

CHAPTER 9: ENVIRONMENTAL PROTECTION

SECTION 9.1: PURPOSE AND INTENT

A primary and fundamental element of this Code is the protection of our existing environmental resources including floodplains and other stream corridors, wetlands, watersheds and groundwater recharge areas, soils, forest stands, specimen trees and other significant vegetation and wildlife. These elements are of economic value to the Town and make it a desirable place to live and visit.

- A. *Tree Protection and Removal:* Wooded sites provide distinct aesthetic, economic and environmental significance and value as a natural resource of the Town. Vegetation on sloping sites plays a critical role in maintaining aesthetic quality, water quality, and in minimizing erosion and downstream flooding. At a minimum selective retention of certain significant vegetation should occur, particularly in areas or portions of a site that are located within a fragile ecological setting. The regulating of tree removal along rights-of-way and public property within the Town ensures a pedestrian friendly atmosphere along with the preservation and natural balance of vegetation.
- B. *Landscaping:* The purpose of this section is to regulate the protection, installation, and long-term management of trees and shrubs within the Town of Cornelius. Landscape requirements under the provisions of this section are intended to minimize potential nuisances such as visual impacts from adjacent properties; transmission of noise, dust, odor, litter, and glare of lights; provide for a separation of space and establish a sense of privacy. Generally, the responsibility for the screening is that of the more intense land use. The appropriate use of existing and supplemental landscaping enhances the aesthetic appearance of new development and blends new development with the natural landscape. Quality landscaping is an essential component of the built urban form of the Town. Existing landscaping should be retained where possible to ensure as natural as possible an established environment. The use of native evergreen and deciduous plant materials blend the built environment with the new construction while maintaining the aesthetics of our Town.
- C. *SWIM Buffers:* These regulations protect the long-term water quality of the Mountain Island Lake and Lake Norman watersheds thereby protecting our drinking water. The purpose of a stream buffer network is to filter pollutants, store floodwaters, provide habitat, and contribute to the “green infrastructure” of the Town of Cornelius and lands within its jurisdiction. Stream systems are comprised of each stream and its respective drainage basin. Streams have the primary natural functions of conveying storm and ground water, storing floodwater, and supporting aquatic life. Vegetated lands adjacent to the stream channel in the drainage basin serve as “buffers” to protect the stream’s ability to fulfill its natural functions. Buffers have the primary natural functions of protecting water quality by filtering sediments; pollutants such as nitrogen, phosphorus, trace metals, and hydrocarbons; providing intermittent storage for floodwaters, allowing channels to meander naturally; and providing suitable habitat for wildlife.
- D. *Land Suitability:* This section defines suitable areas for development while promoting the health, safety and welfare of our citizens.
- E. *Sedimentation and Erosion Control:* The prevention of soil erosion and sedimentation pollution of streams, springs, water bodies, or other drainage networks are intended to protect the Town’s soil resources, natural drainage areas, control runoff velocity, and collect excess storm water which flows into the Town drainage system.



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SECTION 9.2: GENERAL PROVISIONS/APPLICABILITY

All land uses requiring *Development Plan* approval shall be designed in accordance with the requirements of this Chapter. Landscaped areas shall include existing vegetation to remain following development, open space, floodplains, wetlands, and areas containing new plantings. Landscaped areas may include any perimeter landscaping required by this Chapter.

Modifications to standards. Where necessary to accommodate creativity in site design, or where conformance with the strict requirements of this Chapter are not feasible, the Town of Cornelius Board of Commissioners, Planning Board, or Planning Department, whichever is responsible for approving the plan, may modify these requirements, provided that the type and amount of landscaping or other features are equivalent in effectiveness.

SECTION 9.3: TREE PROTECTION

9.3.1: APPLICABILITY

Significant forest stands, natural vegetation, specimen trees, severe natural topography, drainage features, and water courses should be preserved to the extent that is reasonable and practical while otherwise not reasonably prohibiting development. Forested and vegetated areas whose physical site conditions render them unsuitable for development should be set aside as conservation areas or as open space. Wooded sites should be developed with careful consideration of the natural characteristics of the site. When portions of forested stands must be developed, consideration should be given to preserving wooded perimeters or the most desirable natural features in order to retain the aesthetic or visual character of the site. Isolated pockets of existing trees or specimen trees should be protected as a valuable asset of the property. This section shall apply to all zoning districts regulated by the *Land Development Code*.

Determination of the need to preserve significant vegetation on the site is also a function of a site's buildable area or potential for development defined as follows:

1. *Prime Buildable.* Land with little or no building restrictions that occur as a result of slope conditions or site topography. These areas are defined as slopes less than ten percent (10%) and generally offer the least opportunity for the preservation of existing tree canopy, forest stands, or significant vegetation outside of satisfying open space dedication requirements.
2. *Secondary Buildable.* Areas with slopes of ten percent to fifteen percent (10% - 15%), site preparation techniques should minimize grading. Such areas require selective clearing and grading. These areas offer limited opportunity for the preservation of existing tree canopy, forest stands, or significant vegetation outside of satisfying open space dedication requirements.
3. *Conserved.* Areas with slopes of fifteen percent to twenty-five percent (15% - 25%) with severe slope restrictions. These areas offer optimal opportunity for the preservation of existing tree canopy, forest stands, or significant vegetation outside of satisfying open space dedication requirements.



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4. *Preserved.* Natural floodplain and floodways, wetland areas, existing tree canopy, forest stands, or significant vegetation on slopes exceeding twenty-five percent (25%) and which present severe or prohibitive slope conditions for development shall be preserved.

9.3.2: TREE AND ROOT PROTECTION FENCING REQUIREMENTS

A tree and root preservation plan delineating areas in accordance with Section 9.3.1 shall be incorporated as part of the landscape plan for the project and shall consist of the following type of preventative measures:

- A. The preservation of existing trees requires protection by physical barriers in addition to supervision during the construction phase of development. During development of the property, the owner shall be responsible for the erection of any and all tree and root protection fencing necessary to protect any existing or installed vegetation from damage both during and after construction. All significant vegetation, native ornamental species and perimeter landscaping that are to be preserved during development shall be protected with a sturdy and visible fence before clearing and grading begins. The existing site conditions will be considered by both the applicant and staff in determining the exact location of any tree protection fencing. Generally, the location should be as far as possible from the vegetation in order to preserve soil and root structure. The location of tree protection fencing and method of construction shall be noted on the landscape plan. The proper installation of tree protection fencing shall be approved by the Mecklenburg County Land Use and Environmental Services Agency based upon field inspection prior to site clearing, grading, construction, or other land disturbing activity, and cannot be removed until after final inspection. Tree protection fencing shall remain in place and in good condition until all development activities are completed.

The tree protection fence shall be located no less than one (1) foot from the tree trunk for each one (1) inch in tree diameter for specimen trees, significant vegetation, or from the dripline of any forest canopy stand to be preserved, with a minimum distance of ten feet (10') required from the edge of the trunk. Tree protection fencing for forest canopy stands are to be located no less than one foot (1') from the tree trunk for each one inch (1") in tree diameter of the dripline trees identified up to ten feet (10'). Tree protection fencing shall be constructed from any material substantial enough to protect the roots, trunk, and crown of the tree, such as 2"x4" wood posts and 1"x4" wood rails, silt fencing or orange safety fencing a minimum of four feet (4') in height on metal or wood posts.

- B. No soil disturbance or compaction, stock piling of soil or other construction materials, vehicular traffic, storage of heavy equipment are allowed in the tree and root protection area(s), or within the drip line of trees to be retained.
- C. Dead trees and undesirable scrub growth shall be cut flush with adjacent grade and removed during construction.
- D. Root pruning shall be kept to an absolute minimum.
- E. No nails, ropes, cables, signs, or fencing shall be attached to any part of any tree to remain.



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9.3.3: ENVIRONMENTAL SURVEY

Identification of existing trees, understory vegetation, known endangered species, wetlands, streams and creeks, floodplains, and topographical features on a site prior to the advanced preparation of development plans enables the reasonable and practical planned preservation of existing vegetation while considering unique site conditions. This requirement provides the Town and the applicant the ability to evaluate the proposed development in order to preserve vegetation, to improve the appearance of the development proposed and to encourage the use of the existing forest and tree canopy, specimen trees and significant vegetation to satisfy the requirements of this Chapter. An environmental survey is intended to identify forest stands or trees of a uniform size and species (homogeneous trees); specimen trees of varying sizes and species, particularly free standing or open-grown or field grown trees; a distinctive tree line or forest edge; existing watercourses; and, previously documented endangered species habitats. A zoning permit shall not be issued for development unless the Town first approves an environmental survey. All developments on a site including public and private utilities shall conform to the provisions of an approved environmental survey.

Environmental survey requirements are as follows:

- A. The area to survey is to be located within the proposed construction limits, building envelope, or area of the site to be disturbed and is to extend a minimum of ten feet (10') outside of this area.
- B. Provide a general written description of the significant vegetation twelve inches (12") in diameter at breast height (DBH) or greater and native understory species two inches (2") or greater, including tree species and uniform the size and height of stands of homogeneous trees including the typical tree species composition of the forest stand, typical tree size, typical spacing between trees, and general health and vigor of the stand and specimen trees.
- C. Denote the dripline of any existing forest stand, as measured between existing tree trunks six inches (6") or greater located at the edge of the stand.
- D. Identify all free standing, open grown or field-grown specimen trees eighteen inches (18") DBH or greater located on the site. Every effort shall be made to save such trees during development.
- E. Show all other important natural features influencing site design such as the location of wetlands, rock outcroppings, site topography at two foot (2') contour intervals, slopes steeper than fifteen percent (15%), and perennial streams, natural drainageways, lakes, and other water bodies.
- F. Show any existing watercourses including wetlands, streams, creeks, ponds, and floodplains indicating both the flood fringe and the flood way.

Denote the presence of any known endangered species indicated in any surveys completed by the appropriate governmental agency.



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9.3.4: TREE REMOVAL PERMIT REQUIRED

No person directly or indirectly, shall remove, destroy, cut, or severely prune any tree or shrub having its trunk in or upon any public property or on any street right-of-way without first obtaining a permit from the Planning Department.

- A. Public and private utilities shall submit written specifications for pruning and trenching operations to the Town for approval.
- B. The Town of Cornelius may seek compensation from the property owner for the removal of hazardous vegetation. The Public Works Director is authorized to remove trees that are dead, diseased, irreparably damaged, or hazardous and are creating damage and/or are a threat to public safety. The Public Works Director shall be authorized to bill the owner for such services provided that the owner had been notified of the hazardous conditions and failed to act. The Public Works Director, upon determination that a tree on private property creates a threat to public safety, shall notify the property owner in writing to preserve or remove the hazardous tree. In the event the property owner does not respond to this notification, the Town of Cornelius may seek civil remedy under the provisions of Section 9.9.5, Penalties, and may enter the property to remove the hazardous vegetation.
- C. Permits shall also be obtained for trees planted in the public right-of-way or on public property.
- D. A site plan may be required for the planting of vegetation in the right-of-way at the discretion of the Planning Director.

9.3.5: PROHIBITED TREES

Any tree whose fruit, root system, brittleness, or susceptibility to disease is considered undesirable and, therefore, prohibited from planting on public property or public rights-of-way.

SECTION 9.4: LANDSCAPE REQUIREMENTS

9.4.1: APPLICABILITY

All development plans shall comply with the provisions of this section. A change of use or expansion of existing heated square footage of an existing building and expansion of parking and loading areas also require compliance with these provisions as prescribed per Section 15.7, Nonconforming Parking, Lighting, Landscaping, Screening, and Other Exterior Features.

9.4.2: TYPES OF LANDSCAPING

The six (6) types of landscaping are defined as follows, and shall meet the following performance requirements:

A. TYPE 'A' General Screening Buffers

Location & Required Usage:

- Rear and/or side transition yard between existing residential zoning and all proposed uses and developments
- Edge of all yards abutting right-of-way for Interstate 77 (Minimum width: fifty feet (50')

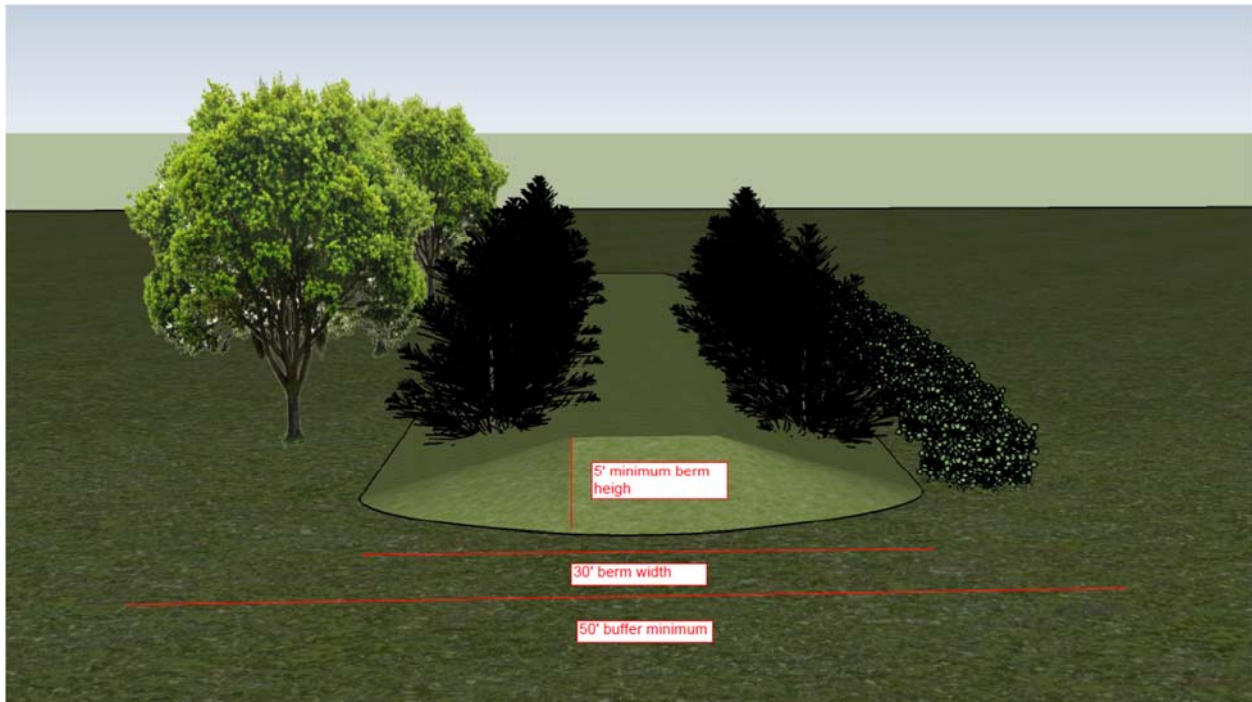


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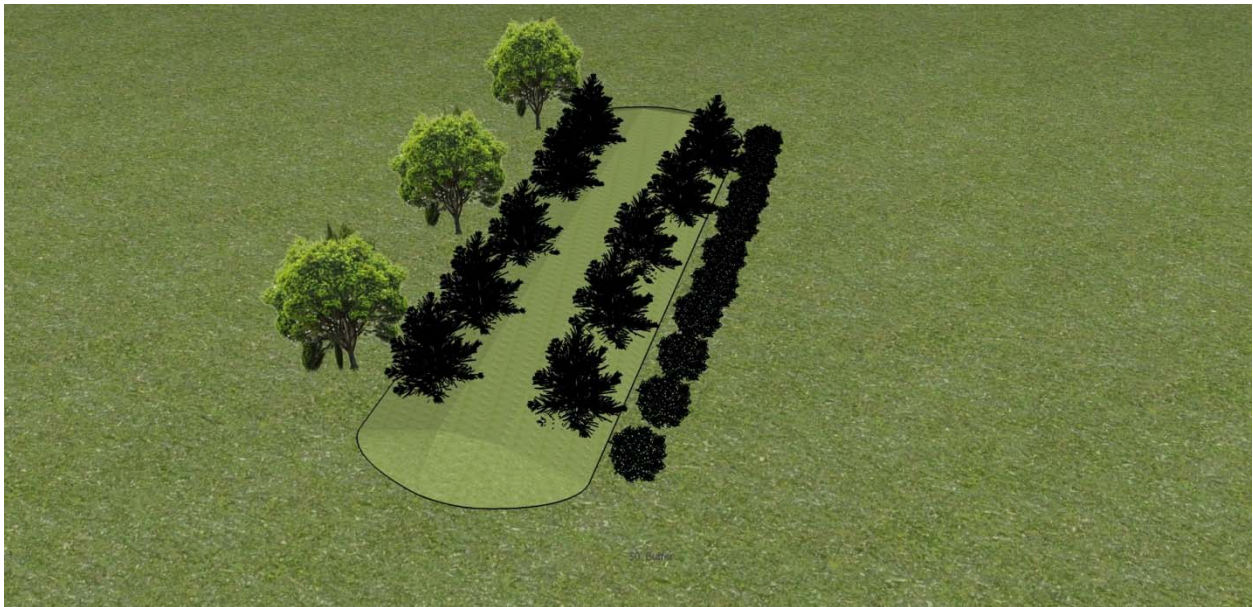
- Deciduous Trees must be a minimum of two and one-half inches (2 ½") caliper at planting
- Evergreen Trees must be a minimum of eight feet (8') in height at planting
- Shrubbery must be minimum of thirty-six inches (36") in height at planting
- Existing vegetation may be considered. In joint consultation with the applicant and the adjoining property owner, the Planning Director may approve and/or recommend an alternative buffer that includes the existing vegetation.

Type A-1

- Minimum width: fifty feet (50')
- Berm with minimum height of five feet (5') & maximum slope of 3:1
- Deciduous trees at 2.5/100 linear feet
- Evergreen trees at 5/100 linear feet (Must be on the berm)
- Shrubbery at 20/100 linear feet



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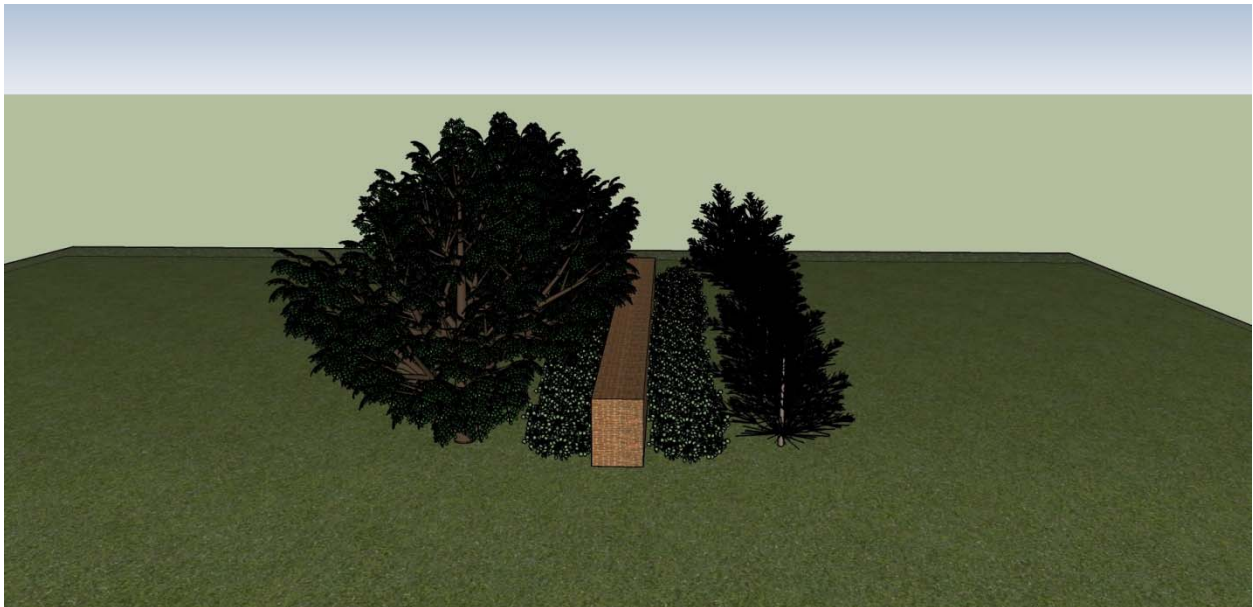


Type A-2

- Minimum width: 30'
- Masonry wall of brick and/or stone with minimum height of 6'
- Masonry wall shall be a minimum of 20' off of any property line
- Deciduous trees at 2.5/100 linear feet
- Evergreen trees at 5/100 linear feet
- Shrubbery at 20/100 linear feet



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Type A-3

- Minimum width: 10'
- To be negotiated with the adjoining property owner and may contain any combination of plant material or fence options that is mutually agreed upon by the applicant and the adjoining property owner. Any agreement must be in writing with the adjoining property owners' signature.



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B. TYPE B Street Landscape Buffer

Type B-1 Parking Area (fronting a street)

- Minimum 15' wide landscape buffer
- Must provide a continuous masonry (brick/stone) wall, a minimum of three feet (3') in height, if the wall is within an elevation of two feet (2') below grade or two feet (2') above grade. The wall may have gaps for pedestrian access and is in addition to landscaping requirements.
- Evergreen tree requirement: 2 per 100 linear feet
- Deciduous tree requirements:
 - Minimum 3" caliper at planting time; and
 - Overstory trees = 4 per 100 linear feet;
 - Mixture of overstory/understory/ornamental = 5 per 100 linear feet;
 - Understory/ornamental = 6 per 100 linear feet
- Shrub requirement: 20 per 100 linear feet

Type B-2 All Other Street Frontage Areas (including buildings)

- Minimum 15' wide landscape buffer
- Deciduous tree requirements:
 - Minimum 3" caliper at planting time; and
 - Overstory trees = 1 per linear feet;
 - Mixture of overstory/understory/ornamental = 1.5 per 100 linear feet;
 - Understory/ornamental = 2 per 100 linear feet
- Shrub requirement: 20 per 100 linear feet
- If a proposed building encroaches into the minimum 15' landscape buffer based on the minimum front setback requirement allowed according to Section 5.5.5, no landscape is required immediately in front of the building.



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C. TYPE C Interior and Perimeter Plantings

Location & Required Usage:

Interiors of all parking areas

This type functions as a tree ceiling over a parking area providing shelter from sun and rain. Large maturing canopy trees shall be planted in a manner that provides shade for the entire parking area at maturity. To this end, no parking space shall be more than sixty feet (60') from the base of a canopy tree. The use of differing species around the parking area is encouraged to promote diversity in the overall urban tree canopy. The use of existing vegetation to satisfy this requirement is encouraged. Supplemental plantings may be required in addition to native materials. The Zoning Administrator or designee may, at their discretion, reduce the required Type C buffer on the subject property.

Parking Area Perimeter (non-street front) Plantings

- Minimum 10' wide buffer
- Shrub plantings shall have no unobstructed openings wider than 4'. At least 75% of the required shrubs shall be evergreen species locally adapted to the area.

D. TYPE D Street Tree Canopy

Location & Required Usage:

- Along all street frontages (All Districts)

This type functions as a unifying element along all street frontages by establishing an attractive and consistent streetscape and scale. Street tree plantings soften the transition of the public street to the private yard and provide shelter from sun and rain to pedestrians and drivers. Trees shall be spaced twenty feet (20') on-center for understory and forty feet (40') on center for large canopy trees at the discretion of the Planning Director. Trees shall be planted parallel to the street within a well-defined planting strip of consistent width located between the curb and sidewalk, or in tree wells located in the sidewalk. The use of existing vegetation to satisfy this requirement is encouraged. Supplemental plantings may be required in addition to native materials.

F. TYPE F (Parkway Buffer)

Location & Required Usage:

- Along Major corridors

This type functions as a unifying element along all corridors with Industrial Campus zoning and/or where proposed development is not oriented toward the street by establishing an attractive and consistent streetscape and scale. This buffer will soften the transition of the street to the parking area and to provide shelter from sun and rain to pedestrians and drivers. The additional landscaping will provide an additional screening mechanism to the large scale uses and parking areas. The use of existing vegetation to satisfy this requirement is encouraged. Supplemental plantings may be required in addition to native materials. A berm with a maximum four foot (4') height may be utilized where feasible. See Figure 9.1 of the appropriate planting schedule



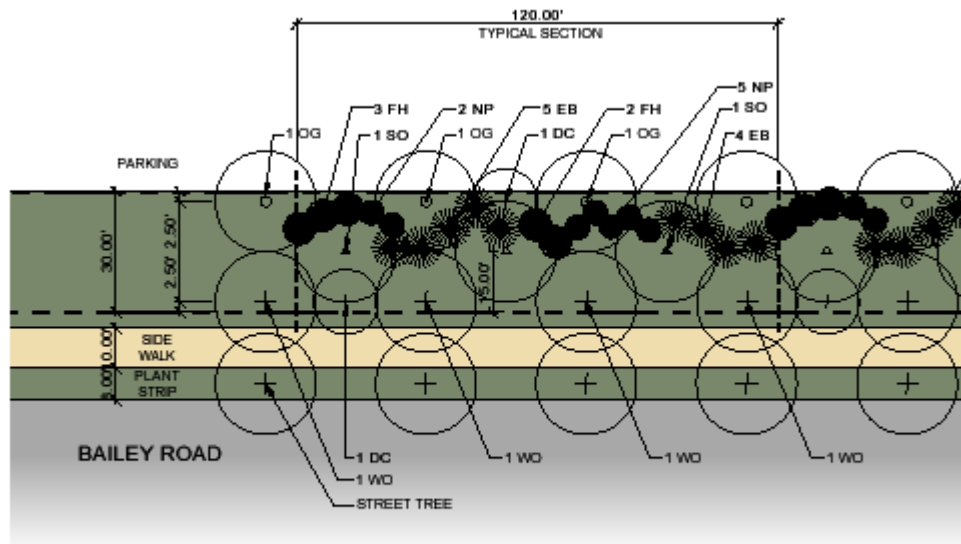
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FIGURE 9.1: TYPE F LANDSCAPE

PLANT SCHEDULE - BERMS

SYM #	COMMON NAME	BOTANICAL NAME	SIZE	ROOT	SPAC'G	NOTES
TREES						
OG 3	RED MAPLE	ACER RUBRUM 'OCTOBER GLORY'	2.5'-3" CAL.	B&B	A.I.	MATCHED
DC 2	DEODAR CEDAR	CEDRUS DEODARA 'MYSTIC ICE'	8'-10' HT.	B&B	A.I.	FULL TO GROUND
EB 9	EMILY BRUNNER HOLLY	ILEX 'EMILY BRUNNER'	8'-10' HT.	B&B	A.I.	FULL TO GROUND
FH 5	FOSTER HOLLY	ILEX ATTENUATA 'FOSTER'	8'-10' HT.	CONT.	A.I.	FULL TO GROUND
NP 7	NEEDLEPOINT HOLLY	ILEX CORNUTA	4'-5' HT. 15 GAL.	CONT.	A.I.	FULL TO GROUND
WO 3	WILLOW OAK	QUERCUS PHELLOS 'HIGH TOWER'	2.5'-3" CAL.	CONT.	A.I.	MATCHED
SO 3	SHUMARD OAK	QUERCUS SHUMARDII 'PANACHE'	2.5'-3" CAL.	CONT.	A.I.	MATCHED

NOTE: STREET TREES (WILLOW OAKS) NOT INCLUDED IN PLANT SCHEDULE



TYPE F BUFFER

9.4.3: SUPPLEMENTAL LANDSCAPING GENERAL PROVISIONS

A. LOCATION

The perimeter landscaping required by this Chapter shall be located along the outer perimeter of the parcel and shall extend to the parcel boundary line or right-of-way line. Plants comprising the perimeter landscape shall be appropriately spread across the entire width of the landscape area.



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B. EXISTING VEGETATION, FENCES, WALLS, AND BERMS

The use of existing trees or shrubs to satisfy the perimeter landscaping requirements of this Section is strongly encouraged. Existing significant vegetation within the required perimeter landscaped area shall be preserved and credited toward standards for the type of perimeter landscaping required, unless otherwise approved by the Town of Cornelius at the time of site plan approval. Existing berms, walls, or fences within the perimeter landscaped area but not including chain link fencing, may be used to fulfill the standards for the type of perimeter landscaping required, provided that these elements are healthy and/or in a condition of good repair. Other existing site features within the required perimeter landscaped area which do not otherwise function to meet the standards for the required perimeter landscaping shall be screened from the view of other properties or removed, as determined during review and approval of the site plan.

C. INSTALLATION OF NEW VEGETATION AND OTHER FEATURES

New plant material should complement existing vegetation native to the site. If existing significant vegetation and other site features do not fully meet the standards for the type of landscaping required, then additional vegetation and/or site features (including fences) shall be planted or installed within the required landscaping area. The use of indigenous, native and/or regionally grown species of trees, shrubs, vines, groundcovers and perennials is encouraged in order to make planted areas compatible with existing native habitats.

D. STANDARDS FOR NEW PLANTING

Landscaping should be of sufficient size so that mature appearance will be achieved within three to five years of installation. All trees which this Chapter requires to be planted shall be at least eight feet (8') high above ground level and at least two and one-half inches (2 ½") in caliper at the time of installation, shall have an expected mature height of at least twenty feet (20'), and the cumulative caliper of all new trees shall match or exceed the caliper of the tree(s) removed, up to eight inches (8"). All shrubs which this Chapter requires to be planted shall be measured at least five (5) gallons in container size and three feet (3') above ground level and shall reach the height required for performance within three (3) years after installation. The selection of plants, planting methods, minimum height, root ball and container size, number of branches, and width, shall conform with the American Standard for Nursery Stock published by the American Association of Nurserymen for that type of tree or shrub at the time of installation. Groves of trees, as well as isolated islands with single trees, are encouraged. Adequate drainage and mulching shall be provided for planting medians and islands. Each canopy tree shall be provided with a minimum pervious ground area of 300 square feet for root growth (exception: Street Trees) and should be planted on slopes not to exceed 4:1 horizontal to vertical distance. All tree installations shall be in accordance with the Mecklenburg County Land Development Standards Manual.

E. GRADING AND DEVELOPMENT WITHIN THE PERIMETER LANDSCAPE AREAS

The required perimeter landscaping shall not contain any development, impervious surfaces, or site features that do not function to meet these standards or that require removal of existing significant vegetation. No grading, development, or land-disturbing activities shall occur within this area if forest canopy, specimen trees, or significant vegetation exists within the perimeter landscape area, unless approved by the Town of Cornelius at the time of site



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plan approval. If grading within a perimeter landscaped area is proposed, slopes of 2:1 or less are encouraged to ensure the proper transition of grades to the adjacent property and to facilitate landscaping.

F. EASEMENTS

Nothing shall be planted or installed within an underground or overhead utility easement or a drainage easement without the consent of the Town and the easement holder at the time of site plan approval.

G. RESPONSIBILITY FOR INSTALLATION

Where a vacant parcel is being developed adjacent to another vacant parcel, then the developer or owner of the first parcel to be developed shall provide the perimeter landscaping required adjacent to the vacant land. Where a vacant parcel is being developed adjacent to an existing land use, then the developer or owner of the vacant parcel shall provide the perimeter landscaping required adjacent to the existing land use.

H. MAINTENANCE OF REQUIRED LANDSCAPING

Once streets have been accepted by the Town or the state, street trees shall be maintained and cared for by the property owner adjacent to the tree, except in subdivisions where the property owners association provides maintenance and care. Prior to street acceptance, the developer shall be responsible for ensuring maintenance and care. Maintenance shall include replacement and trimming as necessary. A maintenance responsibility statement shall be provided on the Final Plat and documented within the homeowners' association articles of incorporation or the restrictive covenants/deed restrictions for the development.

I. ZONING CHANGE

If the zoning district classification changes for an existing use or parcel, then the parcel shall comply with the landscaping requirements of this Chapter or, at a minimum, the intent of this Chapter as prescribed by the Planning Director. The owner or developer may need to install additional plant material on the parcel in order to meet the intent of this Chapter, especially on developed sites, or to bring the parcel up to the standards for the type of perimeter landscaping which would be required under this Chapter.

J. IRRIGATION

The use of irrigation is encouraged in all required landscaping areas as required by this Chapter.

K. UNLAWFUL CUTTING OF VEGETATION

No person may remove any vegetation from within any right-of-way except in areas approved by the Town of Cornelius and/or the NC Department of Transportation.



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SECTION 9.5: STREAM AND WETLAND BUFFERS (*S.W.I.M. Surface Water Improvement and Management*)

9.5.1: APPLICABILITY

- All development plans shall comply with the buffer requirements of this Section, however uses and structures previously approved and constructed in a buffer may remain.
- A site specific development plan amended by action of the Board of Commissioners subsequent to adoption of this Section shall comply, in its amended form, with the S.W.I.M. buffer requirements, however uses and structures previously approved and constructed in a buffer may remain.
- Where stream buffers are also required as part of the Lake Norman or Mountain Island Lake Watershed Protection Overlay Districts, the more stringent of the stream buffer requirements shall apply.
- Redevelopment or expansions are not subject to the buffer requirements of this part unless it would result in an increase in impervious area within the buffer.

9.5.2: MINIMUM BUFFER REQUIREMENTS

- A. At a minimum, no land disturbing activity is permitted within the flood plain except as otherwise permitted in Section 9.5.4. The regulatory flood plain elevation is delineated per the latest revision of the Flood Insurance Rate Map, Flood Boundary Floodway Maps, and Flood Insurance Study for the Town of Cornelius and Mecklenburg County, or calculated for unmapped or undefined areas using consistent engineering methods applied in the development of regulatory floodplain maps used by the Federal Emergency Management Agency.
- B. Minimum stream buffer widths vary based on the location and size of the upstream drainage basin, but at a minimum shall be no less than the delineated flood plain:
 1. All streams with upstream drainage basins greater than fifty (50) acres and less than three hundred (300) acres shall require an undisturbed natural buffer with a minimum width of thirty-five feet (35') from each side of the stream as measured from the top of the stream bank.
 2. All streams with upstream drainage basins greater than three hundred (300) acres and less than six hundred forty (640) acres shall require an undisturbed natural buffer with a minimum width of fifty feet (50') from each side of the stream as measured from the top of the stream bank.
 3. All streams with upstream drainage basins greater than six hundred forty (640) acres shall require an undisturbed natural buffer including the entire floodplain but no less than one hundred feet (100') from each side of the stream as measured from the top of the stream bank.
 4. Where stream buffers are also required in another section of this Code, the more stringent requirement shall apply.
- C. Buffer widths for drainage basins are measured horizontally on a line perpendicular to the surface water, landward from the top of the bank on each side of the stream.
- D. Floodplain delineation will be based upon current locally adopted maps and may be amended from time to time.
- E. When reforestation of disturbed buffers is required, tree planting shall be as specified in the Mecklenburg County Land Development Standards Manual.



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- F. No fill material is permitted to be brought into any required buffer. Uses permitted in the buffer zones should be coordinated to ensure minimal disturbance of the buffer system. For example, if it is necessary to install utilities within the buffer, then if greenway trails are built they should follow these cleared areas instead of necessitating additional clearing.
- G. Diffuse Flow Requirement. Diffuse flow of runoff shall be maintained in the buffer by dispersing concentrated flow and reestablishing vegetation. Techniques for providing diffuse flow are specified in the Mecklenburg County Land Development Standards Manual.
 - 1. Concentrated runoff from ditches or other manmade conveyances shall be diverted to diffuse flow before the runoff enters the buffer.
 - 2. Periodic corrective action to restore diffuse flow shall be taken by the property owner as necessary to impede the formation of erosion gullies.

9.5.3: BUFFER DELINEATION

The following buffer delineations are required:

- A. Buffer boundaries must be clearly delineated on all development plans for approval by the Town Board of Commissioners, on all construction documents, including grading and clearing plans, erosion and sediment control plans, and site plans.
- B. Buffer boundaries must be clearly delineated on-site prior to any land disturbing activities. Limits of grading shall maintain a minimum twenty feet (20') separation from the base of each tree on the upland side of the buffer.
- C. Buffer boundaries as well as all buffer requirements must be specified on the record plat, on individual deeds, and in property association documents for lands held in common.

9.5.4: PERMITTED BUFFER IMPACTS

The following buffer impacts are permitted, however, design and construction shall comply with the specifications provided in the Charlotte-Mecklenburg Water Quality Buffer Implementation Guidelines for stabilization of disturbed areas to minimize negative effects on the quality of surface waters.

- A. Road crossings for connectivity or transportation links where the Town of Cornelius has granted site plan approval and required utilities.
- B. Parallel water and sewer utility installation as approved by Charlotte Water.
- C. Approved public or common area open space paths and trails parallel to the creek shall be at least thirty feet (30') away from the stream and near perpendicular stream crossings. Pathways must use existing and proposed utility alignments or previously cleared areas and minimize tree cutting to the maximum extent practicable. To the extent possible, pathways shall preserve existing drainage patterns and avoid drainage structures that concentrate storm water.
- D. Incidental drainage improvements/repairs for maintenance.
- E. Individual pedestrian paths connecting homeowners to the stream in the form of narrow, pervious footpaths with minimal tree disturbance.
- F. New domesticated animal trails (farming) where existing trails are lost because of action beyond the farmer's control. Stream crossings should be constructed to minimize impacts and be maintained with fencing perpendicular to and through the buffer to direct animal movement.



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- G. Ponds, which intersect the stream channel, shall have the same buffers as the original stream. Buffer requirements do not apply to wet ponds used as structural BMP's.
- H. Mitigation approved by a state or federal agency acting pursuant to Sections 401 or 404 of the federal Clean Water Act.

SECTION 9.6: LAND SUITABILITY

9.6.1: APPLICABILITY

Land subject to flood hazard, improper drainage, erosion or that is for topographical or other reasons unsuitable for residential use as determined by the Town of Cornelius, shall not be platted or developed for residential use nor for any other uses that will continue or increase the danger to health, safety, or property unless the hazards can be and are corrected.

9.6.2: FLOOD HAZARD AREA DEVELOPMENT

The land designated within Special Flood Hazard Area zones and Floodway Areas in Zone AE subject to periodic inundation by one hundred (100) year flood as shown on the most current FEMA Flood Insurance Rate Maps (FIRM) for Mecklenburg County and the Cornelius area shall be identified on all plats. Land designated as Special Flood Hazard Area Flood Zone shall be built on only in accordance with the Town of Cornelius Flood Damage Prevention Ordinance, Chapter 154 of the Town of Cornelius Code of Ordinances. No grading, clearing, removal of significant vegetation, the placement of structures, fill, or any other encroachment activity shall occur within designated Special Flood Hazard Area zones which would interfere with the natural water course without approval from the Town of Cornelius based upon certification that such activity mitigates the potential adverse impact of flood hazard. Streets and utility lines and structures may be placed within the flood hazard area only if their elevation is raised above maximum flood heights or if they are otherwise flood protected.

9.6.3: WATERSHED DEVELOPMENT

All land located within the designated Water Supply Watershed Protection District as shown on the official Cornelius Watershed & Environmental Features Map shall comply with all provisions of this Ordinance regarding watershed protection. The watershed protection provisions of this Ordinance shall take precedence over all other provisions of this ordinance with regard to density, open space dedication, and built-upon areas.

9.6.4: DEMOLITION LANDFILL DEVELOPMENT

Areas that have been used for the disposal of solid waste shall not be subdivided into commercial or residential building sites. This includes areas that have been used for the disposal of trash, demolition waste, construction debris, stumps, and other waste materials.

SECTION 9.7: SEDIMENTATION AND EROSION CONTROL

The subdivider shall comply with all requirements of the North Carolina Sedimentation Pollution Control Act of 1973, as amended, the Mecklenburg County Soil Erosion and Sedimentation Control Ordinance (MCSESCO) and any other federal or state law or locally adopted ordinance.



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The developer shall cause all grading, excavations, open cuts, side slopes, and other land surface disturbances to be mulched, seeded, sodded, or otherwise protected. Temporary erosion and sedimentation control measures shall be placed in accordance with the approved erosion control plan prior to any construction.

Erosion and sedimentation from land disturbance activities of less than one acre, shall be controlled with silt fencing or any other method approved by the Planning Director to prevent siltation of adjoining parcels, lots, and streets.

SECTION 9.8: STORMWATER RUNOFF PROVISIONS

9.8.1 PURPOSE

The purpose of this section is to control the peak flow of less-common storm events and should be used in conjunction with the Post Construction Ordinance, and/or SWIM buffer provisions outlined in this chapter, as part of the Post Construction Ordinance, and as part of the Watershed Protection Ordinance, when they also apply, to any parcel of land.

9.8.2 PLAN REQUIRED

No development or use of land that involves or would create more than twenty thousand (20,000) square feet of impervious groundcover shall be permitted without the submission and approval of a storm water management plan by the Town of Cornelius and Mecklenburg County Land Use and Environmental Services Division. Subdivisions into two (2) or more parcels that, when combined, would create impervious surface areas of twenty thousand (20,000) or more square feet shall be required to provide a storm water management plan for the combined total built-upon surface. No certificates of occupancy or building permits for such development shall be issued until the storm water management plan is approved by the Town and County. Built-upon ground cover in existence prior to April 16, 2007 and not altered or removed after that date, shall not be used in measuring the twenty thousand (20,000) square feet.

9.8.3 CONTENTS OF A STORM WATER MANAGEMENT PLAN

The storm water management plan shall include: a site plan showing existing and proposed buildings or other built-upon impervious surfaces; existing on-site and adjacent storm water drainage facilities; site construction plans, grading plans, and proposed storm water management system; and any other appropriate information requested by the Town or Mecklenburg County. Storm water facilities shall be required to control the peak runoff release rate for both the two (2) year and ten (10) year six (6) hour storms, with an emergency overflow capable of safely discharging flow from the fifty (50) year twenty-four (24) hour storm event. All storm water management systems shall conform to the standards and specifications as provided in the Charlotte-Mecklenburg Storm Water Design Manual (latest revision), Charlotte-Mecklenburg BMP Design Manual (latest revision), Mecklenburg County Land Development Standards Manual (latest revision), or the more restrictive of any standards that conflict.

9.8.4 PLAN APPROVALS

Neither the Town nor Mecklenburg County shall approve a storm water management plan if the built-upon ground cover proposed in the plan would increase the peak level of the storm water runoff from the site for both the two (2) year and ten (10) year six (6) hour storms, unless the



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storm water management plan identifies measures to control and limit runoff to peak levels no greater than would occur from the site if left in its existing condition. Furthermore, if documented downstream flooding concerns exist, the storm water management plan shall not be approved if the built-upon ground cover proposed in the plan would increase the peak level of the storm water runoff from the site for both the two (2) year and ten (10) year six (6) hour storms, or less common storms at the discretion of the Town or County, unless the storm water management plan identifies measures to control and limit runoff to peak levels for such storms no greater than would occur from the site if left in its natural, undeveloped, good condition; or, if currently undeveloped, its existing condition.

9.8.5 REQUIREMENT WAIVER

The Town or County may waive any requirements under this section when storm water from the site would drain via an approved, permanent easement recorded at the Mecklenburg County Register of Deeds, or directly to a FEMA flood plain when within the same parcel of land. A written request for waiver shall be submitted to the Town which must be supported by a downstream flood analysis using the criteria specified in Chapter 3, Section 5 of the Charlotte-Mecklenburg BMP Design Manual (latest revision). In order to grant a waiver, the Town and County shall determine that the supplied flood analysis provides sufficient documentation that a waiver of storm water detention will not create increased flooding potential at, above, or below the subject location.

9.8.6 CONFLICT OF LAWS

This section is not intended to modify or repeal any other ordinance, rule, regulation, or other provision of law, including the Post Construction Ordinance. The requirements of this section are in addition to the requirements of any other ordinance, rule, regulation, or other provision of law, and where any provision of this section imposes restrictions different from those imposed by any other ordinance, rule, regulation, or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human or environmental health, safety, and welfare shall control.

SECTION 9.9: MAINTENANCE AND PENALTIES

9.9.1 APPLICABILITY

This Section shall not apply to fully vegetated natural areas, except where the property owner has damaged or destroyed vegetation in a required landscaped area, or caused vegetation to be damaged or destroyed. In no instance will the Town of Cornelius be responsible for the maintenance of any vegetation.

9.9.2 TIME FOR INSTALLATION OF REQUIRED LANDSCAPING AND STORM WATER CONTROL MEASURES AND/OR DRAINAGE IMPROVEMENTS

A. **Time limit.** All landscaping, mulching, seeding, storm water control measures, and drainage improvements shall be completed in accordance with the approved site plan prior to issuance of a Certificate of Occupancy for the site.



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- B. **Extensions and exceptions.** The Town of Cornelius may grant exceptions and extensions to the above time limit under the following conditions:
1. Extensions may be granted due to unusual environmental conditions, provided that the developer or property owner provides the Town with a financial guarantee ensuring the installation of the remaining landscaping and storm water control measures or drainage improvements. In such cases, the Town may authorize Mecklenburg County to issue a temporary Certificate of Occupancy for a period of thirty (30) to one hundred eighty (180) days.
 2. Exceptions may be granted due to the substitution or unavailability of plant species or acceptable plant sizes as specified on the site plan, provided that the developer or property owner provides the Town with a financial guarantee to ensure that the unavailable plants will be installed on the property. In such cases, the Town of Cornelius may authorize Mecklenburg County to issue a temporary Certificate of Occupancy with a term of up to one hundred eighty (180) days relative to the next planting season. Only twenty percent (20%) of the plant materials to be installed on the property may be delayed and bonded under this exception. All such substitutions shall be marked on the landscaping plans submitted to the Department and must be signed, dated, and approved prior to installation.
 3. Exceptions may be granted due to circumstances beyond the developer's or property owner's control, such as incomplete construction or utility work to occur in an area proposed for landscaping, storm water measures or drainage features within thirty (30) days after expected site completion. Exceptions may be granted provided that the developer or property owner submits a letter from the utility company to the Town stating the estimated installation date, and provides a financial guarantee to ensure installation of the required improvements. In such cases, the Town of Cornelius may authorize Mecklenburg County to issue a temporary Certificate of Occupancy for a period not to exceed thirty (30) days.
- C. **Financial Guarantees.** Any financial guarantee posted as surety for the completion of required improvements shall be accompanied by documentation of the estimated cost of the remaining landscaping, storm water control measures, or drainage improvements to be completed. This documentation may be a contractor's bid or contract, a contractor's bill, or a similar document. The amount of the guarantee shall be one and one-quarter (1.25) times the cost of the improvements yet to be installed, based on the highest estimate received. The Town Manager is authorized to release part of any security posted as the improvements are completed and approved by the Town of Cornelius and Mecklenburg County. Such funds shall be released within ten (10) days after the corresponding improvements have been approved.

9.9.3: INSPECTIONS

A permanent Certificate of Occupancy for any development shall not be issued unless the landscaping, storm water control measures and/or drainage improvements as required under this Chapter are installed in accordance with these standards and in accordance with the approved site plan or subdivision plat. The Town of Cornelius and Mecklenburg County shall inspect the site



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one-year after the issuance of a permanent certificate of occupancy in order to ensure compliance with the approved site plan and to ensure that the landscaping is properly maintained and that all other storm water control measures and drainage improvements on and off site are functioning properly. A notice will be sent certified mail return receipt or as deemed by the Planning Director in the event a site inspection determines non-compliance with this section. The Notice will instruct the property owner on the measures necessary to rectify the violation.

The Town reserves the right for re-inspection to assure the survivability of vegetation, and functionality of drainage on and off site.

9.9.4: MAINTENANCE

- A. **Maintenance responsibility.** The owners of the property and their agents, heirs, or assigns shall be responsible for the installation, preservation, and maintenance of all improvements required by this Chapter. All plant materials should be allowed to reach their mature size and maintained appropriately. In the event that any improvement required by this Chapter is severely damaged due to an unusual weather occurrence or natural catastrophe, the owner shall have one (1) year to replace, replant or reconstruct said improvement. All required landscaping and drainage areas shall be free of refuse and debris in accordance with the site or subdivision plan approved by Town of Cornelius, and shall be maintained so as to prevent mulch, straw, dirt, or other materials from washing onto streets and sidewalks.
- B. **Replacement of disturbed and damaged vegetation.** The disturbance of any landscaped area or vegetation required by this Chapter shall constitute a violation of the site or subdivision plan. All disturbed landscaped areas and vegetation shall be replanted to meet the standards of this Section as well as the approved site plan.

Where the vegetation that has been disturbed or damaged existed on the site at the time the development was approved, all replacement vegetation shall meet the standards set forth in this Chapter taking into account any unique site conditions and significant vegetation remaining within the landscaped area. Trees or vegetation that die within one year of construction completion, because of contractor negligence, shall be removed and replaced with new vegetation of equal or greater in size.

1. Existing vegetation required to be preserved that has been damaged or destroyed during the course of development activity shall be subject to civil penalty and replaced in accordance with the requirements of this Section.
2. A *Revegetation Plan* shall be submitted that accounts for the development condition of the site, remaining significant vegetation remaining within landscaped areas, and the desired habit of replacement plant materials. The Town of Cornelius may require equal amounts of new vegetation to be installed equal to the size of the vegetation removed.
3. Pruning is the cutting off or removal of dead or living parts of a tree or bush for the intentions of improving shape or growth. Pruning shall be done in accordance to the National Arborist Standards not to exceed thirty percent (30%) of the crown and in a manner that preserves the character of the crown. Topping is any pruning practice that



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results in more than one-half (½) of the foliage and limbs being removed. This includes pruning that leads to the disfigurement of the normal shape of the tree. The topping of trees is prohibited, except for extreme circumstances due to weather damage, disease, or dead wood.

9.9.5: PENALTIES

Any act constituting a violation of this chapter resulting in the destruction or removal of vegetation shall subject the landowner to a civil penalty in accordance with Section 14.6 G.

It shall be the duty of the permit holder to demonstrate that the development activities are compliance with the permit issued.

Unless otherwise specified in this chapter, the Town of Cornelius shall enforce the provision of this chapter in accordance with procedures, penalties, and remedies described in Chapter 14 of the *Land Development Code*.

Stop work orders shall also apply for damaging and/or destroying vegetation, interior specimen significant growth, landscape, or tree save areas.

The Town of Cornelius Planning Board shall act as the Tree Advisory Board and hear all matters dealing with Chapter 9. They shall have the authority to hear and decide matters concerning appeals, interpretations, and variances.

9.9.6: REPLACEMENT OF VEGETATION

A. Replacement consists of one or a combination of any of the following measures:

1. Replant according to the requirements of this section. A replanting plan denoting the proposed installation shall be submitted to the Town of Cornelius for approval. The Planning Director may elect to present the replanting plan to the Planning Board for final approval.
2. Replace damaged or destroyed significant vegetation in both perimeter and or interior landscaped areas with an equal amount of new vegetation according to the size of vegetation removed. Any tree with a caliper of at least eight inches (8") which is damaged or removed shall be replaced with one or more trees which have a caliper of at least two and one half inches (2 1/2") and a cumulative caliper equal to or greater than the original tree. Tress damaged or destroyed less than eight inches (8") in diameter shall be replaced to satisfy the performance criteria of this Section. Understory plantings may also be required to restore the buffer performance criteria for the disturbed area. A revegetation plan denoting the proposed installation shall be submitted to the Town of Cornelius for approval. The Planning Director may elect to present the revegetation plan to the Planning Board for final approval. This requirement may be modified by the Planning Director based upon site conditions.
3. For all other cases where existing vegetation is damaged or removed, the type and amount of replacement vegetation required shall be of the type and amount that is



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necessary to provide the type of landscaping required under this Section or interior preservation area identified on the landscape plan.

- B. Location of Replacement Trees and Vegetation. Replanting should be located within the vicinity of the violation. If the area is too small for sufficient growth, a more suitable location on the site may be selected as permitted by the Planning Director.

9.9.7: TREE TOPPING

Tree topping is not allowed anywhere within the Town of Cornelius Sphere of Influence.

9.9.8: FINANCIAL GUARANTEES

When storm water control measures and drainage improvements are approved for mitigation of a buffer disturbance, the approval will be subject to the owner filing a financial guarantee with Mecklenburg County Land Use and Environmental Services Agency, in a form which is satisfactory to the County Attorney guaranteeing the installation and maintenance of the required improvements until the issuance of certificates of occupancy for ninety percent (90%) of all construction which might reasonably be anticipated to be built within the area that drains into the storm water control measure, allowing credit for improvements completed prior to the submission of the final plat. At such time that this level of occupancy is achieved, written notice thereof must be given by the owner to the Mecklenburg County Land Use and Environmental Services Agency. The owner must verify the adequacy of the maintenance plan for the storm water control measure including the necessary financing to support the proposed maintenance practices. The County will inspect the storm water control measure and verify the effectiveness of the maintenance plan and if found satisfactory, will within 30 days of the date of the notice notify the owner in writing.

9.9.9: MAINTENANCE RESPONSIBILITIES FOR STORM WATER CONTROL MEASURES AND DRAINAGE IMPROVEMENTS – CIVIL PENALTIES

Maintenance of all storm water control measures and drainage improvements will be the responsibility of the property owner or his designee. Any person who fails to maintain the required improvements in accordance with the approved maintenance plan will be subject to a civil penalty of not more than five hundred dollars (\$500). Each day that violation continues shall constitute a separate violation. No penalties shall be assessed until the person alleged to be in violation has been notified in writing of the violation by registered or certified mail, return receipt requested, or by other means which are reasonably calculated to give actual notice. The notice shall describe the nature of the violation with reasonable particularity, specify a reasonable time period within which the violation must be corrected, and warn that a failure to correct the violation within the time period will result in assessment of a civil penalty or other enforcement action.

9.9.10: SPECIAL VARIANCE PROVISIONS/MITIGATION TECHNIQUES.

Site specific mitigation plans using the mitigation techniques established below and approved by the Town or its designated agency shall be construed to be evidence responsive to any variance



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request consistent with adopted plans and for the protection of public safety and welfare. Specifications for these mitigation techniques are provided in the *Mecklenburg County Land Development Standards Manual*. The techniques below are not permitted to offset the requirement for diffuse flow. Any site specific plan utilizing any techniques below is subject to approval by the Town of Cornelius, the Mecklenburg County Land Use and Environmental Services Agency, and/or any other agent or agency as designated appropriate by the Town.

- A. *Installation of Storm Water Control Measures, including BMP's.* The installation of any on-site storm water control measure designed to achieve pollutant removal targets as specified in the *Mecklenburg County Land Development Standards Manual* will allow for all proposed stream buffer impacts on the specific site. Said measure must remain outside of the Stream Buffer. A detailed design plan must be submitted for approval based on specifications contained in the *Mecklenburg County Land Development Standards Manual*.
- B. *Stream Restoration.* The owner or developer may restore and preserve the buffer area on any stream of equivalent or greater drainage area the condition of which is determined to be qualified for restoration by the Mecklenburg Land Use and Environmental Services Agency on a 1:1 basis in linear feet of stream. This restoration shall include stream bank improvements and Stream Buffer re-vegetation, in accordance with the *Mecklenburg County Land Development Standards Manual*.
- C. *Stream Preservation.* The owner or developer may purchase, fee simple, other stream segments at equivalent or greater drainage area on a 1:1 linear foot basis and convey fee simple and absolute title to the land to the Town of Cornelius, Mecklenburg County, or conservation trust.
- D. *Wetlands Restoration.* On a 2:1 acreage basis for disturbed stream and buffer area (2 acres of wetland for each acre of disturbed area), the owner may provide a combination of the preservation and/or restoration of wetlands with protective easements and the implementation of storm water control measures to achieve specific pollutant removal targets within the impacted area.
- E. *Bottom Land Hardwood Preservation.* On a 2:1 acreage basis for impacted stream and buffer area (2 acres of bottomland hardwood for each acre of disturbed area), the owner or developer may provide a combination of the preservation of existing bottom land hardwood forest or other specifically approved natural heritage area by conservation easement or other legal instrument, and the implementation of storm water control measures to achieve specific pollutant removal targets within the impacted area.
- F. *Controlled Impervious Cover for Buffer Disturbance.* The owner or developer may commit to, and provide, a specific site development plan for the parcel with requested buffer disturbance. The plan shall limit overall site impervious cover to less than or equal to twenty-four percent (24%). Preservation of a thirty foot (30') stream buffer is still required.
- G. *Open Space Development.* A site-specific development plan shall be submitted that preserves fifty percent (50%) of the total land area as undisturbed open space.
- H. *Mitigation Credits:* The purchase of mitigation credits through the Stream Restoration Program on a 1:1 basis, utilizing linear feet of stream impacted and the prevailing rate of purchase as established by the *Mecklenburg County Land Development Standards Manual*. Mitigation credits purchased under any other program (i.e., U.S. Army Corp of



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Engineers) shall not cover this requirement unless the issuing agency agrees to relinquish the funds to the appropriate local government agency.

- I. *Alternative mitigation.* The list of mitigation techniques shall not prevent the creative development of alternative mitigation plans that achieve the purposes of this section.

