



PL(Z) 25-05
City of Greensboro Planning Department
Zoning Staff Report

City Council Hearing Date: March 18, 2025

GENERAL INFORMATION

APPLICANT	Tom Terrell for Christopher Farms, LLC, Hamburg Heights, LLC, and MMM- 4305 Hamburg Mill Road, LLC.
HEARING TYPE	Annexation and Original Zoning Request
REQUEST	County RS-40 (Residential Single-family) to City PUD (Planned Unit Development) and the associated Unified Development Plan
CONDITIONS	<ol style="list-style-type: none">1. Permitted uses shall include all uses allowed in the TN district and:<ul style="list-style-type: none">• Assisted Living Facility• Life Care Community• Rooming and Boarding Houses, up to 9 tenant residents.• Overnight Accommodations• Retreat Center• Short Term Rentals• Mobile Food Vendors, Motorized• Mobile Food Vendors, pushcart• Pet Grooming Services, without boarding• Artisan Manufacturing• Craft Distillery• Microbrewery• Bars and Brewpubs• Special Events Facilities
LOCATION	5136 Carlson Dairy Road and 4305 and 4307 Hamburg Mill Road
PARCEL ID NUMBER(S)	7837599875, 7838614537, 7838613370
PUBLIC NOTIFICATION	The notification area for this public hearing was 750 feet (Chapter 30-4-1.4 of the Land Development Ordinance requires notification of the owner of that parcel of land and the owners of all parcels of land adjoining and contiguous to that parcel of land as shown on the County tax listing). 102 notices were mailed to those property owners in the mailing area.
TRACT SIZE	78.512 acres

TOPOGRAPHY Undulating
VEGETATION Some trees, mostly cleared

SITE DATA

Existing Use		Agricultural land, single-family dwellings, and undeveloped land
	Adjacent Zoning	Adjacent Land Uses
N	Summerfield RS (Residential Single-family) and Summerfield AG (Agricultural)	Single-family dwellings and undeveloped land
E	Summerfield RS (Residential Single-family), Summerfield AG (Agricultural), Summerfield OI (Office/Institutional), City of Greensboro PNR (Parkland and Natural Resources)	Agricultural land, single-family dwellings, Lake Higgins, and undeveloped land
S	Summerfield RS (Residential Single-family)	Single-family dwellings, undeveloped land, and Lake Higgins
W	Summerfield RS (Residential Single-family), Summerfield CZ-OSR (Conditional Zoning - Open Space Residential)	Single-family dwellings and undeveloped land

Zoning History

Case #	Effective Date	Request Summary
N/A	N/A	The subject properties are not currently located in the City's jurisdiction.

ZONING DISTRICT STANDARDS

District Summary *

Zoning District Designation:	Existing County AG	Existing County RS-40	Requested City PUD
Max. Density:	1.1 dwellings per acre	1.0 dwellings per acre	Per the UDP, dwelling units are limited to not more than 268 and Commercial/Civic uses are limited to 18,000 square feet.
Typical Uses	Typical uses in the County AG district include agricultural uses as well as supporting facilities that can include limited residential uses.	Typical uses in the County RS-40 district include single-family dwellings with a density of not less than 1.0 unit per acre.	Permitted uses shall include all uses allowed in the TN district and these additional uses: Assisted Living Facility; Life Care Community; Rooming and

Boarding Houses, up to 9 tenant residents; Overnight Accommodations; Retreat Center; Short Term Rentals; Mobile Food Vendors, Motorized; Mobile Food Vendors, pushcart; Pet Grooming Services, without boarding; Artisan Manufacturing; Craft Distillery; Microbrewery; Bars, Nightclubs, and Brewpubs; and Special Events Facilities.

**These regulations may not reflect all requirements for all situations; see the City of Greensboro Land Development Ordinance for all applicable regulations for site requirements for this zoning district.*

SPECIAL INFORMATION

Overlay District Ordinance/Historic Preservation

The subject site is not located within an overlay district.

The subject site is not:

- Located in a City of Greensboro Historic District or Heritage Community
- Designated as a Guilford County Landmark Property
- Recognized as a State of North Carolina Historic Site
- Listed in the National Register of Historic Places
- Located in a National Register Historic District

Environmental/Soils

Water Supply Watershed Site drains to Greensboro Watersupply Watershed WS-III, WCA Tier 3, Brush Creek sub-basin

Floodplains N/A

Streams Blue Line streams and possible Non-Blue Line Stream features onsite. Non-Blue Line Stream features must be identified for possible stream buffers. Perennial and Intermittent streams require a 50' stream buffer measured from top of bank on each side. Show and label top of stream bank. Label zones with dimensions and restrictions within the buffer. "No BUA is allowed in the entire buffer" (see section LDO 30-12-3.9 for buffer restrictions). Show and label the different zones within the buffer (see LDO 30-12-3.9F for information about the different zones). Intermittent and Perennial streams that have no special flood hazard area must shall apply a non-encroachment area to the stream. Please show & label non-encroachment area (measured 30ft from top of bank or 5x's the width of the channel) for intermittent & perennial streams. See the Land Development

Ordinance (LDO) Flood Damage Prevention, Chp.30-12-2.3F for description of requirements.

Other: Site must meet current watershed requirements, Water Quality and Water Quantity control must be addressed. Maximum BUA for High Density Development is 30% with sewer, Low Density is 12% with sewer. Water Quality must treat the first 1" of rainfall. Water Quantity Control must reduce the 1yr, 2yr & 10yr 24hr storms to pre-development levels. State / Corps permits are required for any stream or wetland disturbance or crossing. All BUA must be treated by a State approved water quality BMP/SCM. See Land Development Ordinance Requirements pertaining to site. LDO Chp.30-12-4 for Land Disturbance requirements and Chp.30-12-8.3 Table 12-15 for Open Space requirements for WCA. Site is within the 5 statute mile radius of the PTI airport. No SCM/BMP is allowed that holds a normal pool elevation unless supporting engineering documentation is provided. State/Corps permits are required for any stream or wetland disturbance or crossing.

Utilities (Availability)

Water is available on Carlson Dairy Road 7,235+/- feet to the southeast. Sewer is available 7,235+/- feet to the southeast at the intersection of Carlson Dairy Road & Horse Pen Creek Road. Private Developer shall ensure all extensions to the property and on site water and sewer meet City of Greensboro's Water and Sewer Design Standards. A water and sewer feasibility has been completed for this site.

Airport Overlay District & Noise Cone

N/A

Landscaping & Tree Conservation Requirements

The landscaping requirements of the PUD are established within the Unified Development Plan. The minimum requirements are those set out in Section 30-10 of the Land Development Ordinance, as noted below.

Landscaping:

Street Yards:

Street planting yards must be installed abutting public street rights-of-way. The required street planting yard must have a minimum width of 10 feet (as measured from the outside edge of the right-of-way or the back of the sidewalk, whichever is further from the street centerline) and include at least 2 canopy trees and 17 shrubs per 100 linear feet of required street planting yard, not including allowed driveways.

Buffer Yards:

There are no Landscaping or Tree Conservation requirements for single-family residential uses.

Adjacent to Single-family: Type C buffer yard, with an average width of 15', a minimum width of 10', and a planting rate of 2 canopy trees, 3 understory trees, and 17 shrubs per 100 linear feet.

Adjacent to vacant property or same LUC (land use class): 5' wide Vehicular Use Area buffer yard (see below) between any parking lot or drive aisle and the adjacent property line.

Parking Lots:

When a parking lot or other vehicular use area abuts a vacant site or a site with the same land use classification as the subject site, a planting yard with a minimum width of 5 feet must be provided between the parking lot/vehicular use area and the abutting (interior) property line. This required planting area must be landscaped with at least 2 understory trees and 18 evergreen shrubs per 100 linear feet.

Trees for required parking spaces: 1 canopy tree per 12 spaces, in islands or medians within the parking lot.

Tree Conservation:

For 78.512 acres, 10% of parcel size in critical root zone to be dedicated for Tree Conservation

Transportation

Street Classification: Carlson Dairy Road – Collector Street.
Hamburg Mill Road – Major Thoroughfare.

Site Access: All access(es) must be designed and constructed to the City of Greensboro standards.

Traffic Counts: Hamburg Mill Road AADT = 1,600 (NCDOT, 2023).
Carlson Dairy Road AADT = 3,500 (NCDOT, 2023).

Trip Generation: 24 Hour = 2,772, AM Peak Hour = 219, PM Peak Hour = 292.

Sidewalks: Sidewalks are a requirement of the Development Ordinance and shall be installed per the Streets Design Standards Manual. Sidewalk does not exist along the frontage of this property.

Transit in Vicinity: No.

Traffic Impact Study: Yes, required per TIS Ordinance. Please see the end of this staff report (TIS) for the Executive Summary of the **DRAFT** TIS.

Street Connectivity: N/A.

Other: N/A.

IMPACT/POLICY ANALYSIS

Land Use Compatibility

The proposed **City PUD (Planned Unit Development)** zoning district would allow land uses that are compatible with the general character of the area.

GSO2040 Comprehensive Plan Policies

The subject properties lie outside the water/sewer service boundary established at the time the **GSO2040** Comprehensive Plan was adopted, so it was not included on the Anticipated Growth Maps. The **GSO2040** Future Land Use Map designates similar nearby sites as **Residential**. The requested **City PUD (Planned Unit Development)** zoning district would allow uses that are generally consistent with those future land use designations. The **GSO2040** Future Built Form Map designates similar nearby sites as **Urban General**.

GSO2040 Written Policies:

Filling In Our Framework – How we arrange our land uses for where we live, work, attend school, shop and enjoy our free time can create a more vibrant and livable Greensboro.

Goal A – Greensboro is recognized and admired for its attractive, walkable and compact mixed-use activity centers where people live, work and enjoy life.

Strategy 2 – Encourage higher density, mixed-use, walkable infill development.

Creating Great Places – Creating interesting and attractive places and vibrant public spaces in neighborhoods, across Greensboro, in downtown and with our historic resources.

Goal A – Greensboro’s citywide network of unique neighborhoods offer residents of all walks of life a variety of quality housing choices.

Strategy 2 – Meet housing needs and desires with a sufficient and diverse supply of housing products, prices and locations.

GSO2040 Map Policies:**Future Land Use Map**

Future Land Uses: Broad areas based on the main character of land uses that we want to see in the future. These are not intended to be exclusive; it is assumed that there are a variety of uses in each area, but the designation reflects the area’s predominant character.

Residential: Includes both single-and multi-family residential. Other uses should generally be in the scale of a Neighborhood- or a District- Scaled Activity Center as described in the Future Built Form Map, in a form that is appropriate to the character of the area. Many residential areas include commercial corridors, and future development along these corridors should be oriented to the corridor to avoid negative impacts to adjacent residences.

Future Built Form

Place Types: Areas that have a consistency of character, identity or purpose and that are most often bounded by corridors, natural features, or parks that create transition or separation from other neighborhoods that may not share the same characteristics.

Urban General should reflect these characteristics:

1. Setbacks, building orientation, building materials, height, and scale of residential buildings are considered within the existing neighborhood context.
2. New housing helps increase the range of choice, supply, and adds additional appropriately-scaled density with: Missing Middle housing; mid-rise multi-family; and high-rise multi-family in Activity Centers and along Mixed-Use Corridors.
3. Transitions between neighborhoods and different land uses provide continuity in scale, density, intensity with adjacent uses.
4. Cut-through traffic is minimized.
5. New freestanding or expanded business areas are created within or adjoining an existing Activity Center or as part of creating a new Activity Center.
6. Exterior building materials are durable, sustainable, and contribute positively to the character of the public realm.
7. The size and impact of surface parking lots is minimized through landscaping, screening, narrow curb-cuts, and use of glare-free, no-spill lighting.

8. New sidewalks contribute to the completion of a sidewalk network.

CONFORMITY WITH OTHER PLANS

City Plans

Sustainability Action Plan

Element 1) Transportation and Land Use:

- Policy 1)** Encourage increased density, a mix of land uses and more integrated links between transportation and land use through changes to Greensboro's Comprehensive Plan, Development Ordinance and other related plans.

Other Plans

N/A

STAFF ANALYSIS AND RECOMMENDATION

Community Outreach Applicant is strongly encouraged to discuss this proposed original zoning and development with the surrounding community.

Staff Annexation Analysis

The subject property is currently located in the County. On September 1, 2020 the Planning and Zoning Commission assumed responsibility for reviewing annexation petitions and making a recommendation to City Council regarding annexation requests. Upon submittal of a valid annexation petition, Planning staff forwards annexation requests to City services providers. These service providers include Water Resources (water and sewer), Fire Marshal's Office, Police Department, and Solid Waste (trash and recycling services).

The GSO2040 Comprehensive Plan's Growth Strategies Maps do not currently designate a Growth Tier for the subject properties as the properties were still under the Town of Summerfield's jurisdiction when the GSO2040 Comprehensive Plan was adopted. The subject properties were de-annexed by the North Carolina General Assembly effective June 30, 2024. Per the General Assembly action, the properties are also not subject to the annexation agreement between Summerfield and the City of Greensboro. As the properties are contiguous to Greensboro's primary city limits, the subject parcels may be annexed by the City of Greensboro.

Each service provider stated that infrastructure is either in place or can be extended to provide City services to this location. The Technical Review Committee recommended approval of this annexation request at its February 4, 2025 meeting. Since this property can be served by City utility providers, the City of Greensboro may annex the property pending approval of the associated original zoning.

Staff Unified Development Plan (UDP) Analysis

On September 1, 2020 the Planning and Zoning Commission assumed responsibility for reviewing Unified Development Plans in conjunction with rezoning requests to a Planned Unit Development zoning district.

There are three main purposes for a Unified Development Plan (UDP). One is to specify the type of development and dimensional standards that will govern the development in various sections of the property. The second is to make sure that City of Greensboro service providers can adequately serve the proposed development. Finally, the Unified Development Plan puts

the development standards into a form recordable at the Guilford County Register of Deeds Office so there will be notice of these requirements to future owners and occupants.

When making the determination to approve a Unified Development Plan (UDP), the Planning and Zoning Commission must review the UDP for consistency with the Planned Unit Development (PUD) Concept Plan and zoning conditions. The UDP is still under review by the Technical Review Committee. The Planning and Zoning Commission will be updated once the TRC makes a recommendation.

Staff Original Zoning Analysis

The combined acreage for the subject properties is approximately 78.512 acres. The properties contain agricultural land, single-family dwellings, and undeveloped land. North of the request contains single-family dwellings and undeveloped land, zoned Summerfield RS (Residential Single-family) and Summerfield AG (Agricultural). East of the request contains agricultural land, single-family dwellings, Lake Higgins, and undeveloped land, zoned Summerfield RS (Residential Single-family), Summerfield AG (Agricultural), Summerfield OI (Office/Institutional), and City of Greensboro PNR (Parkland and Natural Resources). South of the request contains single-family dwellings, undeveloped land, and Lake Higgins, zoned Summerfield RS (Residential Single-family). West of the request contains single-family dwellings and undeveloped land, zoned Summerfield RS (Residential Single-family), Summerfield CZ-OSR (Conditional Zoning - Open Space Residential).

The proposed original zoning request supports the Comprehensive Plan's Filling In Our Framework Big Idea to arrange our land uses for where we live, work, attend school, shop and enjoy our free time to create a more vibrant and livable Greensboro. The request also supports the Creating Great Places goal to expand Greensboro's citywide network of unique neighborhoods offering residents all walks of life a variety of quality housing choices.

The Comprehensive Plan's Future Land Use Map designates nearby similar properties as Residential. The Residential designation includes both single- and multi-family residential. Other uses should generally be in the scale of a Neighborhood- or a District- Scaled Activity Center as described in the Future Built Form Map, in a form that is appropriate to the character of the area. Many residential areas include commercial corridors, and future development along these corridors should be oriented to the corridor to avoid negative impacts to adjacent residences.

The Comprehensive Plan's Future Built Form Map currently designates similar nearby properties as Urban General. Urban General should reflect the following characteristics:

1. Setbacks, building orientation, building materials, height, and scale of residential buildings are considered within the existing neighborhood context.
2. New housing helps increase the range of choice, supply, and adds additional appropriately-scaled density with: Missing Middle housing; mid-rise multi-family; and high-rise multi-family in Activity Centers and along Mixed-Use Corridors.
3. Transitions between neighborhoods and different land uses provide continuity in scale, density, intensity with adjacent uses.
4. Cut-through traffic is minimized.
5. New freestanding or expanded business areas are created within or adjoining an existing Activity Center or as part of creating a new Activity Center.
6. Exterior building materials are durable, sustainable, and contribute positively to the character of the public realm.

7. The size and impact of surface parking lots is minimized through landscaping, screening, narrow curb-cuts, and use of glare-free, no-spill lighting.
8. New sidewalks contribute to the completion of a sidewalk network.

The PUD zoning district encourages innovation by allowing flexibility in permitted uses, design, and layout requirements in accordance with a Unified Development Plan. This should provide benefits by providing opportunities for employment and services closer to residences. The proposed PUD, as conditioned, is primarily intended to accommodate a mix of residential housing types and complementary nonresidential uses. The request also introduces innovative neighborhood design while preserving open space. The proposed original zoning request allows uses that are compatible with existing uses in the surrounding area. Care should be taken with respect to building orientation, building materials, building height, and visual buffers to ensure an appropriate transition to the lower density residential uses on adjacent properties.

This request is consistent with the intent and purpose of the zoning code, the Comprehensive Plan (GSO2040), and is generally compatible with the existing development and trend in the surrounding area.

Staff Recommendation

Staff recommends **approval** of the requested **City PUD (Planned Unit Development)** zoning district.

Draft Traffic Impact Study excerpt:**Project Description**

Villages of Summerfield Farms proposes to develop an 80.11-acre property in Summerfield, NC bounded by Hamburg Mill Road to the north, Carlson Dairy Road to the south, Pleasant Ridge Road to the west, and US 220 (Battleground Avenue) to the east. The proposed Planned Unit Development will include up to 268 residential units (164 single-family detached homes, 48 townhomes, and 56 multifamily apartments), as well as 8,000 square feet of neighborhood retail space. An additional 10,000 square feet of civic space is proposed to house events such as weddings or workplace retreat-style meetings. The site is currently zoned RS-40 in Guilford County.

Figure 1 displays the site vicinity, and Figure 2 shows the proposed site plan. The anticipated build-out year for the development is 2030. The site will be accessed by five full-movement public driveways: two on Hamburg Mill Road and three on Carlson Dairy Road. An additional driveway will be provided on Hamburg Mill Road just west of Windcrest Drive to service only construction and emergency vehicles. As this driveway will not be open to the public, it was not included as a study intersection in this TIA.

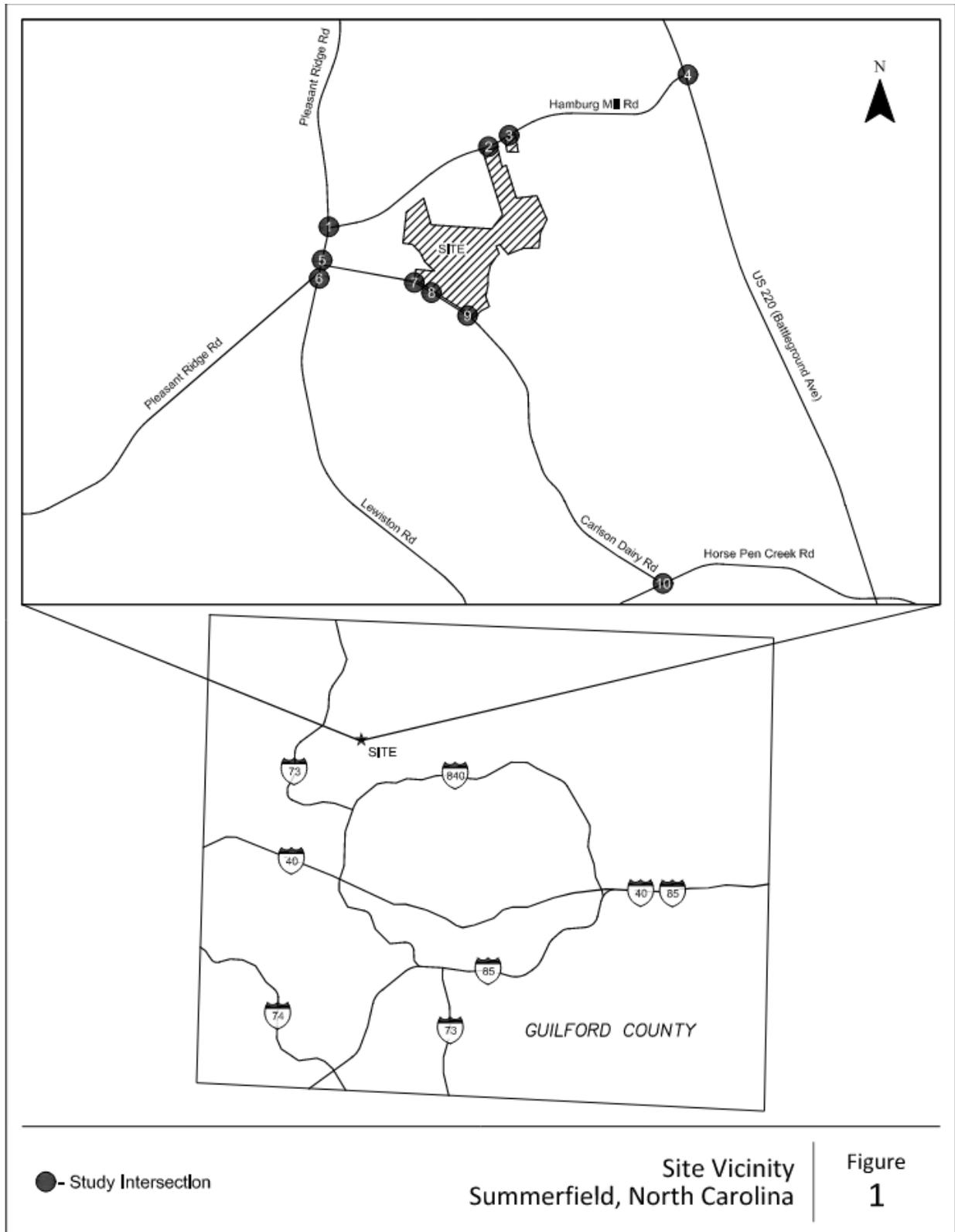
Scope and Analysis Methodology

This analysis discusses the transportation-related impacts associated with the proposed Christopher Village site and was prepared in accordance with Greensboro Department of Transportation (GDOT) and NCDOT requirements for TIAs. Based on a pre-scoping meeting with GDOT and NCDOT held on August 27, 2024, Kittelson & Associates, Inc. (Kittelson) prepared a scoping checklist identifying the site location, proposed site plan, unit count, driveway locations, and proposed study area. *Appendix "A"* contains the scoping checklists submitted to NCDOT and the Greensboro Department of Transportation (GDOT).

This report includes an analysis of operations and safety at the following study intersections and site accesses:

1. Pleasant Ridge Road / Hamburg Mill Road
2. Access A / Hamburg Mill Road
3. Access B / Hamburg Mill Road
4. US 220 (Battleground Avenue) / Hamburg Mill Road
5. Pleasant Ridge Road / Carlson Dairy Road
6. Pleasant Ridge Road / Lewiston Road
7. Access C / Carlson Dairy Road
8. Access D / Carlson Dairy Road
9. Access E / Carlson Dairy Road
10. Carlson Dairy Road / Horse Pen Creek Road

GDOT requires that the analysis year for a TIA be one year after the proposed build-out of the development (2031).



Year 2031 No Build Conditions

The year 2031 no build traffic analysis identifies how the study area’s transportation system will operate without the proposed Christopher Village development. This analysis includes traffic attributed to planned developments within the study area and general traffic growth in the region but does not include traffic from the proposed development.

Planned Developments and Transportation Improvements

At the time of scoping discussions pertaining to Christopher Village, GDOT did not identify any approved in-process developments within the study area that would significantly contribute to no build traffic volumes beyond regional traffic growth. Similarly, no transportation improvements were identified by GDOT or NCDOT that would affect the study intersections.

Background Traffic Growth

The Piedmont Triad Regional Model (PTRM) was reviewed to identify planned regional growth in the study area. The base year 2025 and future year 2045 model outputs were compared for each link within the study area to assess the general growth in traffic within the regional model. Table 3 displays the resulting growth rates.

Table 3. Annual Traffic Growth Rate Calculation

Link	PTRM Outputs		Annual Growth (Compounded)
	2025 Base Year	2045 Future Year	
US 220 N of Hamburg Mill	31,957	36,409	0.7%
US 220 S of Hamburg Mill	30,143	34,215	0.6%
Hamburg Mill W of US 220	4,379	4,751	0.4%
Hamburg Mill E of Pleasant Ridge	3,884	4,630	0.9%
Pleasant Ridge N of Hamburg Mill	1,776	3,230	3.0%
Pleasant Ridge S of Carlson Dairy	7,550	9,601	1.2%
Carlson Dairy S of Pleasant Ridge	3,311	2,669	-1.1%
Carlson Dairy N of Horse Pen	3,394	2,776	-1.0%
Horse Pen W of Carlson Mill	7,675	7,215	-0.3%
Horse Pen E of Carlson Dairy	9,113	8,361	-0.4%
Lewiston S of Pleasant Ridge	942	3,392	6.6%
Average	9,466	10,659	0.6%

As shown, most of the study area roadways are expected to experience less than one percent annual growth in traffic over the next 20 years, with negative growth expected along Carlson Dairy Road and Horse Pen Creek Road. While some lower-volume corridors such as Pleasant Ridge Road and Lewiston Road may experience higher growth rates relative to existing traffic demand, as described in the previous section, these corridors already operate well under capacity. Based on this analysis a one percent annual growth rate was selected for the study area and was applied to all mainline turning movement volumes, compounded annually. Figure 5 displays the resulting year 2031 no build traffic volumes at the study intersections.

Year 2031 Build Conditions

The year 2031 build traffic analysis identifies how the study area’s transportation system will operate after build-out of the proposed Christopher Village development. The proposed Planned Unit Development will include up to 268 residential units (164 single-family detached homes, 48 townhomes, and 56 multifamily apartments), as well as 8,000 square feet of neighborhood retail space. An additional 10,000 square feet of civic space is proposed to house events such as weddings or workplace retreat-style meetings.

Site Access Locations

The site will be accessed by a total of five full-movement, public driveways:

- Access A – on Hamburg Mill Road approximately 180 feet west of Horseshoe Drive. This access will service the bulk of the residential dwelling units on the east side of the development.
- Access B – on Hamburg Mill Road approximately 200 feet east of Horseshoe Drive. This access will service four single-family detached homes.
- Access C – on Carlson Dairy Road approximately 1,000 feet east of Carlson Ridge Court. This access will be an alley servicing approximately nine single-family detached homes.
- Access D – on Carlson Dairy Road approximately 1,300 feet east of Carlson Ridge Court. This access will service the residential, commercial, and civic space within the development.
- Access E – on Carlson Dairy Road approximately 190 feet west of Carlson Valley Road. This access will service the residential, commercial, and civic space within the development.

An additional driveway will be provided on Hamburg Mill Road just west of Windcrest Drive to service only construction and emergency vehicles. As this driveway will not be open to the public, it was not included as a study intersection in this TIA.

Trip Generation

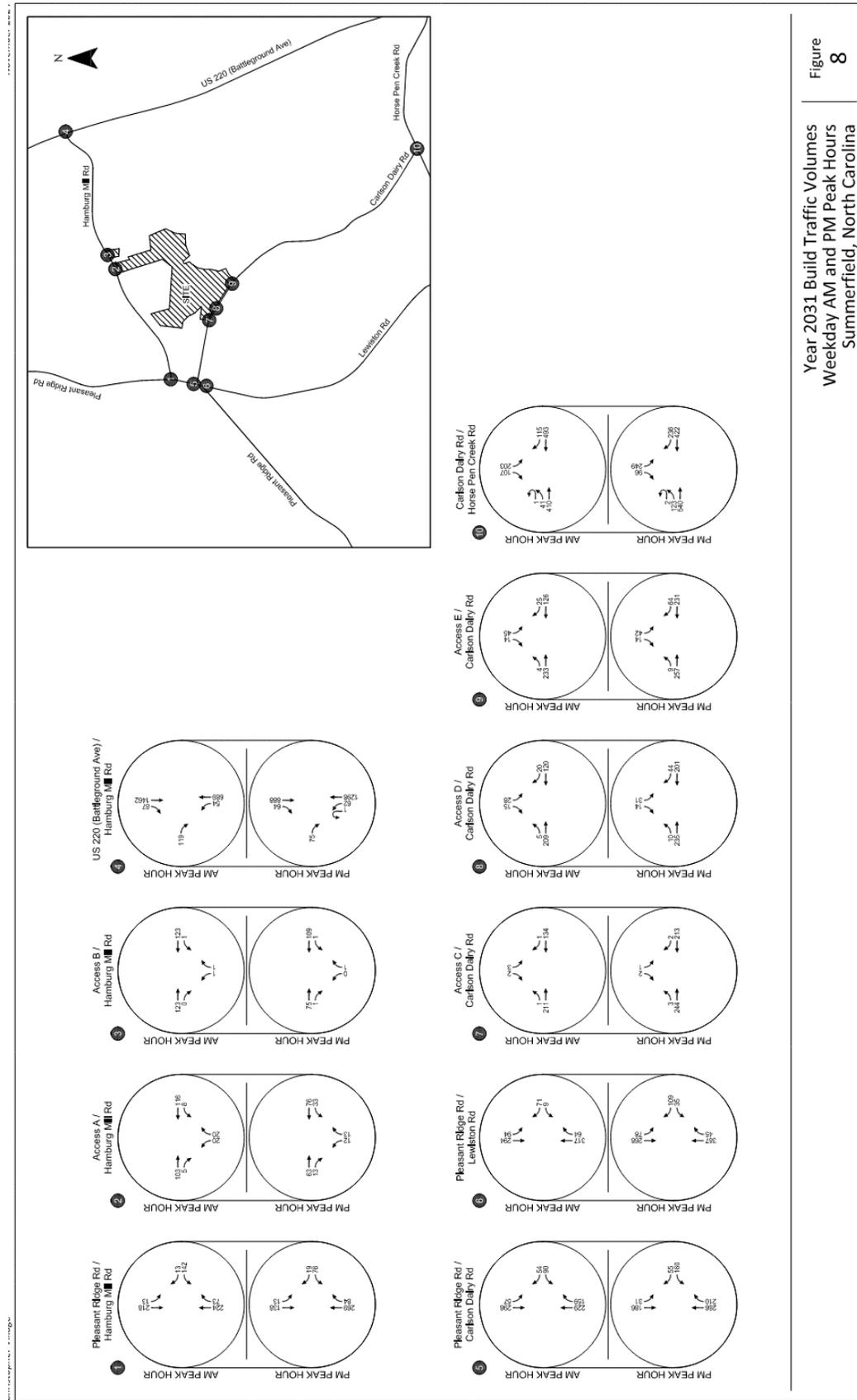
Trip generation rates for the proposed Christopher Village development were prepared based on the Institute of Transportation Engineers’ (ITE) *Trip Generation, 11th Edition* (Reference 1). Table 4 displays the estimated trip generation for the proposed site.

Table 4. Estimated Trip Generation

Land Use	ITE Code	Size	Weekday Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Single Family Detached	210	164 units	1,590	29	88	117	100	58	158
Single Family Attached*	215	48 units	316	4	13	17	13	9	22
Multifamily Low-rise	220	56 units	434	10	30	40	28	17	45
Commercial	822	8 ksf	436	11	8	19	26	27	53
<i>Less Pass-by (34% PM)</i>			148	0	0	0	9	9	18
Civic Space	712	10 ksf	144	16	10	26	13	19	32
Total Trips			2,920	70	149	219	180	130	310
<i>Less Pass-by</i>			148	0	0	0	9	9	18
Total Net New Trips			2,772	70	149	219	171	121	292

ksf = 1,000 square feet

*The AM and PM peak hour trip generation for the 8 live/work units was reduced by 50 percent from ITE values.



Year 2031 Build Traffic Volumes
 Weekday AM and PM Peak Hours
 Summerfield, North Carolina
 Figure 8

Findings and Recommendations

This analysis discusses the transportation-related impacts associated with the proposed Christopher Village site. The primary recommendations of this study are summarized below.

Findings

- **Safety:**
 - The US 220/Hamburg Mill Road, Pleasant Ridge Road/Carlson Dairy Road, and Horse Pen Creek Road/Carlson Dairy Road intersections each reported one injury crash in the most recent five years. No discernable crash trends were observed. Also, the NCDOT HSIP map was reviewed for notable locations within the study area. No HSIP locations are listed on the map for the years 2020-2024.
 - Currently, the site fronting roadways carry only motor vehicles with no provision for pedestrians or bicyclists. As additional infill and transition to a more developed area occurs, accommodation of these modes should be considered concurrent with a reevaluation of the roadway speeds, and appropriate speed management measures enacted if needed.

- **Trip Generation:**
 - The proposed development is estimated to generate a total of 2,772 weekday trips, including 219 (70 in/149 out) during the AM peak hour and 292 (171 in/121 out) during the PM peak hour. The development is also estimated to generate approximately 148 weekday pass-by trips, including 18 during the PM peak hour (9 in/9 out).

- **Capacity Analysis:**
 - All of the study intersections and site accesses currently operate at level of service "C" or better during both the weekday AM and PM peak hours and are expected to continue doing so upon site build-out in year 2031, meeting GDOT and NCDOT standards.
 - A 95th-percentile queuing analysis was performed for each of the study intersections and site accesses during the AM and PM peak hours. The 95th-percentile queue for the southbound left turn on Carlson Dairy Road at Horse Pen Creek Road currently exceeds the available storage length of 150 feet by 10 feet during the PM peak hour and is expected to continue exceeding the available queue storage under year 2031 no-build and build conditions. As this queue can generally be stored within the painted striped median between Horse Pen Creek Road and Hedrick Drive, no additional mitigation is recommended.

- **Sight Distance:**
 - At the construction/emergency vehicle access on Hamburg Mill Road, approximately 350 feet of intersection sight distance is provided looking west, but 565 feet of sight distance would be required for a truck pulling out of the entrance and making a right turn.
 - At Access D on Carlson Dairy Road, approximately 370 feet of intersection sight distance is provided looking west, but 500 feet of sight distance would be required for a passenger

car pulling out of the entrance and making a left turn. There is adequate stopping sight distance available, so no additional mitigation is recommended.

Recommendations

- We recommend that as the construction/emergency vehicle access on Hamburg Mill Road near Windcrest Drive is graded and nearby vegetation is cleared, the available sight distance will be increased to at least 375 feet.
- On-site landscaping, as well as any above-ground utilities and signage, should be located and maintained at the site driveways to provide adequate intersection sight distance.