Certified Recommendation

Raleigh Planning Commission

CR#

DRAFT 5/16/2017

Case Information: TC-4-17 / Text Changes for Advancing Green Infrastructure and Low Impact Development in Raleigh

Comprehensive Plan Guidance

Applicable Policy Statements	**Policy EP 2.1: Green Infrastructure** Ensure protection of Raleigh's unique and significant green infrastructure – its natural resources, landscapes, and ecological systems – through best practices management stewardship and land use regulations**.** **Policy EP 3.1: Water Quality BMPs** Use non-structural best management practices (BMPs) in an effort to improve water quality, such as public education programs, monitoring and control of illicit discharges, expansion of the greenway concept to include "receiving lands" that can absorb storm surge overflows, and update of the City's sediment control program with an orientation toward performance measures. **Policy EP 3.4: Low Impact Systems for Parking** Well maintained pervious pavement or other low impact systems for parking areas should be encouraged throughout the City, especially in environmentally sensitive areas and floodplains, as appropriate. **Policy EP 3.8: Low Impact Development** Promote the use of LID techniques to mitigate the impact of stormwater runoff. This includes the use of green roofs, rain gardens, cisterns, rain barrels, and on-site wastewater reuse systems in urban and suburban landscapes. **Policy PU 5.1: Sustainable Stormwater Management** Reduce run-off velocity and improve water quality from existing and new development using sustainable infrastructure techniques that use soils and vegetation to capture, cleanse, and re-use stormwater runoff. **Policy PU 5.4: Discharge Control Methods** Apply discharge control methods that control both peak and volume and that are economically, aesthetically, and environmentally acceptable as well as effective in stormwater management. **Policy PU 5.5: Stormwater Education** Educate and involve the public in stormwater management. **Policy PU 5.6: Rainwater Collection and Storage** Where adjacent waters are not vulnerable to even minor reductions in base flow, encourage the deployment and use of rainwater collection and storage systems such as rain barrels and cisterns and rain gardens by residential and commercial property owners and managers. **Policy T 1.5: Context Sensitive Road Design** "Context sensitive" approaches shall be used for new roadways or widening of

existing roads to minimize impacts to historic business districts and neighborhoods and sensitive natural areas (particularly in watershed protection, conservation management and metro park protection areas).

Policy T 6.9: Green Parking Facilities
Reduce stormwater runoff generated by parking facilities by promoting an increase in the use of tree planting and landscaping, green roofs for parking decks, and permeable materials for parking lots, driveways, and walkways.

Narrative excerpts from Environmental Protection Element
Adoption, implementation, and enforcement of this Environmental Protection Element presents the City of Raleigh with an opportunity to move toward more comprehensive solutions to complex environmental problems.

Part of Raleigh's natural landscape includes the Neuse River, identified by American Rivers as the eighth most endangered river in the US. As a capital city and as a community at the headwaters of the Neuse, Raleigh is uniquely positioned to champion the recovery of this degraded resource. Looking beyond the river, and at the watershed as a whole, both water quality and water quantity will play significant roles in the City's ability to meet the needs of its growing population.

The City of Raleigh has a responsibility to current residents and future generations to immediately improve the health of local rivers, creeks, floodplains, and wetlands, and to continue to protect these resources for the long term. These elements of the City's green infrastructure cannot continue to be compromised, as they represent a direct lifeline to the vitality of the City as a whole: without ample, clean water resources, the City of Raleigh cannot survive long-term droughts, much less thrive with current and projected levels of population. The core goals to be fulfilled by these water quality and conservation policies include: keeping rainfall on-site as much as possible, thereby mimicking the flow of water in a natural setting and reducing non-point source pollution from stormwater run-off; increasing water conservation measures, and reducing overall demand for water; minimizing soil erosion and sedimentation; reducing flood damage; and reducing nutrient loads.

Narrative excerpts from Stormwater Public Utility Element
Runoff degrades the environment and imposes costs on downstream communities and the public sector. Ongoing improvements to the City's stormwater infrastructure, programs, and regulations will be directed to improving the overall health of urban watersheds. Through sustainable practices that protect water quality, enhance fish and wildlife habitat, and provide for urban green spaces an improved quality of life will be realized.

Applicable Action Items	**Action EP 3.1: Demonstration Projects** Work with other City departments, regional partners, and the local development community to promote demonstration projects within the City of Raleigh that use multiple water conservation measures on single sites. Incorporate Best Management Practices (BMPs) such as green roofs, bioretention cells, permeable pavers, large- and small-scale rainwater harvesting, innovative wastewater treatment and re-use systems, and grey water. Offer incentives, such as grants, fee waivers, tax breaks, and/or density bonus or transfer provisions for participating in demonstration programs. **Action EP 3.2: Low Impact Development Ordinance** Develop and adopt an incentive-based LID ordinance so that rainwater is retained and absorbed on-site as an alternative to traditional approaches that include piping, channelization, and regional detention. **Action EP 3.4: Water Quality Management Projects** Identify and retrofit specific sites in the City of Raleigh where water quality management projects can be installed in existing developments. **Action PU 5.4: Green Infrastructure Study** Undertake a green infrastructure study that identifies landscapes where stormwater can be absorbed naturally. Model both watersheds and sub-watersheds for the amount of green infrastructure that is present to perform this function. **Action T 1.3: Context Sensitive Solutions** Adopt context sensitive solution practices to determine the most appropriate transportation improvements to minimize environmental impacts and serve adjacent and future land uses within a multi-modal network. These practices should be included in a revision to the Streets, Sidewalks, and Driveway Access Handbook.

Summary of Text Changes

Summary	These text changes would amend various UDO sections in Chapters 1, 2, 7, 8, 9, and 12. Refer to specific UDO text changes given in the accompanying table titled Recommended Text Changes for Advancing Green Infrastructure and Low Impact Development in Raleigh. In general, the majority of these text changes would provide options to developers and their designers for managing stormwater runoff in ways that reduce runoff volume and remove pollutants by using existing natural features or by constructing features that mimic nature. These text changes would achieve one or more of the following for design of stormwater-related aspects of site development: • Explicitly allow, but not require, use of green stormwater infrastructure (GSI) practices (rather than the status quo of passively allowing GSI practices by not prohibiting them); • Allow flexibility in selecting landscaping plant species (types, numbers, and

	placement) to support use of GSI practices; • Remove or provide flexibility with current requirements that are unnecessary, overly prescriptive, or conflict with use of GSI practices; and/or • Expand the types of allowable measures for meeting the City's requirements for control of stormwater runoff. Two of the recommended text changes in Chapter 9 would be new requirements for site development. Both would amend relatively narrow provisions for the Falls and Swift Creek Watershed Protection Overlay Districts: • Certain development lots would be subject to a limit on "buildable area" (a proposed new term defined in these text changes), rather than on "impervious surface area". These text changes are in response to concerns expressed by City Council members that use of GSI practices in water supply watersheds could result in more intensive site development than intended by the protections currently afforded by the UDO. • Certain developments would be required to use GSI practices, rather than conventional stormwater control practices, unless the cost of GSI practices is more than 1.25 times the next best alternative stormwater design that meets City requirements. This change would apply to streets where impervious surface coverage is greater than prescribed thresholds and to developments in a secondary water supply watershed protection area where buildable area exceeds a prescribed threshold. These text changes are intended to advance the use of GSI practices generally and to increase protection of these water supplies from export of pollutants from developed sites. Refer to the History/Overview section of the accompanying Zoning Staff Report.

Summary of Impacts

Impacts Identified	<u>Adoption of TC-4-17</u>: 1) Adoption of these text changes would help advance the use of GSI practices in Raleigh. Applied broadly, use of GSI practices will reduce erosion, scouring, and degradation of streams by reducing rates and volumes of stormwater runoff from development sites and by reducing amounts of pollutants carried to streams by runoff. Refer to benefits associated with each text change given in the accompanying table titled Recommended Text Changes for Advancing Green Infrastructure and Low Impact Development in Raleigh. <u>No Action:</u> 1) The City's objectives for advancing GI/LID in Raleigh would not be realized or would be realized only slowly.

Public Meetings

Submitted	***Committee***		***Planning Commission***	

Attachments

1. Table titled Recommended Text Changes for Advancing Green Infrastructure and Low Impact Development in Raleigh

Planning Commission Recommendation

Recommendation	
Findings & Reasons	
Motion and Vote	

This document is a true and accurate statement of the findings and recommendations of the Planning Commission. Approval of this document incorporates all of the findings of the attached Staff Report.

_____ _____

Planning Director Date Planning Commission Chairperson Date

Staff Coordinator: Eric Hodge: eric.hodge@raleighnc.gov

Zoning Staff Report – TC-4-17

Text Changes for Advancing Green Infrastructure and Low Impact Development in Raleigh

Request

Section References	Various UDO sections in Chapters 1, 2, 7, 8, 9, and 12. Refer to specific UDO sections given in the accompanying table titled Recommended Text Changes for Advancing Green Infrastructure and Low Impact Development in Raleigh.
Basic Information	Refer to Summary of Text Changes in the accompanying Certified Recommendation.
PC Recommendation Deadline	

Comprehensive Plan Guidance

Applicable Policies	Refer to items listed in the accompanying Certified Recommendation.
Action Items	Refer to items listed in the accompanying Certified Recommendation.

Contact Information

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History/Overview

At City Council work sessions in May and October 2016, staff provided updates on the implementation of the GI/LID Work Plan that the City Council approved in March 2015. Those updates provided information on the work of the two parallel stakeholder work groups and various other focus groups to address the work plan's priority items. These work groups completed their efforts in March 2016, and their recommendations are summarized in a staff memorandum to the City Council dated May 4, 2016. Details of the work groups' efforts can be found in materials provided to Council Members during the May work session, including the Implementation Work

Group Report, the Code Review Work Group Report, the May 4 summary memo, and GI/LID Fact Sheets that demonstrate use of these techniques within various development types. On December 6, 2016, Council authorized staff to prepare the UDO text changes for the Planning Commission's consideration.

Among other recommendations, the work groups and staff recommended making a number of text changes to the UDO, other ordinances, and associated manuals and handbooks for reducing real and perceived impediments to the use of GI/LID practices. For projects that incorporate GI/LID practices, these text changes and policy adjustments are intended to improve definition of practices that are and are not allowed and to make more predictable the processes and timelines for completing development plan reviews and obtaining permits.

In addition to these UDO text changes, other ordinances and design handbooks will be adjusted to remain consistent with the amended UDO.

Purpose and Need

Refer to Summary of Text Changes in the accompanying Certified Recommendation.

Alternatives Considered

None

Scoping of Impacts

Potential adverse impacts of the proposed text change have been identified as follows:

None.

The adverse impacts of taking no action (retaining the existing regulations) have been identified as follows:

The City's objectives for advancing GI/LID in Raleigh would not be realized or would be or would be realized only slowly.

Impacts Summary

Adoption of Proposed Text Change

Adoption of these text changes would help advance the use of GSI practices in Raleigh. Applied broadly, use of GSI practices will reduce erosion, scouring, and degradation of streams by reducing rates and volumes of stormwater runoff from development sites and by reducing amounts of pollutants carried to streams by runoff.

No action

The City's objectives for advancing GI/LID in Raleigh would not be realized or would be or would be realized only slowly.

RECOMMENDED UDO TEXT CHANGES FOR ADVANCING GREEN INFRASTRUCTURE AND LOW IMPACT DEVELOPMENT IN RALEIGH
PREPARED FOR THE TEXT CHANGE COMMITTEE OF THE CITY OF RALEIGH PLANNING COMMISSION
COMMITTEE MEETING ON 5/16/2017

Current UDO Text	UDO Text Change	*Explanation*
UDO Chapter 1 – Introductory Provisions		
UDO Section 1.5.3.C. Measurement, Exceptions & General Rules of Applicability; Coverage General Requirements 7. Above-ground stormwater detention facilities shall not be considered an outdoor amenity area.	7. ~~Above-ground stormwater detention facilities~~ Stormwater detention wet ponds and dry ponds shall not be considered an outdoor amenity area. GSI practices may be used to meet up to 10% of the requirement for the amenity area.	*Text changes to Sections 1.5.3.C. and 1.5.3.D. would explicitly allow GSI practices in required designated landscape areas/amenity areas or for GSI practices to count toward required landscaping/amenities. These changes also would name specific types of stormwater devices that explicitly are not allowed as or within amenity areas.* *These changes are intended to encourage use of GSI practices by enabling them to be co-located with or within required amenity areas, potentially reducing site development costs for landscaping and stormwater management.*
UDO Section 1.5.3.D. Measurement, Exceptions & General Rules of Applicability; Additional Requirements for Urban Plazas 2. Amenity areas may contain any one of the following: benches, seats, tables, eating areas, plazas, courtyards, fountains, active recreation areas, or public art.	2. Amenity areas ~~may~~shall contain ~~any~~ one of the following: benches, seats, tables, eating areas, plazas, courtyards, fountains, active recreation areas, or public art. In addition, vegetated GSI practices may be located within the amenity area and may be used to meet up to 10% of the requirement for the amenity area. Stormwater detention wet ponds and dry ponds shall not be considered an outdoor amenity area.	
UDO Chapter 2 – Residential Districts		
UDO Section 2.5.2.A. Open Space Allocation 2. Natural resource buffers required along primary and secondary watercourses.	2. Natural resource buffers required along primary and secondary watercourses (see open space bonus allowance in Sec. 9.2.3 A.1.d).	*This text change would provide cross reference to the open space bonus being added as a text change to Sec. 9.2.3.A.1.d.*
UDO Chapter 7 – General Development Standards		
UDO Section 7.1.4. Parking, Vehicle Parking Reductions Not addressed in the current UDO.	E. Minimum required parking may be reduced by one parking space for each tree 12 inches in diameter or larger that is preserved within the parking lot or elsewhere on the development site within 50 feet of the parking area (reduction not to exceed 2 parking spaces or 10% of the total required parking spaces, whichever is greater). The preserved trees shall be specified on the recorded plat.	*This text change would allow preservation of mature trees within and/or near required parking areas by allowing reduction of the number of required parking spaces.* *This change is intended to preserve natural green infrastructure and aesthetics and decrease urban heating.*
UDO Section 7.1.7.A. Parking, Vehicle Parking Lot Landscaping, Intent 1. The intent of the vehicle parking lot landscaping requirements is to minimize the visual impacts of large areas of vehicular parking as viewed by the public right-of-way and dissipate the effects of the urban heat island.	1. The intent of the vehicle parking lot landscaping requirements is to minimize the visual impacts of large areas of vehicular parking as viewed by the public right-of-way, minimize the impacts of stormwater runoff, and dissipate the effects of the urban heat island.	*Text changes to Sections Section 7.1.4.A., 7.1.7.A., 7.1.7.C., 7.1.7.D., and 7.1.7.E. would explicitly allow GSI practices as part of or within required landscaping of parking lot islands.* *These changes are intended to encourage use of GSI practices by enabling them to meet requirements for both stormwater management and landscaping, thereby decreasing costs of landscaping and stormwater management.*
UDO Section 7.1.7.C. Parking, Vehicle Parking Lot Landscaping, Perimeter Islands 2. A landscaped perimeter island must be a minimum of 5 feet wide, landscaped with shrubs installed at a rate of 30 shrubs per 100 linear feet that under typical conditions can be expected to reach a height and spread of 3 feet within three years of planting. All shrubs shall be a minimum of 18 inches tall when planted. In lieu of planting a hedge, a wall at least three feet in height may be installed.	2. A landscaped perimeter island must be a minimum of 5 feet wide, landscaped with shrubs installed at a rate of 30 shrubs per 100 linear feet that under typical conditions can be expected to reach a height and spread of 3 feet within three years of planting. All shrubs shall be a minimum of 18 inches tall when planted. In lieu of planting a hedge, a wall at least three feet in height may be installed. GSI practices may be located in perimeter islands if part of an approved stormwater management plan for the site. The shrub requirements may be met within GSI practices.	

Current UDO Text	UDO Text Change	*Explanation*
UDO Section 7.1.7.D. Parking, Vehicle Parking Lot Landscaping, Interior Islands Not addressed in the current UDO.	5. GSI practices may be located in interior islands and terminal islands if part of an approved stormwater management plan for the site. Required shade trees may be placed within GSI practices. A maintenance plan must be approved for the GSI practices according to Sec. 9.2.2.D.	*Text changes to Sections Section 7.1.4.A., 7.1.7.A., 7.1.7.C., 7.1.7.D., and 7.1.7.E. would explicitly allow GSI practices as part of or within required landscaping of parking lot islands.* *These changes are intended to encourage use of GSI practices by enabling them to meet requirements for both stormwater management and landscaping, thereby decreasing costs of landscaping and stormwater management.*
UDO Section 7.1.7.E Parking, Vehicle Parking Lot Landscaping, Median Islands Not addressed in the current UDO.	5. GSI practices may be located in median islands if part of an approved stormwater management plan for the site. Required shade trees and required shrubs may be placed within GSI practices. A maintenance plan must be approved for the GSI practices according to Sec. 9.2.2.D.	
UDO Section 7.2.4.A. Landscaping and Screening; Protective Yards, Transitional Protective Yards Not addressed in the current UDO.	3. GSI practices shall be allowed in Transitional Protective Yard Types A2, B1 and B2. In order to accommodate GSI practices the number of shrubs may be reduced in Protective Yards by 10%.	*Text changes to Sections 7.2.4.A, 7.2.4.B., and 7.2.5.A would explicitly allow GSI practices in required landscape areas/amenity areas and/or to count toward required landscaping/amenities.* *These changes are intended to encourage use of GSI practices by not requiring stormwater management to compete with landscaping for available space, thereby decreasing costs of landscaping and stormwater management.*
UDO Section 7.2.4.B. A Landscaping and Screening; Protective Yards, Street Protective Yards Not addressed in the current UDO.	4. GSI practices shall be allowed in Street Protective Yard Types C1, C2, and C3. In order to accommodate GSI practices the number of shrubs may be reduced in Protective Yards by ten (10) percent.	
UDO Section 7.2.5.A. Landscaping and Screening; Screening, Drive-Thru Facilities 3. Screening must be a continuous compact evergreen hedge. At the time of installation, such screening must be at least 36 inches in height and reach a height of 48 inches within 3 years of planting. 4. In lieu of compact evergreen hedge, a screening wall with a minimum height of forty-eight (48) inches may be installed. The wall must be compatible with the principal building in terms of texture, quality, material, and color.	3. Screening must be a continuous compact evergreen hedge. At the time of installation, such screening must be at least 36 inches in height and reach a height of 48 inches within 3 years of planting. 4. The following ~~Two~~ options may be used in lieu of compact evergreen hedge: (1) a combination of plants within GSI practices proposed to be part of an approved stormwater management plan and evergreen plants outside such GSI practices that together, at the time of planting, provide screening at least 36 inches above the level of the ground adjacent to the GSI practice, and reach a height at least 48 inches above adjacent ground level within 3 years of planting; or (2) a screening wall with a minimum height of 48 inches may be installed. The wall must be compatible with the principal building in terms of texture, quality, material, and color.	
UDO Section 7.2.7.C. Design and Installation; Plant Material 1.d. Trees cannot be planted within a tree conservation area or the critical root zone of an existing tree and must be planted at least 15 feet from any other tree and no further than 50 feet from any other tree, measured from tree trunk to tree trunk.	1.d. Trees cannot be planted within a tree conservation area or the critical root zone of an existing tree~~. and must be planted at least 15 feet from any other tree and no further than 50 feet from any other tree, measured from tree trunk to tree trunk.~~	*This text change would remove current requirements that are unnecessary and overly prescriptive, conflict with use of GSI practices, and do not support other UDO landscaping and tree-planting requirements.* *This change is intended to encourage use of GSI practices by removing an unneeded requirement that discourages use of GSI practices.*
UDO Section 7.2.7.C. Design and Installation; Plant Material 4. Additional Requirements for Trees in a Protective Yard a. In a protective yard, 50% of required trees shall be locally-adaptive evergreen species.	4.Additional Requirements for Trees in a Protective Yard a. In a protective yard, 50% of required trees shall be locally-adaptive evergreen species, except where an approved GSI practice is within a protective yard. b. Protective Yard vi. To accommodate multi-functional GSI practices as part of an approved stormwater management plan, the number of shrubs may be reduced in Protective Yards by 10%, non-evergreen species may be used in lieu of up to 35% of evergreen shrubs, and all shrubs may be 24 inches when planted.	*This text change would allow flexibility in the number and size of shrubs and use of non-evergreen species in protective yards as part of an approved stormwater management plan that employs GSI practices.* *This change is intended to encourage use of GSI practices by introducing flexibility to the currently rigid requirement that precludes plantings that are conducive to use of GSI practices. To be most effective, GSI practices require appropriate types, sizes, and spacing of plants.*

Current UDO Text	UDO Text Change	*Explanation*
UDO Chapter 8 – Subdivision & Site Plan Standards		
UDO Section 8.4.1.D. New Streets, General Provisions; Tree Planting **D. Tree Planting** 1. Unless otherwise noted below, all trees planted in accordance with the Article must be shade trees. 2. Where overhead utilities exist, 1 understory tree shall be planted every 20 feet on center, on average. 3. All required street trees must meet the design and installation requirements of Sec. 7.2.7. 4. Where development abuts a street controlled by the North Carolina Department of Transportation, street trees may not be required in the right-of-way, at the discretion of the North Carolina Department of Transportation. In this instance a Type C2 street protective yard is required in accordance with Sec. 7.2.4.	**D. Tree Planting** 1. Unless otherwise noted below, all trees planted in accordance with the Article must be shade trees. 2. Where overhead utilities exist, 1 understory tree shall be planted every 20 feet on center, on average. Required understory trees may be installed within GSI practices. Up to 20% of required understory trees may be offset by installing vegetated GSI practices, such as stormwater planter boxes. A maintenance plan must be approved for the GSI practice according to Sec. 9.2.2.D. 3. All required street trees must meet the design and installation requirements of Sec. 7.2.7. If a GSI practice is part of an approved stormwater management plan for the site, required street trees may be installed within the GSI practice. A maintenance plan must be approved for the GSI practice according to Sec. 9.2.2.D. 4. Where development abuts a street controlled by the North Carolina Department of Transportation, street trees may not be required in the right-of-way, at the discretion of the North Carolina Department of Transportation. In this instance a Type C2 street protective yard is required in accordance with Sec. 7.2.4.	*Text changes to Sections* 8.4.1.D., 8.5.1.D., and 8.5.2. *would explicitly allow GSI practices to help meet requirements for new street trees and streetscape planting areas.* *These changes are intended to encourage use of GSI practices by enabling them to meet requirements for both stormwater management and landscaping, thereby decreasing costs of landscaping and stormwater management.*
UDO Section 8.5.1.D. Existing Streets, General Provisions; Tree Planting **D. Tree Planting** 1. Unless otherwise noted below, all trees planted in accordance with this Article must be shade trees. 2. Where overhead utilities exist, 1 understory tree shall be planted every 20 feet on center, on average.	**D. Tree Planting** 1. Unless otherwise noted below, all trees planted in accordance with the Article must be shade trees. 2. Where overhead utilities exist, 1 understory tree shall be planted every 20 feet on center, on average. Required understory trees may be installed within GSI practices. Up to 20% of required understory trees may be offset by installing vegetated GSI practices, such as stormwater planter boxes. A maintenance plan must be approved for the GSI practice according to Sec. 9.2.2.D. 3. All a required street trees must meet the design and installation requirements of Sec. 7.2.7. If a GSI practice is part of an approved stormwater management plan for the site, required street trees may be installed within the GSI practice. A maintenance plan must be approved for the GSI practice according to Sec. 9.2.2.D.	
UDO Section 8.5.2. Existing Streets, Streetscape Types The required streetscape type is determined by the zoning district or by the designated frontage. Where there is conflict between a designated frontage and the zoning district, the designated frontage standard applies. The Planning and Development Officer shall make the final determination. Design specifications for streetscape improvements can be found in the Raleigh Street Design Manual and City Tree Manual.	The required streetscape type is determined by the zoning district or by the designated frontage. Where there is conflict between a designated frontage and the zoning district, the designated frontage standard applies. Dimensional standards for planting area, tree spacing, and utility placement and the planting type may be varied to accommodate GSI practices. The Planning and Development Officer and the Urban Forester shall make the final determination. Design specifications for streetscape improvements can be found in the Raleigh Street Design Manual, ~~and~~ the City Tree Manual, and the City Stormwater Design Manual.	

Current UDO Text	UDO Text Change	*Explanation*
UDO Article 8.6. Reimbursements Reimbursement for stormwater facilities is not explicitly addressed in the current UDO.	**UDO Section 8.6.x Stormwater** **A. Improvements Eligible for Reimbursement** 1. The City may reimburse the developer for stormwater improvements that are related to the development and are over and above improvements needed for the development to comply with any ordinance or regulation. 2. The following improvements may be eligible for reimbursement: a. Stormwater treatment practices, including GSI practices, for treating stormwater otherwise conveyed within street rights-of-way and/or from City-owned property; and b. Stormwater conveyances, including pipes, culverts, ditches, swales, and channels, associated with and needed for such stormwater treatment practices. 3. Eligibility for reimbursement shall be subject to availability of funds and to prior determination of eligibility for reimbursement by the Engineering Services Director or a designee. **B. Method and Conditions of Reimbursement** 1. The Development Fee Schedule is adopted by the City Council 2. The current Development Fee Schedule is kept on file in the office of the Transportation Department Director. 3. Reimbursement for eligible costs shall be in accordance with items and corresponding rates given in the Development Fee Schedule, except as provided herein. 4. Reimbursement rates shall be the rates in the Development Fee Schedule in effect when the improvement is determined by the City to be eligible. 5. In addition to reimbursement for items given in the Development Fee Schedule, the City may reimburse the developer for costs of other work necessary for the improvement and/or are incidental to the development of the general area which, in the opinion of the City Council, should properly by borne by the City. The City shall set forth the terms of such reimbursement.	*This text change would provide a mechanism for the City to engage private developers in installing GSI practices in existing or proposed street rights-of-way adjacent to their development or redevelopment sites. GSI projects in street rights-of-way were not envisioned in the drafting of the UDO, and this text change will clearly identify GSI stormwater projects in street rights-of-way as eligible for reimbursement by the City.* *This change is intended to enable the City to leverage developers' required improvements in rights-of-way for implementing GSI practices desired by the City.*
UDO Section 8.8.2. Piping of Watercourses; Retaining Stormwater Onsite and Piping of Watercourses B. All natural watercourses shall remain open and unaltered unless piping, enclosing, or altering is requested and justified.., but then only when the following conditions are met: 1. The developer must connect the development pipe system to an existing public or private pipe storm drainage system when such system is determined by the Director of Public Works to be reasonably accessible. 7. Where natural drainage systems are used or where an approved pipe drainage system cannot be connected to an existing public pipe drainage system, a developer must do all the grading to assure positive flow of stormwaters of the design storm and provide ~~all~~ drainage structures that are necessary to properly carry stormwater to locations which are acceptable to the Public Works Director.	B. The City encourages retaining stormwater onsite through rainwater harvesting, infiltration, and/or evaporation and through preserving natural drainage features. All natural watercourses shall remain open and unaltered unless piping, enclosing, or altering is requested and justified.., but then only when the following conditions are met: 1. Where the Engineering Services Director has determined that an existing public or private storm drainage system is reasonably available, t~~T~~he developer must either connect the development pipe system to said ~~an existing public or private pipe~~ storm drainage system or, during the administrative site review meeting for the development, propose options for using GSI practices as a part the site's stormwater management plan.~~when such system is determined by the Engineering Services Director of Public Works to be reasonably accessible.~~ 7. Where natural drainage systems are used or where an approved pipe drainage system cannot be connected to an existing public pipe drainage system, a developer must ~~do all the grading~~ grade to assure positive flow of ~~stormwaters of~~ runoff from ~~the~~ design storms and provide ~~all~~ drainage structures that are necessary to properly carry stormwater to locations which are acceptable to the ~~Public Works~~Engineering Services Director. Such grading shall not preclude the use of practices that retain the stormwater onsite.	*The text change in item B.1. would provide an alternative to the current UDO requirement for a development's altered watercourses and drainage features to be connected to an existing public or private pipe storm drainage system when such system is accessible. This alternative would enable the developer to propose options for using GSI practices. These current requirements conflict with the GSI approach of managing, distributing, and infiltrating stormwater on site, generally within natural areas and landscaped areas.* *This change is intended to encourage use of GSI practices by providing an alternative to a currently rigid requirement.* *The text change in item B.7. would retain the basic intent of a development being graded "to assure positive flow", while allowing for practices that hold stormwater on the site in order for it to soak into the ground and be absorbed by plants (be retained), thus reducing the volume of runoff from the site.* *This change is intended to communicate flexibility in balancing objectives of site drainage with goals of reducing stormwater volume (the basic tenant of GSI).*

Current UDO Text	UDO Text Change	*Explanation*
UDO Chapter 9 – Natural Resources Protection		
UDO Section 9.2.2.B.1. Active Stormwater Control Measures **B. Nitrogen Reduction** 1. Requirement a. Any new or expansion of existing development, not in compliance with the stormwater control master plan approved for its drainage basin, may not contribute a nitrogen export load exceeding 3.6 pounds per acre per year. b. Compliance with stormwater control master plan must include the installation within the development of all stormwater control measures shown on the stormwater control master plan, payment of fees in lieu of installation, when allowed by the City and payment of any applicable drainage fees.	**B. Nitrogen Reduction** 1. Requirement a. Any new or expansion of existing development, not in compliance with the stormwater control master plan approved for its drainage basin, may not contribute a nitrogen export load exceeding 3.6 pounds per acre per year. b. Compliance with stormwater control master plan must include the installation within the development of all stormwater control measures shown on the stormwater control master plan, payment of fees in lieu of installation, when allowed by the City and payment of any applicable drainage fees. c. Stormwater control measures shown on the stormwater control master plan for a new development or expansion of existing development that are demonstrated to control stormwater on a runoff volume basis will be deemed to meet the nitrogen export load requirement, provided that the pre-development volume of stormwater leaving the site is equal to or less than the post-development volume of stormwater leaving the site based on the 90th percentile storm. For the purposes of meeting this requirement for new development sites, the pre-development land cover must be assumed to be forested for the entire development site. For redevelopment of a developed site, any impervious area added as part of the redevelopment must be assumed to be forested in the pre-development condition. In any case, output from appropriate Nutrient Sensitive Waters methodology shall be provided to the City for purposes of recordkeeping and reporting.	*This text change would enable an alternative method for meeting the City's nitrogen export load requirement by allowing demonstration that the volume of runoff from the development site after development will be no more than the volume before development.* *This change is intended to encourage use of GSI practices in new development and redevelopment.*
UDO Section 9.2.2.E.2.c. Stormwater Runoff Controls; Exemptions The maximum impervious surface coverage for the lot, including existing impervious cover is not more than 15%, and the remaining pervious portions of the lot are utilized to convey and control the stormwater.to the maximum extent practical.	The maximum impervious surface coverage for the lot, including existing impervious cover is not more than ~~15~~ 10 %, and the remaining pervious portions of the lot are utilized to convey and control the stormwater to the maximum extent practical.	*For a residential lots that do not mitigate for peak discharge, this text change would lower the maximum impervious surface cover from 15% to 10%. Lots with more than 10% impervious surface cover would be required to implement controls measures to mitigate peak discharge.* *This change is intended to reduce the volume of stormwater runoff from new residential lots and from lots undergoing redevelopment. Numerous studies have shown that stream health and water quality tend to degrade when impervious surface area for the drainage area is higher than 10%.*
UDO Section 9.2.3 A.1. Watercourse Buffers; Natural Resource Buffers, General Rules Not addressed in the current UDO.	d. Open space requirements for Conservation Development and Compact Development (Sec 2.5), and Planned Development (Sec. 4.7) may receive an open space bonus if the site exceeds the minimum natural resource buffer requirement. The open space bonus shall be based on a sliding-scale factor from 0.9 (10% greater than required buffer) to 0.5 (100% greater than required buffer). The open space credit factor shall be determined as follows: (Area of required natural resource buffer)/(Area of proposed natural resource buffer) = Credit Factor. See required buffer area in Section 2.5.2.A.2. This credit factor may be multiplied times the required open space area and may meet up to 50% of Conservation Development, Compact Development, and Planned Development open space requirements. This bonus does not apply to open space requirements in Section 9.2, Stormwater Management.	*For developments qualifying as Conservation Development, Compact Development, or Planned Development, this text change would offer an open space bonus for natural resource buffers widths that exceed the minimum required. The current UDO does not offer such a bonus.* *This change is intended to serve as an incentive for use of this GSI practice. Wider stream buffers provide more stormwater treatment and infiltration. Raleigh has less stringent requirements for stream buffer width than several neighboring jurisdictions in the Triangle.*

<table>
<tr><th>Current UDO Text</th><th>UDO Text Change</th><th>Explanation</th></tr>
<tr>
<td>UDO Section 9.5.1.C. Urban Watershed Protection Overlay District; Required Stormwater Measures
1. Stormwater Retention, Detention and Capture
Within any primary or secondary watershed protection area, lots which are connected to both City water and sewer utilities and have a total maximum impervious surface of more than 24%, provided that the first ½ inch of stormwater which directly or indirectly runoff off the surface in excess of 24%, from the lot is:
a. Retained for either infiltration into the soil or for evaporation into the air;
b. Detained for at least a 12-hour period; or
c. Captured by an approved stormwater treatment device.</td>
<td>1. Stormwater Retention, Detention and Capture
Within any primary or secondary watershed protection area, lots which are connected to both City water and sewer utilities and have a total maximum impervious surface of more than 24%, provided that the first ½ inch of stormwater which directly or indirectly runoff off the surface in excess of 24%, from the lot is:
a. Retained for ~~either~~ water harvesting and use on the site, infiltration into the soil, ~~or for~~ evaporation into the air, or a combination of these;
b. Detained for at least a 12-hour period; ~~or~~
c. Captured by an approved stormwater treatment device~~.~~; or
d. A combination of the above.</td>
<td>For residential lots in primary or secondary water supply watershed protection areas, this text change would enable use of rainwater harvesting/on-site water use as a method for pertly or wholly complying with requirements for stormwater retention, detention, and capture.
This change is intended to encourage use of this GSI practice.</td>
</tr>
<tr>
<td>UDO Section 9.5.2. Falls Watershed Protection Overlay District
A. Natural Resource Buffer Yards
Natural resource buffer yards consistent with Sec. 9.2.3 must be established.

B. Impervious Surface Coverage
1. All lots or portions of lots in existence prior to March 1, 1988 or lots established outside the subdivision process after this date, no additional impervious surface may be added to the property which would result in greater coverage by impervious surface than allowed by the following table:
<table>
<tr><th>Area</th><th>No Stormwater Control Measures</th><th>Retention, Detention or Capture First Half Inch of Runoff</th><th>Wet Ponds Capturing First Inch of Rainfall</th></tr>
<tr><td>Primary water supply watershed protection areas</td><td>6%; or 3,500 sq. ft. if this is not more than 12%</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Secondary water supply watershed protection areas not connected to both City water and sewer utilities</td><td>12%; or 3,500 sq. ft. if this is not more than 24%</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Secondary water supply watershed protection areas with connections to both City water and sewer utilities</td><td>12%; or 3,500 sq. ft. if this is not more than 24%</td><td>24%</td><td>30%; or 3,500 sq. ft. if this is not more than 50%; 70% in areas designated in the Comprehensive Plan for higher impervious surfaces</td></tr>
</table>
2. Impervious surfaces include all proposed public and private streets within the development approved after June 20, 1993 and all impervious surfaces on any lot and common area.

3. Calculation of the area of the development includes all subdivision lots, new street rights-of-way established ager June 20, 1993 and common area within the watershed. Calculation of the area of the development excludes any widening of existing street rights-of-way, existing street rights-of-way and new street rights-of-way reserved in accordance with the</td>
<td>A. Natural Resource Buffer Yards
Natural resource buffer yards consistent with Sec. 9.2.3 must be established.

B. Impervious Surface Coverage
1. For a~~A~~ll lots or portions of lots in existence prior to March 1, 1988 or lots established outside the subdivision process after this date, no additional impervious surface may be added to the property which would result in greater coverage by impervious surface or by buildable area than allowed by the following table:
<table>
<tr><th>Area</th><th>No Stormwater Control Measures</th><th>Retention, Detention or Capture First Half Inch of Runoff</th><th>Management of ~~Wet Ponds Capturing~~ First Inch of Rainfall</th></tr>
<tr><td>Primary water supply watershed protection areas</td><td>6% impervious surface; or 3,500 sq. ft. if this is not more than 12% impervious surface</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Secondary water supply watershed protection areas not connected to both City water and sewer utilities</td><td>12% impervious surface; or 3,500 sq. ft. if this is not more than 24% impervious surface</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Secondary water supply watershed protection areas with connections to both City water and sewer utilities</td><td>12% impervious surface; or 3,500 sq. ft. if this is not more than 24% impervious surface</td><td>24% impervious surface</td><td>30% buildable area; or 3,500 sq. ft. if this is not more than 50% buildable area; 70% buildable area in areas designated in the Comprehensive Plan for higher impervious surfaces</td></tr>
</table>
2. Impervious surfaces and buildable areas include all proposed public and private streets within the development approved after June 20, 1993 and all impervious surfaces and buildable areas on any lot and common area.</td>
<td>Text changes to Section 9.5.2 would apply to developments in the Falls Watershed Protection Overlay District:

1) The text change in item C.1.a. would expand the types of measures that can be used to meet stormwater retention requirements (i.e., reduce stormwater runoff volume) to also allow rainwater harvesting. This change would apply to any development in either District.
This change is intended to encourage use of rainwater harvesting as a GSI practice.

2) Text changes in items B. and C. would revise the current limit on additional impervious surface area such that it is based instead on “buildable area” (a proposed new term defined in this table under UDO Article 12.2, Defined Terms). This change would apply to any development in a secondary water supply watershed protection area on lots or portions of lots in existence prior to March 1, 1988 or on lots established outside the subdivision process after this date, with connections to both City water and sewer utilities, and with impervious surface areas of 24% or higher.
These text changes are proposed in response to concerns expressed by City Council members that use of GSI practices in water supply watersheds could result in more intensive site development than intended by the protections currently afforded by this UDO section. This topic was addressed in a City Council work session on 10/11/2016.

3) Text changes in items C.1.b., C.2.b., and C.3.a. would expand the types of stormwater retention, detention, and capture measures such that practices in addition to wetponds may be used. (This UDO section currently requires use of wetponds to the exclusion of other practices.) This change would apply to any development in a secondary water supply watershed protection area, for development of streets and of lots with impervious surface areas 24% or higher, as applied to capturing the first inch of rainfall.
These text changes are intended to encourage use of GSI</td>
</tr>
</table>

Current UDO Text	UDO Text Change	*Explanation*
Roadway Corridor Official Map Act, N.C. Gen Stat. Chapter 136 Article 2E. 4. All lots established after June 20, 1993 must comply the impervious surface coverage standards of the Article. 5. Substitutions of impervious surfaces in accordance with *Sec. 10.3.5.A.* are allowed. **C. Required Stormwater Measures** 1. Stormwater Retention, Detention and Capture a. Within any secondary watershed protection area, lots which are connected to both City water and sewer utilities and have a total maximum impervious surface of more than 3,500 square feet may have an impervious coverage of more than 12% and less than 24%; provided that the first ½ inch of stormwater which directly or indirectly runs off the surfaces in excess of 12%, from the lot is: i. Retained for either infiltration into the soil or for evaporation into the air; ii. Detained for at least a 12-hour period; or iii. Captured by an approved stormwater treatment device. b. Additional impervious surface coverage is allowed in secondary reservoir watershed protection areas when the first inch of rainfall (including the amount form the first 24% impervious surface coverage) is captured by a wet pond. 2. Stormwater Runoff From Streets a. Where impervious surface coverage is equal to or less than 12% in any primary water supply watershed protection area or equal to or less than 24% in any secondary water supply watershed protection area, the first ½ inch of stormwater runoff which runs of any street must be contained within the development capture methods set forth in *Sec. 9.5.2.C.1* above. b. Where impervious surface coverage is greater than 12% in any primary water supply watershed protection area or greater than 24% in any secondary water supply watershed protection area, the first inch of rainfall from streets must be captured in a wet pond in accordance with *Sec. 9.5.2.C.3.* below. 3. Wet Ponds a. When impervious surfaces exceed 24% in secondary reservoir watershed protection areas, the first inch of rainfall within an entire development shall be captured in a wet pond of standing water.	3. Calculation of the area of the development includes all subdivision lots, new street rights-of-way established ager June 20, 1993 and common area within the watershed. Calculation of the area of the development excludes any widening of existing street rights-of-way, existing street rights-of-way and new street rights-of-way reserved in accordance with the Roadway Corridor Official Map Act, N.C. Gen Stat. Chapter 136 Article 2E. 4. All lots established after June 20, 1993 must comply the impervious surface coverage standards and the buildable area coverage standards of the Article. 5. Substitutions of impervious surfaces in accordance with *Sec. 10.3.5.A.* are allowed. **C. Required Stormwater Measures** 1. Stormwater Retention, Detention and Capture a. Within any secondary watershed protection area, lots which are connected to both City water and sewer utilities and have a total maximum impervious surface of more than 3,500 square feet may have an impervious coverage of more than 12% and less than 24%; provided that the first ½ inch of stormwater which directly or indirectly runs off the surfaces in excess of 12%, from the lot is: i. Retained for ~~either~~ water harvesting and use on the site, infiltration into the soil~~, or for~~ evaporation into the air, or a combination of these; ii. Detained for at least a 12-hour period;~~ or~~ iii. Captured by an approved stormwater treatment device~~.~~; or iv. A combination of the above. b. Buildable area coverage of 24% or higher ~~Additional impervious surface coverage~~ is allowed in secondary reservoir watershed protection areas when the first inch of rainfall (including the amount from the first 24% buildable area ~~impervious surface~~ coverage) is captured ~~by a wetpond~~ by an approved stormwater treatment device. Such runoff must be managed using GSI in accordance with *Sec.9.5.2.C.3* below unless the cost of GSI is more than 1.25 times the next best alternative stormwater design that meets City requirements, based on information provided by the applicant/developer. 2. Stormwater Runoff From Streets a. Where impervious surface coverage is equal to or less than 12% in any primary water supply watershed protection area or equal to or less than 24% in any secondary water supply watershed protection area, the first ½ inch of stormwater runoff which runs of any street must be contained within the development capture methods set forth in *Sec. 9.5.2.C.1* above. b. Where impervious surface coverage is greater than 12% in any primary water supply watershed protection area or greater than 24% in any secondary water supply watershed protection area, the first inch of rainfall from streets must be ~~captured in a wetpond~~ managed using GSI in accordance with *Sec.9.5.2.C.3* below unless the cost of GSI is more than 1.25 times the next best alternative stormwater design that meets City requirements, based on information provided by the applicant/developer. 3. GSI Policy in Secondary Protection Areas ~~Wet Ponds~~ a. When buildable area ~~impervious surfaces~~ exceeds 24% in secondary reservoir watershed protection areas, the first inch of rainfall within ~~an~~the entire development ~~shall be captured in a wetpond of standing water~~ must be managed using GSI unless the cost of GSI is more than 1.25 times the next best alternative stormwater design that meets City requirements, based on information provided by the applicant/developer.	*practices by enabling their use, as well as use of conventional practices that are more effective than wetponds, for reducing pollutants loads and reducing stormwater runoff volume.* 4) *Text changes in items C.2.b. and C.3.a. would add a new requirement to use GSI practices, rather than conventional stormwater control practices, unless the cost of GSI practices is more than 1.25 times the next best alternative stormwater design that meets City requirements. This change would apply to the following areas in both Districts:* • *Development of any street where impervious surface coverage is greater than 12% in any primary water supply watershed protection area or greater than 24% in any secondary water supply watershed protection area, as applied to capturing the first inch of rainfall from such streets; and* • *Any development in a secondary water supply watershed protection area where buildable area exceeds 24%, as applied to the first inch of rainfall within the entire development.* *These text changes are intended to advance the use of GSI practices generally and to increase protection of these water supplies from export of pollutants from developed sites.*

Current UDO Text

UDO Section 9.5.3. Swift Creek Protection Overlay District

A. Natural Resource Buffer Yards

Natural resource buffer yards consistent with *Sec. 9.2.3* must be established.

B. Impervious Surface Coverage

1. All lots or portions of lots in existence prior to March 1, 1988 or lots established outside the subdivision process after this date, no additional impervious surface may be added to the property which would result in greater coverage by impervious surface than allowed by the following table:

Area	No Stormwater Control Measures	Retention, Detention or Capture First Half Inch of Runoff	Wet Ponds Capturing First Inch of Rainfall
Primary water supply watershed protection areas	6%; or 3,500 sq. ft. if this is not more than 12%	N/A	N/A
Secondary water supply watershed protection areas not connected to both City water and sewer utilities	12%; or 3,500 sq. ft. if this is not more than 24%	N/A	N/A
Secondary water supply watershed protection areas with connections to both City water and sewer utilities	12%; or 3,500 sq. ft. if this is not more than 24%	24%	30%; or 3,500 sq. ft. if this is not more than 50%; 70% in areas designated in the Comprehensive Plan for higher impervious surfaces

2. Impervious surfaces include all proposed public and private streets within the development approved after June 20, 1993 and all impervious surfaces on any lot and common area.

3. Calculation of the area of the development includes all subdivision lots, new street rights-of-way established ager June 20, 1993 and common area within the watershed. Calculation of the area of the development excludes any widening of existing street rights-of-way, existing street rights-of-way and new street rights-of-way reserved in accordance with the Roadway Corridor Official Map Act, N.C. Gen Stat. Chapter 136 Article 2E.

4. All lots established after June 20, 1993 must comply the impervious surface coverage standards of the Article.

5. Substitutions of impervious surfaces in accordance with *Sec. 10.3.5.A.* are allowed.

C. Required Stormwater Measures

1. Stormwater Retention, Detention and Capture

a. Within any secondary watershed protection area, lots which are connected to both City water and sewer utilities and have a total maximum impervious surface of more than 3,500 square feet may have an impervious coverage of more than 12% and less than 24%; provided that the first ½ inch of stormwater which directly or indirectly runs off the surfaces in excess

UDO Text Change

A. Natural Resource Buffer Yards

Natural resource buffer yards consistent with *Sec. 9.2.3* must be established.

B. Impervious Surface Coverage

1. For a~~A~~ll lots or portions of lots in existence prior to March 1, 1988 or lots established outside the subdivision process after this date, no additional impervious surface may be added to the property which would result in greater coverage by impervious surface or by buildable area than allowed by the following table:

Area	No Stormwater Control Measures	Retention, Detention or Capture First Half Inch of Runoff	Management of ~~Wet Ponds Capturing~~ First Inch of Rainfall
Primary water supply watershed protection areas	6% impervious surface; or 3,500 sq. ft. if this is not more than 12% impervious surface	N/A	N/A
Secondary water supply watershed protection areas not connected to both City water and sewer utilities	12% impervious surface; or 3,500 sq. ft. if this is not more than 24% impervious surface	N/A	N/A
Secondary water supply watershed protection areas with connections to both City water and sewer utilities	12% impervious surface; or 3,500 sq. ft. if this is not more than 24% impervious surface	24% impervious surface	30% buildable area; or 3,500 sq. ft. if this is not more than 50% buildable area; 70% buildable area in areas designated in the Comprehensive Plan for higher impervious surfaces

2. Impervious surfaces and buildable areas include all proposed public and private streets within the development approved after June 20, 1993 and all impervious surfaces and buildable areas on any lot and common area.

3. Calculation of the area of the development includes all subdivision lots, new street rights-of-way established ager June 20, 1993 and common area within the watershed. Calculation of the area of the development excludes any widening of existing street rights-of-way, existing street rights-of-way and new street rights-of-way reserved in accordance with the Roadway Corridor Official Map Act, N.C. Gen Stat. Chapter 136 Article 2E.

4. All lots established after June 20, 1993 must comply the impervious surface coverage standards and the buildable area coverage standards of the Article.

5. Substitutions of impervious surfaces in accordance with *Sec. 10.3.5.A.* are allowed.

C. Required Stormwater Measures

1. Stormwater Retention, Detention and Capture

Explanation

Text changes to Section 9.5.3 would apply to developments in the Swift Creek Watershed Protection Overlay District and are identical to those proposed for the Falls Watershed Protection Overlay District (9.5.2.).

Current UDO Text	UDO Text Change	*Explanation*
of 12%, from the lot is: i. Retained for either infiltration into the soil or for evaporation into the air; ii. Detained for at least a 12-hour period; or iii. Captured by an approved stormwater treatment device. b. Additional impervious surface coverage is allowed in secondary reservoir watershed protection areas when the first inch of rainfall (including the amount form the first 24% impervious surface coverage) is captured by a wet pond. 2. Stormwater Runoff From Streets a. Where impervious surface coverage is equal to or less than 12% in any primary water supply watershed protection area or equal to or less than 24% in any secondary water supply watershed protection area, the first ½ inch of stormwater runoff which runs of any street must be contained within the development capture methods set forth in *Sec. 9.5.3.C.1* above. b. Where impervious surface coverage is greater than 12% in any primary water supply watershed protection area or greater than 24% in any secondary water supply watershed protection area, the first inch of rainfall from streets must be captured in a wet pond in accordance with *Sec. 9.5.3.C.3.* below. 3. Wet Ponds a. When impervious surfaces exceed 24% in secondary reservoir watershed protection areas, the first inch of rainfall within an entire development shall be captured in a wet pond of standing water.	a. Within any secondary watershed protection area, lots which are connected to both City water and sewer utilities and have a total maximum impervious surface of more than 3,500 square feet may have an impervious coverage of more than 12% and less than 24%; provided that the first ½ inch of stormwater which directly or indirectly runs off the surfaces in excess of 12%, from the lot is: i. Retained for ~~either~~ water harvesting and use on the site, infiltration into the soil, ~~or for~~ evaporation into the air, or a combination of these; ii. Detained for at least a 12-hour period; ~~or~~ iii. Captured by an approved stormwater treatment device~~.~~; or iv. A combination of the above. b. Buildable area coverage of 24% or higher ~~Additional impervious surface coverage~~ is allowed in secondary reservoir watershed protection areas when the first inch of rainfall (including the amount from the first 24% buildable area ~~impervious surface~~ coverage) is captured ~~by a wetpond~~ by an approved stormwater treatment device. Such runoff must be managed using GSI in accordance with *Sec.9.5.3.C.3* below unless the cost of GSI is more than 1.25 times the next best alternative stormwater design that meets City requirements, based on information provided by the applicant/developer. 2. Stormwater Runoff From Streets a. Where impervious surface coverage is equal to or less than 12% in any primary water supply watershed protection area or equal to or less than 24% in any secondary water supply watershed protection area, the first ½ inch of stormwater runoff which runs of any street must be contained within the development capture methods set forth in *Sec. 9.5.3.C.1* above. b. Where impervious surface coverage is greater than 12% in any primary water supply watershed protection area or greater than 24% in any secondary water supply watershed protection area, the first inch of rainfall from streets must be ~~captured in a wetpond~~ managed using GSI in accordance with *Sec.9.5.3.C.3* below unless the cost of GSI is more than 1.25 times the next best alternative stormwater design that meets City requirements, based on information provided by the applicant/developer. 3. GSI Policy in Secondary Protection Areas ~~Wet Ponds~~ a. When buildable area ~~impervious surfaces~~ exceeds 24% in secondary reservoir watershed protection areas, the first inch of rainfall within ~~an~~the entire development ~~shall be captured in a wetpond of standing water~~ must be managed using GSI unless the cost of GSI is more than 1.25 times the next best alternative stormwater design that meets City requirements, based on information provided by the applicant/developer.	

Current UDO Text	UDO Text Change	*Explanation*
UDO Chapter 12 – Definitions		
UDO Article 12.2. Defined Terms Terms not defined in the current UDO.	**Buildable Area** The sum of the horizontal areas of materials existing or placed at the ground surface that have impervious surfaces, as defined herein, that are not 0% impervious, including but not limited to permeable and semi-permeable pavements and pavers, green roofs, and living roofs. **Green Stormwater Infrastructure (GSI)** Any of a number of practices that, used individually or collectively, contribute to managing, treating, and reducing stormwater runoff from a development or redevelopment site, as close as possible to the runoff's source, by preserving natural landscape features (such as vegetation, soils, hydrology, and natural processes) and/or by mimicking natural processes through installation and maintenance of structurally engineered devices (such as bioretention cells, bioswales, permeable paving/pavers, green roofs, stormwater street trees, and cisterns). In addition to contributing to stormwater management, GSI practices can enhance site aesthetics, improve air quality, reduce urban heat island impacts, provide shading, create wildlife habitat, reduce energy consumption, reduce infrastructure costs, and increase property values. **Vegetated GSI Practices** GSI practices that are predominantly vegetated at the surface of the practice. Examples of such practices include preserved natural areas, bioretention areas, and green roofs.	*These terms represent concepts that are introduced through text changes in many of the ordinances addressed herein.*