Article 8 | Environmental Protection

Sec. 8.1 Purpose

Durham County is endowed with an abundance of natural resources, including land, forests, streams and rivers, lakes, wildlife and natural beauty. Inappropriate development threatens the quality of the natural resources that make it a special place to live and work. Durham's governing bodies recognize that establishing standards for the protection of Durham County's natural resources represents prudent stewardship of the land and good business. The multiple purposes of natural resource protection standards are:

A. To preserve and enhance the quality of the water in rivers, streams, ponds and lakes that flow into and out of Durham County;

B. To minimize future flooding problems by restricting development in flood prone areas;

C. To preserve the water carrying capacity of watercourses and the natural water storage capacity of the floodplain;

D. To protect land and watercourses from pollutants, sedimentation and erosion;

E. To retain open spaces in order to protect their environmentally-sensitive character;

F. To protect and conserve significant natural resources from degradation due to inappropriate development. Such natural resources include Inventory Sites, wildlife and plant life habitats, wetland areas and riparian areas;

G. To minimize the impact of development by controlling the location, intensity, pattern and design of development and construction activities;

H. To enhance the aesthetic appearance of Durham as a means of improving quality of life and attracting new businesses and residents;

I. To improve air quality by reducing the heat island effect by reducing pollution and fossil fuel used for transportation by encouraging walking, bicycling and transit; and

J. To protect environmentally sensitive lands while recognizing the legitimate expectations of property owners and Durham's economic development goals.

Sec. 8.2 Exemptions from Environmental Protection Standards

8.2.1 Water Supply Reservoirs

Public water supply reservoirs and associated facilities shall be exempt from the requirements of this Article unless explicitly acknowledged within any section.

Sec. 8.3 Tree Protection and Tree Coverage

8.3.1 Tree Coverage Standards

A. Purpose

The primary purpose of the tree coverage standards is the preservation and maintenance of undisturbed tree cover and the provision of replacement tree cover on development sites in the Urban and Suburban Tiers. Tree coverage serves to reduce glare, noise, air pollution, and soil erosion; to moderate temperatures; to reduce stormwater runoff; to preserve remnants of Durham's native ecology; to provide habitat for native plants and wildlife; to provide a healthy living environment; and to make Durham County a more attractive place to live.

B. Applicability

1. Tree coverage standards shall only be applied in the Urban and Suburban Tiers.

2. Developments in the RR and RS-20 Districts, and developments of less than four acres in size in the Urban Tier, shall be exempt from tree coverage requirements provided enforceable assurances are provided that no mass grading as defined in Sec. 16.3, Defined Terms, or clear-cutting as defined in paragraph 8.3.4, Clear-Cutting, will be utilized during the development process.

3. No tree coverage is required in non-residential districts in the Urban Tier.

4. Additions to existing residential structures, excluding multiplexes and apartments, are exempt from tree coverage requirements.

C. Tree Coverage

1. New development shall include tree coverage areas on a portion of the development tract.

2. Additions to development existing as of the effective date of this Ordinance shall provide tree coverage as a percentage of the area proposed for disturbance.

3. Locations

a. Tree coverage areas in new subdivisions shall be located in common open space or buffers required by other provisions of this Ordinance, except that new subdivisions without buffers that make payment in lieu of required open space under Section 7.2.2, Required Open Space, may locate tree coverage areas on private lots or as otherwise specified below.

b. Any forested land in the floodway, non-encroachment area, floodway fringe, non-encroachment area fringe, or Areas of Shallow Flooding (Zone AO) (unless proposed to be filled or developed in accordance with Sec. 8.4.4, Development in Special Flood Hazard Areas and Future Conditions Flood Hazard Areas), preserved wetlands and wetland buffers, steep slope areas, stream buffers, Durham Natural Inventory Sites, Major Transportation Corridor (MTC) buffers, and any portion of the tract left undisturbed in order to create required perimeter buffers that satisfies the minimum size requirements established in Sec. 8.3.1D , Preserved Tree Coverage, or Sec. 8.3.1E, Replacement Tree Coverage, below may be used as tree cover.

4. Tree coverage standards may be met either by preserving existing trees on the site, by planting replacement trees, or a combination of both.

a. Suburban Tier

The percentage of a tract which shall have tree coverage is as indicated in the table below. The total tree coverage area shown reflects the addition of replacement tree coverage area to the preserved tree coverage area shown.

Residential Development	
Preserved Tree Coverage Area (%)	**Total Tree Coverage Area Required (%)**
20	20
At least 15 but less than 20	23
At least 10 but less than 15	24
Less than 10	25
Nonresidential Development	
Preserved Tree Coverage Area (%)	**Total Tree Coverage Area Required (%)**
10	10
At least 8 but less than 10	13
At least 6 but less than 8	14
Less than 6	15

b. Urban Tier

Developments in residential districts in the Urban Tier shall provide a minimum 3% tree coverage.

5. For the purposes of calculating tree coverage requirements, the water surface area of ponds, lakes and other water bodies (excluding stormwater control structures) shall be excluded from the total land area of the development tract.

6. Tree preservation and tree replacement areas shall be shown on all preliminary plats, final plats, site plans and development plans in order to clearly assign tree replacement responsibility to future owners. Tree preservation and tree replacement areas on any individual lot shall be clearly shown on all plot plans for the lot.

7. Property owners shall be responsible for protecting and preserving tree preservation and tree replacement areas during and after the development process in accordance with standard horticultural practice and Sec. 8.3.2, Protection of Existing Vegetation.

D. Preserved Tree Coverage

Areas proposed as tree preservation shall meet the following requirements to satisfy the tree coverage standards in paragraph 8.3.1, Tree Coverage and Protection Standards:

1. The provisions of Sec. 8.3.2, Protection of Existing Vegetation, shall be fulfilled.

2. Tree preservation areas shall be located in the areas listed in Sec. 8.3.1, Tree Coverage Standards, above. Additional tree preservation areas may be located outside of these areas, in which case they shall be located in order to preserve specimen trees and to preserve clusters of trees that add to the aesthetic quality of the development as viewed from the public right-of-way.

3. Clusters of Trees

a. The tree coverage area for a cluster of trees shall be determined by the exterior boundary of the total root protection zones for all of the trees in the cluster.

b. For parcels greater than one acre, no tree preservation area for a cluster of trees may be counted toward meeting the tree coverage standard unless it includes a minimum of 1,000 square feet (or such smaller area as required by paragraph 8.3.1C.4 above) and has no individual dimension of less than 13 feet. The area protected must include the entire root protection zone of the tree cluster, and adequate tree protection measures, as defined in paragraph 8.3.2, Protection of Existing Vegetation, must be taken during the construction and grading of the project.

c. For parcels one acre or less, no single tree preservation area for a cluster of trees may be counted toward meeting the tree coverage standard unless it includes a minimum of 500 square feet (or such smaller area as required by paragraph 8.3.1C.4 above) and has no individual dimension less than 13 feet.

d. At least 60% of the tree coverage included within any tree preservation area shall be composed of trees with at least a one inch dbh as determined through use of landscape sampling pursuant to paragraph 9.3.3, Sampling.

e. At least 75% of the root protection zone for a cluster of trees shall be located on the subject site for it to be considered a protected cluster.

4. Individual Trees

a. The tree coverage area for an individual tree shall be determined by the tree's root protection zone.

b. At least 75% of the root protection zone for an individual tree shall be located on the subject site in order for that tree to count as preserved.

c. An individual tree may be counted toward tree coverage credit provided that its diameter is eight inches dbh or greater.

5. Construction in Preserved Tree Coverage Area

a. Preserved tree coverage areas shall not be used for active recreational purposes, except the following:

i. Unpaved walking paths and foot trails constructed with minimal disturbance of tree roots and existing vegetation. No tree eight inches dbh or greater shall be removed for the construction of the trail.

ii. Paved trails that are public trails and are shown on the most recent version of the Durham Trails and Greenways Master Plan. No tree eight inches dbh or greater shall be removed for the construction of the trail without approval from the Planning Director or designee. In no case shall the clearing of the trail corridor exceed 16 feet in width.

iii. Amenity areas containing such items as picnic tables and benches provided that such areas are unpaved and no larger than 200 square feet or 10% of the tree coverage area, whichever is smaller. No tree

eight inches dbh or greater shall be removed for the construction of an amenity area.

b. All buildings, utilities, and stormwater facilities shall be set back at least 10 feet from the edge of any preserved tree coverage area. No easements, except conservation, greenway, and landscape easements, shall be included within a tree coverage area.

E. Replacement Tree Coverage

Areas proposed as tree replacement shall meet the following requirements to satisfy the standards found in paragraph 8.3.1C, Tree Coverage:

1. For parcels greater than one acre, no tree replacement area may be counted toward meeting the tree coverage standard unless it includes a minimum of 1,000 square feet (or such smaller area as required by paragraph. 8.3.1C.4 above) and has no individual dimension of less than 25 feet.

2. For parcels one acre or less, no tree replacement area may be counted toward meeting the tree coverage standard unless it includes a minimum of 500 square feet (or such smaller area as required by paragraph 8.3.1C.4 above) and has no individual dimension less than 15 feet.

3. When replacement trees are provided in order to satisfy the requirements of paragraph 8.3.1C, Tree Coverage, coverage credit shall be accrued in accordance with the following table with credit calculated based on the required planting area for the proposed trees up to a maximum credit for any single tree of 275 square feet.

Hardwood Caliper (inches)	Non-Hardwood Height (feet)	Credit (square feet)
4	18 or over	275
3½	16 to 18	250
3	14 to 16	225
2½	12 to14	200
2	10 to12	175
1½	8 to 10	150
1	7 to 8	100
0.75	5 to 7	75
Less than 0.75	Less than 5	No credit

EXAMPLE: *10 trees at 2½-inch caliper requires 2,000 square feet of planting area, and provides 2,000 square feet of replacement tree credits.*

4. At least 50% of replacement trees shall be one inch caliper or greater.

5. A minimum of 50% of replacement trees shall be large, maturing, hardwood species native to Durham County. The remainder of the replacement trees shall be a mix of canopy and understory hardwood and non-hardwood species native to Durham County, as long as no more than 50% of this remainder are pines. Replacement trees shall be provided as a mix of species, in accordance with the standards set in paragraph 9.2.3B.5, Mixing of Tree Species.

6. At least 75% of the replacement trees planted to augment preserved tree coverage clusters pursuant to paragraph 8.3.1D.3.f shall be native understory hardwoods of one inch caliper or greater.

7. Where evidence can be provided that a portion of a development tract has been in continuous agricultural use since January 1, 1980, the tree coverage standard indicated in paragraph 8.3.1C, Tree Coverage, may be reduced by the proportion of the entire development tract that is in such agricultural use, up to 33%. Such portion of the tract shall not be required to remain in agricultural use upon approval of a site plan by the approving authority. Tree coverage requirement reductions under this paragraph shall not apply to nonresidential development.

> *EXAMPLE: A 100 acre site in the Suburban Tier is to be developed as single-family housing. Twenty percent of the site is currently in agricultural use. Therefore, instead of the 20% tree coverage requirement, the overall site is only required to provide 16% tree coverage.*

8. Areas designated as replacement tree coverage shall be subject to the use limitations imposed on preserved tree coverage in paragraph 8.3.1D.5, Construction in Preserved Tree Coverage Areas, except that stormwater control measures designed as bioretention facilities shall be allowed.

9. Replacement trees shall be planted before any Certificate of Compliance is issued, unless the planting has been deferred to an appropriate season in accordance with the requirements of paragraph 9.11.2, Extensions for All Other Development.

8.3.2 Protection of Existing Vegetation

Any trees preserved on a development tract in order to meet Ordinance requirements or otherwise indicated to be preserved shall meet the following protection standards.

A. Protection measures to be used during grading and construction, including details of the tree protection fence(s) and its location(s), shall be shown on the site, landscape, grading, utility, demolition, and erosion control plans.

B. Root protection zones shall be established around all trees to be preserved. The root protection zone shall either be a six-foot radius around the tree or a one foot radius for every inch of tree dbh, whichever is greater.

C. A tree protection fence constructed of a material resistant to degradation by sun, wind, and moisture for the duration of the construction, shall be installed at the same time as the erosion control measures, and shall remain in place until all construction is complete. Such fencing shall be mounted on metal posts placed no further than ten feet apart. Silt fencing shall not serve as tree protection fencing except in unusual circumstances, such as when topography limits the area available for installation of both tree protection fencing and erosion control measures.

D. At the start of grading involving the lowering of the existing grade around a tree or stripping of topsoil, a clean, sharp, vertical cut shall be made at the edge of the tree save area at the same time as other erosion control measures are installed. Tree protection fencing shall be installed on the side of this cut farthest away from the tree trunk. This procedure shall be incorporated as a note on the grading and erosion control plans.

E. No storage of materials, dumping of waste materials, fill, or parking of equipment shall be allowed within the root protection zone, and no trespassing shall be allowed within the boundary of the root protection zone, and shall be so noted on the grading and erosion control plans and posted at each end of the tree protection fence with perimeter signs spaced a maximum of 100 feet on center thereafter. Each sign shall read "no trespassing/tree protection area" and "prohibido entrar/zona protectora para los arboles".

8.3.3 Tree Survey

A. Purpose

The primary purpose of the tree survey requirements is to provide better information about the presence and location of significant trees on sites proposed for development. This information is needed before plans for development are so far advanced that it is unreasonable and impractical to modify the plans to protect the trees identified on the tree survey. Knowing the location and size of specimen trees helps the staff and governing body evaluate possible modifications to the proposed plans to preserve significant trees and improve the appearance of proposed development.

B. General Tree Survey

For a development plan showing building envelopes rather than building footprints, a generalized survey describing existing forest stands, indicating the range of species and approximate size of trees on the tract, shall be provided.

C. Land Disturbance Tree Survey

1. A land disturbance tree survey shall be required for any area for which the limits of disturbance are within 30 feet of a preserved tree coverage area, floodplain, steep slope area, stream buffer, required landscape buffer, Inventory Site, wetland, or conservation area.

2. The land disturbance tree survey shall show the specific location, species, size and root protection zone of any tree(s) eight inches dbh or greater that is within 30 feet of any area proposed for disturbance, and meets the qualifications in the above paragraph.

3. The land disturbance tree survey shall be shown on all site, grading, and erosion control plans, as well as preliminary plats.

8.3.4 Clear-Cutting

A. Standard

Properties shall not be clear-cut during the conduct of forestry activities. To maintain the visual character of the site from adjoining properties and right-of-way, a vegetated perimeter buffer shall be maintained while tree harvesting for forestry occurs. A 32-foot wide buffer of naturally existing vegetation shall be maintained

along all boundaries of the property being forested that adjoin other properties. Along public rights-of-way, a 50-foot buffer of naturally existing vegetation shall be maintained, exclusive of areas required for access to the site.

B. Penalties

1. City

Site plans proposing development of properties on which all or substantially all of the trees protected in a 32-foot buffer required under this section, a 50-foot buffer required under this section, or both, are removed shall be denied for a period of three years from the date of removal or five years from the date of removal if removal is a willful violation of this section.

2. County

Site plans proposing development of properties on which all or substantially all of the trees protected in a 32-foot buffer required under this section, a 50-foot buffer required under this section, or both, are removed shall be denied for a period of three years from the date of removal.

8.3.5 Specimen Trees

A. A specimen tree shall be defined as any evergreen canopy tree eighteen (18) inches dbh or greater, any deciduous canopy tree twelve (12) inches dbh or greater and any understory tree (deciduous or evergreen) eight (8) inches dbh or greater, except any tree listed as a non-native invasive plant by the US Forest Service or listed as Prohibited for Any Use in the Landscape Guidelines for Durham, North Carolina.

B. Specimen trees, as defined above, that are saved and protected under the requirements of paragraph 8.3.2, shall be granted tree coverage credit at one and one-half times the size of the root protection zone. Specimen trees that are located in the floodway, non-encroachment area, floodway fringe, non-encroachment area fringe, or Areas of Shallow Flooding (Zone AO) (unless proposed to be filled or developed in accordance with paragraph 8.4.4, Development in Special Flood Hazard Areas and Future Conditions Flood Hazard Areas), preserved wetlands and wetland buffers, steep slope areas, riparian buffers, Major Transportation Corridor (MTC) buffers, and Durham Natural Inventory Sites are not eligible for additional credit as described above.

C. In order to receive additional credit for specimen trees as described above, a specimen tree survey shall be required showing specific location, species, size, and root protection zone of all specimen trees to be saved. This survey shall be included on all site, landscape, grading, utility, demolition, and erosion control plans.

Sec. 8.4 Floodplain and Flood Damage Protection Standards

8.4.1 Purpose

The primary purpose of the floodplain and flood damage protection standards is to preserve and maintain the natural floodplain in an undisturbed vegetated state in order to maintain flood storage capacity, control stormwater, improve water quality and conserve plant and wildlife habitat. Additionally, these standards serve to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions within flood prone areas.

In addition, this section serves to facilitate implementation of the Federal Flood Insurance Program and to minimize the possibility that new construction will sustain damage from flooding by:

A. Restricting or prohibiting uses that are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;

B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

C. Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of floodwaters;

D. Controlling filling, grading, dredging, or other development that may increase erosion or flood damage;

E. Preventing or regulating the construction of flood barriers that unnaturally divert flood waters or that may increase flood hazards to other lands;

F. Minimizing damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, and streets and bridges located in areas of special flood hazard; and

G. Ensuring that property owners and potential property owners are notified that property is a Special Flood Hazard Area or Future Conditions Flood Hazard Area.

Commentary: *Losses in floodprone areas are the result of the cumulative effects of obstructions, removal of vegetative cover, and construction practices that cause an increase in flood heights and velocities. Increased flood heights and velocities create a greater threat to land uses and structures that are inadequately elevated, floodproofed, or are otherwise unprotected from flood damage. Occupancy in flood prone areas by uses vulnerable to floods or other hazards can result 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.*

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering consideration. Larger floods can and will occur. Actual flood heights may be increased by man-made or natural causes. This ordinance does not imply that land outside the Special Flood Hazard Areas 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 Durham City or County or by any officer or employee thereof for

any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

8.4.2 Applicability

This section shall apply to all Special Flood Hazard Areas and Future Conditions Flood Hazard Areas within the City and County of Durham as identified by the Federal Emergency Management Agency (FEMA) or produced under the Cooperating Technical State (CTS) agreement between the State of North Carolina and FEMA in its Flood Insurance Study (FIS) and its accompanying flood maps, such as the Flood Insurance Rate Map(s) (FIRM) for Durham County dated May 2, 2006; February 2, 2007; April 16, 2007; June 4, 2007; August 2, 2007; or May 16, 2008, are adopted by reference and declared to be a part of this ordinance. Also adopted by reference and declared to be a part of this ordinance are associated Physical Map Revisions and Letters of Map Change issued by FEMA as of [date on which ordinance has been adopted by both governing bodies]. 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 Sec. 3.22.2.B (11 & 12), Duties and Responsibilities;

B. preliminary FIRMs where more stringent than the effective FIRM; or

C. post-disaster Flood Recovery Maps.

8.4.3 Standards

A. General

In all Special Flood Hazard Areas and Future Conditions Flood Hazard Areas the following provisions are required:

1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure;

2. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage;

3. All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damages;

4. Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding. These include but are not limited to HVAC equipment, water softener units, bath/kitchen fixtures, ductwork, electric meter panels/boxes, utility/cable boxes, appliances (i.e., washers, dryers, refrigerator, etc.), hot water heaters, electric outlets/switches;

5. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;

6. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters;

7. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding;

8. Any alteration, repair, reconstruction, or improvements to a structure which is in compliance with the provisions of this ordinance, shall meet the requirements of new construction; and

9. New solid waste disposal facilities and sites, hazardous waste management facilities, salvage yards, and chemical storage facilities shall not be permitted. A structure or tank for chemical or fuel storage incidental to an allowed use or to the operation of a water treatment plant or wastewater treatment facility may be located in a Special Flood Hazard Area only if the structure or tank is either elevated or floodproofed to at least the regulatory flood protection elevation and certified according to the certification requirements in Sec. 3.22, Floodplain Development Permit.

10. Fill material shall be used for all new construction and substantial improvements to create an elevation that is two feet above base flood elevation or future conditions flood elevation, except as otherwise authorized pursuant to Sec. 8.4.4, Development in Special Flood Hazard Areas and Future Conditions Flood Hazard Areas. The fill material shall be required to extend for a distance of 40 feet from the exterior walls of a building. Where the distance to the property line is less than 40 feet, the fill shall extend to the property line. The required fill material distance shall include a sloped edge with a maximum 3:1 slope [for example, for a fill three feet deep: 31 feet of flat fill plus nine feet of sloped fill] or a retaining wall in lieu of the slope [for example, a side yard of flat fill and a retaining wall]. Residential accessory structures which are defined as nonhabitable structures by the North Carolina Building Code are exempt from requirements to extend the fill material away from the base but are required to be placed on fill which is two feet, or five feet in Zone A, above base flood elevation. Exceptions from any of these requirements resulting from special storm water considerations shall be forwarded to the approving authority if other than the Floodplain Administrator, with a recommendation from the Floodplain Administrator.

B. Specific Standards

In all Special Flood Hazard Areas where Base Flood Elevation (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 Sec. 8.4.2, Applicability, or Sec. 3.22.1.B (11 & 12), Duties and Responsibilities, the following provisions are required:

1. Subdivisions

a. Land in the Special Flood Hazard Areas and Future Conditions Flood Hazard Areas may be used for the following purposes, provided that such uses are designed and constructed to minimize clearing, grading, erosion and water quality degradation and are in compliance with the Sec. 8.4, Floodplain and Flood Damage Protection Standards. Land within Special Flood Hazard Areas and Future Conditions Flood Hazard Areas shall not serve to meet minimum lot size requirements, except in the Rural Tier and on property zoned RR or RS-20 in the Suburban Tier where at least 50% of the required lot area is located outside the floodway or non-encroachment area or floodway fringe.

b. When permitted, development proposals located within Special Flood Hazard Areas and Future Conditions Flood Hazard Areas shall:

(1) be consistent with the need to minimize flood damage;

(2) have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage;

(3) have adequate drainage provided to reduce exposure to flood hazards; and,

(4) have Base Flood Elevation (BFE) data provided if development is greater than the lesser of five (5) acres or fifty (50) lots/manufactured home sites. Such Base Flood Elevation (BFE) data shall be adopted by reference per Sec. 8.4.2, Applicability, to be utilized in implementing this code.

2. 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 the regulatory flood protection elevation.

3. Non-Residential Construction

New construction or substantial improvement of any commercial, industrial (other than hazardous, solid waste, salvage yards, chemical storage facilities or similar uses which are prohibited) or other non-residential structure shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation. Structures located in 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 the certification requirements in Sec. 3.22, Floodplain Development Permit.

4. Manufactured Homes

a. 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.

b. Manufactured homes shall be securely anchored to an adequately anchored foundation to resist flotation, collapse, and lateral movement in accordance with the State of North Carolina Regulations for Manufactured/Mobile Homes, 1995 Edition, and any revision thereto adopted by the Commissioner of Insurance pursuant to NCGS §143-143.15 or a certified engineered foundation. 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 other foundation elements of at least equivalent strength. When the elevation of the chassis is above thirty-six (36) inches in height, an engineering certification is required.

c. All foundation enclosures or skirting shall be in accordance with Sec. 8.4.3.B.5, Elevated Buildings.

d. All new, substantially improved or substantially damaged manufactured home parks or subdivisions located within Special Flood Hazard Areas or Future Conditions Flood Hazard Areas shall prepare an evacuation plan for evacuation of all residents. The plan shall be filed with the Inspections Director, or designee (as the Floodplain Administrator) and the Emergency Management Coordinator prior to the time of site plan approval, plat approval, or building permit, if site plans or plats are not required.

e. Manufactured homes, except replacement manufactured homes located in an existing manufactured home park or subdivision, shall not be permitted in the floodway or non-encroachment area. Permitted manufactured homes shall be subject to the non-encroachment standards of Sec. 8.4.3E, Floodway and Non-Encroachment Areas.

5. 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 Zone AE and X Zone (Future) and meet the following design criteria:

a. 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:

(1) Provide a minimum of two openings on different sides of each enclosed area subject to flooding.

(2) 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.

(3) If a building has more than one enclosed area, each area must have openings on exterior walls to allow floodwater to directly enter;

(4) The bottom of all required openings shall be no higher than one (1) foot above the adjacent grade; and

(5) Openings may be equipped with screens, louvers, or other opening coverings or devices provided they permit the automatic flow of floodwaters in both directions. For purposes of this provision, vinyl or sheet metal skirting shall not be considered an enclosure for regulatory and flood insurance rating purposes and therefore shall not require hydrostatic openings.

b. 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.

6. Additions/Improvements

a. Additions and/or improvements to pre-FIRM structures when the addition and/or improvements in combination with any interior modifications to the existing structure are:

(1) 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; or

(2) a substantial improvement, the existing structure and the addition and/or improvements must comply with the standards for new construction.

b. 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.

c. Additions and/or improvements to post-FIRM structures whereas the addition and/or improvements in combination with any interior modifications to the existing structure are:

(1) not a substantial improvement, the addition and/or improvements only must comply with the standards for new construction; or

(2) a substantial improvement, the existing structure and the addition and/or improvements must comply with the standards for new construction.

d. 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.

7. Recreational Vehicles

Recreational vehicles shall not be located within Special Flood Hazard Areas or Future Conditions Flood Hazard Areas for 180 days or more and shall be licensed and ready for highway use (on wheels attached to a site by quick-disconnect type utilities with no permanently attached additions). Recreational vehicles not meeting these standards shall meet the standards of manufactured homes above.

8. Temporary Structures

Prior to the issuance of a floodplain development permit for a temporary structure, Applicants must submit to the Floodplain Administrator a written 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 proposed 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 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.

9. Accessory Structures

When accessory structures (sheds, detached garages, etc.) are to be placed within a Special Flood Hazard Area or Future Conditions Flood Hazard Area, the following criteria shall be met:

a. Accessory structures shall not be used for human habitation (including work, sleeping, living, cooking or restroom areas);

b. Accessory structures shall be designed to have low flood damage potential;

c. Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters;

d. Accessory structures shall be firmly anchored in accordance with Sec. 8.4.3, General;

e. All service facilities such as electrical and heating equipment shall be installed in accordance with Sec. 8.4.3, Specific Standards;

f. Openings to relieve hydrostatic pressure during a flood shall be provided below regulatory flood protection elevation in conformance with elevated building requirements in Sec. 8.4.3, Standards; and

g. An accessory structure with a footprint less than 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 the certification requirements in Sec. 3.22, Floodplain Development Permit.

C. Floodplains without Base Flood Elevations

Within the Special Flood Hazard Areas established in Sec. 8.4.2, Applicability, where no Base Flood Elevation (BFE) data has been provided, the following provisions shall apply:

1. No encroachments, including fill, new construction, substantial improvements or new development shall be permitted within a distance of 20 feet each side from top of bank or five times the width of the stream whichever is greater, unless certification with supporting technical data by a registered professional engineer is provided demonstrating that such encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

2. The BFE used in determining the regulatory flood protection elevation shall be determined based on one of the following criteria set in priority order:

   a. If Base Flood Elevation (BFE) data is available from other sources, all new construction and substantial improvements within such areas shall also comply with all applicable provisions of this ordinance and shall be elevated or floodproofed in accordance with standards in Sec. 3.22.1.B (11&12).

   b. All subdivision, manufactured home park and other development proposals shall provide Base Flood Elevation (BFE) data if development is greater than five (5) acres or has more than fifty (50) lots/manufactured home sites. Such Base Flood Elevation (BFE) data shall be adopted by reference per Sec. 8.4.2, Standards, to be utilized in implementing this ordinance.

   c. When Base Flood Elevation (BFE) data is not available from a Federal, State, or other source as outlined above, the reference level shall be elevated to or above five feet above the highest adjacent grade.

D. Floodplains with Base Flood Elevations but no Established Floodway or Non-Encroachment Areas

Along rivers and streams where Base Flood Elevation (BFE) data is provided but neither floodway nor non-encroachment areas are identified for a Special Flood Hazard Area on the FIRM or in the FIS, no encroachments, including fill, new construction, substantial improvements, or other development, shall be permitted unless certification with supporting technical data by a registered professional engineer is provided demonstrating that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

E. Floodway and Non-Encroachment Areas

Located within the Special Flood Hazard Areas established in Sec 8.4.2, Applicability, are areas designated as floodways or non-encroachment areas, which are extremely hazardous due to the velocity of floodwaters that have erosion potential and carry debris and potential projectiles. In such areas no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless the Federal Emergency Management Agency (FEMA) authorizes conditional approval of the proposed encroachment via a Conditional Letter of Map Revision (CLOMR) or a professional engineer registered in the State of North Carolina certifies that such uses will result in no increases in flood levels during the occurrence of a base flood, as demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice if required by the Floodplain Administrator.

F. Standards for Areas of Shallow Flooding (Zone AO)

Located within the Special Flood Hazard Areas established in Sec 8.4.2, Applicability, 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 the general standards in 8.4.3.A, all new construction and substantial improvements shall meet the following requirements.

1. 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 2 feet, above the highest adjacent grade; or at least five feet above the highest adjacent grade if no depth number is specified.
2. Non-residential structures may, in lieu of elevation, be floodproofed to the same level as required in Sec. 8.4.3.F.1 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 as per Sec. 3.22.6, Certification Requirements, and Sec. 8.4.3.B.3, Non-Residential Construction.
3. Adequate drainage paths shall be provided around structures on slopes, to guide floodwaters around and away from proposed structures.

8.4.4 Development in Special Flood Hazard Areas and Future Conditions Flood Hazard Areas

Development and land disturbing activity within Special Flood Hazard Areas and Future Conditions Flood Hazard Areas shall be prohibited, except as provided below. The Floodplain Administrator and the governing bodies shall not approve development that is located below the regulatory flood protection elevation if such development is otherwise required to be located at or above the regulatory flood protection elevation or is not permitted within the Special Flood Hazard Areas or Future Conditions Flood Hazard Areas. Development addressed under Sec. 8.4.3C, Floodplains without Base Flood Elevations, and Sec. 8.4.3D, Floodplains with Base Flood Elevations but no Established Floodway or Non-Encroachment Areas, shall be deemed floodway development for purposes of this section.

A. Development Allowed

Land in Special Flood Hazard Areas may be used for the following purposes, with no special approvals required:

1. Agricultural uses, including active agriculture, pasture forestry, wildlife sanctuary, game farms, and similar uses; and
2. Lawns and gardens.

B. Development Requiring Floodplain Administrator Approval

1. Development of, or substantial improvements to, one single-family or duplex residence on a single lot of record that exists as of January 1, 2006, may utilize fill, pursuant to a floodplain development permit issued under Sec. 3.22, Floodplain Development Permit, in the floodway fringe, non-encroachment area fringe, or Areas of Shallow Flooding (Zone AO) if the Floodplain Administrator determines that:
    a. The proposed fill provides for a better balance between overall efficiency of the site design and improved conservation elsewhere on the site than would be possible without intrusion in the floodway fringe, non-encroachment area fringe, or Areas of Shallow Flooding (Zone AO); and

b. The proposed fill represents the minimum amount of floodway fringe, non-encroachment area fringe, or Areas of Shallow Flooding (Zone AO) intrusion to achieve this better balance.

2. Floodproofing or elevation by design in lieu of required fill for new construction or substantial improvements on lots of record that exist as of January 1, 2006 pursuant to a floodplain development permit issued under Sec. 3.22, Floodplain Development Permit. If the Floodplain Administrator approves floodproofed or elevated-by-design construction or improvements rather than use of fill in Zone AE or Zone X (Future), the approval shall specify the minimum foundation opening requirements and limitations on below-BFE enclosures uses, if applicable.

C. Development Requiring Development Review Board Approval

1. Land in Special Flood Hazard Areas or Future Conditions Flood Hazard Areas may be used for the following purposes, provided that the DRB determines that such uses are designed and shall be constructed to minimize clearing, grading, erosion and water quality degradation.

a. Active and passive recreational activities.

b. Wetlands constructed or restored for mitigation purposes.

2. Land in the floodway fringe, non-encroachment area fringe, or Areas of Shallow Flooding (Zone AO) may be used for the following purposes, and may be filled in support of such uses, provided that the DRB determines that such uses are designed and shall be constructed to minimize clearing, grading, erosion and water quality degradation.

a. Crossings by streets, driveways, pedestrian walkways, and railroads provided that they cross the Special Flood Hazard Areas or Future Conditions Flood Hazard Areas as nearly perpendicular to the stream as possible. Such facilities may run within and parallel to the stream if no other access to the property is feasible.

b. Intakes, docks, piers, utilities (including water and wastewater treatment, stormwater control and sedimentation and erosion control facilities), bridges, other public facilities and water-dependent structures.

3. Land in the floodway or non-encroachment area may be used for the following purposes, and may be filled in support of such uses, if the certification required under Sec. 8.4.3C, Floodplains without Base Flood Elevations, Sec. 8.4.3D, Floodplains with Base Flood Elevations but no Established Floodway or Non-Encroachment Areas, or Sec. 8.4.3E, Floodway and Non-Encroachment Areas, as appropriate, has been provided if the DRB determines that such uses are designed and shall be constructed to minimize clearing, grading, erosion and water quality degradation.

a. Crossings by streets, driveways, pedestrian walkways, and railroads provided that they cross Special Flood Hazard Areas or Future Conditions Flood Hazard Areas as nearly perpendicular to the stream as possible. Such facilities may run within and parallel to the stream if no other access to the property is feasible.

b. Intakes, docks, piers, utilities (including water and wastewater treatment, stormwater control and sedimentation and erosion control facilities), bridges, other public facilities and water-dependent structures.

c. Other encroachments authorized by FEMA.

D. Development Requiring Governing Body Approval

1. Fill or Development in the Floodway Fringe or Non-Encroachment Area Fringe

Fill or development (e.g., parking or floodproofing or elevation by design) in the floodway fringe, non-encroachment area fringe, or Areas of Shallow Flooding (Zone AO) that is not authorized above is not permitted unless it is in support of otherwise permissible uses and authorized by a major special use permit issued under Sec. 3.9, Special Use Permit, and provided that the appropriate governing body finds that:

a. The proposed fill or development provides for a better balance between overall efficiency of the site design, and improved conservation elsewhere on the site than would be possible without intrusion into the floodway fringe, non-encroachment area fringe, or Areas of Shallow Flooding (Zone AO); and

b. The proposed fill or development represents the minimum amount of floodway fringe, non-encroachment area fringe, or Areas of Shallow Flooding (Zone AO) intrusion to achieve this better balance.

> ***Commentary:*** *Intrusion within the floodway fringe or non-encroachment area fringe may allow preservation of other significant resources on the site, and the governing body is empowered to review the balancing of these two concepts.*

E. No credit shall be allowed for land in the floodway or non-encroachment area, except in the RR District where 100% density credit may be given for land in the floodway or non-encroachment area in Conservation Subdivisions pursuant to Sec 6.2.4, Conservation Subdivision.

F. The amount of land in the floodway fringe or non-encroachment area fringe may be credited for residential density on adjacent land in the same development at a rate of 50% of that allowed by the zoning, except in the RR District where 100% density credit may be given for land in the floodway fringe or non-encroachment area fringe in Conservation Subdivisions pursuant to Sec 6.2.4, Conservation Subdivision.

Sec. 8.5 Riparian Buffer Protection Standards

8.5.1 Purpose

The primary purpose of Sec. 8.5, Riparian Buffer Protection Standards (which may be referred to herein as "this section") is to maintain land adjacent to surface waters in a vegetated state in order to enhance and maintain water quality, protect stream channel wetlands, minimize stormwater runoff, reduce sedimentation and erosion, provide nutrient removal, conserve plant and wildlife habitat and protect wildlife movement corridors.

8.5.2 Applicability

This section shall apply to any person or entity conducting activities within the City or County of Durham, except where such activities are otherwise regulated by the State of North Carolina or the United States. Outside of the Neuse River Basin, activities otherwise regulated by the State include forest harvesting and agricultural activities, activities conducted by a local, state, or federal government, and activities under multiple jurisdictions except where such multiple jurisdictions are the City and County of Durham exclusively. This section shall supersede all locally implemented buffer requirements stated in 15A NCAC 02B .0214 through .0216 as applied to WS-II, WS-III, and WS-IV waters in the Jordan watershed. Where any requirement of this section conflicts with any other valid law, the most stringent requirement shall apply.

The requirements of this section shall apply in all cases, including where State standards are less stringent. Review and approval by the City or County is always required, except in the case of an exempt use, and shall occur pursuant to the applicable process in each case (e.g., Preliminary Plat, Major Site Plan, etc.). Within the Neuse River Basin, final review by the City or County shall occur after any State action is completed.

8.5.3 Definitions

Within the Neuse River Basin, the definitions contained or referenced in 15A NCAC 02B .0233 and .0242 shall apply to this section. Outside of the Neuse River Basin, the definitions contained or referenced in 15A NCAC 02B .0263, .0267, and .0268 shall apply to this section. Such definitions shall supersede any conflicting UDO definition for purposes of this section.

8.5.4 Riparian Buffers Protected

A. Regulated Activities

This section shall apply to any activity conducted within any riparian buffer, and to any activity conducted outside of any riparian buffer that has hydrologic impacts upon that buffer in violation of the diffuse flow requirements of paragraph 8.5.5, Diffuse Flow Requirements. There is no disturbed area minimum for regulated activities and they include but are not limited to activities conducted pursuant to building permits. As stated in Sec. 8.5.2, Applicability, compliance with this entire section is required even where State standards are less stringent. Within the Neuse River Basin, final review by the City or County shall occur after any State action is completed.

B. Buffers Protected

1. General Riparian Buffers

Riparian buffers as depicted on the table below shall be required adjacent to the following surface waters: intermittent streams; perennial streams; modified natural streams; lakes; and ponds including beaver ponds. The table includes the additional buffer width required for certain surface waters in watershed protection overlays. It does not include the 10-foot setback required under Sec. 8.5.10C below. A lake or pond shall receive the same buffer as the stream to which it is connected at the point of initial connection. A gap of 300 feet or less in a stream, as determined by the City or County, shall receive the same buffer as the upstream portion of such stream.

Commentary: *UDO Sec. 16.3, Defined Terms, defines "adjacent" as "[p]roperty abutting directly on the boundary of, touching, or sharing a common point." The applicable state rules define "modified natural stream" as "an on-site channelization or relocation of a stream channel and subsequent relocation of the intermittent or perennial flow as evidenced by topographic alterations in the immediate watershed. A modified natural stream must have the typical biological, hydrological, and physical characteristics commonly associated with the conveyance of water."*

Key:
P - Perennial
I - Intermittant
NA - Not applicable because not located therein
M/LR-A - Lake Michie/Little River Critical Area
M/LR-B - Lake Michie/Little River Protected Area
E-A - Eno River Critical Area
E-B - Eno River Protected Area
F/J-A - Falls/Jordan Critical Area
F/J-B - Falls/Jordan Protected Area

Tier	Watershed Protection Overlay													
	None		M/LR-A		M/LR-B		E-A		E-B		F/J-A		F/J-B	
Downtown and Compact Neighborhood														
Stream Type	P	I	P	I	P	I	P	I	P	I	P	I	P	I
Width	50	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Urban														
Stream Type	P	I	P	I	P	I	P	I	P	I	P	I	P	I
Width	50	50	NA	NA	NA	NA	NA	NA	100	50[1]	NA	NA	100	50[1]
Suburban														
Stream Type	P	I	P	I	P	I	P	I	P	I	P	I	P	I
Width	50	50	150	50	150	50	150	50	100	50[1]	150	100	100	50[1]
Rural														
Stream Type	P	I	P	I	P	I	P	I	P	I	P	I	P	I
Width	50	50	150	50	150	50	NA	NA	100	50[1]	150	100	100	50[1]

[1] Stream buffer minimum of 100 feet if a high density option is utilized per Sec. 8.7.2B.1

2. Riparian Reservoir Buffers

Riparian buffers shall be required adjacent to reservoirs pursuant to Sec. 8.6, Water Supply Reservoir Buffer.

3. Riparian Wetland Buffers

Riparian buffers shall be required adjacent to wetlands pursuant to Sec. 8.9, Wetlands Protection Standards.

4. Wetlands adjacent to, or within 50 feet of, surface waters shall be considered part of the riparian buffers but are regulated pursuant to 15A NCAC 2B .0230 and .0231, 15A NCAC 2H .0500, 15A NCAC 2H .1300, and Sections 401 and 404 of the Federal Water Pollution Control Act.

C. Buffer Measurement

Riparian buffers shall be measured as follows:

1. For intermittent and perennial streams, begin at the top of the bank and extend landward the required distance on all sides of the surface water, measured horizontally on a line perpendicular to a vertical line marking the top of the bank;

2. For ponds, lakes and reservoirs located within a natural drainage way, begin at the normal water level and extend landward the required distance, measured horizontally on a line perpendicular to a vertical line marking the normal water level;

3. Where an intermittent or perennial stream begins or ends, including but not limited to when it goes underground, enters or exits a culvert, or enters or exits a wetland, begin at the top of the bank and extend landward the required distance in a radius around the beginning or end; and

Commentary: *The radius requirement does not apply to a continuous stream that flows through a culvert within an existing stream buffer.*

4. Where an intermittent, perennial, or modified natural stream contains a gap of 300 feet or less, as determined by the City or County, extend the upstream buffer in a straight line through the gap, or in an alternative manner if approved by the Planning Director or designee, until it meets the downstream buffer.

D. Buffer Identification

1. Riparian buffers shall be clearly indicated on all development plans, site plans, preliminary plats, final plats, sedimentation and erosion control plans, any other plans required before, during, or after construction, and any other documents as required under applicable law or policy.

2. Signs or other mechanisms that clearly demarcate riparian buffer boundaries shall be required for all new development or redevelopment.

a. Temporary signs shall be installed before clearing and grading begins and maintained until permanent signs are installed. Tree save or silt fencing may be used in lieu of temporary signs with prior approval from the City or County as appropriate.

b. Permanent signs shall be installed prior to issuance of certificate of occupancy and maintained in perpetuity.

c. All signs shall be posted at intervals of one per parcel or every 50 feet, whichever is less.

d. Each sign shall be [at least, *City only*] 4" by 6" in size, shall face away from the buffer, and shall read "Riparian Buffer – Do Not Disturb Except as Authorized by the City [County] of Durham".

e. All signs must be placed on metal or wood posts installed securely in the ground, except that permanent signs may be placed on permanent fencing along the buffer boundary. If wood posts are used they must be at least 2" x 2" in size and be made of treated wood. Posts must extend a minimum of three feet above ground and be sunk at least two feet below ground.

8.5.5 Diffuse Flow Requirements

Diffuse flow shall be maintained in riparian buffers by dispersing concentrated flow prior to its entry into a buffer and reestablishing vegetation as listed below. These requirements apply to all development, including development that does not propose to impact or conduct an activity within a riparian buffer.

A. Concentrated runoff from new ditches or man-made conveyances shall be converted to diffuse flow at non-erosive velocities before the runoff enters a riparian buffer except as authorized under paragraph 8.5.10, Uses.

B. Corrective action to restore diffuse flow shall be taken as necessary and shall be designed to impede the formation of erosion gullies.

C. New stormwater conveyances including drainage ditches, roadside ditches, and stormwater BMPs shall not be allowed in or through riparian buffers except as authorized under paragraph 8.5.10, Uses.

8.5.6 Maps and On-Site Determinations

A. Maps

All of the following maps shall be used to identify surface water subject to the requirements of this section:

1. The most recent version of the soil survey map prepared by the Natural Resources Conservation Service of the United States Department of Agriculture, which means the most recent hard copy paper bound map or CD-ROM or PDF of such map; and

2. The most recent version of the 1:24,000 scale (7.5 minute) quadrangle topographic map prepared by the United States Geologic Survey (USGS); and

3. Outside of the Neuse River Basin, any map approved by the Geographic Information Coordinating Council, the North Carolina Environmental Management Commission and both governing bodies as more accurate than the maps listed in paragraphs 1 and 2 above. However, such map shall not be used for buffer delineation on projects that are existing and ongoing under Sec. 8.5.7, Existing Use Exemption.

Surface water shall be deemed present if it is at least approximately shown on any map. If any surface water is depicted differently on different maps, the most restrictive depiction shall apply.

B. On-Site Determinations

1. Within the Neuse River Basin

A landowner or other affected party who believes that surface water is inaccurately depicted shall consult the North Carolina Division of Water Quality (Division) and may request an on-site determination by the Division.

2. Outside the Neuse River Basin

a. The Division or another party may request an on-site determination by the City or County as appropriate of the specific origination point of a stream where it is in question.

b. A landowner or other affected party, including the Division, who believes that one or more maps inaccurately depict, or omit based on site-specific evidence, surface water shall consult the City or County as appropriate and may request an on-site determination by the City or County.

c. When an on-site determination is requested, a City or County representative, or other party authorized or accepted by the City or County, who has successfully completed the Division's *Surface Water Identification Training Certification* course, its successor, or other equivalent training curriculum approved by the Division, shall make the on-site determination following submission of any fees, information or documents required by the City or County. An origination point shall be established using the latest version of the Division publication, *Identification Methods for the Origins of Intermittent and Perennial Streams*.

d. A City or County representative, or other party authorized or accepted by the City or County, who has successfully completed the training required above may also make either type of on-site determination absent an outside consultation or request.

e. An on-site determination shall be valid for five years from the date of the determination unless specified otherwise therein.

3. Surface water shown on a map shall be exempt from Sec. 8.5, Riparian Buffer Protection Standards, if it is determined on site to be: 1) a manmade pond or lake located outside of a natural drainage way, meaning the pond or lake is not fed by, and has no direct discharge to, an intermittent or perennial stream; 2) an ephemeral stream; 3) not present on the ground, except for any stream gap of 300 feet or less; or 4) a ditch or other manmade conveyance other than a modified natural stream unless constructed for navigation or boat access.

4. Surface water not shown on a map shall be governed by Sec. 8.5, Riparian Buffer Protection Standards, if it is determined on site to be: 1) a pond or lake located in a natural drainage way, meaning the pond or lake is fed by and has a direct discharge to an intermittent or perennial stream; 2) a perennial stream, including any gap of 300 feet or less; 3) an intermittent stream, including any gap of 300 feet or less; or 4) a modified natural stream, including any gap of 300 feet or less.

5. Despite the provisions of Section 2.4, Board of Adjustment, any dispute shall be referred to the Division Director c/o the 401 Oversight Express Permitting Unit,

or its successor, in writing. The Director's determination is subject to review as provided in Articles 3 and 4 of G.S. 150B.

8.5.7 Existing Use Exemption

A. General

This section shall not apply to the portion of a riparian buffer occupied by the footprint of a legal existing and ongoing use. An existing and ongoing use is a use that was present within the riparian buffer as of July 22, 1997 within the Neuse River Basin, or as the effective date of this section outside of the Neuse River Basin, and has continued to exist since that time. Such uses may include but are not limited to agriculture, buildings, industrial facilities, commercial areas, transportation facilities, maintained lawns, utility lines and on-site sanitary sewage systems. A use that converts from an existing and ongoing use to another use shall no longer be exempt. Conversion includes but is not limited to changing an agricultural operation to non-agricultural use, failing to maintain a lawn, or failing to meet the criteria specified below for activities allowed.

B. Exemption Maintained

The following activities do not convert an existing and ongoing use to another use:

1. Activities necessary to maintain a use provided that no impervious surface is added to the riparian buffer where it did not exist as of the applicable date, existing diffuse flow is maintained, and either 1) outside of the Neuse River Basin, the site remains similarly vegetated, or 2) within the Neuse River Basin, no additional vegetation is removed except that grazed or trampled by livestock;
2. Grading and revegetating of the outer 20 feet of a buffer that is not located in a watershed protection overlay, provided that the health of the vegetation in the inner 30 feet of the buffer is not compromised, the ground is stabilized and existing diffuse flow is maintained; or
3. Outside of the Neuse River Basin, change of ownership through purchase or inheritance.

C. Outside the Neuse River Basin

Outside of the Neuse River Basin, a project that meets at least one of the following criteria is also existing and ongoing:

1. The project requires a 401 Certification and 404 Permit and they were issued prior to the effective date of this section;
2. The project requires a state permit (e.g., landfill, National Pollutant Discharge Elimination System (NPDES) wastewater discharge, land application of residuals, road construction activity), has started construction or is under contract to start construction, and received all required state permits and certifications prior to the effective date of this section;
3. The project is reviewed through the Clean Water Act Section 404/National Environmental Policy Act Merger 01 Process or its immediate successor and reached agreement with the NC Department of Environment and Natural Resources on avoidance and minimization prior to the effective date of this section; or
4. The project can avoid review under the Clean Water Act Section 404/National Environmental Policy Act Merger 01 Process or its immediate successor due to a

Finding of No Significant Impact and received written approval from the City or County as appropriate prior to the effective date of this section.

8.5.8 Piping Streams

Piping of streams is prohibited except where necessary to accomplish a use that is authorized under paragraph 8.5.10, Uses, and approved as required.

Commentary: *Approved piping is a use within an existing buffer and the buffer remains in effect. There is no gap in the buffer, so buffer requirements apply along the piped portion of the stream.*

8.5.9 Lots and Density Credits

Land within the stream buffer shall not serve to meet minimum lot size requirements, except in the Rural Tier and on property zoned RR or RS-20, in the Suburban Tier, where at least 50% of the required lot area is outside the stream buffer. No credit shall be allowed for land within stream buffers, except in the RR District, where density credits may be given for stream buffers in conservation subdivisions pursuant to Sec. 6.2.4, Conservation Subdivision.

8.5.10 Uses

A. As stated in Sec. 8.5.2, Applicability, compliance with this entire section is required even where State standards are less stringent. Within the Neuse River Basin, final review by the City or County shall occur after any State action is completed.

B. No new clearing, grading, or development shall take place nor shall any new building permits be issued in violation of this section. Parties subject to this section shall abide by all state rules and laws regarding waters of the state including but not limited to 15A NCAC 2B .0230 and .0231, 15A NCAC 2H .0500, 15A NCAC 2H .1300, and Sections 401 and 404 of the Federal Water Pollution Control Act.

C. Buildings and other features that require grading and construction shall be set back at least ten feet from the edge of the riparian buffer.

D. Any use authorized by this section shall be designed, constructed and maintained to minimize the amount of intrusion into the riparian buffer and to minimize clearing, grading, erosion, water quality degradation, and damage to vegetation.

E. Where any use involves temporary land clearing, revegetation shall occur pursuant to an approved vegetation plan. Such plan shall include trees as specified under paragraph 9.2.3B.5, Mixing of Tree Species, and the Durham Landscape Guidelines, planted at a density sufficient to provide 320 trees per acre at maturity with at least 50% of those trees having the potential of attaining a two and a half inch or greater dbh within seven years.

F. Use Category Requirements

1. Exempt

An exempt use may occur without authorization provided it adheres to the limitations contained in the Table of Uses below. In addition, an exempt use shall be designed, constructed, maintained and monitored to minimize soil disturbance and maximize water quality protection.

2. Allowable

An allowable use requires written authorization from the North Carolina Division of Water Quality, City, or County as appropriate and may occur following a finding of "no practical alternatives" and issuance of an Authorization Certificate pursuant to paragraph 8.5.11, No Practical Alternatives/Authorization Certificate.

3. Allowable with Mitigation

An allowable with mitigation use requires written authorization from the North Carolina Division of Water Quality, City, or County as appropriate and may occur following a finding of "no practical alternatives" and issuance of an Authorization Certificate pursuant to paragraph 8.5.11, No Practical Alternatives/Authorization Certificate, and approval of a mitigation strategy pursuant to paragraph 8.5.12, Mitigation.

G. Table of Uses

The following table sets out potential new uses within the riparian buffer, or outside of the buffer with impacts upon the buffer, and categorizes them as exempt, allowable, or allowable with mitigation. The requirements for each category are contained in paragraph F, Use Category Requirements, above. All uses not categorized as exempt, allowable, or allowable with mitigation are prohibited and may not occur within the riparian buffer or outside of the riparian buffer with impacts on the buffer unless a variance is obtained pursuant to paragraph 8.5.13, Variances. Uses include construction, monitoring, and maintenance activities.

Use	Category
Key (see Sec. 8.5.10F, Use Category Requirements): E = Exempt; A = Allowable; AM = Allowable with Mitigation; X or not listed = Prohibited; NA = Not applicable	
Outside of the Neuse River Basin, access trails: pedestrian access trails leading to the surface water, docks, fishing piers, boat ramps, overlooks, view points, and other water dependent activities:	
• Pedestrian access trails that are restricted to the minimum width practicable and do not exceed four feet in width of buffer disturbance, and provided that installation and use does not result in removal of any tree and no impervious surface is added to the riparian buffer.	E
• Pedestrian access trails that exceed 4 feet in width of buffer disturbance, the installation or use results in removal of any tree or impervious surface is added to the riparian buffer.	A
Airport facilities:	
• Airport facilities that impact equal to or less than 150 linear feet or one-third of an acre of riparian buffer.	X
• Airport facilities that impact greater than 150 linear feet or one-third of an acre of riparian buffer.	X
• Outside of the Neuse River Basin, activities necessary to comply with FAA requirements (e.g. radar uses or landing strips).[1]	A
Archaeological activities not covered by another specific use.	E
Bridges not covered by another specific use.	A
Outside of the Neuse River Basin, canoe access provided that installation and use does not result in removal of any tree and no impervious surface is added to the buffer.	E
Dam maintenance activities:	
• Dam maintenance activities that do not cause additional buffer disturbance beyond the footprint of the existing dam or those covered under the U.S. Army Corps of Engineers Nationwide Permit No. 3.	E
• Dam maintenance activities that do cause additional buffer disturbance beyond the footprint of the existing dam or those not covered under the U.S. Army Corps of Engineers Nationwide Permit No.3.	A
Drainage ditches, roadside ditches and stormwater conveyances through riparian buffers:	
• New stormwater flows to existing drainage ditches, roadside ditches, and stormwater conveyances provided flows do not alter or result in the need to alter the conveyance and are managed to minimize the sediment, nutrients and other pollution that convey to waterbodies.	E
• Outside of the Neuse River Basin, realignment of existing roadside drainage ditches retaining the design dimensions, provided that no additional travel lanes are added and the minimum required roadway typical section is used based on traffic and safety considerations.	A
• New (or altered if outside of the Neuse River Basin) drainage ditches, roadside ditches and stormwater outfalls provided that a stormwater management facility is installed to control nutrients as directed by the appropriate jurisdiction and attenuate flow before the conveyance discharges through the riparian buffer.	A
• New drainage ditches, roadside ditches and stormwater conveyances applicable to linear projects that do not provide a stormwater management facility due to topography constraints provided that other practicable BMPs are employed.	AM

Use	Category
Key (see Sec. 8.5.10F, Use Category Requirements): E = Exempt; A = Allowable; AM = Allowable with Mitigation; X or not listed = Prohibited; NA = Not applicable	
Driveway crossings of streams and other surface waters subject to this section:	
• Driveway crossings on single family residential lots that disturb equal to or less than 25 linear feet or 2,500 square feet of riparian buffer.	A
• Driveway crossings on single family residential lots that disturb greater than 25 linear feet or 2,500 square feet of riparian buffer.	A
• In a subdivision that cumulatively disturb equal to or less than 150 linear feet or one-third of an acre of riparian buffer.	A
• In a subdivision that cumulatively disturb greater than 150 linear feet or one-third of an acre of riparian buffer.	AM
• Outside of the Neuse River Basin, driveway impacts other than crossing of a stream or other surface waters subject to this section.	AM
Fences:	
• Fences on single-family lots provided that disturbance is minimized and installation does not result in removal of any tree (or, within the Neuse River Basin, forest vegetation).	X
• Fences on lands other than single-family lots provided that disturbance is minimized and installation does not result in removal of any tree (or, within the Neuse River Basin, forest vegetation)	X
• Outside of the Neuse River Basin, fences provided that disturbance is minimized and installation results in removal of any tree.	X
Fertilizer application: one-time application only, to establish vegetation.	E
Forest harvesting as regulated by the State of North Carolina pursuant to 15A NCAC 02B .0233 and 15A NCAC 02B .0267.	Per State Regulation
Greenway / hiking trails designed, constructed and maintained to maximize nutrient removal and erosion protection, minimize adverse effects on aquatic life and habitat, and protect water quality to the maximum extent practical.	A
Historic preservation not covered by another specific use.	E
Landscaping of the outer 20 feet of a riparian buffer in the Urban, Compact Neighborhood, or Downtown Tier that is not located in a watershed protection overlay in accordance with an approved City or County revegetation plan.	E
Maintenance access on modified natural streams: a grassed travel way on one side of the water body when less impacting alternatives are not practical. The width and specifications of the travel way shall be only that needed for equipment access and operation. The travel way shall be located to maximize stream shading.	A
Mining activities:	
• Mining activities that are covered by the Mining Act provided that new riparian buffers that meet the requirements of this section are established adjacent to the relocated channels.	A
• Mining activities that are not covered by the Mining Act OR where new riparian buffers that meet the requirements of this section are not established adjacent to the relocated channels.	AM
• Wastewater or mining dewatering wells with approved NPDES permit.	E
Playground equipment:	
• Playground equipment on single family lots that exist as of adoption of this section provided that installation and use does not result in removal of vegetation.	E
• Playground equipment installed on lands other than single-family lots or that requires removal of vegetation.	X

Use	Category
Key (see Sec. 8.5.10F, Use Category Requirements): E = Exempt; A = Allowable; AM = Allowable with Mitigation; X or not listed = Prohibited; NA = Not applicable	
Within the Neuse River Basin, ponds in natural drainage ways, excluding dry ponds; outside of the Neuse River Basin, ponds created by impounding streams and not used as stormwater BMPs:	
• New ponds provided that a riparian buffer that meets the requirements of this section is established adjacent to the pond.	A
• New ponds where a riparian buffer that meets the requirements of this section is NOT established adjacent to the pond.	AM
Protection of existing structures, facilities and stream banks when this requires additional disturbance of the riparian buffer or the stream channel.	A
Railroad impacts other than crossings of streams and other surface waters subject to this section.	AM
Railroad crossings of streams and other surface waters subject to this section:	
• Railroad crossings that impact equal to or less than 40 linear feet of riparian buffer.	A
• Railroad crossings that impact greater than 40 linear feet but equal to or less than 150 linear feet or one-third of an acre of riparian buffer.	A
• Railroad crossings that impact greater than 150 linear feet or one-third of an acre of riparian buffer.	AM
Removal of previous fill or debris provided that diffuse flow is maintained and vegetation is restored.	A
Road impacts other than crossings of streams and other surface waters subject to this section.	AM
Road crossings of streams and other surface waters subject to this section:	
• Road crossings that impact equal to or less than 40 linear feet of riparian buffer.	A
• Road crossings that impact greater than 40 linear feet but equal to or less than 150 linear feet or one-third of an acre of riparian buffer.	A
• Road crossings that impact greater than 150 linear feet or one-third of an acre of riparian buffer.	AM
Outside of the Neuse River Basin, road relocation: Relocation of existing private access roads associated with public road projects where necessary for public safety:	
• Less than or equal to 2,500 square feet of buffer impact.	A
• Greater than 2,500 square feet of buffer impact.	AM
Scientific studies and stream gauging.	E
Within the Neuse River Basin, stormwater management ponds excluding dry ponds:	
• New stormwater management ponds provided that a riparian buffer that meets the requirements of this section is established adjacent to the pond.	A
• New stormwater management ponds where a riparian buffer that meets the requirements of this section is not established adjacent to the pond.	AM
Outside of the Neuse River Basin, stormwater BMPs:	
• Wet detention, bioretention, and constructed wetlands.	AM
Streambank or, outside of the Neuse River Basin, shoreline stabilization.	A

Use	Category
Key (see Sec. 8.5.10F, Use Category Requirements): E = Exempt; A = Allowable; AM = Allowable with Mitigation; X or not listed = Prohibited; NA = Not applicable	
Temporary roads, provided that the disturbed area is restored to pre-construction topographic and hydrologic conditions immediately after construction is complete and replanted immediately with comparable vegetation, except that tree planting may occur during the dormant season. A one-time application of fertilizer may be used to establish vegetation. At the end of five years the restored buffer shall comply with the restoration criteria of paragraph 8.5.12E, Riparian Buffer Restoration or Enhancement.	
• Less than or equal to 2,500 square feet of buffer disturbance and not perpendicular to the stream.	X
• Greater than 2,500 square feet of buffer disturbance and not perpendicular to the stream.	X
• Associated with culvert installation outside of the Neuse River Basin or bridge construction or replacement and not perpendicular to the stream	X
• Perpendicular to the stream	A
Temporary sediment and erosion control devices, provided that the disturbed area is restored to pre-construction topographic and hydrologic conditions immediately after construction is complete and replanted immediately with comparable vegetation, except that tree planting may occur during the dormant season. A one-time application of fertilizer may be used to establish vegetation. At the end of five years the restored buffer shall comply with the restoration criteria of paragraph 8.5.12E, Riparian Buffer Restoration or Enhancement.	
• To control impacts associated with uses approved by the appropriate jurisdiction or that have received a variance, provided that sediment and erosion control for upland areas is addressed to the maximum extent possible, outside the buffer.	A
• In-stream temporary erosion and sediment control measures for work within a stream channel that is authorized under Sections 401 and 404 of the Federal Water Pollution Control Act.	A
• In-stream temporary erosion and sediment control measures for work within a stream channel.	A
Utility, electric, aerial, perpendicular crossings of streams and other surface waters subject to this section:[2,3,5]	
• Disturb equal to or less than 150 linear feet of riparian buffer.	E
• Disturb greater than 150 linear feet of riparian buffer.	A
Utility, electric, aerial, other than perpendicular crossings:[2,3,5]	AM
Utility, electric, underground, perpendicular crossings:[3,4,5]	
• Disturb less than or equal to 40 linear feet of riparian buffer.	E
• Disturb greater than 40 linear feet of riparian buffer.	A
Utility, electric, underground, other than perpendicular crossings:[1,4]	E
Utility, non-electric, perpendicular crossings of streams and other surface waters subject to this section:[3,5]	
• Disturb equal to or less than 40 linear feet of riparian buffer with a maintenance corridor equal to or less than 10 feet in width.	A
• Disturb equal to or less than 40 linear feet of riparian buffer with a maintenance corridor greater than 10 feet in width.	A

Use	Category
Key (see Sec. 8.5.10F, Use Category Requirements): E = Exempt; A = Allowable; AM = Allowable with Mitigation; X or not listed = Prohibited; NA = Not applicable	
• Disturb greater than 40 linear feet but equal to or less than 150 linear feet of riparian buffer with a maintenance corridor equal to or less than 10 feet in width.	A
• Disturb greater than 40 linear feet but equal to or less than 150 linear feet of riparian buffer with a maintenance corridor greater than 10 feet in width.	AM
• Disturb greater than 150 linear feet of riparian buffer.	AM
Utility, non-electric, other than perpendicular crossings.[1,4,.5]	AM
Vegetation management, pursuant to applicable City or County guidelines.	
• Emergency fire control measures provided that topography is restored.	E
• Planting vegetation to enhance the riparian buffer.	E
• Pruning forest vegetation provided that the health and function of the forest vegetation is not compromised.	E
• Removal of individual trees that are in danger of causing damage to dwellings, other structures or human life, or outside of the Neuse River Basin, are imminently endangering stability of the streambank.	E
• Outside of the Neuse River Basin, removal of individual trees that are dead, diseased or damaged.	E
• Removal of poison ivy.	E
• Removal of either 1) within the Neuse River Basin, understory nuisance vegetation, or 2) outside of the Neuse River Basin, invasive exotic vegetation, both as defined in: *Smith, Cherri L. 1998. Exotic Plant Guidelines. Dept. of Environment and Natural Resources. Division of Parks and Recreation. Raleigh, NC. Guideline #30.*	E
• Outside of the Neuse River Basin, vehicular access roads leading to water-dependent structures as defined in 15A NCAC 02B .0202, provided they do not cross the surface water and have minimum practicable width not exceeding ten feet.	A
• Water dependent structures as defined in 15A NCAC 02B .0202, including their installation, maintenance, use, and removal.	A
Water supply reservoirs:	
• New reservoirs where a riparian buffer that meets the requirements of this section is established adjacent to the reservoir.	A
• New reservoirs where a riparian buffer that meets the requirements of this section is not established adjacent to the reservoir.	AM
Water wells	
• Single family residential water wells.	E
• All other water wells.	A
Wetland, stream and, outside of the Neuse River Basin, buffer restoration:	
• Wetland, stream and buffer restoration that requires NC Division of Water Quality approval for the use of a 401 Water Quality Certification.	E
• Wetland, stream and buffer restoration that does not require Division of Water Quality approval for the use of a 401 Water Quality Certification.	A
Outside of the Neuse River Basin, wildlife passage structures.	A

[1]Provided that:

- No heavy equipment is used.
- Vegetation in undisturbed portions of the buffer is not compromised.
- Felled trees are removed by chain.
- No permanent felling of trees occurs in protected buffers or streams.
- Stumps are removed only by grinding.
- At the completion of the project the disturbed area is stabilized with native vegetation.
- The buffer meets the requirements of Sec. 8.5.5, Diffuse Flow Requirements.

[2]Provided that all of the following BMPs for overhead utility lines are used. If all of these BMPs are not used, then the overhead utility lines shall require a no practical alternative evaluation.

- A minimum zone of 10 feet wide immediately adjacent to the water body shall be managed such that only vegetation that poses a hazard or has the potential to grow tall enough to interfere with the line is removed.
- Woody vegetation shall be cleared by hand. No land grubbing or grading is allowed.
- Vegetative root systems shall be left intact to maintain the integrity of the soil. Stumps shall remain where trees are cut.
- Riprap shall not be used unless it is necessary to stabilize a tower.
- No fertilizer shall be used other than a one-time application to re-establish vegetation.
- Construction activities shall minimize the removal of woody vegetation, the extent of the disturbed area, and the time in which areas remain in a disturbed state.
- Active measures shall be taken after construction and during routine maintenance to ensure diffuse flow of stormwater through the buffer.
- In wetlands, mats shall be utilized to minimize soil disturbance.

[3]Provided that poles or aerial infrastructure, including towers, shall not be installed within 10 feet of a water body absent a no practical alternative evaluation.

[4]Provided that all of the following BMPs for underground utility lines are used. If all of these BMPs are not used, then the underground utility line shall require a no practical alternative evaluation.

- Woody vegetation shall be cleared by hand. No land grubbing or grading is allowed.
- Vegetative root systems shall be left intact to maintain the integrity of the soil. Stumps shall remain, except in the trench where trees are cut.
- Underground cables shall be installed by vibratory plow or trenching.
- The trench shall be backfilled with the excavated soil material immediately following cable installation.
- No fertilizer shall be used other than a one-time application to re-establish vegetation.
- Construction activities shall minimize the removal of woody vegetation, the extent of the disturbed area, and the time in which areas remain in a disturbed state.
- Active measures shall be taken upon completion of construction and during routine maintenance to ensure diffuse flow of stormwater through the buffer.
- In wetlands, mats shall be utilized to minimize soil disturbance.

[5]Perpendicular crossings are those that intersect the surface water at an angle between 75 degrees and 105 degrees.

8.5.11 No Practical Alternatives/Authorization Certificate

A. A person who wishes to undertake a use designated as allowable or allowable with mitigation shall first submit a request for a "no practical alternatives" determination. Within the Neuse River Basin, the request shall be submitted to the North Carolina Division of Water Quality (Division). Outside of the Neuse River Basin, the request

shall be submitted to the City or County as appropriate. In the request, the applicant shall certify that the project meets all of the following criteria:

1. The basic project purpose cannot be practically accomplished to better minimize disturbance, preserve aquatic life and habitat, and protect water quality;
2. The use cannot practically be reduced in size or density, reconfigured or redesigned to better minimize disturbance, preserve aquatic life and habitat, and protect water quality; and
3. Best management practices shall be used if necessary to minimize disturbance, preserve aquatic life and habitat, and protect water quality.

B. The applicant shall also submit at least the following information:

1. The name, address and phone number of the applicant;
2. The nature of the activity to be conducted by the applicant;
3. The location of the activity, including the jurisdiction;
4. A map of sufficient detail to accurately delineate the boundaries of the land to be utilized in carrying out the activity, the location and dimensions of the riparian buffers, and the location and dimensions of any disturbance in riparian buffers associated with the activity;
5. An explanation of why the activity cannot be practically accomplished, reduced or reconfigured to better minimize disturbance to the riparian buffer, preserve aquatic life and habitat and protect water quality; and
6. Best management practices proposed to control the impacts associated with the activity.

C. Within 60 days of a complete submission, the appropriate jurisdiction (the Division acting pursuant to 15 NCAC 02B .0233 (8)) shall review the entire project and make a finding of fact as to whether the criteria in paragraph 1 above have been met. If they have, "no practical alternatives" has been established and the jurisdiction shall issue an Authorization Certificate. Failure to act within 60 days shall be construed as a finding of "no practical alternatives" and an Authorization Certificate shall be issued to the applicant. Outside of the Neuse River Basin, however, such 60-day deadline may be extended if one of the following occurs:

1. The applicant agrees, in writing, to a longer period;
2. The jurisdiction determines that the applicant requires an additional reasonable period of time in which to furnish requested information the jurisdiction deems necessary to its decision; or
3. The final decision is to be made pursuant to a public hearing.

D. The appropriate jurisdiction may attach conditions to an Authorization Certificate that support the purpose, spirit and intent of the state riparian buffer protection program and/or this section.

E. Outside of the Neuse River Basin, the Authorization Certificate shall be denied if the applicant refuses access to its records or premises for the purposes of gathering information the appropriate jurisdiction deems necessary to its decision or if the jurisdiction determines that the applicant has failed to furnish requested information

the jurisdiction deems necessary to its decision within the 60-day period or an additional period as authorized under paragraph C.2 above.

F. Despite the provisions of Section 2.4, Board of Adjustment, appeals from Authorization Certificate determinations shall be to the Division Director, c/o the 401 Oversight Express Permitting Unit, or its successor, in writing. The Director's decision is subject to review as provided in Articles 3 and 4 of G.S. 150B.

8.5.12 Mitigation

Mitigation is required where: 1) a person wishes to undertake a use designated as allowable with mitigation and has obtained a "no practical alternatives" determination; and 2) a person is required to perform mitigation as a condition of variance approval under this section. Within the Neuse River Basin, the proposal shall be submitted to the North Carolina Division of Water Quality (Division), which shall proceed pursuant to 15A NCAC 02B .0242. Outside of the Neuse River Basin, the proposal shall be submitted to the City or County as appropriate, which shall proceed pursuant to this section as authorized under 15A NCAC 02B .0268.

The appropriate jurisdiction (the Division acting pursuant to 15 NCAC 02B .0242) shall issue a mitigation approval upon determining that a proposal meets the requirements of this section. Within the Neuse River Basin, the approval shall specify the required area and location of mitigation. Outside of the Neuse River Basin, the approval shall identify at a minimum the option chosen, the required and proposed areas, and the mitigation location or offset payment amount as applicable. As stated in Sec. 8.5.2, Applicability, compliance with this entire section is required even where State standards are less stringent. Within the Neuse River Basin, final review by the City or County shall occur after any State action is completed.

A. Mitigation Options

The mitigation requirement may be met through one of the following options:

1. Participation in a private compensatory mitigation bank in the same hydrologic area, as defined in NCGS 143.214(11), as the proposed impact that is approved by the NC Department of Environment and Natural Resources;

2. Payment of a compensatory mitigation fee to the Riparian Buffer Restoration Fund pursuant to 15A NCAC 02B .0269 contingent upon acceptance of payments by the North Carolina Ecosystem Enhancement Program. This option is available to a non-government applicant only if option 1 is not available;

3. Donation of real property or of an interest in real property pursuant to paragraph D, Donation of Real Property, below to satisfy a compensatory mitigation fee in whole or in part;

4. Restoration or enhancement of a non-forested riparian buffer pursuant to paragraph E, Riparian Buffer Restoration or Enhancement, below; or

5. Construction of an alternative measure that reduces nutrient loading as well as or better than the riparian buffer that is lost in the same river basin as the riparian buffer that is lost and that is approved by the Division.

B. Mitigation Area

The appropriate jurisdiction shall determine the required area of mitigation as

follows:

1. Add the following areas to determine the impacts in square feet to each portion of the riparian buffer:
   a. The area of the footprint of the use causing the impact to the riparian buffer;
   b. The area of the boundary of any clearing and grading activities within the riparian buffer necessary to accommodate the use; and
   c. The area of any ongoing maintenance corridors within the riparian buffer associated with the use; and
2. Apply the following multipliers to the impacts determined in paragraph 1 to each portion of the riparian buffer:
   a. Impacts to the inner 30 feet of the riparian buffer shall be multiplied by three;
   b. Impacts to the outer 20 feet of the riparian buffer shall be multiplied by one and one-half; and
   c. Impacts to wetlands within those two portions of the riparian buffer that are subject to mitigation under 15A NCAC 2H .0506 shall comply with the mitigation ratios in 15A NCAC 2H .0506.

C. Mitigation Location

1. Within the Falls Reservoir Watershed, mitigation shall be located within the Upper Falls Watershed, as defined in 15A NCAC 2B.0275 and .0276, and the same distance from, or closer to, the Upper Falls Reservoir, as defined in 15A NCAC 2B.0275 and .0276, as the proposed impact, and as close to the location of the impact as feasible. Alternatively, mitigation may be located anywhere within the Upper Falls Watershed provided that the mitigation proposal accounts for differences in delivery of nutrients to the Upper Falls Watershed resulting from differences between the locations of the buffer impact and mitigation.
2. Within the Jordan Reservoir Watershed, mitigation shall be located within the same subwatershed, as defined in 15A NCAC 02B.0262, and the same distance from, or closer to, the reservoir as the proposed impact, and as close to the location of the impact as feasible. Alternatively, the applicant may propose mitigation anywhere within the same subwatershed, as defined in 15A NCAC 02B.0262, provided that the mitigation proposal accounts for differences in delivery of nutrients to the affected arm of the reservoir resulting from differences between the locations of the buffer impact and mitigation.
3. In any location, mitigation of riparian buffer loss in the watershed of a drinking water supply shall be performed in the watershed of that drinking water supply and as may be further limited by the North Carolina Environmental Management Commission.

Additional location requirements for the property donation option are enumerated in paragraph D, Donation of Property, below.

D. Donation of Property

1. Donation of real property interests that meet the requirements listed below may partially or fully satisfy payment of a compensatory mitigation fee to the Riparian Buffer Restoration Fund, calculated pursuant to 15A NCAC 02B .0269. The value of the property interest shall be determined by an appraisal performed in accordance with paragraph 4 below. The donation shall satisfy the mitigation requirement if the appraised value of the donated property interest is equal to or greater than the required fee. If the appraised value of the donated property interest is less than the required fee, the applicant shall pay the balance.

2. A conservation easement shall be accepted only if it is granted in perpetuity.

3. Any property interest shall be accepted only if it meets all of the following requirements:

a. In addition to the location requirements of paragraph C, Mitigation Location, above, the property shall be located within an area that is identified as a priority for restoration in, or is otherwise consistent with the goals of, the Division's *Basinwide Wetlands and Riparian Restoration Plan* (within the Neuse River Basin) or its *Basinwide Wetlands and Riparian Restoration Plan for the Cape Fear River Basin* (outside of the Neuse River Basin), both developed pursuant to NCGS 143-214.10;

b. The property shall contain riparian buffers not currently protected by the State's riparian buffer protection program that are in need of restoration as defined in paragraph E.4 below;

c. The restorable riparian buffer on the property shall have a minimum length of 1000 linear feet along a surface water and a minimum width of 50 feet measured horizontally on a line perpendicular to the surface water;

d. The size of the restorable riparian buffer on the property shall equal or exceed the area of mitigation responsibility determined under paragraph B above;

e. Outside of the Neuse River Basin, restoration shall not require removal of man-made structures or infrastructure. Within the Neuse River Basin, the property shall not require excessive measures for successful restoration, such as removal of structures or infrastructure, and restoration of the property shall be fully capable of offsetting the adverse impacts of the requested use;

f. The property shall be suitable to be successfully restored, based on existing hydrology, soils, and vegetation;

g. The estimated cost of restoring and maintaining the property shall not exceed the value of the property minus site identification and transaction costs;

h. The property shall not contain any building, structure, object, site, or district that is listed in the National Register of Historic Places established pursuant to Public Law 89-665, 16 U.S.C. 470 as amended;

i. The property shall not contain any hazardous substance or solid waste;

j. The property shall not contain structures or materials that present health or safety problems to the general public. If wells, septic, water or sewer connections exist, they shall be filled, remediated or closed at the expense of the applicant or donor in accordance with state and local health and safety regulations;

k. The property and adjacent properties shall not have prior, current, or known future land use that would inhibit the function of the restoration effort; and

l. The property shall not have any encumbrances or conditions on the transfer of the property interests.

4. At the expense of the applicant or donor, the following information shall be submitted to the appropriate jurisdiction with any proposal for donation or dedication of interest in real property:

a. Documentation that the property meets the requirements laid out in paragraph E.3 below;

b. US Geological Survey 1:24,000 (7.5 minute) scale topographic map, county tax map, USDA Natural Resource Conservation Service County Soil Survey Map, and county road map showing the location of the property along with information on existing site conditions, vegetation types, and existing structures and easements;

c. A current property survey performed in accordance with the procedures of the North Carolina Department of Administration, State Property Office as identified by the State Board of Registration for Professional Engineers and Land Surveyors in "Standards of Practice for Land Surveying in North Carolina";

d. A current appraisal of the value of the property performed in accordance with the procedures of the North Carolina Department of Administration, State Property Office as identified by the Appraisal Board in the "Uniform Standards of Professional North Carolina Appraisal Practice"; and

e. A title certificate.

E. Riparian Buffer Restoration or Enhancement

Mitigation through riparian buffer restoration or enhancement shall meet the following requirements:

1. The applicant may restore or enhance a non-forested riparian buffer if either of the following applies:

a. The area of riparian buffer restoration is equal to the required area of mitigation determined pursuant to paragraph B, Mitigation Area, above; or

b. The area of riparian buffer enhancement is three times larger than the required area of mitigation determined pursuant to paragraph B, Mitigation Area, above;

2. The location of the riparian buffer restoration or enhancement shall comply with the requirements of paragraph C, Mitigation Location, above;

3. The riparian buffer restoration or enhancement site shall have a minimum

width of 50 feet measured horizontally on a line perpendicular to a vertical line marking the top of the bank for a stream or the normal water level for a pond, lake, or reservoir;

4. Outside of the Neuse River Basin, enhancement and restoration shall each have the objective of establishing a forested riparian buffer. Enhancement shall be distinguished from restoration based on existing buffer conditions. Where existing trees are sparse, meaning greater than or equal to 100 trees per acre but less than 200 trees per acre, a buffer shall be enhanced. Where existing woody vegetation is absent, meaning less than 100 trees per acre, a buffer shall be restored;

5. The applicant shall first receive an Authorization Certificate for the proposed use according to the requirements of paragraph 8.5.11, No Practical Alternatives/Authorization Certificate. The applicant shall then submit a restoration or enhancement plan to the City or County as appropriate. The restoration or enhancement plan shall contain the following:

a. A map of the proposed restoration or enhancement site;

b. A vegetation plan. The vegetation plan shall include trees as specified under paragraph 9.2.3B.5, Mixing of Tree Species, and the Durham Landscape Guidelines, planted at a density sufficient to provide 320 trees per acre at maturity with at least 50% of those trees having the potential of attaining a two and a half inch or greater dbh within seven years;

c. A grading plan. The site shall be graded in a manner to ensure diffuse flow through the riparian buffer;

d. A fertilization plan; and

e. An implementation schedule;

6. Within one year after restoration or enhancement plan approval, the applicant shall present proof to the appropriate jurisdiction that the riparian buffer has been restored or enhanced. If proof is not presented within this timeframe, the applicant shall be in violation of both the State and local riparian buffer protection programs;

7. The mitigation area shall be placed under a perpetual conservation easement that provides for protection of the property's nutrient removal functions;

8. The applicant shall submit annual reports for a period of five years after the restoration or enhancement showing that the trees planted have survived and that diffuse flow through the riparian buffer has been maintained. The applicant shall replace trees that do not survive and restore diffuse flow if needed during that five-year period.

8.5.13 Variances

A person who wishes to undertake a prohibited use shall first submit a request for a minor or major variance to the appropriate jurisdiction as stated below. A minor variance is required for any activity that impacts only the outer 20 feet of a riparian buffer. A major variance is required for any activity that impacts any portion of the inner 30 feet of a riparian buffer. Such variances are separate from variances authorized under Sec. 3.15, Variance.

A. Within the Neuse River Basin

1. Minor Variance

Pursuant to 15 NCAC 02B .0233 (9), a minor variance request shall be submitted to the North Carolina Division of Water Quality (Division) for review and decision. The Division may attach conditions to approval that support the purpose, spirit and intent of the riparian buffer protection program. Appeal from the Division decision shall be to the Office of Administrative Hearings.

2. Major Variance

Pursuant to 15 NCAC 02B .0233 (9)(c), a major variance request shall be submitted to the Division for initial review. If the Division determines that the request meets the requirements of paragraph 3, Variance Requirements, below, it shall submit preliminary findings to the NC Environmental Management Commission c/o the Division of Water Quality, 401 Oversight Express Permitting Unit, or its successor. Within 90 days after receipt by the Director of a complete application, the Commission shall approve, approve with conditions or stipulations, or deny the request. Upon and in accordance with the Commission's decision, the Division shall issue a final decision granting, granting subject to conditions or stipulations, or denying the major variance. Appeal from either the initial Division determination or the Commission decision shall be to the Office of Administrative Hearings.

3. Variance Requirements

Pursuant to 15 NCAC 02B .0233 (9)(a), the Division shall make a finding of fact as to whether the following requirements have been met:

a. There are practical difficulties or unnecessary hardships that prevent compliance with the strict letter of the riparian buffer protection requirements; Practical difficulties or unnecessary hardships shall be evaluated in accordance with the following:

(1) If the applicant complies with the provisions of this section, he/she can secure no reasonable return from, nor make reasonable use of, his/her property. Merely proving that the variance would permit a greater profit from the property shall not be considered adequate justification for a variance. Moreover, the Division shall consider whether the variance is the minimum possible deviation from the terms of this section that shall make reasonable use of the property possible;

(2) The hardship results from application of this section to the property rather than from other factors such as deed restrictions or other hardship;

(3) The hardship is due to the physical nature of the applicant's property, such as its size, shape, or topography, which is different from that of neighboring property;

(4) The applicant did not cause the hardship by knowingly or unknowingly violating this section;

(5) The applicant did not purchase the property after the effective date of 15A NCAC 02B .0233, Neuse River Basin: Nutrient Sensitive Waters

Management Strategy: Protection and Maintenance of Existing Riparian Buffers, and then requesting an appeal; and

(6) The hardship is unique to the applicant's property, rather than the result of conditions that are widespread. If other properties are equally subject to the hardship created in the restriction, then granting a variance would be a special privilege denied to others, and would not promote equal justice;

b. The variance is in harmony with the general purpose and intent of this section and preserves its spirit; and

c. In granting the variance, the public safety and welfare have been assured, water quality has been protected, and substantial justice has been done.

B. Outside of the Neuse River Basin

1. Minor Variance

A minor variance request shall be submitted to the City or County as appropriate for review and decision. The City or County may attach conditions to approval that support the purpose, spirit and intent of the riparian buffer protection program and this section. Despite the provisions of Section 2.4, Board of Adjustment, appeal from the City or County decision shall be to the Division Director, c/o the 401 Oversight Express Permitting Unit, or its successor. The Director's decision is subject to review as provided in Articles 3 and 4 of G.S. 150B.

2. Major Variance

A major variance request shall be submitted to the City or County as appropriate for initial review. If the City or County determines that the request meets the requirements of paragraph 3, Variance Requirements, below, it shall submit preliminary findings to the North Carolina Environmental Management Commission c/o the Division of Water Quality, 401 Oversight Express Permitting Unit, or its successor. Within 90 days after receipt by the City or County of a complete application, the Commission approves, approves with conditions and stipulations, or denies the request. Despite the provisions of Section 2.4, Board of Adjustment, appeal from the initial City or County determination or the Commission decision shall be to Superior Court.

3. Variance Requirements

The City or County shall make the following three findings of fact in order to determine that the variance requirements are met:

a. There are practical difficulties or unnecessary hardships that prevent compliance with the riparian buffer protection requirements. The following criteria must all be met in order to make such finding:

(1) If the applicant complies with the provisions of this section, he/she can secure no reasonable return from, nor make reasonable use of, his/her property. Merely proving that the variance would permit a greater profit from the property shall not be considered adequate justification for a variance. Moreover, the variance shall be the minimum possible deviation from the terms of this Ordinance that shall make reasonable use of the property possible;

(2) The hardship results from application of this section to the property rather than from other factors such as deed restrictions or other hardship;

(3) The hardship is due to the physical nature of the applicant's property, such as its size, shape, or topography, such that compliance with provisions of this section would not allow reasonable use of the property;

(4) The applicant did not cause the hardship by knowingly or unknowingly violating this Ordinance;

(5) The applicant did not purchase the property after the effective date of this Ordinance, and then request a variance; and

(6) The hardship is rare or unique to the applicant's property.

b. The requested variance is in harmony with the general purpose, spirit and intent of the state riparian buffer protection requirements and/or this section; and

c. In granting the variance, the public safety and welfare have been assured, water quality has been protected, and substantial justice has been done.

Sec. 8.6 Water Supply Reservoir Buffer

8.6.1 Reservoir Buffer Standards

A. A reservoir buffer shall be maintained from the normal pool of each water supply reservoir as shown in the table below, except that the buffer requirement of this section shall not apply to land that does not naturally drain to that reservoir. If the land around any reservoir does not naturally drain to that reservoir, the riparian buffer requirements of Sec. 8.5, Riparian Buffer Protection Standards, shall apply.

Reservoir	Buffer Width
Lake Michie	250 feet
Little River Reservoir	250 feet
Jordan Reservoir	250 feet[1]
Falls Reservoir	250 feet[1]

[1] On nonresidential uses, the buffer width shall extend to 1,000 feet in accordance with Sec. 4.11.4, Nonresidential Land Use Restrictions.

B. Reservoir buffers shall remain in natural undisturbed vegetation, except for intrusions allowed pursuant to Sec. 8.5, Riparian Buffer Protection Standards.

8.6.2 Buffer Reductions

A. At the request of a property owner, the governing body may reduce the reservoir buffer requirements through the issuance of a Major Special Use Permit, pursuant to Sec. 3.9, Special Use Permit, whenever it determines that:

1. The reservoir buffer would result in exceptional hardship, depriving the property owner of all reasonable use of the property.

2. The proposed intrusion into the reservoir buffer is the minimum amount necessary to relieve that exceptional hardship.

The maximum reduction permitted is to the riparian buffer width required under Sec. 8.5, Riparian Buffer Protection Standards.

B. In making its determination, the governing body shall consider topography, erosion potential, and the size of the parcel, in addition to the review factors specified in Sec. 3.9.8, Criteria for Approval or Major and Minor Special Use Permits.

Sec. 8.7 Watershed Protection Overlay Standards

8.7.1 Applicability

The watershed protection overlay standards of this section shall apply to the Watershed Protection Overlay as set forth in Sec. 4.11, Watershed Protection Overlay.

8.7.2 General Requirements

A. Minimum Lot Size

1. In all Watershed Protection Overlays, except F/J-B and E-B, the minimum lot sizes indicated in the following table shall be applied in all new subdivisions unless the subdivision uses the cluster provision in accordance with Sec. 6.7, Cluster Subdivision, or the conservation subdivision provisions of Sec. 6.2.4, Conservation Subdivision.

	Minimum Lot Size	
Overlay	Rural Tier	Suburban Tier
M/LR-A	3 acres	20,000 square feet
M/LR-B	3 acres	20,000 square feet
F/J-A	3 acres	1 acre
E-A	Not Applicable	20,000 square feet

2. In the F/J-B and E-B overlays, developers of single-family subdivisions shall comply with the requirements of the underlying zoning district.

B. Impervious Surface Limits

1. Any development in a Watershed Protection Overlay shall be subject to limits on the amount of impervious surfaces permitted in accordance with the following table. Development plans, site plans, preliminary plats, and final plats shall clearly identify the amount of existing and proposed impervious surfaces.

Overlay	Low Density Option Impervious Surface Limit	High Density Option Impervious Surface Limit
M/LR-A	6%	Not permitted
M/LR-B	6%	Not permitted
F/J-A	Within one-half mile of the normal pool: 6%; Between one-half and one mile from the normal pool: 9%	Not permitted in the Rural Tier. 40%, for all areas not in the Rural Tier and for those uses allowed in Sec. 4.11.4; Nonresidential Land Use Restrictions, intensities greater than 25% shall require a Major Special Use Permit pursuant to Sec. 3.9, Special Use Permit.
F/J-B, E-B	24%	70%
E-A	24%	Not permitted

2. The impervious surface limit provisions of this section may be exceeded through an impervious surface credit transfer. Credit for the impervious surfaces allowed on one or more parcels ("donor parcels") may be transferred to non-contiguous parcels ("receiving parcels"), such that the amount of impervious surface available for a development project would be the total of

what is normally allowed on the receiving parcel plus what is transferred from the donor parcel(s). Impervious surface credit transfer is subject to the following provisions:

a. The donor parcel and receiving parcel shall be located within the same water supply watershed.

b. The impervious surface credit transfer shall not be from a donor parcel in Area B to a receiving parcel in Area A, or from a donor parcel in an F/J-A area with a 9% limit to a receiving parcel in an F/J-A area with a 6% limit.

c. The portion of the donor parcel which is restricted from development as part of the impervious surface credit transfer shall remain in a vegetated or natural state or used for crop production or pasture provided that best management practices (BMPs) as developed by the Soil and Water Conservation District are utilized. The portion of the donor site restricted from development shall be protected from all future development through use of a permanent conservation easement in favor of either:

(1) Durham County or the City of Durham; or

(2) A land trust or similar conservation-oriented non-profit organization with legal authority to accept such easements (the organization shall be bona fide and in perpetual existence and the conveyance instruments shall contain an appropriate provision for retransfer to the County or City, as appropriate, in the event the organization becomes unable to carry out its functions). If the entity accepting the easement is not the County or City, then a third right of enforcement favoring the County or City, as appropriate, shall be included in the easement.

d. The impervious surface credit transfer shall be reviewed and approved through use of the site plan process pursuant to Sec. 3.7, Site Plan Review.

e. The donor parcel shall be deemed appropriate for acceptance by the County or City, as appropriate, under the Durham County Review Criteria for Acceptance of Conservation Easements for Impervious Surface Transfer.

C. Stormwater Control Requirements

Where development proposes intensity greater than the maximum authorized by the Low Density Option, engineered stormwater controls shall be used to control stormwater runoff from the first inch of rainfall in order to meet water quality concerns.

D. Ownership, Design and Maintenance of Engineered Stormwater Controls

1. Unless otherwise approved, ownership of the engineered stormwater controls shall remain with the property owner or a property owner's association, which shall be responsible for the continued care and maintenance of such controls.

2. Engineered stormwater controls shall be designed and constructed in accordance with standards and specifications established by the City Public Works Director or County Engineer, or their designees, as appropriate.

3. Except as allowed in (c.) below, no building permit shall be issued for a site proposed for development, until:

a. The City Public Works Director or County Engineer, or their designees, as appropriate, has approved plans and specifications for the proposed engineered stormwater controls and the property owner has entered into an Agreement and Covenants or Operation and Maintenance Agreement with the City or County, as appropriate, in accordance with the terms established by either the City Public Works Director or County Engineer, or their designees, as appropriate; and

b. The property owner has posted a performance bond, other surety instrument, or other payment satisfactory to the City or County, as appropriate, in an amount determined by the City Public Works Director or County Engineer, or their designees, as appropriate to assure construction, maintenance, repair, and/or reconstruction necessary for adequate performance of the engineered stormwater controls.

c. For office, institutional, commercial, industrial and multi-family projects, building permits may be issued but construction drawing approval or water or sewer permit approval shall be withheld until compliance with paragraph a and b above.

The Agreement and Covenants or Operation and Maintenance Agreement required under paragraph a. above may be required prior to site plan or preliminary plat approval.

4. No certificate of compliance shall be issued for any structure constructed within a site proposed for development, other than as allowed below, until the City Public Works Director or County Engineer, or their designees, as appropriate, has approved construction of the engineered stormwater controls and after review and approval of submitted "as-built" drawings. Notwithstanding this requirement, the Stormwater Division of the City may allow for delay in approval of construction of stormwater controls and submission and approval of as-built drawings for single family housing, duplexes, and townhouses) and other developments requiring multiple certificates of occupancy in accordance with adopted policies of the City.

E. Riparian Buffers

Riparian buffers are required in accordance with Sec. 8.5, Riparian Buffer Protection Standards.

F. Wastewater Treatment and Facilities

1. Wastewater Treatment

Except as indicated below, wastewater treatment facilities shall be prohibited in all Watershed Protection Overlays.

a. Individual on-site ground absorption systems shall be permitted, subject to the approval of the Durham County Health Department or the State of North Carolina, as applicable.

b. A spray irrigation wastewater treatment system to serve a single-family house shall be permitted, provided that:

(1) The owner enters into a written agreement with the Durham County Health Department which:

(a) Provides for Health Department access to the property for the purpose of monitoring the system during its construction and operation; and

(b) Provides that the owner and certified operator shall provide to the Health Department copies of any and all applications, plans, permits, reports and any other documents concerning but not limited to the permitting, system, design, construction, operation, monitoring or repair of the system.

(2) The owner shall not act as the certified operator for a spray irrigation system to be installed on his or her property.

c. Publicly-owned wastewater treatment facilities, and replacement and expansions of such facilities, shall be allowed in F/J-B and E-B overlays.

d. Wastewater treatment facilities may be permitted in the F/J-A overlay through the issuance of a Major Special Use Permit pursuant to Sec. 3.9, Special Use Permit, subject to the restrictions described in Sec. 12.7, Water and Sanitary Sewer Systems.

2. Sanitary Sewer Services

a. Except in the Rural Tier, public and private sanitary sewer lines, force mains, and pump stations shall be permitted within all Watershed Protection Overlays. Public and private pump stations shall be equipped with the following safety features:

(1) Battery-backed alarm systems activated by pump failure or power outage, connected by an automatic dialer to a 24-hour maintenance service approved by the City Public Works Director or County Engineer, or their designees, as appropriate.

(2) Provision for connection of a portable generator. The City Public Works Director or County Engineer, or their designees, as appropriate, may require the pump station to be equipped with on-site, stand-by power.

b. Within the Rural Tier, new public or private sanitary sewer lines or outfalls, including necessary force mains and pump stations, may be permitted within the Watershed Protection Overlays subject to City Council or Board of Commissioners approval, as appropriate:

(1) To serve an existing use or structure for which a health hazard has been documented by the County Health Department or the State of North Carolina; or

(2) If associated with a wastewater treatment facility permitted pursuant to paragraph 1, Wastewater Treatment, above.

c. In considering such extensions, all reasonable alternatives shall be considered prior to a decision to extend the sewer services. All service connections, installed in accordance with the North Carolina Plumbing Code, shall be permitted only in accordance with Article III, Water and Sewer Main Extensions*, of Chapter 70, Utilities*, of the Durham City Code.

G. Hazardous and Nuclear Materials

1. Prior to site plan approval, an Emergency Contingency Plan shall be prepared and submitted through the Planning Department to the Durham County Fire Marshall and the Water Management Director for review and approval. The Emergency Contingency Plan shall be prepared in accordance with the requirements in the Superfund Amendments and Reauthorization Act (SARA), Title III and shall be updated annually. In addition, the Emergency Contingency Plan shall include:
   a. A site plan showing buildings and the locations of points of storage, transfer and use of nuclear and hazardous materials;
   b. A list of nuclear and hazardous materials kept on-site in any quantities;
   c. The location of spill control valves on any bridges and causeways; and
   d. The person responsible for on-site spill control and containment, and the appropriate means of contacting that person on a 24-hour basis.
2. Any container or tank used to store hazardous materials shall be equipped with leak detection devices and shall be double-walled or have other secondary containment features.
3. Points of storage, transfer and use of substantial quantities of hazardous materials shall be protected by a dike or comparable containment structure, constructed of a material resistant to hazardous material the dike or structure is designed to contain. The dike or structure shall be sized to handle at least the maximum amount of material to be stored or used and shall be constructed and installed in a manner to exclude rainwater and stormwater runoff.
4. All floor drains that could collect hazardous materials shall be connected to a corrosion resistant tank or catch basin sized to handle the maximum amount of hazardous material to be stored or used. These floor drains shall not be open to the site's natural drainage system and discharges to the site's storm drainage system or to adjacent surface waters shall be prohibited.
5. Points of storage, transfer and use of hazardous or nuclear materials shall have roof coverage.

8.7.3 Exceptions

All development within Watershed Protection Overlays shall be subject to the restrictions in this section, with the following exceptions:

A. Existing Development

For the purposes of this section, existing development shall be considered to include any impervious surfaces constructed before January 1, 1994. All new uses and activities and all expansions of previously-existing uses and activities shall conform to Sec. 4.11.4, Nonresidential Land Use Restrictions and Sec. 8.7.2, General Requirements.

B. Existing Single-Family Lots

New construction and additions to existing residential buildings on single-family residential lots recorded prior to January 1, 1994 shall be constructed in accordance with the watershed protection regulations, if any, in effect at the time the lot was created.

C. Stormwater Control Exemptions

Proposed development projects not in the Rural Tier, and in F/J-B or E-B overlays involving less than one acre cumulatively, of land disturbing activity shall be exempt from the stormwater control requirements indicated in this Section.

8.7.4 High Density Option Approval

Any development utilizing the High Density Option within the F/J-A overlay shall require site plan approval by the appropriate governing body.

8.7.5 Changes to Tier Boundaries

Neither the City nor the County shall extend the Urban or Suburban Tier boundaries further into the M/LR-A or F/J-A overlays.

Sec. 8.8 Steep Slope Protection Standards

8.8.1 Purpose

The primary purpose for the slope protection standards is to minimize grading, land instability and the removal of vegetation in order to:

A. Protect the quality of wetlands and water courses below the slope from increased sedimentation;

B. Protect steep slope plant and animal habitat from disturbance and development; and

C. Preserve the aesthetic quality of the natural terrain.

8.8.2 Exception – Sedimentation and Erosion Control

Notwithstanding the requirements of this section, steep slopes for purposes of sedimentation and erosion control are defined in Sec.12.10.4B, Stabilization of Disturbed Land, and regulated under Sec. 3.8, Sedimentation and Erosion Control, and Sec. 12.10, Sedimentation and Erosion Control.

8.8.3 Steep Slope Areas

A. Slope is the relationship of vertical rise to horizontal run, expressed as a percentage. Steep slope areas shall be defined as land areas that:

1. Have a grade of 25% or more;

2. Have an area of 5,000 square feet or greater; and

3. Are located within 200 feet of any floodway fringe or perennial stream or within 100 feet of an intermittent stream.

B. Steep slope areas refer to natural grades and shall not include man-made grades. Slope calculations shall use the smallest contour interval for which maps are available. Steep slope areas shall be determined irrespective of tract boundaries.

C. Steep slope areas shall be clearly indicated on all site plans, development plans, preliminary plats and final plats. When a property owner or developer believes that the presence or location of a steep slope area is different than what is shown on the appropriate topographic map, the Development Review Board shall have the authority to determine the location or presence of the moderate or steep slope area for purposes of meeting the requirements of this section.

8.8.4 Steep Slope Development Limitations

Development and land disturbing activity on steep slope areas shall be conducted only in accordance with the following requirements. Compliance with these requirements shall be determined by the approving authority.

A. Development shall be designed and constructed in order to minimize disturbance to the natural landform as much as possible. Development shall demonstrate appropriate terrain-adaptive design and construction techniques. An inability to design a particular development allowed by the underlying zone without significant disturbance to the natural landform may indicate that the site should not accommodate the full amount of proposed development. Alternate site design and construction measures shall be encouraged to mitigate the effects of development on

steep slopes. The grade of reconstructed slopes shall not exceed 50%. Non-load bearing retaining walls shall be encouraged in order to reduce the amount of disturbance to the natural slope.

B. In order to accommodate building placement on steep slope areas, street and side yard setbacks on lots on the interior of the development may be reduced by up to 50% by the Development Review Board.

C. On any tract proposed for construction, no more than 15% of the steep slope area on the tract shall be graded. For purposes of this calculation, the land areas of individual steep slope areas on the tract shall be added together to establish the total steep slope area for the tract.

D. Development shall be designed and arranged in order to minimize the impact of street construction on steep slope areas. Proposed right-of-way for major thoroughfares, minor thoroughfares and collector streets shall be exempt from the steep slope area grading limits of this section, provided that the Development Review Board determines that proposed rights-of-way are designed and arranged in order to minimize the impact on steep slope areas.

8.8.5 Density Credits

The amount of land designated as steep slopes may be credited for residential density on adjacent land in the same development at a rate of 15% of that allowed by the zoning.

Sec. 8.9 Wetlands Protection Standards

8.9.1 Purpose

The primary purpose of the wetlands protection standards is to conserve and maintain natural wetlands in an undisturbed vegetated state in order to provide storage of stormwater runoff, minimize degradation of preserved wetlands from the impacts of adjacent development, improve water quality and preserve plant and wildlife habitat.

8.9.2 Application of Wetlands Protection

The City and County acknowledge the pre-eminence of the Federal and State governments with regard to the identification and regulation of wetlands. Accordingly, the standards contained within this section shall not duplicate the requirements of the US Army Corps of Engineers (the Corps) or the North Carolina Department of Environment and Natural Resources (DENR), Division of Water Quality (Division), but shall require the buffering of wetland areas, identified by these agencies, on development plans, site plans, preliminary plats, final plats, and as otherwise required under Sec. 8.5, Riparian Buffer Protection Standards.

8.9.3 Wetland Buffer Applicability

A. A wetland buffer shall not be required for any wetland approved for dredging or filling under a Section 404 Permit issued by the Corps or a Section 401 Water Quality Certification issued by the Division.

B. A wetland buffer shall not be required for wetland areas associated with man-made ponds unconnected to intermittent or perennial streams or to man-made drainage ditches.

C. A wetland buffer shall be required for any wetland area one acre or greater in size.

8.9.4 Wetland Buffer Width

The wetland buffer shall be provided along the perimeter boundary of the wetland area and shall be at least 25 feet in width.

8.9.5 Wetland Buffer Standards

Wetland buffers shall be governed by Sec. 8.5, Riparian Buffer Protection Standards, except where it may conflict with this section, in which case this section applies.

Sec. 8.10 Durham Inventory Site Protection Standards

Sites listed in the Durham County Inventory of Important Natural Areas, Plants and Wildlife, which in the case of a conflict may be superseded or supplemented by more current information from the North Carolina Heritage Program as determined by the Planning Director, are protected through a series of development standards, including, but not limited to:

A. Site plan review procedure in Sec. 3.7;

B. Special use permits in Sec. 3.9;

C. Conservation subdivisions in Sec. 6.2.4;

D. Open space in Sec. 7.2; and

E. Tree protection and tree coverage in Sec. 8.3.