Environmental Impact Assessment

Williams Corner

Chatham County, NC

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List of Acronyms

BMP	Best Management Practice
DEQ	North Carolina Department of Environmental Quality
DOT	North Carolina Department of Transportation
DWR	North Carolina Division of Water Resources
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
HUC	Hydrologic Unit Code
ISA	Impervious Surface Area
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NHP	North Carolina Natural Heritage Program
NRCS	Natural Resource Conservation Service
SHPO	State Historic Preservation Office
SWC	North Carolina Surface Water Classification
TOB	Top of Bank
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
EPA	United States Environmental Protection Agency
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey

List of Exhibits and Attachments

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I. Executive Summary

The purpose of this Environmental Impact Assessment (EIA) is to evaluate the potential environmental impacts associated with the proposed Williams Corner development as required under the Chatham County Zoning Ordinance Section 11.3 (the "Zoning Ordinance") which incorporates Chatham County Subdivision Ordinance (the "Subdivision Ordinanc

e") Section 6.2.B. This assessment was completed based on field studies of existing conditions, review of public documents and documents developed for the Williams Corner development (the "Project").

The EIA assesses the potential for direct short- and long-term impacts to the existing environment and natural resources in the study area as a result of the Project. Discussion focuses on an analysis of existing resources, anticipated impacts, avoidance and minimization efforts, and mitigative measures for each of the resource topics listed in section 6.2.B of the Chatham County Subdivision Ordinance.

Based on W&W's understanding of the scope of the Williams Corner development in the context of the existing onsite natural resources, public interest, state and federal environmental laws, local zoning regulations, and compatibility with Chatham County's long-term planning visions, the Project will have no significant long-term impacts to the environment. By observing rules and regulations that incorporate safeguards to abate predictable events, project proponents have minimized and mitigated the likelihood of environmental impacts.

Concentrating the limits of disturbance along an established urban corridor allows for preservation of higher-quality and more naturalized areas of the Project site, reduces development sprawl, and facilitates the preservation of rural areas of Chatham County. Williams Corner is designed with high-density vertical development where allowable, further reducing the footprint of environmental impacts. The Project ensures that riparian buffers are maintained, steep slopes are avoided, wetlands and diverse forested areas are preserved. The establishment of preservation areas along the highest quality streams and in areas with the most diverse age class and species richness assist in mitigating long-term impacts to the environment. Wildlife dispersal is enabled through established perimeter setbacks and along preserved riparian corridors, thereby ensuring there are no lasting impacts to the urban wildlife of the region.

Williams Corner is consistent with the uses previously approved for the site and is designed to be consistent with the "place type" set by the community's expectations of land use along a long-established transportation corridor and economic thoroughfare, as evidenced by nearby zoning practices and developments of similar scope and nature. The Project's design is consistent with Williams Corner's "Community Center" designation in Chatham County's Comprehensive Plan, of which defining features include retail hubs, multi-story and high-density development, and variation and mix of uses (Plan Chatham, 2017).

II. Introduction

i. Scope of Work

Wetlands & Waters, Inc. (W&W) was contracted by ZR Chatham, LLC to conduct and compose this EIA, the contents of which will be submitted for the proposed Williams Corner Subdivision in accordance with the requirements outlined in the Zoning Ordinance and the Subdivision Ordinance. As outlined in the

Subdivision Ordinance, an EIA is required for "any proposed non-residential development project of ten (10) contiguous acres or more in extent that disturbs ten (10) or more acres."

ii. Limitations

This EIA was prepared by using data sourced from public documents, online sources and onsite sampling and evaluation. This document serves to provide Chatham County with the necessary information needed to evaluate the potential environmental impacts associated with the proposed Project at the time of submittal. It is assumed that the development will be constructed in accordance with all applicable local, state, and federal regulations.

This report is intended for use only by Chatham County and ZR Chatham, LLC. This EIA is not intended or recommended for reuse on any other project.

III. Proposed Project Description and Need

The proposed Williams Corner project is an approximately 118-acre mixed-use development consisting of multi-family, office, storage, and retail development to meet current and projected residential and commercial real estate needs of Chatham County and the surrounding region. The project site is located on the US 15-501 corridor, approximately 7 miles south of Chapel Hill, North Carolina and approximately 11 miles north of Pittsboro, North Carolina. Exhibit 1.0 shows the Project location and approximate Project boundary.

Chatham County was the second fastest growing county in the state at the time that the 2017 Chatham County Comprehensive Plan was published. According to that report, projected population growth of the county is expected to reach 128,327 by 2040. As of 2014, there were 29,322 housing units in Chatham County, a number which grew by 37% between the years 2000-2014 (Plan Chatham, 2017). Given the projected growth of the county the demand for centralized and quality community living is expected to increase.

The included preliminary construction drawings indicate the approximate proposed cleared and graded area, proposed structures, appurtenant infrastructure, utilities, and general site layout (Attachment A). The site plan provided is conceptual in nature. Shown uses and square footages will be based on final end users. Final site plans for individual portions of the Williams Corner project will be submitted for review and approval to Chatham County. Earthwork computations will be performed at the time of development of the Project's associated construction documents. The Project is not part of a larger master plan.

The Project area is comprised of 12 parcels that will be recombined to support the following uses, constructed in phases: +/- 13.2 acres of multi-family units north of Cub Creek and adjacent to Legend Oaks Drive (construction phase IV); +/- 14.4 acres of multi-family units south of Cub Creek (construction phase I); +/- 19.1 acres of retail (construction phase I), office and storage uses (based on final end users; construction phase III); and +/- 71.3 acres of common area/riparian buffers. The totality of the Project has a projected build-out timeline of 5-7 years, depending on market conditions. The total impervious surface area (ISA) for the Project is approximately 28 acres of the total 118 acres, or 23.73%. Site disturbance proposed in association with Williams Corner is limited to the western portion of the overall project area, proximate to US 15-501.

Multi-family units north and south of Cub Creek are each designed to accommodate up to 275 residential units. Multi-family units north of Cub Creek are anticipated to have a maximum of 426 parking spaces, while multi-family units south of Cub Creek will have a maximum of 393 parking spaces. Residential buildings vary between two to four stories. Residents and visitors will have access to the northern residential development from the Legend Oaks Drive site entrance or from retail development to the south, while access to the southern residential development is provided from Lystra Road or from retail development to the east.

Between 90,000 to 140,000 square feet of retail space is planned in the western portion of the development area along US 15-501 and Lystra Road, with direct access from two locations along US 15-501 or from a singular connection from Lystra Road. In the northwestern corner of the project area, between 80,000 to 120,000 square feet of storage space and between 50,000 to 90,000 square feet of office space is planned with an entrance from Legend Oaks Drive and connection to multi-family development north of Cub Creek and retail development south. Retail will be limited to one story buildings, while office and storage will vary from one to three stories. The site plan incorporates a maximum of 855 parking spaces for retail and office onsite. All parking shown on the site plan meets Chatham County off-street parking requirements for retail, commercial, and residential development.

Currently, the project site plan implements a 100' setback with variable Type A, B, or C buffer around the perimeter of the Williams Corner development. Within the setback, 20' type A, B, and C buffers will be implemented abutting the parcel boundaries. In some areas, existing loblolly pine and deciduous vegetation will be preserved with additional evergreen plantings to supplement existing vegetation in order to meet perimeter buffer planting requirements. Where the 100' setback intersects with a stream buffer area, existing vegetation (mature deciduous and evergreen species) will remain undisturbed. Alternatively based on a pending text amendment the perimeter setbacks may be reduced to 50' along US 15-501. No environmental consequences are expected as a result of reduction of the buffer along US 15-501, as the project site displays a high level of unnatural disturbance proximate to the US 15-501 roadway. Perimeter setbacks that are distal from the highway are more natural in composition and structure and will be maintained at 100'. Attachment A includes a depiction of onsite perimeter setbacks, buffer types, and a landscape plan.

The Project incorporates stormwater Best Management Practices (BMPs) and curb and gutter for the treatment of stormwater. The Project is designed to treat all proposed impervious area, thereby preventing flooding of downstream properties. Impacts to surface water quality and downstream receiving waters will be minimized throughout the life of the project with the use of sediment and erosion controls during construction.

The Project will utilize and has direct access to Chatham County's North Water System, accessible via connections along both US 15-501 and Lystra Road. A letter dated January 14, 2020 from Mr. Larry Bridges, Chatham County Public Utilities Director, confirms that Chatham County will be able to serve water to the Project pending design approval by County staff and NCDEQ-Public Water Supply Section (Attachment B). Wastewater disposal generated from the Project will tie into existing infrastructure for treatment and disposal offsite by Old North State Water Company. Sanitary sewer will be both gravity and force main. Utilities are co-located within maintained North Carolina Department of Transportation (DOT) road rights-of-way that have inherently low ecological functioning and value.

IV. Alternatives Analysis

i. No Action Alternative

The no action alternative does not meet the purpose or need for the Williams Corner development, and is inconsistent with the planning vision outlined in the Chatham County Comprehensive Plan. Under the no action alternative, Williams Corner would not be constructed. The Project location's proximity to the Research Triangle Park and Piedmont Triad Region suggests that this parcel assemblage will ultimately be developed, which is further underscored by recent development proximate to the project location along the US 15-501 corridor as well as the area's "Community Center" designation (Plan Chatham, 2017).

ii. Previously-Approved Site Plan

Williams Corner has an existing site approval that provides a suitable, although less desirable, alternative. The standing site plan approval was designed to comply with standards in place nearly two decades ago, and incorporates less-restrictive property line setbacks and environmental buffers, resulting in a greater degree of environmental disturbance and loss of high-quality habitat on the site. Further, a letter dated October 20, 2005 provided by Withers & Ravenel indicates that the plan incorporated onsite wastewater treatment with designs for storage ponds, spray irrigation, and dedicated spray fields, increasing the potential for environmental contamination (Attachment C).

iii. Preferred Alternative

It has been determined that this parcel assemblage is the project proponent's preferred alternative. The Project location is ideal for accessibility to the Research Triangle Park Region (Chapel Hill, Durham, Raleigh, Research Triangle Park) and the Piedmont Triad Region (High Point, Winston-Salem, Greensboro), and facilitates sustainable and environmentally responsible development designed to balance economic growth with preservation of the integrity of Chatham County's rural backdrop.

The Project benefits the citizens and visitors of Chatham County by increasing tax base, property and sales tax revenue for Chatham County, providing job opportunities, as well as providing purchasing alternatives for the selection of products and services associated with the commercial aspect of the Project. The proximity of the Project to US 15-501 increases the opportunity to capture visitor expenditures, further benefiting Chatham County and its residents. The availability of existing infrastructure such as water supply and offsite wastewater treatment ensures the project will have a minimal environmental footprint, and the previously-disturbed nature of much of the site creates an opportunity to target desirable development away from the more rural, natural areas of Chatham County.

V. Existing Environment and Project Impacts

For each of the following resource topics we have provided information on the existing conditions, anticipated impacts, avoidance and minimization efforts and mitigative measures.

1.0 Geography

1.1 Geology

The site is located in the Carolina Slate Belt geographic ecoregion of North Carolina, primarily composed of felsic igneous and metamorphic rocks of piedmont uplands. The Project site overlies a pluton of granite to granodiorite geologic material that intruded the Carolina Slate Belt. The USGS Geologic Map of the

7.5-Minute Farrington Quadrangle indicates the majority of the underlying geologic material on this site consists of East Farrington pluton main facies (Zefg-m) metamorphic geologic material (Exhibit 1.1). Outcrops and boulders of diabase—primarily composed of plagioclase, augite and some olivine—are present along ridges, knolls and hilltops near the southern Project boundary.

Construction of the Project will require site preparation and balancing that has the potential to displace some of the outcrops and boulders native to the site. The limits of disturbance avoid the steep slopes typical of the natural valleys of the site, and property line setbacks along the southern Project boundary assist in preserving some areas where outcrops and boulders occur. The proposed conservation area overlaps with large areas of the site where these features occur. Because the Project will utilize municipal water supply to serve the development, deep drilling for wells will be avoided and construction activity will be limited to the minimal depth required to establish structural stability and install the private utilities.

Based on these circumstances, minimal short-term impacts to resistant boulders may result from extraction or relocation of these features during site preparation, but significant short-term impacts and long-term impacts to the geology of the site are unlikely.

1.2 Topography

The project site is situated in the Piedmont physiographic region and contains a rolling terrain with slight to steep slopes, with natural valleys dividing the property. The site is depicted on the Chatham County GIS USGS topographic quadrangle map (Exhibit 1.2). The topography of the site varies from a high elevation of approximately 548 feet above mean sea level (MSL) in the southeastern extreme of the project area to a low of approximately 390 feet above MSL, where Cub Creek exits the property to the east.

The existing topography on site will be altered during site preparation, including clearing and grading activities, although not substantially compared with the site's existing disposition. Significant portions of the western and southwestern Project area show evidence of having been previously cleared, graded, and/or excavated. Subsurface bedrock and steep slopes have guided the ultimate cut and fill limits of the Project, and prevent substantial manipulation of existing topographic conditions.

Given that the western and southwestern areas of the Project site appear to have been substantially altered historically and because the Project has been designed to retain the natural topographic character of the site as much as possible, no short- or long-term impacts to the topography of the site are expected.

1.3 FEMA Flood Hazard Areas

The entirety of the project site and the surrounding areas lie outside of mapped flood hazard areas (Exhibit 1.3). Flooding is not expected to impact downstream properties as a result of the Project, as the entirety of the stormwater runoff from newly proposed impervious areas will be captured and treated.

1.4 Anticipated Cut/Fill Volumes

Select areas of the site will need to be graded and/or filled to support the proposed project. Cut and fill volume estimates will be available at a later date, and any required land disturbance and grading permits will be acquired at a later date. It is anticipated that soil will be neither imported to nor exported from the site.

1.5 Pond/Dam Work

No pond or dam work is anticipated at this time.

2.0 Soils and Prime Farmland

2.1 Soils

Soils on this site are primarily sandy textured due to the weathering of the residual granite to granodiorite parent material. The Project area is predominantly composed of Wedowee sandy loam with varying slopes, amounting to approximately 98 acres (84.2%), while approximately 17.4 acres (14.9%) of Vance sandy loam borders the western Project area and US Highway 15-501. Approximately 1 acre (0.9%) of the site is mapped as water (Exhibits 2.1 and 2.2).

Restrictive geological, topographical, and soil constraints identified onsite are characterized by steep slopes, resistant boulders and rock outcrops, drainage features, wetlands, and saturated soil conditions. Geological and topographical considerations are discussed in sections 1.1 and 1.2. The majority of these areas are excluded from the limits of disturbance for the Project.

Soil disturbance is required to achieve site balance for completion of Williams Corner, but soil disturbance will be limited to areas within the Project area. Soil disturbance will be controlled with the use of sediment and erosion control measures in combination with stormwater BMPs and prudent construction practices. A sediment and erosion control plan will be submitted for review and approval by Chatham County prior to construction activity. Aspects of the plan include the use of skimmer sediment basins, silt fencing, sand bags and sediment traps. Roads are designed with road curb and gutter to direct roadway runoff to stormwater BMPs. All areas of impervious cover will be treated to County stormwater requirements. Erosion control basins utilized through construction phases will be converted to permanent BMPs in final phases of the project. Disturbed areas will be stabilized upon completion of construction activity. With the implementation of these practices, offsite impacts due to soil disturbance are not expected.

Preliminary site balancing discussions indicate that soils will not be imported to or exported from the Project site, and site balancing can be achieved from materials within the Project area. Should projections change, the grading and excavation plan will be updated accordingly.

Soil contamination is not expected as a result of the project, but may be possible with the operation of heavy equipment for construction activities. Existing soil contamination has not been identified within the Project area and is not expected given the previous uses associated with the properties. In the event of soil contamination, contaminated soil will be isolated and properly disposed of by qualified personnel.

2.2 Prime Farmland

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey of Chatham County, NC, Vance sandy loam at 2-6% slopes (VaB) and Wedowee sandy loam at 2-6% slopes (WeB) are considered prime farmland. Wedowee sandy loam at 6-10% slopes (WeC) and Wedowee sandy loam at 10-15% slopes (WeD) are classified as farmland of statewide importance (Hayes, 2006). The USDA NRCS Custom Soil Resource Report (Attachment D) indicates that approximately 14.9% (17.4 acres) of VaB and approximately 4.1% (4.8 acres) of WeB are

mapped in the project area and are considered prime farmland; however, existing conditions of some of these soil areas preclude them from being suitable for agricultural use due to existing site conditions and relict soil disturbance. Approximately 17.4% (20.3 acres) of WeC and approximately 22.2% (25.8 acres) of WeD are mapped in the project area and are considered farmland of statewide importance.

Exhibit 2.3 shows Chatham County GIS mapped prime farmland areas onsite. Based on this data, approximately 1.05 acres of prime farmland will be retained and approximately 23.06 acres of prime farmland will be lost within the project area. Of the total estimated acreage lost, approximately 2.4 acres of the GIS-indicated prime farmland are mapped at the location of an existing pond.

Portions of the WeC and WeD mapped soils lie in riparian areas that will remain undisturbed, particularly in the southwestern extent of the project area and a small area of WeD mapped in the northeastern project area. Short- and long-term impacts are expected to VaB and WeB mapped prime farmland, as well as WeC and WeD mapped farmland of statewide importance in upland areas outside of riparian buffers. Development of these areas will eliminate the potential use of these areas for farmland.

3.0 Land Use

Current land use of the property consists of vacant woodland and fields reverting from past agricultural use and mechanized land disturbance. Evidence of past manipulation is extensive in areas of the site, particularly in the western half of the Project area where residential structures are known to have existed. Timber harvesting is evident in the northern portion of the review area, primarily in the form of aged stumps and lack of old-growth. Historic aerials indicate that timbering of the site occurred between 1993 and 1999. During field review, W&W observed areas with barbed wire on trees, indicating that portions of the southern tracts were in pasture or farmland. Historic aerials indicate that an existing pond in the northwestern portion of the site previously operated as a quarry or borrow pit between the years 2004-2005, and had ceased operation by 2008 (Exhibits 3.1-3.3). Several residential structures appear to have been present along US 15-501 and Lystra Road, but have since been destroyed.

The region surrounding the project area is transitioning to a developed commercial and residential corridor, particularly along US 15-501, which is functionally classified as a principal arterial serving Chatham and Orange Counties (Stantec Consulting Services, Inc., 2014). Surrounding land use includes residential to the north (Legend Oaks), east (including Governors Club) and southwest (Briar Chapel); commercial, retail and office space to the north (North Chatham Village), west (Polks Village) and south (Chatham Downs); a solar farm to the south, and various interspersed areas of vacant woodlands and agricultural fields.

The proposed project will change the current land use from vacant woodlands, fallow fields, and former agricultural use to semi-developed mixed-use development, with commercial road frontage along US 15-501. The current land use does not align with the planning vision outlined in Chatham County's Comprehensive Plan, which is further underscored by zoning designations of similarly situated properties (Exhibit 3.4).

Williams Corner is compatible with surrounding land use along the developing US 15-501 corridor. Further, the preservation of riparian corridors and other habitat onsite facilitates continued ecological function of the site, contributing to the balance of development with the preservation of the natural environment in the transitioning corridor.

The current zoning of the property is CU-B-1 (Conditional Use District-General Business District) along US 15-501, with the remainder of the review area zoned as R-1 (Residential District 1). The applicant has requested rezoning to a mixed-use conditional district, consistent with long-term planning objectives envisioned and adopted by the County.

4.0 Existing and Natural Resources

In 2019 W&W verified a detailed wetland delineation previously performed by John R. McAdams Group and approved by Andy Williams, Project Manager with the Raleigh Regulatory Office of the U.S. Army Corps of Engineers, dated August 18, 2014 (Attachment E). The delineation performed by W&W was consistent with the methodologies and definitions defined under the Clean Water Act, and consistent with the 3-parameter approach outlined in the Eastern Mountains and Piedmont supplement of the 1987 US Army Corps Wetland Delineation Manual, post *Rapanos* Supreme Court decision guidance (2007), and Regulatory Guidance Letters (Engineers, 2012). Wetland types onsite were assessed using the North Carolina Wetland Assessment Method, and were categorized primarily as bottomland hardwood and headwater forest wetlands. Exhibit 4.1 shows the most recent delineation performed by W&W on the Williams Corner assemblage. W&W conducted an onsite stream buffer evaluation with Mr. Drew Blake of the Chatham County Watershed Protection Department on November 5, 2019. A subsequent buffer determination was issued on November 12, 2019 (Attachment F).

The proposed project will require permit verification from USACE and concurrence from DWR for a Nationwide Permit 29/39 and corresponding Water Quality Certification #4139 for authorization to construct two stream crossings. No wetland fills are proposed. Appropriate permits will be acquired prior to construction. The Project proponent is aware that stream mitigation may be required from the USACE depending on the final site plan. Should mitigation be required by USACE, several mitigation banks are available in the primary service area of the Project.

Other permits required for the proposed project may include but are not limited to: Sediment and erosion control permit, stormwater permit, grading permit, and building permit from Chatham County; Driveway permit from DOT.

5.0 Public Lands and Scenic, Recreational, and State Natural Areas

There are no public lands or scenic, recreational, or state natural areas located on or adjacent to the site (Exhibit 5.1).

6.0 Areas of Archaelogical or Historical Value

Cultural Resources are protected by law under the Indian Antiquities Articles of the North Carolina Adminimistrative Code and Section 106 of the National Historic Preservation Act of 1966. Section 106 protects properties that possess significance but have not yet been listed or formally determined eligible for listing in the National Register. The North Carolina State Historic Preservation Office (SHPO) in Raleigh should be contacted if archaeological artifacts are uncovered during construction.

During a field review, W&W identified a partial chimney structure (Exhibit 6.1) and a feature that appears to be an old spring box shaped with stone at the head of a linear wetland draining to Cub Creek (Exhibits 6.2). The structures appear to be at least 50 years old. These features are located within areas that will remain undisturbed by development of Williams Corner and will not be impacted by the Project.

In October 2019, W&W located a SHPO GIS record that identifies the Blake-Andrews-Horton Farm (CH0233, status SO) in the southwestern portion of the project area. An inquiry to the Chatham County Historical Association and the Chatham County Planning Office (Attachment G) did not return information relating to the record, but identified a cemetery (referred to as the "Cole Family Cemetery") that may have been reinterred within the Project area. A report from Environmental Services, Inc. dated September 23, 2019 documents the reinterment location of the Cole Family Cemetery (Attachment H), as identified on landscape sketch plans by John R. McAdams included within the report. The current location of the Cole Family Cemetery is shown on the Williams Corner site plan.

Exhibit 6.3 shows the approximate location of the chimney structure and springhead relative to the Project boundary. Because all areas of archaeological or historic value are located within the conservation area of the Project, there will be no short- or long-term impacts to these resources.

7.0 Air Quality

Heavy equipment operation during construction phases of the Project may generate short-term impacts related to vehicle emmissions and dust, similar in degree to those generated onsite during previous timber harvesting activities and mechanized land disturbance. Emmission standards established for nonroad compression-ignition (diesel) engines and spark-ignition engines should assist in minimizing unavoidable emissions. Dust suppression will be implemented to minimize the dispersion of particulates if necessary.

Increased vehicle traffic generated by the Williams Corner development will likely produce emissions similar to those emitted as a result of other development in the US 15-501 corridor. The Project's proximity to a CCX Park and Ride Station approximately 1.4 miles north of the Project location provides an opportunity for residents and visitors to utilize mass transit, potentially resulting in reduced emissions. A Traffic Impact Analysis (TIA), developed by Kimley-Horn and Associates, has been submitted to, reviewed and approved by DOT Congestion Management and the District Office. The proposed uses associated with Williams Corner are not expected to produce odor levels of hazardous, objectional or offensive concentrations. The Project will comply with the North Carolina State Implementation Plan for achieving and maintaining National Ambient Air Quality Standards (NAAQS) for criteria pollutants.

Controlled open burning practices may be implemented during construction phases. In accordance with North Carolina Open Burning regulations 15A NCAC 02D .1900, open burn permits will be obtained from the North Carolina Department of Forestry or from one of the several permit agents in Chatham County if necessary during land clearing activities within the Project area. These permits will be the responsibility of the contractor overseeing the work. Where an open burn permit is not necessary, burning activies will meet the criteria set forth in Paragraph B of 15A NCAC 02D .1800. If any odors are released in association with construction of the project, the odors will be temporary and insignificant in nature.

8.0 Noise Levels

Under existing conditions, noise levels onsite are generated primarily by highway traffic on US 15-501 and Lystra Road. Noise levels vary depending on proximity to these roadways and elevation within the site. The least amount of ambient noise is apparent in lower elevations of natural valleys and within stream corridors in central and eastern portions of the site. These areas are generally encompassed within the Project's preserved riparian corridors and outside of the limits of disturbance.

Noise levels are expected to temporarily increase during construction phases of the project, and are anticipated to be similar to the noise levels that were generated by construction of the aforementioned commercial and residential developments within one mile of the Project area. Construction equipment operation time will be limited to minimize disturbance of surrounding properties.

Commercial developments located within one mile north (Plaza Drive and US 15-501), west (Polks Village Road and US 15-501), and south (Lystra Road and US 15-501) of the Project generate comparable noise levels to what is anticipated with completion of the Project. Residential neighborhoods to the north, east, and southwest provide similar benchmark noise levels to the residential portions of the Project. Preservation of existing vegetation, in combination with variation in elevation in central and eastern portions of the site, should assist in mitigating the effects of increased noise. Property line setbacks and vegetative buffers further mitigate disturbance to adjacent property owners. Commercial and retail uses along US 15-501 and Lystra Road are not expected to contribute significantly to existing noise levels, as they are expected to operate during normal business hours. Uses within the project area are subject to the requirements and noise level limitations set forth under the Chatham County Noise Ordinance.

9.0 Light Levels

Site lighting will be in accordance with the lighting requirements listed in Section 13 of the Chatham County Zoning Ordinance. Final site plans for end users will be required to meet Chatham County's Lighting Requirements and will require approval of lighting plan by Chatham County prior to construction of the various end user site construction plans.

Project design and implementation strategies will assist in preventing illumination outside of the property boundary. Long-term impacts may occur to wildlife due to increased illumination in built-upon areas that were previously forested, but undisturbed areas of the site will help mitigate this effect by providing habitat. Vegetation preservation onsite will assist in screening adjoining residents and wildlife from increased light levels.

10.0 Surface and Groundwater Resources

Exhibit 4.1 shows the most recent delineation performed by W&W on the Williams Corner assemblage, and depicts surface waters and wetlands within the Project area.

The Project area is located in the Morgan Creek watershed of the upper Cape Fear River Basin, USGS 12-digit Hydrologic Unit Code 030300020607 (United States Geological Survey, 1974)(Exhibit 10.1). The site has a drainage area of 1.22 square miles (Attachment I). Surface waters of the site drain to Cub Creek, the main drainage of the site, which flows centrally through the project area from west to east and exits the site at the eastern property boundary. Several unnamed perennial and intermittent tributaries are on the site and drain to Cub Creek. North Carolina Division of Water Quality (DWQ) stream index numbers for Cub Creek is 16-41-2-10-(.5). Cub Creek has a best use classification of "WS-IV; NSW". WS-IV; NSW classified waters are protected as water supplies that are generally in moderately to highly developed watersheds; point source discharges of treated wastewater are permitted pursuant to Rules .0104 and .0211, local programs to control non-point source and stormwater discharge of pollution are required. Waters classified as "NSW" or "Nutrient Sensitive Waters" are those that have the potential to exhibit high levels of nutrients. More stringent regulations exist on these waters in order to better protect the

water quality downstream. Cub Creek is a tributary of B. Everette Jordan Lake. Buffers are required on all NSW waters and upper tributaries of Jordan Lake. The Project will abide by all required buffers and surface water regulations to avoid and minimize impacts to downstream waters. Generally, aquatic and riparian areas found on the Williams Corner site occur within or below the greater slopes in the site's natural valley drainages. These areas are generally composed of high-quality habitat and diverse terrestrial plant communities, and will be protected and preserved.

The Chatham County Watershed Protection Ordinance implements stringent buffer requirements around surface water features in the County's jurisdiction. The ordinance requires all stream classifications to be conducted by a qualified professional who has received documented certification of training in classifying streams and surface waters in North Carolina. Additionally, all wetland delineations must be conducted by a qualified professional who has at least two years of demonstrated experience in conducting wetland delineations in North Carolina under the Clean Water Act Sections 401 and 404 provisions. All field determinations of streams are subject to review and approval by the County. The ordinance currently requires a one hundred (100) foot buffer laterally of the top of bank (TOB) of perennial streams, or the full horizontal extent of the "Area of Special Flood Hazard" as most recently mapped by the North Carolina Floodplain Mapping Program, NC Division of Emergency Management (whichever is greater). No flood hazard areas are mapped within the project area. Intermittent streams require a fifty (50) foot riparian buffer laterally of the TOB. Ephemeral streams require a thirty (30) foot buffer laterally of the TOB. Wetlands require a riparian buffer of fifty (50) feet from the delineated boundary, surrounding all features classified as wetlands and linear wetlands. The proposed site plan implements a minimum 100-foot undisturbed riparian buffer along Cub Creek. Wetlands and seasonal streams are preserved with undisturbed 50-foot buffers, and 30-foot undisturbed buffers are preserved along ephemeral streams.

The Piedmont of North Carolina is underlain by crystalline-rock aquifers lined by bedrock that yields water from fractures and secondary porosity. Recharge predominately occurs along the interstream areas through porous regolith and fractures in bedrock. Most groundwater moves laterally and enters depressions in the landscape, such as stream channels. Solum thickness has a direct correlation to groundwater storage; generally, the thicker the overlying regolith the greater the volume of water storage potential and subsequent well recharge/discharge capacity. Typically, groundwater recharge is greater in valleys and depressional areas due to the thicker regolith and proximity to fracture zones in the bedrock. Groundwater quality is generally suitable for drinking and other uses, but iron, manganese, and sulfate can occur at undesirable levels (Trapp, Jr. & Horn, 1997).

Most observable changes in groundwater quality are related to land use and waste disposal patterns. Underground storage tanks, waste lagoons and disposal landfills are commonly responsible for point source contamination. However, more dispersed contamination by non-point sources is increased with development and the addition of impervious surfaces, and is manifested by petroleum, pesticide and biological contamination. Land uses commonly associated with groundwater contamination are not known to have occurred within the Project area. There are no known groundwater quality issues associated with the project area, although it is likely that surface runoff from existing impervious surfaces and adjoining development conveys pollutants from the large drainage area of the site. W&W did not identify pollutants within surface waters or wetlands during the field review of the project area.

No short- or long-term impacts are expected to water supply or drinking water sources as the project will utilize municipal water supply. Construction activity for the project and the project's completion will not impact groundwater supply onsite. Proposed construction activity has the potential to result in short-term impacts to surface water quality as a result of site preparation, soil disturbance, and construction. To minimize potential short- and long-term effects to onsite water quality, the project will employ sediment and erosion control measures. The sediment and erosion control plan for the project will be submitted for review and approval to Chatham County prior to construction. Stormwater runoff rates may increase due to the addition of new impervious area, but will be managed and treated by stormwater BMPs. The stormwater management plan includes the use of diffuse flow methods to prevent degradation of riparian buffers and downstream waters.

11.0 Fish and Aquatic Habitats

Cub Creek is the primary drainage located within the site, with several smaller perennial and intermittent streams draining to Cub Creek within the review area. Cub Creek and the associated tributaries to the south provide suitable habitat to host fish and other aquatic species. The average width of streams onsite is approximately 4 feet, with an average depth of approximately 6 inches. Generally, the perennial systems onsite contained strong riffle-pool complexes, ample substrate, and hosted sporadic aquatic vegetation.

The greatest diversity of aquatic species was noted within the lower reaches of Cub Creek and the online impoundment located in the southern portion of the site. Fish species present within these water bodies are typical of the Piedmont region and include species such as mosquito fish and creek chub. The impoundment and its headwaters contained sunfish, bass, and other small bait fish. Macrobenthos were noted in the eastern reach of Cub Creek in low numbers. Frogs and crayfish burrows were also noted. Perennial and intermittent streams north of Cub Creek provide weak fish and aquatic habitat due to a lack of baseflow.

The open water feature formerly used as a borrow pit provides disjunct habitat for commonly occurring amphibian and avian species as well as common submerged aquatic vegetation, including milfoil (*Myriophyllum* spp.), and a wetland fringe. It is located away from riparian corridors and is recently naturalized, therefore likely ranking as a low-value, manipulated ecosystem. The borrow pit, located outside of a natural drainage feature, appears to have begun filling with water between 2005-2008 (refer to exhibits 3.2 and 3.3). It is approximately 500 feet north of Cub Creek and is hydrologically isolated, the jurisdictional status of which was confirmed by the USACE as being isolated with no significant nexus to downstream waters, and therefore nonregulated. The created environment is suitable for early colonizing fish and amphibian species and transient waterfowl species. We observed mosquito fish, frogs, and tadpoles within the water along with some aquatic beetles. Fish and amphibian eggs are known to be dispersed by water fowl and we anticipate that this is the case here. The relative age and excavated nature of the basin is such that there are no suitable comparisons to natural systems. Aquatic environments incidental to excavation do not typically rank high in ecological value, although this unregulated resource appears to be a refuge for waterfowl such as Great Blue Heron and various species of ducks.

Fish and aquatic habitats onsite will be primarily preserved within the undisturbed areas of the proposed development, with the exception of two road crossings constructed for access to high ground. These

crossings will be located in areas where aquatic habitat is of lower quality and species less abundant or absent.

The Project planning process involved determining ways in which impacts to surface waters and wetlands could be avoided and minimized, thereby reducing impacts to aquatic species. The majority of the jurisdictional waters and all wetlands onsite will be avoided completely, but the central location of the natural drainage valley necessitates impacts in order to access high ground and provide inner site circulation. Two streams and their respective stream buffers will require impacts to construct the roadways serving the development. Each crossing width will be minimized to the greatest extent practicable by utilizing headwalls and orienting crossings to be perpendicular to streams. Each crossing will be limited to less than 150 LF of impact per crossing, with total project impacts limited to less than 300 LF, which is the common threshold established under many of the Nationwide Permits used by USACE to permit jurisdictional impacts to surface waters and wetlands. The Project has been designed to completely avoid impacts to wetlands onsite. Stormwater BMPs will utilize diffuse flow techniques to discharge outside of protected buffer and riparian areas. Due to the minimal nature of the two proposed crossings, mitigation for buffer impacts is not anticipated at this time. During active construction, potential impacts to these resources will be mitigated with the implementation of a sediment and erosion control plan. Short- and long-term impacts to these resources will be effectively minimized through these construction techniques and Project designs.

12.0 Wildlife and Natural Vegetation

The site exhibits a sporadically located heterogenous mix of natural vegetation. The present plant community was generated by natural succession with manipulation from past and existing land uses. The site shows evidence of activities such as land clearing for agricultural purposes, clearcutting, fire suppression, road construction and maintenance, and maintenance of utility easements. Distribution and composition of the plant communities on and immediately adjacent to the site reflects landscape variations in topography, soils, hydrology, and past or present land use practices. The plant communities observed within the property do not wholly conform to a natural plant community classification due to past silvicultural practices, topography, and soils. Additionally, the interspersion of habitat types has a direct correlation to the wildlife population dynamics and species diversity.

12.1-12.2 Natural Community Types and Dominant Species

The following plant communities based on the community descriptions published within the Classification of the Natural Communities of North Carolina Third Approximation (Schafale & Weakley, 1990) were found on the Williams Corner site. Exhibit 12.1 indicates generalized land cover of the project area.

<u>Dry-Mesic Oak-Hickory Forest</u>

The dry-mesic oak-hickory forest generally occurs in higher elevation areas onsite away from surface waters. The composition of the canopy is fairly consistent, with species dominance varying. Generally, the dry-mesic oak-hickory forests onsite are composed of more Southern Red Oak (*Querus falcata*) and Black Oak (*Quercus velutina*), while the dry oak-hickory community has a greater proportion of Scarlet Oak (*Quercus coccinea*) and a small component of Post Oak (*Quercus stellata*). The dry-mesic oak-hickory forest still contains a component of pines throughout much of the site. The subcanopy is primarily the same as in the dry oak-hickory community, but American Beech (*Fagus grandifolia*) contributes to

the composition. The shrub and herb layer are slightly more diverse, containing additional species such as Downy-Arrowwood (*Viburnum rafinesquianum*), Christmas Fern (*Polystichum acrostichoides*), and Rattlesnake Plantain (*Goodyera pubescens*).

Mesic Mixed Hardwood Forest (Piedmont Subtype)

This community type occurs in areas that have a higher moisture regime and nutrient content. The canopy is dominated by mesophytic hardwood species such as American Beech (*Fagus grandifolia*), White Oak (*Quercus alba*), Red Oak (*Quercus rubra*), Tulip Poplar (*Liriodendron tulipifera*), Sweet Gum (*Liquidambar styraciflua*), and Pignut Hickory (*Carya glabra*), as well as scattered Loblolly Pine (*Pinus taeda*). The subcanopy is comprised of Sourwood (*Oxydendrum arboretum*), Red Cedar (*Juniperus virginiana*), American Holly (*Ilexopaca*), Umbrella Magnolia (*Magnolia tripetala*), and Flowering Dogwood (*Cornus florida*). The shrub layer is composed of species such as Downy-Arrowwood (*Viburnum rafinesquianum*), and American Hazelnut (*Corylus americana*). The herb layer is also quite diverse, with species such as Beech Drops (*Epifagus virginiana*), Azure Bluet (*Houstonia caerulea*), Spotted Wintergreen (*Chimaphila maculate*), Little Brown Jug (*Hexastylis arifolia*), Cranefly Orchid (*Tipularia discolor*), Rattlesnake Fern (*Botrychium virginianum*), and Heartleaf Foamflower (*Tiarella cordifolia*).

Piedmont/Mountain Bottomland Forest

This community type occupies the floodplain surrounding Cub Creek in central portions of the site. The canopy is comprised of Tulip Poplar (*Liriodendron tulipifera*), Sweet Gum (*Liquidambar styraciflua*), American Elm (*Ulmus americana*), River Birch (*Betula nigra*), and Red Maple (*Acer rubrum*). The subcanopy is composed of American Holly (*Ilexopaca*) and Musclewood (*Carpinus caroliniana*). Other herbaceous species include Cranefly Orchid (*Tipularia discolor*), Hearts-a-Bustin' (*Euonymus americanus*), Christmas Fern (*Polystichum acrostichoides*), Common Greenbrier (*Smilax rotundifolia*), Netted Chainfern (*Woodwardia areolata*), Stiff Bedstraw (*Galium tinctorium*), and Japanese Honeysuckle (*Lonicera japonica*).

Early Successional Areas

Examples of early successional communities occur within field-woodland transition areas and areas that were historically mechanically manipulated or used for agriculture. Species observed include Horseweed (*Erigeron canadensis*), Purpletop Tridens (*Tridens flavus*), Plume Grass (*Erianthus contortus*), *Panicum* spp., Rabbit Tobacco (*Gnaphalium obtusifolium*), Red Cedar (*Juniperus virginiana*) saplings, Broomsedge (*Andropogon virginicus*), Wooly Mullein (*Verbascum thapsus*), Smooth Sumac (*Rhus glabra*), and Tree-of-Heaven (*Ailanthus altissima*). Formerly clear-cut areas are comprised of Sweetgum (*Liquidambar styraciflua*), Loblolly Pine (*Pinus taeda*), and Red Maple (*Acer rubrum*) saplings. Blackberry (Rubus spp.) provides nearly 100% of the understory cover. Non-native species also exist in these early successional areas, including Chinese privet (*Ligustrum sinense*) and Autumn Olive (*Elaeagnus umbellata*).

12.3 Habitat for Rare, Threatened, and/or Endangered Species

Species with Federal classifications of Endangered or Threatened are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). A query of the North Carolina Natural Heritage Program (NHP) indicates that there are no records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the evaluation area. The NHP

report (Attachment J) indicates the Carolina Ladle Crayfish (*Cambarus davidi*), a state-designated significantly rare crustacean, is known to occur within a one-mile radius of the project area. W&W did not observe this species when reviewing fish and aquatic habitats onsite, but perennial stream systems within the review area provide suitable habitat for the species. Construction phases of the project will utilize sediment and erosion control measures to avoid impacting potential habitats that could support this species. Further, preservation of riparian buffers onsite will further ensure impacts to potential habitat for the species is avoided.

W&W conducted a field review for the presence of threatened and endangered species onsite that are known to occur in Chatham County. The field review was catered towards identifying habitat suitable to support species with a federal status of threatened or endangered that are known to occur in Chatham County, including Bald eagle (*Haliaeetus leucocephalus*), Cape Fear shiner (*Notropis mekistocholas*), Red-cockaded woodpecker (*Pecoides borealis*), and Harperella (*Ptilimnium nodosum*) (U.S. Fish & Wildlife Service, 2018). Bald Eagles are known to occur in proximity to Jordan Lake, but the Project impact areas are beyond the expected normal occupation area of the species. The project site is located outside of the range of the Cape Fear Shiner. Additionally, the site lacks expanses of fire-maintained pine forests and that typically support habitat for the Red-cockaded woodpecker.

Harperella is known to occur on gravelly and rocky sandbars of clear, swift flowing streams. Cub creek may provide suitable conditions to support this species, although uncontrolled stormwater runoff from existing impervious areas likely degrades the suitability of the habitat. W&W did not observe the species during the field review.

12.4 Wildlife Displacement

Permanent displacement of wildlife is not expected as a result of the proposed project. The project is designed to accommodate wildlife habitat through the preservation of undisturbed areas and riparian corridors in central and eastern portions of the site. Temporarily displaced wildlife are expected to migrate to adjacent habitats during the construction period. Areas adjacent to the project area provide suitable habitat including Loblolly Pine Forests, Oak-Hickory communities, mixed hardwood communities, forested wetlands and riparian areas, and stream channels, with natural communities similar to those currently found on the site. After development is complete, undisturbed areas will serve as permanent wildlife habitat and dispersal corridors.

12.5 Invasive Species

The site has a proliferation of non-native invasive species that has severely impacted the composition and stratification of the plant communities. Princess Tree (*Paulownia tomentosa*) and Tree-of-Heaven (*Ailanthus altissima*) were identified in the tree and sapling layers. Autumn Olive (*Eleagnus umbellata*), Russian Olive (*Elaeagnus angustifolia*) and Chinese privet (*Ligustrum sinense*) have invaded the shrub layer in many areas outside of active agricultural use, with Russian Olive being particularly prolific where the tree canopy has been reduced. Similarly, Japanese Stiltgrass (*Microstegium vimineum*) and Japanese Honeysuckle (*Lonicera japonica*) comprise much of the herb layer.

Long-term management of exotic species will improve the ecological value of the undisturbed riparian areas and uplands. Proposed development areas that are proximate to US 15-501 are the most impacted by the invasive species and will see short- and long-term impacts resulting from the proposed

development. Areas that have a higher endemic composition of species will be preserved within undisturbed areas of the project.

12.6 Deforestation

Development of the site requires deforestation in upland areas where construction is proposed, and where stream crossings are proposed to access high ground for development. Future undisturbed areas comprise approximately 50% of the site, and will preserve much of the older growth communities associated with surface waters and wetlands in the project area. Deforestation will occur in areas that are early to mid successional growth or in areas that are currently maintained or historically used in agriculture. The project area will be timbered using typical equipment. Tree save areas and buffers will be clearly marked prior to construction activity to establish timbering limits.

13.0 Hazardous Materials

Equipment fuel may be temporarily staged onsite by contractors in de minimis quantities. A spill kit will be available for use by trained personnel if accidental spills occur. No other hazardous materials will be stored or introduced during construction or operation of the site.