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MEMORANDUM

TO: Board of County Commissioners
Bonnie Hammersley, County Manager
Travis Myren, Deputy County Manager
John Roberts, County Attorney

FROM: Michael D. Harvey, Current Planning Supervisor
Craig Benedict, Planning Director

DATE: May 14, 2021

SUBJECT: SUMMARY of County's Watershed Management Program

This memorandum summarizes Orange County's watershed management and planning program, broken down as follows:

- I. Summary of State requirements, specifically:
 - I-A. Watershed Classifications (page 4);
 - I-B. 'Options' related to the adoption/implementation of local watershed management program(s) (page 8);
- II. Summary of the County's watershed management program, including:
 - II-A. Watershed Districts (page 13);
 - II-B. Residential development opportunities/constraints (page 16); and
 - II-C. Non-residential opportunities/constraints (page 21)
- III. Links to past BOCC meeting(s) involving the development of the County watershed management program (page 27).

Notes are provided throughout providing additional context.

EXECUTIVE SUMMARY: Orange County began watershed management/planning efforts in the mid/late 1980's, adopting regulatory standards (i.e. density, impervious surface limits, etc.) creating 13 separate watershed protection overlay districts in 1994.

As adopted, these standards were more restrictive from both a density and impervious surface allotment standpoint than required by the State.

Regulations were subsequently adopted establishing allowances for the State's 'high-density' development option in areas designated within the adopted 2030 Comprehensive Plan as suitable for 'urban' style development (i.e. residential and non-residential land uses). This includes establishing acreage 'caps' on non-residential land uses as well as allowing more impervious surface area for specified land uses, namely fire stations and solid waste convenience centers, in certain districts.

Urban style development (i.e. density exceeding 1 unit per acre and/or impervious typically exceeding 12% of land area) are permitted in the following overlay districts:

- Back Creek Watershed Protection Overlay District:
 - 10/20 Year Transition Land Use Category: Approximately 665 acres (4% of the watershed).

STAFF NOTE(s): Impervious is limited to 30% for residential development.

Under State regulations, approximately 1,808 acres of the watershed potentially qualifies for high-density development (i.e. 10% of the watershed). This calculation includes municipal corporate limits and extraterritorial jurisdictional (ETJ) areas.

Impervious area for non-residential development within the Back Creek Protected Watershed Protection Overlay District cannot exceed 163 acres cumulative acres.
- Upper Eno Protected Watershed Protection Overlay District:
 - 10/20 Year Transition Land Use Category: Approximately 1,713 acres (7% of the County watershed area);

STAFF NOTE: The County designates more land within the 'critical' portion of the watershed (State recognizes approximately 2,164 acres while the County recognizes 14,541 acres).

Impervious is limited to 30% for residential development.

Under State regulations, approximately 2,400 acres qualifies for high-density development (i.e. 10% of the watershed). This calculation is based on the County's watershed designations and includes municipal corporate limits and extraterritorial jurisdictional (ETJ) areas.¹
 - Commercial Industrial Transition Activity Node (CITAN) Land Use Category: Approximately 736 acres (3% of the County watershed area);
 - Economic Development Land Use Category: Approximately 712 acres (3% of the watershed).

¹ County staff has previously argued high-density allowance should be based on State defined watershed areas, allowing for approximately 3,637 acres (i.e. 10% of the watershed at 70% impervious). There has not been a definitive response from State staff on this determination.

STAFF NOTE: Current regulations allow 70% impervious in these land use categories.²

Impervious area for non-residential development within the Upper Eno Protected Watershed Protection Overlay District cannot exceed 1,151 cumulative acres.

A total of 3,161 acres is reserved for some form of 'high-density' development. Developments exceeding 30% impervious surface area are limited to a cumulative total of 1,151 acres (i.e. 50% of the watershed overlay district). This is more restrictive than the State would require.

- Lower Eno Protected Watershed Protection Overlay District.
 - Economic Development: Approximately 957 acres (4.5% of the watershed);
 - 10/20 Year Transition Land Use Category: Approximately 298 acres (1.5% of the watershed).

STAFF NOTE: There is no 'cumulative acreage limit' on impervious area for non-residential development within this watershed.

- Jordan Lake Protected Watershed Protection Overlay District:
 - 10/20 Year Transition Land Use Category: Approximately 207 acres (9% of the watershed).³

Approximately 16% of the county is 'viable' for urban style development/intensities.

There are concern(s) our high-density development standards, specifically within the Upper Eno Protected Watershed Protection Overlay district, are inconsistent with State allowances. These concerns arose with the public review/discussion of the Buckhorn Area Plan (BAP).

The County's watershed management program complies with State standards, including the high-density development option(s). Current regulations establish more restrictive standards than the State requires, most notably a cumulative acreage limit on non-residential development activity within various watersheds. The County also designates less overall land area for 'high-density' development than the State would typically allow.

The State periodically audits local programs to verify compliance with applicable regulations. The last audit, occurring in 2009, found our program to be in good standing. This included our methodology for allowing high-density development in specified areas of the County, allowing for a maximum of 70% impervious surface area in specified land use categories, and adoption/enforcement of cumulative acreage limits.

² Stormwater control measures (SCMs) are required for projects exceeding 12% impervious, or 5,227 sq.ft. of impervious area per 1 acre of property.

I-A: STATE PROGRAM REQUIREMENTS - WATERSHED CLASSIFICATIONS:

The following is a summary of the State’s water supply classification system:

State Classification (i.e. designation):		Description:	Present in Orange County:
Water Supply I (WS-I)		Protected for various uses (i.e. secondary recreation ⁴ , fishing, wildlife/aquatic life, survival and maintenance of biological integrity, agriculture, etc.) including serving as a water supply ⁵ . Includes waters within public ownership.	No WS-I designated waters located within Orange County
Water Supply II (WS-II)	Critical Area (CA)	Source of water supply where WS-I classification is not feasible. Generally located in predominantly undeveloped watersheds.	(WSII CA): Yes (critical watershed designation) including University Lake, Cane Creek, Upper Eno.
	Balance of Watershed (BA)	WS-II waters are classified as High Quality Waters (HQW) ⁶ and qualify for designation as a Nutrient Sensitive Water (NSW) ⁷ by the State.	(WS II BA): Yes (protected watershed designation) including University Lake, Cane Creek, Upper Eno, Little River, Back Creek, and South Hyco Creek.
Water Supply III (WS-III)	Critical Area (CA)	Sources of water supply where WS-I or II classification is not feasible. Generally located in low to moderately developed watersheds. Qualify for designation as a Nutrient Sensitive Water (NSW) by the State.	(WS III CA): No
	Balance of Watershed (BA)		(WS III BA): Yes (protected watershed designation) Flat River.
Water Supply IV (WS-IV)	Critical Area (CA)	Sources of water supply where WS-I, II or III classification is not feasible. Generally located in moderately to highly developed watersheds or Protected Areas. Qualify for designation as a Nutrient Sensitive Water (NSW) by the State.	(WS IV CA): No
	Protected Area (PA)		(WS IV PA): Yes (protected watershed designation) including Lower Eno, Haw River, and Jordan Lake.

³ Listed due to location within the 10/20 Year Transition Area land use category. Minimum required lot size/density of parcels is 2 acres consistent with underlying zoning (Rural Buffer) and provisions of the Joint Planning Land Use Plan and Agreement.

⁴ Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner.

⁵ Designation as being suitable for use as ‘water supply’ includes drinking, culinary, and food processing uses.

⁶ High Quality Waters (HQW) is a State supplemental classification intended to protect waters rated excellent based on biological and physical/chemical characteristics through Division monitoring or special studies, primary nursery areas designated by the Marine Fisheries Commission, and other functional nursery areas designated by the Marine Fisheries Commission.

⁷ Nutrient Sensitive Waters (NSW) is a State supplemental classification intended for waters needing additional nutrient management due to being subject to excessive growth of microscopic or macroscopic vegetation.

State Classification (i.e. designation):	Description:	Present in Orange County:
Water Supply V (WS-V)	Protected as water supplies, generally upstream and draining into a Class WS-IV waters, waters used by industry to supply employees with drinking water, or waters formerly used as water supply.	No WS-V designated waters located within Orange County.

NOTES:

1. Under State rules, Critical Area is defined as: *The area adjacent to a water supply intake or reservoir where risk associated with pollution is greater than from the remaining portions of the watershed. The critical area is defined as extending either one-half mile from the normal pool elevation of the reservoir in which the intake is located or to the ridge line of the watershed (whichever comes first); or one-half mile upstream from the intake located directly in the stream or river (run-of-the-river), or the ridge line of the watershed (whichever comes first). Local governments may extend the critical area as needed. Major landmarks such as highways or property lines may be used to delineate the outer boundary of the critical area if these landmarks are immediately adjacent to the appropriate outer boundary of one-half mile.*
2. The State defines the term ‘Balance of Watershed’ as: *The area adjoining and upstream of the critical area in a WS-II and WS-III water supply watershed. The "balance of watershed" is comprised of the entire land area contributing surface drainage to the stream, river, or reservoir where a water supply intake is located.*

STAFF COMMENT: ‘Balance of Watershed’, as defined by the State, is synonymous with the term ‘Protected Area’ as defined/utilized in the County’s watershed management program.

3. The aforementioned table can be summarized as follows:

State Classification:	County Designation:	Approximate Acreage (State Designated):
WS-II Critical Area:	University Lake	2,241.7
	Cane Creek	4,227.6
	Upper Eno	2,164 ⁸
WS-II Balance of Watershed (i.e. protected watershed area):	University Lake	15,222.5
	Cane Creek	14,199.5
	Upper Eno	36,377 ⁹
	Back Creek	18,088.7
	Little River	40,602.5
	South Hyco Creek	3,487.9

⁸ The County has established an Upper Eno Critical area of 14,541 acres.

⁹ The County recognizes an Upper Eno Protected area of 23,727 acres. As previous indicated under State rules, approximately 3,637 acres qualifies for 70% impervious area (i.e. 10% of the balance of the watershed). County regulations cap impervious area (i.e. area over 30%) to 1,151 acres of the watershed.

State Classification:	County Designation:	Approximate Acreage (State):
WS-III Balance of Watershed (i.e. protected watershed area):	Flat River	6,636
WS-IV Balance of Watershed (i.e. protected watershed area):	Haw River	6,264.1
	Lower Eno	21,019.4
	Jordan Lake	10,247.8

4. Approximately 75,814.9 acres is not located within a State classified watershed area (i.e. an unprotected area of the County). This includes areas surrounding the Town of Hillsborough corporate limit(s) slated for 'urban' development intensities.

I-B: **STATE DENSITY AND IMPERVIOUS SURFACE LIMIT OPTIONS:** The following outlines available 'options' for local governments establishing/implementing watershed management program(s):

State Classification:		Maximum Allowable Project Density or Minimum Lot Size		
		Low Density Development		High Density Development
		Single-family detached residential	Non-residential and all other residential	All types
WS-I		Not Applicable		
WS-II	Critical Area (CA)	1 dwelling unit (du) per 2 acres OR 1 du per 80,000 sq.ft. lot (exclude right-of-way) OR 6% maximum built-upon area ¹⁰	6% maximum built-upon area	6 to 24% maximum built-upon area
	Balance of Watershed (BA)	1 du per acre OR 1 du per 40,000 sq.ft. lot (exclude right-of-way) OR 12% maximum built-upon area	12% maximum built-upon area	12 to 30% maximum built-upon area ¹¹
WS-III	Critical Area (CA)	1 du per 1 acre OR 1 du per 40,000 sq.ft. lot (exclude right-of-way) OR 12% maximum built-upon area	12% maximum built-upon area	12 to 30% maximum built-upon area
	Balance of Watershed (BA)	1 du per half acre OR 1 du per 20,000 sq.ft. lot (exclude right-of-way) OR 24% maximum built-upon area	24% maximum built-upon area	24 to 50% maximum built-upon area ¹²

¹⁰ Built-upon area (BUA) is the State reference to an impervious surface limit.

¹¹ Consistent with State regulations, units of local government can allow 10% of land, outside critical area designations, have up to 70% impervious surface area.

¹² IBID.

State Classification:		Maximum Allowable Project Density or Minimum Lot Size		
		Low Density Development		High Density Development
		Single-family detached residential	Non-residential and all other residential	All types
WS-IV	Critical Area (CA)	1 du per half acre OR 1 du per 20,000 sq.ft. lot (exclude right-of-way) OR 24% maximum built-upon area	24% maximum built-upon area	24 to 50% maximum built-upon area
WS-IV (continued)	Protected Area (PA)	1 du per half acre OR 1 du per 20,000 sq.ft. lot (exclude right-of-way) OR 24% maximum built-upon area; OR 3 du per acre; OR 36% maximum built-upon area without curb and gutter street system	24% maximum built-upon area; or 36% maximum built-upon area without curb and gutter street system	24 to 70% maximum built-upon area
WS-V		Not Applicable		

NOTES:

1. Per NC General Statute (NCGS) 143-217.7 (b) (2) the term 'Built-upon Area' is defined as: *Built-upon areas shall include that portion of a development project that is covered by impervious or partially impervious (does not allow water to infiltrate from surface to subsurface) cover including buildings, pavement, gravel areas (e.g. roads, parking lots, paths), recreation facilities (e.g. tennis courts), etc. (Note: Wooden slatted decks and the water area of a swimming pool are considered pervious.)*

STAFF COMMENT: Article 10 *Definitions* of the UDO contains a similar definition of 'Built-upon Area'.

2. The County defines 'impervious surface' within Article 10 *Definitions* of the UDO as: *A surface composed of any material that impedes or prevents the natural infiltration of water into the soil. Such surfaces include concrete, asphalt and*

gravel surfaces. These include, but are not be limited to, streets and parking areas, sidewalks, patios, and structures that cover the land.

3. Local governments may regulate single-family detached residential development using:
 - a. Minimum lot size requirements, or
 - b. Dwelling unit per acre requirements (i.e. density limits), or
 - c. Built-upon area percentages (i.e. impervious surface limits)

or some combination of same.

STAFF COMMENT: Orange County chose to implement density and impervious surface limits in the various local watershed protection overlay district(s) as part of our watershed management program. In many instances, these limits are more restrictive than State requirements.

4. Under applicable State rules, high-density development is permitted outside of WS-I watersheds and outside the critical areas of WS-II, WS-III, and WS-IV watershed classifications. Implementing a high-density development program means the amount of built-upon area will increase and engineered stormwater control measures (SCMs) are required to capture /treat runoff.
5. High-density development was limited to specific areas of the County designated as being viable for 'urban' style development consistent with the adopted 2030 Comprehensive Plan. Appendix 1 contains a synopsis of the various land use categories identified as suitable for 'urban' and 'rural' style development.

STAFF COMMENT: Approximately 84% of the county, outside of municipal planning jurisdictions, is designated for rural development intensities. This is primarily due to the absence of public utilities (i.e. water and sewer) supporting urban style development.

Approximately 16% of the county is designated for urban development intensities. This is primarily due to the presence of public utilities and proximity to major transportation thoroughfares/infrastructure (i.e. Interstates, major roadway networks, public transportation, etc.). Land use categories indicating areas slated for 'urban' development intensities are limited to:

- Transition (10 and 20 year);
- Commercial Industrial Transition Activity Node (CITAN);
- Commercial Transition Activity Node; and
- Economic Development Transition Activity Node.

6. The State, under specific circumstances, allows a maximum of 10 percent (10%) of land area within a water supply watershed, outside of the designated critical area (i.e. State or local, whichever is more restrictive), to be developed up to 70% built-upon area (i.e. impervious surface area).

Using State figures, this translates to the following:

- a. University Lake (protected): Approximately 1,520 acres.

- b. Cane Creek (protected): Approximately 1,400 acres.
- c. Upper Eno (protected): Approximately 3,637 acres.

STAFF COMMENT: The County's 'balance of the watershed' is approximately 24,000¹³ acres in area. 10% of this area is 2,400 acres. This is the result of our recognition/enforcement of a larger critical watershed area (i.e. Upper Eno Critical).

Current regulations limit high-density development to a total of 3,161 acres of land area within the watershed (i.e. 1,713 acres for residential and 1,448 acres of non-residential).

Residential development is limited to 30% impervious surface area in the 1,713 acres portion of the watershed.

Non-residential development is limited to a cumulative impervious surface area of 1,151 acres for the entire watershed (i.e. 1,151 acres of 70% impervious with approximately 297 acres of undeveloped land area).

Through the acreage cap, we have compliance with the State's 10% limitation based on our 'balance of the watershed' (i.e. 2,400 acres).

County staff has suggested the high-density allowance should be based on State defined watershed areas, allowing for approximately 3,637 acres (i.e. 10% of the watershed at 70% impervious). State staff have yet to respond to this suggestion.

- d. Back Creek (protected): Approximately 1,800 acres.

STAFF COMMENT: Current regulations limit high-density development (i.e. residential and non-residential) to 665 acres.

Non-residential development is further limited to a cumulative impervious surface area of 163 acres for the entire watershed.

- e. Flat River (protected): Approximately 663 acres.
- f. Haw River (protected): Approximately 626 acres.
- g. Jordan Lake (protected): Approximately 1,020 acres.
- h. Little River (protected): Approximately 4,060 acres.
- i. Lower Eno (protected): Approximately 2,100 acres.
- j. South Hyco Creek (protected): Approximately 348 acres.

Please refer to subsection(s) II-B and II-C of this document for additional information.

- 7. High density projects are required to comply with the following stormwater requirements:

¹³ Includes local municipal corporate limits and extra territorial jurisdictional (ETJ) area.

- a. Stormwater Control Measures (SCMs) shall be designed, constructed, and maintained so that the project achieves either "runoff treatment" or "runoff volume match";

STAFF COMMENT: State regulations defines these terms as:

- *Runoff Treatment: The volume of stormwater runoff generated from all of the built-upon area of a project at build-out during a storm of the required storm depth is treated in one or more primary SCMs or a combination of Primary and Secondary SCMs that provides equal or better treatment.*
- *Runoff Volume Match: The annual runoff volume after development shall not be more than ten percent higher than the annual runoff volume before development, except in areas subject to SA waters requirements per Rule .1019 of this Section where runoff volume match means that the annual runoff volume after development shall not be more than five percent higher than the annual runoff volume before development.*

- b. Required minimum design for an SCM storm depth shall be one inch;
- c. Stormwater outlets shall be designed so that they do not cause erosion downslope of the discharge point during the peak flow from the 10-year storm event as shown by engineering calculations.

II-A: **COUNTY REGULATIONS – WATERSHED DISTRICTS:** The County has created 13 individual watershed protection overlay districts, defined within Section 4.2.2 (E) of the UDO as follows:

DISTRICT NAME:	GENERAL LOCATION :
University Lake Critical Area - UNIV-CA	One-half mile from the normal pool elevation of University Lake, or to the ridgeline of the watershed, whichever is less.
University Lake Protected Watershed Overlay District - UNIV-PW	The portion of the drainage basin of University Lake not covered by UNIV-CA.
Cane Creek Critical Area Overlay District - CANE-CA	One-half mile from the normal pool elevation of Cane Creek Reservoir, or to the ridgeline of the watershed, whichever is less.
Cane Creek Protected Watershed Overlay District - CANE-PW	The portion of the drainage basin of Cane Creek Reservoir not covered by CANE-CA.
Upper Eno Critical Area Overlay District - U-ENO-CA	One-half mile from the normal pool elevation, or to the ridgeline of the watershed, whichever is less, of the following Class I reservoirs: Corporation Lake (538' actual NPE, 540' contour line used) and Lake Ben Johnson (515' NPE and contour line used). One-half mile (straight line measurement) from the normal pool elevation, or to the ridgeline of the watershed, whichever is less, of the following Class II reservoirs: Lake Orange (615' NPE and contour line used) and West Fork on the Eno (642' NPE, 642' contour line used); and the land area within one-half mile (straight line measurement) on each side of other streams designated for protection. These protected streams include portions of: Eno River, Seven Mile Creek, West Fork of the Eno River, East Fork of the Eno River, Rocky Run, Stream ID 1625, Stream ID 1498, Dry Run Creek, Crabtree Creek, and Stream ID 2109. (Source of elevation data: Atlantic Technologies Ltd., 1998 planimetric project approved by Orange County GIS).
Upper Eno Protected Watershed Overlay - U-ENO-PW	The portion of the Upper Eno drainage basin not covered by U-ENO-CA.
Lower Eno Protected Watershed Overlay - L-ENO-PW	The Orange County portion of the Eno River Watershed within ten miles of the City of Durham Emergency Water Intake east of US 501 (Roxboro Road).
Little River Protected Watershed Overlay District – LITTLE-PW	The portion of drainage basin of the Little River Reservoir which is located in Orange County.

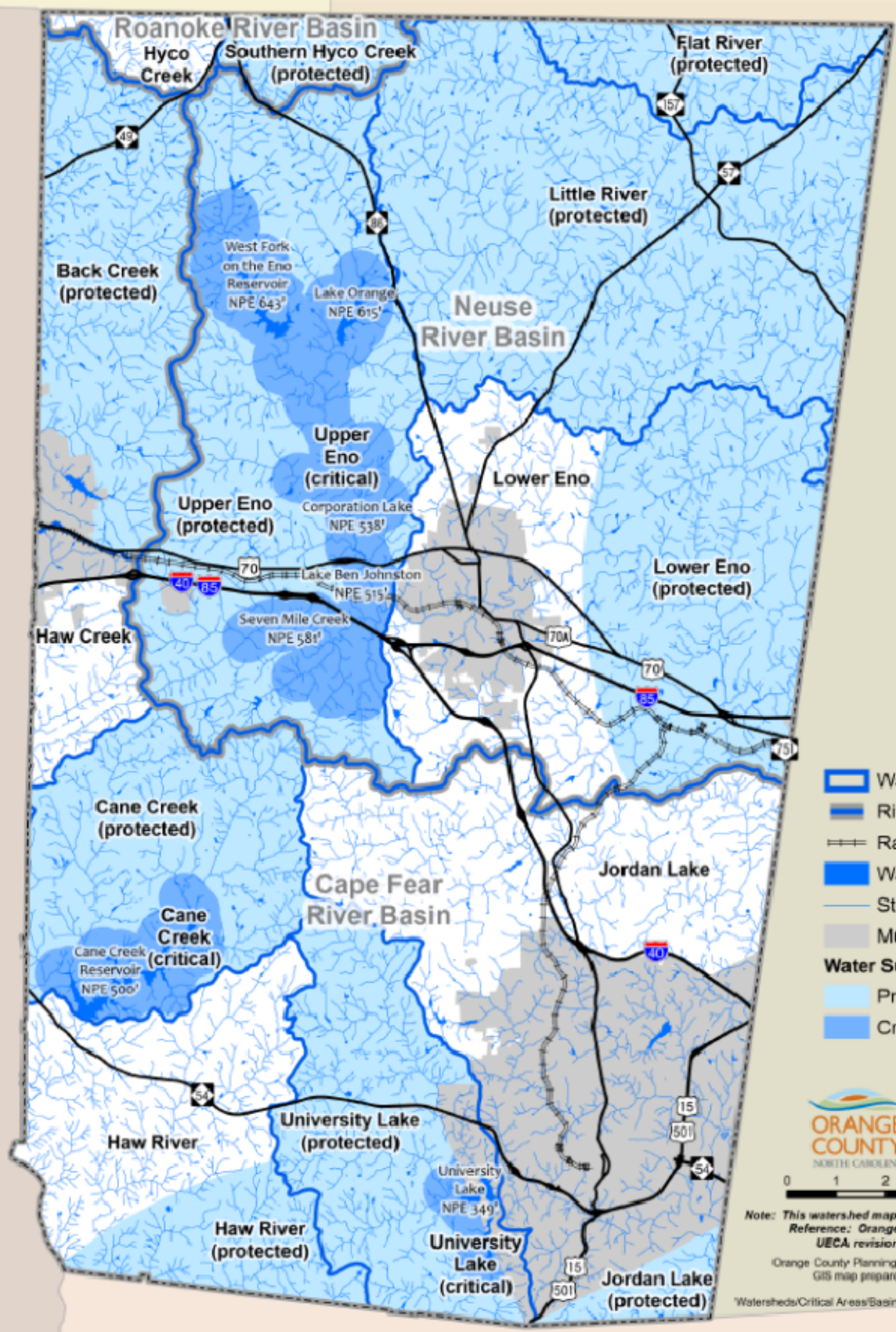
DISTRICT NAME:	GENERAL LOCATION :
Back Creek Protected Watershed Overlay District – BACK-PW	The portion of the drainage basin of Back Creek which is located in Orange County.
South Hyco Creek Protected Watershed Overlay District – HYCO-PW	The portion of the drainage basin of South Hyco Creek which is located in Orange County.
Flat River Protected Watershed Overlay District – FLAT-PW	The portion of the drainage basin of the Flat River which is located in Orange County.
Haw River Protected Watershed Overlay District – HAW-PW	The portion of the drainage basin for the Haw River which is located in Orange County
Jordan Lake Protected Watershed Overlay District – JORDAN-PW	The Orange County portion of the Jordan Lake Watershed which extends five miles from the normal pool elevation of the impoundment.

NOTES:

1. As detailed herein, the County chose to implement/enforce additional critical watershed area within the Upper Eno thereby reducing the overall area designated as 'balance of the watershed'.

The following page contains a map depicting the County's 13 separate Watershed Protection Overlay Districts.

ORANGE COUNTY, NC
Watersheds



- Watersheds
- River Basin Boundary
- Railroad
- Water Bodies
- Streams
- Municipal Jurisdiction
- Water Supply Watersheds**
- Protected
- Critical

ORANGE COUNTY
 NORTH CAROLINA

N

0 1 2 3 4 Miles

*Note: This watershed map replaces previous versions.
 Reference: Orange County Zoning Ordinance
 UECA revision adopted June 1, 2010*

Orange County Planning & Inspections Department
 GIS map prepared by Brian Carson

Watersheds/Critical Areas/Basins Data: November, 2010 Revision

II-B: RESIDENTIAL DEVELOPMENT REGULATIONS:

State Classification		Comparable County Watershed Protection Overlay Districts:	Density Limits:	Impervious Limits: ¹⁴	High Intensity Development Allowed:
WS-II	Critical Area (CA)	University Lake Critical	1 du ¹⁵ for every 5 acres	6% maximum (2,613 sq.ft. per acre of property)	No
		Cane Creek Critical			
		Upper Eno Critical	1 du for every 2 acres		
	Balance of Watershed (BA)	University Lake Protected	1 du for every 5 acres	6% maximum	No ¹⁶
		Cane Creek Protected			
		Little River Protected	1 du for every 2 acres	6% maximum	No ¹⁷
		Upper Eno	Based on underlying general use zoning	12% maximum (5,227 sq.ft. per acre of property)	Yes in specific areas
		Back Creek Protected			
		South Hyco Creek Protected	1 du for every 40,000 sq.ft.	12% maximum	No
WS-III	Critical Area (CA)	N/A			
	Balance of Watershed (BA)	Flat River Protected	1 du for every 40,000 sq.ft.	12% maximum	No

¹⁴ Impervious surface area is synonymous with the State’s term ‘built-upon area’ or BUA.

¹⁵ As previously indicated ‘DU’ is the abbreviation for ‘dwelling unit’.

¹⁶ There is no ‘residential’ high-density option.

¹⁷ Ibid.

State Classification		County Watershed Protection Overlay Districts:	Density Limits:	Impervious Limits:	High Intensity Development Allowed:
WS-IV	Critical Area (CA)	N/A			
	Protected Area (PA)	Lower Eno Protected	Based on underlying general use zoning ¹⁸	24% maximum for projects with curb/gutter (10,454 sq.ft. per acre of property). 36% maximum for projects without curb and gutter (15,681 sq.ft. per acre of property).	Yes in specific areas
		Haw River Protected	1 du for every 40,000 sq.ft. (underlying zoning consistent with Comprehensive Plan)	24% maximum	No based on Comprehensive Plan.
		Jordan Lake Protected	1 du for every 2 acres of property (underlying zoning is Rural Buffer (RB) requiring a 2 acre minimum lot size)		No based on Comprehensive Plan and Joint Planning Land Use Plan/Agreement.

NOTES:

1. Local governments, with delegated local authority, can be more restrictive than the State;
2. Existing regulations require installation of Stormwater Control Measure (SCM) for projects (i.e. residential and non-residential) exceeding a 12% impervious surface limit threshold;

¹⁸ Stormwater Control Measures (SCMs) required where density exceeds 1 DU per acre of property.

3. University Lake Critical and Protected Watershed Protection Overlay Districts (WS II CA and BA):
 - a. Density consistent with the adopted Joint Planning Land Use Plan and Agreement far exceeding State requirements;
 - b. Current regulations implement both:
 - i. A lower density allowance (i.e. 1 unit for every 5 acres), and
 - ii. Lower impervious surface allotments (i.e. a 6% limit)

The State would have required either a density limit of 1 dwelling-unit for every 2 acres of property **OR** a 6% impervious surface limit (i.e. not necessarily both).
4. Cane Creek Critical and Protected Watershed Protection Overlay Districts (WS II CA and BA):
 - a. Orange County chose to enforce density and impervious surface limits consistent with standards enforced within the University Lake Watershed Protection Overlay Districts. This was due to the reservoir serving as a water source for the Town(s) of Carrboro and Chapel Hill;
 - b. Current regulations far exceed State requirements.
5. Upper Eno Critical Watershed Protection Overlay District (WS II CA):
 - a. The County designated more 'critical' watershed area than required/recognized by the State, which designates approximately 2,164 acres of land as WS-II CA (i.e. critical area). The County recognizes/designates a total of 14,514 acres of 'critical area', thereby adding approximately 12,350 sq.ft. additional acres of land;
 - b. Current regulations implement both:
 - i. A density limit of 1 dwelling unit for every 2 acres of property;
 - ii. A maximum 6% impervious surface limit.

The State would have required either a density limit of 1 dwelling-unit for every 2 acres of property **OR** a 6% impervious surface limit (i.e. not necessarily both).
6. Upper Eno and Back Creek Protected Watershed Protection Overlay District (WS II BA): Cumulatively, there are approximately 40,665 acres (16,665 acres within Back Creek and 24,000 acres within Upper Eno) located within identified watershed protection overlay districts.
 - a. Allowable density is divided into 'urbanizing' and 'rural' areas:
 - i. Low-density development: Approximately 38,014 acres (i.e. approximately 91% of the combined area) of land designated 'rural area' developed at:
 1. A density of 1 dwelling unit for every 40,000 sq.ft. (0.92 acres) of land area;
 2. A maximum 12% impervious surface limit.

- ii. High-density development: A pre-defined 'urban' area of approximately 3,637 acres in size is available for high intensity residential and non-residential development within both watershed districts.

STAFF COMMENT: As detailed herein, the County imposes additional acreage limits for non-residential projects exceeding 12% impervious surface area.

Residential development (high intensity) can occur on parcels within Transition Area(s) as designated within Comprehensive Plan. Impervious surface area is typically limited to 30% (13,068 sq.ft. per acre of property) for projects exceeding 1 dwelling-unit per acre.

STAFF COMMENT: Per Section 4.2.5 of the UDO, residential uses developed at "high intensity" densities (i.e. R-5, R-8, and R-13) in an Economic Development District as designated in the Land Use Element of the Comprehensive Plan can develop at a 70% impervious surface limit.

7. Flat River (WS III BA) and South Hyco Creek (WS II BA) Protected Watershed Protection Overlay District: Limited to a density limit of 1 dwelling unit for every 40,000 sq.ft. and a 12% impervious surface limit.

STAFF COMMENT:

- Flat River (WS III BA): Current regulations exceed State requirements. The County chose to enforce density/impervious standards consistent with a WS III CA watershed designation.

This appears to have been done in an effort to ensure consistency with regulations enforced in adjoining watershed protection overlay districts.

- South Hyco Creek (WS II BA): The State would have required either a density limit of 1 dwelling-unit for every 1 acre of property **OR** a 12% impervious surface limit (i.e. not both).

8. Haw River Protected Watershed Protection Overlay District (WS IV PA): Density limitations are based on the underlying general use zoning district (i.e. translates to a typical density of 1 dwelling unit for every 40,000 sq.ft. of land area) and an impervious surface limit of 24%.

STAFF COMMENT: State rules would allow a density of 1 dwelling unit for every 20,000 sq.ft. **OR** an impervious surface limit of 24%.

9. Jordan Lake Protected Watershed Protection Overlay District (WS IV PA):

- a. A density limit of 1 dwelling unit for every 2 acres of property;

STAFF COMMENT: The underlying general use zoning designation is Rural Buffer (RB), which required a 2 acre minimum lot size. Consistent with the Joint Planning Land Use Plan and Agreement, density in this area is required to observe a 1 dwelling-unit per 2 acre density.

- b. A maximum 24% impervious surface limit.

The State requires either a density limit of 1 dwelling-unit for every 20,000 sq.ft. of property **OR** a 24% impervious surface limit (i.e. not both).

10. Little River Protected Watershed Protection Overlay District (WS II BA): Current watershed protection regulations implement both:

- a. A density limit of 1 dwelling unit for every 2 acres of property;
- b. A maximum 6% impervious surface limit.

The State requires either a density limit of 1 dwelling-unit for every 2 acres of property **OR** a 6% impervious surface limit (i.e. not necessarily both).

11. Lower Eno Protected Watershed Protection Overlay District (WS IV PA):

- a. Maximum density is consistent with underlying general use zoning designation (typically 1 dwelling unit for every 40,000 sq.ft.);
- b. Impervious:
 - i. 24% impervious surface limit for projects with curb and gutter;
 - ii. 36% impervious surface limit for projects without curb and gutter;
 - iii. 70% impervious surface limit for residential uses developed at “high intensity” densities (R-5, R-8, and R-13) in an Economic Development District as designated in the Land Use Element of the Comprehensive Plan (high-density option).

STAFF COMMENT: SCMs required when impervious surface exceeds: 24% (w/ curb and gutter) 36% (w/o curb and gutter).

The land area allowing for high intensity residential land uses is limited to approximately 2,840 acres.

Areas where staff anticipates development at rural densities (i.e. 1 dwelling unit for every 40,000 sq.ft. minimum) represents approximately 9,030 acres of the watershed overlay district.

County regulations, within this watershed district, are consistent with State requirements/allowances.

II-C: NON-RESIDENTIAL:

State Classification		County Watershed Protection Overlay Districts:	Density/Minimum Lot Size Requirement:	Impervious Limits:	High Intensity Development Allowed:
WS-II	Critical Area (CA)	University Lake and Cane Creek Critical ¹⁹	5 acre minimum lot size	6% maximum (2,613 sq.ft. per acre of property)	No
		Upper Eno Critical ²⁰	2 acre minimum lot size		
	Balance of Watershed (BA)	University Lake and Cane Creek Protected	5 acre minimum lot size	50% maximum for fire stations and solid waste collection centers; 12% maximum for all other uses	Limited to those specified uses listed
		Little River Protected	2 acre minimum lot size	50% maximum for fire stations and solid waste collection centers; 12% maximum for all other uses	Limited to those specified uses listed
		Upper Eno and Back Creek Protected	Minimum lot size based on underlying general use zoning district	70% maximum in 'urban areas' ²¹ 50% maximum for fire stations and solid waste collection centers; 12% maximum for development not proposing a stormwater control measure (SCM)	Yes with cumulative caps on total acreage of non-residential development over 30% impervious
South Hyco Creek Protected	Minimum lot size based on underlying general use zoning district	50% maximum for fire stations and solid waste collection centers; 12% maximum for all other uses	Limited to those specified uses listed		

¹⁹ Per Section 4.2.3 *Land Use Restrictions* of the UDO, no new landfills or golf courses are permitted. Commercial/Industrial development are only allowed consistent with the UDO and/or within established Nodes as detailed within the adopted Comprehensive Plan.

²⁰ IBID.

²¹ Transition Areas, Commercial Industrial Transition Activity Node (CITAN), Economic Development land use category as detailed within the Comprehensive Plan. For more information, please refer to [Appendix 1](#).

State Classification		County Watershed Protection Overlay Districts:	Density/Minimum Lot Size Requirement:	Impervious Limits:	High Intensity Development Allowed:
WS-III	Critical Area (CA)	N/A			
	Balance of Watershed (BA)	Flat River Protected	Minimum lot size based on underlying general use zoning district	50% maximum for fire stations and solid waste collection centers; 12% maximum for all other uses	Limited to those specified uses listed
WS-IV	Critical Area (CA)	N/A			
	Protected Area (PA)	Lower Eno Protected	Minimum lot size based on underlying general use zoning district	70% maximum	Yes.
		Haw River Protected	Minimum lot size based on underlying general use zoning district	24% maximum	No based on Comprehensive Plan.
		Jordan Lake Protected	Minimum lot size based on underlying general use zoning district		No based on Comprehensive Plan and Joint Planning Land Use Plan/Agreement.

NOTES:

1. Existing regulations require installation of Stormwater Control Measure (SCM) for projects exceeding a 12% impervious surface limit threshold;
2. In accordance with Section 4.2.6 of the UDO, there are acreage limits for non-residential development(s) in various Watershed Protection Overlay Districts. Staff tracks non-residential development and maintains a database on existing development/impervious limits. These limits are summarized as follows:
 - a. Cane Creek Protected Watershed Protection Overlay District is limited to a cumulative total of 139 acres (1% of the district) of impervious area;
 - b. Little River Protected Watershed Protection Overlay District is limited to a cumulative total of 406 acres (1% of the district) of impervious area;
 - c. Upper Eno Protected Watershed Protection Overlay District is limited to a cumulative total of 1,151 acres (5% of the district) of impervious area;

- d. Back Creek Protected Watershed Protection Overlay District is limited to a cumulative total of 163 acres (1% of the district) of impervious area;
 - e. South Hyco Creek Protected Watershed Protection Overlay District is limited to a cumulative total of 37 acres (1% of the district) of impervious area;
 - f. Flat River Protected Watershed Protection Overlay District is limited to a cumulative total of 66 acres (1% of the district) of impervious area;
3. University Lake Critical and Protected Watershed Protection Overlay Districts (WS II CA and BA):
- a. Density/lot size consistent with the adopted Joint Planning Land Use Plan and Agreement far exceeding State requirements (i.e. 5 acre minimum lot size). The State rules do not establish a density/minimum lot size for non-residential development;
 - b. The County imposes a:
 - i. 6% impervious surface limit within the Critical watershed areas;
 - ii. 12% impervious surface limit within the Protected watershed areas;
 - iii. 50% impervious surface limit for fire stations and solid waste collection centers within the University Lake Protected Watershed Protection Overlay district

for non-residential development.
4. Cane Creek Critical and Protected Watershed Protection Overlay Districts (WS II CA and BA):
- a. Non-residential development within the Cane Creek Critical and Protected Watershed Protection Overlay Districts has to observe a minimum lot size/density of 5 acres. State rules do not establish a density/minimum lot size for non-residential development;
 - b. The County imposes a:
 - i. 6% impervious surface limit within the Critical watershed area;
 - ii. 12% impervious surface limit within the Protected watershed areas;
 - iii. 50% impervious surface limit for fire stations and solid waste collection centers within the Cane Creek Protected Watershed Protection Overlay district.

for non-residential development.
 - c. Staff enforces a 139 acre cumulative impervious surface limit (1% of the watershed) within the Cane Creek Protected watershed area.
5. Upper Eno Critical Watershed Protection Overlay District (WS II CA):
- a. As previously indicated, the County designated more 'critical' watershed area than required/recognized by the State;
 - b. Current regulations require:

- i. Minimum lot size of 2 acres for non-residential development; and
- ii. Maximum 6% impervious surface limit.

State rules do not establish a density/minimum lot size for non-residential projects.

6. Upper Eno and Back Creek Protected Watershed Protection Overlay District (WS II BA):

- a. Non-residential development is limited to specific acreages within each watershed overlay district;
- b. Impervious is permitted as follows:
 - i. 70% in Economic Development, Commercial and/or Commercial-Industrial Nodes as designated within the Comprehensive Plan (high-density option);
 - ii. 50% for all fire stations and solid waste collection centers outside of Commercial and/or Commercial-Industrial Nodes;
 - iii. 12% for all other non-residential uses outside of Economic Development, Commercial and/or Commercial-Industrial Nodes.

Allowances are consistent with State provisions.

7. Flat River (WS III BA) and South Hyco (WS II BA) Protected Watershed Protection Overlay District: The State would allow a maximum of 50% impervious for 'high density development'. The County limits this to fire stations and solid waste collection centers (i.e. land uses that serve a public purpose).

Non-residential development is limited to specific acreages.

8. Haw River Protected and Jordan Lake Protected Watershed Protection Overlay District (WS IV PA): impervious is limited to 24% in accordance with State allowances.

9. Little River Protected Watershed Protection Overlay District (WS II BA): Current watershed protection regulations implement both:

- a. A density/minimum lot size of 2 acres of property for non-residential developments;
- b. 50% for all fire stations and solid waste collection centers outside of Commercial and/or Commercial-Industrial Nodes;
- c. 12% for all other non-residential uses.

State rules do not establish a density/minimum lot size for non-residential projects. Impervious allowances are consistent with State standards.

10. Lower Eno Protected Watershed Protection Overlay District (WS IV PA):

- a. Impervious: 70% impervious surface limit for non-residential uses with stormwater control measures (SCMs) required when impervious exceeds:
 - i. 24% impervious surface limit for projects with curb and gutter;
 - ii. 36% impervious surface limit for projects without curb and gutter;

The district has approximately 800 acres of land area reserved (i.e. zoned) for high-intensity non-residential development.

County regulations are consistent with State requirements/allowances.

ADDITIONAL CONTEXT – UPPER ENO PROTECTED: In completing this assessment, the Director provided the following additional context/analysis related to the Upper Eno Critical and Protected Watershed Protection Overlay Districts:

NCDENR - Upper Eno Watershed WS-II NSW

Eno River (Lake Ben Johnson)
Eno River (Corporation Lake)

A. Watershed total acreage 38,541 acres (NCDWR map areas)

B. Critical Area: 2,164 acres	Gross	Net
100% of critical can be 6% BUA	2,164 acres	130 acres

10/70 Rule High Density Option Potential Acreage

C. Protected 36,377 acres	Gross	Net
C1. 10% of protected can be 70% BUA acres	3,638 acres	2,547 acres
C2. 90% of protected can be 12% BUA acres	32,739 acres	3,929 acres

D. Total Potential BUA using NCDENR	Gross	Net
10/70 Rule	38,451 acres	6,606 acres
17.2% of watershed		

Orange County Watershed Protection Program - Upper Eno Watershed WS-II NSW

Eno River (Lake Ben Johnson)
Eno River (Corporation Lake)

A. Watershed Total Acreage 38,541 acres
Orange County Watershed Program Breakdown

B. Critical Area	Gross	Net
B1. NCDENR & OC (same area) Critical	2,164 acres	
B2. Orange County Additional Critical (OC does 6% vs NC designated protected 12%)	12,377 acres	

C. Protected Area NCDENR & OC (same area) Protected 24,000 acres. Note: Orange County chose to use the county designated protected area of 24,000 to employ the 10/70 Rule High Density Option (HDO) instead of the NCDENR area of 36,377. This lower protected acreage relates to increasing critical area by 670% of NCDENR area, which becomes more restrictive. Therein the following BUA is operative:

C1. 10% Of Orange County Protected can be 70% impervious acres (i.e. Built Upon Area BUA)	Gross 2,400 acres	Net 1,680 acres
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Orange County allocates this HDO BUA in roughly 2 Land use areas.

Economic Development/CITAN Land Use @70% BUA	Gross 1,626 acres	Net 1138 acres
10 and 20 year Transition (primarily residential) Land Use @ 30%	<u>BUA</u> 1,715 acres	<u>515 acres BUA</u> 1,653

C2. 90% Protected area remaining (24,000-2400 10%) @12%	Gross 21,600 acres	Net 2,592 acres
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Critical NCDENR & OC @6%	Gross 2,164 acres	Net 130 acres BUA
OC Additional Area @ 6% (Note NCDENR would allow twice this amount by statute)	12,377 acres	<u>743 acres BUA</u> 873 acres BUA

Total Orange County Program BUA Summary

OC HDO Area	1680 net BUA
OC Protected	2592 net BUA
OC Critical	<u>873 net BUA</u>
Total BUA	5145 net BUA
	13.4% of watershed

Therefore the OC Watershed Protection Program complies with State rules; 6606 acres BUA (NCDENR) vs. 5145 acres BUA (OC). The difference lies primarily in the 10% HDO allowance area 2547 acres (NCDENR) vs 1680 acres (OC) where OC is 34% less (867 acres). Amendments using the difference can be accomplished using state, county and local rules.

III: HELPFUL LINKS: The following are links to agenda items providing a historical 'snap shot' on the initial development of the County's watershed management program.

- June 4, 1981: BOCC public hearing on the land use plan (involved designation of water quality areas):
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=42861&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- March 17, 1982: BOCC work session for discussion of report of the Water Resources task force:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=44204&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- November 28, 1983: BOCC/County Planning Board joint public hearing reviewing land use plan amendments concerning water quality critical areas:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=46312&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- February 23, 1987: BOCC/County Planning Board joint public hearing to review of Joint Planning Agreement and Land Use Plan amendments concerning University Lake watershed area:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=42951&searchid=61833d2e-f1fc-49c4-b9f3-45eb9ad79c09&dbid=0>
- December 15, 1987: BOCC agenda item on University Lake watershed designation:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=43028&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- June 30, 1988: Joint Public Hearing with BOCC, Town of Chapel Hill, and Town of Carrboro on Joint Land Use Plan/Agreement amendment(s) including watershed designations:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=44181&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- May 22, 1989: BOCC/County Planning Board joint public hearing on Future Land Use and Zoning Atlas amendment(s) modifying watershed designations, including Upper Eno:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=45896&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- June 18, 1989: BOCC agenda to receive report on implementation issues concerning University Lake study:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=45902&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- February 5, 1990: BOCC agenda to receive report on impervious surface standards for watershed protection:

- <http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=48677&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- February 28, 1990: BOCC/Town of Chapel Hill joint meeting to review designation of University Lake watershed overlay district:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=48680&searchid=61833d2e-f1fc-49c4-b9f3-45eb9ad79c09&dbid=0>
 - April 2, 1990: BOCC agenda discussing University Lake watershed overlay district:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=48684&searchid=61833d2e-f1fc-49c4-b9f3-45eb9ad79c09&dbid=0>
 - May 1, 1990: BOCC agenda package discussing Seven Mile Creek area:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=49121&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - March 21, 1990: BOCC agenda receiving report on reclassification of Upper Eno watershed:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=48682&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - August 5, 1991: BOCC regular agenda to receive a report on the State watershed program, including potential implications:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=49217&searchid=61833d2e-f1fc-49c4-b9f3-45eb9ad79c09&dbid=0>
 - August 26, 1991: BOCC/County Planning Board joint public hearing reviewing proposed state watershed classification(s) and development standards:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=49219&searchid=61833d2e-f1fc-49c4-b9f3-45eb9ad79c09&dbid=0>
 - September 3, 1991: Orange County water and sewer policy:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=10025&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - October 7, 1991: BOCC agenda to receive a report on State watershed classifications and standards:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=49223&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - October 22, 1991: BOCC agenda reviewing watershed standards:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=49226&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - November 19, 1991: BOCC agenda to receive report on watershed comments from 'adjoining jurisdictions':

<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=49228&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>

- March 9, 1992: BOCC agenda 'declassifying' of the Haw Creek reservoir:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=49240&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - April 21, 1992: BOCC agenda reporting on Eno River watershed classifications:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=49244&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - May 24, 1993: BOCC agenda concerning zoning text amendment on impervious surface area limitations:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=44779&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - August 17, 1993: BOCC agenda requesting guidance on County's support of Falls Lake Management Association.
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=45223&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - August 23, 1993: BOCC agenda reviewing zoning text and atlas amendments on watershed protection standards for Little River and Cedar Grove Townships:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=45234&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - September 7, 1993: BOCC agenda on text amendments related to impervious surface limits:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=45288&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - November 16, 1993: BOCC agenda concerning adoption of watershed standards for Little River and Cedar Grove Townships:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=45559&searchid=61833d2e-f1fc-49c4-b9f3-45eb9ad79c09&dbid=0>
- and
- <http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=47416&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- January 4, 1994: BOCC agenda on zoning text and atlas amendments concerning watershed protection standards within Little River and Cedar Grove townships:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=36142&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - June 28, 1994: BOCC agenda on proposed zoning text amendments concerning reservoir setbacks and required stream buffers:

- <http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=36775&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
- October 21, 1997: BOCC agenda reporting on Cane Creek watershed study:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=29980&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - November 3, 1997: BOCC agenda item – report on proposed OWASA revisions to University lake water and sewer extension policy:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=30017&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - November 19, 1997: BOCC agenda reporting on Cane Creek watershed study:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=30158&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - November 23, 1998: BOCC/County Planning Board joint public hearing on zoning text amendments related to the Cane Creek watershed overlay district:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=17238&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - October 19, 1999: BOCC agenda concerning text amendment for Cane Creek Watershed regulations:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=30593&searchid=61833d2e-f1fc-49c4-b9f3-45eb9ad79c09&dbid=0>
 - August 21, 2001: BOCC agenda item on the adoption of watershed best management practices:
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=6290&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>
 - August 27, 2001: BOCC public hearing on erosion control amendments related to University Lake Watershed
<http://server3.co.orange.nc.us:8088/weblink/DocView.aspx?id=6303&searchid=6ec5f8f7-6ab2-4532-99cc-17225f6dc10b&dbid=0>

APPENDIX 1

COUNTY COMPREHENSIVE PLAN: Chapter 5 *Land Use Element* of the adopted Comprehensive Plan establishes the following land use categories:

Classifications:	Name:	Definition:
Transition Land Use Classification:	10-Year Transition	Land located in areas that are in the process of changing from rural to urban densities and/or intensities, that are suitable for higher densities and/or intensities and could be provided with public utilities and services within the first 10 year phase of the Plan update or where such utilities and services are already present or planned. Non-residential uses implemented in accordance with small area plans and/or overlay districts may be appropriate.
	20-Year Transition	Land located in areas that are in the process of changing from rural to urban, that are suitable for urban-type densities and should be provided with public utilities and services within the second 10-year phase of the plan.
	Commercial Transition Activity Node	Land located at major road intersections or near major transportation routes that could be provided with public water and wastewater services and is appropriate for retail and other commercial uses.
	Commercial Industrial Transition Activity Node	Land near major transportation routes that could be provided with public water and wastewater services and is appropriate for retail and other commercial uses; manufacturing and other industrial uses; office and limited (not to exceed 25% of any Node) higher density residential uses.
	Economic Development Transition Activity Node	Land in areas of the County which has been specifically targeted for economic development activity consisting of light industrial, distribution, office, service/retail uses, and flex space (typically one-story buildings designed, constructed, and marketed as suitable for use as offices but able to accommodate other uses such as a warehouse, showroom, manufacturing assembly, or similar operations.) Such areas are located adjacent to interstate and major arterial highways, and subject to special design criteria and performance standards.
Rural Land Use Classifications	Rural Buffer	Land adjacent to an urban or transition area which is rural in character and which should remain rural, contain very low-density residential uses, and not require urban services during the plan period.

Classifications:	Name:	Definition:
Rural Land Use Classifications (continued)	Rural Residential	Land in the rural areas of the County which is appropriate for low intensity and low-density residential development and which would not be dependent on urban services during the plan period.
	Agricultural Residential	Land in the rural areas where the prevailing land use activities are related to the land (agriculture, forestry) and which is an appropriate location for the continuation of these uses.
	Rural Community Activity Node	Land focused on designated road intersections which serve as nodal crossroads for the surrounding rural community and is an appropriate location for any of the following uses: church, fire station, small post office, school, or other similar institutional uses and one or more commercial uses.
	Rural Neighborhood Activity Node	Land focused on designated road intersections within the rural area that is appropriate for small-scale commercial uses characteristic of "Mom and Pop" convenience stores and gas stations.
	Rural Industrial Activity Node	Land focused on designated road intersections within the rural area that is appropriate for small scale industrial uses which do not require urban type services.
Overlay Classifications	Public Interest	Land which contains public or quasi-public uses such as publicly owned land, research forests or known archaeological or historical sites.
	Water Supply Watershed	Land draining to existing reservoirs which serve as public water supplies, or to potential reservoir sites or stream intakes for drinking water withdrawal which have been designated for protection against threats to the water quality of future water supplies, in accordance with County watershed protection programs and the North Carolina Water Supply Watershed Protection Act of 1989.
	Watershed Area, Designated Critical County	The land area within one-half mile of the normal pool elevation (or designated elevation) of an existing Class II water supply reservoir, or the ridgeline of the watershed, whichever is less; and the land area within one-half mile of the normal pool elevation (or designated elevation) of a proposed water supply reservoir, or the ridgeline of the watershed, whichever is less; and the area within one-half mile on each side of streams flowing into Class I reservoirs, as designated for protection within the Zoning Ordinance.

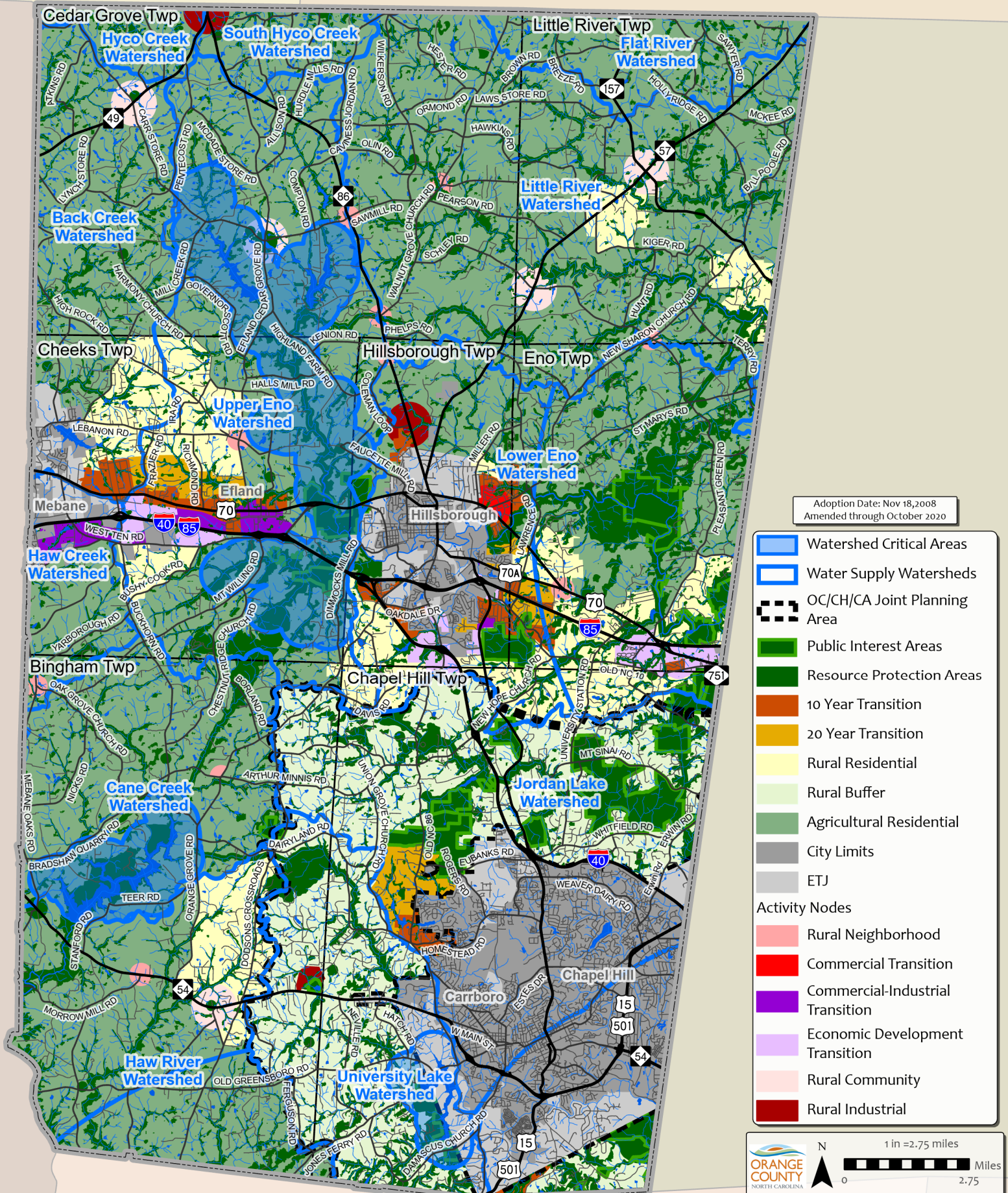
Classifications:	Name:	Definition:
Overlay Classifications continued	Watershed Critical Area, State Required	The land area within one-half mile of the normal pool elevation of public water supply reservoirs in which an intake is located (i.e., Class I reservoirs), or the ridge line of the watershed, whichever is closest to the normal pool elevation of the reservoir.
	Reservoir, Class I	A body of water, such as a pond or lake, confined by a dam or other barrier to be used for public water supply from which water flows by gravity or is pumped directly to a treatment plant or to a small intervening storage basin and thence to a treatment plant.
	Reservoir, Class II	A body of water, such as a pond or lake, confined by a dam or other barrier to be used for public water supply from which water flows by gravity or is pumped to a Class I reservoir prior to final entrance to a water treatment plant.
	Resource Protection Area	Land designated as Primary Conservation Area which contains sensitive environmental resources, historically significant sites, and features considered unbuildable because of their limitations or unsuitability for development. This includes wetlands and floodplains along drainage tributaries, steep slope areas, (15% or greater), natural areas, wildlife habitats and corridors, and significant historic and archaeological sites. These areas form the basis for a conservation network within which other land uses are situated.
	New Hope Creek Corridor Open Space	Some of the land in the Resource Protection Areas and a portion of the Public Interest Area designated as significant and worthy of protection according to the New Hope Corridor Open Space Master Plan completed in April of 1991. This classification is part of a system of open space in Durham and Orange Counties along New Hope Creek and its tributaries between Eno River State Park and U.S. Army Corps of Engineers land north of Jordan Lake. The New Hope Corridor Open Space is made up of critical environmental areas such as stream beds, floodplains, steep slopes, and larger tracts of historic, educational, or recreational value.
	Stoney Creek Basin	Land within the boundaries of the 4,696 acre Stoney Creek Drainage Basin southeast of the Town of Hillsborough in portions of Hillsborough, Eno, and Chapel Hill Townships. The area is triangular in shape and is bound generally by I-85 to the north, the

		University Spur of Southern Railroad to the east, and NC Highway 86 to the west.
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NOTES:

1. Each land use classification and overlay have a set of locational criteria defining 'how' and 'where' they can be located;
2. Transition Land Use Classification(s) denote property intended for 'urban' development intensities while Rural Land Use Classifications denote those areas where 'rural' development intensities are anticipated;
3. Appendix F *Relationships between Land Use Categories and Zoning Districts Matrix* of the Comprehensive Plan outlines what general use land use designations are permitted/anticipated within defined land use classifications.

Future Land Use Map of the Orange County Comprehensive Plan



Adoption Date: Nov 18, 2008
 Amended through October 2020

- Watershed Critical Areas
 - Water Supply Watersheds
 - OC/CH/CA Joint Planning Area
 - Public Interest Areas
 - Resource Protection Areas
 - 10 Year Transition
 - 20 Year Transition
 - Rural Residential
 - Rural Buffer
 - Agricultural Residential
 - City Limits
 - ETJ
- Activity Nodes
- Rural Neighborhood
 - Commercial Transition
 - Commercial-Industrial Transition
 - Economic Development Transition
 - Rural Community
 - Rural Industrial

N
1 in = 2.75 miles
 Miles
0 2.75

Orange County and Planning and Inspections Department.
 Map is for reference use only.
 Contact Planning staff for verification of data.

Planning and Inspections Department
 5/14/2021



Appendix F: Land Use and Zoning Matrix

Land Use Classifications & Overlays		ZONING DISTRICTS																							
		RB	AR	R-1	R-2	R-3, R-4	R-5, R-8, R-13	LC-1	NC-2	CC-3	GC-4	EC-5	O/RM	I-1	I-2	I-3	EI	EDB-1, EDB-2, EDE-1, EDE-2, EDH-1, EDH-2, EDH-3, EDH-4, EDH-5	AS	Special Zoning Overlay District	PID	ASE-CZ	MPD-CZ	HP-CZ	
Transition	Chapel Hill Transition	Permit Administration by Municipalities under the provisions of the Joint Planning Agreement-																							
	Carrboro Transition	Contact appropriate Municipality for applicable Zoning Standards																							
	10-Year Transition			◆	◆	◆	◆														◆			◆	◆
	20-Year Transition			◆	◆	◆	◆														◆			◆	◆
	Commercial Transition Activity Node							◆	◆	◆	◆		◆								◆		◆	◆	
	Commercial-Industrial Transition Activity							◆	◆	◆	◆		◆	◆	◆	◆					◆		◆	◆	
	Economic Development Transition Activity Node																	◆			◆		◆		
Rural	Rural Buffer	◆																				◆		◆	
	Rural Residential			◆																		◆		◆	
	Agricultural Residential		◆																◆			◆		◆	
	Rural Community Activity Node						◆	◆														◆	◆		
	Rural Neighborhood Activity Node						◆	◆														◆			
	Rural Industrial Activity Node													◆									◆		
Overlay	Public Interest Area																				◆				

Amended 02-13-17