty-four percent, shall be subject to the provisions of this article.
 - ii. Development of an individual single-family or duplex residential lot that:
 - a) Is not part of a larger common plan of development or sale where multiple separate and distinct development activities may be taking place at different times on different schedules but governed by a single development plan regardless of ownership of the parcels.

- b) Does not result in greater than five percent built upon area on the lot;
- iii. Development or redevelopment that is exempt from permit requirements of Section 404 of the federal Clean Water Act as specified in 40 CFR 232 (primarily, ongoing farming and forestry activities) is exempt from the provisions of this article.
- iv. Per the requirements of 15A NCAC 02B .0265, NCAC 02B .0711, NCAC 02B .0731 and the Town's Phase II Permit NCS000460, new development undertaken by a local government solely as a public road project shall be deemed compliant with the purposes of this article if it meets the riparian buffer protection requirements of The Neuse River Buffer Rules and nutrient loading targets of the Neuse Nutrient Management Strategy. For these public road projects, the following shall be done to the maximum extent practicable (MEP):
 - a) Meet the Neuse Nitrogen Target Rates of 3.6 lb/acre/year by providing onsite SCM or permanent offsite nutrient credits.
 - b) Minimize BUA;
 - c) Divert runoff away from surface waters; and
 - d) Implement BMPs and SCMs.
- 5. **No Development or Redevelopment until Compliance and Permit.** No development or redevelopment shall occur except in compliance with the provisions of this article or unless exempted. No development or redevelopment for which a permit is required pursuant to this article shall occur except in compliance with the provisions, conditions, and limitations of the permit.
- 6. **Map.**
 - a. The provisions of this article shall apply within the areas designated on the map titled "Stormwater Map of Knightdale, North Carolina" ("the Stormwater Map"), which is adopted simultaneously herewith. The Stormwater Map and all explanatory matter contained thereon accompanies and is hereby made a part of this Ordinance.
 - b. The Stormwater Map shall be kept on file by the Stormwater Administrator and shall be dated to take into account changes in the land area covered by this Ordinance and the geographic location of all engineered stormwater controls permitted under this article. In the event of a dispute, the applicability of this article to a particular area of land or BMP/SCM shall be determined by reference to the North Carolina Statutes, the North Carolina Administrative Code, and local zoning and jurisdictional boundary ordinances.
- 7. **Erosion and Sediment Control.** Follow Town of Knightdale Erosion and Sedimentation Control Ordinance.
- 8. **Design Manual.**
 - a. **Reference to Manual.**
 - i. The Stormwater Administrator shall use the policy, criteria, and information, including technical specifications and standards in the North Carolina Department of Environment Natural Resources' (NCDENR) most recent Stormwater Design Manual (hereinafter referred to simply as the Manual) as the basis for decisions about stormwater permits and about the design, implementation, and performance of structural and non-structural stormwater SCMs. The latest Manual information can be found here: [NC DEQ: Stormwater Design Manual](#).

- ii. The current Design Manual, includes a list of acceptable stormwater treatment practices, including specific design criteria for each stormwater practice. Stormwater treatment practices that are designed, constructed, and maintained in accordance with these design and sizing criteria will be presumed to meet the minimum water quality performance standards of the Neuse Rules, Phase II and other applicable stormwater laws.
 - iii. In addition to the Design manual, the Town shall adopt its own “Stormwater Management Manual” to provide more specific information on its individual administrative standards and procedures. This manual will be kept on file by the Stormwater Administrator and be easily accessible to the public.
- b. **Relationship of Manual to Other Laws and Regulations.** If the specifications or guidelines of the Design Manual are more restrictive or apply a higher standard than other laws or regulations, that fact shall not prevent application of the specifications or guidelines in the Design Manual.
- c. **Changes to Standards and Specifications.** If the standards, specifications, guidelines, policies, criteria, or other information in the Design Manual are amended subsequent to the submittal of an application for approval pursuant to this article, but prior to approval, the new information shall control and shall be utilized in reviewing the application and in implementing this article with regard to the application.
- d. **Amendments to Design Manual.**
 - i. The Design Manual may be updated and expanded periodically based on advancements in technology and engineering, improved knowledge of local conditions, or local monitoring or maintenance experience.
 - ii. Prior to amending or updating the Design Manual, proposed changes shall be generally publicized and made available for review, and an opportunity for comment by interested persons shall be provided.
- e. **Stormwater Management Plan.**
 - i. A stormwater management plan is required for all development and redevelopment unless exempt pursuant to the provisions of Section 9.4. Please refer to Section 12.3 (I)(5) for stormwater management plan requirements.

B. Administration and Procedures.

1. Stormwater Administrator.

- a. **Designation.** A Stormwater Administrator shall be designated by the town of Knightdale to administer and enforce this article.
- b. **Powers and Duties.** In addition to the powers and duties that may be conferred by other provisions of this Ordinance and other laws, the Stormwater Administrator shall have the following powers and duties under this article:
 - i. To review and approve, approve with conditions, or disapprove applications for approval of plans pursuant to this article.
 - ii. To make determinations and render interpretations of this article. Any person may request an interpretation by submitting a written request to the Stormwater Administrator, who shall respond in writing within thirty (30) days. The Stormwater Administrator shall keep on file a record of all written interpretations of this article.

- iii. To establish application requirements and schedules for submittal and review of applications and appeals, to review and make recommendations to other Town staff and Town boards on applications for development or redevelopment approvals.
 - iv. To enforce the provisions of this article in accordance with its enforcement provisions.
 - v. To maintain records, maps, forms, and other official materials as they relate to the adoption, amendment, enforcement, and administration of this article.
 - vi. To provide expertise and technical assistance to the Town, on request.
 - vii. To designate appropriate other person(s) who shall carry out the powers and duties of the Stormwater Administrator.
 - viii. To take any other action necessary to administer the provisions of this article.
2. **Review Procedures.**
- a. **Stormwater Management Permit Required; Must Apply for Permit.** A stormwater management permit is required for all development and redevelopment unless exempt pursuant to this article. A stormwater management permit may only be issued subsequent to a properly submitted and reviewed permit application, pursuant to this section.
 - b. **Effect of Permit.**
 - i. A stormwater management permit shall govern the design, installation, and construction of stormwater management and control practices on the site, including engineered stormwater controls and elements of site design for stormwater management other than engineered stormwater controls.
 - ii. The stormwater management permit is intended to provide a mechanism for the review, approval, and inspection of the approach to be used for the management and control of stormwater for the development or redevelopment site consistent with the requirements of this article, whether the approach consists of engineered stormwater controls or other techniques such as low-impact or low-density design. The permit does not continue in existence indefinitely after the completion of the project; rather, compliance after project construction is assured by the maintenance provisions of this article.
 - c. **Authority to File Applications.** All stormwater management permit applications required pursuant to this article shall be submitted to the Stormwater Administrator by the landowner or the landowner's duly authorized agent.
 - d. **Establishment of Application Requirements, Schedule, and Fees.**
 - i. **Application Contents and Form.** The Stormwater Administrator shall establish requirements for the content and form of all stormwater management permit applications and shall amend and update those requirements from time to time. At a minimum, the stormwater management permit application shall describe in detail how post-development stormwater runoff will be controlled and managed, the design of all stormwater facilities and practices, and how the proposed project will meet the requirements of this article.
 - ii. **Submission Schedule.** The Stormwater Administrator shall establish a submission schedule for stormwater management permit applications. The schedule shall establish deadlines by which complete applications must be submitted for the purpose of ensuring that there is adequate time to review applications, and that the various stages in the review process are accommodated.

- iii. **Permit Review Fees.** The Town Council shall establish stormwater management permit review fees as well as policies regarding refund of any fees upon withdrawal of an application and may amend and update the fees and policies from time to time.
 - iv. **Stormwater Management Manual.** For stormwater management permit applications required under this Code, the Stormwater Administrator shall compile the application requirements, submission schedule, fee schedule, a copy of this article, and information on how and where to obtain the Design Manual in a Stormwater Management Manual, which shall be made available to the public.
- e. **Submittal of Complete Application.**
- i. Stormwater management permit applications shall be submitted to the Stormwater Administrator pursuant to the application submittal schedule, and in the form established by the Stormwater Administrator, along with the appropriate fee established pursuant to this section.
 - ii. A stormwater management permit application shall be considered as timely submitted only when it contains all elements of a complete application pursuant to this article, along with the appropriate fee. If the Stormwater Administrator finds that an application is incomplete, the applicant shall be notified of the deficient elements and shall be provided with an opportunity to submit a complete application. However, the submittal of an incomplete application shall not suffice to meet a deadline contained in the submission schedule established above.
- f. **Review.** Within the timeframe specified in the submission schedule after a complete stormwater management permit application is submitted, the Stormwater Administrator shall review the application and determine whether the application complies with the standards of this article.
- i. **Approval.** If the Stormwater Administrator finds that the Stormwater Management Permit application complies with the standards of this article and this Ordinance, the Stormwater Administrator shall approve the application. The Stormwater Administrator may impose conditions of approval as needed to ensure compliance with this article. The conditions shall be included as part of the approval.
- g. **Fails to Comply.** If the Stormwater Administrator finds that the stormwater management permit application fails to comply with the standards of this article, the Stormwater Administrator shall notify the applicant and shall indicate how the application fails to comply. The applicant shall have an opportunity to submit a revised application.
- h. **Revision and Subsequent Review.**
- i. A complete revised stormwater management permit application shall be reviewed by the Stormwater Administrator within the timeframe specified in the submission schedule after its resubmittal and shall be approved, approved with conditions, or disapproved.
 - ii. If a revised stormwater management permit application is not re-submitted within six months from the date the applicant was notified, the application shall be considered withdrawn, and a new submittal for the same or substantially the same project shall be required along with the appropriate fee for a new submittal.
 - iii. Two resubmittals of a revised stormwater management permit application may be submitted without payment of an additional permit review fee. Any resubmittal after the second resubmittal shall be accompanied by an additional permit review fee, as established pursuant to this Ordinance.

C. Applications for Approval.

1. Concept Plan and Consultation Meeting.

- a. **Consultation Meeting.** Before a stormwater management permit application is deemed complete, the Stormwater Administrator or developer may request a consultation on a concept plan for the post-construction stormwater management system to be utilized in the proposed development project. This consultation meeting should take place at the time of the preliminary plan of subdivision or other early step in the development process. The purpose of this meeting is to discuss the stormwater management measures necessary for the proposed project, as well as to discuss and assess constraints, opportunities, and potential approaches to stormwater management designs before formal site design engineering is commenced. Local watershed plans, the Comprehensive Plan, and other relevant resource protection plans should be consulted in the discussion of the concept plan.
- b. **Concept Plan Contents.** To accomplish this goal, the following information should be included in the concept plan, which should be submitted in advance of the meeting:
 - i. **Existing Conditions/Proposed Site Plans.** Existing conditions and proposed site layout sketch plans, which illustrate at a minimum:
 - a) Existing and proposed topography;
 - b) Perennial and intermittent streams;
 - c) Mapping of predominant soils from soil surveys (if available);
 - d) Stream and other buffers and features used in designing buffers and meeting any applicable buffer requirements;
 - e) Boundaries of existing predominant vegetation;
 - f) Proposed limits of clearing and grading; and
 - g) Location of existing and proposed roads, buildings, parking areas, and other impervious surfaces.
 - ii. **Natural Resources Inventory.** A written or graphic inventory of natural resources at the site and surrounding area as it exists prior to the commencement of the project. This description should include a discussion of soil conditions, forest cover, geologic features, topography, wetlands, and native vegetative areas on the site, as well as the location and boundaries of other natural feature protection and conservation areas such as lakes, ponds, floodplains, stream buffers, and other setbacks (e.g., drinking water well setbacks, septic setbacks, etc.). Particular attention should be paid to environmentally sensitive features that provide particular opportunities or constraints for development and stormwater management.
 - iii. **Stormwater Management System Concept Plan.** A written or graphic concept plan of the proposed post-development stormwater management system including: preliminary selection and location of proposed engineered stormwater controls; low-impact design elements; location of existing and proposed conveyance systems such as grass channels, swales, and storm drains; flow paths; location of floodplain/floodway limits; relationship of site to upstream and downstream properties and drainages; and preliminary location of any proposed stream channel modifications, such as bridge or culvert crossings.

2. Stormwater Management Permit Application.

- a. The stormwater management permit application shall detail how post-development stormwater runoff will be controlled and managed and how the proposed project will meet the requirements

- of this article, including Section 9.4 (G), Standards. All such plans shall be prepared by a qualified licensed North Carolina Professional Engineer or registered surveyor, soil scientist, or landscape architect. The engineer, surveyor, soil scientist, or landscape architect shall perform services only in their area of competence and shall verify that the design of all stormwater management facilities and practices meets the submittal requirements for complete applications, that the designs and plans are sufficient to comply with applicable standards and policies found in the Design Manual, and that the designs and plans ensure compliance with this article.
- b. The submittal shall include all of the information required in the submittal checklist established by the Stormwater Administrator. Incomplete submittals shall be treated pursuant to Section 9.4 (B)(2)(e), Submittal of Complete Application.
 3. **Sedimentation & Erosion Control Plan Approval and Grading Permit.** Within the corporate limits and extra territorial jurisdiction of the Town of Knightdale, the Stormwater Administrator is responsible for the administration and enforcement of the Town's erosion control program, including approval, issuance of permits related to, and enforcement of erosion and sedimentation control plans. Prior to land disturbing activities, a Sedimentation & Erosion Control Plan Approval and a grading permit shall be obtained directly from the Town. Sedimentation & Erosion Control Plans shall be prepared in accordance with Section 9.4 (A)(7) of this ordinance.
 4. **Preconstruction Activities.**
 - a. Prior to site work, submittals shall be presented to the town outlining all materials used for public infrastructure i.e., precast structures, conveyance piping etc.
 - b. Once the submittals have been approved by the Stormwater Administrator, a pre-construction meeting shall be scheduled on site to review the stormwater management and erosion control plan.
 5. **As-Built Plans and Final Approval.**
 - a. Upon completion of a project, and before a Certificate of Compliance/Occupancy shall be granted, the applicant shall certify that the completed project is in accordance with the approved stormwater management plans and designs and shall submit actual "as built" plans for all stormwater management facilities or practices after final construction is completed.
 - b. The plans shall show the final design specifications for all stormwater management facilities and practices and the field location, size, depth, and planted vegetation of all measures, controls, and devices, as installed. This shall also include any geotechnical surveys completed by an authorized representative, CCTV footage recorded, and Geographic Information System (GIS) files from all stormwater conveyances. The designer of the stormwater management measures and plans shall certify, under seal, that the as-built stormwater measures, controls, and devices are in compliance with the approved stormwater management plans and designs and with the requirements of this article. A final inspection and approval by the Stormwater Administrator shall occur before the release of any performance securities.
 6. **Other Permits.** No Certificate of Compliance/Occupancy shall be issued by the Town Inspections Department without final as-built plans and a final inspection and approval by the Stormwater Administrator, except where multiple units are served by the stormwater practice or facilities, in which case the Inspections Department may elect to withhold a percentage of permits or Certificates of Compliance/Occupancy until as-built plans are submitted and final inspection and approval has occurred.

D. Approvals.

1. **Effect of Approval.** Approval of a stormwater management permit authorizes the applicant to go forward with only the specific plans and activities authorized in the permit. The approval shall not be construed to exempt the applicant from obtaining other applicable approvals from local, State, and federal authorities.
2. **Time Limit/Expiration.**
 - a. When work under an approved plan or permit is not completed within two years following the date of issuance, the permit or approval shall be deemed null and void. The Stormwater Administrator may grant a permit extension in one- or two-year increments, upon receiving a written request from the applicant before the expiration of the approved plan.
 - b. In granting an extension, the Stormwater Administrator may require compliance with standards adopted since the original application was submitted unless there has been substantial reliance on the original permit and the change in standards would infringe the applicant's vested rights.

E. Stormwater Variances.

1. Any person may petition the Town for a variance granting permission to use the person's land in a manner otherwise prohibited by this article. For all proposed major and minor variances from the requirements of this article, the Board of Adjustment shall make findings of fact showing that:
 - a. There are practical difficulties or unnecessary hardships that prevent compliance with the strict letter of the article;
 - b. The variance is in harmony with the general purpose and intent of the local watershed protection regulations and preserves their spirit; and
 - c. In granting the variance, the public safety and welfare have been assured and substantial justice has been done.
2. In the case of a request for a minor variance, the Board of Adjustment may vary or modify any of the regulations or provisions of the article so that the spirit of the article shall be observed, public safety and welfare secured, and substantial justice done, and may impose reasonable and appropriate conditions and safeguards upon any variance it grants.
3. The Board of Adjustment may attach conditions to the major or minor variance approval that support the purpose of the local watershed protection regulations. If the variance request qualifies as a major variance, and the Board of Adjustment decides in favor of granting the major variance, the Board shall then prepare a preliminary record of the hearing and submit it to the North Carolina Environmental Management Commission for review and approval. If the Commission approves the major variance or approves with conditions or stipulations added, then the Commission shall prepare a Commission decision which authorizes the Board of Adjustment to issue a final decision which would include any conditions or stipulations added by the Commission. If the Commission denies the major variance, then the Commission shall prepare a decision to be sent to the Board of Adjustment. The Board shall prepare a final decision denying the major variance.
4. Appeals from the local government decision on a major or minor variance request are made on certiorari to the local Superior Court. Appeals from the Commission decision on a major variance request are made on judicial review to Superior Court.

- F. **Appeals.** Any aggrieved person affected by any decision, order, requirement, or determination relating to the interpretation or application of this article made by the Stormwater Administrator, may file an appeal to the Board of Adjustment or Town Council per the procedures specified in Section 12.2 (F)(2) within thirty (30) days. Applications for an Appeal shall be filed, reviewed, and decided in accordance with Section 12.2 (F)(2) Administrative Appeal, except that the Board of Adjustment shall make a final decision on an appeal of a decision relating to civil penalties for violations of this article within ninety (90) days after the date the appeal application is accepted.

G. **Standards.**

1. **General Standards.** All development and redevelopment to which this article applies shall comply with the standards of this section. The approval of the stormwater management permit shall require an enforceable restriction on property usage that runs with the land, such as a recorded deed restriction or protective covenants, to ensure that future development and redevelopment maintains the site consistent with the approved project plans.
2. **Nutrient Sensitive Waters (NSW).** In addition to the standards for stormwater handling set out in the design manual, development and redevelopment that drains in whole or part to class NSW waters shall design and implement the best stormwater practices that reduce nutrient loading, while still meeting the other requirements of this ordinance.
3. **Neuse River Estuary Nutrient Management Requirements.**
 - a. Nitrogen Loading Rate Targets
 - i. The project shall meet either a nitrogen stormwater loading rate of 3.6 pounds per acre per year (lb/ac/yr) or meet “runoff volume match” as defined in 15A NCAC 02H.1002.
 - ii. The project area used for nutrient calculation and stormwater requirements consists of the site area, including any engineered stormwater controls, less any existing built upon area. The project density used for determining stormwater requirements is the amount of built upon area subject to this ordinance at project completion divided by the project area.
 - iii. The developer shall determine the nitrogen load and loading rate generated from the project area without engineered stormwater controls and determine the needed nitrogen load reduction to meet nutrient targets by using the approved accounting tool.
4. **Nitrogen and Phosphorus Standard is Supplemental; Total Suspended Solids (TSS) Removal.**
 - a. The nitrogen and phosphorus loading standards in this article are supplemental to, not replacements for, stormwater standards otherwise required by federal, state, or local law, including without limitation any riparian buffer requirements applicable to the location of the development. This includes, without limitation, the riparian buffer protection requirements of 15A NCAC 2B.0714.
 - b. All stormwater systems used to meet these requirements shall be designed to have a minimum of eighty-five (85) percent average annual removal for TSS.

5. Control and Treatment of Runoff Volume.

- a. Stormwater systems shall be designed to control and treat the runoff volume generated from all surfaces by one inch of rainfall; the treatment volume. This treatment volume shall not exceed the maximum ponding depth and be drawn down pursuant to standards specific to each practice as provided in the Design Manual.
- b. To minimize flooding and to ensure that the integrity and nutrient processing functions of receiving waters and associated riparian buffers are not compromised by erosive flows, stormwater flows from the development or redevelopment shall not contribute to degradation of waters of the State. At a minimum, the development or redevelopment shall not result in a net increase in peak flow leaving the site from pre-development conditions for the 1-year, 24-hour storm; 2-year, 24-hour storm; and 10-year, 24- hour storm events.

6. Partial Offset of Nutrient Control Requirements.

- a. Development subject to this article shall attain a maximum nitrogen loading rate of three and six tenths (3.6) of a pound per acre per year and shall meet any requirements for engineered stormwater controls otherwise imposed by this article. A developer subject to this article may achieve nitrogen loading required by this article through a combination of the following methods:
 - i. Purchasing offset credits from an approved private seller with a project located within the same eight-digit Hydrologic Unit Code (8-digit HUC) as the proposed development. Refer to the North Carolina Department of Environmental Quality (NCDEQ) Division of Water Resources (DWR) for approved mitigation banks with applicable and eligible credits to Knightdale.
 - ii. A developer may propose other offset measures to the Town, including providing his or her own off-site offset.
 - iii. Making offset payments to the NC Ecosystem Enhancement Program contingent upon acceptance of payments by that Program.
 - iv. Making offset payments to the Town of Knightdale for equivalent nutrient credits at eighty (80) percent of the rate calculated by the NC Ecosystem Enhancement Program for the Neuse-Falls Lake watershed.
- b. All offset measures permitted by the ordinance shall meet the requirements of 15A NCAC 02B .0273 (2) through (4) and 15A NCAC 02B .0703. Documentation and proof of purchase for offset credit options is required prior to construction.

7. Standards for Stormwater Control Measures.

- a. **Evaluation According to Contents of Design Manual.** All stormwater control measures, stormwater systems and stormwater treatment practices (also referred to as Best Management Practices, or BMP/SCMs) required under this article shall be evaluated by the Stormwater Administrator according to the policies, criteria, and information, including technical specifications and standards and the specific design criteria for each stormwater practice, in the most updated version of the Design Manual. The Stormwater Administrator shall determine whether proposed BMP/SCMs will be adequate to meet the requirements of this article.
 - b. **Determination of Adequacy; Presumptions and Alternatives.** Stormwater treatment practices that are designed, constructed, and maintained in accordance with the criteria and specifications in the Design Manual and the approved accounting tool will be presumed to meet the minimum water quality and quantity performance standards of this article. Whenever an applicant proposes to utilize a practice or practices not designed and constructed in accordance with the criteria and specifications in the Design Manual, the applicant shall have the burden of demonstrating that the practice(s) will satisfy the minimum water quality and quantity performance standards of this article. The Stormwater Administrator may require the applicant to provide the documentation, calculations, and examples necessary for the Stormwater Administrator to determine whether such an affirmative showing is made.
 - c. **Safety Requirements.** All SCM facilities subject to this ordinance shall be designed with features to discourage access from unauthorized personal to prevent injury and accidental loss of life. Specific requirements for each facility type can be found in the Town of Knightdale Stormwater Management Manual.
8. **Completion of Stormwater BMPs and SCMs.** The developer of any nonresidential development will be expected to have installed and stabilized the final stormwater BMP/SCMs supporting their development prior to issuance of a Certificate of Occupancy. For residential development, the final stormwater device can be installed at such point that seventy-five (75) percent or more of the residential lots are completed.
 9. **Dedication of BMP/SCMs, Facilities, and Improvements.** The Town may accept dedication of any existing or future stormwater management facility for maintenance, provided such facility meets all the requirements of this article and includes adequate and perpetual access and sufficient area, by easement or otherwise, for inspection and regular maintenance.

H. Maintenance.

1. General Standards for Maintenance.

- a. **Function of BMP/SCMs as Intended.** The owner of each engineered stormwater control installed pursuant to this article shall maintain and operate it so as to preserve and continue its function in controlling stormwater quality and quantity at the degree or amount of function for which the engineered stormwater control was designed.

b. Annual Maintenance Inspection and Report.

- i. The person responsible for maintenance of any engineered stormwater control installed pursuant to this article shall submit to the Stormwater Administrator an inspection report from one of the following persons performing services only in their area of competence: a qualified licensed North Carolina Professional Engineer or registered surveyor, landscape architect, or person certified by the North Carolina Cooperative Extension Service for stormwater treatment practice inspection and maintenance. The inspection report shall contain all of the following:
 - a) The name and address of the land owner;
 - b) Parcel PIN.
 - c) The recorded book and page number of the lot of each engineered stormwater control;
 - d) A statement that an inspection was made of all engineered stormwater controls;
 - e) The date the inspection was made;
 - f) A statement that all inspected engineered stormwater controls are performing properly and are in compliance with the terms and conditions of the approved maintenance agreement required by this article; and
 - g) The original signature and seal of the engineer, surveyor, or landscape architect.
- ii. All inspection reports shall be on forms supplied by the Stormwater Administrator. An original inspection report shall be provided to the Stormwater Administrator beginning one year from the date of as-built certification and each year thereafter on or before the date of the as-built certification.

2. Operation and Maintenance Agreement.

a. In General.

- i. Prior to the conveyance or transfer of any lot or building site to be served by a engineered stormwater control pursuant to this article, and prior to issuance of any permit for development or redevelopment requiring a engineered stormwater control pursuant to this article, the applicant or owner of the site must execute an operation and maintenance agreement that shall be binding on all subsequent owners of the site, portions of the site, and lots or parcels served by the engineered stormwater control. Until the transference of all property, sites, or lots served by the engineered stormwater control, the original owner or applicant shall have primary responsibility for carrying out the provisions of the maintenance agreement.
- ii. The operation and maintenance agreement shall require the owner or owners to maintain, repair, and, if necessary, reconstruct the engineered stormwater control and subsequent conveyance systems, and shall state the terms, conditions, and schedule of maintenance for the engineered stormwater control. In addition, it shall grant to the Town a right of entry in the event that the Stormwater Administrator has reason to believe it has become necessary to inspect, monitor, maintain, repair, or reconstruct the engineered stormwater control; however, in no case shall the right of entry, of itself, confer an obligation on the Town to assume responsibility for the engineered stormwater control.

- iii. The operation and maintenance agreement must be approved by the Stormwater Administrator prior to plan approval, and it shall be referenced on the final plat and shall be recorded with the Register of Deeds of the county in which the stormwater control is located upon final plat approval. A copy of the recorded maintenance agreement shall be given to the Stormwater Administrator within fourteen (14) days following its recordation.
 - iv. For all engineered stormwater controls required pursuant to this article the required operation and maintenance agreement shall include all of the following provisions:
 - a) A statement that the agreement shall grant to the Town of Knightdale a right of entry to inspect, monitor, maintain, repair, and reconstruct structural BMP/SCMs.
 - b) A statement that the Town of Knightdale is authorized to recover from the property owner and/or association and its members, any and all costs the Town of Knightdale expends to maintain or repair the structural BMP/SCMs or to correct any operational deficiencies. Failure to pay the Town of Knightdale all of its expended costs, after forty-five days written notice, shall constitute a breach of the agreement. The Town of Knightdale shall thereafter be entitled to bring an action against the property owner and/or association and its members to pay, or foreclose upon the lien hereby authorized by the agreement against the property, or both, in case of a deficiency. Interest, collection costs, and attorney fees shall be added to the recovery.
 - c) A statement that the agreement shall not obligate the Town of Knightdale to maintain or repair any structural BMP/SCMs or encompassing easements, and the Town of Knightdale shall not be liable to any person for the condition or operation of structural BMP/SCMs.
 - d) A statement that the agreement shall not in any way diminish, limit, or restrict the right of the Town of Knightdale to enforce any of its ordinances as authorized by law.
 - e) A statement that the property owner and/or association and its members indemnifies and holds harmless the Town of Knightdale for any costs and injuries arising from or related to the structural BMP/SCM, unless the Town of Knightdale has agreed in writing to assume the maintenance responsibility for the BMP/SCM and has accepted dedication of any and all rights necessary to carry out that maintenance.
 - b. **Third Party Transfer Document For Homeowners' Associations.** A third-party document signed by the Town of Knightdale, the developer and the Homeowners' associations shall be required upon completion of the project and handoff of all structural BMP/SCM devices included in the recorded operations and maintenance agreement.
 - i. A formal onsite inspection with all three parties present shall be required. If all devices are compliant and functioning as designed the agreement will be signed by all three parties and recorded.
 - ii. The attachment shall then be recorded as an addendum to the original recorded operations and management agreement.
3. **Inspection Program.**
- a. Inspections and inspection programs by the Town may be conducted or established on any reasonable basis, including but not limited to routine inspections, random inspections, inspections based upon complaints or other notice of possible violations, and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in BMPs or SCMs; and evaluating the condition of BMP and SCM devices.

- b. If the owner or occupant of any property refuses to permit such inspection, the Stormwater Administrator shall proceed to obtain an administrative search warrant pursuant to N.C.G.S. 15-27.2 or its successor. No person shall obstruct, hamper, or interfere with the Stormwater Administrator while carrying out his or her official duties.
4. **Performance Security for Installation and Performance.**
- a. **Performance Security.** The Town shall require the submittal of a performance security prior to issuance of a permit in order to ensure that the engineered stormwater controls are:
 - i. Installed by the permit holder as required by the approved stormwater management plan, and/or
 - ii. Maintained by the owner as required by the operation and maintenance agreement.
 - b. **Amount.** The amount of an installation performance security shall be the total estimated construction cost of the BMP/SCMs approved under the permit, plus twenty-five (25) percent.
 - c. **Uses of Performance Security.**
 - i. **Forfeiture Provisions.** The performance security shall contain forfeiture provisions for failure, after proper notice, to complete work within the time specified, or to initiate or maintain any actions which may be required of the applicant or owner in accordance with this article, approvals issued pursuant to this article, or an operation and maintenance agreement established pursuant to this article.
 - ii. **Default.** Upon default of the owner to construct, maintain, repair and, if necessary, reconstruct any engineered stormwater control in accordance with the applicable permit or operation and maintenance agreement, the Stormwater Administrator shall obtain and use all or any portion of the security to make necessary improvements based on an engineering estimate. Such expenditure of funds shall only be made after requesting the owner to comply with the permit or maintenance agreement. In the event of a default triggering the use of installation performance security, the Town shall not return any of the unused deposited cash funds or other security, which shall be retained for maintenance.
 - iii. **Costs in Excess of Performance Security.** If the Town takes action upon such failure by the applicant or owner, the Town may collect from the applicant or owner the difference between the amount of the reasonable cost of such action and the amount of the security held, in addition to any other penalties or damages due.
 - iv. **Refund.** After final approval of record drawings, as-builts, and certifications, the installation performance security required per Section 9.4 (D)(4) shall be refunded to the applicant or terminated in accordance with this ordinance and the Town's Engineering Design and Construction Manual (EDCM).

5. **Notice to Owners.**

- a. **Deed Recordation and Indications on Plat.** The applicable operations and maintenance agreement pertaining to every engineered stormwater control shall be referenced on the final plat and shall be recorded with the Register of Deeds of the county in which the stormwater control is located upon final plat approval. If no subdivision plat is recorded for the site, then the operations and maintenance agreement shall be recorded with the Register of Deeds of the appropriate county so as to appear in the chain of title of all subsequent purchasers under generally accepted searching principles.
 - b. **Signage.** If determined by the Stormwater Administrator to assure compliance with this article, engineered stormwater controls shall be posted with a conspicuous sign stating the party responsible for required maintenance and annual inspection. The sign shall be maintained so as to remain visible and legible and comply with any applicable standards in Chapter 8 of the UDO and the Town of Knightdale Stormwater Manual.
6. **Records of Installation and Maintenance Activities.** The owner of each engineered SCM shall keep records of inspections, maintenance, and repairs for at least five (5) years running at any given time and shall submit the same upon reasonable request to the Stormwater Administrator.
7. **Nuisance.** The owner of each stormwater BMP/SCM, whether engineered stormwater control or non-engineered stormwater control, shall maintain it so as not to create or result in a nuisance condition.
8. **SCM Access and Maintenance Easement.** Every engineered stormwater control installed pursuant to this article shall be made accessible for adequate maintenance and repair by a maintenance easement. The easement shall be recorded and its terms shall specify who may make use of the easement and for what purposes.

I. Enforcement and Violations.

1. General.

- a. **Authority to Enforce.** The provisions of this article shall be enforced by the Stormwater Administrator, his or her designee, or any authorized agent of the Town. Whenever this section refers to the Stormwater Administrator, it includes his or her designee as well as any authorized agent of the Town.
 - b. **Violation Unlawful.** Any failure to comply with an applicable requirement, prohibition, standard, or limitation imposed by this article, or the terms or conditions of any permit or other development approval or authorization granted pursuant to this ordinance, is unlawful and shall constitute a violation of this Ordinance.
 - c. **Each Day a Separate Offense.** Each day that a violation continues shall constitute a separate and distinct violation or offense.
 - d. **Responsible Persons/Entities.**
 - i. Any person who erects, constructs, reconstructs, alters (whether actively or passively), or fails to erect, construct, reconstruct, alter, repair, or maintain any structure, BMP/SCM, engineered stormwater control, practice, or condition in violation of this article shall be subject to the remedies, penalties, and/or enforcement actions in accordance with this section. Persons subject to the remedies and penalties set forth herein may include any architect, engineer, builder, contractor, developer, agency, or any other person who participates in, assists, directs, creates, causes, or maintains a condition that results in or constitutes a violation of this article, or fails to take appropriate action so that a violation of this article results or persists; or an owner, any tenant or occupant, or any other person, who has control over, or responsibility for, the use or development of the property on which the violation occurs.
 - ii. For the purposes of this article, responsible person(s) shall include, but not be limited to:
 - a) **Person Maintaining Condition Resulting in or Constituting Violation.** An architect, engineer, builder, contractor, developer, agency, or any other person who participates in, assists, directs, creates, causes, or maintains a condition that constitutes a violation of this article, or fails to take appropriate action so that a violation of this article results or persists.
 - b) **Person Responsible for Land or Use of Land.** The owner of the land on which the violation occurs, any tenant or occupant of the property, any person who is responsible for stormwater controls or practices pursuant to a private agreement or public document, or any person, who has control over, or responsibility for, the use or development of the property.
2. **Remedies and Penalties.** The remedies and penalties provided for violations of this article, whether civil or criminal, shall be cumulative and in addition to any other remedy provided by law, and may be exercised in any order.
- a. **Remedies.**
 - i. **Withholding of Certificate of Compliance/Occupancy.** The Stormwater Administrator or other authorized agent may refuse to issue a Certificate of Compliance/Occupancy for the building or other improvements constructed or being constructed on the site and served by the stormwater practices in question until the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise cured the violations described therein.

- ii. **Disapproval of Subsequent Permits and Development Approvals.** As long as a violation of this article continues and remains uncorrected, the Stormwater Administrator or other authorized agent may withhold, and the Town Council may disapprove, any request for permit or development approval or authorization provided for by this Ordinance and/or building regulations, as appropriate for the land on which the violation occurs.
 - iii. **Injunction, Abatements, Etc.** The Stormwater Administrator, with the written authorization of the Town Manager, may institute an action in a court of competent jurisdiction for a mandatory or prohibitory injunction and order of abatement to correct a violation of this article. Any person violating this article shall be subject to the full range of equitable remedies provided in the General Statutes or at common law.
 - iv. **Correction as Public Health Nuisance, Costs as Lien, etc.** If the violation is deemed dangerous or prejudicial to the public health or public safety and is within the geographic limits prescribed by N.C.G.S 160A-193, the Stormwater Administrator, with the written authorization of the Town Manager, may cause the violation to be corrected and the costs to be assessed as a lien against the property.
 - v. **Stop Work Order.** The Stormwater Administrator may issue a stop work order to the person(s) violating this article. The stop work order shall remain in effect until the person has taken the remedial measures set forth in the notice of violation or has otherwise cured the violation or violations described therein. The stop work order may be withdrawn or modified to enable the person to take the necessary remedial measures to cure such violation or violations.
 - b. **Civil Penalties.** The Stormwater Administrator may assess a civil penalty against any person who violates any provision of this article or of a permit or other requirement pursuant to this article. Civil penalties may be assessed up to the full amount of penalty authorized by N.C.G.S. 143-215.6A.
 - c. **Criminal Penalties.** Violation of this article may be enforced as a misdemeanor subject to the maximum fine permissible under North Carolina law.
3. **Procedures.**
- a. **Initiation/Complaint.** Whenever a violation of this article occurs, or is alleged to have occurred, any person may file a written complaint. Such complaint shall state fully the alleged violation and the basis thereof, and shall be filed with the Stormwater Administrator, who shall record the complaint. The complaint shall be investigated promptly by the Stormwater Administrator.
 - b. **Inspection.** The Stormwater Administrator shall have the authority, upon presentation of proper credentials, to enter and inspect any land, building, structure, or premises to ensure compliance with this article.
 - c. **Notice of Violation and Order to Correct.**
 - i. When the Stormwater Administrator finds that any building, structure, or land is in violation of this article, the Stormwater Administrator shall notify, in writing, the property owner or other person violating this article. The notification shall indicate the nature of the violation, contain the address or other description of the site upon which the violation is occurring, order the necessary action to abate the violation, and give a deadline for correcting the violation. If civil penalties are to be assessed, the notice of violation shall also contain a statement of the civil penalties to be assessed, the time of their accrual, and the time within which they must be paid or be subject to collection as a debt.

- ii. The Stormwater Administrator may deliver the notice of violation and correction order by any means authorized for the service of documents by Rule 4 of the North Carolina Rules of Civil Procedure.
- iii. If a violation is not corrected within a reasonable period of time, as provided in the notification, the Stormwater Administrator may take appropriate action under this article to correct and abate the violation and to ensure compliance with this article.
- d. **Extension of Time.** A person who receives a notice of violation and correction order, or the owner of the land on which the violation occurs, may submit to the Stormwater Administrator a written request for an extension of time for correction of the violation. On determining that the request includes enough information to show that the violation cannot be corrected within the specified time limit for reasons beyond the control of the person requesting the extension, the Stormwater Administrator may extend the time limit as is reasonably necessary to allow timely correction of the violation, up to, but not exceeding 30 days. The Stormwater Administrator may grant 30-day extensions in addition to the foregoing extension if the violation cannot be corrected within the permitted time due to circumstances beyond the control of the person violating this article. The Stormwater Administrator may grant an extension only by written notice of extension. The notice of extension shall state the date prior to which correction must be made, after which the violator will be subject to the penalties described in the notice of violation and correction order.
- e. **Enforcement after Time to Correct.** After the time has expired to correct a violation, including any extension(s) if authorized by the Stormwater Administrator, the Stormwater Administrator shall determine if the violation is corrected. The Stormwater Administrator may act to impose one or more of the remedies and penalties authorized by this article whether or not the violation has been corrected.
- f. **Emergency Enforcement.** If delay in correcting a violation would seriously threaten the effective enforcement of this article or pose an immediate danger to the public health, safety, or welfare, then the Stormwater Administrator may order the immediate cessation of a violation. Any person so ordered shall cease any violation immediately. The Stormwater Administrator may seek immediate enforcement, without prior written notice, through any remedy or penalty authorized by this article.

J. Illicit Discharges and Connections.

1. Illicit Discharges.

- a. No person shall cause or allow the discharge, emission, disposal, pouring, or pumping directly or indirectly to any stormwater conveyance, the waters of the State, or upon the land in manner and amount that the substance is likely to reach a stormwater conveyance or the waters of the State, any liquid, solid, gas, or prohibited substance other than stormwater. Prohibited substances include, but are not limited to, oil, antifreeze, chemicals, animal waste, paints, garbage, development-related materials such as discarded building materials, concrete truck wash water, and sanitary waste from portable restrooms. Non-stormwater discharges associated with the following activities may be allowed, provided that such discharges do not significantly impact water quality:
 - i. Water line and fire hydrant flushing;
 - ii. Landscape irrigation;
 - iii. Temporarily diverted stream flows;
 - iv. Rising groundwaters;
 - v. Uncontaminated groundwater infiltration (as defined at 40 CFR 35.2005(20));

- vi. Uncontaminated pumped ground water;
- vii. Discharges from uncontaminated potable water sources;
- viii. Foundation drains;
- ix. Residential or commercial air conditioning condensate;
- x. Irrigation water;
- xi. Springs;
- xii. Water from crawl space pumps;
- xiii. Footing drains;
- xiv. Lawn watering;
- xv. Individual residential car washing;
- xvi. Flows from riparian habitats and wetlands;
- xvii. Dechlorinated swimming pool discharges;
- xv. Flows from active firefighting activities/street wash water; and
- xviii. Other non-stormwater discharges for which a valid NPDES discharge permit has been approved and issued by the State of North Carolina, and provided that any such discharges to the municipal separate storm sewer system shall be authorized by the Town.

2. Illicit Connections.

- a. Single-family detached and attached uses shall be prohibited from establishing direct connections to a stormwater conveyance or stormwater conveyance system, unless a permit is issued by the Town in accordance with the standards set forth in the Stormwater Management Manual.
- b. Connections to a stormwater conveyance or stormwater conveyance system that allow the discharge of non-stormwater, other than the exemptions in Section 9.4 (A)(4)(c), are unlawful. Prohibited connections include, but are not limited to floor drains, waste water from washing machines or sanitary sewers, wash water from commercial vehicle washing or steam cleaning, and waste water from septic systems.
- c. Where such connections exist in violation of this section and said connections were made prior to the adoption of this provision or any other regulation prohibiting such connections, the property owner or the person using said connection shall remove the connection within one year following the effective date of this article. However, the one-year grace period shall not apply to connections which may result in the discharge of hazardous materials or other discharges which pose an immediate threat to health and safety or are likely to result in immediate injury and harm to real or personal property, natural resources, wildlife, or habitat.

- d. Where it is determined that said connection (a) may result in the discharge of hazardous materials or may pose an immediate threat to health and safety or is likely to result in immediate injury and harm to real or personal property, natural resources, wildlife, or habitat, or (b) was made in violation of any applicable regulation or ordinance other than this section, the Stormwater Administrator shall designate the time within which the connection shall be removed. In setting the time limit for compliance, the Stormwater Administrator shall take into consideration:

- i. The quantity and complexity of the work,
- ii. The consequences of delay,
- iii. The potential harm to the environment, to the public health, and to public and private property, and
- iv. The cost of remedying the damage.

3. **Spills.**

- a. Spills or leaks of polluting substances released, discharged to, or having the potential to released or discharged to the stormwater conveyance system, shall be contained, controlled, collected, and properly disposed. All affected areas shall be restored to their preexisting condition.
- b. Persons in control of the polluting substances immediately prior to their release or discharge, and persons owning the property on which the substances were released or discharged, shall immediately notify the Fire Chief of the release or discharge, as well as making any required notifications under State and federal law. Notification shall not relieve any person of any expenses related to the restoration, loss, damage, or any other liability which may be incurred as a result of said spill or leak, nor shall such notification relieve any person from other liability which may be imposed by State or other law.

- 4. **Nuisance.** Illicit discharges and illicit connections which exist within the Town are hereby found, deemed, and declared to be dangerous or prejudiced to the public health or public safety and are found, deemed, and declared to be public nuisances. Such public nuisances shall be abated in accordance with the procedures set forth in Section 9.4 (F)(5) below.

5. **Enforcement.**

- a. **Authority to Enter.** Any authorized Town personnel shall be permitted to enter upon public or private property for the purposes of observation, inspection, sampling, monitoring, testing, surveying, and measuring compliance. No person shall obstruct, hamper, or interfere with any such representative while carrying out his official duties.
- b. **Civil and Criminal Penalties.**
 - i. **Illicit Discharges.** Any designer, engineer, contractor, agent, or any other person who allows, acts in concert, participates, directs, or assists directly or indirectly in the creation of a violation of this article shall be subject to civil penalties as follows:
 - a) For first time offenders, if the quantity of the discharge is equal to or less than five gallons and consists of domestic or household products in quantities considered ordinary for household purposes, or for any quantity of yard waste or litter, said person shall be assessed a civil penalty of \$100.00 per violation or per day for any continuing violation and if the quantity of discharge is greater than five gallons or contains non-domestic substances, including but not limited to process wastewater, or if the person cannot provide clear and convincing evidence of the volume and nature of the substance discharged, said person shall be assessed a civil penalty of \$1,000.00 per violation or per day for any continuing violation.

- b) For repeat offenders, the amount of the penalty shall be double the amount assessed for the previous penalty, not to exceed \$10,000.00 per violation for any continuing violation.
 - ii. **Illicit Connections.** Any person found with an illicit connection in violation of this article and any designer, engineer, contractor, agent, or any other person who allows, acts in concert, participates, directs, or assists directly or indirectly in the establishment of an illicit connection in violation of this article shall be subject to civil penalties as follows:
 - a) First time offenders shall be subject to a civil penalty of \$500.00 per day of continuing violation.
 - b) Repeat offenders shall be subject to a civil penalty of \$1,000.00 per day of continuing violation.
 - iii. **Procedures for Assessing Civil Penalties.** Said penalties shall be assessed by the Town manager or his designee. No penalty shall be assessed until the person alleged to be in violation is served written notice of the violation by registered, certified mail-return receipt requested, or personal service. Refusal to accept the notice shall not relieve the violator of the obligation to pay the penalty. The notice shall describe the violation with particularity and specify the measures needed to come into compliance. The notice shall designate the time within which such measures must be completed. The notice shall warn that failure to correct the violation within the specified time period will result in the assessment of additional civil penalties.
 - iv. **Payment/Collection Procedures.** Penalties shall be assessed by the Town Manager or his designee after proper notice has been served as described in subsection (b)(iii) above. The Town Manager or designee shall make written demand for payment upon the person in violation. If payment is not received within thirty (30) days after demand for payment is made, the matter shall be referred to the Town Attorney for possible institution of a civil action in the name of the Town for recovering the penalty.
 - v. **Criminal Penalties.** Any person who knowingly or willfully violates any provision of this article or any order duly adopted or issued pursuant to this article shall be guilty of a misdemeanor, punishable by a fine not to exceed \$500.00 or imprisonment for not longer than thirty (30) days. Each violation shall be a separate offense.
- c. **Suspension of MS4 Access.**
- i. **Suspension due to Illicit Discharges in Emergency Situations.** The Stormwater Administrator may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or Waters of the U.S. If the violator fails to comply with a suspension order issued in an emergency, the authorized enforcement agency may take such steps as deemed necessary to prevent or minimize damage to the MS4 or Waters of the U.S., or to minimize danger to persons.
 - ii. **Suspension due to the Detection of Illicit Discharge.** Any person discharging to the MS4 in violation of this ordinance may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The authorized enforcement agency will notify a violator of the proposed termination of its MS4 access. The violator may petition the authorized enforcement agency for reconsideration and hearing.
 - iii. A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior approval of the authorized enforcement agency.

- d. **Industrial or Construction Activity Discharges.** Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the Stormwater Administrator prior to the allowing of discharges to the MS4.
- e. **Monitoring of Discharges.**
 - i. **Applicability.** This section applies to all facilities that have stormwater discharges associated with industrial activity, including construction activity.
 - ii. **Access to Facilities.**
 - a) The Stormwater Administrator shall be permitted to enter and inspect facilities subject to regulation under this ordinance as often as may be necessary to determine compliance with this ordinance. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to the Stormwater Administrator.
 - b) Facility operators shall allow the Stormwater Administrator ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of an NPDES permit to discharge stormwater, and the performance of any additional duties as defined by state and federal law.
 - c) The Stormwater Administrator shall have the right to set up on any permitted facility such devices as are necessary in the opinion of the Administrator to conduct monitoring and/or sampling of the facility's stormwater discharge.
 - d) The Stormwater Administrator has the right to require the discharger to install monitoring equipment, as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.
 - e) Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the Administrator and shall not be replaced. The costs of clearing such access shall be borne by the operator.
 - f) Unreasonable delays in allowing the Stormwater Administrator access to a permitted facility is a violation of a stormwater discharge permit and of this ordinance. A person who is the operator of a facility with a NPDES permit to discharge stormwater associated with industrial activity commits an offense if the person denies the Administrator reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this ordinance.
 - g) If the Stormwater Administrator has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the Administrator may seek issuance of a search warrant from any court of competent jurisdiction.

- f. **Requirement to Prevent, Control and Reduce Stormwater Pollutants by the Use of BMP/SCMs.** The Stormwater Administrator will adopt requirements identifying BMP/SCMs for any activity, operation or facility which may cause or contribute to pollution or contamination of stormwater, the storm drain system, or waters of the U.S. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMP/SCMs. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs or SCMs to prevent the further discharge of pollutants to the municipal separate storm sewer system. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMP/SCMs shall be part of a stormwater pollution prevention plan (SWPP) as necessary for compliance with requirements of the NPDES permit.
- g. **Watercourse Protection.** Every person owning property through which a watercourse passes or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.
- h. **Notification of Spills.** Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into stormwater, the storm drain system, or water of the U.S.; said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the Stormwater Administrator in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Stormwater Administrator within three (3) business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three (3) years.

9.5. Flood Damage Prevention.

The flood-prone areas within the jurisdiction of the Town are subject to periodic inundation which results in loss of life, property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures of flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare. These flood losses are caused by the cumulative effect of obstructions, both inside and outside the identified Special Flood Hazard Areas, causing increases in flood heights and velocities and by the occupancy in flood prone areas by uses vulnerable to floods or other hazards. These obstructions and occupancy by uses vulnerable to floods may be hazardous to other lands which are inadequately elevated, floodproofed, or otherwise unprotected from flood damages.

This ordinance shall apply to all Special Flood Hazard Areas and Future Conditions Flood Hazard Areas within the jurisdiction, including the Extra-Territorial Jurisdiction of the Town.

In an effort to avoid potential flood losses special flood hazard areas (SFHAs) cannot be located on any single-family residential building lot (detached or attached) within a major subdivision as defined in Section 12.2 (D)(6). In general terms, SFHAs in major subdivisions must be platted as separate lots where the responsibility of maintaining (in a natural state) said SFHA in perpetuity is typically designated to a homeowner's association or non-profit land conservation agency.

- A. **Purpose and Intent.** It is the purpose of this ordinance to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions within flood-prone areas by provisions designed to:
1. Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion, flood heights, or velocities; and
 2. Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; and
 3. Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters; and
 4. Control filling, grading, dredging, and all other development which may increase erosion or flood damage; and
 5. Prevent or regulate the construction of flood barriers that will unnaturally divert floodwaters, or which may increase flood hazards to other lands.

B. **General Provisions.**

1. **Basis for Establishing the Special Flood Hazard Areas and Community Flood Hazard Areas.**
The Special Flood Hazard Areas and Future Conditions Flood Hazard Areas are those identified under the Cooperating Technical State (CTS) agreement between the State of North Carolina and FEMA in its FIS dated July 19, 2022, for Wake County and associated DFIRM panels, including any digital data developed as part of the FIS, and any revision thereto, which are adopted by reference and declared a part of this ordinance. The Special Flood Hazard Areas and Future Conditions Flood Hazard Areas also include those defined through standard engineering analysis for private developments or by governmental agencies, but which have not yet been incorporated in the FIRM. This includes, but is not limited to, detailed flood data:
 - a. Generated as a requirement of this ordinance;
 - b. Preliminary FIRMs where more stringent than the effective FIRM; or

- c. Post-disaster Flood Recovery Maps.
2. When Preliminary Flood Insurance Studies and Flood Insurance Rate Maps have been provided by FEMA to the Town:
 - a. Prior to the issuance of a Letter of Final Determination (LFD) by FEMA, the use of the preliminary flood hazard data shall only be required where no base flood elevations and/or floodway areas exist or where the preliminary base flood elevations or floodway area exceed the base flood elevations and/or floodway widths in the effective flood hazard data provided by FEMA. Such preliminary data may be subject to revision through valid appeals.
 - b. Upon the issuance of a Letter of Final Determination (LFD) by FEMA, the revised flood hazard data shall be used and replace all previously effective flood hazard data provided by FEMA for the purposes of administering these regulations.
 3. When Advisory Flood Studies have been provided by the North Carolina Floodplain Mapping Program to the Town:
 - a. The data, which are adopted by reference and declared a part of this ordinance, shall be utilized where no base flood elevations or floodway areas exist, or where the Advisory Flood Studies exceed the base flood elevations and/or floodway widths in the effective flood hazard data provided by FEMA, or
 - b. The applicant shall provide a more detailed analysis of the flood hazards for the site for floodplain management purposes.
 4. The Town reserves the right to require further studies for any development within its jurisdiction, if there is evidence that a potential flood hazard exists. Studies can be used to designate Community Flood Hazard Areas (CFHA). Such evidence may include but shall not be limited to:
 - a. Eyewitness accounts of historic flooding or other reports of historic flooding deemed credible by the community;
 - b. Surveyed high-water marks;
 - c. Geologic features observed that resemble floodplains (such as flat areas along streams);
 - d. Proximity to manmade or natural constrictions in or along a watercourse (such as road crossings that can cause backwater effects), and;
 - e. Drainage basin characteristics (such as drainage area, slope, percent impervious cover, land use, etc.).

Where adopted regulatory standards conflict, the more stringent base flood elevation shall prevail.

5. **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 and Future Conditions Flood Hazard Areas determined in Section 9.5 (B)(1).
6. **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.
7. **Abrogation and Greater Restrictions.** This ordinance 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. **Interpretation.** 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.
9. **Warning and Disclaimer of Liability.** 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 on rare occasions. 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 and Future Conditions 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 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.

C. Violations and Corrective Procedures.

1. **Penalties for Violation.** Violation of the provisions of this ordinance 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 N.C.G.S. 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 \$100.00 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 from taking such other lawful action as is necessary to prevent or remedy any violation.
2. **Corrective Procedures.**
 - a. **Stop Work Order:** The Town may issue a stop work order, which shall be served on the applicant or other responsible person. The stop work order shall remain in effect until the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise remedied the violation or violations described therein, provided the stop work order may be withdrawn or modified to enable the applicant or other responsible person to take the necessary remedial measures to remedy such violation or violations.
 - b. **Notice of Violation.** If the Town determines that an owner, occupant, applicant or other responsible person has failed to comply with the terms and conditions of a permit, or the provisions of this ordinance, it shall issue a written notice of violation, by certified return receipt mail, to such applicant or other responsible person. Where the person is engaged in activity covered by this ordinance without having first secured a permit, the notice shall be served on the

owner or the responsible person in charge of the activity being conducted on the site. The notice of violation shall contain:

- i. The name and address of the owner or the applicant or the responsible person;
 - ii. The address or other description of the site upon which the violation is occurring;
 - iii. A statement specifying the nature of the violation;
 - iv. A description of the remedial measures necessary to bring the action or inaction into compliance with the permit or this ordinance and the date for the completion of such remedial action;
 - v. A statement of the penalty or penalties that may be assessed against the person to whom the notice of violation is directed, and;
 - vi. A statement that the determination of violation may be appealed to the community by filing a written notice of appeal within thirty days after the notice of violation (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24-hour notice shall be sufficient).
- c. **Additional Enforcement Actions.** If the remedial measures described in the Notice of Violation have not been completed by the date set forth for such completion in the Notice of Violation, any one or more of the following enforcement actions may be enacted against the person to whom the Notice of Violation was directed. Before taking any of the following actions or imposing any of the following penalties, the Town shall first notify the owner, applicant or other responsible person in writing of its intended action. The Town shall provide reasonable opportunity, of not less than ten days (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24-hour notice shall be sufficient) to remedy such violation. In the event the applicant or other responsible person fails to remedy such violation after such notice and remedial period, the Town may take or impose any one or more of the following enforcement actions or penalties:
- i. **Termination of utility service and/or withhold or revoke Certificate of Occupancy:** The Town may terminate utilities and/or refuse to issue and/or revoke a certificate of occupancy for the building or other improvements and/or repairs conducted or being conducted on the site until the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise remedy the violation or violations described therein.
 - ii. **Suspension, revocation, or modifications of permit:** The Town may suspend, revoke, or modify the permit authorizing the development project. A suspended, revoked, or modified permit may be reinstated after the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise remedy the violations described therein, provided such permit may be reinstated (upon such conditions as the community may deem necessary) to enable the applicant or other responsible person to take the necessary remedial measures to cure such violations.
 - iii. **Civil penalties:** Violation of the provisions of this ordinance 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 N.C.G.S. 143-215.58.
 - a) Any person who violates this ordinance or fails to comply with any of its requirements shall, upon conviction thereof, be fined in accordance with Section 14.4 (B)(4). Each day

such violation continues shall be considered a separate offense. Nothing herein contained shall prevent the Town from taking such other lawful actions, pursuant to N.C.G.S. 153A, 160A, and 160D, as is necessary to prevent or remedy any violation.

- b) Enforcement by an appropriate equitable remedy issuing from a court of competent jurisdiction may be pursued if the offender fails to remedy the violation, pays assessed fines, and/or fails to file an appeal within the prescribed period of time. In such case, the general court of justice shall have jurisdiction to issue such orders as may be appropriate.
- d. **Administrative appeal; judicial review.** Any person receiving a Notice of Violation may appeal the determination of the Town, including but not limited to the issuance of a stop work order, the assessment of an administratively-imposed monetary penalty, the suspension, revocation, modification, or grant with condition of a permit by the Town upon finding that the holder is in violation of permit conditions, or that the holder is in violation of any applicable ordinance or any of the Town's rules and regulations, or the issuance of a notice of bond forfeiture.
 - i. Any person receiving a Notice of Violation may appeal the determination of the floodplain administrator to the local elected governing body. The Notice of Appeal must be in writing and be received by the floodplain administrator and the clerk within thirty (30) days of the date of the Notice of Violation. In the absence of an appeal, the determination of the floodplain administrator shall be final.
 - ii. All appeals shall be heard and decided by the community's designated Appeal Board, which shall be the Board of Adjustment. The Appeal Board shall hear an appeal within a reasonable time and shall have the power to affirm, modify, or reject the original penalty, including the right to increase or decrease the amount of any monetary penalty and the right to add or delete remedial actions required for correction of the violation and compliance with the community's flood damage prevention ordinance, and any other applicable local, state, or federal requirements. In the absence of a petition for review of a quasi-judicial decision, the decision of the Appeal Board shall be final.
 - iii. A petition for review of a quasi-judicial decision can be requested by any person with standing aggrieved by a decision or order of the community, after exhausting his/her administrative remedies. The petition shall be received by the clerk of superior court within 30 days of the date of the local governing body decision.
- e. **Section 1316 Declaration:** Section 1316 of the National Flood Insurance Act authorizes FEMA to deny flood insurance to a property declared by the State, County, or Municipal government to be in violation of the local floodplain management ordinance. A Section 1316 declaration shall be used when all other legal means to remedy a violation have been exhausted and the structure remains noncompliant. The community must coordinate a request for Section 1316 declaration to the FEMA Regional Office through the State NFIP Coordinator.

Once invoked, the property's flood insurance coverage will be terminated and no new or renewal policy can be issued; no flood insurance claim can be paid on any policy on the property, and disaster assistance will be denied. If a structure that has received a Section 1316 declaration is made compliant with the community's floodplain management ordinance, then the Section 1316 declaration can be rescinded by FEMA and flood insurance eligibility restored.

D. Administration.

1. **Designation of Floodplain Administrator.** The Land Use Administrator or designee, hereinafter referred to as the "Floodplain Administrator," is hereby appointed to administer and implement the

provisions of this ordinance. In instances where the Floodplain Administrator receives assistance from others to complete tasks to administer and implement this ordinance, the Floodplain Administrator shall be responsible for the coordination and community's overall compliance with the National Flood Insurance Program and the provisions of this ordinance.

2. Floodplain Development Permit Data Requirements. The following information shall be provided at a minimum on the floodplain development permit to ensure compliance with this code.

- a. A complete description of all the development to be permitted under the floodplain development permit (e.g. house, garage, pool, septic, bulkhead, cabana, pier, bridge, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials, etc.) including an engineer's certified cost estimate.
- b. The Special Flood Hazard Area or Future Conditions Flood Hazard Area determination for the proposed development per available data specified in Section 9.5 (B)(1).
- 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. States that no fill material shall encroach into the floodway or non-encroachment area of any watercourse, if applicable.
- g. The flood openings requirements as dictated by FEMA Technical Bulletin 1-93 Opening in Foundation Walls, if in Zones A, AE, or X (Future).
- h. State limitations of below base flood elevation (BFE) enclosure uses (i.e., parking, building access and limited storage only).

3. Certification Requirements.

a. Elevation Certificates.

- i. An Elevation Certificate (FEMA Form FF-206-FY-22-152) 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, in relation to NAVD 1988. 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.
- ii. An Elevation Certificate (FEMA Form FF-206-FY-22-152) 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, in relation to NAVD 1988. Any work done within the seven (7) day 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.

- iii. A final Finished Construction Elevation Certificate (FEMA Form 086-0-33) 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 two (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. 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 two (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" × 3". Digital photographs are acceptable.
- iv. If a watercourse is to be altered or relocated, a description of the extent of watercourse alteration or relocation; 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 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.

b. Floodproofing Certificate.

- i. If non-residential floodproofing is used to meet the regulatory flood protection elevation requirements, a Floodproofing Certificate (FEMA Form FF-206-FY-22-153), with supporting data and an operation plan, is required prior to the start of any new construction. It shall be the duty of the permit holder to submit to the Stormwater 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 the same. The Stormwater Administrator shall review the certificate data and 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 the required correction shall be cause to deny a floodplain development permit. Failure to construct in accordance with the certified design shall be cause to withhold issuance of a Certificate of Occupancy.
- ii. A final Finished Construction Floodproofing Certificate (FEMA Form FF-206-FY-22-153), 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, in relation to NAVD 1988. Floodproofing certificate 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 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.

- c. **Certification Exemptions.** The following structures, if located within Zones A, AE, or X (Future), are exempt from the elevation/floodproofing certification requirements specified in 9.5 (D)(3)(a) and 9.5 (D)(3)(b):
 - i. Recreational Vehicles meeting requirements of Section 9.5 (E)(3)(g);
 - ii. Temporary Structures meeting requirements of Section 9.5 (E)(3)(h); and
 - iii. Accessory Structures less than one-hundred-fifty (150) square feet meeting requirements of Section 9.5 (E)(3)(i).
4. **Determinations for Existing Buildings and Structures.** For applications for building 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 Building Official, 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.

E. **Provisions for Flood Hazard Reduction.**

1. **Floodways and Non-Encroachment Areas.** Located within the Special Flood Hazard Areas established in Section 9.5 (B)(1) are areas designated as floodways or non-encroachment areas. The 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:
 - i. It has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in an increase in the flood levels during the occurrence of the base flood. Such certification and technical data shall be presented to the Stormwater Administrator prior to issuance of floodplain development permit; or

- ii. A Conditional Letter of Map Revision (CLOMR) has been issued by FEMA for proposed encroachments resulting in increases in the flood levels during the occurrence of the base flood discharge. A Letter of Map Revision (LOMR) must also be obtained within six (6) months of completion of the proposed encroachment.
- iii. A Letter of Map Revision (LOMR) must be obtained within six (6) months of completion of the proposed encroachment, permitted in accordance with this section if the encroachment results in base flood elevation decreases of more than 0.10-feet, changes to the floodway/non-encroachment area widths, and/or changes to the stream location.
- b. If Section 9.5 (E)(1)(a) is satisfied, all development shall comply with all applicable flood hazard reduction provisions of this ordinance.
- c. Placement of recreational vehicles in the regulatory floodway or non-encroachment area is prohibited.

2. General Standards.

- a. All new construction and substantial improvements, where permitted, shall be:
 - i. Anchored to prevent flotation, collapse, or lateral movement of the structure; and
 - ii. Constructed with materials and utility equipment resistant to flood damage; and
 - iii. Constructed by methods and practices that minimize flood damages.
- b. All new electrical, heating, ventilation, plumbing, air conditioning equipment, and other service equipment shall be located at or above the RFPE or designed and installed to prevent water from entering or accumulating within the components during the occurrence of the base flood. These include, but are not limited to, HVAC equipment, water softener units, bath/kitchen fixtures, ductwork, electric/gas meter panels/boxes, utility/cable boxes, water heaters, and electric outlets/switches.
 - i. Replacements part of a substantial improvement, electrical, heating, ventilation, plumbing, air conditioning equipment, and other service equipment shall also meet the above provisions.
 - ii. 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 standards for new construction consistent with the code and requirements for the original structure.
- c. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
- d. 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 floodwaters.
- e. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.
- f. Non-conforming structures or other development may not be enlarged, replaced, or rebuilt unless such enlargement or reconstruction is accomplished in conformance with the provisions of this ordinance. Provided, however, 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 that the bulk of the building or structure below the regulatory flood protection elevation in the floodway, non-encroachment area, or stream setback is not increased and provided that such repair, reconstruction, or replacement meets all of the other requirements of this ordinance.
- g. New solid waste disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities shall not be permitted in Special Flood Hazard Areas or Future Conditions Flood Hazard Areas. 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 or Future Conditions Flood Hazard Area only if the structure or tank is either elevated or floodproofed to at least the regulatory flood protection elevation and certified according to Section 9.5 (D)(3) of this code.
 - h. All subdivision proposals and other development proposals shall be consistent with the need to minimize flood damage.
 - i. 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.
 - j. All subdivision proposals and other development proposals shall have adequate drainage provided to reduce exposure to flood hazards.
 - k. 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.
 - l. 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.
 - m. 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 BFE shall apply.
 - n. Fill used to elevate or support a structure is prohibited in the SFHA. This includes prohibiting Conditional Letters or Letters of Map Revision - Based on Fill (CLOMR-F or LOMR-F). Fill supporting transportation (bridges, culverts, roadways, greenways, etc.), stream restoration, repair of existing levees or berms, and similar projects can be permitted within the SFHA.
3. **Specific Standards.** In all Special Flood Hazard Areas where BFE data has been provided and in Future Conditions Flood Hazard Areas where Future Conditions Flood Elevations data has been provided, as set forth in Section 9.5 (B)(1), the following provisions are required:
- a. **Residential Construction.** New construction or substantial improvement of any residential structure (including manufactured homes) shall have the reference level, including basement, elevated no lower than two feet above the regulatory flood protection elevation or established BFE.
 - b. **Non-Residential Construction.** New construction or 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. Structures located in A, AE, and X (Future) Zones may be floodproofed to the regulatory flood protection elevation in lieu of elevation provided that all areas of the structure below the required 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 standards of this subsection are satisfied. Such certification shall be provided to the official as set forth in Section 9.5 (D)(3).
- c. **Manufactured Homes.** New or replacement manufactured homes shall be elevated so that the reference level of the manufactured home is no lower than the regulatory flood protection elevation. In no case shall manufactured mobile homes be allowed in an A, AE, or X (Future) Zone.
 - i. 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 accordance with the most current edition of the State of North Carolina Regulations for Manufactured Homes adopted by the Commissioner of Insurance pursuant to N.C.G.S. 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.
 - ii. All enclosures or skirting below the lowest floor shall meet the requirements of Section 9.5 (E)(3)(d).
 - iii. 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.
 - d. **Elevated Buildings.** New construction or substantial improvements of elevated buildings that include fully enclosed areas that are below the regulatory flood protection elevation shall not be designed to be used for human habitation but shall be designed to be used only for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises, be constructed entirely of flood-resistant materials below the regulatory flood protection level in A, AE, or X (Future) zones and meet the following design criteria:
 - i. Measures for complying with this requirement shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. To meet this requirement, the foundation must either be certified by a professional engineer or architect or meet the following minimum design criteria:
 - a) Provide a minimum of two (2) openings on different sides of each enclosed area subject to flooding.
 - b) The total net area of all openings must be at least one (1) square inch for each square foot of each enclosed area subject to flooding.
 - c) If a building has more than one (1) enclosed area, each area must have openings on exterior walls to allow floodwater to automatically enter and exit;
 - d) The bottom of all required openings shall be no higher than one (1) foot above the adjacent grade; and,
 - e) Openings may be equipped with screens, louvers, or other opening coverings or devices provided they permit the automatic flow of floodwaters in both directions.

f) **Foundation Enclosures.**

1. Vinyl or sheet metal skirting is not considered an enclosure for regulatory and flood insurance rating purposes. Therefore, such skirting does not require hydrostatic openings as outlined above.
 2. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires hydrostatic openings as outlined above to comply with this ordinance.
- ii. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the living area (stairway or elevator). The interior portion of such enclosed area shall not be partitioned or finished into separate rooms, except to enclose storage areas.
 - iii. Shall not be temperature-controlled or conditioned.
 - iv. Shall be constructed entirely of flood resistant materials at least to the Regulatory Flood Protection Elevation.
 - v. Property owners shall be required to execute and record a non-conversion agreement prior to issuance of a building permit declaring that the area below the lowest floor shall not be improved, finished or otherwise converted to habitable space; the Town shall have the right to inspect the enclosed area. This agreement shall be recorded with the Wake County Register of Deeds and shall transfer with the property in perpetuity.

e. **Fill/Grading.**

- i. Fill is prohibited in the SFHA and Community Flood Hazard Areas.

f. **Additions and Improvements.**

- i. Additions and/or improvements to pre-FIRM structures whereas the addition and/or improvements in combination with any interior modifications to the existing structure:
 - a) Are 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; and
 - b) Is a substantial improvement, both the existing structure and the addition and/or improvements must comply with the standards for new construction.
- ii. Additions to post-FIRM structures with no modifications to the existing structure shall require only the addition to comply with the standards for new construction.
- iii. Additions and/or improvements to post-FIRM structures whereas the addition and/or improvements in combination with any interior modifications to the existing structure:
 - a) Are not a substantial improvement, the addition and/or improvements only must comply with the standards for new construction; and
 - b) Are a substantial improvement, both the existing structure and the addition and/or improvements must comply with the standards for new construction.

- iv. Where a fire wall or independent perimeter load-bearing wall is provided between the addition and the existing building, the addition(s) shall be considered a separate building, and only the addition must comply with the standards for new construction.
- v. 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. Substantial damage also means flood-related damage sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, on the average, equals or exceeds 25 percent of the market value of the structure before the damage occurred. If the structure has sustained substantial damage, any repairs are considered substantial improvement 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 health, sanitary or safety code violations identified by the building official and that are the 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.** Recreation vehicles shall not be allowed within a Special Flood Hazard Area or a Future Conditions Flood Hazard Area. Furthermore, they shall be on site for fewer than one-hundred eighty (180) consecutive days and be fully licensed and ready for highway use (A recreational vehicle is read 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).
- h. **Temporary Structures.** Prior to the issuance of a floodplain development permit for a temporary structure, (i.e. Construction Trailer) the following requirements must be met:
 - i. Applicants must submit to the Stormwater Administrator a plan for the removal of such structure(s) in the event of a hurricane or flash flood warning notification. The plan must include the following information:
 - a) A specified time period for which the temporary use will be permitted;
 - b) The name, address, and phone number of the individual responsible for the removal of the temporary structure;
 - c) The time frame prior to the event at which a structure will be removed (i.e. minimum of seventy-two (72) hours before landfall of a hurricane or immediately upon flood warning notification);
 - d) A copy of the contract or other suitable instrument with a trucking company to ensure the availability of removal equipment when needed; and
 - e) Designation, accompanied by documentation, of a location outside the Special Flood Hazard Area or Future Conditions Flood Hazard Area to which the temporary structure will be moved.
 - ii. The above information shall be submitted in writing to the Stormwater Administrator for review and written approval.

- i. **Accessory Structures.** When accessory structures (sheds, detached garages, etc. see Section 5.10) with a footprint of no more than 600 square feet are placed within A, AO, AH, AE and A99 flood zones, wet floodproofing may be permitted when the following criteria are met:
 - i. Accessory structures shall not be used for human habitation (including work, sleeping, living, cooking or restroom areas);
 - ii. Accessory structures shall be designed to have low flood damage potential;
 - iii. Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters;
 - iv. Accessory structures shall be firmly anchored in accordance with Section 9.5 (E)(2)(a);
 - v. All service facilities such as electrical and heating equipment shall be installed in accordance with Section 9.5 (E)(2)(b); and
 - vi. Openings to relieve hydrostatic pressure during a flood shall be provided below regulatory flood protection elevation in conformance with Section 9.5 (E)(3)(d)(i).
 - vii. An accessory structure with a footprint of less than one-hundred fifty (150) square feet does not require an elevation or floodproofing certificate. Elevation or floodproofing certifications are required for all other accessory structures in accordance with Section 9.5 (D)(3).
 - viii. Accessory structures shall not be temperature-controlled.
 - ix. All other accessory structures exceeding the size restrictions in the section above must comply with the elevation or floodproofing standards and certification requirements in accordance with Section 9.5 (D)(3) and Section 9.5 (E)(3)(b).

An accessory structure with a footprint of 150 square feet or less in A, AO, AH, AE and A99 zones satisfying the criteria outlined above is not required to meet the elevation or floodproofing certification requirements of Section 9.5 (D)(3). All other accessory structures must comply with the elevation or floodproofing certification requirements in accordance with Section 9.5 (D)(3).

j. **Other Development.**

- i. 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 9.5 (E)(1) of this ordinance.
 - ii. 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 9.5 (E)(1) of this ordinance.
 - iii. 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 9.5 (E)(1) of this ordinance.
4. **Standards for Floodplains Without Established Base Flood Elevations.** Within the Special Flood Hazard Areas designated as Approximate Zone A and established in Section 9.5 (B)(1), where no BFE data has been provided, the following provisions shall apply:

- a. No encroachments, including fill, new construction, substantial improvements or new development shall be permitted within a distance of fifty (50) 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 one of the following criteria set in priority order:
 - i. If 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 Section 9.5 (D)(3).
 - ii. All subdivision and major development proposals shall provide BFE data if development is greater than five (5) acres or has more than fifty (50) lots/manufactured home sites. Such BFE data shall be adopted by reference per Section 9.5 (B)(1) to be utilized in implementing this ordinance.
 - iii. When BFE data is not available from a Federal, State, or other source as outlined above, the reference level, including basement, shall be elevated at least two (2) feet above the highest adjacent grade.
5. **Standards For Areas of Shallow Flooding (Zone AO).** Located within the Special Flood Hazard Areas are areas designated as shallow flooding areas. These areas have special flood hazards associated with base flood depths of one (1) to three (3) feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and indeterminate. In addition to Sections 9.5 (E)(2) and (3), all new construction and substantial improvements shall meet the following requirements:
- a. The reference level shall be elevated at least as high as the depth number specified on the Flood Insurance Rate Map (FIRM), in feet, plus a freeboard of two (2) feet, above the highest adjacent grade; or at least four (4) feet above the highest adjacent grade if no depth number is specified.
 - b. Non-residential structures may, in lieu of elevation, be floodproofed to the same level as required in Section 9.5 (E)(3)(b), so that the structure, together with attendant utility and sanitary facilities, below that level shall be watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. Certification is required in accordance with Section 9.5 (D)(3) and Section 9.5 (E)(3)(b).
 - c. Adequate drainage paths shall be provided around structures on slopes, to guide floodwaters around and away from proposed structures.
6. **Standards For Areas of Shallow Flooding (Zone AH).** Located within the Special Flood Hazard Areas established in Section 9.5 (B)(1), are areas designated as shallow flooding areas. These areas are subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are one (1) to three (3) feet. Base Flood Elevations are derived from detailed hydraulic analyses are shown in this zone. In addition to Sections 9.5 (E)(2) and (3), all new construction and substantial improvements shall meet the following requirements:
- a. Adequate drainage paths shall be provided around structures on slopes, to guide floodwaters around and away from proposed structures.

7. **Standards For Areas Outside the Special Flood Hazard Area** Areas designated as X Zones (Shaded or Unshaded) on the FIRM or in the FIS report established in Section 9.5 (B), are areas determined to be low to moderate risk flood zones but are not immune to inundation by flood waters. The following provisions, in addition to the provisions of Section 9.5 (E)(1) and (2), shall apply to all development within such areas:
- a. Where 0.2-percent-annual-chance water surface elevations are provided, the reference level in Zone X (Shaded) shall be elevated or floodproofed to at least the 0.2-percent-annual-chance water surface elevation or the Regulatory Flood Protection Elevation, whichever is higher.
 - b. Where no flood hazard data is available or provided per Section 9.5 (B):
 - i. the reference level shall be elevated or floodproofed, pursuant to Section 9.5 (E)(2), to at least four (4) feet above the highest adjacent grade; or
 - ii. meet the requirements of Section 9.5 (E)(7)(d).
 - c. Where Advisory Flood Studies provide base flood elevations, the reference level shall be elevated or floodproofed, pursuant to Section 9.5 (E)(2), to at least the advisory BFE plus a freeboard of four (4) feet.
 - d. Where a Community Flood Hazard Area (CFHA) is established per Section 9.5 (B), the reference level shall be elevated or floodproofed, pursuant to Section 9.5 (E), to at least the CFHA flood elevation plus a freeboard of four (4) feet.