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All property owners within 300 feet of this rezoning have been notified per UDO Sec. 2.2.11 Public Notification.

| BACKGROUND INFORMATION: | |
|--------------------------------|--|
| Location: | 4525 Green Level West Rd |
| Applicant: | Jessie Hardesty, McAdams Co. |
| Authorized Agent: | Jacob Anderson, Alliance Group |
| Owner: | Eliza C. Williams |
| PROJECT DESCRIPTION: | |
| Acreage: | +/- 61.919 acres |
| PIN: | Portion of 0713943738 |
| Current Zoning: | Rural Residential (RR) |
| Proposed Zoning: | Planned Unit Development–Conditional Zoning (PUD-CZ) |
| 2045 Land Use Map: | Low Density Residential |
| Town Limits: | Inside the ETJ |

| ADJACENT ZONING & LAND USES: | | | | |
|------------------------------|---|--|--|--|
| | Zoning | Land Use | | |
| North: | Wake County Residential (R-40W) | Single-family residential & Vacant; Green Level West Rd | | |
| South: | Low Density Residential-Conditional Zoning (LD-CZ #13CZ17 & #14CZ32) | Single-family residential amenity center (Lake Castleberry Subdivision); Lake Castleberry | | |
| East: | Low Density Residential-Conditional Zoning (LD-CZ #13CZ17); Rural Residential (RR) | Single-family residential (Lake Castleberry Subdivision); Single-family residential | | |
| West: | Chatham Co. R-1 | Single-family residential; Vacant | | |

EXISTING CONDITIONS:

The site consists of one (1) parcel totaling +/- 61.919 acres. The Williams Farm PUD is in the northwest region of Apex, south of Green Level West Road and east of the Chatham County line. The Lake Castleberry subdivision is under development east and south of the site. The property is primarily vacant and wooded with a few cleared areas containing a few outbuildings. There is also a large stream along the eastern and southern border. It was the site of the historic landmark James Madison Williams House, which burned in 2019.

NEIGHBORHOOD MEETING:

The applicant conducted a neighborhood meeting on February 11, 2021. The meeting report is attached to the staff report.

2045 LAND USE MAP:

The 2045 Land Use Map designates the site as Low Density Residential. The PUD proposes a maximum density of 2.89 units per acre, with a maximum of 176 residential units in this area. The proposed rezoning is consistent with the 2045 Land Use Map designation.

WCPSS COORDINATION:

A Letter of Impact from Wake County Public School System (WCPSS) was received for this rezoning and is included in the staff report packet. WCPSS indicates that elementary and middle schools within the current assignment area for this rezoning/development are anticipated to have insufficient capacity for future students;

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transportation to schools outside of the current assignment area should be anticipated. School expansion or construction within the next five years is not anticipated to address concerns. Possible long-term solutions may include capping students out to schools with available seats (not very proximate), reassignments, or calendar changes.

PLANNED UNIT DEVELOPMENT PLAN:

The applicant is proposing a Planned Unit Development with uses and development standards as follows:

Proposed Uses:

The Rezoned Lands may be used for, and only for, the uses listed immediately below. The permitted uses are subject to the limitations and regulations stated in the UDO and any additional limitations or regulations stated below. For convenience, some relevant sections of the UDO may be referenced; such references do not imply that other sections of the UDO do not apply.

- Accessory apartment
- Single-family
- Greenway
- Recreation Facility, private

- Park, active
- Park, passive
- Utility, minor

Conditions:

- A. A maximum of 176 residential units shall be permitted upon the property.
- B. No covenant prohibiting the accessory apartment use shall encumber the property.
- C. Affordable Housing: The developer will contribute \$284.10 per lot to the Apex Affordable Housing Fund, to be paid at plat. Based on 176 lots, the total fee should be \$50,000.

Architectural Conditions:

The proposed development offers the following architectural controls to ensure a consistency of character throughout the development, while allowing for enough variety to create interest and avoid monotony. Changes to the exterior materials, roof, windows, doors, process, trim, etc. are allowable with administrative approval at the staff level. Further details shall be provided at the time of Site Plan submittal. The following conditions shall apply:

- 1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
- 2. Front-facing garage doors shall have windows, decorative details or carriage-style adornments on them.
- 3. The garage cannot protrude more than 1 foot out from the front façade or front porch, measured from roof of porch.
- 4. On single-family homes, the roof shall be pitched at 5:12 or greater (not to include porches, bay windows, etc.).
- 5. House entrances for units with front-facing single-car garages must have a covered porch/stoop area leading to the front door.
- 6. Rear and side elevations of units that have right-of-way frontage shall have trim around the windows.
- 7. Four of the following decorative elements shall be used on each building: decorative shake, board and batten siding, decorative porch rails and posts, shutters, decorative functional foundation and roof vents, recessed windows, decorative windows, decorative brick or stone, decorative gables, decorative cornices, or metal roofing.
- 8. A varied color palette shall be utilized on single family homes throughout the subdivision and shall include siding, trim, shutter, and accent colors complementing the siding colors.
- 9. Solar conduit will be provided on all single-family homes to accommodate the future installation of solar panels.

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Proposed Design Controls:

| Overall Maximum Density: | 2.89 units/acre |
|----------------------------|-----------------------|
| Maximum Residential Units: | 176 |
| Minimum Lot Size: | 5,000 ft ² |
| Minimum Lot Width: | 40 ft |
| Minimum Lot Depth: | 100 ft |
| Maximum Building Height: | 45 ft |

| Building Setbacks: | | | |
|--------------------|-------|--|--|
| Front: | 20 ft | | |
| Side: | 5 ft | | |
| Rear: | 20 ft | | |
| Alley: | 5 ft | | |
| Corner: | 8 ft | | |

Proposed RCA & Buffers:

The proposed Williams Farm PUD complies with the UDO requirement for 30% of the gross project area to be provided as RCA. At least 3 of the champion trees located along Green Level West Road will be preserved, subject to health evaluation and frontage roadway design requirements.

| Buffers: | UDO Requirement: | Proposed: |
|---------------------------------------|------------------|----------------|
| Green Level West Road (Thoroughfare): | 30-foot Type B | 30-foot Type B |
| South boundary: | 10-foot Type B | 20-foot Type B |
| East boundary | | |
| Adjacent to Large Lot Single-Family: | 10-foot Type B | 20-foot Type B |
| Adjacent to Lake Castleberry Lots: | 10-foot Type B | 40-foot Type B |
| West boundary | 10-foot Type B | 10-foot Type B |
| Southwest boundary | 10-foot Type B | 10-foot Type B |

ENVIRONMENTAL COMMITMENTS:

As confirmed by the North Carolina State Historic Preservation Office, there are no historic structures present within the project boundary. The James Madison Williams House was designated as a Wake County Landmark on December 15, 2015, however, the home was lost to fire on May 22, 2019.

While the historic farmhouse no longer exists, a number of significant champion trees as well as an iconic stacked stone wall remain as important historical remnants of the past. Pending evaluation of the health and safety of the trees, both the trees and stacked stone walls will be preserved and incorporated into the landscape design of the community. The project will preserve a minimum of 200 linear feet of the existing stacked stone walls located along the Green Level West Road frontage. Segments of the wall in disrepair may be reconstructed to match the original look of the wall.

The existing pond shall be preserved, pending an evaluation of the dam. The dam is not located on this property, so the developer will work with the owner to evaluate it. Two (2) acres of open space and pocket parks will be provided. The existing private gas line easement may be used to meet this requirement as long as it is graded and

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improved to contain features such as lawn area, walking trails, or vegetation that attracts bird and butterfly habitat. If private play lawns or walking trails are located within the gas easement, they may count 50% towards the RCA requirement.

All homes within the community shall be located no further than 800 feet from an improved open space area such as a play lawn, trail head, greenway, or pocket park.

The project will increase biodiversity in perimeter buffers and open space areas by providing a variety of species for the canopy, understory, and shrub levels. Native and adaptive plant species shall be provided within these areas to minimize death from disease and to provide increased habitat and food sources for insects and animals. A minimum of 70% of the species provided shall be native or a nativar of North Carolina. No invasive species shall be permitted. No single species of tree or shrub shall constitute more than 20% of the plant material of its type installed on a single development site.

Tree canopy areas within the Williams Farm PUD are primarily concentrated around the wetland areas, stream features, perimeter buffers, and champion trees which are to be preserved RCA area. Where trees cannot be preserved as part of the implementation of this community, the project will re-establish a new tree canopy with vegetated perimeter buffers, pocket parks, community gathering spaces, and other open space areas.

Educational signage shall be installed relating to wetlands or other on-site environmental features.

Public Facilities:

The Williams Farm PUD will be served by Town of Apex water, sanitary sewer, and electrical systems. A conceptual Utility Plan is included in the PUD Plan for reference. A portion of the site will be serviced by an onsite pump station in accordance with Town of Apex standards. Preliminary approval for a pump station has been received by Town of Apex Public Utilities. The utility design will be finalized at the time of Master Subdivision Plan approval and be based on available facilities adjacent to the site at that time. The ultimate design for the utilities shall meet the current Town of Apex Master Water and Sewer Plans for approval.

The project site does not sit within a designated current or future 100-year floodplain as shown on the Town of Apex FEMA map and FIRM Panel 3720071300K, dated February 2, 2007. This project is located within the Cape Fear River Basin. This project site is located within the Primary Watershed Protection Overlay District as shown on the Town of Apex Watershed Protection Map. This PUD shall go above the stormwater management requirements for quality and quantity treatment outlined in Section 6.1.7 of the UDO such that:

- Post development peak runoff shall not exceed pre-development peak runoff conditions for the 1 year, 10-year, 25-year, and 24-hour storm events.
- Treatment for the first 1 inch of runoff will provide 85% removal of total suspended solids.

Apex Transportation Plan/Access and Circulation:

Per the Apex Thoroughfare and Collector Street Plan map, Green Level West Road is designated as a future 4lane median-divided thoroughfare. The developer will dedicate right-of-way along their property frontage on Green Level West Road to meet the requirements shown in Advance Apex.

Roadway improvements are subject to modification and final approval by the Town of Apex and NCDOT as part of the Master Subdivision Plan review and approval process. A Traffic Impact Analysis has been performed as part of this PUD rezoning consistent with the Town's standards for the same. Based upon the Traffic Impact Analysis, the following traffic improvements are proposed for this development:

Developer shall provide a westbound left turn lane with 50 feet of full width and appropriate deceleration length and taper on Green Level West Road at the location of the proposed public street accessing the

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subdivision, located approximately 700 feet west of Batchelor Road. No other new points of access are proposed along Green Level West Road. Developer is responsible for any necessary roadway improvements to meet or exceed required sight distance at the proposed access location, subject to NCDOT review and approval.

Additionally, at the time of master subdivision, the developer shall work with the Town of Apex and NCDOT to ensure adequate sight distance at the proposed site access on Green Level West Road. This may require realignment of Green Level West Road and/or a sight distance easement across the frontage of the parcel to the west.

The Apex Bicycle and Pedestrian System Plan map shows a proposed bicycle lane and sidewalk along the south side of Green Level West Road. The project proposes the following:

- Five-foot wide public sidewalks along the south side of Green Level West Road along road frontage of property.
- Five-foot wide public sidewalks along both sides of all internal streets
- Six-foot wide private walking trails throughout the development
- Crosswalks constructed at appropriate street intersections

ENVIROMENTAL ADVISORY BOARD:

The Apex Environmental Advisory Board (EAB) held a pre-application meeting for this rezoning on February 18, 2021. The zoning conditions suggested by the EAB are listed below along with the applicant's response to each condition.

| EAB Suggested Condition | Applicant's Response |
|--|----------------------|
| Preserve champion trees. | Included |
| Preserve stacked stone walls. | Included |
| Tree canopy preservation and replacement rates. | Included |
| Minimum amount of open space/pocket parks. | Included |
| Minimum length of trails. | Included |
| Educational signage about wetlands. | Included |
| Pet waste stations and educational signage outside of sensitive areas. | Included |
| Increased stormwater quantity/quality control measures above ordinance | Included |
| requirement. Commitment to attenuate the 25-year storm. | |
| Increased perimeter buffer to east. | Included |
| Retention of existing farm pond and exploration of water re-use if possible. | Included |
| Increased bio-diversity in perimeter buffers and open space areas. | Included |
| Use of pollinator-friendly flora and native plant species. | Included |
| Solar conduit in homes. | Included |
| Full cut-off street lighting per Apex UDO standards. | Included |

Parks, Recreation, and Cultural Resources Advisory Commission:

Based on the Bike Apex and the Parks, Recreation, Greenways, and Open Space Master Plan maps, this project is required to pay a fee-in-lieu of dedication.

The Parks, Recreation, and Cultural Resources Advisory Commission reviewed the Williams Farm PUD at their March 31, 2021 meeting. The Advisory Commission unanimously recommended fee-in-lieu.

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| Housing Type | Number of Units | Fee Per Unit | Total Fees |
|---------------|-----------------|--------------|--------------|
| Single-Family | 176 | \$3,495.24 | \$615,162.24 |

PLANNING STAFF RECOMMENDATION:

Planning staff recommends approval of Rezoning #20CZ04 Williams Farm PUD as shown.

PLANNING BOARD RECOMMENDATION:

Planning Board heard this at their regularly scheduled meeting on June 14, 2021. They voted unanimously to recommend approval of the rezoning as proposed by the applicant.

ANALYSIS STATEMENT OF THE REASONABLENESS OF THE PROPOSED REZONING:

This Statement will address consistency with the Town's comprehensive and other applicable plans, reasonableness, and effect on public interest:

The 2045 Land Use Map designates the site as Low Density Residential. The proposed rezoning to PUD-CZ as proposed is consistent with the 2045 Land Use Map designation.

The proposed rezoning is reasonable and in the public interest because it will preserve and provide environmental features, provide funding for the Affordable Housing Fund, and permit the development of housing that is compatible with that to the east and south of the site.

PLANNED UNIT DEVELOPMENT DISTRICT AND CONDITIONAL ZONING STANDARDS:

Standards

In return for greater flexibility in site design requirements, Planned Development (PD) Districts are expected to deliver exceptional quality community designs that preserve critical environmental resources; provide high quality community amenities; incorporate creative design in the layout of buildings, Resource Conservation Area and circulation; ensure compatibility with surrounding land uses and neighborhood character; provide high quality architecture; and provide greater efficiency in the layout and provision of roads, utilities, and other infrastructure. The Planned Development (PD) Districts shall not be used as a means of circumventing the Town's adopted land development regulations for routine developments.

1. Planned Unit Development (PUD-CZ) District

In approving a Planned Development (PD) Zoning District designation for a PUD-CZ, the Town Council shall find the PUD-CZ district designation and PD Plan for PUD-CZ demonstrates compliance with the following standards:

- a) Development parameters
 - (i) The uses proposed to be developed in the PD Plan for PUD-CZ are those uses permitted in Sec. 4.2.2 *Use Table.*
 - (ii) The uses proposed in the PD Plan for PUD-CZ can be entirely residential, entirely non-residential, or a mix of residential and non-residential uses, provided a minimum percentage of non-residential land area is included in certain mixed use areas as specified on the 2045 Land Use Map. The location of uses proposed by the PUD-CZ must be shown in the PD Plan with a maximum density for each type of residential use and a maximum square footage for each type of non-residential use.
 - (iii) The dimensional standards in Sec. 5.1.3 *Table of Intensity and Dimensional Standards, Planned Development Districts* may be varied in the PD Plan for PUD-





CZ. The PUD-CZ shall demonstrate compliance with all other dimensional standards of the UDO, North Carolina Building Code, and North Carolina Fire Code.

- (iv) The development proposed in the PD Plan for PUD-CZ encourages cluster and compact development to the greatest extent possible that is interrelated and linked by pedestrian ways, bikeways and other transportation systems. At a minimum, the PD Plan must show sidewalk improvements as required by the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details*, and greenway improvements as required by the Town of Apex Parks, Recreation, Greenways, and Open Space Plan and the Apex Transportation Plan. In addition, sidewalks shall be provided on both sides of all streets for single-family detached homes.
- (v) The design of development in the PD Plan for PUD-CZ results in land use patterns that promote and expand opportunities for walkability, connectivity, public transportation, and an efficient compact network of streets. Cul-de-sacs shall be avoided unless the design of the subdivision and the existing or proposed street system in the surrounding area indicate that a through street is not essential in the location of the proposed cul-de-sac, or where sensitive environmental areas such as streams, floodplains, and wetlands would be substantially disturbed by making road connections.
- (vi) The development proposed in the PD Plan for PUD-CZ is compatible with the character of surrounding land uses and maintains and enhances the value of surrounding properties.
- (vii) The development proposed in the PD Plan for PUD-CZ has architectural and design standards that are exceptional and provide higher quality than routine developments. All residential uses proposed in a PD Plan for PUD-CZ shall provide architectural elevations representative of the residential structures to be built to ensure the Standards of this Section are met.
- b) *Off-street parking and loading*. The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.3 *Off-Street Parking and Loading*, except that variations from these standards may be permitted if a comprehensive parking and loading plan for the PUD-CZ is submitted as part of the PD Plan that is determined to be suitable for the PUD-CZ, and generally consistent with the intent and purpose of the off-street parking and loading standards.
- c) RCA. The PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.1.2 Resource Conservation Area, except that the percentage of RCA required under Sec. 8.1.2 may be reduced by the Town Council by no more than 10% provided that the PD Plan for PUD-CZ includes one or more of the following:
 - (i) A non-residential component; (ii) An overall density of 7 residential units per acre or more; or (iii) Environmental measures including but not limited to the following:
 - a. The installation of a solar photovoltaic (PV) system on a certain number or percentage of single-family or townhouse lots or on a certain number or percentage of multifamily, mixed-use, or nonresidential buildings. All required solar installation shall be completed or under construction prior to 90% of the building permits being issued for the approved number of lots or buildings. For single-family or townhouse installations, the lots on which these homes are located shall be identified on the Master Subdivision Plat, which may be amended;

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- b. The installation of a geothermal system for a certain number or percentage of units within the development; or
- c. Energy efficiency standards that exceed minimum Building Code requirements (i.e. SEER rating for HVAC).
- d) *Landscaping*. The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.2 *Landscaping, Buffering and Screening*, except that variations from these standards may be permitted where it is demonstrated that the proposed landscaping sufficiently buffers uses from each other, ensures compatibility with land uses on surrounding properties, creates attractive streetscapes and parking areas and is consistent with the character of the area. In no case shall a buffer be less than one half of the width required by Sec. 8.2 or 10 feet in width, whichever is greater.
- e) Signs. Signage in the PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.7 Signs, except that the standards can be varied if a master signage plan is submitted for review and approval concurrent with the PD plan and is determined by the Town Council to be suitable for the PUD-CZ and generally consistent with the intent and purpose of the sign standards of the UDO. The master signage plan shall have design standards that are exceptional and provide for higher quality signs than those in routine developments and shall comply with Sec. 8.7.2 *Prohibited Signs*.
- f) *Public facilities.* The improvements standards and guarantees applicable to the public facilities that will serve the site shall comply with Article 7: *Subdivision and* Article 14: *Parks, Recreation, Greenways, and Open Space.*
 - (i) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site transportation circulation system. The on-site transportation circulation system shall be integrated with the off-site transportation circulation system of the Town. The PD Plan for PUD-CZ shall be consistent with the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details* and show required right-of-way widths and road sections. A Traffic Impact Analysis (TIA) shall be required per Sec. 13.19.
 - (ii) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site system of potable water and wastewater lines that can accommodate the proposed development, and are efficiently integrated into off-site potable water and wastewater public improvement plans. The PD Plan shall include a proposed water and wastewater plan.
 - (iii) Adequate off-site facilities for potable water supply, sewage disposal, solid waste disposal, electrical supply, fire protection and roads shall be planned and programmed for the development proposed in the PD Plan for PUD-CZ, and the development is conveniently located in relation to schools and police protection services.
 - (iv) The PD Plan shall demonstrate compliance with the parks and recreation requirements of Sec. Article 14: Parks, Recreation, Greenways, and Open Space and Sec. 7.3.1 Privately-owned Play Lawns if there is a residential component in the PUD-CZ.
- g) Natural resource and environmental protection. The PD Plan for PUD-CZ demonstrates compliance with the current regulatory standards of this Ordinance related to natural resource and environmental protection in Sec. 6.1 Watershed Protection Overlay District, Sec. 6.2 Flood Damage Prevention Overlay District, and Sec. 8.1 Resource Conservation.



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 - h) *Storm water management.* The PD Plan shall demonstrate that the post-development rate of on-site storm water discharge from the entire site shall not exceed pre-development levels in accordance with Sec. 6.1.7 of the UDO.
 - i) *Phasing.* The PD Plan for PUD-CZ shall include a phasing plan for the development. If development of the PUD-CZ is proposed to occur in more than one phase, then guarantees shall be provided that project improvements and amenities that are necessary and desirable for residents of the project, or that are of benefit to the Town, are constructed with the first phase of the project, or, if this is not possible, then as early in the project as is technically feasible.
 - j) *Consistency with 2045 Land Use Map.* The PD Plan for PUD-CZ demonstrates consistency with the goals and policies established in the Town's 2045 Land Use.
 - k) *Complies with the UDO.* The PD Plan for PUD-CZ demonstrates compliance with all other relevant portions of the UDO.

Legislative Considerations

The Town Council shall find the Planned Unit Development-Conditional Zoning (PUD-CZ) designation demonstrates compliance with the following standards. 2.3.3.F:

The applicant shall propose site-specific standards and conditions that take into account the following considerations, which are considerations that are relevant to the legislative determination of whether or not the proposed conditional zoning district rezoning request is in the public interest. These considerations do not exclude the legislative consideration of any other factor that is relevant to the public interest.

- 1) Consistency with 2045 Land Use Map. The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and consistency with the purposes, goals, objectives, and policies of the 2045 Land Use Map.
- 2) *Compatibility.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and compatibility with the character of surrounding land uses.
- 3) *Zoning district supplemental standards.* The proposed Conditional Zoning (CZ) District use's compliance with Sec 4.4 *Supplemental Standards,* if applicable.
- 4) *Design minimizes adverse impact.* The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare, and vibration and not create a nuisance.
- 5) *Design minimizes environmental impact.* The proposed Conditional Zoning District use's minimization of environmental impacts and protection from significant deterioration of water and air resources, wildlife habitat, scenic resources, and other natural resources.
- 6) *Impact on public facilities.* The proposed Conditional Zoning (CZ) District use's avoidance of having adverse impacts on public facilities and services, including roads, potable water and wastewater facilities, parks, schools, police, fire and EMS facilities.
- 7) *Health, safety, and welfare.* The proposed Conditional Zoning (CZ) District use's effect on the health, safety, or welfare of the residents of the Town or its ETJ.
- 8) *Detrimental to adjacent properties.* Whether the proposed Conditional Zoning (CZ) District use is substantially detrimental to adjacent properties.



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 - 9) Not constitute nuisance or hazard. Whether the proposed Conditional Zoning (CZ) District use constitutes a nuisance or hazard due to traffic impact or noise, or because of the number of persons who will be using the Conditional Zoning (CZ) District use.
 - 10) Other relevant standards of this Ordinance. Whether the proposed Conditional Zoning (CZ) District use complies with all standards imposed on it by all other applicable provisions of this Ordinance for use, layout, and general development characteristics.



March 12, 2021

Joshua T. Reinke, PE. Ramey Kemp & Associates, Inc. 5808 Faringdon Place, Suite 100 Raleigh, NC 27609

Subject: Staff summary and comments for the Williams Property TIA, 03/01/2021

Mr. Reinke:

Please review the following summary of my comments and recommendations. You may schedule a meeting with me and your client to discuss at your convenience.

Study Area

The TIA studied access to the proposed subdivision development at the following intersection:

• Site Drive 1 and Green Level West Road

The following two intersections were also studied in the TIA:

- Green Level West Road and Batchelor Road
- Green Level West Road and Wimberly Road

Trip Generation

The proposed development is expected to consist of up to 170 single-family homes. It's projected to generate approximately 31 new trips entering and 95 new trips exiting the site during the weekday A.M. peak hour and 106 new trips entering and 63 new trips exiting the site during the weekday P.M. peak hour. The development is projected to add an additional 1,700 new daily trips onto the adjacent roadway network.

Background traffic

Background traffic consists of 2% annual background traffic growth compounded to build out year 2026, and the following approved developments:

- Parks at Wimberly (Wolfe Properties)
- Preserve and White Oak Creek
- Westford
- Weddington
- Lake Castleberry
- Batchelor Road Residential (17-TAR-423)

Trip Distribution and Assignment

The trip distributions to and from the development site are as follows:

- 15% to/from the south via Wimberly Road
- 15% to/from the west via Green Level West Road
- 70% to/from the east via Green Level West Road

Traffic Capacity Analysis and Recommendations

Level of Service (LOS) is a grade of A through F assigned to an intersection, approach, or movement to describe how well or how poorly it operates. LOS A through D is considered acceptable for peak hour operation. LOS E or F describes potentially unacceptable operation and developers may be required to mitigate their anticipated traffic impact to improve LOS based on the Apex Unified Development Ordinance (UDO).

Tables 1 through 3 describe the levels of service (LOS) for the scenarios analyzed in the TIA. "*NA*" is shown when the scenario does not apply. The scenarios are as follows:

- **Existing 2021** Existing year 2021 traffic developed from pre-pandemic turning movement counts taken in 2019.
- **No Build 2026** Projected year (2026) with background growth, approved development traffic from others, and committed transportation improvements by others where applicable.
- **Build 2026** Projected year (2026) with background traffic, background improvements, and site build-out including recommended improvements where applicable.

| Table 1. A.M. / P.M. Unsignalized Peak Hour Levels of Service Site Drive 1 and Green Level West Road | | | |
|---|--------------------|--|--|
| Build 2026 | | | |
| <u>Overall</u> | <u>NA</u> | | |
| Eastbound (Green Level West Road) | NA | | |
| Westbound (Green Level West Road) | A / A ² | | |
| Northbound (Site Drive 1) | B / B ¹ | | |

Site Drive 1 and Green Level West Road (Unsignalized)

- 1. Level of service for stop-controlled minor street approaches.
- 2. Level of service for left turn movements on free-flowing approaches.

TIA recommendations:

• The TIA recommends construction of future Site Drive 1 as a two-lane road (one lane in each direction) with stop control at Green Level West Road. Additionally, the TIA recommends construction of a westbound left-turn lane with minimum of 50 feet of full-width storage and appropriate deceleration and taper length.

Apex staff recommendations:

• Apex staff concur with the recommendations. With these improvements all approaches are projected to operate at LOS B or better with minimal vehicle delays. The 50 feet long westbound left turn lane will provide enough storage capacity to meet the left turn traffic demand.

Batchelor Road and Green Level West Road

| Table 2. A.M. / P.M. Unsignalized Peak Hour Levels of Service Batchelor Road and Green Level West Road | | | | | |
|---|--------------------|--------------------|--------------------|--|--|
| Existing No Build 2026 Build 2026 | | | | | |
| <u>Overall</u> | NA | NA | <u>NA</u> | | |
| <i>Eastbound (</i> Green Level West Road) | A / A ² | A / A ² | A/A^2 | | |
| <i>Westbound (</i> Green Level West Road) | NA | NA | NA | | |
| Southbound (Batchelor Road) | A / A ¹ | B / B ¹ | B / B ¹ | | |

- 1. Level of service for stop-controlled minor street approaches.
- 2. Level of service for left turn movements on free-flowing approaches.

TIA recommendations:

• The TIA recommends no improvements at this intersection.

Apex staff recommendations:

• Apex staff concur with the recommendations. The intersection operates at LOS B or better on all approaches with minimal vehicle delays.

Wimberly Road and Green Level West Road

| Table 3. A.M. / P.M. Unsignalized Peak Hour Levels of Service Wimberly Road and Green Level West Road | | | | |
|--|--------------------|--------------------|--------------------|--|
| Existing No Build 2021 2026 Build 2026 | | | | |
| <u>Overall</u> | NA | NA | <u>NA</u> | |
| <i>Eastbound (</i> Green Level West Road) | NA | NA | NA | |
| <i>Westbound (</i> Green Level West Road) | A / A ² | A / A ² | A/ A ² | |
| Northbound (Wimberly Road) | A / B¹ | B / C ¹ | B / C ¹ | |

1. Level of service for stop-controlled minor street approaches.

2. Level of service for left turn movements on free-flowing approaches.

TIA recommendations:

• Aside from the northbound right turn lane which has been committed by the Parks at Wimberly (Wolf Properties) development, the TIA recommends no additional improvements at this intersection.

Apex staff recommendations:

 Apex staff concur with the recommendations in the TIA. All approaches are projected to operate at LOS C or better with minimal vehicle delays. The adjacent development has committed to providing a northbound right turn lane with 50 feet of storage and appropriate deceleration and taper length per NCDOT guidance for left and right turn lanes. It's not projected that this development will generate northbound right turn traffic at this intersection. Therefore, even if the adjacent development does not move forward, the northbound approach will operate at acceptable levels of service without the right turn lane improvement.

Please coordinate with the NCDOT District Engineer's Office concerning recommended improvements. Town staff will be available for meetings with NCDOT staff to discuss improvements on state maintained roadways as needed. All recommendations are subject to review by Town Council prior to approval.

Sincerely,

Jereppinet

Serge Grebenschikov Traffic Engineer 919-372-7448



| | JNIT DEVELOPMENT APPLIC | | t and may be published or | n the Town's websit | e or disclosed to |
|---|---------------------------------|---------------------------|----------------------------|---------------------|-------------------|
| third parties. Application Fee Paid | 101.07 | | Submittal Date: Check # | 3-1-2 Charge | |
| PETITION 1 | O AMEND THE OFFICIAL ZO | NING DISTRICT MAP | | | |
| Project Nar | ne: Williams Farm | | | | |
| Address(es) | 4525 Green Level | West Rd | | | |
| PIN(s) | P/O 0713943738 | | | | |
| | | | | Acreage: 6 | 1.919 |
| Current Zor | ning: RR | Propo | osed Zoning: PUD | -CZ | |
| Current 204 | 5 LUM Designation: | ow Density Reside | ntial | η. | |
| Requested | 2045 LUM Designation: | ow Density Reside | ntial | | |
| | e next page for LUM amendm | | | | |
| If any porti | on of the project is shown as i | mixed use (3 or more stri | pes on the 2045 Land | | e the following: |
| Ar | ea classified as mixed use: | | Acreage: | <u>N/A</u> | |
| Ar | ea proposed as non-residentia | l development: | Acreage: | N/A | |
| Pe | rcent of mixed use area propo | sed as non-residential: | Percent: | N/A | |
| Applicant I | nformation | | | | |
| Name: | Jessie Hardesty | | | 6. S | |
| Address: | 2905 Meridian Parkwa | ау | | | |
| City: | Durham | State: | NC | Zip: | 27713 |
| Phone: | 919-361-5000 | E-mail: | hardesty@mcad | damsco.com | |
| Owner Info | rmation | | | | |
| Name: | Eliza C Williams | | | | - |
| Address: | 4525 Green Level We | st Rd | | | |
| City: | Apex | State: | NC | Zip: | 27523 |
| Phone: | | E-mail: | | | |
| Agent Infor | mation | | | | |
| Name: | Alliance Group of NC | (developer/real es | state consultant) | | |
| Address: | 7208 Falls of the Neu | se Rd Suite 101 | | | |
| City: | Raleigh | State: | NC | Zip: | 27615 |
| Phone: | 919-475-7314 | E-mail: | zumwalt@allian | | om |
| Other conta | acts: Bob Zumwalt | = | | | |
| | | | | | |
| | 2 | | | | |

CERTIFIED LIST OF NEIGHBORING PROPERTY OWNERS

Application #:

Submittal Date:

Provide a certified list of property owners subject to this application and all property owners within 300' of the subject property and HOA Contacts.

| | Owner's Name | PIN |
|-------------------|--|---|
| 1. | See attached list of owners within 300' of the subject property. | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |
| 7. | | - Constant and the second s |
| 8. | | |
| 9. | | - |
| 10. | | |
| 11 . | | |
| 12. | | |
| 13. | | |
| <mark>14</mark> . | | |
| 15. | | · · · · · · · · · · · · · · · · · · · |

I, <u>Jessie Hardesty</u>, certify that this is an accurate listing of all property owners and property owners within 300' of the subject property.

Date: 02 25 2021

By: Jusi Harding

COUNTY OF WAKE STATE OF NORTH CAROLINA

| Sworn and subscribed before me, Jessica L | Phintie, a Notary Public for the above State and |
|---|--|
| County, on this the <u>25th</u> day of <u>February</u> | 2021.00 |
| J | Quisicatha |
| SEAL Wake County, North Carolina | Notary Public TESSICH L. PUBLIC |
| Notary Public | Print Name |
| Jessica L Phair My Commission Expires 4/15/2024 | My Commission Expires: 4/15/24 |
| | |

| PIN | Owner | Mail Address 1 | Mail Address 2 | Mail Address 3 | |
|-----------|--|---|-------------------------------------|---------------------------|--|
| 713825716 | LAKE CASTLEBERRY OWNERS ASSOCIATION INC | 1100 PERIMETER PARK DR STE 112 | MORRISVILLE NC 27560-9119 | | |
| 713933017 | MOWLANEJAD, SOPHIA ALEXANDER, JOHN LEE | 414 GRAND HIGHCLERE WAY | APEX NC 27523-9609 | | |
| 713933167 | ASHTON RALEIGH RESIDENTIAL LLC | 5711 SIX FORKS RD STE 300 | RALEIGH NC 27609-3888 | | |
| 713935033 | LAKE CASTLEBERRY OWNERS ASSOCIATION INC | CHARLESTON MANAGEMENT CORPORATION | PO BOX 97243 RALEIGH N 27624-724 | | |
| 713935328 | LAKE CASTLEBERRY OWNERS ASSOCIATION INC | 1100 PERIMETER PARK DR STE 112 | MORRISVILLE N | MORRISVILLE NC 27560-9119 | |
| 713936103 | ASHTON RALEIGH RESIDENTIAL LLC | 5711 SIX FORKS RD STE 300 | RALEIGH NC 27609-3888 | | |
| 713936189 | ASHTON RALEIGH RESIDENTIAL LLC | 5711 SIX FORKS RD STE 300 | RALEIGH NC 27609-3888 | | |
| 713937383 | HARNEY, KEITH T. PENDRAK, PAMELA | 395 GRAND HIGHCLERE WAY | APEX NC 27523-9608 | | |
| 713937588 | NOVELLI, MARIBEL S NOVELLI, DANILO | 390 GRAND HIGHCLERE WAY | APEX NC 27523-9608 | | |
| 713938460 | CUMMINGS, HEATHER CUMMINGS, MICHAEL | 391 GRAND HIGHCLERE WAY | APEX NC 27523-9608 | | |
| 713938663 | LEE, GENE TRUSTEE BARTO, AMY E TRUSTEE | 386 GRAND HIGHCLERE WAY | APEX NC 27523-9608 | | |
| 713939446 | AGSTER, BRIAN AGSTER, MISCHA | 387 GRAND HIGHCLERE WAY | APEX NC 27523-9608 | | |
| 713939659 | HALL, JAMES F HALL, KAVITA K | 382 GRAND HIGHCLERE WAY | APEX NC 27523-9608 | | |
| 713939905 | LAKE CASTLEBERRY OWNERS ASSOCIATION INC | CHARLESTON MANAGEMENT CORPORATION | PO BOX 97243 | RALEIGH NC 27624-7243 | |
| 713943738 | WILLIAMS, ELIZA C | 4525 GREEN LEVEL WEST RD | APEX NC 27523-7516 | | |
| 713947388 | TOLL SOUTHEAST LP COMPANY INC | 250 GIBRALTAR RD | HORSHAM PA 1 | 9044-2323 | |
| 713947691 | TOLL SOUTHEAST LP COMPANY INC | 250 GIBRALTAR RD | HORSHAM PA 1 | 9044-2323 | |
| 713948472 | TOLL SOUTHEAST LP COMPANY INC | 250 GIBRALTAR RD | HORSHAM PA 1 | 9044-2323 | |
| 713948708 | TOLL SOUTHEAST LP COMPANY INC | 250 GIBRALTAR RD | HORSHAM PA 1 | 9044-2323 | |
| 713949448 | TOLL SOUTHEAST LP COMPANY INC | 250 GIBRALTAR RD | HORSHAM PA 1 | 9044-2323 | |
| 713949656 | LAKE CASTLEBERRY OWNERS ASSOCIATION INC | CHARLESTON MANAGEMENT CORPORATION | PO BOX 97243 | RALEIGH NC 27624-7243 | |

| 713949804 | TOLL SOUTHEAST LP COMPANY INC | 250 GIBRALTAR RD | HORSHAM PA 1 | .9044-2323 |
|-----------|---|---|--------------------------|--------------------------|
| 713959207 | JOHNSON, FREEMAN R | 4501 GREEN LEVEL WEST RD | APEX NC 27523-7516 | |
| 713961359 | HELTON, ROBERT D HELTON, LAURA S | 1025 BATCHELOR RD | APEX NC 27523-5718 | |
| 713963564 | HILLIARD, DOUGLAS R HILLIARD, DOROTHY A | 1029 BATCHELOR RD | APEX NC 27523-5718 | |
| 713965333 | POLKA, ESTHER POLKA, JAMES | 1017 BATCHELOR RD | APEX NC 27523-5718 | |
| 723030521 | SIVAKUMAR, MAHESH VEMULA, SUDHEERA | 383 GRAND HIGHCLERE WAY | APEX NC 27523-9608 | |
| 723030734 | ROBBINS, JONATHAN W ROBBINS, STEPHANIE H | 378 GRAND HIGHCLERE WAY | APEX NC 27523-9608 | |
| 723040524 | TOLL SOUTHEAST LP COMPANY INC | 250 GIBRALTAR RD | HORSHAM PA 1 | .9044-2323 |
| 723040769 | TOLL SOUTHEAST LP COMPANY INC | 250 GIBRALTAR RD | HORSHAM PA 1 | .9044-2323 |
| 723041509 | TOLL SOUTHEAST LP COMPANY INC | 250 GIBRALTAR RD | HORSHAM PA 1 | .9044-2323 |
| 723042327 | LAKE CASTLEBERRY OWNERS ASSOCIATION INC | CHARLESTON MANAGEMENT CORPORATION | PO BOX 97243 | RALEIGH NC 27624-7243 |
| 723050996 | LEE, GREGORY LEE, REGINA | 109 TURNSTONE DR | DURHAM NC 27703-8375 | |
| 723051332 | GREENWELL, LINDA P TRUSTEE TRUSTEE OF LINDA J HALE LIVING TRUST | PO BOX 250 | TERRELL NC 28682-0250 | |
| 723064572 | SRN PROPERTIES LLC | 123 PRESTON GRANDE WAY | MORRISVILLE N | C 27560-7073 |
| 18017 | WILLIAMS ELIZA C | 4525 GREEN LEVEL WEST RD | APEX NC 27523-7516 | |
| 76469 | RAGLAND DIANE SEARS | 1576 LUTHER RD | APEX NC 27502 | |
| 18057 | SEARS BILLY L & JULIA N | 1578 LUTHER RD | APEX NC 27523 | |
| 76468 | CUMMINGS HEATH PHILLIP | 315 SEARS PLACE DR | APEX NC 27523-5753 | |
| 18039 | HILLIARD DOUGLAS R ETUX DOROTHY A | 1029 BATCHELOR RD | APEX NC 27523 | |
| 18040 | EVANGELIST WILLIAM J | 1117 BATCHELOR RD | APEX NC 27502 | |
| | TOWN OF APEX PLANNING DEPARTMENT | PO BOX 250 | APEX NC 27502 | |

DEVELOPMENT NAME APPROVAL APPLICATION

Application #:

Submittal Date:

Fee for Initial Submittal: No Charge

Fee for Name Change after Approval: \$500*

Purpose

To provide a consistent and clearly stated procedure for the naming of subdivisions and/or developments and entrance roadways (in conjunction with *Town of Apex Address Policy*) so as to allow developers to define and associate the theme or aesthetics of their project(s) while maintaining the Town's commitment to preserving the quality of life and safety for all residents of Apex proper and extraterritorial jurisdiction.

Guidelines

- ✓ The subdivision/development name shall not duplicate, resemble, or present confusion with an existing subdivision/development within Apex corporate limits or extraterritorial jurisdiction except for the extension of an existing subdivision/development of similar or same name that shares a continuous roadway.
- ✓ The subdivision/development name shall not resemble an existing street name within Apex corporate limits or extraterritorial jurisdiction unless the roadway is a part of the subdivision/development or provides access to the main entrance.
- ✓ The entrance roadway of a proposed subdivision/development shall contain the name of the subdivision/development where this name does not conflict with the Town of Apex Road Name Approval Application and Town of Apex Address Policy guidelines.
- ✓ The name "Apex" shall be excluded from any new subdivision/development name.
- ✓ Descriptive words that are commonly used by existing developments will be scrutinized more seriously in order to limit confusion and encourage distinctiveness. A list of commonly used descriptive words in Apex's jurisdiction is found below.
- ✓ The proposed subdivision/development name must be requested, reviewed and approved during preliminary review by the Town.
- ✓ A \$500.00 fee will be assessed to the developer if a subdivision/development name change is requested after official submittal of the project to the Town.*

*The imposed fee offsets the cost of administrative changes required to alleviate any confusion for the applicant, Planning staff, other Town departments, decision-making bodies, concerned utility companies and other interested parties. There is no charge for the initial name submittal.

Existing Development Titles, Recurring

| | Residential | Non-Residential |
|------------|---|---|
| 10 or more | Creek, Farm(s), Village(s), | Center/Centre |
| 6 to 9 | Crossing(s), Park, Ridge, Wood(s) | Commons, Park |
| 3 to 5 | Acres, Estates, Glen(s), Green [•] , Hills | Crossing(s), Plaza, Station, Village(s) |

•excludes names with Green Level

DEVELOPMENT NAME APPROVAL APPLICATION

| Application #: | Submittal Date: |
|--|-----------------------------|
| Proposed Subdivision/Development Inf | ormation |
| Description of location: 4525 Green Le | vel West Rd, Apex NC |
| Nearest intersecting roads: Green Leve | el West Rd and Batchelor Rd |
| Wake County PIN(s): 0713943738 | |
| Township: White Oak | |
| | |
| Contact Information (as appropriate) | |

| Contact p | erson: | Bob Zumwalt | |
|------------|--|--------------|-------------|
| Phone nu | mber: | 919-475-7314 | Fax number: |
| Address: | 7208 Falls of the Neuse Rd Suite 101 Raleigh, NC | | |
| E-mail add | -mail address: zumwalt@alliancegroupnc.com | | |
| Owner: | Eliza C Williams | | |
| Phone nu | mber: | · · · · · · | Fax number: |
| Address: | dress: 4525 Green Level West Rd Apex, NC | | |
| E-mail add | dress: | | |

Proposed Subdivision/Development Name

1st Choice: Williams Farm

2nd Choice *(Optional)*:

| Town of Apex Staff Approval: | |
|--|------|
| Town of Apex Planning Department Staff | Date |
| Town of Apex Planning Department Stan | Date |

| EX UTILITIES O | |
|----------------|--|
| | |
| | |
| | |
| | |

Application #:

Submittal Date:

Town of Apex 73 Hunter Street P.O. Box 250 Apex, NC 27502 919-249-3400 WAKE COUNTY, NORTH CAROLINA CUSTOMER SELECTION AGREEMENT

Williams Property PUD

(the "Premises")

The Town of Apex offers to provide you with electric utilities on the terms described in this Offer & Agreement. If you accept the Town's offer, please fill in the blanks on this form and sign and we will have an Agreement once signed by the Town.

Stanley Martin Homes ______, the undersigned customer ("Customer") hereby irrevocably chooses and selects the Town of Apex (the "Town") as the permanent electric supplier for the Premises. Permanent service to the Premises will be preceded by temporary service if needed.

The sale, delivery, and use of electric power by Customer at the Premises shall be subject to, and in accordance with, all the terms and conditions of the Town's service regulations, policies, procedures and the Code of Ordinances of the Town.

Customer understands that the Town, based upon this Agreement, will take action and expend funds to provide the requested service. By signing this Agreement the undersigned signifies that he or she has the authority to select the electric service provider, for both permanent and temporary power, for the Premises identified above.

Any additional terms and conditions to this Agreement are attached as Appendix 1. If no appendix is attached this Agreement constitutes the entire agreement of the parties.

Acceptance of this Agreement by the Town constitutes a binding contract to purchase and sell electric power.

Please note that under North Carolina General Statute §160A-332, you may be entitled to choose another electric supplier for the Premises.

Upon acceptance of this Agreement, the Town of Apex Electric Utilities Division will be pleased to provide electric service to the Premises and looks forward to working with you and the owner(s).

ACCEPTED:

| CUSTOMER: | Stanley Martin Homes | TOWN OF APEX | |
|-----------|----------------------|--------------|------------------|
| BY: F | Juffle | вү: | |
| <u> </u> | Authorized Agent | | Authorized Agent |
| DATE: | 8/22/2021 | DATE: | |

| AGENT | AUTHORIZATI | ON FORM | |
|--|-------------------|---|--|
| Applica | ation #: | Submittal Date: | |
| Eliza C V | Villiams | is the owner* of the property for which the attached | |
| applicat | ion is being sub | pmitted: | |
| | Land Use Am | endment | |
| V | au | r Conditional Zoning and Planned Development rezoning applications, this uthorization includes express consent to zoning conditions that are agreed to by the gent which will apply if the application is approved. | |
| • | Site Plan | | |
| 1 | Subdivision | | |
| | Variance | | |
| | Other: | | |
| The property address is: 4525 Green Level West Rd Apex, NC 27523 | | | |
| The age | nt for this proje | Alliance Group of NC | |
| | 🗆 I am the o | wner of the property and will be acting as my own agent | |
| Agent N | lame: | Jacob Anderson | |
| Address | : | 7208 Falls of the Neuse Rd Suite 101 Raleigh, NC | |
| Telepho | one Number: | 919-239-9486 | |
| E-Mail A | | jacob@alliancegroupnc.com | |
| | | Signature(s) of Owner(s)* <u>Eliza C. W. Uliams</u> Type or print name Date | |
| | | Type or print name Date | |

Attach additional sheets if there are additional owners.

*Owner of record as shown on the latest equalized assessment rolls of Wake County. An option to purchase does not constitute ownership. If ownership has been recently transferred, a copy of the deed must accompany this authorization.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

| AFFIDAVIT OF O | WNERSHIP | |
|---------------------|-------------------|--|
| Application #: | | Submittal Date: |
| The undersigned, | Eliza C. Williams | (the "Affiant") first being duly sworn, hereby |
| swears or affirms a | s follows: | |

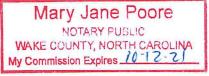
- 1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 4525 Green Level West Rd ______ and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
- 2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
- If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated <u>12-3-13</u>, and recorded in the Wake County Register of Deeds Office on <u>12-3-13</u>, in Book <u>14-E</u> Page <u>362</u>.
- 4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
- 5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on <u>12-3-13</u>. Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on <u>12-3-13</u>, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

| This the 17 day of Februa | ry, 20 <u>21</u> . |
|---------------------------|--------------------------|
| | Eliza C. Williams (seal) |
| | Eliza C. Williams |
| | Type or print name |

STATE OF NORTH CAROLINA

I, the undersigned, a Notary Public in and for the County of <u>Wake</u>, hereby certify that <u>ELIZA C NILLAMS</u>, Affiant, personally known to me or known to me by said Affiant's presentation of said Affiant's <u>Drivers License</u>, personally appeared before me this day and acknowledged the

due and voluntary execution of the foregoing Affidavit.



[NOTARY SEAL]

Notary Public State of North Carolina 10-12-21 My Commission Expires: _

AFFIDAVIT OF OWNERSHIP: EXHIBIT A – LEGAL DESCRIPTION

Application #:

Submittal Date:

Insert legal description below.

WILLIAMS TRACT LEGAL DESCRIPTION

BEGINNING AT A POINT IN THE SOUTHERN RIGHT OF WAY OF GREEN LEVEL WEST ROAD (60-FOOT PUBLIC RIGHT OF WAY); THENCE SOUTH 01°32'22" WEST 672.98 FEET TO AN IRON PIPE; THENCE SOUTH 01°31'22" WEST 1361.14 FEET TO A STAKE; THENCE SOUTH 56°33'17" WEST 368.90 FEET TO AN IRON PIPE; THENCE SOUTH 88°32'13" WEST 421.25 FEET TO AN IRON PIPE; THENCE SOUTH 66°10'21" WEST 554.69 FEET TO AN IRON PIPE; THENCE NORTH 10° 48'22" WEST 715.81 FEET TO A POINT IN THE COUNTY LINE BETWEEN CHATHAM AND WAKE COUNTY; THENCE SAID COUNTY LINE NORTH 15°51'13" EAST 2040.73 FEET TO A POINT IN THE SOUTHERN RIGHT OF WAY OF GREEN LEVEL WEST ROAD (60-FOOT PUBLIC RIGHT OF WAY); THENCE WITH SAID RIGHT OF WAY A CURVE TO THE RIGHT WITH AN ARC LENGTH OF 73.21 FEET, WITH A RADIUS OF 630.00 FEET, WITH A CHORD BEARING OF SOUTH 51°48'57" EAST, WITH A CHORD LENGTH OF 73.17 FEET TO A POINT; THENCE SOUTH 48°29'13" EAST 203.90 FEET TO A POINT; THENCE WITH A CURVE TO THE LEFT WITH AN ARC LENGTH OF 272.48 FEET, WITH A RADIUS OF 320.00 FEET, WITH A CHORD BEARING OF SOUTH 72°52'50" EAST, WITH A CHORD LENGTH OF 264.32 FEET TO A POINT; THENCE NORTH 82°43'32" EAST 98.78 FEET TO A POINT; THENCE NORTH 80°33'13" EAST 310.74 FEET TO THE POINT AND PLACE OF BEGINNING CONTAINING 2,697,206 SQUARE FEET, 61.919 ACRES.



Wake County Residential Development Notification

| Developer Company Information | | | | |
|---------------------------------------|-----------------------------|--|--|--|
| Company <i>Name</i> | Stanley Martin Homes | | | |
| Company Phone Number | 919-977-8760 | | | |
| Developer Representative Name | Brian Ketchem | | | |
| Developer Representative Phone Number | 919-724-0624 | | | |
| Developer Representative Email | KetchemBK@stanleymartin.com | | | |

| New Residential Subdivision Information | | | | | |
|---|---------------------------------------|--|--|--|--|
| Date of Application for Subdivision | August 2021 | | | | |
| City, Town or Wake County Jurisdiction | Арех | | | | |
| Name of Subdivision | Williams Property PUD | | | | |
| Address of Subdivision (if unknown enter nearest cross streets) | Green Level West Rd and Batchelor Rd. | | | | |
| REID(s) | 0077518 | | | | |
| PIN(s) | 0713943738 | | | | |

Please complete each section of this form and submit with your application.

Town of Apex staff will enter this information into the online WCPSS form.

Please send any questions about this form to:

studentassignment-gisgroup@wcpss.net

| Projected Dates Information | | | | | | |
|--|---------------|--|--|--|--|--|
| Subdivision Completion Date | January 2022 | | | | | |
| Subdivision Projected First Occupancy Date | November 2023 | | | | | |

| Lot by Lot Development Information | | | | | | | | | | | | | | | | | |
|------------------------------------|---------------------|---------------|--------|-----------|-----------|-----------|-----------|-------|---------------|--------|--------|------|------------|----------|------------|-----------|---------|
| Unit Type | Total # of Units | Senior Living | Studio | 1 Bedroom | 2 Bedroom | 3 Bedroom | 4 Bedroom | | e Foot nge | Price | Range | , | Anticipate | ed Compl | letion Uni | its & Dat | es |
| | | | | | | | | Min | Max | Low | High | Year | # Units | Year | # Units | Year | # Units |
| Single Family | 166 | | | | | | 166 | 2,800 | 3,500 | \$550K | \$750K | 2023 | 50 | 2024 | 58 | 2025 | 58 |
| Townhomes | 10 | | | | | 10 | | 1,800 | 2,400 | \$250K | \$320K | 2023 | 0 | 2024 | 10 | 2025 | |
| Condos | | | | | | | | | | | | | | | | | |
| Apartments | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |

Revised 08/10/2018

NOTICE OF ELECTRONIC NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

January 27, 2021

Date

Dear Neighbor:

You are invited to an electronic neighborhood meeting to review and discuss the development proposal at

| 4525 GREEN LEVEL WEST RD | 0713943738 |
|--------------------------|------------|
| Address(es) | PIN(s) |

in accordance with the Town of Apex Electronic Neighborhood Meeting procedures. This meeting is intended to be a way for the applicant to discuss the project and review the proposed plans with adjacent neighbors and neighborhood organizations before the submittal of an application to the Town. This provides neighbors an opportunity to raise questions and discuss any concerns about the impacts of the project before it is officially submitted. If you are unable to attend, you may contact the applicant before or after the meeting is held. Once an application has been submitted to the Town, it may be tracked using the <u>Interactive</u> <u>Development Map</u> or the <u>Apex Development Report</u> located on the Town of Apex website at <u>www.apexnc.org</u>. If at all feasible given emergency declarations, limits on in-person gatherings, and social distancing, an additional in-person Neighborhood Meeting may be scheduled and held prior to a public hearing or staff decision on the application.

An Electronic Neighborhood Meeting is required because this project includes (check all that apply):

| Арр | lication Type | Approving Authority |
|-----|--|----------------------|
| X | Rezoning (including Planned Unit Development) PUD-CZ | Town Council |
| | Major Site Plan | Town Council (QJPH*) |
| | Special Use Permit | Town Council (QJPH*) |
| | Residential Master Subdivision Plan (excludes exempt subdivisions) | Technical Review |
| | | Committee (staff) |

*Quasi-Judicial Public Hearing: The Town Council cannot discuss the project prior to the public hearing.

The following is a description of the proposal (also see attached map(s) and/or plan sheet(s)):

The attached maps and plan illustrate the proposal for a rezoning located on Green Level West Road for a new

residential development. The proposed project area is about 62 acres, and is located on the border of

Wake County and Chatham County.

Estimated submittal date: March 1, 2021

| MEETING INFORMATION: Property Owner(s) name(s): | Eliza C Williams |
|--|--|
| Applicant(s): | McAdams |
| Contact information (email/phone): | hardesty@mcadamsco.com / 540-958-9098 |
| Electronic Meeting invitation/call in info: | Please see attached sheet for Zoom meeting information |
| Date of meeting**: | February 11, 2021 |
| Time of meeting**: | 6:00 pm - 8:00 pm |
| MEETING AGENDA TIMES: | 6:05 6:20 |

Welcome: 6:00-6:05 Project Presentation: 6:05-6:20 Question & Answer: 6:20-8:00

**Meetings shall occur between 5:00 p.m.-9:00 p.m. on a Monday through Thursday (excluding Town recognized holidays). If you have questions about the general process for this application, please contact the Planning Department at 919-249-3426. You may also find information about the Apex Planning Department and on-going planning efforts at http://www.apexnc.org/180/Planning.

PROJECT CONTACT INFORMATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

| Development Contacts: | |
|------------------------------------|--|
| Project Name: Williams Property | Zoning: PUD-CZ |
| Location: 4525 Green Level West | Rd |
| Property PIN(s): 0713943738 | Acreage/Square Feet: Total: 73.10 Project Area:61.83 |
| Property Owner: Eliza C Williams | |
| Address: 4525 Green Level West R | Rd |
| City: Apex | State: <u>NC</u> Zip: <u>27523</u> |
| Phone: E | Email: |
| Developer: Alliance Group of NC | |
| Address: 7208 Falls of the Neuse R | Rd Suite 101 |
| _{City:} Raleigh | State: NC Zip: 27615 |
| Phone: 919-475-7314 Fax: | Email: zumwalt@alliancegroupnc.com |
| Engineer: McAdams | |
| Address: 2905 Meridian Parkway | |
| City: Durham | State: NC Zip: 27713 |
| Phone: 919-624-3672 Fax: | Email: jfinch@mcadamsco.com |
| Builder (if known): | |
| Address: | |
| City: | State: Zip: |
| Phone: Fax: | Email: |

Please note that Town staff will not have complete information about a proposed development until the application is submitted for review. If you have a question about Town development standards and how they relate to the proposed development, please contact the appropriate staff person listed below.

| Fown of Apex Department Contacts | | | | | |
|--|----------------|--|--|--|--|
| Planning Department Main Number | | | | | |
| (Provide development name or location to be routed to correct planner) | (919) 249-3426 | | | | |
| Parks, Recreation & Cultural Resources Department | | | | | |
| Angela Reincke, Parks Planner | (919) 249-7468 | | | | |
| Public Works - Transportation | | | | | |
| Russell Dalton, Senior Transportation Engineer | (919) 249-3358 | | | | |
| Water Resources Department | | | | | |
| Jessica Bolin, Senior Engineer (Stormwater, Sedimentation & Erosion Control) | (919) 249-3537 | | | | |
| Stan Fortier, Senior Engineer (Stormwater, Sedimentation & Erosion Control) | (919) 249-1166 | | | | |
| James Gregg, Utility Engineer (Water & Sewer) | (919) 249-3324 | | | | |
| Electric Utilities Division | | | | | |
| Rodney Smith, Electric Technical Services Manager | (919) 249-3342 | | | | |

Providing Input to Town Council:

Each Town Council meeting agenda includes a Public Forum time when anyone is permitted to speak for three (3) minutes on any topic with the exception of items listed as Public Hearings for that meeting. The Town Council meets on the 1st and 3rd Tuesdays of each month at 6:00 p.m. (except for holidays, see schedule of meetings at <u>http://www.apexnc.org/838/Agendas-Minutes</u>). You may also contact Town Council by e-mail at <u>AllCouncil@apexnc.org</u>.

Private Agreements and Easement Negotiation:

The Town of Apex cannot enforce private agreements between developers and neighbors and is not a party to the easement and right-of-way negotiation that occurs between developers and neighboring property owners for easements or rights-of-way that are necessary to build the project.

It is recommended that all private agreements be made in writing and that if a property owner feels it necessary, they should obtain private legal counsel in order to protect their interests in both private agreements and during easement negotiations. The only conditions that the Town of Apex can enforce are those conditions that are made a part of the conditional zoning of the property by agreement of the developer and the Town.

As an example, if a developer offers to build a fence for a neighbor to mitigate some impact, the Town can only enforce the construction of the fence if the fence becomes a condition of the rezoning. This would occur by the developer offering the condition as part of their conditional zoning application package or at the Town Council public hearing on the conditional zoning and the Town accepting it as a condition. Private agreements regarding a fence being constructed will not be enforced by the Town.

To request that any agreement with a developer is made a part of the conditional zoning at the time of approval, you may ask at the Town Council public hearing if the agreement is included in the conditions. If it is not, you may request that the Town Council not approve the rezoning without the agreement being included in the conditions (note that it is up to Town Council whether to approve or deny the rezoning but they cannot impose conditions that the applicant does not agree to add). The developer's proposed conditions can be viewed any time after a rezoning is submitted on the Interactive Development Map at: http://apexnc.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=fa9ba2017b784030b15ef4d

Documentation:

Neighbors to a requested new development and/or rezoning are strongly encouraged to fully document (such as through dated photographs) the condition of their property before any work is initiated for the new development. Stormwater controls installed on developed property are not designed to and will likely not remove 100% of the soil particles transported by stormwater runoff. As a result, creeks and ponds could become cloudy for a period of time after rain events.

COMMON CONSTRUCTION ISSUES & WHO TO CALL

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

| Noise & Hours of Construction: | Non-Emergency Police | 919-362-8661 |
|--|--|--|
| Noise from tree removal, grading, | excavating, paving, and building s | structures is a routine part of the |
| construction process. The Town gene | erally limits construction hours from | 7:00 a.m. to 8:30 p.m. so that there |
| are quiet times even during the co | nstruction process. Note that cons | struction outside of these hours is |
| allowed with special permission from | - | |
| night, often to avoid traffic issues. I | | |
| Friday from 8:00 a.m. to 5:00 p.m. Re | | |
| Non-Emergency Police phone number | | |
| Construction Traffic: | James Misciagno | 919-372-7470 |
| Construction truck traffic will be hea | - | |
| removal of trees from site, loads of d | | _ |
| and wood brought to the site, aspl | - | |
| construction entrance that is gravele | | |
| does get into the road, the Town can | | |
| Road Damage & Traffic Control: | Water Resources – Infrastructu | |
| There can be issues with roadway of | | - |
| inadequate lanes/signing/striping, poo | | |
| be reported to Water Resources – Infra | - | |
| if needed. | | |
| Parking Violations: | Non-Emergency Police | 919-362-8661 |
| Unless a neighbor gives permission, th | | |
| property. Note that parking in the right | · · · · · | |
| driveways so as not to block sight tria | | |
| Emergency Police phone number at 91 | | |
| Dirt in the Road: | James Misciagno | 919-372-7470 |
| Sediment (dirt) and mud gets into the | | |
| should be reported to James Misciagno | - | |
| Dirt on Properties or in Streams: | James Misciagno | 919-372-7470 |
| | Danny Smith | Danny.Smith@ncdenr.gov |
| Sediment (dirt) can leave the site and g | et onto adjacent properties or into stre | eams and stream buffers; it is typically |
| transported off-site by rain events. Th | ese incidents should be reported to . | James Misciagno at 919-372-7470 so |
| that he can coordinate the appropriat | te repairs with the developer. Impact | ts to the streams and stream buffers |
| _should also be reported to Danny Smit | h (<u>danny.smith@ncdenr.gov</u>) with the | e State. |
| Dust: | James Misciagno | 919-372-7470 |
| During dry weather dust often becor | nes a problem blowing into existing | neighborhoods or roadways. These |
| incidents should be reported to Jame | s Misciagno at 919-372-7470 so that | he can coordinate the use of water |
| trucks onsite with the grading contract | | |
| Trash: | James Misciagno | 919-372-7470 |
| Excessive garbage and construction de | | |
| be reported to James Misciagno at 91 | .9-372-7470. He will coordinate the c | leanup and trash collection with the |
| developer/home builder. | | |
| Temporary Sediment Basins: | James Misciagno | 919-372-7470 |
| Temporary sediment basins during cor | | |
| quite unattractive. Concerns should be | | |
| the cleaning and/or mowing of the slo | | |
| Stormwater Control Measures: | Jessica Bolin | 919-249-3537 |
| Post-construction concerns related to | | |
| conversion and long-term maintenance | | |
| Electric Utility Installation: | Rodney Smith | 919-249-3342 |
| Concerns with electric utility installat | ion can be addressed by the Apex E | lectric Utilities Department. Contact |
| Rodney Smith at 919-249-3342. | | |



January 27, 2021

RE: Virtual Neighborhood Meeting – Zoom Instructions

Dear Property Owner,

Due to the current circumstances of COVID-19, we will be hosting a virtual neighborhood meeting via Zoom Webinar. The meeting will be held on February 11th and begin at 6:00 PM Eastern Time.

To attend the meeting via computer, type in the following link in your internet browser: <u>https://mcadamsco.zoom.us/j/94170532762?pwd=cGZjUktWS3IZT0pGNXp6Vi81enFmZz09</u>

Passcode: 415490

To attend the meeting via phone, you may dial in by your location:
 US: +1 646 876 9923 or
 +1 301 715 8592 or
 877 853 5247 (Toll Free)

When prompted, enter the Meeting ID: 941 7053 2762

Sincerely, MCADAMS

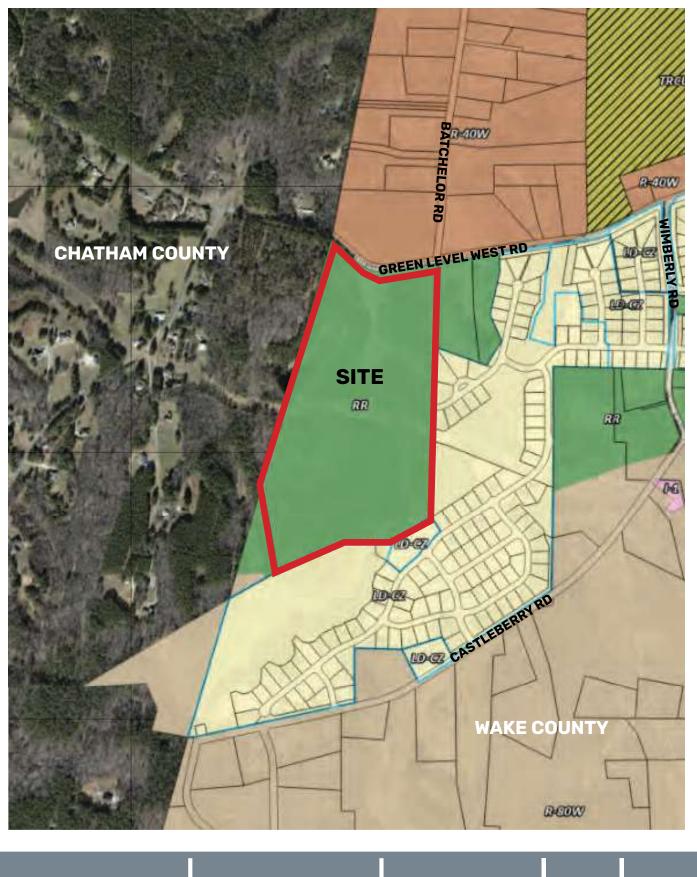


WILLIAMS PROPERTY REZONING 4525 GREEN LEVEL WEST RD APEX, NC

VICINITY MAP





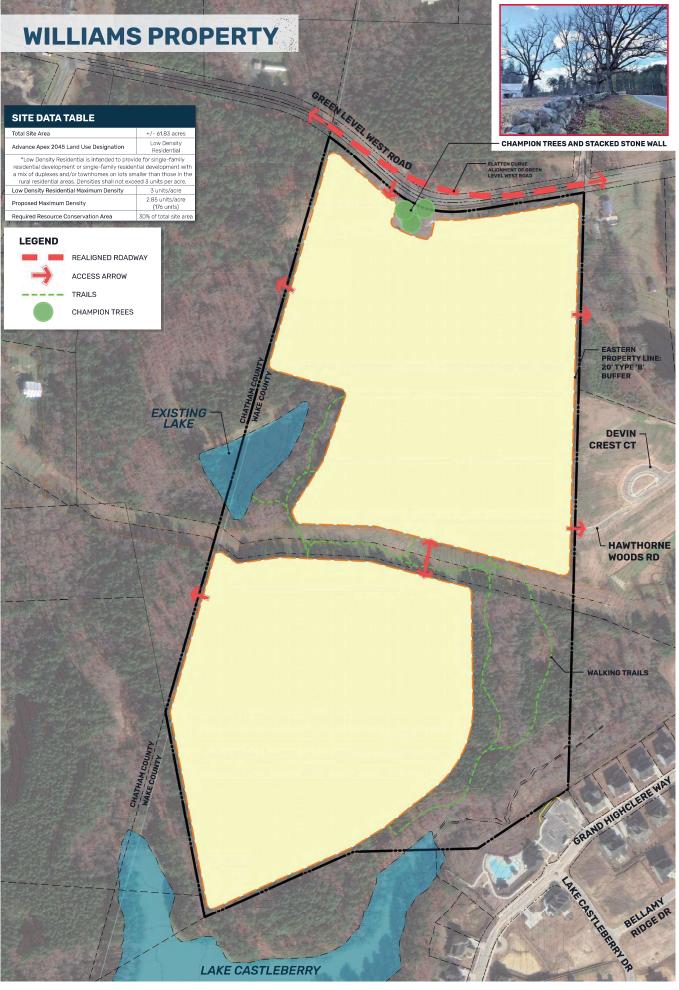


WILLIAMS PROPERTY REZONING 4525 GREEN LEVEL WEST RD APEX, NC

EXISTING ZONING MAP

FEB 2021







WILLIAMS PROPERTY NEIGHBORHOOD MEETING MAP



ELECTRONIC NEIGHBORHOOD MEETING ATTENDANCE SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

| Meeting Format: | Zoom | |
|-------------------|------------------------------|--------------------------------|
| Date of meeting: | February 11, 2021 | Time of meeting: 6:00pm-8:00pm |
| Property Owner(s) |) name(s): Eliza C. Williams | |
| Applicant(s): McA | Adams & Alliance Group of NC | |

Please list Electronic Neighborhood Meeting Attendees who provided their name and/or contact information either during the meeting or via phone/email before or after the meeting.

| | NAME/ORGANIZATION | ADDRESS | PHONE # | EMAIL | SEND PLANS & UPDATES |
|-----|------------------------------|---------------------------------------|---------|-------|-------------------------|
| 1. | Rehab Hamad | | | | |
| 2. | Stephanie Hedrick | | | | |
| 3. | Maribel Novelli | 390 Grand Highclere Way, Apex 27523 | | | |
| 4. | Billy L. Sears | 225 Sears Place Drive | | | |
| 5. | Pam Pendrak & Keith Harney | 395 Grand Highclere Way | | | |
| 6. | Sumanth Kota & Ramya Kota | 3212 Devon Crest CT, Apex, NC 27523 | | | |
| 7. | Warren A Sears | 305 Averroe Drive | | | |
| 8. | Joni and David Klem | 316 Grand Highclere Way, Apex, | | | |
| 9. | Shirley and Scott Diefenbach | | | | |
| 10. | John Hamilton | 434 Grand Highclere Way, Apex | | | |
| 11. | Zoe Stamataros | 221 Glenvale Street, Lake Castleberry | | | |
| 12. | Elsie and Joe Florio | | | | |
| 13. | Ed Paiewonsky | 3260 Bellamy Ridge Drive | | | |
| 14. | Vasanth Baliga | | | | |

Use additional sheets, if necessary.

ELECTRONIC NEIGHBORHOOD MEETING ATTENDANCE SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

| Meeting Format: | Zoom | |
|-------------------|-------------------------------|-------------------------------|
| Date of meeting: | February 11, 2021 | Time of meeting:6:00pm-8:00pm |
| Property Owner(s | a) name(s): Eliza C. Williams | |
| Applicant(s): Mc. | Adams & Alliance Group of NC | |

Please list Electronic Neighborhood Meeting Attendees who provided their name and/or contact information either during the meeting or via phone/email before or after the meeting.

| | NAME/ORGANIZATION | ADDRESS | PHONE # | EMAIL | SEND PLANS & UPDATES |
|----------|-------------------------------|--------------------------------|---------|-------|-------------------------|
| 1. | Kenneth and Dianne Ragland | 186 Sears Place Drive Apex Nc | | | |
| 2. | Jamie Hinckley | 363 Grand Highclere Way | | | |
| 3. | Gene Lee & Amy Barto | 386 Grand Highclere Way | | | |
| 4. | Meena and Vasanth Baliga | 3200 Devon Crest Ct | | | |
| 5. | Deepak Dhar | 214 Glenvale St, Apex NC 27523 | | | |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| 9. | | | | | |
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| <u> </u> | dditional chaota if nacassany | 1 | | | |

Use additional sheets, if necessary.

SUMMARY OF DISCUSSION FROM THE ELECTRONIC NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

| Property Owner(s) name(s): Eliza Williams | | | |
|---|---------------------------------------|--|--|
| Applicant(s): <u>McAdams</u> | | | |
| Contact information (email/phone): | hardesty@mcadamsco.com / 540-958-9098 | | |
| Meeting Format: Zoom | | | |
| Date of meeting: 02/11/2021 | Time of meeting: 6:00pm-8:00pm | | |

Please summarize the questions/comments and your response from the Electronic Neighborhood Meeting in the spaces below (attach additional sheets, if necessary). Please state if/how the project has been modified in response to any concerns. The response should not be "Noted" or "No Response". There has to be documentation of what consideration the neighbor's concern was given and justification for why no change was deemed warranted.

Question/Concern #1:

Will this community connect to Hawthorne Woods Rd?

Applicant's Response:

Yes, this connection will be required by the Town of Apex.

Question/Concern #2:

Can you further explain the purple areas on the eastern side?

Applicant's Response:

We are required to collect all water and detain and treat it. Those areas are conceptual stormwater collection areas.

They will look like wetland areas with plants.

Question/Concern #3:

Will anything be done to decrease traffic?

Applicant's Response:

Our traffic engineer is currently preparing a traffic study and if there are issues that arise, those will be commitments in our application.

Question/Concern #4:

Will the neighborhood have a pool or other amenities?

Applicant's Response:

There won't be a pool or clubhouse like Castleberry. Our amenities would look more like small pocket parks throughout

the development with things like a gazebo, picnic shelter, law areas, etc.

Question/Concern #5: How many single family units will there be?

Applicant Response: We will have a maximum of 176 units total.

Question/Concern #6: How much of a buffer will there be on the eastern side by Devon Crest Ct?

A: There will be at least a 20' buffer or more on the eastern property line.

Question/Concern #7: How will you prevent drainage from going into Lake Castleberry?

Applicant Response: Ultimately the water will drain to this lake, but it will be treated. (gave details of how)

Question/Concern #8: Is it possible to ensure that townhomes won't be close to Lake Castleberry?

Applicant Response: If there are any townhomes, we will make sure there are conditions so they are not close to the lake and adjacent neighborhood. We appreciate that feedback and we imagine if there are townhomes they would be closer to Green Level West Rd.

Question/Concern #9: What kind of tree screens will there be? Will we see homes in the new development?

Applicant Response: We will have a Type B buffer that requires a certain mix of trees and shrubs. The vast majority of the interface between the two neighborhoods will have about 200 feet of preserved wetland buffer so there won't be many areas where you can see the neighborhood.

Question/Concern #10: Is the Castleberry Lake considered to be a part of this property?

Applicant Response: There is a very small piece of the lake the crosses the property line. We might have a trail that goes to this area, but we aren't proposing new trails to go all the way around the lake outside of our property.

Question/Concern #11: What will the stormwater treatment areas look like?

Applicant Response: These will likely look similar to the wet ponds that exist in Lake Castleberry neighborhood with vegetation/plantings around the perimeter.

Question/Concern #12: Do you have plans from the creek sections? We have trees that are falling because their roots are wet from extra water from houses.

Applicant Response: We are not allowed to disturb anything in the creeks and the buffer areas remain untouched unless we have to remove a tree because it is sick/unhealthy.

Question/Concern #13: There is a big concern about traffic with the future neighborhood cutting through Lake Castleberry to get to Wimberly.

Applicant Response: We imagine it will actually be easier for residents in the new neighborhood to drive straight out to Green Level West. The traffic study will also take note of things like this and we will note your concern.

Question/Concern #14: What additional buffers will be provided by Lake Castleberry?

Applicant Response: There will already be 200+ feet of buffers, so nothing in addition to that.

Question/Concern #15: What will be across from the lake?

Applicant Response: We won't touch buffer areas across from the lake, and any homes that are across from the lake will be single family.

Question/Concern #16: How many single family versus townhomes?

Applicant Response: It is too early too tell, but we wouldn't have more than 20-25 townhomes if we have any. This is part of why we are here tonight is to here your feedback on that.

Question/Concern #17: Are there any similar neighborhoods to this development that are in the area?

Applicant Response: None exactly like this from Stanley Martin. Yates Mill and Buffalo Trace is probably not too far off as far as product.

Question/Concern #18: We would prefer just single family homes instead of townhomes.

Applicant Response: Thanks for your feedback.

Question/Concern #19: Concern about removing trees near Devin Crest Ct – is there anything else that can be done?

Applicant Response: Maybe we can walk the property line with you so we can come up with creative solutions and work on it together. It is a little early for us to understand what would be stormwater related behind your home. We are happy to work with you and talk through it.

Question/Concern #20: Are there any buffers on the western side of the property?

Applicant Response: We will probably be providing buffers similar to the eastern side of the property. It is the same owner as our property.

Question/Concern #21: Our property is lower than your property next door. Concerned about erosion and water.

Applicant Response: There will be significant natural area between new homes and your property. We can coordinate with you more to as the design develops to communicate everything.

Question/Concern #22: What is build out time?

Applicant Response: Development wouldn't happen for at least another two years.

Question/Concern #23: Will you be purchasing the property to the west.

Applicant Response: No plans to pursue the property at this time. Being in Chatham County provides some complications.

Question/Concern #24: I noticed surveyors using the Lake Castleberry parking lot next to my property. Will this be happening in the future?

Applicant Response: Our surveyors used this parking lot to access the southern property line, but their work has been completed. We can give notice if for some reason they need to come back out to the property. The only other thing you might see on site is that there are soil borings in the next couple of weeks.

Question/Concern #25: Why are you are connecting to Hawthorne Woods Rd?

Applicant Response: Apex has connection and access point requirements, and we are required to make this connection. We will also have traffic calming throughout the development.

Question/Concern #26: Who is the builder?

Applicant Response: Stanley Martin Homes.

Question/Concern #27: What is the first red arrow above Hawthorne Woods Road?

Applicant Response: This is a road stub. The adjacent property could develop in the future and would connect to our property through that stub.

Question/Concern #28: What is the pricing range on homes going in here?

Applicant Response: We really aren't sure yet, it will depend on the market. They will be nice homes.

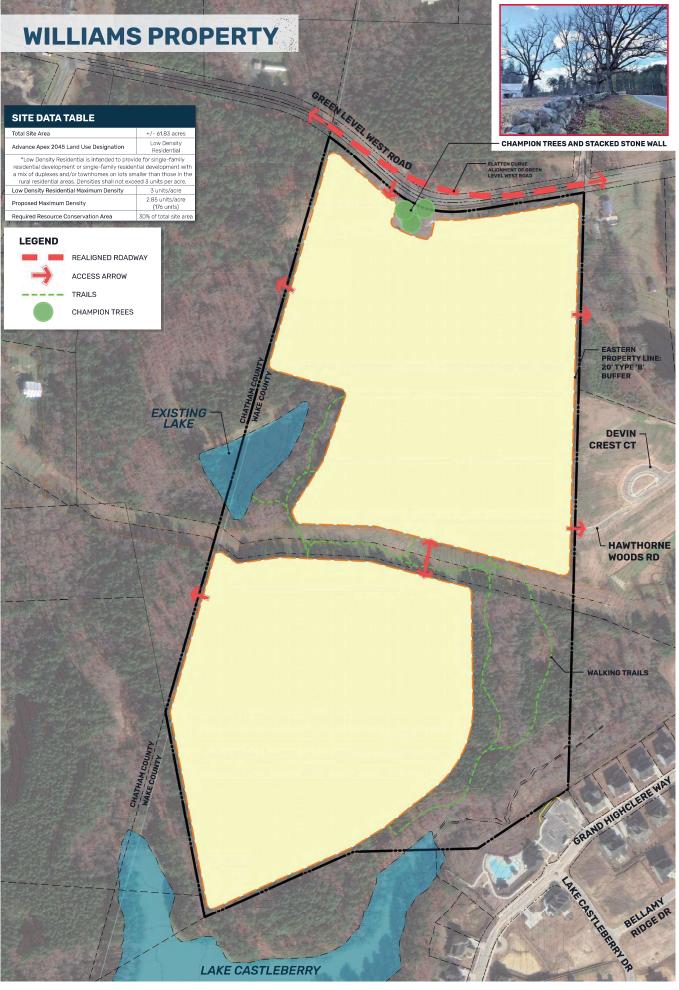
Question/Concern #29: Will this neighborhood be zoned for White Oak Elementary and Mills Park Middle?

Applicant Response: Yes, it is.

Question/Concern #30: Will there be a follow up call in the future?

Applicant Response: We definitely want to meet up with Shirley and Sumanth at the site to walk through some things and then have a follow up meeting to begin to paint the picture more for everyone in 3 to 4 weeks.

At approximately 7:05pm there were no more questions. The zoom meeting stayed open until 8:00pm in case anyone joined in late, but there were no more attendees.





WILLIAMS PROPERTY NEIGHBORHOOD MEETING MAP



AFFIDAVIT OF CONDUCTING A NEIGHBORHOOD MEETING, SIGN-IN SHEET AND ISSUES/RESPONSES SUBMITTAL

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

I, Jessie Hardesty _____, do hereby declare as follows:

Print Name

- 1. I have conducted a Neighborhood Meeting for the proposed Rezoning, Major Site Plan, Master Subdivision Plan, or Special Use Permit in accordance with UDO Sec. 2.2.7 *Neighborhood Meeting*.
- 2. The meeting invitations were mailed to the Apex Planning Department, all property owners within 300 feet of the subject property and any neighborhood association that represents citizens in the area via first class mail a minimum of 10 days in advance of the Neighborhood Meeting.
- 3. The meeting was conducted at Zoom Webinar (location/address) on February 11, 2021 (date) from 6:00pm (start time) to 8:00pm (end time).
- 4. I have included the mailing list, meeting invitation, sign-in sheet, issue/response summary, and zoning map/reduced plans with the application.
- 5. I have prepared these materials in good faith and to the best of my ability.

By: Gin Harden J 02 25 2021 Date

STATE OF NORTH CAROLINA COUNTY OF WAKE

| Sworn and subscribed before me, $\overline{Jessich}$ L County, on this the 25^{+h} day of <u>Februar</u> | \underline{Phrin}_{20} , a Notary Public for the above State and 4 20 $\underline{21}_{20}$. |
|---|---|
| SEAL | Jessich L. Phylic |
| Wake County, North Carolina Notary Public Jessica L Phair My Commission Expires 4/15/2024 | Print Name My Commission Expires: $4/15/24$ |



WILLIAMS FARM PLANNED UNIT DEVELOPMENT

4525 GREEN LEVEL WEST RD APEX, NORTH CAROLINA | PD PLAN



WILLIAMS FARM

Planned Unit Development Prepared for The Town of Apex, North Carolina

Submittal Dates

| First Submittal: | March 1, 2021 |
|-------------------|---------------|
| Second Submittal: | April 9, 2021 |
| Third Submittal: | May 15, 2021 |
| Fourth Submittal: | May 27, 2021 |
| Fifth Submittal: | June 14, 2021 |

Real Estate Consultant

Alliance Group of NC 7208 Falls of Neuse Rd Suite 101 Raleigh NC 27615

Builder

Stanley Martin Homes 4020 Westchase Blvd, Suite 470, Raleigh, NC 27607

Planner, Engineer, Landscape Architect, Surveyor

McAdams 2905 Meridian Parkway Durham NC 27113

Environmental Consultant S&EC 8412 Falls of Neuse Road, Suite 104 Raleigh, NC 27615



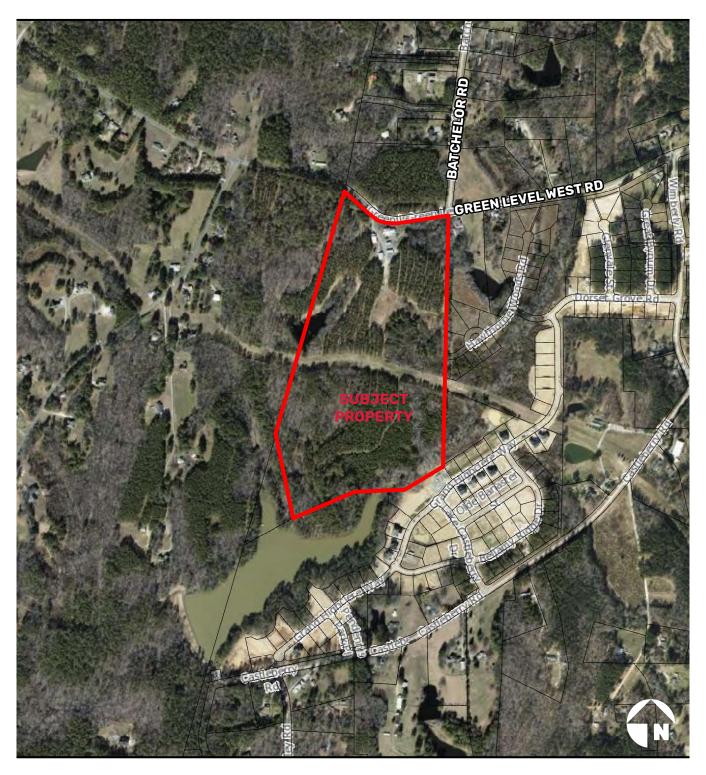


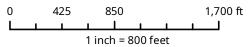


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- 5. AFFORDABLE HOUSING
- 6. DESIGN CONTROLS
- 7. ARCHITECTURAL STANDARDS
- 8. PARKING AND LOADING
- 9. SIGNAGE
- 10. LANDSCAPING
- 11. NATURAL RESOURCE AND ENVIRONMENTAL DATA
- 12. STORMWATER MANAGEMENT
- 13. PARKS AND RECREATION
- 14. PRIVATE AMENITIES
- 15. PUBLIC FACILITIES
- 16. PHASING PLAN
- 17. CONSISTENCY WITH LAND USE PLAN
- 18. COMPLIANCE WITH UDO
- **19. TRANSPORTATION IMPROVEMENTS**

VICINITY MAP





PROJECT DATA

| Name of Project: | Williams Farm |
|---|---|
| Applicant/Real Estate Consultant: | Alliance Group of NC 7208 Falls of Neuse Rd Suite 101 Raleigh NC 27615 919-475-7314 |
| Prepared By: | McAdams 2905 Meridian Parkway Durham, NC 27713 919-361-5000 |
| Current Zoning Designation: | RR |
| Proposed Zoning Designation: | PUD-CZ |
| Current 2045 Land Use Map Designation: | Low Density Residential |
| Proposed 2045 Land Use Map Designation: | Low Density Residential |
| Size of Project: | Approximately 61.919 acres (Acreage may vary based on final alignment of Green Level West Road) |
| Property Identification Number: | P/0 0713943738 |

PURPOSE STATEMENT

The Williams Farm PUD will be a residential development consisting of single family homes. The proposed development will set aside required resource conservation areas throughout the 61.919-acre property. Williams Farm's concept is consistent with the Town's stated PUD goal to provide site specific, high quality neighborhoods that exhibit natural feature preservation as well as compatibility with, and connectivity to, surrounding land uses. This development will comply with the PUD Development Parameters outlined in §2.3.4.F.1.a.i-vii of the Town of Apex Unified Development Ordinance. The Williams Farm PUD is in accordance with the Development Parameters as follows:

- The uses to be developed in the PD Plan for the PUD-CZ are those uses permitted in Section 4.2.2, Use Table.
 - » The uses permitted within the Williams Farm PUD are permitted per §4.2.2 of the Town of Apex UDO.
- The uses proposed in the PD Plan for the PUD-CZ can be entirely residential, entirely nonresidential, or a mix of residential and non-residential uses, provided a minimum percentage of the non-residential land area is included in certain mixed-use areas as specified on the 2045 Land Use Map. The location of uses proposed by the PUD-CZ must be shown on the PD Plan with a maximum density for each type of residential use and a maximum square footage for each type of non-residential use.
 - » Williams Farm is an entirely residential development including a maximum of 176 units.
- The dimensional standards in §5.1.3 Table of Intensity and Dimensional Standards, Planned Development Districts, may be varied in the PD Plan for PUD-CZ. The PUD-CZ shall demonstrate compliance with all other dimensional standards of the UDO, North Carolina Building Code, and North Carolina Fire Code.
 - » The proposed dimensional standards are in compliance with the Town of Apex UDO. Development of the parcel will be in compliance with all other requirements of the UDO, North Carolina Building Code, and North Carolina Fire Code.
- The development proposed in the PD Plan for PUD-CZ encourages cluster and compact development to the greatest extent possible that is interrelated and linked by pedestrian ways, bikeways, and other transportation systems. At a minimum, the PD Plan must show sidewalk improvements as required by the Apex Transportation Plan and the Town of Apex Standard Specifications and Details, and greenway improvements as required by the Town of Apex Parks, Recreation, and Open Space Plan and the Apex Transportation Plan. In addition, sidewalks shall be provided on both sides of all streets for single-family detached homes.
 - Public sidewalks will be constructed along the both sides of all streets as well as along the entire frontage of Green Level West Road, per Town of Apex UDO standards. To encourage a healthy lifestyle and establish a walkable community, pedestrian greenways will also be incorporated throughout the development connecting residential areas to open space amenities located throughout the development. In addition, the site is located within a half mile of the American Tobacco Trail which may be accessed via public sidewalk connections through the Lake Castleberry neighborhood and ultimately along Green Level West Road.

- The design of development in the PD Plan for the PUD-CZ results in land use patterns that
 promote and expand opportunities for walkability, connectivity, public transportation, and an
 efficient network of streets. Cul-de-sacs shall be avoided unless the design of the subdivision
 and the existing proposed or proposed street system in the surrounding area indicated that a
 through street is not essential in the location of the proposed cul-de-sacs, or where sensitive
 environmental features such as streams, floodplains, or wetlands would be substantially
 disturbed by making road connections.
 - » Williams Farm will create a walkable residential community connected by sidewalks, treelined streets, and greenways. Cul-de-sacs will be avoided to enhance the connectivity of the development.
- The development proposed in the PD Plan for PUD-CZ is compatible with the character of surrounding land uses and maintains and enhances the value of surrounding properties.
 - Williams Farm PUD-CZ is consistent with The Town of Apex's Future Land Use Map and compatible with the surrounding land uses. The parcel is designated as Low Density Residential on the 2045 Land Use Map as are the surrounding properties. Current zoning surrounding the development includes Apex RR and LD-CZ on the eastern side, Wake County R-40W on the northern side, and Chatham County R-1 zoning on the western side of the property. It is important to note that the western boundary of the proposed PUD coincides with the Chatham County line. In addition, land located immediately north is within the Town of Cary's ETJ.
- The development proposed in the PD Plan for the PUD-CZ has architectural and design standards that are exceptional and provide a higher quality than routine developments. All residential uses proposed in a PD Plan for PUD-CZ shall provide architectural elevations representative of the residential structures to be built to ensure the Standards of this Section are met.
 - » All single-family homes will be of a higher quality construction than the typical residential development. Architectural controls and sample elevations illustrating the high-quality appearance of single-family homes are included with the PUD-CZ application.

All site-specific standards and conditions of this PD Plan shall be consistent with all Conditional Zoning (CZ) District standards set forth in the UDO Section 2.3.3, Conditional Zoning Districts. The proposed PUD will provide a development density consistent with the 2045 Land Use Plan designation of Low Density Residential. The Advance Apex Plan describes Low Density Residential as "intended to provide for single-family residential development or single-family residential development with a mix of duplexes and/or townhomes on lots smaller than those in the rural residential areas...Densities shall not exceed 3 units per acre." The proposed density of this development is 2.89 units per acre.

The proposed development aims to incorporate the history of the site into the design, preserving notable elements such as the stacked stone walls along Green Level West Rd, the champion trees at the entry to the neighborhood, and the old farm pond on the western boundary. The site will dedicate at least 30% of the land for resource conservation areas with an emphasis on protecting the wetlands located heavily on the eastern property boundary. The site is divided by an existing gas easement, but walking trails will wind through the development connecting residential areas, open space, pocket parks, and forested land throughout.

PERMITTED USES

The Rezoned Lands may be used for, and only for, the uses listed immediately below. The permitted uses are subject to the limitations and regulations stated in the UDO and any additional limitations or regulations stated below.

Permitted uses include:

| Residential | |
|------------------------------|--|
| Single-Family | |
| Accessory apartment* | |
| Utilities | |
| Jtility, minor | |
| Recreational Uses | |
| Greenway | |
| Park, Active | |
| Park, Passive | |
| Recreation Facility, private | |

* Homeowner Association covenants shall not restrict the construction of accessory dwelling units.

AFFORDABLE HOUSING

The project is committed to helping the Town of Apex advance their Affordable Housing Plan to welcome and attract a diverse population with moderate to low incomes and of different age groups. As such, the developer will contribute \$284.10 per lot to the Apex Affordable Housing Fund, to be paid at plat. Based on 176 lots, the total fee should be \$50,000.

DESIGN CONTROLS

| Total Project Area: | 61.919 acres |
|--|-----------------------------------|
| Overall Density Limitations (across 61.919-acre site): Maximum number of units (single-family homes): | 2.89 units per acre 176 |
| Residential Design Controls | |

Single-Family

- Minimum Lot Size: 5,000 square feet
- Minimum Lot Width: 40 feet
- Minimum Lot Depth: 100 feet
- Maximum Building Height: 45 feet
- Building Setbacks
 - » Front: 20 feet to garage; 8 feet to building façade
 - » Side: 5 feet
 - » Rear: 20 feet
 - » Alley: 5 feet
 - » Corner: 8 feet

ARCHITECTURAL STANDARDS

The proposed development offers the following architectural controls to ensure a consistency of character throughout the development, while allowing for enough variety to create interest and avoid monotony. Elevations included are limited examples of multiple options available. Changes to the exterior materials, roof, windows, doors, process, trim, etc. are allowable with administrative approval at the staff level. Further details shall be provided at the time of Residential Master Subdivision Plan or Site Plan submittal.

Residential areas envisioned for the Williams PUD will be comprised of single-family homes. In order to create rich architectural character along the streetscapes, the project will offer a variety of distinct residential elevations – see examples at the end of this document. These elevations will incorporate a natural material selection and earth tone color palette with wood, brick or stone accents, which will help to add diversity to the streetscape.

While each of the architectural offerings proposed will have their own identity, several common threads will create consistency within the Williams PUD including color palettes, materials, roofing, and decorative garage doors. Elevations have been included below in an effort to represent the bulk, massing, scale and architectural style of the development.

Additional features used as focal points or key terminus points shall be located within or around the development (i.e. open spaces, gazebos, stacked stone walls, and public art) in order to meet the Community Amenities requirement of the UDO. Other features not mentioned may be considered with administrative staff approval.

Residential Design Guidelines (all product types):

- 1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
- 2. Front-facing garage doors shall have windows, decorative details or carriage-style adornments on them.
- 3. The garage cannot protrude more than 1 foot out from the front façade or front porch, measured from roof of porch.
- 4. On single-family homes, the roof shall be pitched at 5:12 or greater (not to include porches, bay windows, etc.).
- 5. House entrances for units with front-facing single-car garages must have a covered porch/stoop area leading to the front door.
- 6. Rear and side elevations of units that have right-of-way frontage shall have trim around the windows.
- 7. Four of the following decorative elements shall be used on each building: decorative shake, board and batten siding, decorative porch rails and posts, shutters, decorative functional foundation and roof vents, recessed windows, decorative windows, decorative brick or stone, decorative gables, decorative cornices, or metal roofing.
- 8. A varied color palette shall be utilized on single family homes throughout the subdivision and shall include siding, trim, shutter, and accent colors complementing the siding colors.
- 9. Solar conduit will be provided on all single-family homes to accommodate the future installation of solar panels.

Proposed Residential Materials and Styles

Proposed materials and styles will be of a similar palette to provide consistency of character along with visual interest. Exterior materials that may be incorporated into any of the residential building products include:

- Cementitious lap siding
- Board and batten siding
- Shake and shingle siding
- Wood siding
- Stone or synthetic stone
- Brick

Vinyl siding is not permitted on the exterior of any single-family homes within the project.

Additional building materials may be included with administrative staff approval. Substitute materials shall be allowed by staff as long as they are determined by the Planning Director to be substantially similar.

PARKING AND LOADING

All parking for this PUD will comply with Section 8.3 Off-Street Parking and Loading, of the Town of Apex UDO.

SIGNAGE

All signage for this PUD shall comply with Section 8.7, *Signs*, of the Town of Apex UDO.

LANDSCAPING

Minimum perimeter and streetscape landscape buffers are as follows (see PUD Plan Sheet C2.00 for details):

- 30-ft Type B streetscape buffer along Green Level West Rd
- 10-ft Type B perimeter buffer along western and southwestern property boundary
- 20-ft Type B perimeter buffer along southern property boundary
- 20-ft to 40-ft Type B perimeter buffer along eastern property boundary

The project will increase biodiversity in perimeter buffers and open space areas by providing a variety of species for the canopy, understory, and shrub levels. Native and adaptive plant species shall be provided within these areas to minimize death from disease and to provide increased habitat and food sources for insects and animals. A minimum of 70% of the species provided shall be native or a nativar of North Carolina. No invasive species shall be permitted. No single species of tree or shrub shall constitute more than 20% of the plant material of its type installed on a single development site.

NATURAL RESOURCES AND ENVIRONMENTAL DATA

River Basins and Watershed Protection Overlay Districts

This project is located within the Cape Fear River Basin. This project site is located within the Primary Watershed Protection Overlay District as shown on the Town of Apex Watershed Protection Map. Accordingly, this PUD will comply with all built upon area, vegetated conveyances, structural SCMs and riparian stream buffer requirements of Section 6.1.7.

Resource Conservation Areas (RCA) - Required and Provided

This PUD will be subject to, and meet the requirements of, Section 8.1.2 of the UDO, *Resource Conservation Area* and Section 2.3.4, *Planned Development Districts*.

The PUD will provide a minimum of 30% of the gross project area as a Resource Conservation Area (RCA). Designated RCA areas will be consistent with the items listed in Section 8.1.2(B) of the Town's UDO. Preserved streams, wetlands, and associated riparian buffers provide the primary RCAs throughout the site. Additional RCA areas may include perimeter and streetfront buffers, stormwater management areas (as permitted by the UDO), and greenway.

The project will protect and preserve at least three of the champion trees located along Green Level West Road (subject to health evaluation and frontage roadway design requirements).

The existing farm pond shall be preserved, pending an evaluation of the dam. The dam is not located on this property, so the developer will work with the owner to evaluate it.

Educational signage shall be installed relating to wetlands or other on-site environmental features.

Floodplain

The project site does not sit within a designated current or future 100-year floodplain as shown on the Town of Apex FEMA map and FIRM Panel 3720071300K, dated February 2, 2007.

Tree Canopy

Tree canopy areas on the Williams Farm are primarily concentrated around the wetland areas, stream features, perimeter buffers and champion trees which are to be preserved RCA area.

Where trees cannot be preserved, as part of the implementation of this community, the project will re-establish a new tree canopy with vegetated perimeter buffers, pocket parks, community gathering spaces and other open space areas.

Historic Structures

As confirmed by the North Carolina State Historic Preservation Office, there are no historic structures present within the project boundary. The JM Williams farmhouse was a Study List Entry in 2016, however, the home burned down on May 22, 2019.

While the farmhouse no longer exists, a number of significant champion trees as well as an iconic stacked stone wall remain as important historical remnants of the past. Pending evaluation of health and safety of the trees, both the trees and stacked stone walls will be preserved and incorporated into the landscape design of the community.

The project will preserve a minimum of 200 linear feet of the existing stacked stone walls located along the Green Level West Road frontage. Segments of the wall in disrepair may be reconstructed to match the original look of the wall.

Environmental Commitments Summary

The following environmental commitments were discussed and approved by the Apex Environmental Advisory Board on February 18, 2021 to include in the Williams Farm development:

- The project will protect and preserve at least three of the champion trees located along Green Level West Road (subject to health evaluation and frontage roadway design requirements).
- The project will preserve a minimum of 200 linear feet of the existing stacked stone walls located along the Green Level West Road frontage. Segments of the wall in disrepair may be reconstructed to match the original look of the wall.
- Tree canopy preservation and replacement (30% of site)
- Two acres of open space and pocket parks will be provided. The existing gas line easement may be used to meet this requirement as long as it is graded and improved to contain features such as lawn area, walking trails or vegetation that attracts bird and butterfly habitat.
- All homes within the community shall be located no further than 800 feet from an improved open space area such as a play lane, trail head, greenway or pocket park.
- The project will construct a minimum 1,800 LF of soft surface or paved walking trails in addition to required sidewalks.
- Installation of educational signage related to wetlands or other on-site environmental features
- Increased stormwater quantity and quality control measures (see Stormwater Management section for details)
- Increased perimeter buffers on the eastern property boundary (see PUD plan)
- Retention of the existing farm pond
- The project will increase biodiversity in perimeter buffers and open space areas by providing a variety of species for the canopy, understory, and shrub levels. Native and adaptive plant species shall be provided within these areas to minimize death from disease and to provide increased habitat and food sources for insects and animals. A minimum of 70% of the species provided shall be native or a nativar of North Carolina. No invasive species shall be permitted. No single species of tree or shrub shall constitute more than 20% of the plant material of its type installed on a single development site.
- · Solar conduit in all single-family homes
- Full cutoff street lighting by Apex Electric









STORMWATER MANAGEMENT

This PUD shall go above the stormwater management requirements for quality and quantity treatment outlined in Section 6.1.7 of the UDO such that:

- Post development peak runoff shall not exceed pre-development peak runoff conditions for the 1 year, 10-year, 25-year, and 24-hour storm events.
- Treatment for the first 1 inch of runoff will provide 85% removal of total suspended solids.

Acceptable stormwater structures shall include detention ponds, constructed wetlands, bio-retention areas, or other approved devices consistent with the NC DEQ Stormwater Design Manual and the Town of Apex UDO.

PARKS AND RECREATION

The Parks, Recreation and Cultural Resources Advisory Commission unanimously recommended a feein-lieu of dedication on March 31, 2021.

| Number of Units* | Housing Type | Fee Per Unit** | Total Fees |
|------------------|---------------|----------------|--------------|
| 176 | Single-Family | \$3,495.24 | \$615,162.24 |
| Total | - | - | \$615,162.24 |

*Final unit count will be determined at the time of Master Subdivision.

**Fees are based upon approval date and runs with project with exception of the increase in total unit count.

PRIVATE AMENITIES

Two acres of private open space and pocket parks will be provided. The existing gas line easement may be used to meet this requirement as long as it is graded and improved to contain features such as lawn area, walking trails or vegetation that attracts bird and butterfly habitat.

All homes within the community shall be located no further than 800 feet from an improved open space area such as a play lawn, trail head, greenway or pocket park.

The project will construct a minimum 1,800 LF of soft surface (mulch) or paved walking trails in addition to required sidewalks.

PUBLIC FACILITIES

The proposed PUD shall meet all Public Facilities requirements as set forth in UDO Section 2.3.4(F)(1) (f) and be designed according to sound engineering standards. Road and utility infrastructure shall be as follows:

General Roadway Infrastructure

All proposed roadway infrastructure and right-of-way dedications will be consistent with the Town of Apex UDO and Transportation Plan.

Green Level West Road shall be realigned and widened along the frontage of the property in accordance with NCDOT and Town of Apex Transportation standards. Flattening of this curve will allow for safer entry and exit to and from the neighborhood. It will also improve sight distance and safety for motorists and bicyclists traveling along Green Level West Road. Details of this road realignment will be provided at Master Subdivision Plan.

Proposed access to Green Level West Road shall be located approximately 700 feet west of the intersection with Bachelor Road and include a westbound left turn lane with 50 feet of full width storage, 50 feet of full width deceleration, and a 100-foot taper.

Water and Sanitary Sewer

All lots within the project will be served by Town of Apex for water and sanitary sewer. A portion of the site will be serviced by an on-site pump station in accordance with Town of Apex standards. Preliminary approval for a pump station has been received by Town of Apex Public Utilities. The utility design will be finalized at the time of master subdivision plan approval and be based on available facilities adjacent to the site at that time. The design will meet the current Town of Apex master plans for water and sewer.

Walkability

The following facilities will be provided to contribute to a walkable community within and surrounding the Williams Farm development:

- Five-foot wide public sidewalks along the south side of Green Level West Road through frontage of property.
- Five-foot wide public sidewalks along both sides of all streets
- Six-foot wide private walking trails throughout the development
- Crosswalks constructed at appropriate street intersections

Other Utilities and Facilities

Electricity will be provided by Apex Electric. Phone, cable, and gas will be provided by the developer and shall meet the Town of Apex standards as outlined in the UDO.

Streetscape features may be used to help with establishing a framework for the proposed development. These features may include street trees within the public right-of-way, benches, trash receptacles, and street and/or pedestrian lights compatible with their context.

PHASING PLAN

This PUD will be completed in up to four phases.

CONSISTENCY WITH LAND USE PLAN

The proposed land use will be consistent with Advance Apex 2045: The Apex Comprehensive Plan, adopted in February 2019.

The Future Land Use Map designates this parcel as Low Density Residential, and the proposed land use will stay consistent with this designation allowing single-family homes under 3 dwelling units per acre.

COMPLIANCE WITH UDO

The development standards adopted for this PUD comply with those set forth in the current version of the Town's Unified Development Ordinance (UDO).

TRANSPORTATION IMPROVEMENTS

The following zoning condition represents the recommendations by Apex staff and NCDOT based on a review of the TIA prepared for the Williams Farm plan.

 Developer shall provide a westbound left turn lane with 50 feet of full width and appropriate deceleration length and taper on Green Level West Road at the location of the proposed public street accessing the subdivision, located approximately 700 feet west of Bachelor Road. No other new points of access are proposed along Green Level West Road. Developer is responsible for any necessary roadway improvements to meet or exceed required sight distance at the proposed access location, subject to NCDOT review and approval.

Additionally, at the time of master subdivision, the developer shall work with the Town of Apex and NCDOT to ensure adequate site distance at the Green Level West Road site access. This may require realignment of Green Level West Road and/or a site distance easement across the frontage of the parcel to the west.

Representative Residential Building Elevations



































4525 GREEN LEVEL WEST ROAD APEX, NORTH CAROLINA

PLANNED DEVELOPMENT PLAN FOR PUD-CZ

PROJECT NUMBER: 2020110181 DATE: MARCH 1, 2021 REVISED: JUNE 8, 2021





SHEET INDEX EXISTING CONDITIONS C2.00 PRELIMINARY LAYOUT & UTILITY PLAN

RELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCT

ZONING CONDITIONS

2. DPPLOPER SHALL PROVIDE A WESTBOUND LEFT TURN LANE WITH SO FEET OF FULL WOTH AND APPORPRIATE DECLEPATION LINKSTH AND TAPRE ON GREFIN LINE WIST ROAD AT THE LOCATION OF THE INFORMED PUBLIC SHEFT ACCESSION ET & SUBDOXISON, LOCATED APPROVINATELY 700 FEET WEST OF BACHELOR BOAD, NO D'HER NEW POINTS OF ACCESSA POPOSIDI ALDRO SERIEL VIEW LINTS AND, DEVELOPER & SUSPOSIBIL I ADRA WILLESSA

| | SIT | E DATA | | |
|---|---|--------------------------------------|--|--|
| PARCEL IDENTIFICATION NUMBER (PIN) | PORTION OF 0713-94-3738 | | | |
| DRISTING ZONING | RR | | | |
| PROPOSED ZONING | PUD-CZ | | | |
| CURRENT 2045 LAND USE MAP DESIGNATION | LOW DENSITY | Y RESIDENTIAL | | |
| PROPOSED 2045 LAND USE MAP DESIGNATION | LOW DENSIT | LOW DENSITY RESIDENTIAL | | |
| SITE AREA | APPROX 61. | 92 AC - GROSS | | |
| | APPROX. 0.2 | 7 AC - R/W DEDICATION | | |
| | APPROX. 0.1 | AC - RECLAIMED R/W | | |
| | APPROX 61. | 77 AC - NET | | |
| EXISTING USE | VACANT | | | |
| PROPOSED USE | SINGLE FAM | LY LOTS | | |
| DENSITY | MAXIMUM | 176 UNITS / 61.77 AC = 2.85 DU/AC | | |
| LOT SIZE | MINIMUM | 5,000 SF | | |
| LOT WIDTH | MINIMUM | 40' | | |
| LOT DEPTH | MINIMUM | 100' | | |
| BUILDING HEIGHT | MAXIMUM | 45 | | |
| SETBACKS | FRONT | 20' TO GARAGE, 8' TO BUILDING FACADE | | |
| | SIDE | 5' | | |
| | REAR | 20' | | |
| | ALLEY | 5' | | |
| | CORNER | 8 | | |
| PARKING | REQUIRED | 176 UNITS x 2/UNIT = 352 SPACES | | |
| | PROPOSED | 352 SPACES | | |
| BUILT-UPON AREA (IMPERVIOUS SURFACE) | MAXIMUM | 43.24 AC (70%) | | |
| RESOURCE CONSERVATION AREA | MINIMUM | 18.53 AC (30%) | | |
| WATERSHED PROTECTION OVERLAY | PRIMARY WATERSHED PROTECTION DISTRICT | | | |
| FEMA FLOODPLAIN | NONE (FRM PANEL 3720071300K, EFFECTIVE 02/02/2007) | | | |
| HISTORIC STRUCTURES | NONE | | | |



REVISIONS
 NO.
 DATE

 1
 04.09.2021
 PER TOWN COMMENTS

 2
 05.14.2021
 PER TOWN COMMENTS

 3
 05.27.2021
 PER TOWN COMMENTS

 4
 05.08.2021
 PER TOWN COMMENTS

PLANNED DEVELOPMENT PLAN FOR: WILLIAMS FARM APEX, NORTH CAROLINA PROJECT NUMBER: 2020110181



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PROJECT DIRECTORY HOME BUILDER STANLEY MARTIN HOMES

CONTACT JESSICA HARDESTY

hardestv@mcadamsco.cor PHONE: 919, 361, 5000

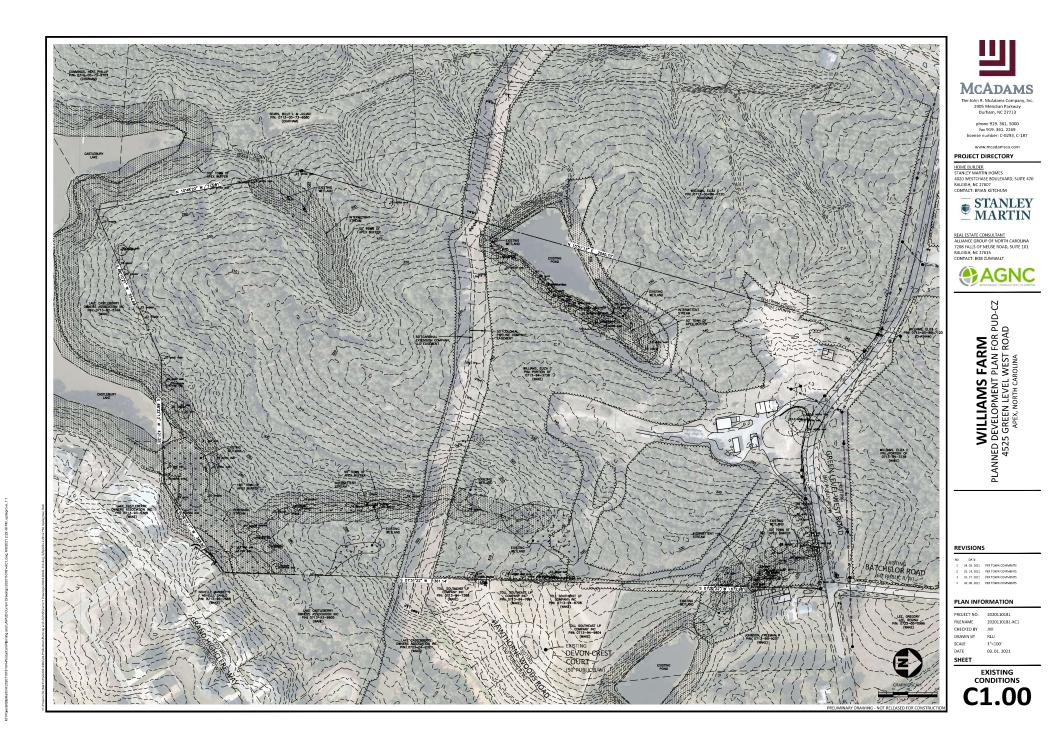
STANLEY MARTIN HOMES 4020 WESTCHASE BOULEVARD, SUITE 470 RALEIGH, NC 27607 CONTACT: BRIAN KETCHUM

STANLEY
 MARTIN

REAL ESTATE CONSULTANT ALLIANCE GROUP OF NORTH CAROLINA 7208 FALLS OF NEUSE ROAD, SUITE 101 RALEIGH, NC 27615 CONTACT: BOB ZUMWALT



OWNER ELIZA C WILLIAMS 4525 GREEN LEVEL WEST ROAD APEX. NC 27523





RAMEY KEMP ASSOCIATES

Moving forward.



Williams Property Traffic Impact Analysis Apex, North Carolina



TRAFFIC IMPACT ANALYSIS

FOR

WILLIAMS PROPERTY

LOCATED

IN

APEX, NORTH CAROLINA

Prepared For: Stanley Martin 11710 Plaza America Drive, Suite 1100 Reston, VA 20190

Prepared By: Ramey Kemp & Associates, Inc. 5808 Faringdon Place, Suite 100 Raleigh, NC 27609 License #C-0910



March 2021

Prepared By: <u>MLS</u>

Reviewed By: JTR

RKA Project No. 21025

TRAFFIC IMPACT ANALYSIS WILLIAMS PROPERTY APEX, NORTH CAROLINA

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed Williams Property development in accordance with the Apex (Town) Unified Development Ordinance (UDO) and North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. The proposed development is to be located south of Green Level West Road and west of Batchelor Road in Apex, North Carolina. The proposed development is expected to be a maximum of 170 singlefamily home development and estimated to be built out in 2026. Site access is proposed via one (1) full movement access point along Green Level West Road to the west of Batchelor Road.

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with the Town and NCDOT and consists of the following existing intersections:

- Green Level West Road and Wimberly Road
- Green Level West Road and Batchelor Road

Peak hour counts were conducted at the intersection of Green Level West Road and Wimberly Road in October of 2019, during weekday AM (7:00 to 9:00 AM) and weekday PM (4:00 to 6:00 PM) peak hours. This data was grown up to 2021 via a 2% annually compounded growth rate. Due to the COVID-19 pandemic, new data was not collected.

Peak hour turning movement counts were conducted at the intersection of Green Level West Road and Batchelor Road in October of 2017, during weekday AM (7:00 to 9:00 AM) and weekday PM (4:00 to 6:00 PM) peak hours. Based on Google Earth aerials between 2017 and 2020, there has been minimal changes to development along Batchelor Road; however, turning movement volumes were still grown up to 2021 via a 2% annually compounded growth rate to be conservative. The through movement volumes at this intersection were balanced with the



Transportation Consulting that moves us forward.

adjacent intersection of Green Level West Road and Wimberly Road, since data collection at this intersection was more recent. This methodology was coordinated with the Town and NCDOT during scoping and through email coordination after scoping.

3. Site Trip Generation

The proposed development is assumed to consist of a maximum of 170 single-family homes. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE Trip Generation Manual, 10th Edition. Table E-1 provides a summary of the trip generation potential for the site.

| LAND USE (ITE Code) | INTENSITY | DAILY TRIPS (VPD) | WEEKDAY AM PEAK HOUR (VPH) Enter Exit | | WEEKDAY PM PEAK HOUR (VPH) Enter Exit | |
|---|-----------|-------------------------|--|----|--|----|
| Single Family Detached Housing (210) | 170 units | 1,700 | 31 | 95 | 106 | 63 |

Table E-1: Site Trip Generation

4. **Future Traffic Conditions**

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 2% would be used to generate projected (2022) weekday AM and PM peak hour traffic volumes. The following adjacent developments were identified to be considered under future conditions:

- Wolfe Properties •
- Tunstall Property (Preserve and White Oak Creek)
- Westford
- Council-Smith (Weddington Smith Roberts PUD)
- Lake Castleberry
- Batchelor Road Residential (17-TAR-423) •



5. **Capacity Analysis Summary**

The analysis considered weekday AM and PM peak hour traffic for existing (2021), no-build (2026), and build (2026) conditions. Refer to Section 7 of the report for the capacity analysis summary performed at each study intersection.

6. Recommendations

Based on the findings of this study, specific geometric and traffic control improvements have been identified at study intersections. The improvements are summarized below and are illustrated in Figure E-1.

Improvements by Wolfe Properties

Green Level West Road and Wimberly Road

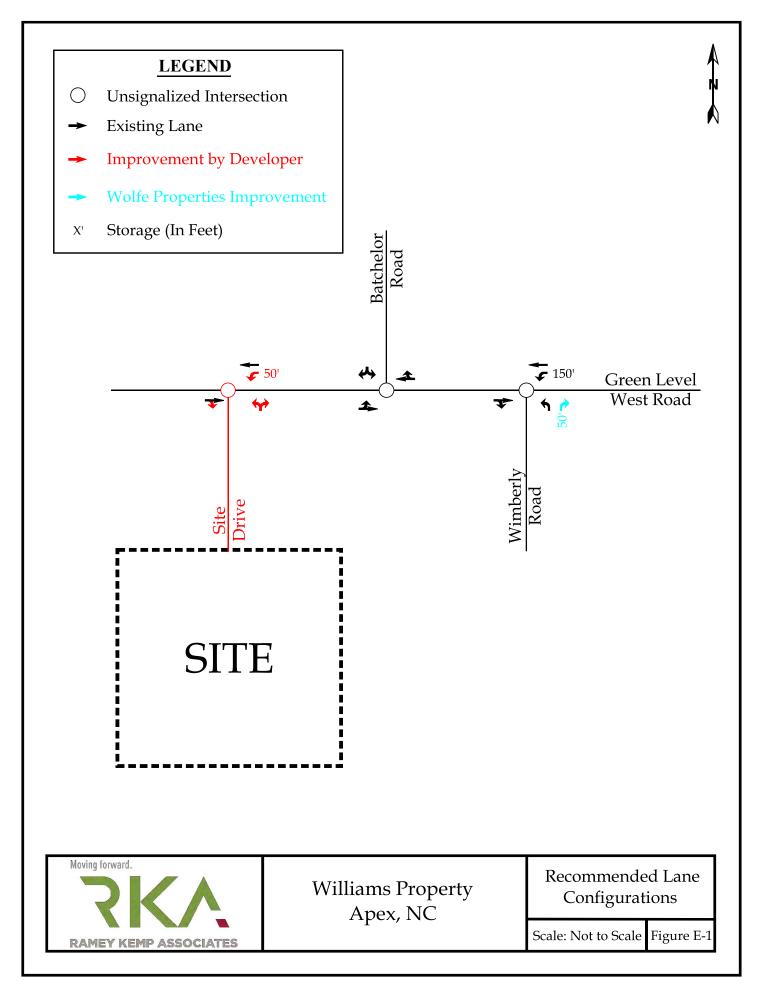
• Provide an exclusive northbound right-turn lane with a minimum of 50 feet of fullwidth storage and appropriate deceleration and taper length.

Recommended Improvements by Developer

Green Level West Road and Site Drive

- Construct the northbound approach with one ingress lane and one egress lane.
- Provide an exclusive westbound left-turn lane with a minimum of 50 feet of full-width storage and appropriate deceleration and taper length.
- Provide stop control for the northbound approach. ٠





RAMEY KEMP ASSOCIATES

Moving forward.

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TRAFFIC IMPACT ANALYSIS WILLIAMS PROPERTY **APEX, NORTH CAROLINA**

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed Williams Property development, located south of Green Level West Road and west of Batchelor Road in Apex, North Carolina. The purpose of this study is to determine the potential impacts to the surrounding transportation system created by traffic generated by the proposed development, as well as recommend improvements to mitigate the impacts.

The proposed development, anticipated to be completed in 2026, is expected to consist of a maximum of 170 single-family homes.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- Existing (2021) Traffic Conditions
- No-Build (2026) Traffic Conditions
- Build (2026) Traffic Conditions

1.1. Site Location and Study Area

The development is proposed to be located south of Green Level West Road and south of Wimberly Road in Apex, North Carolina. Refer to Figure 1 for the site location map.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Town of Apex (Town) and consists of the following existing intersections:

- Green Level West Road and Wimberly Road
- Green Level West Road and Batchelor Road

Refer to Appendix A for the approved scoping documentation.



1.2. Proposed Land Use and Site Access

The site is expected to be located south of Green Level West Road and west of Batchelor Road. The proposed development, anticipated to be completed in 2026, is assumed to consist of a maximum of 170 single-family homes.

Site access is proposed via one (1) full movement access point along Green Level West Road to the west of Batchelor Road. Refer to Figure 2 for a copy of the preliminary site plan.

1.3. Adjacent Land Uses

The proposed development is located in an area consisting primarily of farms, undeveloped land, and residential development.

1.4. Existing Roadways

Existing lane configurations (number of traffic lanes on each intersection approach), speed limits, storage capacities, and other intersection and roadway information within the study area are shown in Figure 3. Table 1 provides a summary of this information, as well.

| Road Name | Route Number | Typical Cross Section | Speed Limit | Maintained By | AADT (vpd) |
|--------------------------|-----------------|-----------------------------|-------------|------------------|----------------------------|
| Green Level West Road | SR 1605 | 2-lane undivided | 45 mph | NCDOT | 2, 500 ¹ |
| Batchelor Road | SR 1759 | 2-lane undivided | 35 mph | NCDOT | 160 ² |
| Wimberly Road | SR 1603 | 2-lane undivided | 45 mph | NCDOT | 880 ³ |

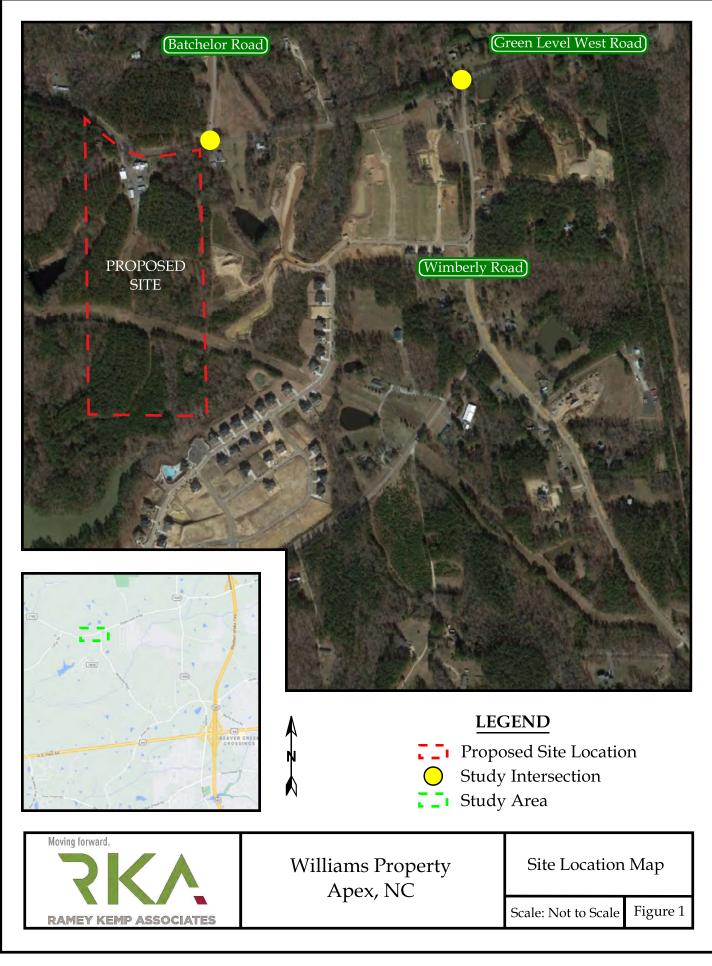
Table 1: Existing Roadway Inventory

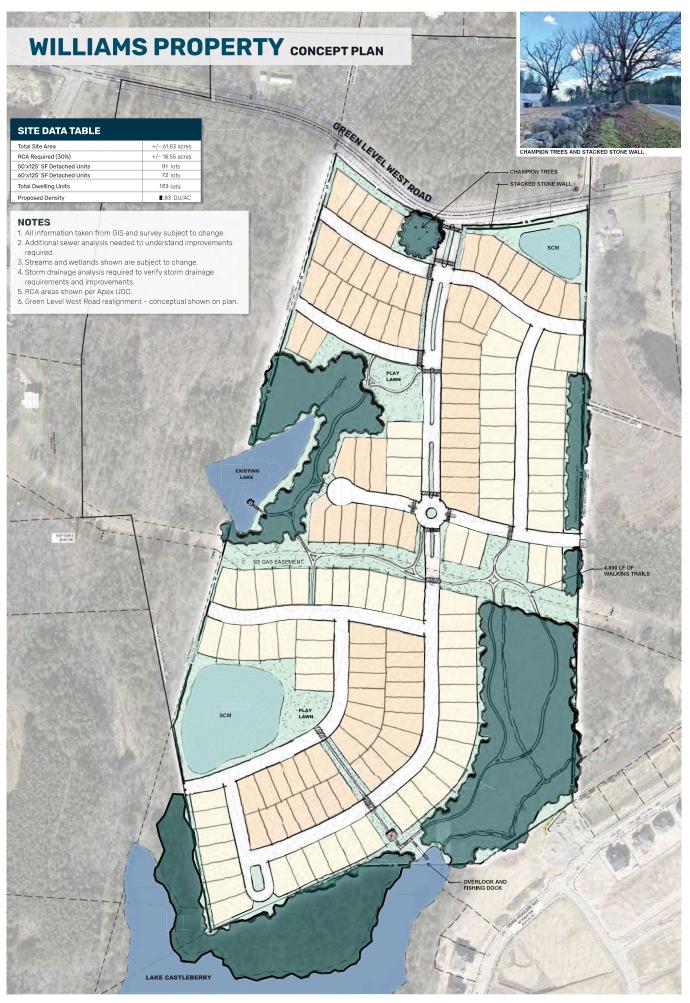
1. 2019 NCDOT AADT

2. AADT based on the traffic counts grown to 2021 and assuming the weekday PM peak hour volume is 10% of the average daily traffic

3. 2015 NCDOT AADT



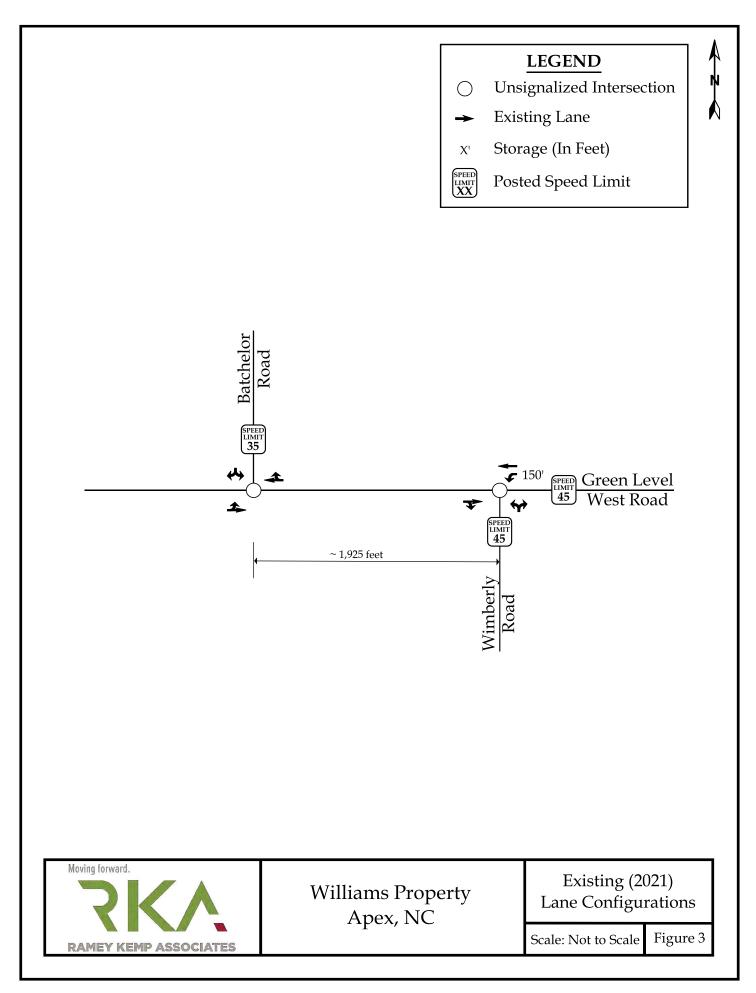






WILLIAMS PROPERTY CONCEPT PLAN APEX, NORTH CAROLINA





2. **EXISTING (2021) PEAK HOUR CONDITIONS**

2.1. Existing (2021) Peak Hour Traffic

Peak hour counts were conducted at the intersection of Green Level West Road and Wimberly Road in October of 2019, during weekday AM (7:00 to 9:00 AM) and weekday PM (4:00 to 6:00 PM) peak hours. This data was grown up to 2021 via a 2% annually compounded growth rate. Due to the COVID-19 pandemic, new data was not collected.

Peak hour turning movement counts were conducted at the intersection of Green Level West Road and Batchelor Road in October of 2017, during weekday AM (7:00 to 9:00 AM) and weekday PM (4:00 to 6:00 PM) peak hours. Based on Google Earth aerials between 2017 and 2020, there has been minimal changes to development along Batchelor Road; however, turning movement volumes were still grown up to 2021 via a 2% annually compounded growth rate to be conservative. The through movement volumes at this intersection were balanced with the adjacent intersection of Green Level West Road and Wimberly Road, since data collection at this intersection was more recent.

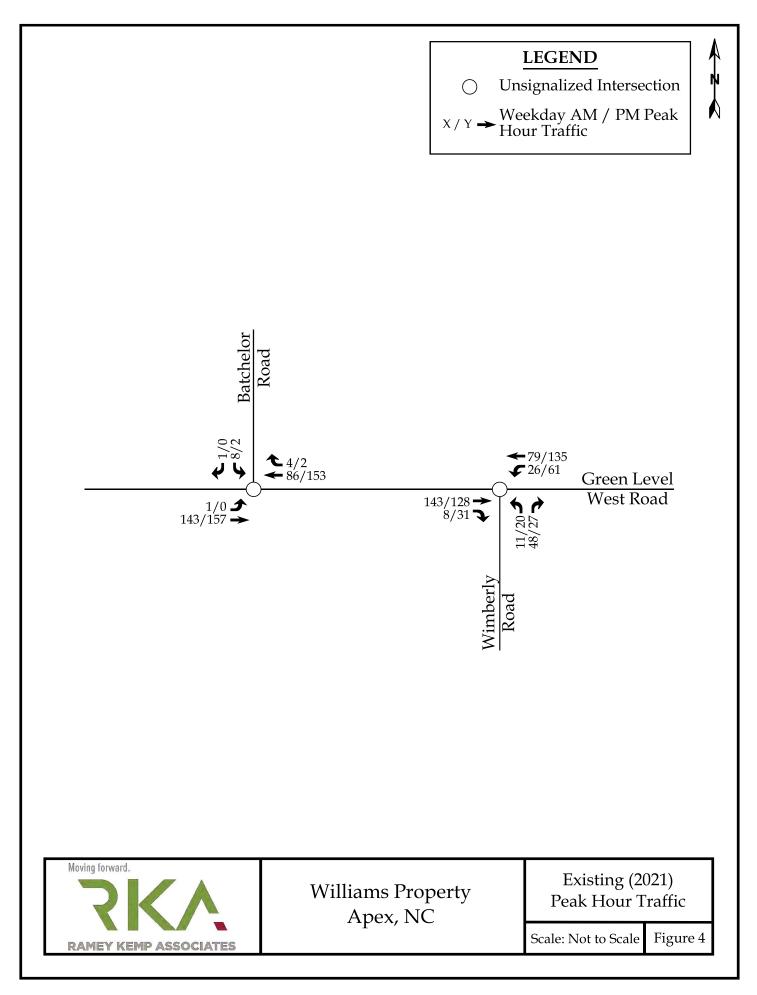
The above methodology was coordinated with the Town and NCDOT during scoping and through email coordination after scoping. Refer to Appendix A for a copy of the Memorandum of Understanding (MOU) and other scoping coordination documentation.

Refer to Figure 4 for existing (2021) weekday AM and PM peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

2.2. Analysis of Existing (2021) Peak Hour Traffic

The existing (2021) weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. The results of the analysis are presented in Section 7 of this report.





3. **NO-BUILD (2026) PEAK HOUR CONDITIONS**

In order to account for growth of traffic and subsequent traffic conditions at a future year, nobuild traffic projections are needed. No-build traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether or not the proposed development is constructed. No-build traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments.

Ambient Traffic Growth 3.1.

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 2% would be used to generate projected (2026) weekday AM and PM peak hour traffic volumes. Refer to Figure 5 for projected (2026) peak hour traffic.

3.2. **Adjacent Development Traffic**

Through coordination with the Town and NCDOT, the following adjacent developments were identified to be included in this study:

- Wolfe Properties ٠
- ٠ Tunstall Property (Preserve and White Oak Creek)
- Westford
- Council-Smith (Weddington Smith Roberts PUD)
- Lake Castleberry
- Batchelor Road Residential (17-TAR-423) ٠

Table 2 on the following page provides a summary of the adjacent developments. Additional adjacent development information can be found in Appendix C.



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| Development Name | Location | Year | | TIA Performed | |
|-------------------------------|---|---|---|--|--|
| Wolfe Properties | East of Wimberly Road, between Green Level West Road and Jenks Road | 2025 | 70 single-family homes and 50 townhomes | November of 2019 by Mott MacDonald | |
| Tunstall Property | North of Jenks Road and east of Wimberly Road | Prior to the build-out of the proposed Williams Property development | 258 single-family homes and 72 townhomes | June of 2013 by Kimley-Horn | |
| Westford | North of US 64 and east of Jenks Road | 2021 | 300 apartments, 225 townhomes, 90 single-family homes, and 100,000 sq. ft. of retail | June of 2017 by Kimley-Horn | |
| Council-Smith | ouncil-Smith South of Green Level West Road, directly across from White Oak Church Road | | 200 single-family homes | September of 2015 by VHB | |
| Lake Castleberry | North of Castleberry Road, west of Wimberly Road | Prior to the build-out of the proposed Williams Property development | 172 single-family homes | February of 2014 by VHB | |
| Batchelor Road Residential | West of White Oak Batchelor Road Church Road and 2022 | | 125 single-family homes | March 2018 by RKA | |

Table 2: Adjacent Development Information

Wolfe Properties is committed to providing an exclusive northbound right-turn lane with 50 feet of storage and appropriate deceleration and taper length at the intersection of Wimberly



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Road and Green Level West Road. This turn lane was included in all future analysis scenarios. It should be noted that neither of the study area intersections for the proposed site were included in the Tunstall Property and Westford TIAs. Based on the locations of these developments, adjacent development trips to/from the north along Wimberly Road were assumed to ultimately travel to/from the west along Green Level West Road for these two developments. This was assumed due to the interconnectivity to the east and that it would be easier for the trips from these developments to utilize Jenks Road and/or Green Level Church Road if traveling to/from the east. This methodology is expected to provide conservative results, because it routes trips from these developments through the entire roadway network for the proposed Williams Property development. It should be noted that the adjacent developments were approved, during scoping, by the Town and NCDOT. Adjacent development trips are shown in Figure 6. Refer to Appendix A for a copy of the approved MOU.

Future Roadway Improvements 3.3.

Based on coordination with the NCDOT and the Town, it was determined there were no future, public roadway improvements to consider with this study.

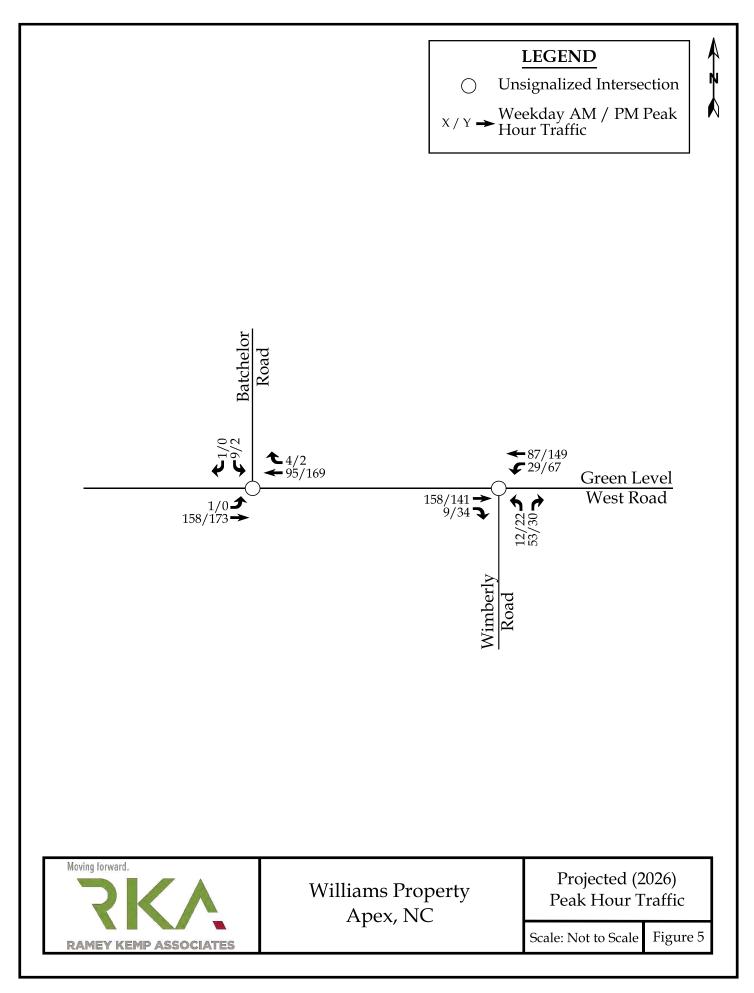
3.4. No-Build (2026) Peak Hour Traffic Volumes

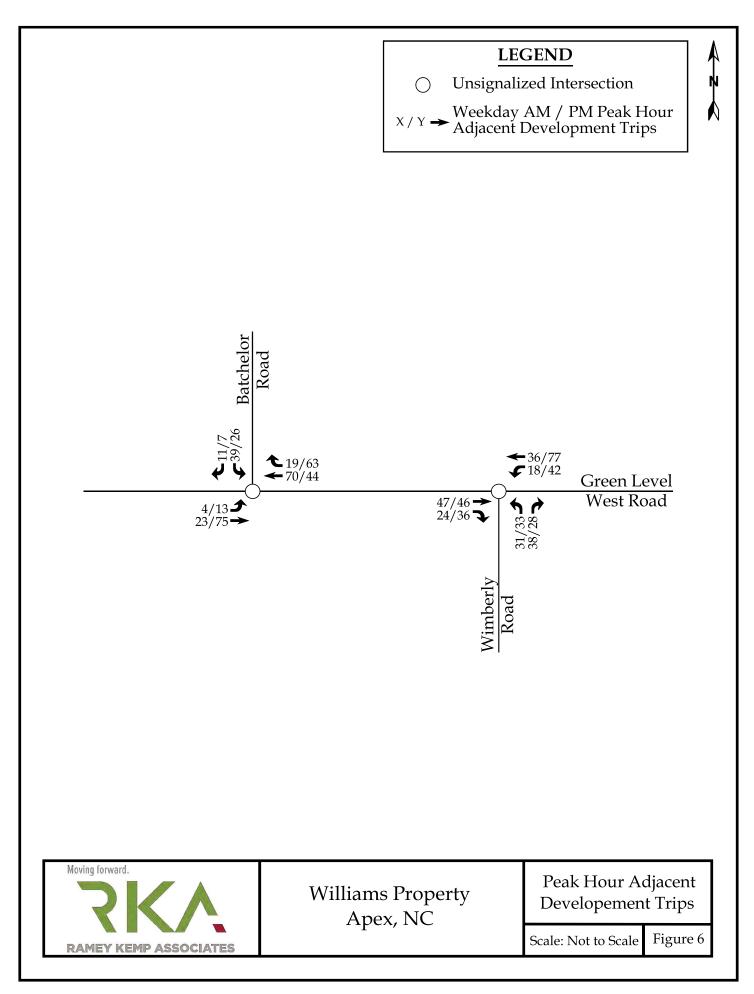
The no-build (2026) traffic volumes were determined by projecting the existing (2021) peak hour traffic to the year 2026 and adding the adjacent development trips. Refer to Figure 7 for an illustration of the no-build (2026) peak hour traffic volumes at the study intersections.

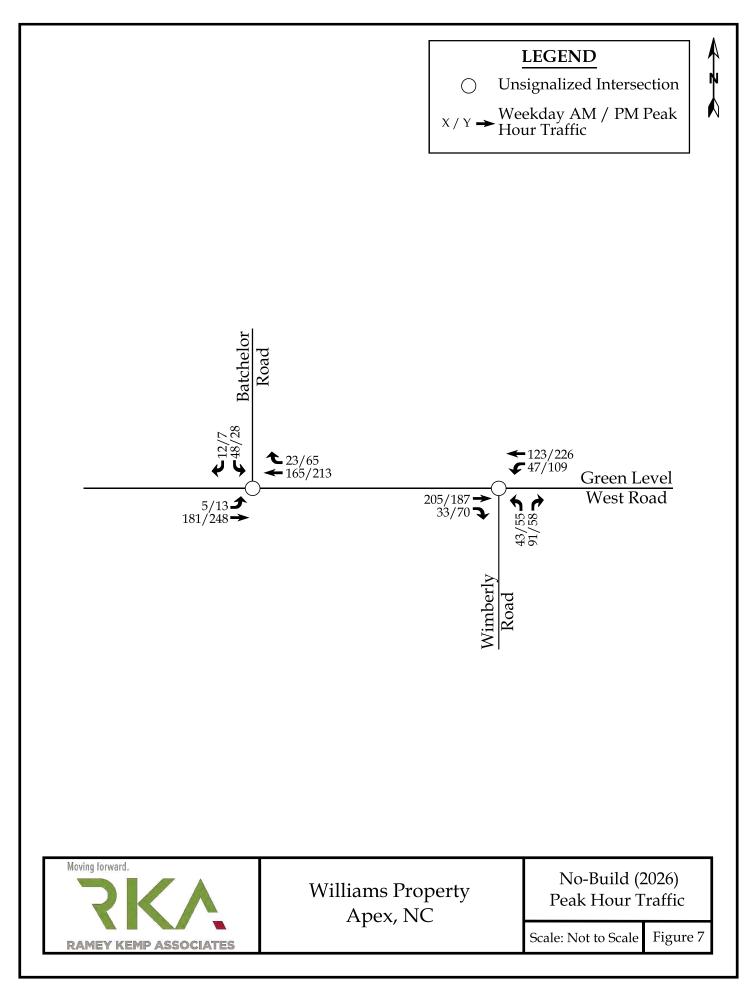
3.5. Analysis of No-Build (2026) Peak Hour Traffic Conditions

The no-build (2026) AM and PM peak hour traffic volumes at the study intersections were analyzed with future geometric roadway conditions and traffic control. The analysis results are presented in Section 7 of this report.









4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development is assumed to consist of a maximum of 170 single-family homes Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE *Trip Generation Manual*, 10th Edition. Table 3 provides a summary of the trip generation potential for the site.

| Land Use (ITE Code) | Intensity | Daily Traffic (vpd) | Weekday AM Peak Hour Trips (vph) | | Weekday PM Peak Hour Trips (vph) | |
|---|-----------|---------------------------|---|------|---|------|
| | | | Enter | Exit | Enter | Exit |
| Single-Family Detached Housing (210) | 170 units | 1,700 | 31 | 95 | 106 | 63 |

| Table 3: T | rip Generation | Summary |
|------------|----------------|---------|
|------------|----------------|---------|

It is estimated that the proposed development will generate approximately 1,700 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 126 trips (31 entering and 95 exiting) will occur during the weekday AM peak hour and 169 (106 entering and 63 exiting) will occur during the weekday PM peak hour.

4.2. Site Trip Distribution and Assignment

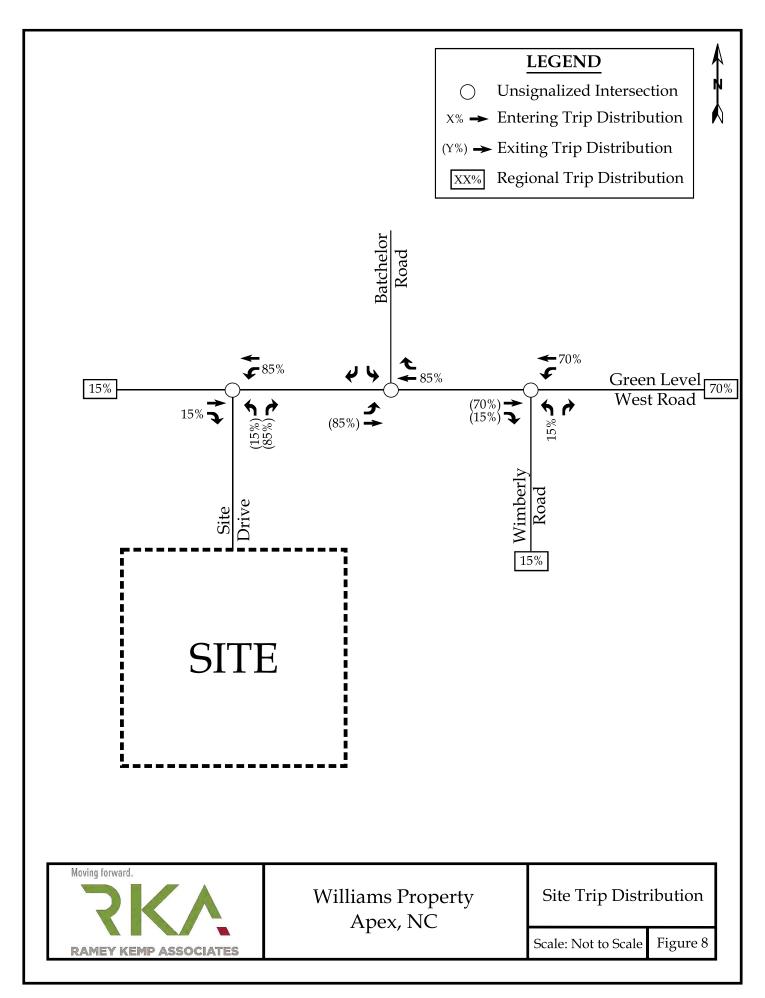
Trip distribution percentages used in assigning site traffic for this development were estimated based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment. It is estimated that the site trips will be regionally distributed as follows:

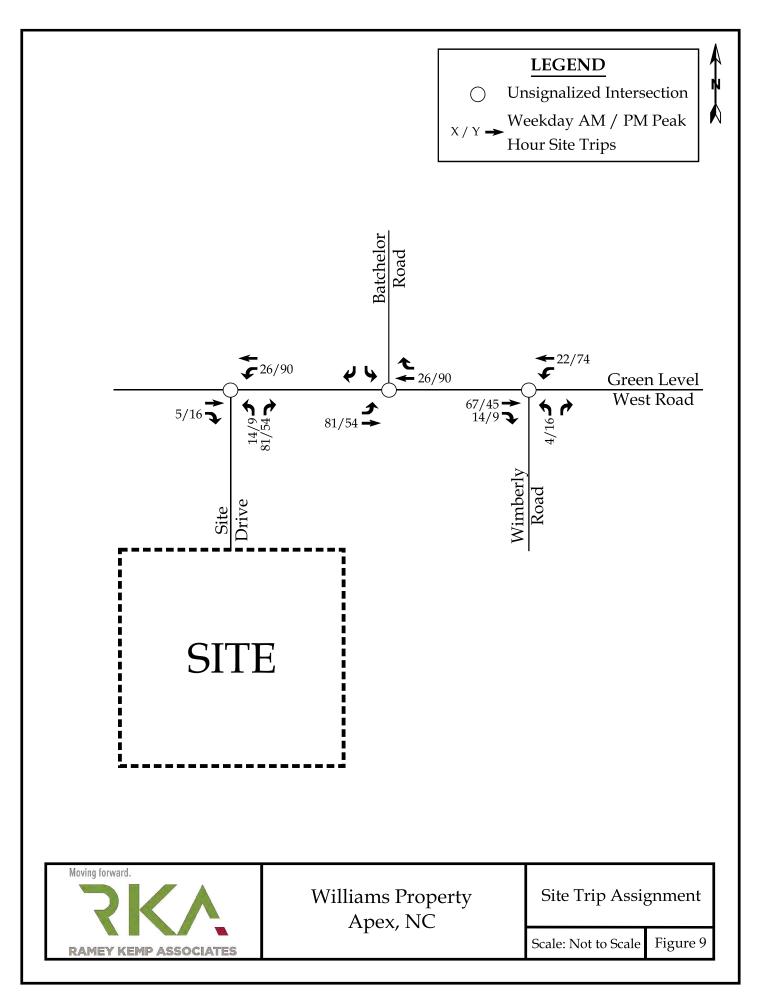
- 15% to/from the south via Wimberly Road
- 15% to/from the west via Green Level West Road
- 70% to/from the east via Green Level West Road

This distribution was reviewed and approved by the Town and NCDOT. Refer to Appendix A for a copy of the MOU. The site trip distribution is shown in Figure 8. Refer to Figure 9 for the site trip assignment.



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5. BUILD (2026) TRAFFIC CONDITIONS

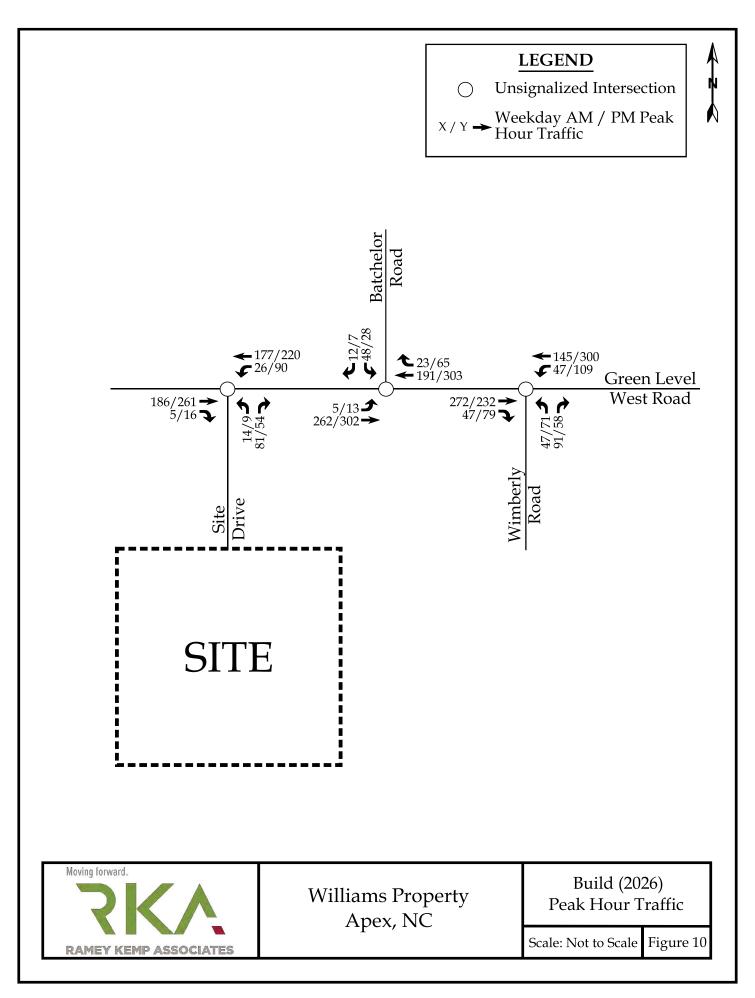
5.1. Build (2026) Peak Hour Traffic Volumes

To estimate traffic conditions with the site fully built-out, the total site trips were added to the no-build (2026) traffic volumes to determine the build (2026) traffic volumes. Refer to Figure 10 for an illustration of the build (2026) peak hour traffic volumes with the proposed site fully developed.

5.2. Analysis of Build (2026) Peak Hour Traffic

Study intersections were analyzed with the build (2026) traffic volumes using the same methodology previously discussed for existing and no-build traffic conditions. Intersections were analyzed with improvements necessary to accommodate future traffic volumes. The results of the capacity analysis for each intersection are presented in Section 7 of this report.





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6. TRAFFIC ANALYSIS PROCEDURE

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 6th Edition published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. A computer software package, Synchro (Version 10.3), was used to complete the analyses for all of the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement.

The HCM defines capacity as "the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions." Level of service (LOS) is a term used to represent different driving conditions, and is defined as a "qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers." Level of service varies from Level "A" representing free flow, to Level "F" where breakdown conditions are evident. Refer to Table 4 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes "initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay". An average control delay of 50 seconds at a signalized intersection results in LOS "D" operation at the intersection.

| UNSIGN | ALIZED INTERSECTION | SIGNALIZED INTERSECTION | | |
|------------------------|--|-------------------------|--|--|
| LEVEL OF SERVICE | AVERAGE CONTROL DELAY PER VEHICLE (SECONDS) | LEVEL OF SERVICE | AVERAGE CONTROL DELAY PER VEHICLE (SECONDS) | |
| A | 0-10 | А | 0-10 | |
| В | 10-15 | В | 10-20 | |
| С | 15-25 | С | 20-35 | |
| D | 25-35 | D | 35-55 | |
| Е | 35-50 | E | 55-80 | |
| F | >50 | F | >80 | |

Table 4: Highway Capacity Manual – Levels-of-Service and Delay

6.1. Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to the NCDOT Congestions Management Guidelines.



7. CAPACITY ANALYSIS

7.1. Green Level West Road and Wimberly Road

The existing unsignalized intersection of Green Level West Road and Wimberly Road was analyzed under existing (2021), no-build (2026), and build (2026) traffic conditions with lane configurations and traffic control shown in Table 5. Based on committed improvements by adjacent developments at this intersection, an exclusive northbound right-turn lane with 50 feet of full width storage and appropriate deceleration and taper length is anticipated to be provided by Wolfe Properties under no-build (2026) conditions. Refer to Table 5 for a summary of the analysis results. Refer to Appendix D for the Synchro capacity analysis reports.

| A P ANALYSIS R | | LANE | WEEKDAY AM PEAK HOUR LEVEL OF SERVICE | | WEEKDAY PM PEAK HOUR LEVEL OF SERVICE | |
|----------------------|------------------|-------------------|---|----------------------|---|----------------------|
| SCENARIO | O A C H | CONFIGURATIONS | Approach | Overall (seconds) | Approach | Overall (seconds) |
| Existing (2021) | EB | 1 TH-RT | | | | |
| Conditions | WB | 1 LT, 1 TH | A ¹ | N/A | A ¹ | N/A |
| Conditions | NB | 1 LT-RT | A ² | - | B ² | - |
| No-Build (2026) | EB | 1 TH-RT | | | | |
| Conditions | WB | 1 LT, 1 TH | A ¹ | N/A | A1 | N/A |
| Conditions | NB | 1 LT, 1 RT | B ² | | C ² | |
| Build (2026) | EB | 1 TH-RT | | | | |
| Conditions | WB | 1 LT, 1 TH | A1 | N/A | A1 | N/A |
| Conditions | NB | 1 LT, 1 RT | B ² | - | C ² | - |

Table 5: Analysis Summary of Green Level West Road and Wimberly Road

1. Level of service for major-street left-turn movement.

2. Level of service for minor-street approach.

Improvement by Wolfe Properties is shown in blue.

Capacity analysis of existing (2021), no-build (2026), and build (2026) traffic conditions indicates the major street left-turn movement of Green Level West Road and Wimberly Road is expected to operate at LOS A during the weekday AM and PM peak hours. The minor-street approach is expected to operate at LOS C or better under all analysis scenarios during the weekday AM and PM peak hours. Based on SimTraffic simulations, the turn lane storages are anticipated to be sufficient under build (2026) conditions.



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7.2. Green Level West Road and Batchelor Road

The existing unsignalized intersection of Green Level West Road and Batchelor Road was analyzed under existing (2021), no-build (2026), and build (2026) traffic conditions with existing lane configurations and traffic control. Refer to Table 6 for a summary of the analysis results. Refer to Appendix E for the Synchro capacity analysis reports.

| A P P ANALYSIS R | | LANE | WEEKDAY AM PEAK HOUR LEVEL OF SERVICE | | WEEKDAY PM PEAK HOUR LEVEL OF SERVICE | |
|-------------------------------|------------------|----------------|---|----------------------|---|----------------------|
| SCENARIO | O A C H | CONFIGURATIONS | Approach | Overall (seconds) | Approach | Overall (seconds) |
| Existing (2021) | EB | 1 LT-TH | A1 | | A1 | |
| Conditions | WB | 1 TH-RT | | N/A | | N/A |
| Conditions | SB | 1 LT-RT | A ² | - | B2 | |
| No Build (2026) | EB | 1 LT-TH | A ¹ | | A1 | |
| No-Build (2026) Conditions | WB | 1 TH-RT | | N/A | | N/A |
| Conditions | SB | 1 LT-RT | B ² | | B ² | |
| $P_{11}(1)(2)(2)$ | EB | 1 LT-TH | A1 | | A1 | |
| Build (2026) Conditions | WB | 1 TH-RT | | N/A | | N/A |
| Conditions | SB | 1 LT-RT | B ² | - | B ² | - |

Table 6: Analysis Summary of Green Level West Road and Batchelor Road

1. Level of service for major-street left-turn movement.

2. Level of service for minor-street approach.

Capacity analysis of existing (2021), no-build (2026), and build (2026) traffic conditions indicates the major street left-turn movement at the intersection of Green Level West Road and Batchelor Road is expected to operate at LOS A during the weekday AM and PM peak hours. The minor-street approach is expected to operate at LOS B or better under all analysis scenarios during the weekday AM and PM peak hours. Based on SimTraffic simulations, minimal queuing is anticipated under build (2026) conditions. Based on the proposed location of Site Drive along Green Level West Road and the low number of left-turning vehicles at this intersection, the proposed spacing is anticipated to be sufficient to avoid conflicting left-turn volumes between these two offset intersections.



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7.3. Green Level West Road and Site Drive

The proposed intersection of Green Level West and Site Drive was analyzed under build (2026) traffic conditions with the lane configurations and traffic control shown in Table 7. Refer to Table 7 for a summary of the analysis results. Refer to Appendix F for the Synchro capacity analysis reports.

| A P ANALYSIS R | | LANE | WEEKDAY AM PEAK HOUR LEVEL OF SERVICE | | WEEKDAY PM PEAK HOUR LEVEL OF SERVICE | |
|----------------------------|-----------------------|----------------------------------|---|----------------------|---|----------------------|
| SCENARIO | O A C H | CONFIGURATIONS | Approach | Overall (seconds) | Approach | Overall (seconds) |
| Build (2026) Conditions | EB WB NB | 1 TH-RT 1 LT, 1 TH 1 LT-RT | A ¹ B ² | N/A | A ¹ B ² | N/A |

Table 7: Analysis Summary of Green Level West Road and Site Drive

1. Level of service for major-street left-turn movement.

2. Level of service for minor-street approach.

Improvements by the developer are shown in **bold**.

Capacity analysis of build (2026) traffic conditions indicates the minor-street approach at the proposed intersection of Green Level West Road and Site Drive is expected to operate at LOS B during both weekday AM and PM peak hours. The major-street left-turn movement is expected to operate at LOS A.

Based on SimTraffic simulations, an exclusive westbound left-turn lane with 50 feet of storage and appropriate deceleration and taper length is recommended at this intersection. Due to the low eastbound volumes at this intersection and minimal queuing, an exclusive eastbound right-turn lane is not recommended.



8. CONCLUSIONS

This Traffic Impact Analysis was conducted to determine the potential traffic impacts of the proposed development located south of Green Level West Road and west of Batchelor Road in Apex, North Carolina. The proposed development is expected to be built out in 2026. Site access is proposed via one (1) full movement access point along Green Level West Road.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- Existing (2021) Traffic Conditions •
- No-Build (2026) Traffic Conditions
- Build (2026) Traffic Conditions

Trip Generation

It is estimated that the proposed development will generate approximately 126 trips (31 entering and 95 exiting) during the weekday AM peak hour and 169 trips (106 entering and 63 exiting) during the weekday PM peak hour.

Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to NCDOT Congestion Management Guidelines. Refer to section 6.1 of this report for a detailed description of any adjustments to these guidelines made throughout the analysis.

Intersection Capacity Analysis Summary

All the study area intersections (including the proposed site driveways) are expected to operate at acceptable levels-of-service under existing and future year conditions.



9. RECOMMENDATIONS

Based on the findings of this study, specific geometric improvements have been identified and are recommended to accommodate future traffic conditions. See a more detailed description of the recommended improvements below. Refer to Figure 11 for an illustration of the recommended lane configuration for the proposed development.

Improvements by Wolfe Properties

Green Level West Road and Wimberly Road

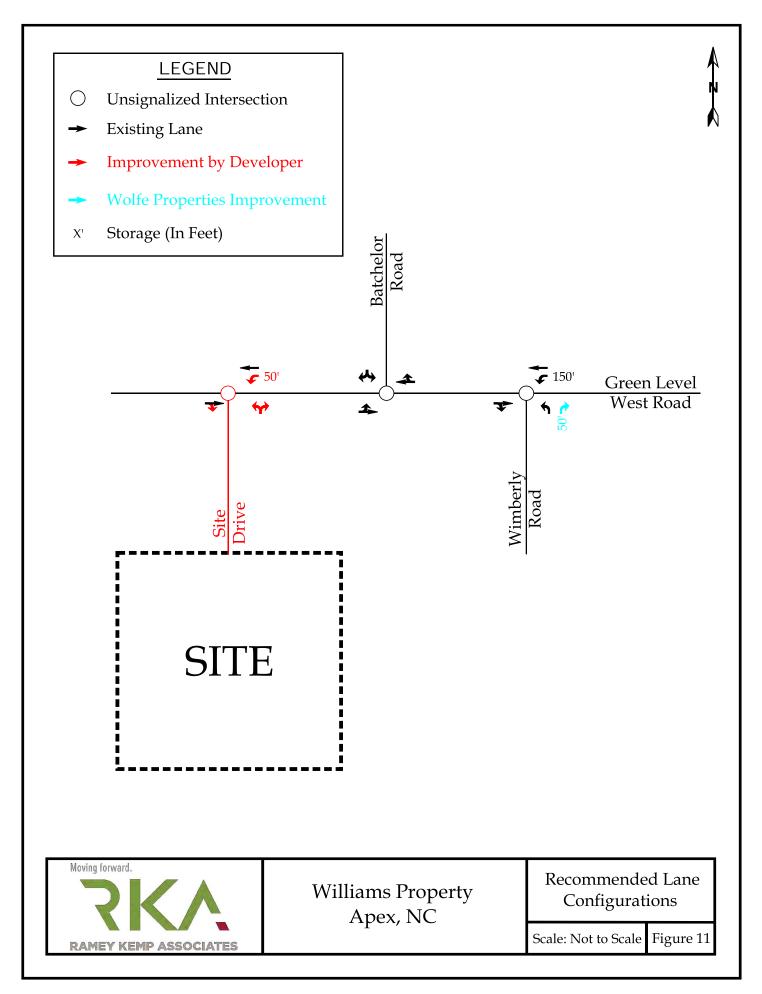
• Provide an exclusive northbound right-turn lane with a minimum of 50 feet of full-width storage and appropriate deceleration and taper length.

Recommended Improvements by Developer

Green Level West Road and Site Drive

- Construct the northbound approach with one ingress lane and one egress lane.
- Provide an exclusive westbound left-turn lane with a minimum of 50 feet of fullwidth storage and appropriate deceleration and taper length.
- Provide stop control for the northbound approach. ٠





TECHNICAL APPENDIX

APPENDIX A

SCOPING DOCUMENTATION

Mary Lynn Smith

| From: | Brennan, Sean P <spbrennan@ncdot.gov></spbrennan@ncdot.gov> |
|----------|--|
| Sent: | Friday, February 05, 2021 8:41 AM |
| То: | Serge Grebenschikov; Mary Lynn Smith; Russell Dalton; Neidringhaus, Amy N; |
| | Bunting, Clarence B |
| Cc: | Joshua Reinke; Ishak, Doumit Y; Walker, Braden M |
| Subject: | Re: [External] RE: Williams Property - TIA Scoping Meeting Minutes |

Sounds good!

Regards,

Sean Brennan, PE Senior Assistant District Engineer Division 5/District 1 Department of Transportation

919-733-3213 office 919-715-5778 fax <u>spbrennan@ncdot.gov</u>

4009 District Drive (Physical Address) Raleigh, NC 27607

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From: Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>
Sent: Friday, February 5, 2021 8:39 AM
To: Mary Lynn Smith <msmith@rameykemp.com>; Brennan, Sean P <spbrennan@ncdot.gov>; Russell Dalton

<Russell.Dalton@apexnc.org>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>

Cc: Joshua Reinke <jreinke@rameykemp.com>; Ishak, Doumit Y <dishak@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>

Subject: RE: [External] RE: Williams Property - TIA Scoping Meeting Minutes

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Thanks Mary Lynn!

From: Mary Lynn Smith [mailto:msmith@rameykemp.com]
Sent: Thursday, February 04, 2021 6:33 PM
To: Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>; Brennan, Sean P <spbrennan@ncdot.gov>; Russell Dalton
<Russell.Dalton@apexnc.org>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>; Bunting, Clarence B
<cbunting@ncdot.gov>
Cc: Joshua Reinke <jreinke@rameykemp.com>; Ishak, Doumit Y <dishak@ncdot.gov>; Walker, Braden M
<bmwalker1@ncdot.gov>
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verify the content is safe.

Good afternoon all,

Serge mentioned one additional adjacent development to include – Batchelor Road Residential (17-TAR-423). We have added this development into the attached MOU and updated the proposed adjacent development trips figure. Please feel free to reach out with any questions. None of the other assumptions or methodologies have been changed from the original.

Thank you!

Mary Lynn Smith, EI Traffic Engineering Associate T 919 872 5115 | D 919 872 0642

rameykemp.com

From: Serge Grebenschikov <<u>Serge.Grebenschikov@apexnc.org</u>>
Sent: Thursday, February 04, 2021 8:32 AM
To: Brennan, Sean P <<u>spbrennan@ncdot.gov</u>>; Mary Lynn Smith <<u>msmith@rameykemp.com</u>>; Russell Dalton
<<u>Russell.Dalton@apexnc.org</u>>; Neidringhaus, Amy N <<u>anneidringhaus@ncdot.gov</u>>; Bunting, Clarence B
<<u>cbunting@ncdot.gov</u>>
Cc: Joshua Reinke <<u>ireinke@rameykemp.com</u>>; Ishak, Doumit Y <<u>dishak@ncdot.gov</u>>; Walker, Braden M
<<u>bmwalker1@ncdot.gov</u>>
Subject: RE: [External] RE: Williams Property - TIA Scoping Meeting Minutes

Hi Mary Lynn,

Thanks for sending this over to review. The approach in the MOU works for the Town as well.

Kind regards

Serge Grebenschikov, PE

Traffic Engineer Public Works & Transportation – Traffic 73 Hunter Street, 3rd Fl PO Box 250 Apex, NC 27502 P: (919) 372-7448 E: Serge.Grebenschikov@apexnc.org

From: Brennan, Sean P [mailto:spbrennan@ncdot.gov]
Sent: Thursday, February 04, 2021 8:20 AM
To: Mary Lynn Smith <<u>msmith@rameykemp.com</u>>; Russell Dalton <<u>Russell.Dalton@apexnc.org</u>>; Neidringhaus, Amy N
<anneidringhaus@ncdot.gov>; Bunting, Clarence B <<u>cbunting@ncdot.gov</u>>; Serge Grebenschikov
<astronomics</p>
Cc: Joshua Reinke <<u>ireinke@rameykemp.com</u>>; Ishak, Doumit Y <<u>dishak@ncdot.gov</u>>; Walker, Braden M
<bmwalker1@ncdot.gov>

Subject: Re: [External] RE: Williams Property - TIA Scoping Meeting Minutes

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Mary Lynn,

I'm okay with the MOU.

Regards,

Sean Brennan, PE Senior Assistant District Engineer Division 5/District 1 Department of Transportation

919-733-3213 office 919-715-5778 fax <u>spbrennan@ncdot.gov</u>

4009 District Drive (Physical Address) Raleigh, NC 27607

1575 Mail Service Center (Mailing Address) Raleigh, NC 27699-1575

×

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From: Mary Lynn Smith <<u>msmith@rameykemp.com</u>>

Sent: Wednesday, February 3, 2021 6:31 PM

To: Russell Dalton <<u>Russell.Dalton@apexnc.org</u>>; Neidringhaus, Amy N <<u>anneidringhaus@ncdot.gov</u>>; Bunting, Clarence B <<u>cbunting@ncdot.gov</u>>; Serge Grebenschikov <<u>Serge.Grebenschikov@apexnc.org</u>>; Brennan, Sean P <<u>spbrennan@ncdot.gov</u>>

Cc: Joshua Reinke <<u>jreinke@rameykemp.com</u>>; Ishak, Doumit Y <<u>dishak@ncdot.gov</u>>; Walker, Braden M <<u>bmwalker1@ncdot.gov</u>>

Subject: [External] RE: Williams Property - TIA Scoping Meeting Minutes

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Good afternoon all,

Please see attached for the MOU for Williams Property. Let us know if you have any questions!

Thank you,

Mary Lynn Smith, EI Traffic Engineering Associate T 919 872 5115 | D 919 872 0642

rameykemp.com

From: Mary Lynn Smith

Sent: Tuesday, January 26, 2021 8:08 AM

To: Jacob Anderson <<u>jacob@alliancegroupnc.com</u>>; Russell Dalton <<u>Russell.Dalton@apexnc.org</u>>; Neidringhaus, Amy N
<anneidringhaus@ncdot.gov>; Bunting, Clarence B <<u>cbunting@ncdot.gov</u>>; Serge Grebenschikov
<<u>Serge.Grebenschikov@apexnc.org</u>>; Brennan, Sean P <<u>spbrennan@ncdot.gov</u>>; Cc: Bob Zumwalt <<u>zumwalt@alliancegroupnc.com</u>>; Brian K. Ketchem <<u>KetchemBK@stanleymartin.com</u>>; Joshua Reinke
<a>ipeinke@rameykemp.com>; Ishak, Doumit Y <<u>dishak@ncdot.gov</u>>; Walker, Braden M <<u>bmwalker1@ncdot.gov</u>>; Subject: Williams Property - TIA Scoping Meeting Minutes

Good morning,

Thank you all for taking the time to meet for the proposed Williams Property residential development. Please see below for a summary of the meeting minutes/scope. Anything that was discussed after the scoping meeting is included in *italics*. Feel free to let us know if you have any additional thoughts or questions and feel free to distribute these notes, as necessary.

Attendees: Clarence Bunting (NCDOT), Sean Brennan (NCDOT), Amy Neidringhaus (NCDOT), Russell Dalton (Town), Serge Grebenschikov (Town), Jacob Anderson (Alliance Group of NC), Mary Lynn Smith (RKA), Josh Reinke (RKA)

Overview:

- Size:
 - o 170 single-family homes
- Located south of Green Level West Road and west of Wimberly Road
- Access is proposed to be provided via one (1) full movement driveway along Green Level West Road west of Batchelor Road
- Build year: 2025-2026

Study Area

- Existing Study Intersections:
 - o Green Level West Road and Wimberly Road
 - 2019 counts from Wolfe Property (attached) will be grown to 2021 via a 2% annually compounded growth rate for existing conditions due to the COVID-19 pandemic
 - $\circ\quad$ Green Level West Road and Batchelor Road
 - 2017 turning movement counts will be utilized at Batchelor Road (and conservatively growing up by 2% compounded annually even though not much has changed along Batchelor Road)
 - Through movement traffic will be balanced against the grown 2019 counts at Wimberly Road along Green Level West Road

Analysis Scenarios:

- Existing (2021) conditions
- No-Build (2026) conditions
- Build (2026) conditions
- Build (2026) conditions with improvements

Future Conditions:

- Growth rate of 2%/year
- Adjacent development(s):
 - Wolfe Properties
 - Tunstall Property (Preserve at White Oak Creek)
 - Westford
 - Council-Smith (Weddington Smith Roberts PUD)
 - Lake Castleberry
- The following improvements by adjacent developments will be included in future analysis:
 - Wimberly Road and Green Level West Road
 - Construct an exclusive westbound left-turn lane with 100' of storage (Lake Castleberry/Council-Smith)
 - Construct an exclusive northbound right-turn lane with 50' of storage (Wolfe Properties)

Additional Notes/Questions:

• NCDOT mentioned neighbor complaints along Batchelor Road regarding walkability

Mary Lynn Smith, EI Traffic Engineering Associate T 919 872 5115 | D 919 872 0642 rameykemp.com



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T 919 872 5115

5808 Faringdon Place Raleigh, NC 27609

Moving forward.

February 4, 2021

Serge Grebenschikov, PE Traffic Engineer Public Works & Transportation – Traffic 73 Hunter Street, 3rd Fl PO Box 250 Apex, NC 27502

Reference: Williams Property Apex, North Carolina

Subject: Memorandum of Understanding for TIA Report

Dear Mr. Grebenschikov:

The following is a Memorandum of Understanding (MOU) outlining the proposed scope of work and assumptions related to the Traffic Impact Analysis (TIA) for the proposed Williams Property development, located south of Green Level West Road and west of Wimberly Road in Apex, North Carolina. The development is anticipated to consist of approximately 170 single-family homes and is expected to be fully built-out by 2026. Access to the site is proposed via one (1) full movement access point along Green Level West Road.

Study Area

Based on coordination with the North Carolina Department of Transportation (NCDOT) and the Town of Apex (Town), the study area is proposed to consist of the following intersections:

- Green Level West Road and Wimberly Road
- Green Level West Road and Batchelor Road
- Green Level West Road and Site Drive

Analysis Scenarios

All capacity analyses will be performed utilizing Synchro (Version 10.3). All study intersections will be analyzed during the weekday AM and PM peak hours under the following proposed traffic scenarios:

- Existing (2021) Traffic Conditions
- No-Build (2026) Traffic Conditions
- Build (2026) Traffic Conditions
- Build (2026) Traffic Conditions with Improvements



Moving forward.

Existing Traffic Volumes

Peak hour counts were conducted at the intersection of Green Level West Road and Wimberly Road in October of 2019, during weekday AM (7:00 to 9:00 AM) and weekday PM (4:00 to 6:00 PM) peak hours. This data was grown up to 2021 via a 2% annually compounded growth rate. Due to the COVID-19 pandemic, new data was not collected.

Peak hour turning movement counts were conducted at the intersection of Green Level West Road and Batchelor Road in October of 2017, during weekday AM (7:00 to 9:00 AM) and weekday PM (4:00 to 6:00 PM) peak hours. Based on Google Earth aerials between 2017 and 2020, there has been minimal changes to development along Batchelor Road; however, turning movement volumes were still grown up to 2021 via a 2% annually compounded growth rate to be conservative. The through movement volumes at this intersection were balanced with the adjacent intersection of Green Level West Road and Wimberly Road, since data collection at this intersection was more recent.

The above methodology was coordinated with the Town and NCDOT during scoping and through email coordination after scoping.

No-Build Traffic Volumes

Per coordination with NCDOT and the Town, no-build traffic volumes will be determined by projecting existing (2021) traffic volumes to 2026 using a 2% annually compounded growth rate.

Adjacent Developments

Per coordination with NCDOT and the Town, the following adjacent developments will be considered in this study:

- Wolfe Properties
- Tunstall Property (Preserve at White Oak Creek)
- Westford
- Council-Smith (Weddington Smith Roberts PUD)
- Lake Castleberry
- Batchelor Road Residential

Wolfe Properties has an improvement at the intersection of Wimberly Road and Green Level West Road, which is proposed to be included in future analysis scenarios:

• Provide an exclusive northbound right-turn lane with 50 feet of storage.

It should be noted that neither of the study area intersections for the proposed site were included in the Tunstall Property and Westford TIAs. Based on the locations of these developments, adjacent development trips to/from the north along Wimberly Road were assumed to ultimately travel to/from the west along Green Level West Road for these two developments. This was assumed due to the interconnectivity to the east and that it would be easier for the trips from these developments to utilize Jenks Road and/or Green Level Church Road if traveling to/from the east. This methodology is expected to provide conservative results because it routes trips from these developments through the entire proposed roadway network. Refer to the attachments for adjacent development trips.



Moving forward.

Trip Generation

Average weekday daily and peak hour trips for the proposed site were calculated utilizing methodology contained within the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Refer to Table 1 for a detailed breakdown of the trip generation.

| Table 1: | Trip | Generation | Summary |
|----------|------|------------|---------|
|----------|------|------------|---------|

| Land Use | Intensity | Daily Traffic | AM Pea Trips | | PM Peak Hour Trips (vph) | | |
|--------------------------------------|-----------|------------------|-----------------|------|-----------------------------|------|--|
| | | (vpd) | Enter | Exit | Enter | Exit | |
| Single-Family Detached Housing (210) | 170 units | 1,700 | 31 | 95 | 106 | 63 | |

It is estimated that the proposed development will generate approximately 1,700 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 126 trips (31 entering and 95 exiting) will occur during the weekday AM peak hour and 169 trips (106 entering and 63 exiting) will occur during the weekday PM peak hour.

Trip Distribution

The site trips were distributed based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment. A summary of the proposed site trip distribution is below:

- 15% to/from the south via Wimberly Road
- 15% to/from the west via Green Level West Road
- 70% to/from the east via Green Level West Road •

Refer to the attachments for a figure showing the anticipated site trip distribution for the site.

Report

The TIA will be prepared based on NCDOT requirements.



Moving forward.

If you find this memorandum of understanding acceptable, please let me know so that we may include it in the TIA report. If you have any questions or concerns, please do not hesitate to contact me.

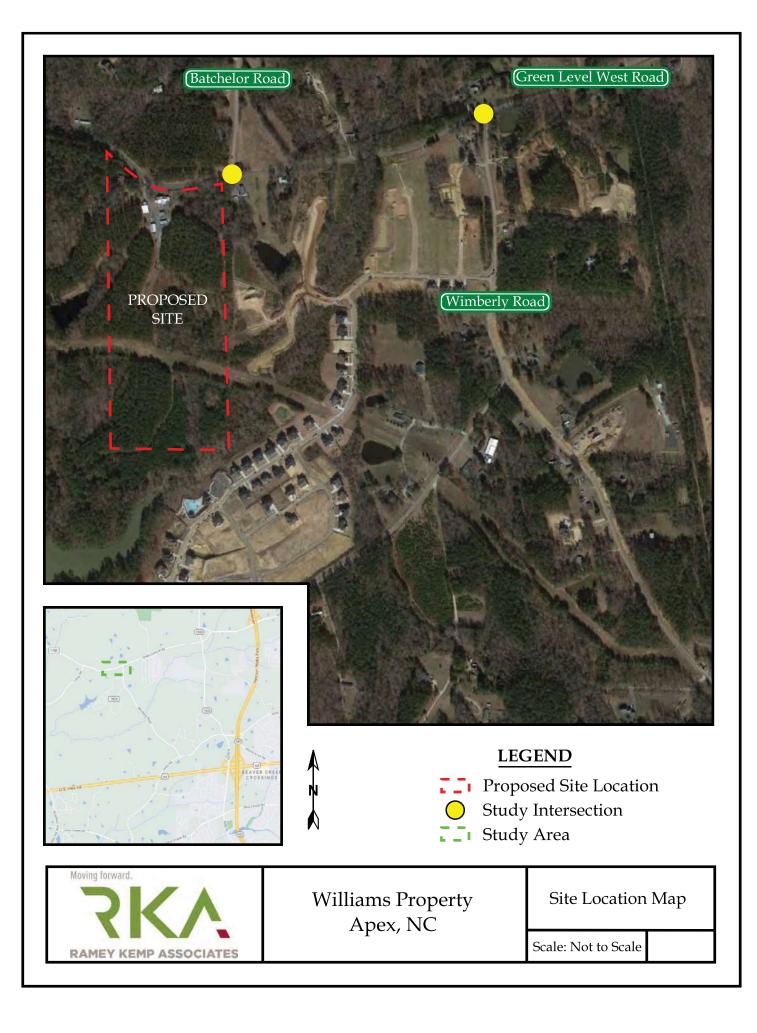
Sincerely, Ramey Kemp & Associates, Inc.

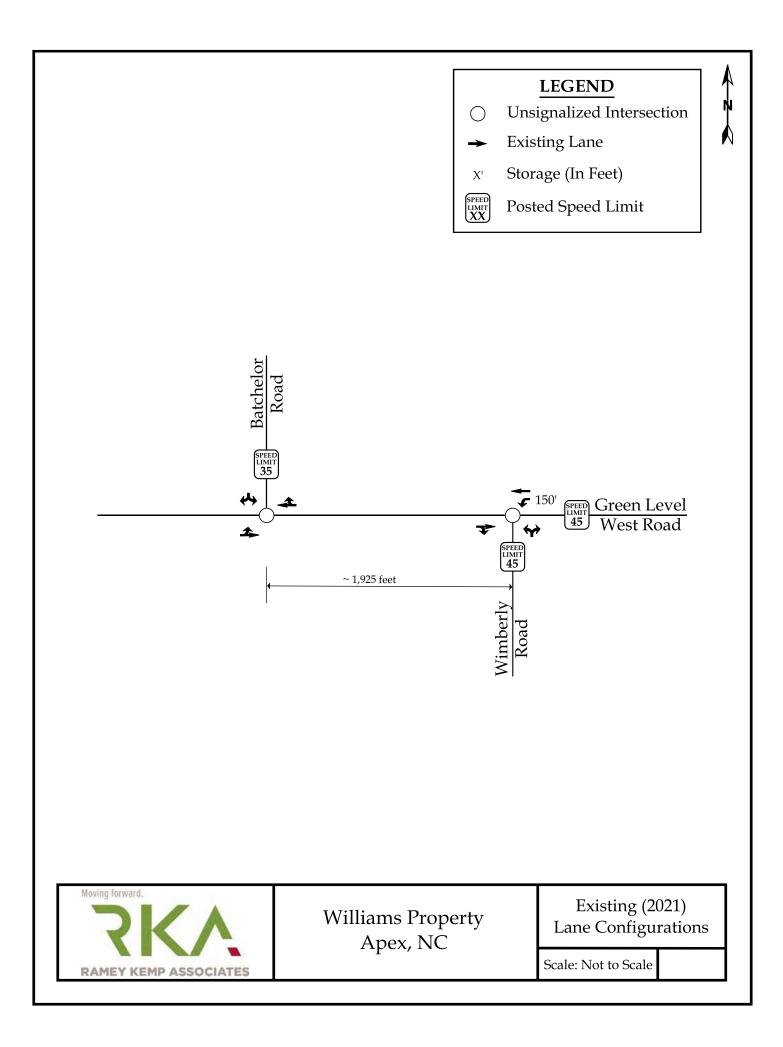
Jour T. Fire

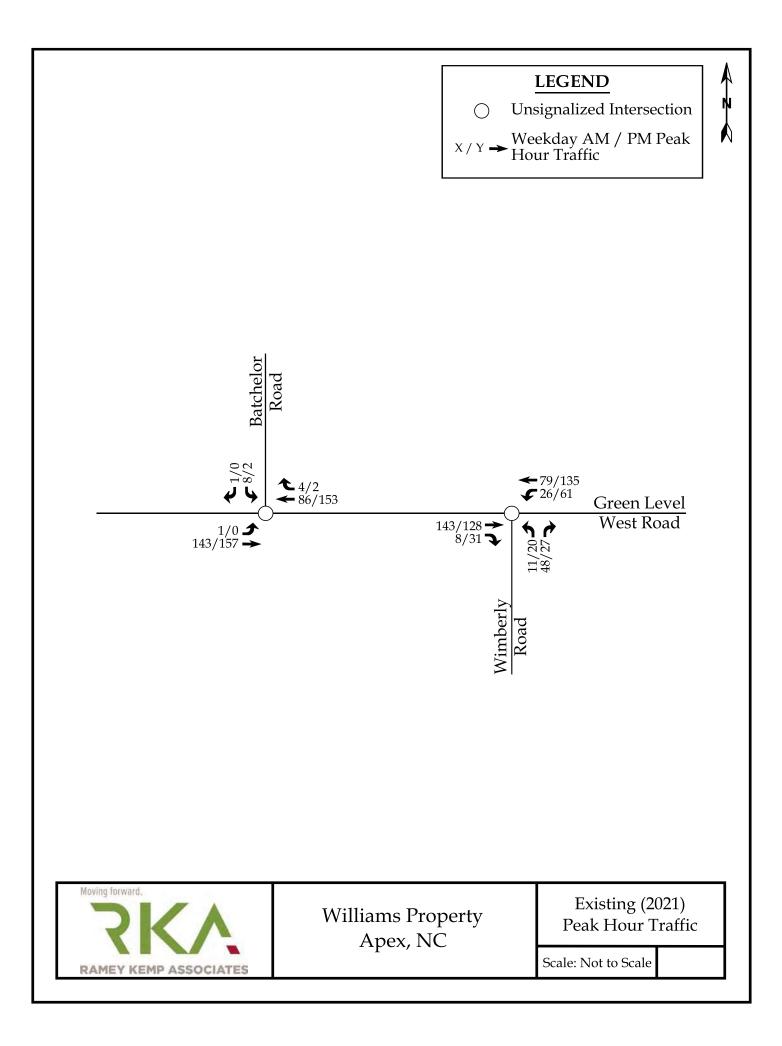
Josh Reinke, PE State Traffic Engineering Lead

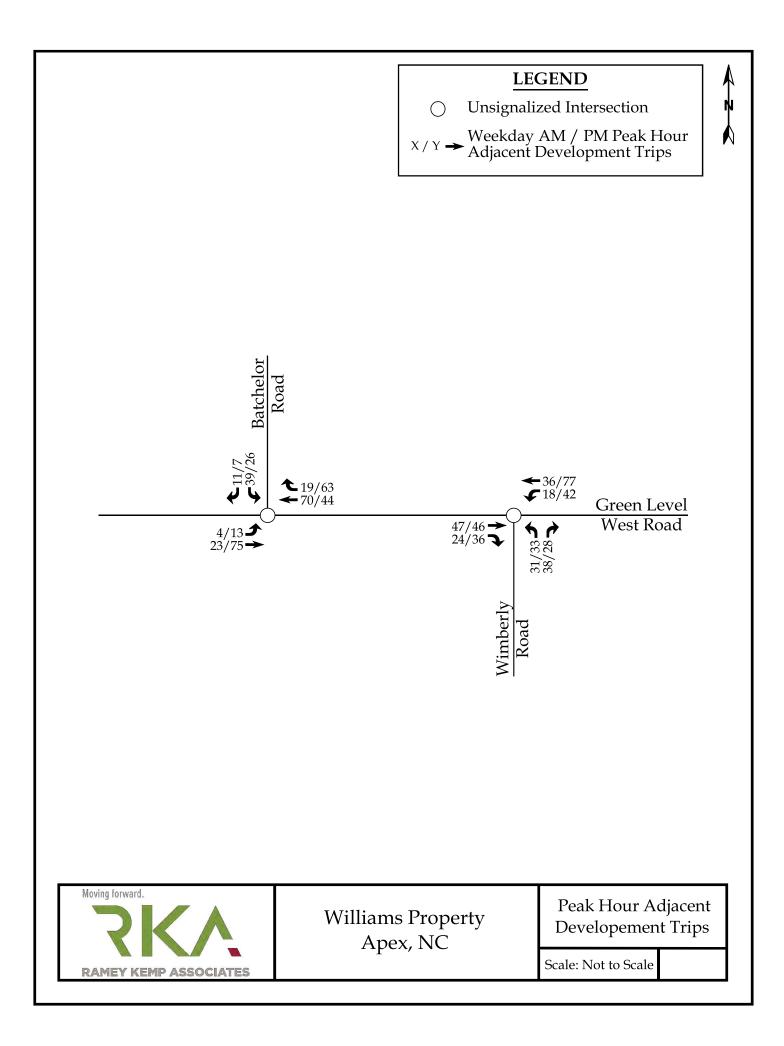
Attachments: Site Location Map Figure Existing Lane Configurations Existing (2021) Traffic Volumes Figure Adjacent Development Information Site Trip Distribution Figure Count Information

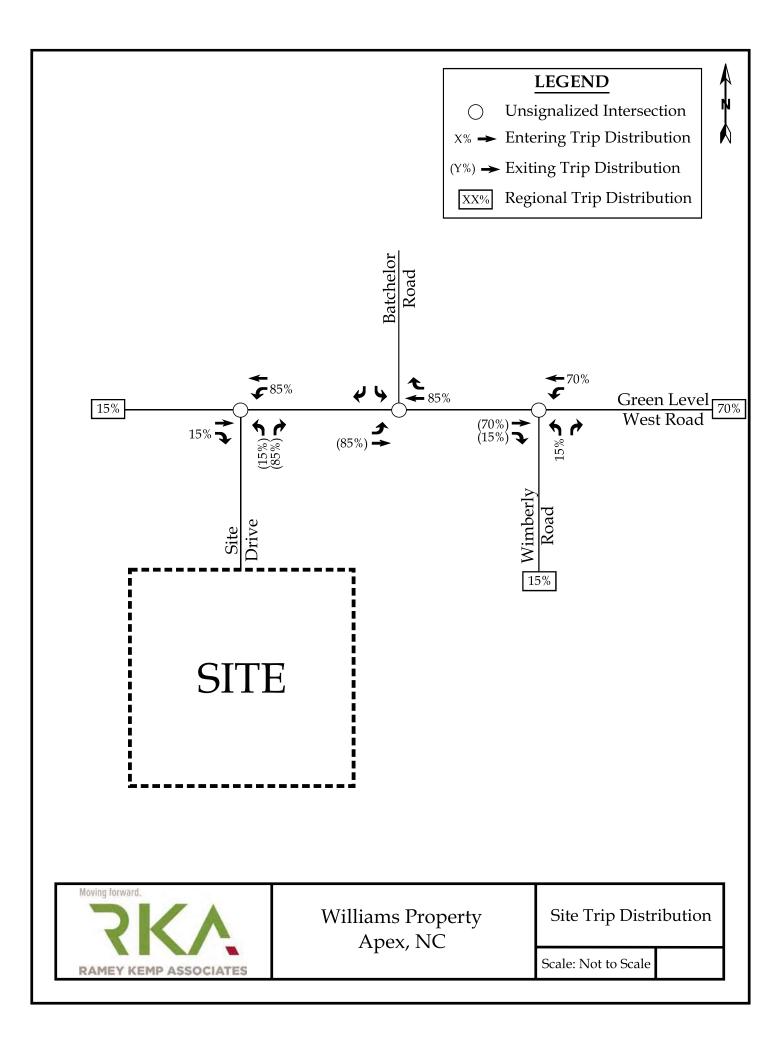












APPENDIX B

COUNT DATA



5808 Faringdon Place, Suite 100 Raleigh, NC 27609 PH: 919 872-5115

> File Name : Green Level West Road and Batchelor Road Site Code : 00101817 Start Date : 10/18/2017 Page No : 1

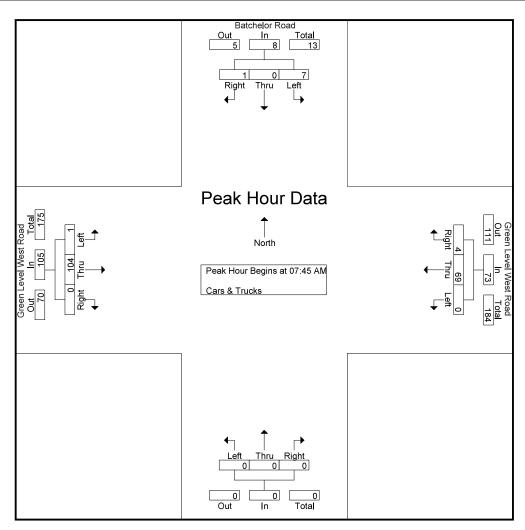
| | | | | | | | | | | ups P | rinted | - Car | s & T | rucks | ; | | | | | | | | |
|-------------|-------------|------|-------|------|-----------|-------|------|--------|------|------------|--------|-------|-------|-------|------------|-------|-------|------|------|------------|-----------------|-----------------|------------|
| | | | helor | | k | Gre | | evel V | | Road | | | | | | Gre | en Le | | Road | | | | |
| | | Fr | om N | orth | | | Fr | om E | ast | | | Fre | om So | outh | | | Fr | om W | Vest | | | | |
| Start Time | Right | Thru | Left | TRKS | App. Tota | Right | Thru | Left | TRKS | App. Total | Right | Thru | Left | TRKS | App. Total | Right | Thru | Left | TRKS | App. Total | Exclu. Total | Inclu. Totaj | int. Total |
| 07:00 AM | 0 | 0 | 2 | 0 | 2 | 0 | 23 | 0 | 1 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 12 | 1 | 37 | 38 |
| 07:15 AM | 1 | 0 | 3 | 0 | 4 | 1 | 14 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 16 | 0 | 35 | 35 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 24 | 0 | 39 | 39 |
| 07:45 AM | 0 | 0 | 2 | 0 | 2 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 1 | 22 | 1 | 41 | 42 |
| Total | 1 | 0 | 7 | 0 | 8 | 1 | 69 | 0 | 1 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 74 | 0 | 1 | 74 | 2 | 152 | 154 |
| 08:00 AM | 0 | 0 | 2 | 0 | 2 | 1 | 19 | 0 | 1 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 22 | 1 | 44 | 45 |
| 08:15 AM | 0 | 0 | 1 | 0 | 1 | 1 | 19 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 1 | 2 | 32 | 2 | 53 | 55 |
| 08:30 AM | 1 | 0 | 2 | 0 | 3 | 2 | 14 | 0 | 3 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 1 | 29 | 4 | 48 | 52 |
| *** BREAK | ** * | | | | | | | | | | | | | | | | | | | | | | |
| Total | 1 | 0 | 5 | 0 | 6 | 4 | 52 | 0 | 4 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 1 | 3 | 83 | 7 | 145 | 152 |
| *** BREAK | *** | | | | | | | | | | | | | | | | | | | | | | |
| 04:00 PM | 0 | 0 | 1 | 0 | 1 | 3 | 6 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 1 | 1 | 13 | 1 | 23 | 24 |
| 04:15 PM | 0 | 0 | 4 | 0 | 4 | 1 | 19 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 2 | 0 | 22 | 0 | 46 | 46 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 16 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 1 | 23 | 1 | 41 | 42 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 3 | 20 | 0 | 1 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 22 | 1 | 45 | 46 |
| Tota | 0 | 0 | 5 | 0 | 5 | 9 | 61 | 0 | 1 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 3 | 2 | 80 | 3 | 155 | 158 |
| 05:00 PM | 0 | 0 | 1 | 0 | 1 | 1 | 26 | 0 | 1 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 38 | 1 | 66 | 67 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 31 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 41 | 0 | 73 | 73 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 1 | 49 | 1 | 77 | 78 |
| 05:45 PM | 0 | 0 | 1 | 0 | 1 | 0 | 28 | 0 | 1 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 37 | 1 | 66 | 67 |
| Total | 0 | 0 | 2 | 0 | 2 | 2 | 113 | 0 | 2 | 115 | 0 | 0 | 0 | 0 | 0 | 0 | 165 | 0 | 1 | 165 | 3 | 282 | 285 |
| Grand Total | 2 | 0 | 19 | 0 | 21 | 16 | 295 | 0 | 8 | 311 | 0 | 0 | 0 | 0 | 0 | 0 | 398 | 4 | 7 | 402 | 15 | 734 | 749 |
| Apprch % | 9.5 | 0 | 90.5 | | | 5.1 | 94.9 | 0 | | | 0 | 0 | 0 | | | 0 | 99 | 1 | | | | | |
| Total % | 0.3 | 0 | 2.6 | | 2.9 | 2.2 | 40.2 | 0 | | 42.4 | 0 | 0 | 0 | | 0 | 0 | 54.2 | 0.5 | | 54.8 | 2 | 98 | |



5808 Faringdon Place, Suite 100 Raleigh, NC 27609 PH: 919 872-5115

> File Name : Green Level West Road and Batchelor Road Site Code : 00101817 Start Date : 10/18/2017 Page No : 2

| | | Batche | lor Roa | ad | Gree | Green Level West Road | | | | | | | Gree | | | | |
|---------------|----------|---------|---------|------------|---------|-----------------------|------|------------|-------|------|-------|------------|-------|------|------|------------|------------|
| | | From | North | | | From | East | | | From | South | | | | | | |
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour An | alysis F | From 07 | 7:00 AN | /I to 11:4 | 5 AM - | Peak 1 | of 1 | | | | | | | | | | |
| Peak Hour for | Entire | Interse | ction B | egins at | 07:45 A | ١M | | | | | | | | | | | |
| 07:45 AM | 0 | 0 | 2 | 2 | 0 | 17 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 22 | 41 |
| 08:00 AM | 0 | 0 | 2 | 2 | 1 | 19 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 22 | 44 |
| 08:15 AM | 0 | 0 | 1 | 1 | 1 | 19 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 31 | 1 | 32 | 53 |
| 08:30 AM | 1 | 0 | 2 | 3 | 2 | 14 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 29 | 48 |
| Total Volume | 1 | 0 | 7 | 8 | 4 | 69 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 104 | 1 | 105 | 186 |
| % App. Total | 12.5 | 0 | 87.5 | | 5.5 | 94.5 | 0 | | 0 | 0 | 0 | | 0 | 99 | 1 | | |
| PHF | .250 | .000 | .875 | .667 | .500 | .908 | .000 | .913 | .000 | .000 | .000 | .000 | .000 | .839 | .250 | .820 | .877 |



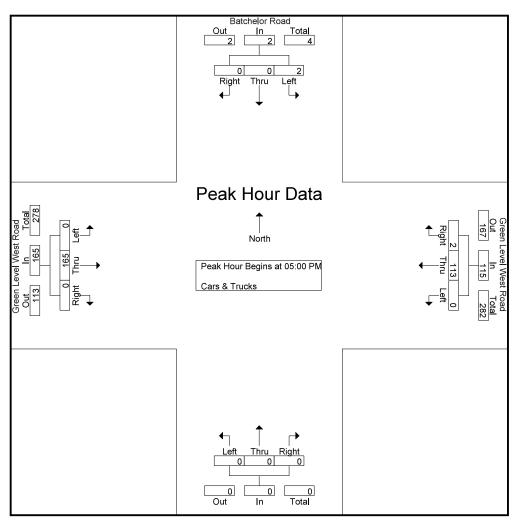


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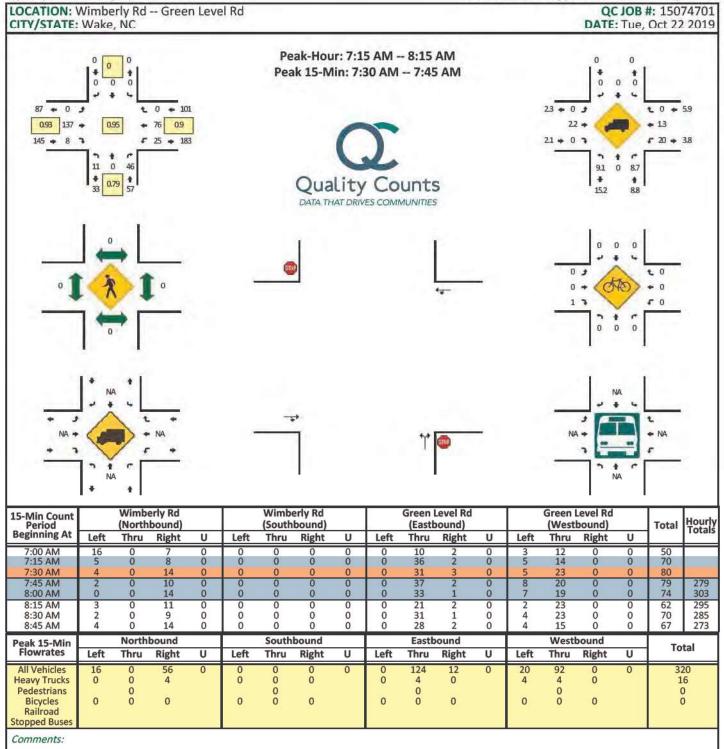
> File Name : Green Level West Road and Batchelor Road Site Code : 00101817 Start Date : 10/18/2017

Page No : 3

| | | Batche | lor Roa | ıd | Gree | Green Level West Road | | | | | | | Gree | [| | | |
|---------------|----------|---------|---------|------------|---------|-----------------------|--------|------------|-------|------|-------|------------|-------|------|------|------------|------------|
| | | From | North | | | From | n East | | | From | South | | | | | | |
| Start Time | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Right | Thru | Left | App. Total | Int. Total |
| Peak Hour An | alysis F | From 12 | 2:00 PN | /I to 05:4 | 5 PM - | Peak 1 | of 1 | | | | | | | | | | |
| Peak Hour for | Entire | Interse | ction B | egins at | 05:00 F | РМ | | | | | | | | | | | |
| 05:00 PM | 0 | 0 | 1 | - 1 | 1 | 26 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 38 | 66 |
| 05:15 PM | 0 | 0 | 0 | 0 | 1 | 31 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 41 | 73 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 49 | 77 |
| 05:45 PM | 0 | 0 | 1 | 1 | 0 | 28 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 37 | 66 |
| Total Volume | 0 | 0 | 2 | 2 | 2 | 113 | 0 | 115 | 0 | 0 | 0 | 0 | 0 | 165 | 0 | 165 | 282 |
| % App. Total | 0 | 0 | 100 | | 1.7 | 98.3 | 0 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| PHF | .000 | .000 | .500 | .500 | .500 | .911 | .000 | .898 | .000 | .000 | .000 | .000 | .000 | .842 | .000 | .842 | .916 |



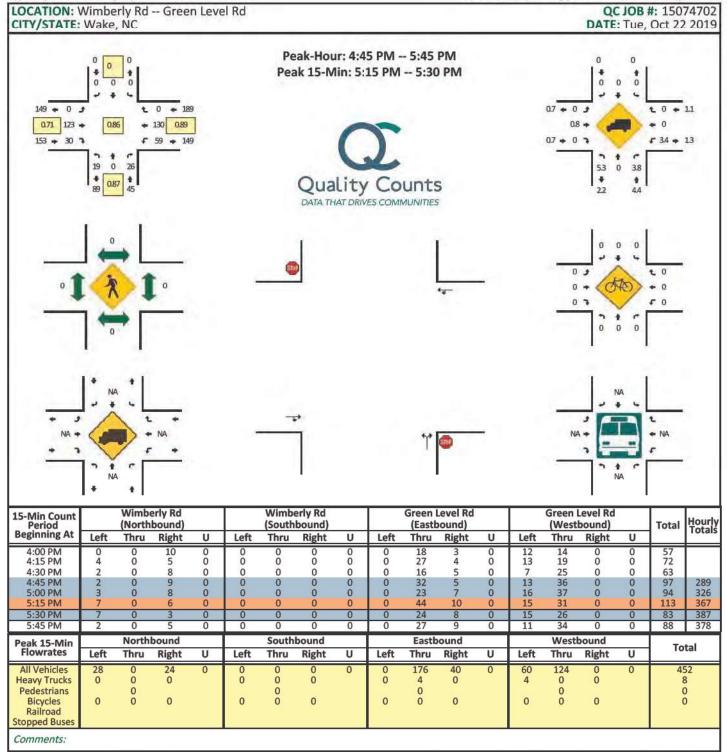
Type of peak hour being reported: Intersection Peak



Report generated on 10/29/2019 10:54 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak



Report generated on 10/29/2019 10:54 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

APPENDIX C

ADJACENT DEVELOPMENT INFORMATION

Traffic Impact Analysis

Tunstall Property Apex, NC

Prepared for: Raleigh Land Fund I, LLC

© Kimley-Horn and Associates, Inc. 2013

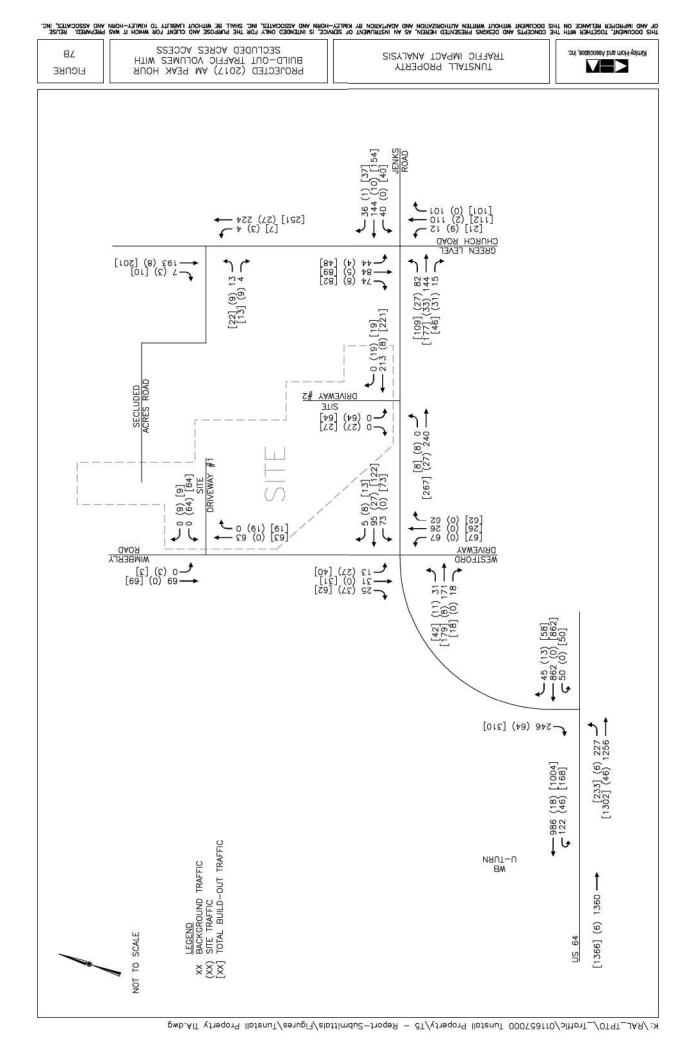
Traffic Impact Analysis for Tunstall Property Apex, North Carolina

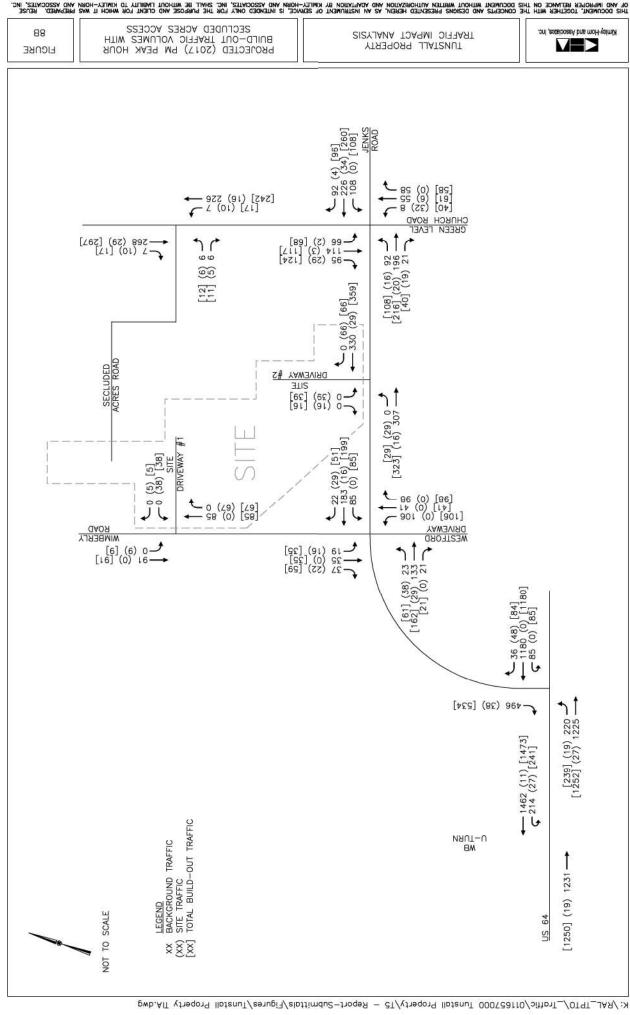
Prepared for: Raleigh Land Fund I, LLC Raleigh, NC

Prepared By: Kimley-Horn and Associates, Inc. NC License # F-0102 3001 Weston Parkway Cary, North Carolina 27513 (919) 677-2000

> 011657000 June 2013







8.0 Conclusions and Recommendations

The following roadway improvements are committed to be performed by the Westford development:

US 64 & Jenks Road:

- Convert existing full-movement intersection to a modified "super street" design
- Construct a channelized island in the median of US 64 to prohibit left-turns from Jenks Road
- Restripe the existing southbound left-turn lane on Jenks Road to an exclusive right-turn lane
- Extend the existing southbound right-turn lane on Jenks Road to provide 200 feet of storage
- Install a traffic signal for the eastbound left-turn, the westbound through and right-turn, and the southbound right-turn
- Construct a downstream U-turn on US 64 with 125 feet of storage for the westbound U-turn lane

Jenks Road & Wimberly Road / Westford Driveway:

- Construct an exclusive westbound left-turn lane with 75 feet of storage on Jenks Road
- Construct an exclusive eastbound left-turn lane with 50 feet of storage on Jenks Road
- Provide an exclusive left-turn lane and a shared through-right lane on the Westford driveway

Jenks Road & Green Level Church Road:

- Construct an exclusive eastbound left-turn lane with 100 feet of storage on Jenks Road
- Construct exclusive southbound right-turn lane with 100 feet of storage on Green Level Church Road
- Monitor intersection for traffic signal warrants and install a traffic signal if they are met

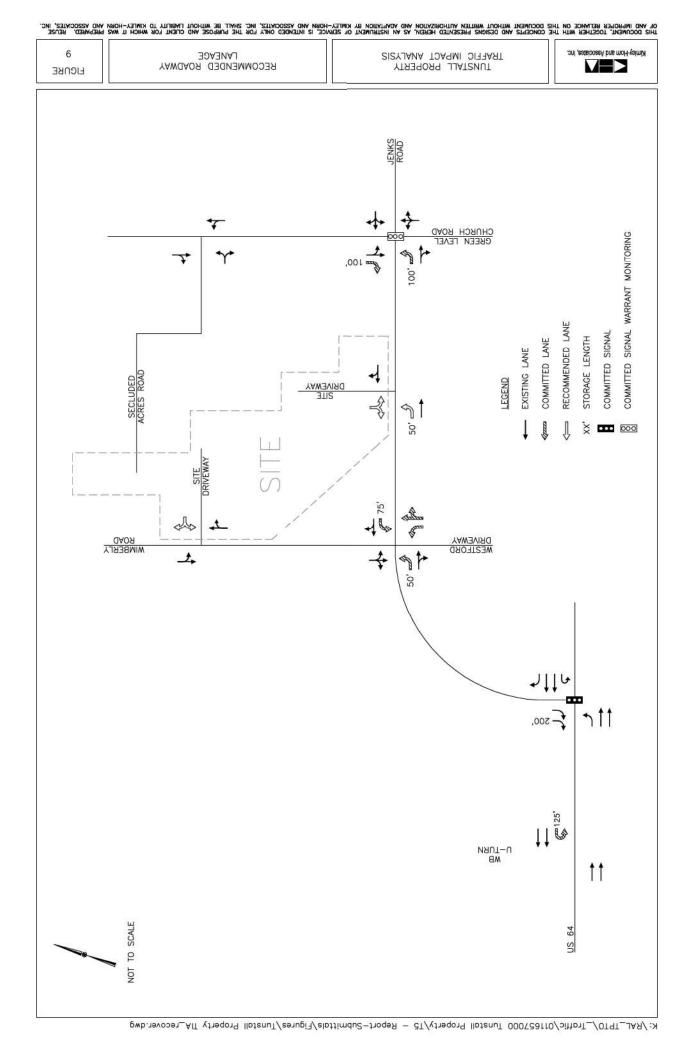
The following roadway improvement is recommended to accommodate required thoroughfare widening on Jenks Road:

Jenks Road at Site Driveway:

Construct an exclusive eastbound left-turn lane with 50 feet of storage on Jenks Road

The analysis indicates that all intersections in the study area will operate at acceptable levels of service at project build-out with the exception of the intersection of Jenks Road at Green Level Church Road. At project build-out with the Westford development in place, the intersection is expected to operate at LOS E in the PM peak hour as a 4-way stop. However, Westford is committed to monitoring this intersection for MUTCD signal warrants and installing a signal when warrants are met. It should also be noted that without Westford the intersection is expected to operate at LOS B in the PM peak hour at project build-out. Therefore, no additional improvements are recommended at this intersection to accommodate projected site traffic. The recommended roadway laneage is shown on Figure 9.







Jown of

P. D. BOX 250 APEX, NORTH CAROLINA 27502

December 9, 2013

To:Apex Planning Board and Apex Town CouncilSubject:Staff review of Tunstall Property TIA dated 6/28/2013 (The Preserve at
White Oak Creek); updated traffic summary for final PUD plan

Study Area

- The PUD is located north and west of Jenks Road and Wimberly Road with frontage on both roadways.
- The existing stop controlled intersections studied include: US 64 at Jenks Road, Jenks Road at Wimberly Road, Green Level Church Road at Jenks Road, and Green Level Church Road at Secluded Acres Road.

Trip Generation

The TIA assumes 250 single family homes and 100 townhomes. The PUD is anticipated to generate 55 new inbound trips and 182 new outbound trips in the a.m. peak hour. It is anticipated to generate 191 new inbound trips and 109 new outbound trips in the p.m. peak hour. The PUD is anticipated to add 3,084 new trips to the adjacent roadway network on a typical weekday.

Site Access

- Site Driveway 1 provides access to Wimberly Road 1,100 feet north of Jenks Road as indicated in the PUD Plan.
- Site Driveway 2 provides access to Jenks Road 1,750 feet east of Wimberly Road as indicated in the PUD Plan.
- The site may eventually have access to Secluded Acres Road but would require extending that road west on land that is not currently dedicated as public right of way. The TIA analyzed traffic with and without that access. The subdivision would be limited to 300 units if only provided two points of access.

Traffic Capacity Analysis

Traffic was analyzed with and without development of the approved Westford project. The following table lists the overall levels of service reported for the signalized study intersection and any critical movements or stop controlled intersections operating worse than LOS D. Other movements experiencing LOS D or better for all conditions are included in the TIA but not in this summary table.

| 2013 Existing (2016 No-Build) [2016 Build] | | | | | | | | | |
|--|---------------------------------------|----------------|--|--|--|--|--|--|--|
| | Intersection Level of Service (A – F) | | | | | | | | |
| Signalized Level of Service, US 64 at Jenks Rd | A.M. Peak Hour | P.M. Peak Hour | | | | | | | |
| No-Build (with Westford PUD) | В | В | | | | | | | |
| Build-out with proposed subdivision and Westford PUD* | В | В | | | | | | | |
| Unsignalized (four-way stop) Level of Service, Green Level Church Rd at Jenks Rd | | | | | | | | | |
| No-Build (with Westford PUD) | В | С | | | | | | | |
| Build-out with proposed subdivision and Westford PUD** | В | E | | | | | | | |

* Assumes committed improvements (including traffic signal) with Westford PUD. Moderate delays for stop-controlled operation result at build-out with no improvements if Westford is not developed at that time.

**LOS is the same with or without Secluded Acres Road access. Assumes committed improvements from Westford PUD (eastbound left turn and southbound right turn).

Recommendations

 The TIA recommends no changes to US 64 at Jenks Road or US 64 westbound Uturn west of Jenks Road in addition to commitments made by Westford, showing that previously committed improvements will accommodate traffic from both developments upon build-out. Without development of Westford, no improvements are proposed. *Apex staff concurs with no additional improvements for the intersections along US 64 as part of the proposed PUD.*

- 2. The TIA recommends no changes to Jenks Road at Wimberly Road in addition to commitments made by Westford, showing that previously committed improvements will accommodate traffic from both developments upon buildout. Without development of Westford, no improvements are proposed. Apex staff concurs with no additional improvements for Jenks Road at Wimberly Road proposed as part of the proposed PUD.
- 3. The TIA recommends Wimberly Road at Site Driveway as a single lane exit with no exclusive turn lanes on Wimberly Road. Apex staff concurs with the recommendations for Wimberly Road at Site Driveway.
- 4. The TIA recommends Site Driveway at Jenks Road as a single lane exit with a 50foot exclusive left turn lane on Jenks Road. Apex staff concurs with the note included in the PUD plan providing for a minimum length of 150 feet of full width for the left turn lane proposed on Jenks Road as part of the proposed PUD and exclusive left and right lanes exiting the proposed Site Driveway.
- 5. The TIA recommends no changes to Green Level Church Road at Jenks Road in addition to commitments made by Westford, showing that previously committed improvements will accommodate traffic from both developments upon buildout. Without development of Westford, no improvements are proposed. Apex staff concurs with the note included in the PUD plan providing for installation of a traffic signal if warranted at this location following a warrant study to be conducted following the 265th CO and no later than the 280th CO.
- 6. The TIA recommends no changes to Green Level Church Road at Secluded Acres Road. Apex staff concurs with the note included in the PUD plan providing for a minimum length of 150 feet of full width for a left turn lane proposed on Green Level Church Road at Secluded Acres Road prior to public access being completed along Secluded Acres Road to the PUD.

Please note that staff recommendations and proposed changes on state-maintained facilities are subject to approval by NCDOT. NCDOT maintains US 64, Wimberly Road, Jenks Road, Green Level Church Road, and Secluded Acres Road.

Sincerely,

Russell H. Dalton

Russell H. Dalton, PE Transportation Engineer



Traffic Impact Analysis

Westford Apex, NC

Prepared for:

The Halle Companies

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Kimley **»Horn**



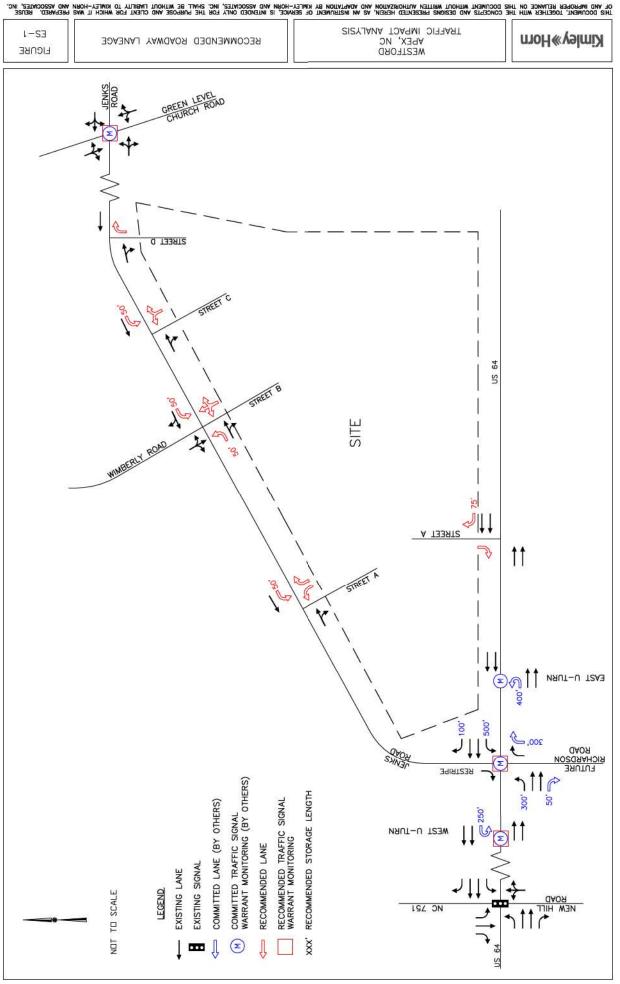
Traffic Impact Analysis for Westford Apex, North Carolina

Prepared for: The Halle Companies Apex, North Carolina

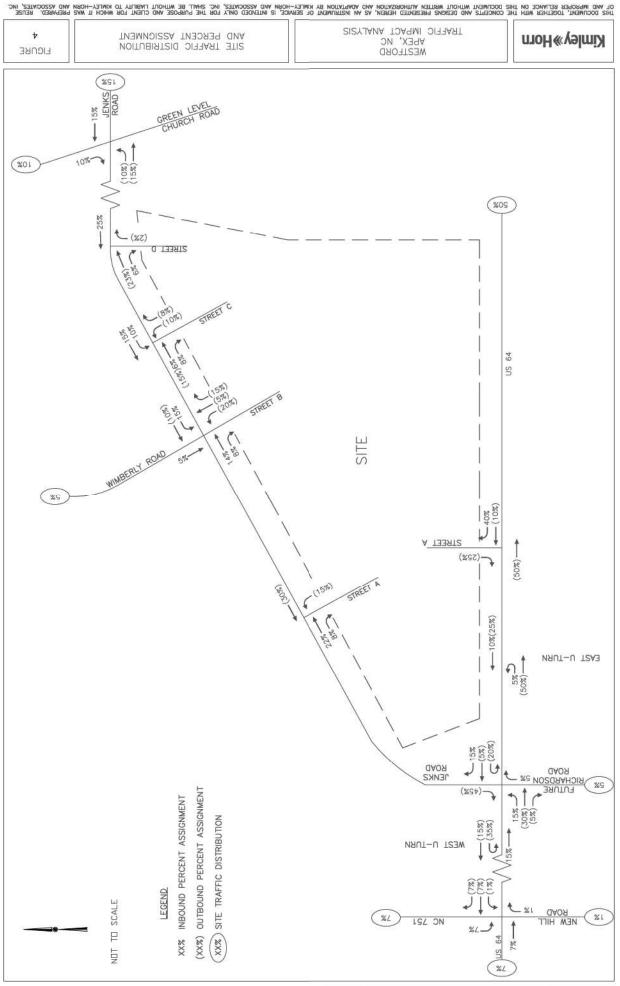
Prepared by: Kimley-Horn and Associates, Inc. NC License #F-0102 421 Fayetteville Street Suite 600 Raleigh, NC 27601 (919) 677-2000

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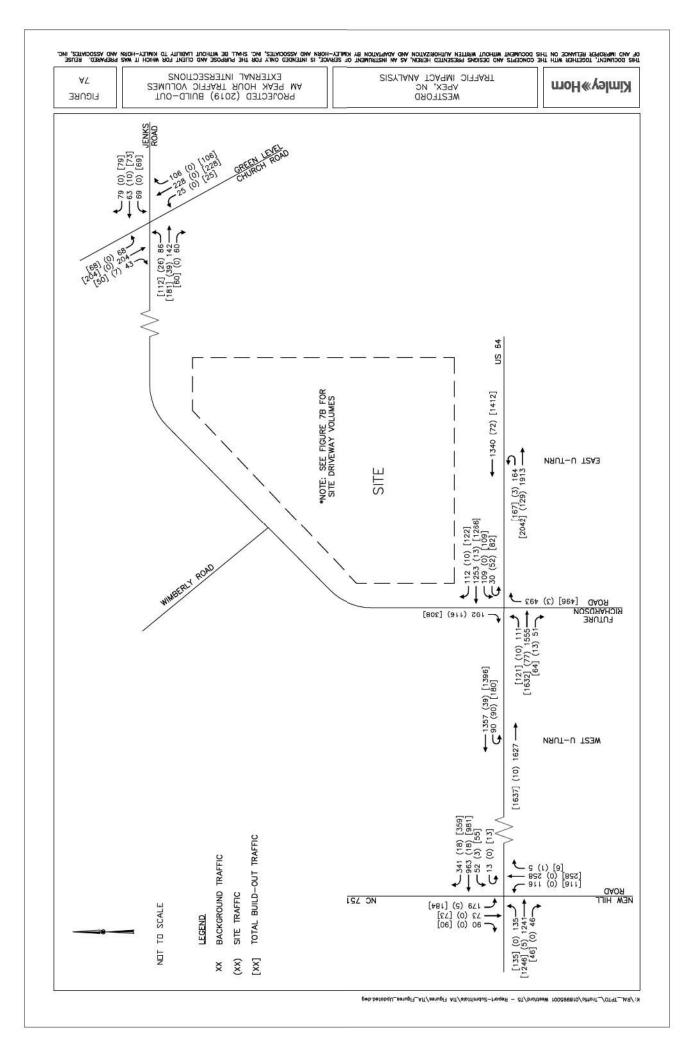
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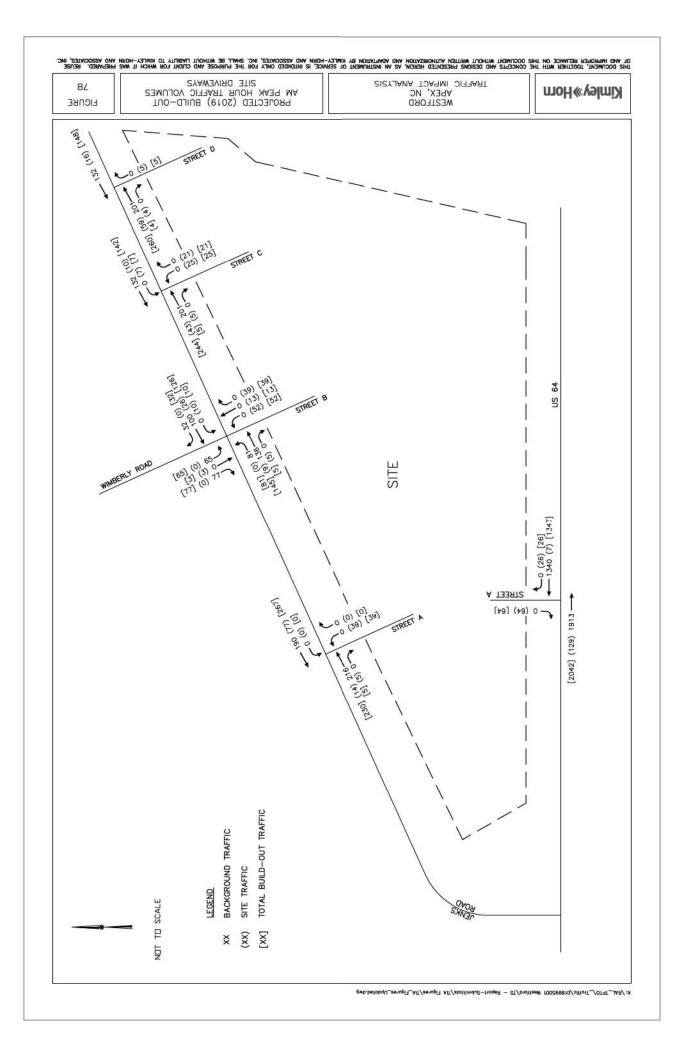


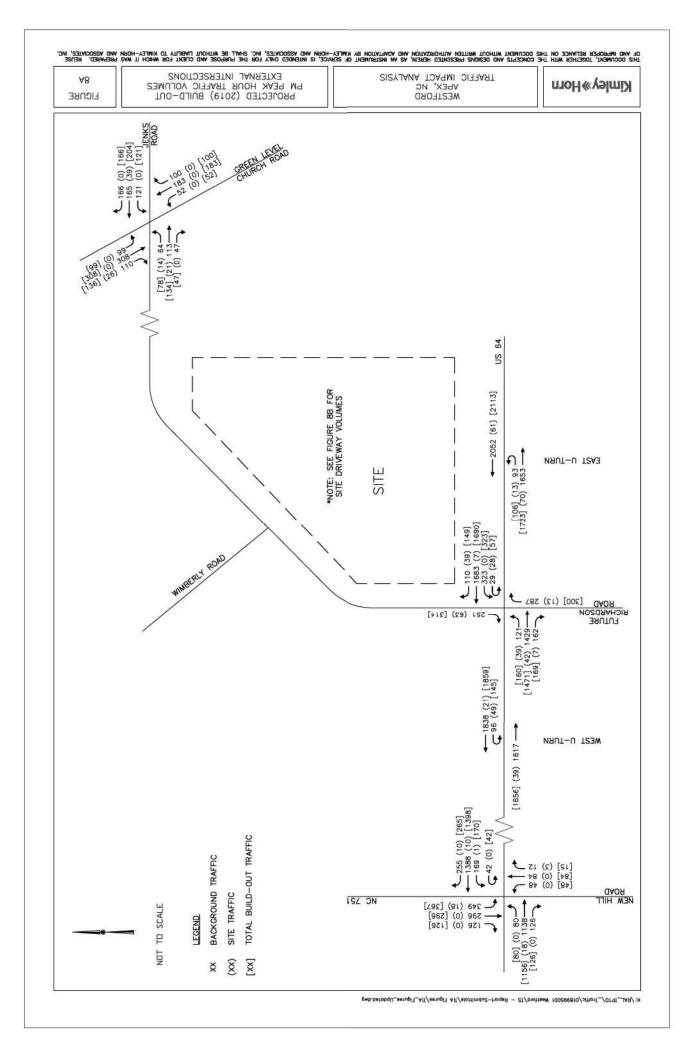
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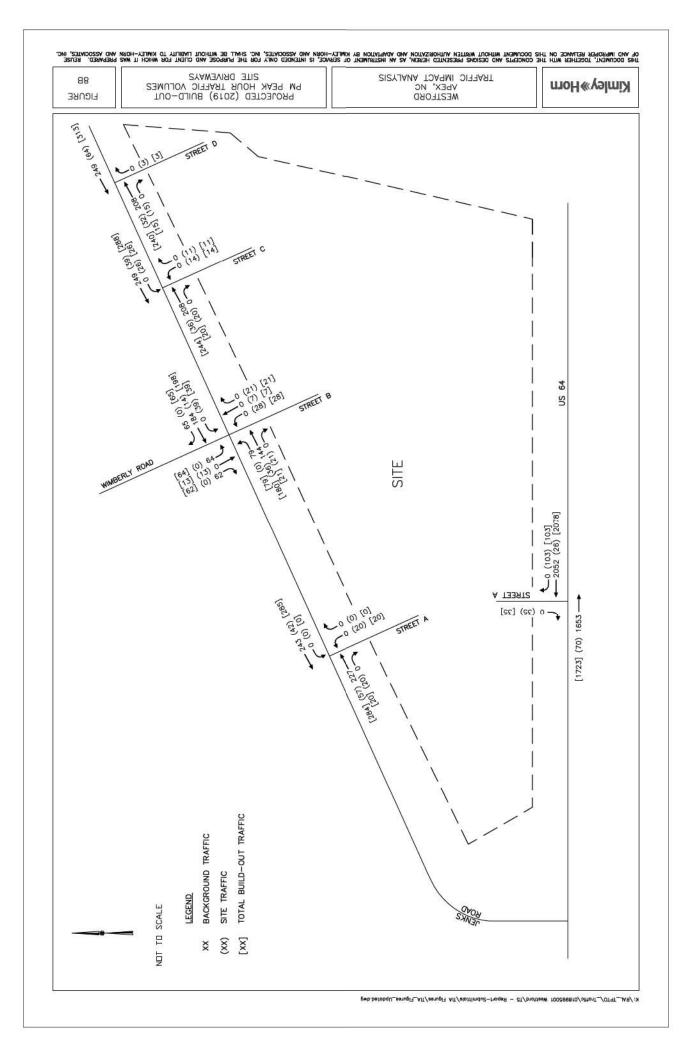


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7.0 Recommendations

The following roadway improvements are committed to be performed by other developments in the area:

US 64 at Jenks Road:

- Convert existing intersection to a superstreet configuration with left turn crossovers and downstream U-Turns (by Sweetwater Phase 1)
- Monitor crossovers for MUTCD traffic signal warrants and install a traffic signal if warrants are met (by Sweetwater Phase 1)
- Construct a single westbound left-turn lane with 300 feet of storage and a single rightturn lane with 100 feet of storage on US 64 (by Sweetwater Phase 1)
- Construct a single eastbound left-turn lane with 300 feet of storage and a single right-turn lane with 50 feet of storage on US 64 (by Sweetwater Phase 1)
- Extend the westbound left-turn lane on US 64 to provide 500 feet of storage (by Smith Farm prior to platting 300 units)
- Extend the eastbound right-turn lane on US 64 to provide 100 feet of storage (by Smith Farm prior to platting of 360 units)
- Construct an additional northbound right-turn lane on Richardson Road with 300 feet of storage (by Smith Farm prior to platting 360 units)

US 64 at West U-turn:

- Construct a single lane U-turn with 250 feet of storage (by Sweetwater Phase 1)
- Monitor for MUTCD traffic signal warrants and install a traffic signal if warrants are met (by Sweetwater Phase 1)

US 64 at East U-turn:

- Construct a single lane U-turn with 250 feet of storage on US 64 (by Sweetwater Phase 1)
- Monitor for MUTCD traffic signal warrants and install a traffic signal if warrants are met (by Sweetwater Phase 1)
- Extend eastbound U-turn lane on US 64 to provide 400 feet of storage (by Smith Farm Phase 1)

Green Level Church Road at Jenks Road:

• Monitor this intersection for MUTCD traffic signal warrants and install a traffic signal if warrants are met (by The Preserve at White Oak Creek)

The following roadway improvements are recommended to be performed to accommodate projected Westford site traffic based on the analysis presented herein:

US 64 at Jenks Road:

• If not already done by others, monitor this intersection for MUTCD traffic signal warrants for the eastbound left-turn, the westbound through and right-turn, and the southbound right-turn movements and install a traffic signal if warrants are met

US 64 at West U-Turn:

• If not already done by others, monitor this intersection for MUTCD traffic signal warrants and install a traffic signal if warrants are met

Jenks Road at Green Level Church Road:

• If not already done by others, monitor this intersection for MUTCD traffic signal warrants and install a traffic signal if warrants are met

Jenks Road at Wimberly Road / Street B:

- Construct an exclusive westbound left-turn lane with a minimum of 50 feet of storage on Jenks Road
- Construct an exclusive eastbound left-turn lane with a minimum of 50 feet of storage on Jenks Road

US 64 at Street A:

 Construct an exclusive westbound right-turn lane with a minimum of 75 feet of storage on US 64

Jenks Road at Street A:

- Construct an exclusive westbound left-turn lane with a minimum of 50 feet of storage on Jenks Road
- Provide separate left- and right-turn lanes on the northbound approach of Street A

Jenks Road at Street C:

 Construct an exclusive westbound left-turn lane with a minimum of 50 feet of storage on Jenks Road

Analysis indicates that with the committed and recommended improvements in place, all of the study intersections are expected to operate at an acceptable level of service. The recommended lane geometry is shown on Figure 9.

KIMLEY-HORN AND ASSOCIATES, INC NC License #F-0102

MEMORANDUM

| To: | Mr. Russell Dalton, P.E., Town of Apex | XP. |
|----------|--|-----------------|
| 10. | Mr. Scott Wheeler, NCDOT | V Vren |
| From: | Travis Fluitt, P.E. | E9D326 |
| | Kimley-Horn and Associates, Inc. | ····· |
| Date: | June 29, 2017 | 6/2 |
| Subject: | Westford – Traffic Impact Analysis Addendum – Co | mmercial Parcel |



Kimley-Horn has prepared this addendum to the *Westford TIA* (Kimley-Horn, December 2016) to determine the impacts of site traffic associated the proposed commercial portion of the development located south of Jenks Road between US 64 and Wimberly Road in Apex, North Carolina. While the original TIA was performed for the residential portion of the development, which as currently proposed would include approximately 300 apartments, 225 townhomes, and 90 single-family homes with a projected build-out year of 2019, this addendum studied the construction of approximately 100,000 square feet (SF) of general retail space to be located generally southwest of the residential uses along Jenks Road. The commercial portion of the site will be accessed primarily by the right-in/right-out site driveway on US 64 (Street A), a shared full-movement driveway on Jenks Road with the residential uses (Street A), and an additional right-in/right-out driveway on Jenks Road west of Street A. The commercial portion of the development has a projected build-out year of 2021.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the proposed development in the 2021 study year. Figure 1 shows the proposed site plan.

Background Traffic

Based on historic daily traffic volumes in the area and to be consistent with the *Westford TIA*, an annual growth factor of 2% was applied to the existing traffic volumes up to the year 2021 to calculate background traffic volumes.

Approved development volumes were obtained from the December 2016 *Westford TIA*. It should be noted that, with the inclusion of a 2% annual growth rate and approved development traffic, the effective annual growth rate analyzed as part of this development ranged from approximately 4% to nearly 22%. Peak hour background traffic volumes, which include historic growth traffic, are shown on Figures 2 and 3.

Trip Generation

The trip generation potential for the commercial portion of the development was determined by calculating the difference between the trip generation of the combined site (residential and commercial uses) and the trip generation of the residential land uses only (obtained from the *Westford TIA*). The

net new external trips for the commercial portion of the development were assigned to the network based on the overall distribution discussed below, while the site trips for the residential portion of the development were obtained from the *Westford TIA* and assigned directly to the network. In order to accurately depict the impacts of the entire Westford development, site traffic associated with the residential portion of the project was only analyzed in the build-out traffic condition (as opposed to analyzing it as approved development traffic).

| | | ITE Traff | 100 C 100 | ble 1 eration (V | ehicles) | i de la | | . 5.5 | |
|-------------|-------------------------------------|---------------|---|---------------------|------------------|------------|-----|------------|-------------|
| Land Use | Land Use | Intens | ity | Da | ily | AM F Ho | | PM F Ho | Peak Jur |
| Code | and the second second second second | 100 100000000 | | In | Out | In | Out | In | Out |
| 210 | Single Family Detached Housing | 90 | d.u. | 472 | 472 | 18 | 55 | 60 | 36 |
| 220 | Apartments | 300 | d.u. | 971 | 971 | 30 | 121 | 119 | 64 |
| 230 | Townhomes | 225 | d.u. | 651 | 651 | 17 | 82 | 78 | 39 |
| 820 | Shopping Center | 100,000 | <mark>s.f</mark> . | 3,396 | 3,396 | 97 | 59 | 288 | 311 |
| | Subtotal | | | 5,495 | 5,495 | 162 | 317 | 545 | 450 |
| | Internal Captu | re | | 955 | <mark>955</mark> | 0 | 0 | 110 | 110 |
| | Pass-by Captu | ıre | | 830 | 830 | 0 | 0 | 88 | 78 |
| N | et New Residential Tri | ps from TIA | | 2,094 | 2,094 | 65 | 258 | 257 | 139 |
| Differe | ence in Total Net Nev | v External | Trips - | 1,616 | 1,616 | 97 | 59 | 90 | 123 |

Table 1 summarizes the estimated traffic generation potential for the site.

Table 1 shows that, separate from the site trips generated by the residential portion of the development, the commercial portion of the site has the potential to generate 1,616 new entering trips and 1,616 new exiting trips on a typical weekday, with 97 new trips entering and 59 new trips exiting in the AM peak hour and 90 new trips entering and 123 new trips exiting in the PM peak hour.

Trip Distribution and Assignment

The new generated commercial trips were assigned to the surrounding roadway network. The directional distribution and assignment, which are somewhat different than those for the residential uses, were based on land uses and existing travel patterns in the area.

- 50% to/from the east on US 64
- 15% to/from the east on Jenks Road
- 13% to/from the west on US 64
- 10% to/from the north on Green Level Church Road
- 5% to/from the north on NC 751
- 5% to/from the north on Wimberly Road
- 2% to/from the south on New Hill Road

The site traffic distribution and percent assignment for the net new site trips are shown on Figure 4.

The attached Figures 5 and 6 show the AM and PM peak hour site traffic volumes at the study intersections, respectively, as well as the total build-out peak hour traffic volumes.

Capacity Analysis

Capacity analyses were performed using Synchro Version 9.1 and SIDRA version 7 software. Synchro intersection level-of-service (LOS) and SIDRA reports are attached. The LOS for the study intersections are summarized in Table 2.

| Tabl Level-of-Servi | | |
|--|--|--|
| Condition | AM Peak Hour LOS (Delay) | PM Peak Hour LOS (Delay) |
| US 64 at Jenks R | oad (Signalized) | |
| Projected (2021) Background Traffic - Signalized, Superstreet Configuration | US 64 EB – B (20.0) US 64 WB – A (9.8) | US 64 EB – B (17.2) US 64 WB – B (14.1) |
| Projected (2021) Build Traffic - Signalized, Superstreet Configuration w/ Imps. | US 64 EB – B (16.8) US 64 WB – B (16.8) | US 64 EB – B (14.3) US 64 WB – C (25.2) |
| US 64 at U-Turn We | est of Jenks Road | |
| Projected (2021) Background Traffic - Unsignalized | WBU – D (27.0) | WBU – D (27.5) |
| Projected (2021) Build-out Traffic - Signalized | B (14.6) | B (15.5) |
| US 64 at U-Turn East of | Jenks Road (Signalized |) |
| Projected (2021) Background Traffic | B (11.2) | B (14.8) |
| Projected (2021) Build-out Traffic | B (10.3) | B (18.6) |
| US 64 at NC 751/New I | Hill Road (Signalized) | |
| Projected (2021) Background Traffic | E (57.4) | D (44.9) |
| Projected (2021) Build-out Traffic | E (61.0) | D (46.2) |

| Table 2 (Level-of-Servic | | |
|---|--|--|
| Condition | AM Peak Hour LOS (Delay) | PM Peak Hour LOS (Delay) |
| Jenks Road at Green I | Level Church Road | |
| Projected (2021) Background Traffic – Unsignalized, All-Way Stop Control | C (24.1) | F (92.9) |
| Projected (2021) Background Traffic – Roundabout | B (10.2) v/c = 0.53 | C (17.3) v/c = 0.79 |
| Projected (2021) Build-out Traffic – Roundabout^ | B (12.0) v/c = 0.58 | C (23.8) v/c = 0.89 |
| Jenks Road at Wimberly Roa | d/Street B (Unsignaliz | ed) |
| Projected (2021) Background Traffic | SB – B (12.3) EBL – A (7.7) | SB – B (14.1) EBL – A (8.1) |
| Projected (2021) Build-out Traffic w/ Improvements | NB – C (16.6) SB – C (15.8) EBL – A (7.9) WBL – A (7.6) | NB – C (20.1) SB – C (23.3) EBL – A (8.2) WBL – A (7.9) |
| US 64 at Street A | (Unsignalized) | |
| Projected (2021) Build-out Traffic. | SB – C (19.1) | SB – E (44.4) |
| Jenks Road at Right-in/Right-out | Site Driveway (Unsign | nalized) |
| Projected (2021) Build-out Traffic | NB – A (9.9) | NB – B (10.7) |
| Jenks Road at Street | A (Unsignalized) | |
| Projected (2021) Build-out Traffic | NB – B (14.5) WBL – A (7.9) | NB – C (19.5) WBL – A (8.2) |
| Jenks Road at Street | C (Unsignalized) | |
| Projected (2021) Build-out Traffic | NB – B (11.5) WBL – A (7.9) | NB – B (13.0) WBL – A (8.0) |
| Jenks Road at Street | D (Unsignalized) | |
| Projected (2021) Build-out Traffic | NB – B (10.0) | NB – B (10.0) |

^Note: Roundabout analysis performed using SIDRA version 7.

It should be noted that the intersections of US 64 at Jenks Road, Richardson Road, and the U-Turn East of Richardson Road were assumed to be signalized in both the background and build-out traffic conditions.

Recommendations

Based on the capacity analyses presented herein, the following improvements are recommended in addition to the improvements committed to be performed by other developments in the study area and by the residential portion of the Westford development:

Page 4

US 64 at Richardson Road:

• If not already completed by others, construct an additional westbound left-turn lane on US 64 with approximately 400 feet of storage to be used as an exclusive U-turn lane

US 64 at West U-Turn:

 If not already done by others, monitor this intersection for MUTCD traffic signal warrants and install a traffic signal if warrants are met

US 64 at Street A:

 Provide an additional 50 feet of storage for the exclusive westbound right-turn lane on US 64 to provide a total of 125 feet of storage and appropriate tapers

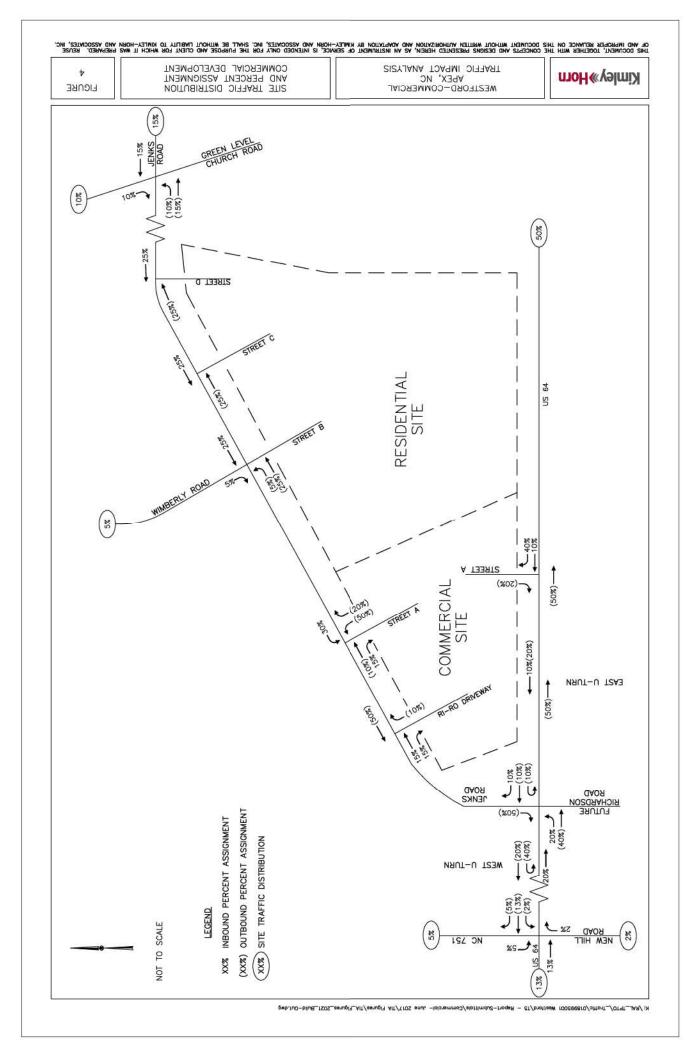
Jenks Road at Right-in/Right-out Site Driveway

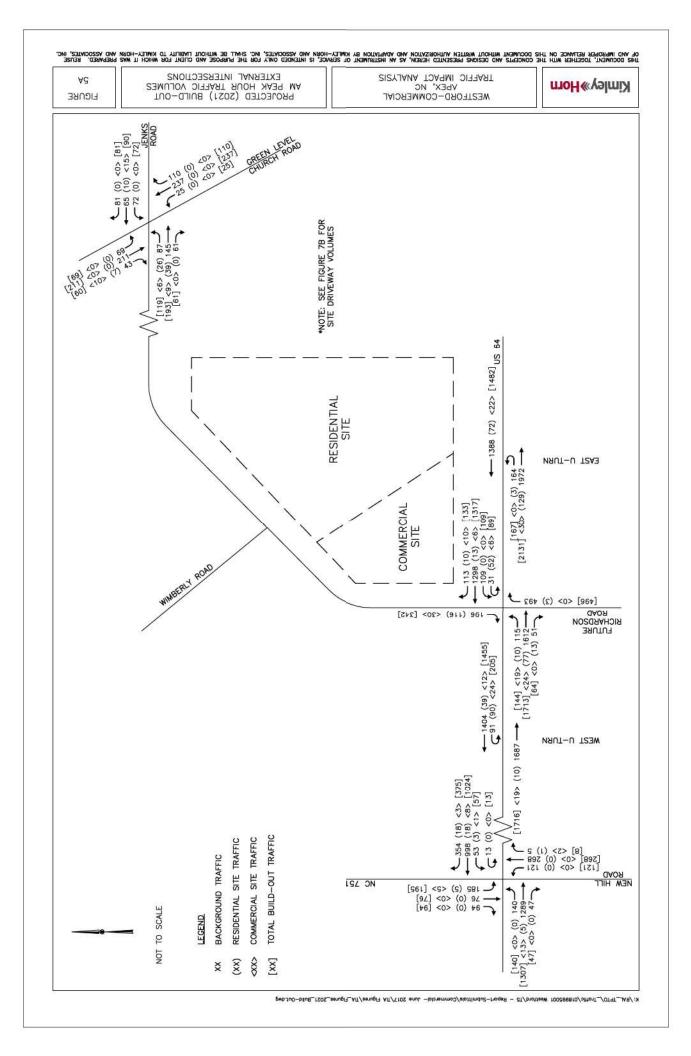
 Construct an exclusive eastbound right-turn lane on Jenks Road with 50 feet of storage and appropriate tapers

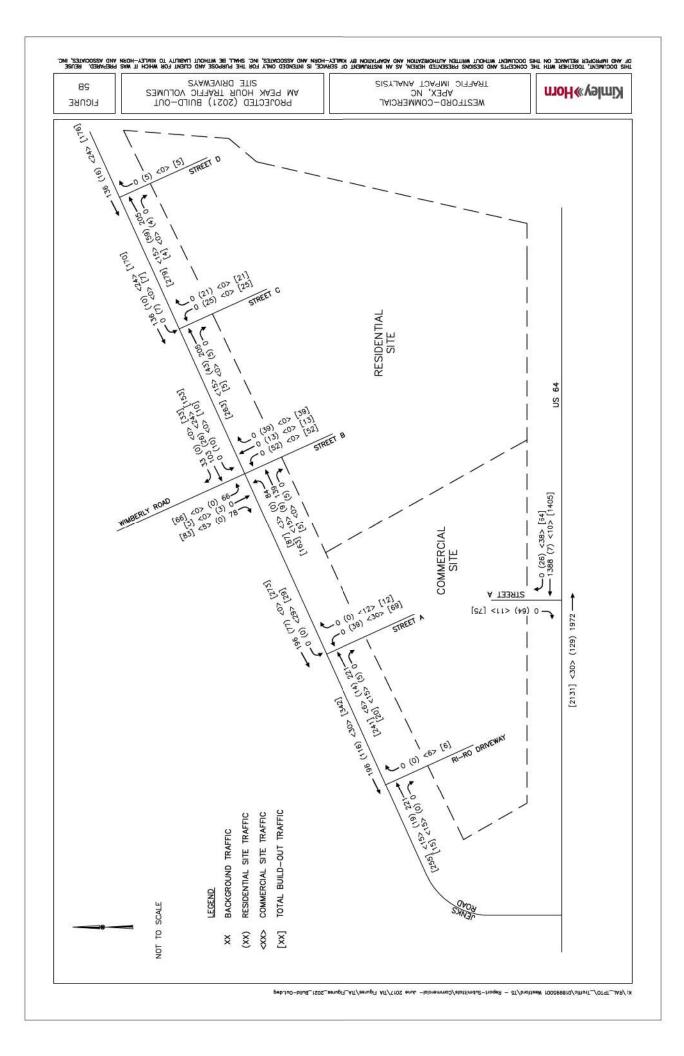
Analysis indicates that, all of the study intersections are expected to operate at an acceptable level-ofservice at full build-out of the development with the exception of the intersection of US 64 at NC 751/New Hill Road. However, that intersection, which is nearly 2 miles from the project site, is expected to operate at LOS E in the AM peak hour with or without the proposed development in place. As the intersection delay is expected to increase by less than 4 seconds with the addition of site traffic, and since site traffic associated with the development accounts for less than 4% of the total traffic in the build-out traffic condition, no roadway improvements are recommended at this intersection. The recommended laneage is shown on Figure 7.

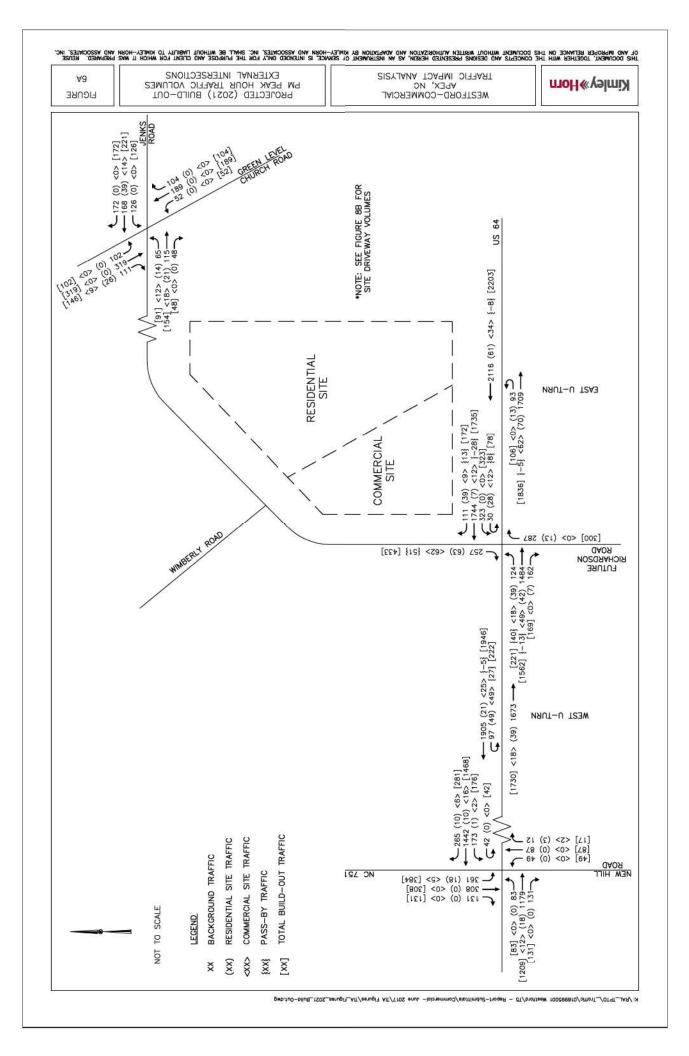
Should you have any questions or comments, please do not hesitate to contact me at (919) 653-2948 or travis.fluitt@kimley-horn.com.

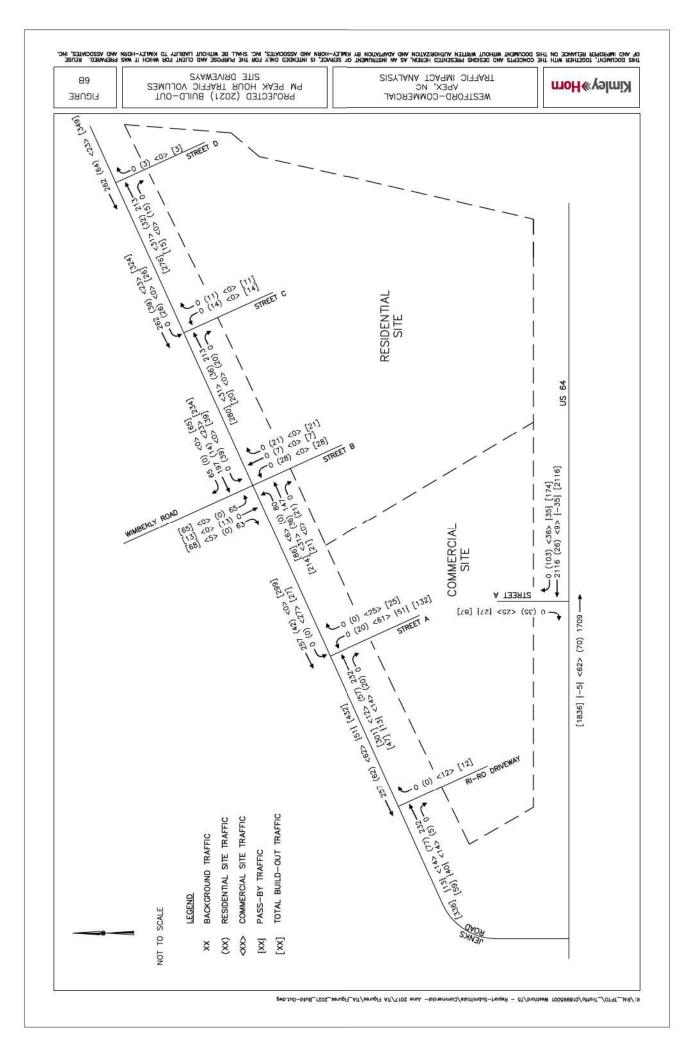
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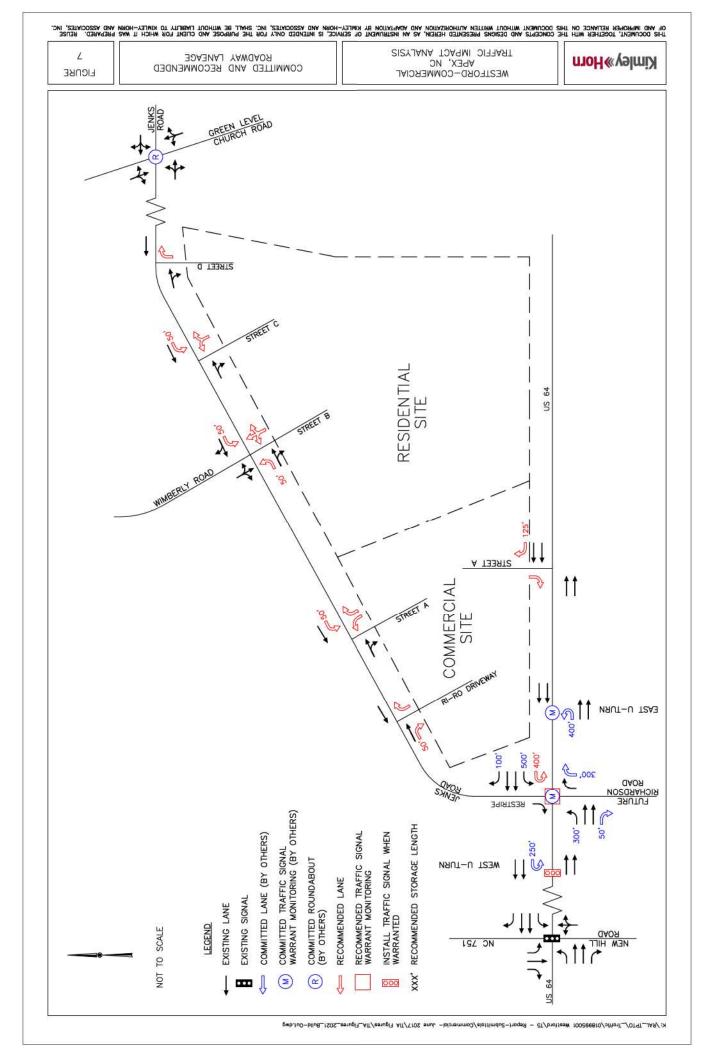














March 2, 2017

J. Travis Fluitt Kimley-Horn and Associates, Inc. 421 Fayetteville St, Suite 600 Raleigh, NC 27601

Subject: Staff summary and comments for Westford TIA, 12/7/16

Mr. Fluitt:

Please review the following summary of my comments and recommendations. You may schedule a meeting with me and your client to discuss at your convenience.

Study Area

Five points of access are proposed, four of which are located along Jenks Road and one on US 64.

Intersections included in the TIA are as follows:

- US 64 at Jenks Rd / Richardson Rd
- US 64 at U-turn west of Jenks Road
- US 64 at U-turn east of Jenks Road
- US 64 at NC 751 / New Hill Road
- Jenks Rd at Green Level Church Rd
- Jenks Road at Wimberly Road / Street B
- US 64 at Street A
- Jenks Road at Street A
- Jenks Road at Street C
- Jenks Road at Street D

Trip Generation

The development is expected to include 90 single family homes, 300 apartments, and 225 townhomes. Total traffic generation is 65 new inbound trips and 258 new outbound trips in the A.M. peak hour and 257 new inbound trips and 139 new outbound trips in the P.M. peak hour. The development is expected to add 4,188 total new daily trips to the adjacent roadways at build out. The proposed plan analyzed in the TIA does not include the commercial area so traffic from those land uses will be subject to separate review at a later date when submitted.

Background traffic

The approved developments added to the existing traffic in addition to 2% annual background growth to the build out year 2019 are as follows:

- Sweetwater (residential portion only)
- Smith Farm (residential portion only)
- Deer Creek (residential portion only)
- The Preserve at White Oak Creek
- Greenmoor
- Lake Castleberry
- Crestmont

The Sweetwater TIA included a full build out analysis of their project in 2019 with traffic from both the residential and commercial phases of Deer Creek originally anticipated to be built out in 2021 according to the Deer Creek TIA. Smith Farm included a full build out analysis by 2021. Commercial development may or may not occur on those timelines within the aforementioned projects subject to market conditions. The Westford TIA included traffic from the residential portions of those projects for a 2019 build out analysis but did not account for the effect of the commercial uses of those projects in part or as a whole. However, it did include all of the residential build out and only the improvements associated with Sweetwater's residential phase. Additional improvements are committed with full build out of the other projects that are not included in this 2019 residential build out analysis, but Westford does represent traffic being added to those committed longer term improvements.

Trip Distribution and Assignment

The development includes four points of access along Jenks Road and one point of access on US 64. The distribution is as follows:

- 50% east and 7% west on US 64
- 15% east on Jenks Road
- 10% north on Green Level Church Road
- 7% north on NC 751
- 5% north on Wimberly Road
- 5% south on Richardson Road
- 1% south on New Hill Road

Traffic Capacity Analysis and Recommendations

Level of Service (LOS) is a grade of A through F assigned to an intersection, approach, or movement to describe how well or how poorly it operates. LOS A through D is considered acceptable for peak hour operation. LOS E or F describes potentially unacceptable operation and developers may be required to mitigate their anticipated traffic impact to improve LOS based on the Apex Unified Development Ordinance (UDO).

Tables 1 through 10 describe the levels of service (LOS) for the scenarios analyzed in the TIA. "NA" is shown when the scenario does not apply. The scenarios are as follows:

• Existing 2016 - Existing year 2016 based on traffic counts

- Background 2019 Projected year 2019 with background growth and approved development traffic from others without the proposed site
- Build-out 2019 Projected year 2019 with background traffic and site build-out including recommended improvements where applicable

| | | .M. Peak Hour Lev nks Road-Richard | | | |
|--|---------------------|---------------------------------------|-------------------------------|-----------------------------|--|
| · · · · · · · · · · · · · · · · · · · | F 1 (1) 0010 | Background 20 | Background 2019 "Superstreet" | | |
| (* 14. ž.) | Existing 2016 | Stop control | Signalized | "Superstreet" Signalized | |
| <u>Overall Richardson</u> <u>Rd at EB US 64</u> | NA | NA | <u>В / В</u> | <u>c/c</u> | |
| Northbound Richardson Rd | NA | F/D | D/C | C/C | |
| Eastbound US 64 | | - | - | - | |
| -Through & Right | Free flow | Free flow | B/B | B/B | |
| -Left | B/C | F/F | C/C | C/C | |
| <u>Overall Jenks Rd at</u> WB US 64 | NA | NA | <u>A/D</u> | <u>B / C</u> | |
| Southbound Jenks Rd | F/F | D/F | D/D | D/D | |
| Westbound US 64 | 1 | - | - | - | |
| -Through & Right | Free flow | Free flow | A/A | A/B | |
| -Left | C/C | F/F | C/C | C/D | |

US 64 at Jenks Road-Richardson Road

TIA recommendations:

 The TIA recommends, if not already installed, monitoring for signalization of westbound US 64 at Jenks Road and installing a signal on that part of the Superstreet when warranted.

Apex staff recommendations:

 Apex staff concur with the recommendation for signalization of westbound US 64 at Jenks Road when warranted. The warrant study should be conducted prior to platting eighty percent (80%) of the dwelling units and proceed with the installation of a traffic signal when permitted by NCDOT. Signalization of eastbound US 64 at Richardson Road is anticipated to be done as part of Sweetwater when warranted.

US 64 at U-turn west of Jenks Road

| Table 2. A.M. / P.M. Peak Hour Unsignalized Levels of Service US 64 at U-turn west of Jenks Road | | | |
|---|-------------------------------|---------------------------------|--|
| | Background 2019 "Superstreet" | Build-out 2019 "Superstreet" | |
| <u>Overall</u> | NA | NA | |
| Eastbound US 64 Through | Free flow | Free flow | |
| Westbound US 64 U- turn | D/D | E/E | |

TIA recommendations:

 The TIA recommends, if not already installed, monitoring for signalization of the US 64 U-turn west of Jenks Road and installing a signal on that part of the Superstreet when warranted.

Apex staff recommendations:

 Apex staff concur with the recommendation for signalization of US 64 U-turn west of Jenks Road as part of the Westford development plan when warranted if not already installed. Until then, the planned 250-foot U-turn storage is adequate for unsignalized residential build-out conditions. The warrant study should be conducted prior to platting eighty percent (80%) of the dwelling units and proceed with the installation of a traffic signal when permitted by NCDOT. Sweetwater is committed to providing a traffic signal as part of the commercial phase if not warranted and installed prior to that time.

US 64 at U-turn east of Jenks Road

| Т | and a first state of a second | Peak Hour Levels o Irn east of Jenks Ro | |
|----------------------------|-------------------------------|--|--------------|
| Ì | Background 20 | ground 2019 "Superstreet" Build-out 2019 | |
| | Stop control | Signalized | Signalized |
| <u>Overall</u> | NA | <u>B/B</u> | <u>B / B</u> |
| Westbound US 64 Through | Free flow | A/B | A/B |
| Eastbound US 64 U- turn | D/E | C/D | D/D |

TIA recommendations:

 The TIA does not recommend any additional improvements other than the installation of a traffic signal for background conditions if warranted as part of the Sweetwater project.

Apex staff recommendations:

 Apex staff concur with the recommendation for signalization of US 64 U-turn east of Jenks Road as part of the Sweetwater development plan pending justification through a warrant study as already required in the zoning conditions. Traffic from the Westford residential phase does not have a significant impact on unsignalized or signalized conditions at the U-turn. Sweetwater is committed to providing dual 250-foot U-turn lanes and a traffic signal as part of the commercial phase.

US 64 at NC 751-New Hill Road

| Table 4. A.M. / P.M. Peak Hour Signalized Levels of Service US 64 at NC 751-New Hill Road | | | | |
|--|---------------|-----------------|----------------|--|
| · · · · · · · · · · · · · · · · · · · | Existing 2016 | Background 2019 | Build-out 2019 | |
| <u>Overall</u> | <u>D/C</u> | <u>D/D</u> | <u>D/D</u> | |
| Eastbound US 64 | D/C | D/D | D/D | |
| Westbound US 64 | C/C | C/D | C/D | |
| Northbound New Hill Road | F/E | F/F | F/F | |
| Southbound NC 751 | C/C | C/D | C/D | |

TIA recommendations:

• The TIA recommends no additional turn lanes or changes to the signal phasing for the residential build-out represented by this analysis.

Apex staff recommendations:

 Apex staff concur with no additional improvements for US 64 at NC 751-New Hill Road as part of the residential phase. There will be failing conditions for the New Hill Road approach but overall LOS D with or without the Westford project. The Westford residential build-out does not represent enough traffic increase to would justify additional improvements as part of the development plan. Also, the Deer Creek zoning conditions already include commitments for improvements at the intersection to mitigate traffic impacts as part of the future site plan.

Jenks Road at Green Level Church Road

| | | Background 2019 | Build-out 2019 | | |
|---------------------------------|---------------|--------------------|----------------|------------|--|
| | Existing 2016 | | Stop control | Signalized | |
| <u>Overall</u> | <u>B / B</u> | <u>C/F</u> | <u>D/F</u> | B/C | |
| Eastbound Jenks Rd | A/B | C/D | E/D | B/B | |
| Westbound Jenks Rd | B/B | C/F | C/F | B/C | |
| Northbound Green Level Ch Rd | B/B | D/E | D/E | B/B | |
| Southbound Green Level Ch Rd | B/C | C/F | D/F | B/C | |

TIA recommendations:

 The TIA recommends, if not already installed, monitoring for signalization of the intersection of Jenks Road at Green Level Church Road and installing a signal when warranted.

Apex staff recommendations:

 Apex Staff recommend consideration of a roundabout for Jenks Road at Green Level Church Road. The Westford development plan should include analysis of a one-lane roundabout for the build-out condition and pursue design of a one-lane roundabout set up for future expansion to a two-lane roundabout when permitted by NCDOT, provided there is also support from the Town of Apex for what is beyond the anticipated cost of a traffic signal. If the Town is unable to commit funds for the roundabout beyond the cost of a traffic signal, then the developer should conduct a signal warrant study prior to platting fifty percent (50%) of the dwelling units and proceed with the installation of a traffic signal when permitted by NCDOT.

Jenks Road at Wimberly Road-Street B

| Table 6. A.M. / P.M. Peak Hour Unsignalized Levels of Service Jenks Road at Wimberly Road-Street B | | | | |
|---|---------------|-----------------|----------------|--|
| | Existing 2016 | Background 2019 | Build-out 2019 | |
| Overall | NA | NA | NA | |
| Southbound Wimberly Road | A/B | B/B | B/C | |
| Northbound Street B | NA | NA | C/C | |
| Eastbound Jenks Rd left turn movement | A/A | A/A | A/A | |
| Westbound Jenks Rd left turn movement | NA | NA | A/A | |

TIA recommendations:

 The TIA recommends exclusive eastbound and westbound left turn lanes with 50 feet of storage.

Apex staff recommendations:

• Apex staff concur with the proposed left turn lanes on Jenks Road for Wimberly Road and Street B. Minimum length should include 100 feet of taper and 50 feet of full width deceleration lane in addition to proposed storage.

US 64 at Street A

| | Unsignalized Levels of Service (right-in/right-out) | |
|--------------------------------------|--|--|
| | Build-out 2019 | |
| <u>Overall</u> | NA | |
| Southbound Street A (right-out only) | C/D | |

TIA recommendations:

 The TIA recommends an exclusive westbound right turn lane on US 64 at Street A with a minimum of 75 feet of storage.

Apex staff recommendations:

 Apex staff concur with the proposed right turn deceleration lane on US 64 at Street A. Minimum length should include 200 feet of taper and 50 feet of full width deceleration lane in addition to proposed storage.

| | Unsignalized Levels of Service at Street A |
|--|---|
| | Build-out 2019 |
| <u>Overall</u> | NA |
| Northbound Street A | B/B |
| Westbound Jenks Rd left turn movement | A/A |

Jenks Road at Street A

TIA recommendations:

• The TIA recommends an exclusive westbound left turn lane with 50 feet of storage and exclusive left and right turn lanes exiting Street A.

Apex staff recommendations:

 Apex staff concur with the proposed left turn lane on Jenks Road at Street A. Minimum length should include 100 feet of taper and 50 feet of full width deceleration lane in addition to proposed storage.

Jenks Road at Street C

| | Unsignalized Levels of Service at Street C |
|--|---|
| | Build-out 2019 |
| Overall | NA |
| Northbound Street C | B/B |
| Westbound Jenks Rd left turn movement | A/A |

TIA recommendations:

• The TIA recommends an exclusive westbound left turn lane with 50 feet of storage.

Apex staff recommendations:

 Apex staff concur with the proposed left turn lane on Jenks Road at Street C. Minimum length should include 100 feet of taper and 50 feet of full width deceleration lane in addition to proposed storage.

Jenks Road at Street D

| Table 10. A.M. / P.M. Peak Hour Unsignalized Levels of Service Jenks Road at Street D (right-in/right-out) | |
|---|----------------|
| | Build-out 2019 |
| Overall | NA |
| Northbound Street D (right-out only) | A/A |

TIA recommendations:

The TIA recommends no additional improvements.

Apex staff recommendations:

 Apex staff concur with right-in/right-out operation and no additional turn lanes to serve Street D. The left turn restriction should be served by a four-foot wide monolithic concrete median according to NCDOT standards along the center of Jenks Road at Street D for a minimum distance of 100 feet.

Apex staff encourage a meeting with NCDOT to discuss recommendations prior to Town Council consideration.

Sincerely,

Russell H. Dalton

Russell H. Dalton, PE Senior Engineer 919-249-3358

Council-Smith Tracts Apex, NC

PREPARED FOR

Baker Residential c/o Will Yadusky 8059 Brandyapple Drive Raleigh, NC 27615

PREPARED BY



VHB Engineering NC, PC (C-3705) 4000 WestChase Boulevard, Suite 530 Raleigh, NC 27607 919.829.0328

September 11, 2015

TRAFFIC IMPACT ANALYSIS

Council-Smith Tracts Apex, NC

PREPARED FOR

Baker Residential c/o Will Yadusky 8059 Brandyapple Drive Raleigh, NC 27615

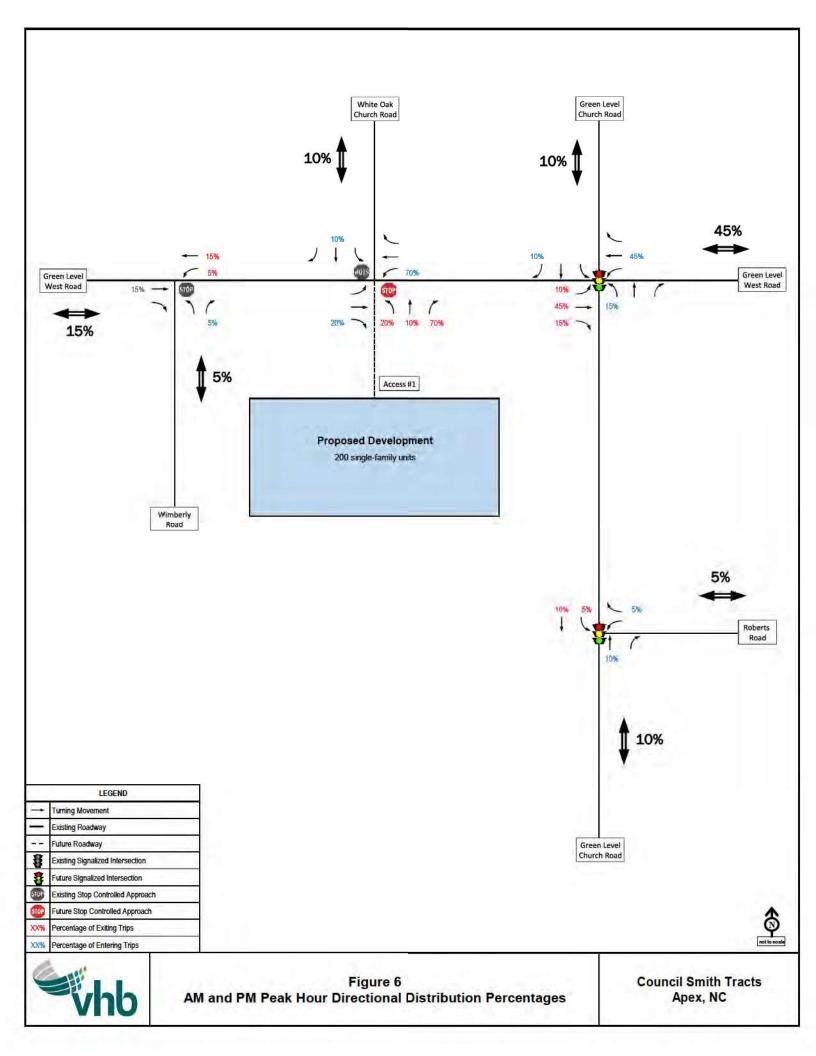
PREPARED BY

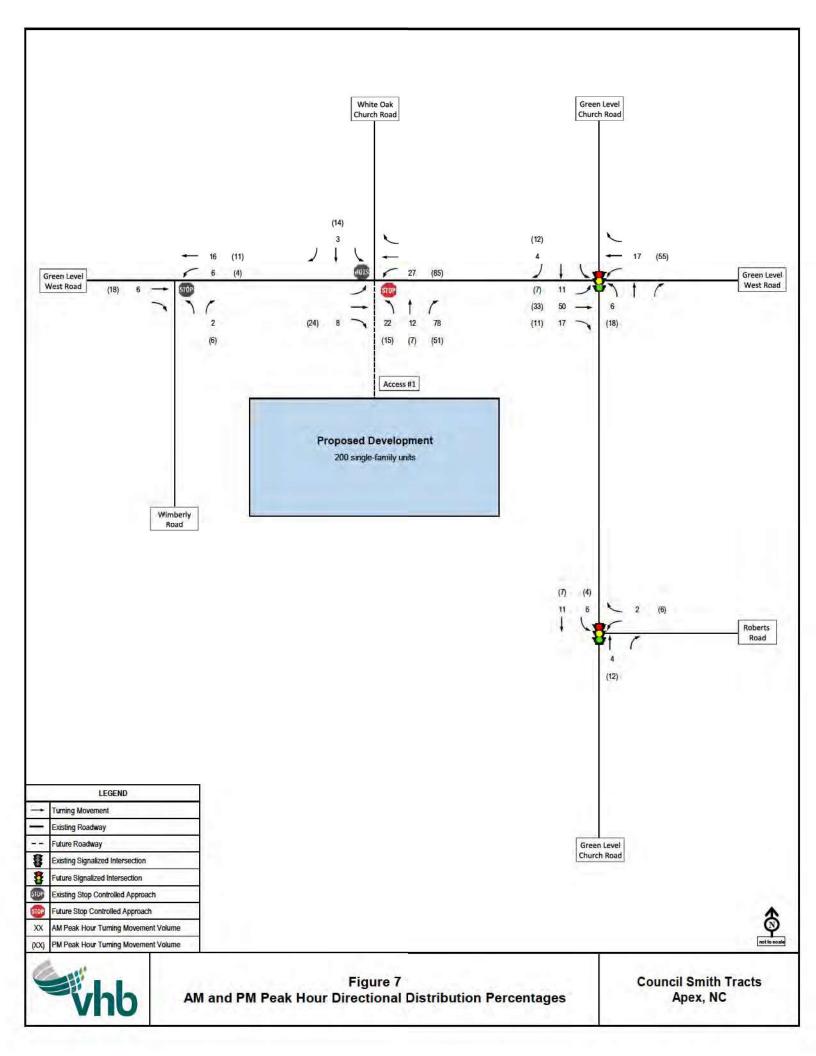


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September 11, 2015









5

Findings and Conclusions

As indicated in the traffic operations analyses, the proposed development is projected to have minimal impact on the traffic operations of the surrounding roadway network and intersections. Therefore, no offsite improvements are recommended; however the following driveway configuration should be considered.

Green Level West Road and White Oak Church Road/Access #1

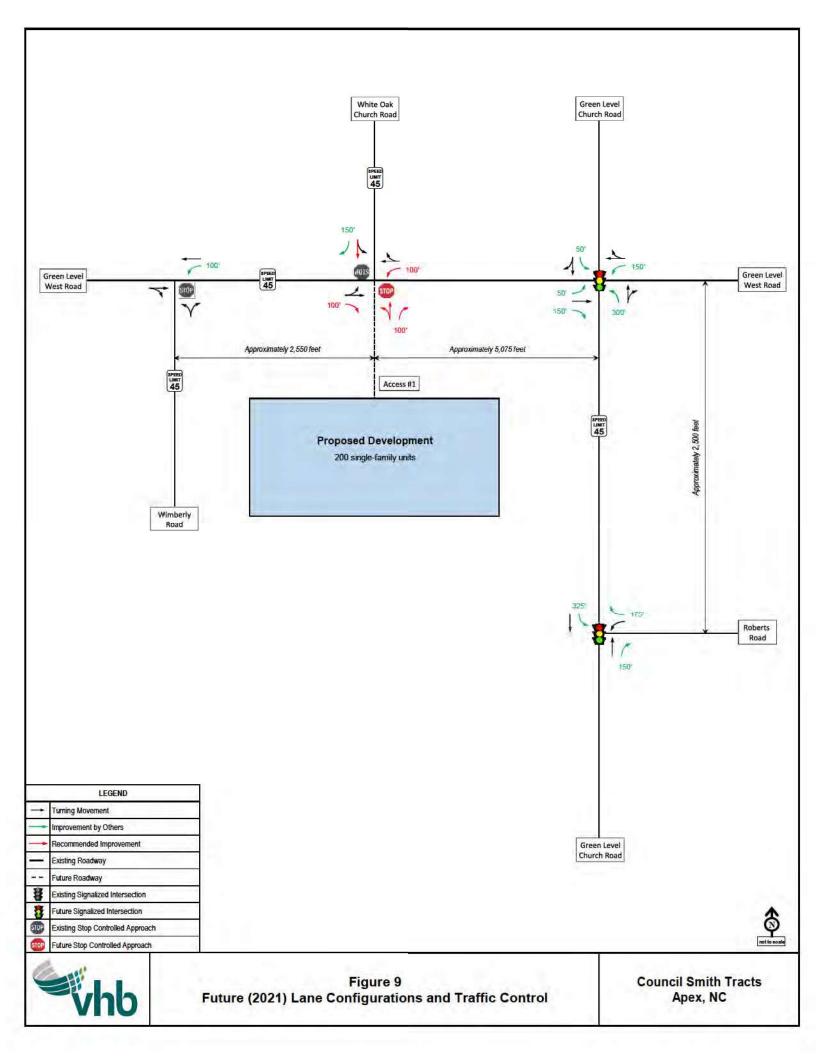
The traffic analysis indicates that the southbound stop-controlled approach is projected to operate at LOS F in the AM peak hour. The development is projected to add only one (1) southbound trip in the AM peak hour. The projected delays at this location are primarily due to the site trips associated with the approved E-37 Elementary School being constructed along White Oak Church Road and it is likely that the poor level of service in the AM peak hour will only last for a short duration of time within the peak hour. A southbound right-turn lane along White Oak Church Road was committed to as part of the E-37 TIA and is expected to be constructed at this location. With the construction of the proposed development, the following driveway configuration should be considered at this location:

- Construct the northbound Access #1 approach to provide for one ingress lane and two egress lanes – an exclusive right-turn lane that provides at least 100 feet of full storage and an appropriate taper and a shared thru/left-turn lane.
- Construct an exclusive westbound left-turn lane along Green Level West Road that provides at least 100 feet of full storage and an appropriate taper.
- Construct an exclusive eastbound right-turn lane along Green Level West Road that provides at least 100 feet of full storage and an appropriate taper.

A peak hour signal warrant analysis indicated that this intersection is projected to meet AM peak hour signal warrants in 2021 due to the projected trips from the E-37 Elementary School, however the PM peak hour signal warrant is not projected to be met in 2021.

All other study area intersections are projected to operate acceptably during the future year (2021) and therefore, no further improvements are recommended.

A summary of LOS results across scenarios is shown in Table 7, and the resulting future lane configurations and traffic control for 2021 are shown in Figure 9.





Jown of Apex

P. O. BOX 250 APEX, NORTH CAROLINA 27502

February 11, 2014

R. Steven Epley, PE sepley@vhb.com VHB Engineering

Subject: Staff comments for Lake Castleberry Development TIA dated 1/10/14

Mr. Epley:

Please review the following comments and recommendations. You may schedule a meeting with me and your client to discuss at your convenience.

Study Area

- The subdivision is located on the north side of Castleberry Road west of the intersection with Wimberly Road and extends northward to connect with Green Level West Road.
- The study includes the following intersections:
 - o Wimberly Road at Green Level West Road
 - o Green Level West Road at Green Level Church Road
 - Wimberly Road at Castleberry Road
 - o Wimberly Road at Jenks Road
 - Site Access Driveways to Castleberry Road (2), Wimberly Road, and Green Level West Road

Trip Generation and Distribution

The TIA assumes 172 single family homes and is anticipated to generate 33 inbound trips and 97 outbound trips in the a.m. peak hour, 108 inbound trips and 63 outbound trips in the p.m. peak hour, and 1,730 trips on a typical weekday. The distribution is as follows:

- 40% east on Green Level West Road
- 30% west on Green Level West Road
- 10% east on US 64
- 10% west on US 64
- 5% north on Green Level Church Road
- 5% south on Green Level Church Road

Site Access

- Two points of access are proposed along Castleberry Road west of Wimberly Road.
- One point of access is proposed along Wimberly Road north of Castleberry Road.
- One point of access is proposed along Green Level West Road west of Wimberly Road.
- All four points of access are proposed as full movement.

Traffic Capacity Analysis

- With the installation of a traffic signal and construction of a northbound left turn lane as planned by others, the intersection of Green Level West Road at Green Level Church Road is anticipated to operate at overall LOS D for build-out in 2018. The westbound approach of Green Level West Road is anticipated to operate at LOS E in the a.m. peak hour and LOS F in the p.m. peak hour for build-out in 2018.
- With the construction of left turn lanes on Jenks Road as planned by others, the southbound and proposed (Westford Driveway) northbound approach of Wimberly Road at Jenks Road are anticipated to operate with long delays for build-out in 2018.
- All proposed points of access for the site, Castleberry Road at Wimberly Road, and Wimberly Road at Green Level West Road are anticipated to operate with short delays.

Recommendations

- 1. The TIA recommends a 100-foot westbound left turn lane on Green Level West Road at Wimberly Road. *Apex staff concurs with the recommendation.*
- The TIA recommends no additional improvements for Green Level West Road at Green Level Church Road. The H7 High School development plans include installation of a traffic signal and the Beckwith Property development plans include a 125-foot northbound left turn lane. *Apex staff concurs with no additional recommendations.*
- 3. The TIA recommends no additional lanes for Wimberly Road at Castleberry Road. *Apex staff concurs.*
- 4. The TIA recommends no additional improvements for Wimberly Road at Jenks Road. The Westford development plans include construction of 100-foot left turns lanes each direction on Jenks Road. *Apex staff concurs with no additional recommendations.*
- The TIA recommends a 100-foot westbound left turn lane on Green Level West Road at the proposed Site Access Driveway. *Apex staff concurs with the recommendation.*

6. The TIA recommends no exclusive turning lanes for either of the two proposed Site Access Driveways on Castleberry Road and no exclusive turning lanes for the Site Access Driveway on Wimberly Road. Apex staff concurs with the recommendations.

NCDOT maintains Green Level Church Road, Green Level West Road, Jenks Road, Wimberly Road, and Castleberry Road. I welcome the opportunity to discuss any recommendations pertaining to state-maintained roads and encourage discussions with NCDOT as early as possible prior to review by Town Council.

Sincerely,

Russell H. Dalton

Russell H. Dalton, PE Transportation Engineer 919-249-3358



Lake Castleberry Development

Apex, NC

Prepared for Withers & Ravenel c/o Craig Duerr, PE, LEED AP 115 MacKenan Drive Cary, NC 28511

Prepared by VHB Engineering NC, P.C. (C-3705) 4000 Westchase Boulevard, Suite 530 Raleigh, NC 27607 919.829.0328 • Fax 919.829.0329 www.vhb.com

January 10, 2014



Transportation | Land Development | Environmental

Lake Castleberry Development

Apex, NC

Prepared for Withers & Ravenel c/o Craig Duerr, PE, LEED AP 115 MacKenan Drive Cary, NC 28511

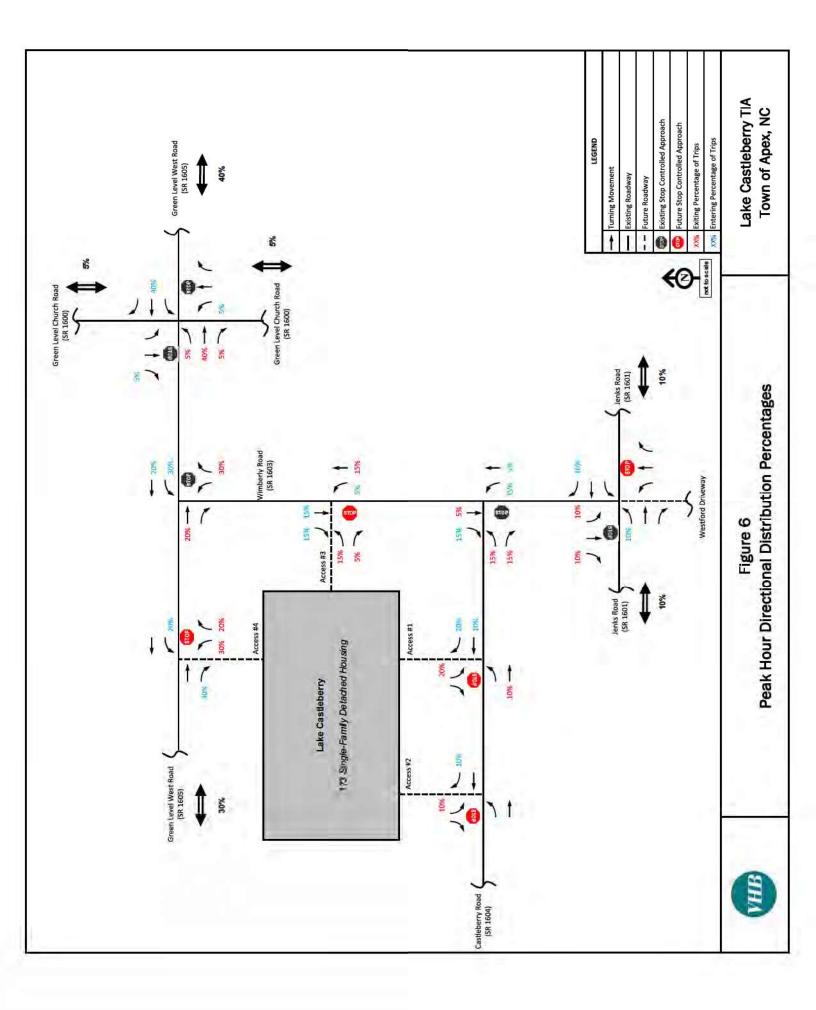
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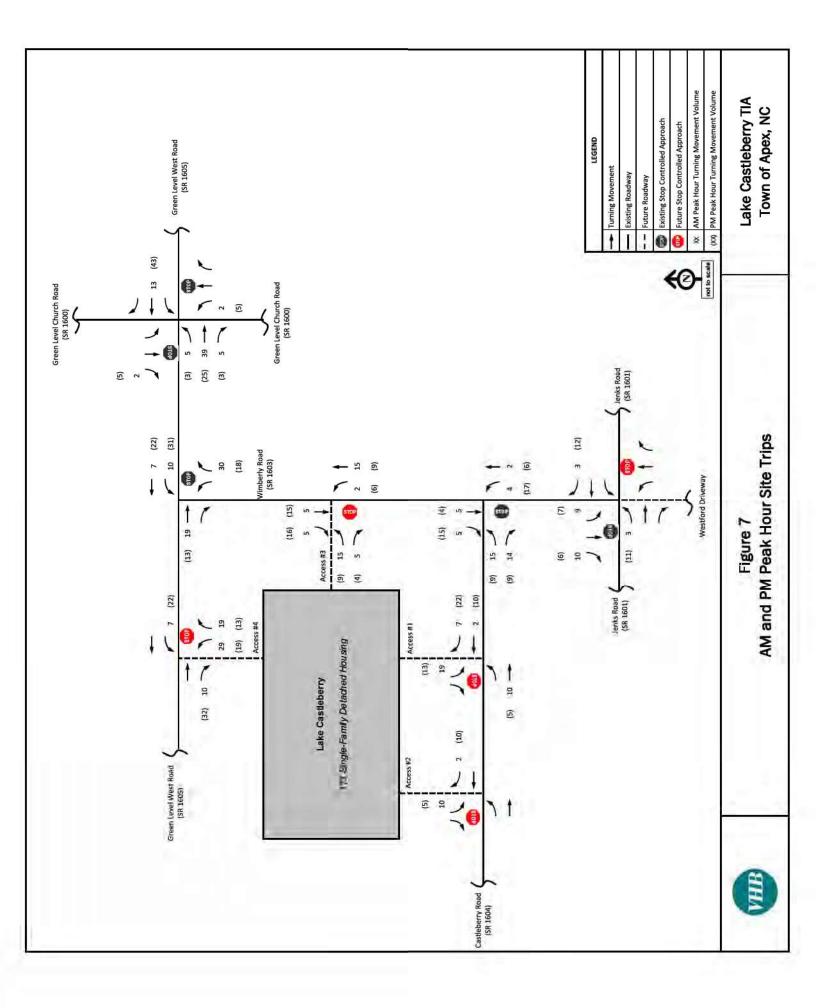


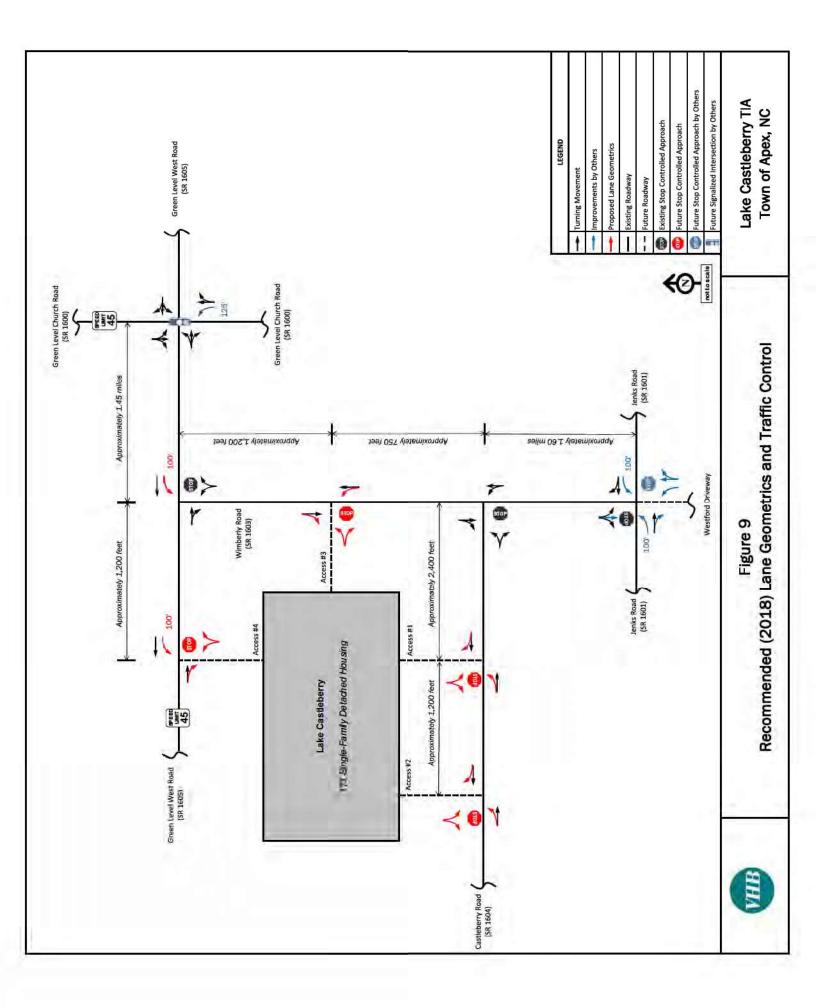
January 10, 2014



Transportation | Land Development | Environmental







5

Findings and Conclusions

As indicated in the traffic operations analyses, the proposed development is projected to have minimal impact on the traffic operations of the surrounding roadway network and intersections. The following roadway improvements are recommended.

Phase I - Castleberry Road and Site Access #1 (unsignalized)

The traffic analysis indicates that this intersection is projected to operate acceptably during the AM and PM peak hours. Therefore, the following intersection configuration is recommended at this location:

Construct Site Access #1 to provide one egress lane and one ingress lane.

Phase II - Castleberry Road and Site Access #2 (unsignalized)

The traffic analysis indicates that this intersection is projected to operate acceptably during the AM and PM peak hours. Therefore, the following intersection configuration is recommended at this location:

Construct Site Access #2 to provide one egress lane and one ingress lane.

Phase III - Wimberly Road and Site Access #3 (unsignalized)

The traffic analysis indicates that this intersection is projected to operate acceptably during the AM and PM peak hours. The following intersection configuration is recommended at this location to accommodate the proposed development's traffic volumes and reduce delay on Wimberly Road:

Construct Site Access #3 to provide one egress lane and one ingress lane.

Phase IV - Green Level West Road and Site Access #4 (unsignalized)

The traffic analysis indicates that this intersection is projected to operate acceptably during the AM and PM peak hours. The following intersection configuration is recommended at this location to accommodate the proposed development's traffic volumes and reduce delay along Green Level West Road:

- Construct a westbound left-turn lane along Green Level West Road that provides at least 100 feet of full storage and an appropriate taper.
- Construct Site Access #4 to provide one egress lane and one ingress lane.

Phase V - Green Level West Road and Wimberly Road (unsignalized)

The traffic analysis indicates that this intersection is projected to operate acceptably during the AM and PM peak hours. However, due to the anticipated westbound left-turn volume on Green Level West Road once Phase IV is completed, the following is recommended at this location:

• Construct a westbound left-turn lane along Green Level West Road that provides at least 100 feet of full storage and an appropriate taper.

The rest of the study intersections are projected to operate at acceptable levels of service under Build (2018) conditions. Therefore, no further improvements are recommended.

A summary of LOS results across scenarios is shown in Table 7, and the resulting future lane configurations and traffic control for 2018 are shown in Figure 9.



Jown of Apex

P. O. BOX 250 APEX, NORTH CAROLINA 27502

September 25, 2015

Richard T. Pate, PE <u>TPate@VHB.com</u> VHB Engineering NC, PC 4000 WestChase Boulevard, Suite 530 Raleigh, NC 27607

Subject: Staff summary and comments for Council-Smith Tracts (Smith Roberts PUD) TIA dated 9/11/15

Mr. Pate:

Please review the following comments and recommendations. You may schedule a meeting with me and your client to discuss at your convenience.

Study Area

The primary routes are Green Level West Road, Green Level Church Road, Roberts Road, Wimberly Road, and White Oak Church Road. One point of access is proposed on Green Level West Road directly across from White Oak Church Road. Additionally, cross access is proposed eastward through the adjacent approved "Beckwith Property" (Toll Brothers) project with an already approved access to Green Level West Road.

Trip Generation

The proposed subdivision is expected to include 200 single-family homes. It is expected to generate 38 new inbound trips and 112 new outbound trips in the A.M. peak hour. It is expected to generate 123 new inbound trips and 73 new outbound trips in the P.M. peak hour. 1,987 daily trips are expected to access the development in a 24-hour period.

Background Growth and Approved Developments

Nineteen (19) approved developments were assumed as background traffic for a 2021 build-out.

Trip Distribution and Assignment

The development includes one new full movement point of access on Green Level West Road and a connection to the Toll Brothers "Beckwith Property." The distribution is as follows.

- 45% east and 15% west on Green Level West Road
- 10% north and 10% south on Green Level Church Road
- 10% north on White Oak Church Road
- 5% east on Roberts Road
- 5% south on Wimberly Road

Traffic Capacity Analysis

Level of Service (LOS) is a grade of A through F assigned to an intersection, approach, or movement to describe how well or how poorly it operates. LOS D is the typical threshold considered acceptable for peak hour operation. LOS E or F describes potentially unacceptable operation and developers may be required to mitigate their anticipated traffic impact to improve LOS based on the Unified Development Ordinance (UDO).

The following table lists the levels of service reported for the signalized intersections and also for the signalized movements that experience worse than LOS D for one or more conditions. Movements experiencing LOS D or better for all conditions are not reported in this summary. Improvements planned by Wake County Public School System as part of school development on Roberts Road (high school) and on White Oak Church Road (elementary school) are assumed in the no-build and build analyses as well as site traffic from those schools.

| 2015 Existing (2021 | able 1. I No-Build) [2021 Bui _evel of Service* | ld] |
|---|---|----------------|
| | Level of Ser | vice (A – F) |
| Signalized intersection/ movement** | A.M. Peak Hour | P.M. Peak Hour |
| Green Level West Road at Green Level Church Road | (D) [D] | (C) [C] |
| Green Level West Rd westbound left turn | (E) [F] | (D) [E] |
| Green Level Church Rd southbound through-right | (D) [E] | (C) [D] |
| Green Level Church Road at Roberts Road | (D) [D] | (B) [B] |
| Green Level Church Rd southbound left turn | (E) [E] | (A) [A] |
| Roberts Rd westbound left turn | (E) [E] | (C) [C] |

*Signalization and turn lanes planned by Wake County Public School System. **Movements with LOS D or better for all conditions not shown.

As shown in Table 1, LOS E conditions are experienced for the westbound left turn on Green Level West Road at Green Level Church Road without site traffic and worsen to LOS F with site traffic in the a.m. peak hour. In the p.m. peak hour LOS D for that same movement falls to LOS E with site traffic. No site traffic is added to that movement and no additional improvements are recommended at this time. Overall intersection LOS is acceptable.

Also shown in Table 1, LOS E conditions are experienced for the southbound left turn on Green Level Church Road at Roberts Road with or without site traffic in the a.m. peak hour. The site adds only six (6) vehicles during that hour. LOS E conditions in the a.m. peak hour are also experienced for the westbound left turn on Roberts Road at Green Level Church Road with or without site traffic. No site traffic is added to that movement and no additional improvements are recommended at this time. Overall intersection LOS is acceptable.

There is only one stop controlled movement in the TIA that falls below LOS D as shown in Table 2. All others are LOS D or better.

| 2015 Existing (202 | able 2. 1 No-Build) [2021 Bui nents Worse than LO | |
|---|---|----------------|
| | Level of Ser | vice (A – F) |
| Unsignalized movement* | A.M. Peak Hour | P.M. Peak Hour |
| White Oak Church Road southbound single lane (left turn) [through-left] at Green Level West Road | A (F) [F] | A (B) [C] |

The southbound left turn on White Oak Church Road at Green Level West Road will operate at LOS F with or without site traffic in the a.m. peak hour due to the planned Elementary School adding a relatively large volume of traffic in the nobuild condition. The school is constructing a 150-foot southbound right turn lane to mitigate the impact for the southbound approach and the proposed development will restripe the left turn as a through-left, adding the fourth leg to the south, with only three (3) vehicles traveling through in the a.m. peak hour. The northbound site access is proposed with a 100-foot right turn lane and a through-left lane. A traffic signal is not anticipated based on the projected traffic volumes but may eventually be warranted in later years depending on additional growth and traffic patterns.

Recommendations

1. The TIA recommends no additional changes to the signalized intersection of Green Level West Road at Green Level Church Road. Wake County Public School System (WCPSS) will be adding turn lanes and a traffic signal at this location. Site traffic adds more than 10% to the eastbound left turn movement and storage planned for that lane does not accommodate the build-out queue. The proposed project should extend the eastbound left turn lane to provide at least 75 feet of full width storage based on the 95th percentile queue to mitigate site traffic impacts. Wake County Public Schools is planning 50 feet of storage. The intersection operates at LOS D or better for build-out conditions.

- 2. The TIA recommends no additional changes to the signalized intersection of Green Level Church Road at Roberts Road. WCPSS will be adding turn lanes and a traffic signal at this location. Apex staff concur with no additional changes at this location based on site traffic impacts. The intersection operates at LOS D or better for build-out conditions.
- 3. The TIA recommends a 100-foot eastbound right turn lane, 100foot westbound left turn lane, and 100-foot northbound right turn lane at the intersection of Green Level West Road at White Oak Church Road/Access #1. Apex staff concur with the proposed improvements to accommodate the addition of a fourth leg accessing the site. Long delays will be experienced for the southbound left turn for morning carpool traffic coming from the planned school with or without site traffic. The proposed turn lanes will mitigate the impact of site traffic at this intersection.
- 4. The TIA recommends no additional changes to the stop-controlled intersection of Green Level West Road at Wimberly Road. The Lake Castleberry project will be adding the 100-foot westbound left turn lane assumed in the TIA. Apex staff concur with no additional changes to the intersection. The stopped approach of Wimberly Road operates at LOS B with or without site traffic.

Please coordinate with the NCDOT District Engineer's Office concerning recommended improvements and site access. All proposed changes to state-maintained roadways are subject to NCDOT review and approval. Town staff will be available for meetings with NCDOT staff to discuss as needed.

Sincerely,

Russell H. Dalton

Russell H. Dalton, PE Transportation Engineer 919-249-3358





March 13, 2019

Tommy Pate, P.E. Mott MacDonald 7621 Purfoy Road, Suite 115 Fuquay-Varina, NC 27526

Subject: Staff summary and comments for the Wolfe Properties PUD TIA, 11/22/2019

Mr. Pate:

Please review the following summary of my comments and recommendations. You may schedule a meeting with me and your client to discuss at your convenience.

Study Area

The TIA studied access to the proposed development at the following two intersections:

- Wimberly Road and Site Access 1
- Wimberly Road and Site Access 2

The intersections of Jenks Road and Wimberly Road as well as the intersection of Green Level West Road and Wimberly Road were also studied in the TIA.

Trip Generation

The proposed development is expected to consist of 70 single-family homes and 50 townhome units. It's projected to generate approximately 19 new trips entering and 60 new trips exiting the site during the weekday A.M. peak hour and 65 new trips entering and 39 new trips exiting the site during the weekday P.M. peak hour. The proposed development is projected to generate a total of 1,086 new trips on the adjacent roadway network.

Background traffic

Background traffic consists of 2% annual background traffic growth compounded to build out year 2025, and the following approved developments:

- Lake Castleberry (40% built, 60% development traffic)
- The Preserve at White Oak Creek (75% built, 25% development traffic)
- Westford Residential (50% built, 50% development traffic)
- Westford Commercial
- Weddington

Trip Distribution and Assignment

The trip distribution to and from the development was assumed to be as follows:

- 20% to/from the east via Jenks Road
- 65% to/from the west via Jenks Road
- 10% to/from the east via Green Level West Road
- 5% to/from the west via Green Level West Road

Traffic Capacity Analysis and Recommendations

Level of Service (LOS) is a grade of A through F assigned to an intersection, approach, or movement to describe how well or how poorly it operates. LOS A through D is considered acceptable for peak hour operation. LOS E or F describes potentially unacceptable operation and developers may be required to mitigate their anticipated traffic impact to improve LOS based on the Apex Unified Development Ordinance (UDO).

Tables 1 through 4 describe the levels of service (LOS) for the scenarios analyzed in the TIA. "*NA*" is shown when the scenario does not apply. The scenarios are as follows:

- Existing 2019 Existing year 2019 traffic.
- **No Build 2025** Projected year (2025) with background growth, approved development traffic from others, and committed transportation improvements by others where applicable.
- **Build 2025** Projected year (2025) with background traffic, background improvements, and site build-out including recommended improvements where applicable.

| • | nalized Peak Hour Levels of Service ad and Site Access 1 |
|----------------------------|---|
| | Build 2025 |
| <u>Overall</u> | <u>NA</u> |
| Westbound (Site Drive 1) | A / A ² |
| Northbound (Wimberly Road) | NA |
| Southbound (Wimberly Road) | A/A ¹ |

Wimberly Road and Site Access 1 (unsignalized)

1. Level of service for left turn movement on free-flowing approach.

2. Level of service for stop-controlled minor street approach.

TIA recommendations:

• The TIA recommends construction of a full movement westbound approach with a single lane of ingress and a single lane of egress. Based on traffic volumes, a southbound left turn lane is not warranted per NCDOT's *Warrants for Left and Right Turn Lanes* or recommended on Wimberly Road.

Apex staff recommendations:

• Apex staff concur with the recommendation. Based on the analysis, all approaches are projected to operate at LOS A in the Build condition.

| Table 2. A.M. / P.M. Unsignalized Pea Wimberly Road and Site | |
|---|--------------------|
| | Build 2025 |
| <u>Overall</u> | <u>NA</u> |
| Westbound (Site Access 2) | A / B ² |
| Northbound (Wimberly Road) | NA |
| Southbound (Wimberly Road) | A/A ¹ |

Wimberly Road and Site Access 2 (unsignalized)

- 1. Level of service for left turn movement on free-flowing approach.
- 2. Level of service for stop-controlled minor street approach.

TIA recommendations:

• The TIA recommends construction of a full movement westbound approach with a single lane of ingress and a single lane of egress. Based on traffic volumes, a southbound left turn lane is not warranted per NCDOT's *Warrants for Left and Right Turn Lanes* or recommended on Wimberly Road.

Apex staff recommendations:

• Apex staff concurs with the recommendation. Based on the analysis, all approaches are projected to operate at LOS B or better in the Build condition.

| Table 3. A.M. / P.M. Unsignal Jenks Road and Wimbe | | | |
|---|--------------------|--------------------|--------------------|
| | Existing 2019 | No Build 2025 | Build 2025 |
| <u>Overall</u> | NA | <u>NA</u> | <u>NA</u> |
| Eastbound (Jenks Road) | A/A ¹ | A/A ¹ | A/A ¹ |
| Westbound (Jenks Road) | A / A ¹ | A / A ¹ | A/A ¹ |
| Northbound (Westford Street B) | A / B² | B / B² | B / C ² |
| Southbound (Wimberly Road) | B / B² | B / B² | B/C² |

Jenks Road and Wimberly Road (unsignalized)

1. Level of service for left turn movement on free-flowing approach.

2. Level of service for stop-controlled minor street approach.

TIA recommendations:

• The TIA does not recommend any improvements at this intersection. Analysis results indicated both minor street approaches to operate at LOS C or better during both A.M. and P.M. peak hours with 95th percentile queues to be less than 50 feet in length.

Apex staff recommendations:

• Based on NCDOT's *Warrants for Left and Right Turn Lanes*, the southbound approach of Wimberly Road warrants a right turn lane with 50 feet of full width deceleration and a 100-foot taper. Apex staff recommends construction of the right turn lane, subject to NCDOT review and approval.

| Table 4. A.M. / P.M. Unsignalize Green Level West Road | | | vice |
|---|--------------------|--------------------|--------------------|
| | Existing 2019 | No Build 2025 | Build 2025 |
| <u>Overall</u> | <u>NA</u> | NA | <u>NA</u> |
| Eastbound (Green Level West Road) | NA | NA | NA |
| Westbound (Green Level West Road) | A/A ¹ | A/A ¹ | A / A ¹ |
| Northbound (Wimberly Road) | A / B ² | B / B ² | B / B² |

Green Level West Road and Wimberly Road (unsignalized)

1. Level of service for left turn movement on free-flowing approach.

2. Level of service for stop-controlled minor street approach.

TIA recommendations:

• The TIA does not recommend any improvements at this intersection. Analysis results indicated the minor street approach to operate at LOS B or better during both A.M. and P.M. peak hours with 95th percentile queues to be less than 50 feet in length.

Apex staff recommendations:

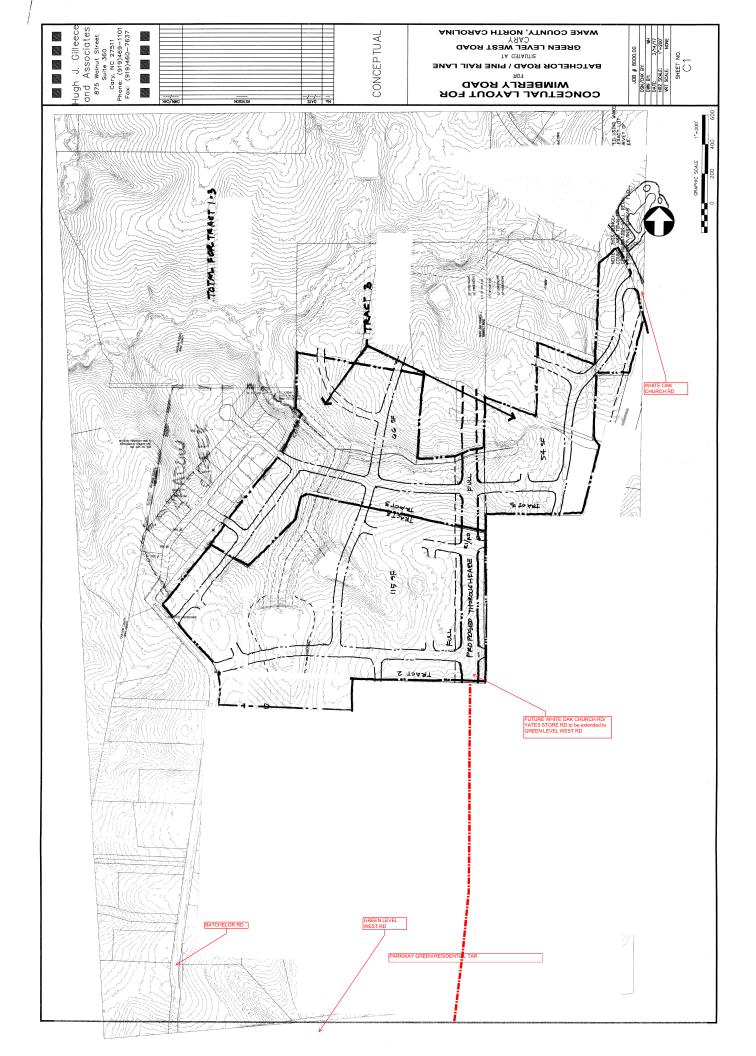
• Based on NCDOT's *Warrants for Left and Right Turn Lanes*, the northbound approach of Wimberly Road warrants a right turn lane with 50 feet of full width deceleration and a 100-foot taper. Apex staff recommends construction of the right turn lane, subject to NCDOT review and approval.

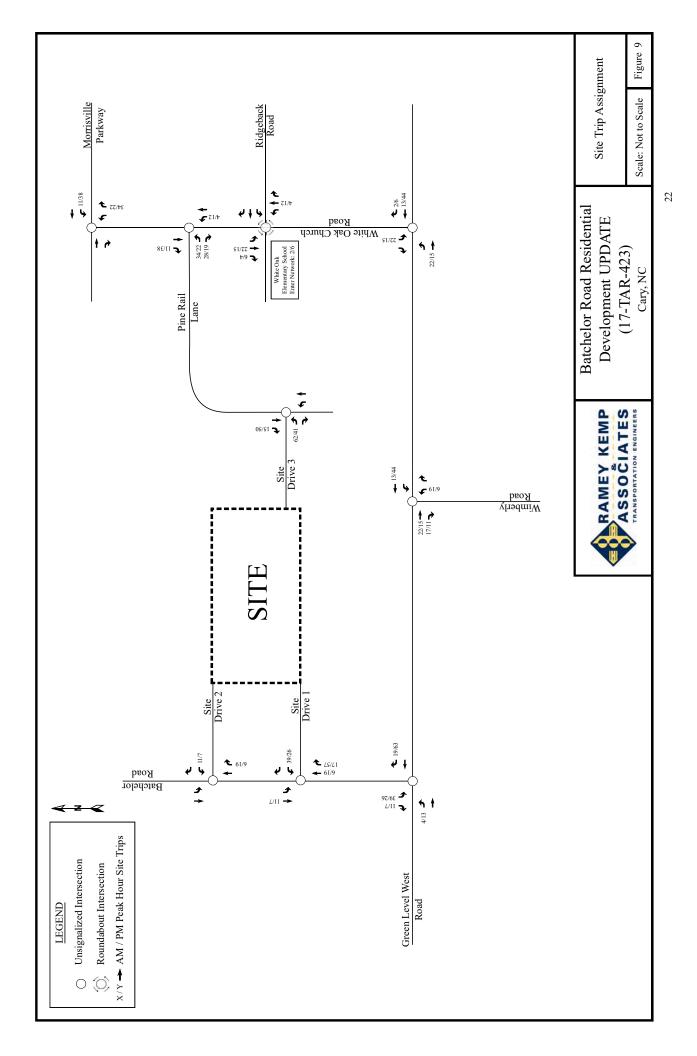
Please coordinate with the NCDOT District Engineer's Office concerning recommended improvements. Town staff will be available for meetings with NCDOT staff to discuss improvements on state maintained roadways as needed. All recommendations are subject to review by Town Council prior to approval.

Sincerely,

Lerep Jone tout

Serge Grebenschikov Traffic Engineer 919-372-7448





APPENDIX D

CAPACITY ANALYSIS CALCULATIONS GREEN LEVEL WEST ROAD & WIMBERLY ROAD

| Intersection | | | | | | |
|--|-------|--------------|---------------|------|--------------|------------|
| Int Delay, s/veh | 2.5 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | 1+ | | ٦ | 1 | Y | |
| Traffic Vol, veh/h | 143 | 8 | 26 | 79 | 11 | 48 |
| Future Vol, veh/h | 143 | 8 | 26 | 79 | 11 | 48 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| - | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 150 | - | 0 | - |
| Veh in Median Storage, | # 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 159 | 9 | 29 | 88 | 12 | 53 |
| | | | | | | |
| Major/Minor M | oior1 | | Viciar O | | Minor1 | |
| | ajor1 | 0 | Major2 168 | 0 | | 164 |
| Conflicting Flow All | 0 | 0 | 100 | | 310 164 | |
| Stage 1 | - | - | - | - | 146 | - |
| Stage 2 | - | - | - 4.12 | - | 6.42 | - 6.22 |
| Critical Hdwy | - | - | 4.1Z | - | 6.42 5.42 | 0.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - 2.218 | - | | - 2 210 |
| Follow-up Hdwy | - | - | | - | 3.518 | |
| Pot Cap-1 Maneuver | - | - | 1410 | - | 682 865 | 881 |
| Stage 1 | - | - | - | - | 865 | - |
| Stage 2 | - | - | - | - | 881 | - |
| Platoon blocked, % | - | - | 1110 | - | 660 | 004 |
| Mov Cap-1 Maneuver | - | - | 1410 | - | 668 | 881 |
| Mov Cap-2 Maneuver | - | - | - | - | 668 865 | - |
| Stage 1 | - | - | - | - | 865 | - |
| Stage 2 | - | - | - | - | 862 | - |
| | | | | | | |
| Approach | EB | | WB | | NB | |
| HCM Control Delay, s | 0 | | 1.9 | | 9.7 | |
| HCM LOS | | | | | Α | |
| | | | | | | |
| Minor Lane/Major Mvmt | 1 | NBLn1 | EBT | EBR | WBL | WBT |
| | 1 | 832 | - | - | 1410 | |
| Capacity (veh/h) HCM Lane V/C Ratio | | 0.079 | - | - | 0.02 | - |
| HCM Control Delay (s) | | 0.079 9.7 | - | - | 0.02 7.6 | - |
| HCM Lane LOS | | 9.7 A | - | - | 7.0 A | - |
| HCM 95th %tile Q(veh) | | 0.3 | - | - | 0.1 | - |
| | | 0.5 | - | - | 0.1 | - |

| Intersection | | | | | | |
|------------------------|-------|-----------|--------|------|----------|-------|
| Int Delay, s/veh | 2.4 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | 4 | | ٦ | 1 | Y | |
| Traffic Vol, veh/h | 128 | 31 | 61 | 135 | 20 | 27 |
| Future Vol, veh/h | 128 | 31 | 61 | 135 | 20 | 27 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| - | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 150 | - | 0 | - |
| Veh in Median Storage, | # 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 142 | 34 | 68 | 150 | 22 | 30 |
| | | • | | | | |
| | | | | | A | |
| | ajor1 | | Major2 | | Minor1 | 150 |
| Conflicting Flow All | 0 | 0 | 176 | 0 | 445 | 159 |
| Stage 1 | - | - | - | - | 159 | - |
| Stage 2 | - | - | - | - | 286 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1400 | - | 571 | 886 |
| Stage 1 | - | - | - | - | 870 | - |
| Stage 2 | - | - | - | - | 763 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1400 | - | 543 | 886 |
| Mov Cap-2 Maneuver | - | - | - | - | 543 | - |
| Stage 1 | - | - | - | - | 870 | - |
| Stage 2 | - | _ | - | - | 726 | - |
| Oldgo Z | | | | | 120 | |
| | | | | | | |
| Approach | EB | | WB | | NB | |
| HCM Control Delay, s | 0 | | 2.4 | | 10.6 | |
| HCM LOS | | | | | В | |
| | | | | | | |
| Minor Lane/Major Mvmt | ١ | NBLn1 | EBT | FRR | WBL | WBT |
| Capacity (veh/h) | | 698 | | - | 1400 | - |
| HCM Lane V/C Ratio | | 0.075 | - | | 0.048 | - |
| HCM Control Delay (s) | | 10.6 | - | - | 0.040 | - |
| HCM Lane LOS | | 10.6 B | - | - | 7.7 A | - |
| | | в 0.2 | - | - | А 0.2 | - |
| HCM 95th %tile Q(veh) | | U.Z | - | - | U.Z | - |

| Intersection | | | | | | | | | | | |
|------------------------|---------|--------|--------|------|--------|-------|-----|------|------|------|------|
| Int Delay, s/veh | 3.4 | | | | | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR | | | | | |
| Lane Configurations | 4 | | 7 | 1 | 1 | 1 | | | | | |
| Traffic Vol, veh/h | 205 | 33 | 47 | 123 | 43 | 91 | | | | | |
| Future Vol, veh/h | 205 | 33 | 47 | 123 | 43 | 91 | | | | | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| Sign Control | Free | Free | Free | Free | Stop | Stop | | | | | |
| RT Channelized | - | None | - | None | - | None | | | | | |
| Storage Length | - | - | 150 | - | 0 | 50 | | | | | |
| Veh in Median Storage | ,# 0 | - | - | 0 | 0 | - | | | | | |
| Grade, % | 0 | - | - | 0 | 0 | - | | | | | |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | | | | | |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | | | | | |
| Mvmt Flow | 228 | 37 | 52 | 137 | 48 | 101 | | | | | |
| | | | | | | | | | | | |
| Major/Minor N | /lajor1 | I | Major2 | | Minor1 | | | | | | |
| Conflicting Flow All | 0 | 0 | 265 | 0 | 488 | 247 | | | | | |
| Stage 1 | - | - | - | - | 247 | - | | | | | |
| Stage 2 | - | - | - | - | 241 | - | | | | | |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 | | | | | |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - | | | | | |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - | | | | | |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 | | | | | |
| Pot Cap-1 Maneuver | - | - | 1299 | - | 539 | 792 | | | | | |
| Stage 1 | - | - | - | - | 794 | - | | | | | |
| Stage 2 | - | - | - | - | 799 | - | | | | | |
| Platoon blocked, % | - | - | | - | | | | | | | |
| Mov Cap-1 Maneuver | - | - | 1299 | - | 517 | 792 | | | | | |
| Mov Cap-2 Maneuver | - | - | - | - | 517 | - | | | | | |
| Stage 1 | - | - | - | - | 794 | - | | | | | |
| Stage 2 | - | - | - | - | 767 | - | | | | | |
| | | | | | | | | | | | |
| Approach | EB | | WB | | NB | | | | | | |
| HCM Control Delay, s | 0 | | 2.2 | | 11 | | | | | | |
| HCM LOS | | | | | В | | | | | | |
| | | | | | | | | | | | |
| Minor Lane/Major Mvm | t I | NBLn1I | NBLn2 | EBT | EBR | WBL | WBT | | | | |
| Capacity (veh/h) | | 517 | 792 | - | - | 1299 | - | | | | |
| HCM Lane V/C Ratio | | | 0.128 | - | - | 0.04 | - | | | | |
| HCM Control Delay (s) | | 12.7 | 10.2 | - | - | 7.9 | - | | | | |
| HCM Lane LOS | | В | В | - | - | A | - | | | | |
| HCM 95th %tile Q(veh) | | 0.3 | 0.4 | - | - | 0.1 | - | | | | |
| ·\ - / | | | | | | | | | | | |

| Intersection | | | | | | | | | | | | |
|------------------------|--------|-----------|----------|------|-----------|----------|-----|--|--|--|------|--|
| Int Delay, s/veh | 3.4 | | | | | | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR | | | | | | |
| Lane Configurations | 4 | | 7 | 1 | 1 | 7 | | | | | | |
| Traffic Vol, veh/h | 187 | 70 | 109 | 226 | 55 | 58 | | | | | | |
| Future Vol, veh/h | 187 | 70 | 109 | 226 | 55 | 58 | | | | | | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Sign Control | Free | Free | Free | Free | Stop | Stop | | | | | | |
| RT Channelized | - | None | - | None | - | None | | | | | | |
| Storage Length | - | - | 150 | - | 0 | 50 | | | | | | |
| /eh in Median Storage, | # 0 | - | - | 0 | 0 | - | | | | | | |
| Grade, % | 0 | - | - | 0 | 0 | - | | | | | | |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | | | | | | |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | |
| Mvmt Flow | 208 | 78 | 121 | 251 | 61 | 64 | | | | | | |
| | | | | | | | | | | | | |
| Major/Minor N | 1ajor1 | I | Major2 | I | Minor1 | | | | | | | |
| Conflicting Flow All | 0 | 0 | 286 | 0 | 740 | 247 | | | | | | |
| Stage 1 | - | - | | - | 247 | | | | | | | |
| Stage 2 | - | - | - | - | 493 | - | | | | | | |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 | | | | | | |
| Critical Hdwy Stg 1 | - | - | | - | 5.42 | | | | | | | |
| Critical Hdwy Stg 2 | _ | - | - | - | 5.42 | - | | | | | | |
| Follow-up Hdwy | _ | - | 2.218 | - | | 3.318 | | | | | | |
| Pot Cap-1 Maneuver | - | - | 1276 | - | 384 | 792 | | | | | | |
| Stage 1 | _ | - | - | - | 794 | - | | | | | | |
| Stage 2 | _ | - | - | - | 614 | - | | | | | | |
| Platoon blocked, % | - | - | | - | •••• | | | | | | | |
| Nov Cap-1 Maneuver | _ | - | 1276 | - | 348 | 792 | | | | | | |
| Nov Cap-2 Maneuver | - | - | - | - | 348 | - | | | | | | |
| Stage 1 | - | - | - | - | 794 | - | | | | | | |
| Stage 2 | - | - | - | - | 556 | - | | | | | | |
| 0.0.90 - | | | | | | | | | | | | |
| Approach | EB | | WB | | NB | | | | | | | |
| HCM Control Delay, s | 0 | | 2.6 | | 13.6 | | | | | | | |
| HCM LOS | Ű | | 2.0 | | 10.0 B | | | | | | | |
| | | | | | J | | | | | | | |
| Minor Lane/Major Mvmt | · 1 | NBLn11 | NRI n? | EBT | FBR | WBL | WBT | | | | | |
| Capacity (veh/h) | . 1 | 348 | 792 | | - | 1276 | - | | | | | |
| HCM Lane V/C Ratio | | 0.176 | | - | | 0.095 | - | | | | | |
| HCM Control Delay (s) | | 17.5 | 9.9 | - | - | 8.1 | - | | | | | |
| HCM Lane LOS | | 17.5 C | 9.9 A | - | - | 0.1 A | - | | | | | |
| HCM 95th %tile Q(veh) | | 0.6 | 0.3 | - | - | 0.3 | - | | | | | |
| | | 0.0 | 0.5 | - | - | 0.5 | - | | | | | |

| Adversent EBT EBR WBL WBT NBR ane Configurations Image Image | Intersection | | | | | | | | | | | |
|---|------------------------|---------|-------|--------|------|--------|-------|-----|--|--|--|--|
| ane Configurations Image: Configurations Image: Configurations Image: Configurations inter Vol, velvh 272 47 47 445 47 91 conflicting Peds, #hr 0 0 0 0 0 0 sign Control Free Free Free Stop Stop Storage Length - - 0 0 - eak Hour Factor 90 90 90 90 90 eak Volticles, % 2 2 2 2 2 whrt Flow 302 52 52 161 52 101 Adjor/Minor Major1 Major2 Minor1 - - 265 - Stage 1 - - 265 - - 542 - Critical Hdwy Stg 1 - - 542 - - - - Stage 1 - - 542 - - - - - - - - - - - - - - | Int Delay, s/veh | 3.1 | | | | | | | | | | |
| Traffic Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 47 45 47 91 Starticute Vol, veh/h Free Free Free Free Free None None None Starticute Vol 40 0 0 0 0 - 0 0 - Adjor/Minor Major1 Major2 Minor1 Minor1 - - 328 - - 328 - - 328 - - 328 - - 328 - - - 328 - - - 328 - - - - <t< td=""><td>Movement</td><td>EBT</td><td>EBR</td><td>WBL</td><td>WBT</td><td>NBL</td><td>NBR</td><td></td><td></td><td></td><td></td><td></td></t<> | Movement | EBT | EBR | WBL | WBT | NBL | NBR | | | | | |
| Traffic Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 145 47 91 Starticute Vol, veh/h 272 47 47 47 45 47 91 Starticute Vol, veh/h Free Free Free Free Free None None None Starticute Vol 40 0 0 0 0 - 0 0 - Adjor/Minor Major1 Major2 Minor1 Minor1 - - 328 - - 328 - - 328 - - 328 - - 328 - - - 328 - - - 328 - - - - <t< td=""><td>Lane Configurations</td><td>1+</td><td></td><td>5</td><td>1</td><td>7</td><td>1</td><td></td><td></td><td></td><td></td><td></td></t<> | Lane Configurations | 1+ | | 5 | 1 | 7 | 1 | | | | | |
| Donflicting Peds, #/hr 0 <td>Traffic Vol, veh/h</td> <td></td> <td>47</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> | Traffic Vol, veh/h | | 47 | | | | | | | | | |
| Sign Control Free Free Free Free Free Stop XT Channelized - None - None - None - None Storage Length - 150 - 0 0 Pate Mour Factor 90 90 90 90 90 Pask Hour Factor 90 90 90 90 90 Pask Hour Factor 90 90 90 90 90 Ager/Minor Major1 Major2 Minor1 - Conflicting Flow All 0 0 354 0 593 328 Stage 1 - - - 328 - - Stage 2 - - - 328 - - Oldwup Hdwy - 4.12 - 6.42 6.22 - | Future Vol, veh/h | 272 | 47 | 47 | 145 | 47 | 91 | | | | | |
| Sign Control Free Free Free Stop Stop RT Channelized - None - None - None - None Storage Length - 150 - 0 0 Jeh in Median Storage, # 0 - - 0 0 - Pack Hour Factor 90 90 90 90 90 90 90 Pack Hour Factor 90 90 90 90 90 90 90 90 Pack Hour Factor 90 | Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| RT Channelized - None - None Storage Length - - 150 - 0 0 Find Median Storage, # 0 - - 0 0 - Park Hour Factor 90 90 90 90 90 90 90 Yeak Hour Factor 90 90 90 90 90 90 90 Heavy Vehicles, % 2 2 2 2 2 2 2 Anttribut 0 0 354 0 593 328 - Stage 1 - - - 328 - - Stage 2 - - 542 - Critical Hdwy Stg 1 - - 5.42 - < | Sign Control | Free | Free | Free | Free | Stop | Stop | | | | | |
| /eh in Median Storage, # 0 - - 0 0 - Brade, % 0 - - 0 0 - Pak Hour Factor 90 90 90 90 90 90 teavy Vehicles, % 2 2 2 2 2 2 Algor/Minor Major1 Major2 Minor1 - - - Algor/Minor Major1 Major2 Minor1 - - - Stage 1 - - - - - - - Stage 2 - - - - - - - Stage 2 - - - - - - - Oritical Hdwy Stg 1 - - - - - - - Stage 1 - - - 5.42 - - - - - - - - - - - - - - - - - - - <t< td=""><td>RT Channelized</td><td>-</td><td>None</td><td>-</td><td>None</td><td>-</td><td>None</td><td></td><td></td><td></td><td></td><td></td></t<> | RT Channelized | - | None | - | None | - | None | | | | | |
| Grade, % 0 - - 0 0 - Peak Hour Factor 90 90 90 90 90 90 teavy Vehicles, % 2 2 2 2 2 0 Adjor/Minor Major1 Major2 Minor1 - - - Jonfitcing Flow All 0 0 354 0 593 328 Stage 1 - - - 328 - Stage 2 - - - 542 - Oritical Hdwy Stg 1 - - 5.42 - - Tritical Hdwy Stg 2 - - 5.42 - - Stage 1 - - - 5.42 - - Yoltcah Hdwy Stg 2 - - - 7.70 - - Stage 1 - - - 7.70 - - - Vox Cap-1 Maneuver - 1205 - 448 - - - Vox Cap-2 Maneuver - | Storage Length | - | - | 150 | - | 0 | 50 | | | | | |
| Peak Hour Factor 90 | Veh in Median Storage, | ,# 0 | - | - | 0 | 0 | - | | | | | |
| Heavy Vehicles, % 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 101 Adjor/Minor Major/2 Minor1 Major/2 Minor1 Major/2 Minor1 Donflicting Flow All 0 0 354 0 593 328 Stage 1 - - - 328 - Stage 2 - - - 328 - Stage 2 - - - 328 - Stage 1 - - - 265 - - Stage 1 - - - 5.42 - - - 5.42 - - - - 5.42 - | Grade, % | | - | - | 0 | 0 | - | | | | | |
| Avmi Flow 302 52 52 161 52 101 Adjor/Minor Major1 Major2 Minor1 - <td>Peak Hour Factor</td> <td>90</td> <td>90</td> <td>90</td> <td>90</td> <td>90</td> <td>90</td> <td></td> <td></td> <td></td> <td></td> <td></td> | Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | | | | | |
| Mvmt Flow 302 52 52 161 52 101 Adjor/Minor Major1 Major2 Minor1 - <td>Heavy Vehicles, %</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> | Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | | | | | |
| Conflicting Flow All 0 0 354 0 593 328 Stage 1 - - - 328 - Stage 2 - - - 265 - Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Collow-up Hdwy - 2.218 - 3.518 3.318 Yot Cap-1 Maneuver - 1205 - 468 713 Stage 2 - - - 779 - Platoon blocked, % - - - 730 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - 4CM LOS B NB - - Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBT Capacity (veh/h) 448 713 - 1205 - 4CM Los B 713 - 1205 - | Mvmt Flow | 302 | 52 | 52 | 161 | 52 | 101 | | | | | |
| Conflicting Flow All 0 0 354 0 593 328 Stage 1 - - - 328 - Stage 2 - - - 265 - Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Collow-up Hdwy - 2.218 - 3.518 3.318 Yot Cap-1 Maneuver - 1205 - 468 713 Stage 2 - - - 779 - Platoon blocked, % - - - 730 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - 4CM LOS B NB - - Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBT Capacity (veh/h) 448 713 - 1205 - 4CM Los B 713 - 1205 - | | | | | | | | | | | | |
| Conflicting Flow All 0 0 354 0 593 328 Stage 1 - - - 328 - Stage 2 - - - 265 - Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Collow-up Hdwy - 2.218 - 3.518 3.318 Yot Cap-1 Maneuver - 1205 - 468 713 Stage 2 - - - 779 - Platoon blocked, % - - - 730 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - 4CM LOS B NB - - Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBT Capacity (veh/h) 448 713 - 1205 - 4CM Los B 713 - 1205 - | Major/Minor N | /lajor1 | 1 | Major2 | 1 | Minor1 | | | | | | |
| Stage 1 - - - 328 - Stage 2 - - - 265 - Critical Hdwy - - 4.12 - 6.42 6.22 Critical Hdwy Stg 1 - - - 5.42 - - Critical Hdwy Stg 2 - - - 5.42 - - Collow-up Hdwy - 2.2.18 - 5.16 3.318 - Pot Cap-1 Maneuver - 1205 - 468 713 - Stage 2 - - - 730 - - Patoon blocked, % - - - - - Avor Cap-1 Maneuver - - - - - Volve Cap-1 Maneuver - - - 730 - Stage 1 - - - 730 - - Stage 2 - - - 746 - - VC Cap-1 Maneuver - - 746 - | | | | | | | 328 | | | | | |
| Stage 2 - - - 265 - Critical Hdwy - - 4.12 - 6.42 6.22 Critical Hdwy Stg 1 - - - 5.42 - Dritical Hdwy Stg 2 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Collow-up Hdwy - 2.218 3.518 3.318 - Ot Cap-1 Maneuver - 1205 468 713 - Stage 1 - - - 779 - Platon blocked, % - - - - Vov Cap-1 Maneuver - 1205 448 713 Jov Cap-2 Maneuver - - 448 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - - ICM Lane/Major Mvmt NBLn1NBLn2 EBT EBR WBT - <td>-</td> <td></td> <td>-</td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> | - | | - | | - | | | | | | | |
| Dritical Hdwy - - 4.12 - 6.42 6.22 Dritical Hdwy Stg 1 - - 5.42 - Dritical Hdwy Stg 2 - - 5.42 - Follow-up Hdwy - 2.218 - 5.42 - Follow-up Hdwy - - 2.218 - 5.42 - Follow-up Hdwy - - 2.218 - 5.43 - Stage 1 - - - 730 - - Stage 2 - - - 779 - - Platoon blocked, % - - - - - Vov Cap-2 Maneuver - - - 730 - Stage 1 - - - 746 - Stage 2 - - - 746 - Approach EB WB NB - r(CM Control Delay, s 0 2 12 - AcM LOS B - - 1205 <td></td> <td>_</td> <td>-</td> <td>-</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> | | _ | - | - | - | | | | | | | |
| Dritical Hdwy Stg 1 - - 5.42 - Dritical Hdwy Stg 2 - - 5.42 - Follow-up Hdwy - 2.218 3.518 3.318 Pot Cap-1 Maneuver - 1205 468 713 Stage 1 - - - 730 - Pot Cap-1 Maneuver - 1205 448 713 Stage 2 - - - 779 - Platoon blocked, % - - - - Alov Cap-1 Maneuver - 1205 448 713 Alov Cap-2 Maneuver - - - - Stage 1 - - - - - Stage 1 - - - 730 - - Stage 2 - - - 746 - - VCM Control Delay, s 0 2 12 - - - 1205 - VicM Loos B - - 1205 - - - | | - | - | 4.12 | - | | 6.22 | | | | | |
| Critical Hdwy Stg 2 - - 5.42 - Follow-up Hdwy - 2.218 - 3.518 3.318 Pot Cap-1 Maneuver - 1205 - 468 713 Stage 1 - - - 779 - Platoon blocked, % - - - 779 - Platoon blocked, % - - - - - Mov Cap-1 Maneuver - 1205 - 448 713 Mov Cap-2 Maneuver - - - 730 - Stage 1 - - - 730 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - - 4CM LOS B B - - 1205 - Vinor Lane/Major Mvmt NBLn1NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - < | , | - | - | | - | | | | | | | |
| Follow-up Hdwy - - 2.218 - 3.518 3.318 Pot Cap-1 Maneuver - - 1205 - 468 713 Stage 1 - - - 779 - Platoon blocked, % - - - 779 - Aby Cap-1 Maneuver - 1205 - 448 713 Mov Cap-2 Maneuver - - - - - Mov Cap-2 Maneuver - - - 448 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - 4CM Control Delay, s 0 2 12 - CM LoS B - - 1205 - 4CM LoS B - 1205 - - 4CM Lane V/C Ratio 0.117 0.142 - 0.043 - 4CM Lane LOS B B - A < | | - | - | - | - | | - | | | | | |
| Pot Cap-1 Maneuver - - 1205 - 468 713 Stage 1 - - - 730 - Platoon blocked, % - - - 779 - Platoon blocked, % - - - 448 713 Mov Cap-1 Maneuver - 1205 - 448 - Stage 1 - - - 730 - Stage 2 - - - 730 - Stage 1 - - - 746 - Stage 2 - - - 746 - Approach EB WB NB - ICM Control Delay, s 0 2 12 - ICM LOS B - - 1205 - Vinor Lane/Major Mvmt NBLn1NBLn2 EBT EBR WBT - Capacity (veh/h) 448 713 - - 1205 - HCM Lane V/C Ratio 0.117 0.142 - 0.043< | | - | - | 2.218 | - | | 3.318 | | | | | |
| Stage 1 - - - 730 - Stage 2 - - - 779 - Platoon blocked, % - - - - Mov Cap-1 Maneuver - 1205 - 448 713 Mov Cap-2 Maneuver - - - 448 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - ICM Control Delay, s 0 2 12 ICM LOS B - - 1205 Vinor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL Capacity (veh/h) 448 713 - 1205 ICM Lane V/C Ratio 0.117 0.142 - 0.043 ICM Control Delay (s) 14.1 10.9 - 8.1 ICM Lane LOS B B - A - | | - | - | | - | | | | | | | |
| Stage 2 - - - 779 - Platoon blocked, % - - - - Mov Cap-1 Maneuver - 1205 - 448 713 Mov Cap-2 Maneuver - - - 448 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - ICM Control Delay, s 0 2 12 ICM LOS B - - 1205 Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL Capacity (veh/h) 448 713 - 1205 ICM Lane V/C Ratio 0.117 0.142 - 0.043 ICM Control Delay (s) 14.1 10.9 - 8.1 ICM Lane LOS B B - A - | | - | - | - | - | | - | | | | | |
| Platoon blocked, % - - - Mov Cap-1 Maneuver - 1205 - 448 713 Mov Cap-2 Maneuver - - - 448 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - 4CM Control Delay, s 0 2 12 4CM LOS B - - - Minor Lane/Major Mvmt NBLn1NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - 1205 - 4CM Lane V/C Ratio 0.117 0.142 - 0.043 - 4CM Control Delay (s) 14.1 10.9 - 8.1 - 4CM Lane LOS B B - - A - | | - | - | - | - | 779 | - | | | | | |
| Mov Cap-1 Maneuver - - 1205 - 448 713 Mov Cap-2 Maneuver - - - 448 - Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - HCM Control Delay, s 0 2 12 HCM LOS B - - - Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - - 1205 - HCM Lane V/C Ratio 0.117 0.142 - 0.043 - HCM Control Delay (s) 14.1 10.9 - 8.1 - HCM Lane LOS B B - - A - | Platoon blocked, % | - | - | | - | | | | | | | |
| Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - HCM Control Delay, s 0 2 12 HCM LOS B - - 120 Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - - 1205 - Capacity (veh/h) 448 713 - - 1205 - HCM Lane V/C Ratio 0.117 0.142 - - 0.043 - HCM Control Delay (s) 14.1 10.9 - 8.1 - HCM Lane LOS B B - - A - | Mov Cap-1 Maneuver | - | - | 1205 | - | 448 | 713 | | | | | |
| Stage 1 - - - 730 - Stage 2 - - - 746 - Approach EB WB NB - HCM Control Delay, s 0 2 12 HCM LOS B B - - 1205 Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - - 1205 - Capacity (veh/h) 448 713 - - 1205 - HCM Lane V/C Ratio 0.117 0.142 - - 0.043 - HCM Control Delay (s) 14.1 10.9 - 8.1 - HCM Lane LOS B B - - A - | Mov Cap-2 Maneuver | - | - | - | - | 448 | - | | | | | |
| Stage 2 - - - 746 - Approach EB WB NB - HCM Control Delay, s 0 2 12 HCM LOS B B - - 1205 Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - - 1205 - HCM Lane V/C Ratio 0.117 0.142 - - 0.043 - HCM Control Delay (s) 14.1 10.9 - - 8.1 - HCM Lane LOS B B - - A - | | - | - | - | - | 730 | - | | | | | |
| HCM Control Delay, s 0 2 12 HCM LOS B HCM LOS B Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - 1205 - HCM Lane V/C Ratio 0.117 0.142 - 0.043 - HCM Control Delay (s) 14.1 10.9 - 8.1 - HCM Lane LOS B B - - A - | | - | - | - | - | 746 | - | | | | | |
| HCM Control Delay, s 0 2 12 HCM LOS B HCM LOS B Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - 1205 - HCM Lane V/C Ratio 0.117 0.142 - 0.043 - HCM Control Delay (s) 14.1 10.9 - 8.1 - HCM Lane LOS B B - - A - | | | | | | | | | | | | |
| HCM LOS B Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - - 1205 - HCM Lane V/C Ratio 0.117 0.142 - - 0.043 - HCM Control Delay (s) 14.1 10.9 - - 8.1 - HCM Lane LOS B B - - A - | Approach | EB | | WB | | NB | | | | | | |
| Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT Capacity (veh/h) 448 713 - - 1205 - ICM Lane V/C Ratio 0.117 0.142 - - 0.043 - ICM Control Delay (s) 14.1 10.9 - - 8.1 - ICM Lane LOS B B - - A - | HCM Control Delay, s | 0 | | 2 | | 12 | | | | | | |
| Capacity (veh/h) 448 713 - - 1205 - ICM Lane V/C Ratio 0.117 0.142 - - 0.043 - ICM Control Delay (s) 14.1 10.9 - - 8.1 - ICM Lane LOS B B - - A - | HCM LOS | | | | | В | | | | | | |
| Capacity (veh/h) 448 713 - - 1205 - ICM Lane V/C Ratio 0.117 0.142 - - 0.043 - ICM Control Delay (s) 14.1 10.9 - - 8.1 - ICM Lane LOS B B - - A - | | | | | | | | | | | | |
| ICM Lane V/C Ratio 0.117 0.142 0.043 - ICM Control Delay (s) 14.1 10.9 8.1 - ICM Lane LOS B B A - | Minor Lane/Major Mvm | t [| | | EBT | EBR | | WBT | | | | |
| HCM Control Delay (s) 14.1 10.9 8.1 - HCM Lane LOS B B A - | Capacity (veh/h) | | | | - | - | | - | | | | |
| HCM Lane LOS B B A - | HCM Lane V/C Ratio | | 0.117 | 0.142 | - | - | 0.043 | - | | | | |
| | HCM Control Delay (s) | | 14.1 | 10.9 | - | - | 8.1 | - | | | | |
| ICM 95th %tile Q(veh) 0.4 0.5 0.1 - | HCM Lane LOS | | В | В | - | - | | - | | | | |
| | HCM 95th %tile Q(veh) | | 0.4 | 0.5 | - | - | 0.1 | - | | | | |

| Intersection | | | | | | | | | | |
|------------------------|--------|------------------|-----------|------|------------|-----------|-----|------|------|--|
| Int Delay, s/veh | 3.6 | | | | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR | | | | |
| Lane Configurations | 1+ | | ٦ | Ť | 1 | 1 | | | | |
| Traffic Vol, veh/h | 232 | 79 | 109 | 300 | 71 | 58 | | | | |
| Future Vol, veh/h | 232 | 79 | 109 | 300 | 71 | 58 | | | | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Sign Control | Free | Free | Free | Free | Stop | Stop | | | | |
| RT Channelized | - | None | - | None | - | None | | | | |
| Storage Length | - | - | 150 | - | 0 | 50 | | | | |
| Veh in Median Storage, | # 0 | - | - | 0 | 0 | - | | | | |
| Grade, % | 0 | - | - | 0 | 0 | - | | | | |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | | | | |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | | | | |
| Mvmt Flow | 258 | 88 | 121 | 333 | 79 | 64 | | | | |
| | | | | | | • · | | | | |
| Major/Mina- | loia-1 | | Mais-0 | | Vinc-1 | | | | | |
| | lajor1 | | Major2 | | Minor1 | 200 | | | | |
| Conflicting Flow All | 0 | 0 | 346 | 0 | 877 302 | 302 | | | | |
| Stage 1 | - | - | - | - | | - | | | | |
| Stage 2 | - | - | - 4.12 | - | 575 | - 6 00 | | | | |
| Critical Hdwy | - | - | 4.1Z | - | 6.42 | 6.22 | | | | |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - | | | | |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - | | | | |
| Follow-up Hdwy | - | - | 2.218 | | 3.518 | 3.318 | | | | |
| Pot Cap-1 Maneuver | - | - | 1213 | - | 319 | 738 | | | | |
| Stage 1 | - | - | - | - | 750 | - | | | | |
| Stage 2 | - | - | - | - | 563 | - | | | | |
| Platoon blocked, % | - | - | 4040 | - | <u> </u> | 700 | | | | |
| Mov Cap-1 Maneuver | - | - | 1213 | - | 287 | 738 | | | | |
| Mov Cap-2 Maneuver | - | - | - | - | 287 | - | | | | |
| Stage 1 | - | - | - | - | 750 | - | | | | |
| Stage 2 | - | - | - | - | 507 | - | | | | |
| | | | | | | | | | | |
| Approach | EB | | WB | | NB | | | | | |
| HCM Control Delay, s | 0 | | 2.2 | | 16.8 | | | | | |
| HCM LOS | | | | | С | | | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvmt | | NBLn11 | NBLn2 | EBT | EBR | WBL | WBT | | | |
| Capacity (veh/h) | | 287 | 738 | - | - | 1213 | - | | | |
| HCM Lane V/C Ratio | | | 0.087 | - | - | 0.1 | - | | | |
| HCM Control Delay (s) | | 22.2 | 10.3 | - | - | 8.3 | - | | | |
| HCM Lane LOS | | <u>22.2</u> С | 10.0 B | - | - | A | - | | | |
| HCM 95th %tile Q(veh) | | 1.1 | 0.3 | - | - | 0.3 | - | | | |
| | | | 5.5 | | | 5.5 | | | | |

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS GREEN LEVEL WEST ROAD & BATCHELOR ROAD

| Int Delay, s/veh 0.6 Movement EBL EBT WBT WBR SBL SBR Lane Configurations Image: Configuration straffic Vol, veh/h Image: Configuration straffic Vol, veh/h Image: Vol, veh |
|--|
| Lane Configurations Image: Configuration in the image: Configuration in th |
| Traffic Vol, veh/h 4 143 86 4 8 4 Future Vol, veh/h 4 143 86 4 8 4 |
| Future Vol, veh/h 4 143 86 4 8 4 |
| |
| Conflicting Peds #/hr 0 0 0 0 0 |
| |
| Sign Control Free Free Free Stop Stop |
| RT Channelized - None - None - None |
| Storage Length 0 - |
| Veh in Median Storage, # - 0 0 - 0 - |
| Grade, % - 0 0 - 0 - |
| Peak Hour Factor 90 90 90 90 90 90 |
| Heavy Vehicles, % 2 2 2 2 2 2 2 |
| Mvmt Flow 4 159 96 4 9 4 |
| |
| |
| Major/Minor Major1 Major2 Minor2 |
| Conflicting Flow All 100 0 - 0 265 98 |
| Stage 1 98 - |
| Stage 2 167 - |
| Critical Hdwy 4.12 6.42 6.22 |
| Critical Hdwy Stg 1 5.42 |
| Critical Hdwy Stg 2 5.42 - |
| Follow-up Hdwy 2.218 3.518 3.318 |
| Pot Cap-1 Maneuver 1493 724 958 |
| Stage 1 926 - |
| Stage 2 863 - |
| Platoon blocked, % |
| Mov Cap-1 Maneuver 1493 722 958 |
| Mov Cap-2 Maneuver 722 |
| Stage 1 923 |
| 0 |
| Stage 2 863 - |
| |
| Approach EB WB SB |
| HCM Control Delay, s 0.2 0 9.7 |
| HCM LOS A |
| |
| Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 |
| |
| |
| Capacity (veh/h) 1493 787 |
| Capacity (veh/h) 1493 - - 787 HCM Lane V/C Ratio 0.003 - - 0.017 |
| Capacity (veh/h) 1493 - - 787 HCM Lane V/C Ratio 0.003 - - 0.017 HCM Control Delay (s) 7.4 0 - 9.7 |
| Capacity (veh/h) 1493 - - 787 HCM Lane V/C Ratio 0.003 - - 0.017 |

| Intersection | | | | | | |
|------------------------|--------|--------------|--------|------|----------|----------|
| Int Delay, s/veh | 0.3 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | * | 1 | | Y | |
| Traffic Vol, veh/h | 4 | 157 | 153 | 4 | 4 | 4 |
| Future Vol, veh/h | 4 | 157 | 153 | 4 | 4 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage | e, # - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 4 | 174 | 170 | 4 | 4 | 4 |
| | | | | · | | |
| | | | | | | |
| | Major1 | | Major2 | | Minor2 | 470 |
| Conflicting Flow All | 174 | 0 | - | 0 | 354 | 172 |
| Stage 1 | - | - | - | - | 172 | - |
| Stage 2 | - | - | - | - | 182 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | |
| Pot Cap-1 Maneuver | 1403 | - | - | - | 644 | 872 |
| Stage 1 | - | - | - | - | 858 | - |
| Stage 2 | - | - | - | - | 849 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1403 | - | - | - | 642 | 872 |
| Mov Cap-2 Maneuver | - | - | - | - | 642 | - |
| Stage 1 | - | - | - | - | 855 | - |
| Stage 2 | - | - | - | - | 849 | - |
| | | | | | | |
| Approach | EB | | WB | | SB | |
| HCM Control Delay, s | 0.2 | | 0 | | 9.9 | |
| HCM LOS | 0.2 | | 0 | | 0.0 A | |
| | | | | | ~ | |
| Minor Lane/Major Mvm | nt | EBL | EBT | WBT | WBR | SBLn1 |
| Capacity (veh/h) | | 1403 | | | - | 740 |
| HCM Lane V/C Ratio | | 0.003 | | - | | 0.012 |
| HCM Control Delay (s) | | 0.003 7.6 | 0 | - | - | 9.9 |
| HCM Lane LOS | | 7.0 A | A | - | - | 9.9 A |
| | ١ | | А | - | - | |
| HCM 95th %tile Q(veh |) | 0 | - | - | - | 0 |

| Intersection | | | | | | |
|------------------------|--------|-------|--------|------|--------|-------|
| Int Delay, s/veh | 1.7 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | 4 | 4 | | Y | |
| Traffic Vol, veh/h | 5 | 181 | 165 | 23 | 48 | 12 |
| Future Vol, veh/h | 5 | 181 | 165 | 23 | 48 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage | ,# - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 6 | 201 | 183 | 26 | 53 | 13 |
| | Ŭ | 201 | 100 | 20 | 00 | 10 |
| | | | | _ | | |
| | Major1 | | Major2 | | Minor2 | |
| Conflicting Flow All | 209 | 0 | - | 0 | 409 | 196 |
| Stage 1 | - | - | - | - | 196 | - |
| Stage 2 | - | - | - | - | 213 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1362 | - | - | - | 599 | 845 |
| Stage 1 | - | - | - | - | 837 | - |
| Stage 2 | - | - | - | - | 823 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1362 | - | - | - | 596 | 845 |
| Mov Cap-2 Maneuver | | - | - | - | 596 | - |
| Stage 1 | _ | _ | _ | - | 833 | - |
| Stage 2 | _ | | | _ | 823 | _ |
| Oldye z | - | - | - | - | 020 | - |
| | | | | | | |
| Approach | EB | | WB | | SB | |
| HCM Control Delay, s | 0.2 | | 0 | | 11.4 | |
| HCM LOS | | | | | В | |
| | | | | | | |
| Minor Lane/Major Mvm | nt | EBL | EBT | WBT | WBR | SBLn1 |
| Capacity (veh/h) | | 1362 | - | - | _ | 633 |
| HCM Lane V/C Ratio | | 0.004 | - | - | | 0.105 |
| HCM Control Delay (s) | | 7.7 | 0 | - | - | 11.4 |
| HCM Lane LOS | | A | A | - | - | B |
| HCM 95th %tile Q(veh |) | 0 | л | | | 0.4 |
| | / | U | - | - | - | 0.4 |

| Intersection | | | | | | |
|--|----------|-------|--------|------|--------|--------|
| Int Delay, s/veh | 1 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | é. | 1. | | Y | |
| Traffic Vol, veh/h | 13 | 248 | 213 | 65 | 28 | 7 |
| Future Vol, veh/h | 13 | 248 | 213 | 65 | 28 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage | e, # - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 14 | 276 | 237 | 72 | 31 | 8 |
| | | 210 | 201 | 12 | 01 | Ũ |
| | | | | _ | | |
| | Major1 | | Major2 | | Minor2 | |
| Conflicting Flow All | 309 | 0 | - | 0 | 577 | 273 |
| Stage 1 | - | - | - | - | 273 | - |
| Stage 2 | - | - | - | - | 304 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1252 | - | - | - | 478 | 766 |
| Stage 1 | - | - | - | - | 773 | - |
| Stage 2 | - | - | - | - | 748 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1252 | - | - | - | 472 | 766 |
| Mov Cap-2 Maneuver | | _ | - | - | 472 | - |
| Stage 1 | | _ | | _ | 763 | |
| Stage 1 | - | - | - | - | 748 | - |
| Slage 2 | - | - | - | - | 740 | - |
| | | | | | | |
| Approach | EB | | WB | | SB | |
| HCM Control Delay, s | 0.4 | | 0 | | 12.6 | |
| HCM LOS | | | | | В | |
| | | | | | | |
| Minor Lane/Major Mvm | nt | EBL | EBT | WRT | WBR | SBI n1 |
| | п. | | | | | |
| Capacity (veh/h) HCM Lane V/C Ratio | | 1252 | - | - | - | 511 |
| | | 0.012 | - | - | | 0.076 |
| HCM Long LOS | | 7.9 | 0 | - | - | 12.6 |
| HCM Lane LOS | ` | A | A | - | - | В |
| HCM 95th %tile Q(veh |) | 0 | - | - | - | 0.2 |

| Intersection | | | | | | |
|------------------------|--------|-------|--------|------|--------|-------|
| Int Delay, s/veh | 1.4 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ÷ | 4 | | Y | |
| Traffic Vol, veh/h | 5 | 262 | 191 | 23 | 48 | 12 |
| Future Vol, veh/h | 5 | 262 | 191 | 23 | 48 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | _ | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage | e.# - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 6 | 291 | 212 | 26 | 53 | 13 |
| | 0 | 231 | 212 | 20 | 55 | 15 |
| | | | | | | |
| Major/Minor | Major1 | Ν | Major2 | | Minor2 | |
| Conflicting Flow All | 238 | 0 | - | 0 | 528 | 225 |
| Stage 1 | - | - | - | - | 225 | - |
| Stage 2 | - | - | - | - | 303 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | | 3.318 |
| Pot Cap-1 Maneuver | 1329 | - | - | - | 511 | 814 |
| Stage 1 | | _ | - | _ | 812 | - |
| Stage 2 | _ | _ | _ | - | 749 | - |
| Platoon blocked, % | | | _ | _ | 745 | |
| Mov Cap-1 Maneuver | 1329 | - | - | | 508 | 814 |
| | 1529 | - | - | - | 508 | 014 |
| Mov Cap-2 Maneuver | - | - | - | - | | - |
| Stage 1 | - | - | - | - | 808 | - |
| Stage 2 | - | - | - | - | 749 | - |
| | | | | | | |
| Approach | EB | | WB | | SB | |
| HCM Control Delay, s | 0.1 | | 0 | | 12.5 | |
| HCM LOS | | | | | В | |
| | | | | | - | |
| Minor Long/Major Mur | at | EBL | EBT | | WBR | |
| Minor Lane/Major Mvm | ι | | EDI | VVDI | WDR (| |
| Capacity (veh/h) | | 1329 | - | - | - | 549 |
| HCM Lane V/C Ratio | | 0.004 | - | - | | 0.121 |
| HCM Control Delay (s) |) | 7.7 | 0 | - | - | 12.5 |
| HCM Lane LOS | | Α | A | - | - | В |
| HCM 95th %tile Q(veh |) | 0 | - | - | - | 0.4 |
| | | | | | | |

| Intersection | | | | | | |
|------------------------|----------|--------------|--------|------|--------------|---------------|
| Int Delay, s/veh | 0.8 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | 4 | t, | | Y | |
| Traffic Vol, veh/h | 13 | 302 | 303 | 65 | 28 | 7 |
| Future Vol, veh/h | 13 | 302 | 303 | 65 | 28 | 7 |
| Conflicting Peds, #/hr | | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage | e, # - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 14 | 336 | 337 | 72 | 31 | 8 |
| | | | | | | |
| Major/Minor | Major1 | Ν | Major2 | ſ | Minor2 | |
| Conflicting Flow All | 409 | 0 | - 10/2 | 0 | 737 | 373 |
| Stage 1 | | 0 | _ | - | 373 | |
| Stage 2 | _ | | _ | _ | 364 | _ |
| Critical Hdwy | 4.12 | | | _ | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | 4.12 | - | - | - | 5.42 | 0.22 |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 5.42 | - |
| , , | 2.218 | - | - | - | 3.518 | |
| Follow-up Hdwy | 2.210 | - | - | - | 3.516 | 5.510 673 |
| Pot Cap-1 Maneuver | 1150 | - | - | - | | |
| Stage 1 | - | - | - | - | 696 | - |
| Stage 2 | - | - | - | - | 703 | - |
| Platoon blocked, % | 4450 | - | - | - | 000 | 070 |
| Mov Cap-1 Maneuver | | - | - | - | 380 | 673 |
| Mov Cap-2 Maneuver | - | - | - | - | 380 | - |
| Stage 1 | - | - | - | - | 686 | - |
| Stage 2 | - | - | - | - | 703 | - |
| | | | | | | |
| Approach | EB | | WB | | SB | |
| HCM Control Delay, s | 0.3 | | 0 | | 14.5 | |
| HCM LOS | | | | | В | |
| | | | | | | |
| Minor Lane/Major Mvr | nt | EBL | EBT | WRT | WBR | SBI n1 |
| Capacity (veh/h) | | 1150 | | | | 416 |
| HCM Lane V/C Ratio | | 0.013 | - | - | - | 416 0.093 |
| |) | 0.013 8.2 | - | - | - | 0.093 14.5 |
| HCM Control Delay (s | 7 | | 0 | - | - | |
| HCM Lane LOS | •) | A | A | - | - | B |
| HCM 95th %tile Q(ver | 1) | 0 | - | - | - | 0.3 |

APPENDIX F

CAPACITY ANALYSIS CALCULATIONS GREEN LEVEL WEST ROAD & SITE DRIVE

| Intersection | | | | | | |
|------------------------|--------|-----------|--------|------|--------|------|
| Int Delay, s/veh | 2.4 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | 4 | | ٦ | 1 | Y | |
| Traffic Vol, veh/h | 186 | 5 | 26 | 177 | 14 | 81 |
| Future Vol, veh/h | 186 | 5 | 26 | 177 | 14 | 81 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 50 | - | 0 | - |
| Veh in Median Storage, | # 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 207 | 6 | 29 | 197 | 16 | 90 |
| | | | | | | |
| Major/Minor M | laiar1 | , | Vaior? | | Minor1 | |
| | lajor1 | | Major2 | | Minor1 | 040 |
| Conflicting Flow All | 0 | 0 | 213 | 0 | 465 | 210 |
| Stage 1 | - | - | - | - | 210 | - |
| Stage 2 | - | - | - | - | 255 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | |
| Pot Cap-1 Maneuver | - | - | 1357 | - | 556 | 830 |
| Stage 1 | - | - | - | - | 825 | - |
| Stage 2 | - | - | - | - | 788 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1357 | - | 544 | 830 |
| Mov Cap-2 Maneuver | - | - | - | - | 544 | - |
| Stage 1 | - | - | - | - | 825 | - |
| Stage 2 | - | - | - | - | 771 | - |
| - | | | | | | |
| Approach | EB | | WB | | NB | |
| HCM Control Delay, s | 0 | | 1 | | 10.4 | |
| HCM LOS | | | | | В | |
| | | | | | 2 | |
| Minor Lane/Major Mvmt | 1 | NBLn1 | EBT | EBR | WBL | WBT |
| Capacity (veh/h) | | 770 | | | 1357 | |
| HCM Lane V/C Ratio | | 0.137 | _ | - | 0.021 | _ |
| HCM Control Delay (s) | | 10.4 | - | _ | 7.7 | - |
| HCM Lane LOS | | 10.4 B | | - | A | _ |
| HCM 95th %tile Q(veh) | | 0.5 | - | - | 0.1 | - |
| | | 0.0 | - | - | 0.1 | - |

| Intersection | | | | | | |
|------------------------|-------|----------|--------|------|----------|------|
| Int Delay, s/veh | 2.2 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | 1+ | | ٦ | 1 | Y | |
| Traffic Vol, veh/h | 261 | 16 | 90 | 220 | 9 | 54 |
| Future Vol, veh/h | 261 | 16 | 90 | 220 | 9 | 54 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| • | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 50 | - | 0 | - |
| Veh in Median Storage, | # 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 290 | 18 | 100 | 244 | 10 | 60 |
| | | | | | | |
| Major/Minor M | oior1 | , | Major? | | Minor1 | |
| | ajor1 | | Major2 | | | 200 |
| Conflicting Flow All | 0 | 0 | 308 | 0 | 743 | 299 |
| Stage 1 | - | - | - | - | 299 | - |
| Stage 2 | - | - | - | - | 444 | - |
| Critical Hdwy | - | - | 4.12 | - | 0.12 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | |
| Pot Cap-1 Maneuver | - | - | 1253 | - | 383 | 741 |
| Stage 1 | - | - | - | - | 752 | - |
| Stage 2 | - | - | - | - | 646 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1253 | - | 352 | 741 |
| Mov Cap-2 Maneuver | - | - | - | - | 352 | - |
| Stage 1 | - | - | - | - | 752 | - |
| Stage 2 | - | - | - | - | 594 | - |
| | | | | | | |
| Approach | EB | | WB | | NB | |
| HCM Control Delay, s | 0 | | 2.4 | | 11.3 | |
| HCM LOS | • | | | | В | |
| | | | | | _ | |
| Minor Lane/Major Mvmt | 1 | NBLn1 | EBT | EBR | WBL | WBT |
| Capacity (veh/h) | | 640 | | - | 1253 | - |
| HCM Lane V/C Ratio | | 0.109 | | _ | 0.08 | - |
| HCM Control Delay (s) | | 11.3 | | - | 8.1 | _ |
| HCM Lane LOS | | н.э В | - | - | 0.1 A | _ |
| HCM 95th %tile Q(veh) | | 0.4 | - | - | 0.3 | - |
| | | 0.4 | - | - | 0.5 | - |

PLANNING BOARD REPORT TO TOWN COUNCIL Rezoning Case: 21CZ04 Williams Farm PUD

Planning Board Meeting Date: June 14, 2021

Report Requirements:

Per NCGS §160D-604(b), all proposed amendments to the zoning ordinance or zoning map shall be submitted to the Planning Board for review and comment. If no written report is received from the Planning Board within 30 days of referral of the amendment to the Planning Board, the Town Council may act on the amendment without the Planning Board report. The Town Council is not bound by the recommendations, if any, of the Planning Board.

Per NCGS §160D-604(d), the Planning Board shall advise and comment on whether the proposed action is consistent with all applicable officially adopted plans, and provide a written recommendation to the Town Council that addresses plan consistency and other matters as deemed appropriate by the Planning Board, but a comment by the Planning Board that a proposed amendment is inconsistent with the officially adopted plans shall not preclude consideration or approval of the proposed amendment by the Town Council.

PROJECT DESCRIPTION:

| Acreage: | +/- 61.919 |
|--------------------|--|
| PIN(s): | Portion of 0713943738 |
| Current Zoning: | Rural Residential (RR) |
| Proposed Zoning: | Planned Unit Development–Conditional Zoning (PUD-CZ) |
| 2045 Land Use Map: | Low Density Residential |
| Town Limits: | Inside the ETJ |

Applicable Officially Adopted Plans:

The Board must state whether the project is consistent or inconsistent with the following officially adopted plans, if applicable. Applicable plans have a check mark next to them.

| 2045 Land Use Map Consistent | Inconsistent | Reason: |
|--|--------------------|---------|
| | | |
| Apex Transportation Plan Consistent | Inconsistent | Reason: |
| | | |
| Parks, Recreation, Open Space, ✔ Consistent | and Greenways Plan | Reason: |
| | | |

| | ANNING BOARD REPOR | | | APEX 1073 |
|---------------------|---|---|--|-------------------|
| Pla | nning Board Meeting Date: Jur | ne 14, 2021 | | CP, CARO |
| The cons prop | siderations, which are considerations, which are considered conditional zoning dist | lerations that are relevant to | conditions that take into accour the legislative determination of wl public interest. These consideratio t to the public interest. | nether or not the |
| 1. | - | | ditional Zoning (CZ) District use's a goals, objectives, and policies of t Reason: | |
| | | | | |
| | | | | |
| 2. | | ed Conditional Zoning (CZ) Dis character of surrounding land Inconsistent | trict use's appropriateness for its p 1 uses. Reason: | roposed location |
| | | | | |
| 3. | Zoning district supplement Sec. 4.4 Supplemental Star Consistent | | onditional Zoning (CZ) District use's Reason: | compliance with |
| | | | | |
| 4. | minimization of adverse avoidance of significant a | effects, including visual imp | proposed Conditional Zoning (C act of the proposed use on adja ing lands regarding trash, traffic, nd not create a nuisance. Reason: | acent lands; and |
| | | | | |
| 5. | environmental impacts ar | | d Conditional Zoning District use's deterioration of water and air re Reason: | |
| | | | | |
| | | | | |

| Rez | ANNING BOARD REPORT TO TOWN COUNCIL zoning Case:21CZ04 Williams Farm PUD nning Board Meeting Date:June 14, 2021 | A PE+ 1973 Z A A A CAROL |
|-----|--|---|
| 6. | Impact on public facilities. The proposed Conditional Zoni impacts on public facilities and services, including roads schools, police, fire and EMS facilities. X Consistent Inconsistent | |
| | | |
| 7. | Health, safety, and welfare. The proposed Conditional Zor or welfare of the residents of the Town or its ETJ. Consistent Inconsistent | ning (CZ) District use's effect on the health, safety, Reason: |
| | | |
| | | |
| 8. | Detrimental to adjacent properties. Whether the prosubstantially detrimental to adjacent properties. | oposed Conditional Zoning (CZ) District use is Reason: |
| | | |
| | | |
| 9. | Not constitute nuisance or hazard. Whether the proposed nuisance or hazard due to traffic impact or noise, or becau Conditional Zoning (CZ) District use. | |
| | | |
| | | |
| 10. | Other relevant standards of this Ordinance. Whether the complies with all standards imposed on it by all other applies and general development characteristics. | |
| | | |
| | | |

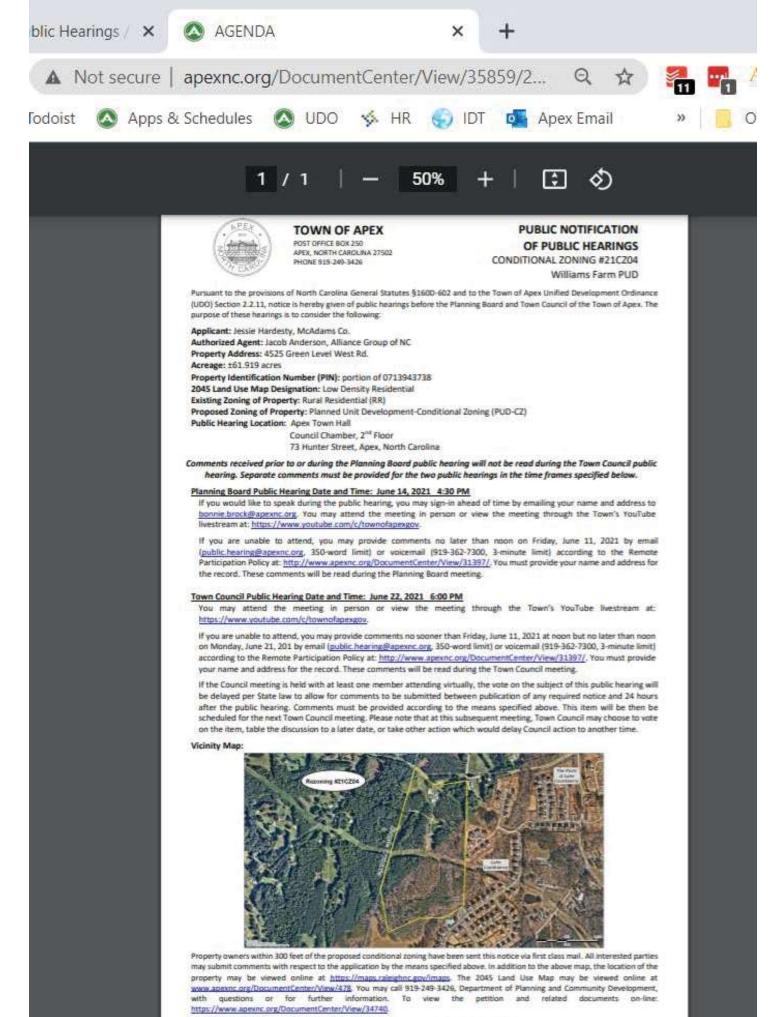
PLANNING BOARD REPORT TO TOWN COUNCIL Rezoning Case:21CZ04 Williams Farm PUD

Planning Board Meeting Date: June 14, 2021



Planning Board Recommendation:

| | Motion: | Approve |
|-----------------------|---|---|
| I | Introduced by Planning Board member: | Braswell |
| | Seconded by Planning Board member: | Skinner |
| ✓ | <i>Approval</i> : the project is consistent with considerations listed above. | h all applicable officially adopted plans and the applicable legislative |
| | | s not consistent with all applicable officially adopted plans and/or the s noted above, so the following conditions are recommended to be e it fully consistent: |
| | | |
| | | |
| | | |
| | Denial: the project is not consistent with all applicable officially adopted plans and/or the applicable legislative considerations as noted above. | |
| | | With <u>8</u> Planning Board Member(s) voting "aye" |
| | | With Planning Board Member(s) voting "no" |
| | Reasons for dissenting votes: *Ryan Akers was recused as the engine | eering firm where he works is produced the plans for this rezoning. |
| | | |
| | | |
| This | report reflects the recommendation of t | he Planning Board, this the <u>14</u> day of <u>June</u> 2021. |
| Atte | st: | |
| Mic | chael Marks Digitally signed by Michae | A Marks 8 -04'00' A Manda Bunce 9 -04'00' Digitally signed by Amanda Bunce DN: cn=Amanda Bunce, o, ou, email=amanda.bunce@apexnc.org, c=US Date: 2021.06.14 17:07:22 -04'00' |
| Mich | nael Marks, Planning Board Chair | for Dianne Khin, Director of Planning and Community Development |



Published Dates: May 28 - June 22, 2021

Dianne F. Khin, AICP Director of Planning and Community Development

TOWN OF APEX



POST OFFICE BOX 250 APEX, NORTH CAROLINA 27502 PHONE 919-249-3426

PUBLIC NOTIFICATION OF PUBLIC HEARINGS

CONDITIONAL ZONING #21CZ04 Williams Farm PUD

Pursuant to the provisions of North Carolina General Statutes §160D-602 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Planning Board and Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

Applicant: Jessie Hardesty, McAdams Co. Authorized Agent: Jacob Anderson, Alliance Group of NC Property Address: 4525 Green Level West Rd. Acreage: ±61.919 acres Property Identification Number (PIN): portion of 0713943738 2045 Land Use Map Designation: Low Density Residential Existing Zoning of Property: Rural Residential (RR) Proposed Zoning of Property: Planned Unit Development-Conditional Zoning (PUD-CZ) Public Hearing Location: Apex Town Hall Council Chamber, 2nd Floor 73 Hunter Street, Apex, North Carolina

Comments received prior to or during the Planning Board public hearing will not be read during the Town Council public hearing. Separate comments must be provided for the two public hearings in the time frames specified below.

Planning Board Public Hearing Date and Time: June 14, 2021 4:30 PM

If you would like to speak during the public hearing, you may sign-in ahead of time by emailing your name and address to <u>bonnie.brock@apexnc.org</u>. You may attend the meeting in person or view the meeting through the Town's YouTube livestream at: <u>https://www.youtube.com/c/townofapexgov</u>.

If you are unable to attend, you may provide comments no later than noon on Friday, June 11, 2021 by email (<u>public.hearing@apexnc.org</u>, 350-word limit) or voicemail (919-362-7300, 3-minute limit) according to the Remote Participation Policy at: <u>http://www.apexnc.org/DocumentCenter/View/31397/</u>. You must provide your name and address for the record. These comments will be read during the Planning Board meeting.

Town Council Public Hearing Date and Time: June 22, 2021 6:00 PM

You may attend the meeting in person or view the meeting through the Town's YouTube livestream at: https://www.youtube.com/c/townofapexgov.

If you are unable to attend, you may provide comments no sooner than Friday, June 11, 2021 at noon but no later than noon on Monday, June 21, 201 by email (<u>public.hearing@apexnc.org</u>, 350-word limit) or voicemail (919-362-7300, 3-minute limit) according to the Remote Participation Policy at: <u>http://www.apexnc.org/DocumentCenter/View/31397/</u>. You must provide your name and address for the record. These comments will be read during the Town Council meeting.

If the Council meeting is held with at least one member attending virtually, the vote on the subject of this public hearing will be delayed per State law to allow for comments to be submitted between publication of any required notice and 24 hours after the public hearing. Comments must be provided according to the means specified above. This item will be then be scheduled for the next Town Council meeting. Please note that at this subsequent meeting, Town Council may choose to vote on the item, table the discussion to a later date, or take other action which would delay Council action to another time.

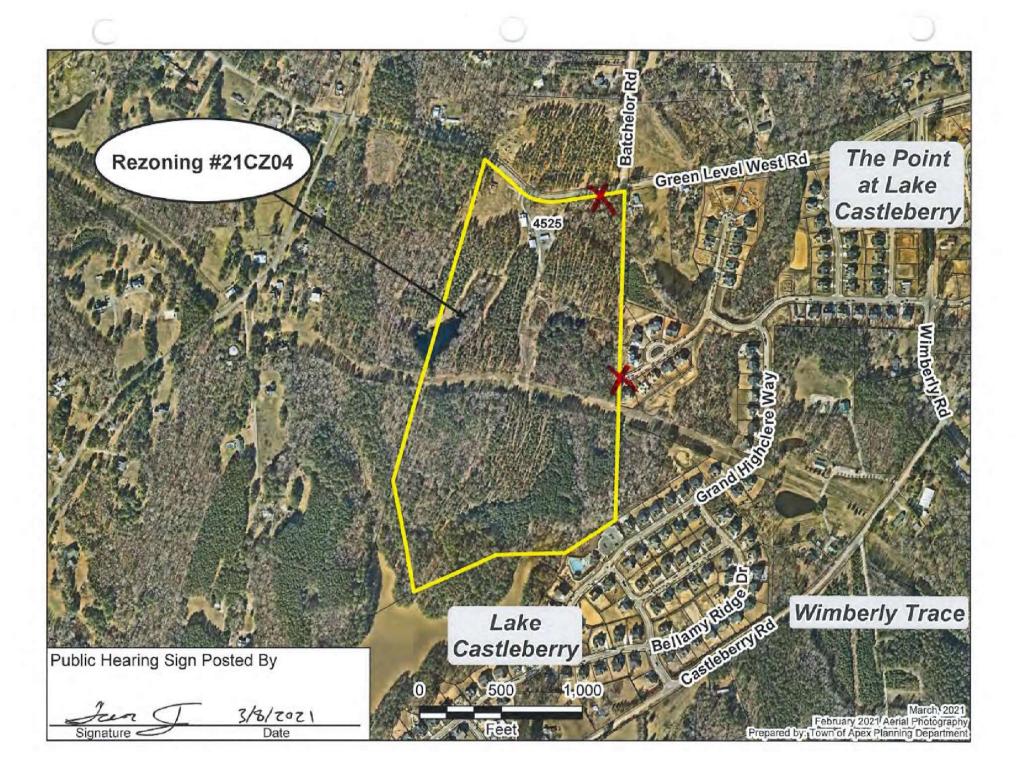
Vicinity Map:



Property owners within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may submit comments with respect to the application by the means specified above. In addition to the above map, the location of the property may be viewed online at https://maps.raleighnc.gov/imaps. The 2045 Land Use Map may be viewed online at https://maps.raleighnc.gov/imaps. The 2045 Land Use Map may be viewed online at www.apexnc.org/DocumentCenter/View/478. You may call 919-249-3426, Department of Planning and Community Development, with questions or for further information. To view the petition and related documents on-line: https://www.apexnc.org/DocumentCenter/View/478.

Published Dates: May 28 - June 22, 2021

Dianne F. Khin, AICP Director of Planning and Community Development





TOWN OF APEX

POST OFFICE BOX 250 APEX, NORTH CAROLINA 27502 PHONE 919-249-3426

AFFIDAVIT CERTIFYING Public Notification – Written (Mailed) Notice

Section 2.2.11 Town of Apex Unified Development Ordinance

Project Name:

Project Location:

Applicant:

Jessie Hardesty

Williams Farm PUD

Conditional Zoning #21CZ04

4525 Green Level West Rd.

Firm:

McAdams Co

This is to certify that I, as Director of Planning and Community Development, mailed or caused to have mailed by first class postage for the above mentioned project on May 28, 2021, a notice containing the time and place, location, nature and scope of the application, where additional information may be obtained, and the opportunity for interested parties to be heard, to the property owners within 300' of the land subject to notification. I further certify that I relied on information provided to me by the above-mentioned person as to accuracy and mailing addresses of property owners within 300' of the land subject to notification.

______ day of ________ , 202 /____ .

5-28-21 Date

for Dianne Khin

Director of Planning and Community Development

STATE OF NORTH CAROLINA COUNTY OF WAKE

Sworn and subscribed before me,

State and County, this the



Jeu Chartain Rederon Notary Public

Jeri Chastain Pederson, a Notary Public for the above

My Commission Expires: 03 / 10 / 2024



Student Assignment Glenn Carrozza 5625 Dillard Drive Cary, NC 27518

tel: (919) 431-7333 fax: (919) 694-7753

May 20, 2021

Dianne Khin, AICP Director, Department of Planning and Community Development Town of Apex <u>Dianne.Khin@apexnc.org</u>

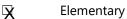
Dear Dianne,

The Wake County Public School System (WCPSS) Office of School Assignment received information about a proposed rezoning/development within the Town of Apex planning area. We are providing this letter to share information about WCPSS's capacity related to the proposal. The following information about the proposed rezoning/development was provided through the Wake County Residential Development Notification database:

- Date of application: March 1, 2021
- Name of development: 21CZ04 Williams Farm PUD
- Address of rezoning/development: 4525 Green Level West Rd
- Total number of proposed residential units: 176
- Type(s) of residential units proposed: Single-family;

Based on the information received at the time of application, the Office of School Assignment is providing the following assessment of possible impacts to the Wake County Public School System:

- □ Schools at <u>all</u> grade levels within the current assignment area for the proposed rezoning/development are anticipated to have <u>sufficient</u> capacity for future students.
- Schools at <u>the following</u> grade levels within the current assignment area for the proposed rezoning/development are anticipated to have <u>insufficient</u> capacity for future students; transportation to schools outside of the current assignment area should be anticipated:



 \mathbf{k}

🗆 High

The following mitigation of capacity concerns due to school construction or expansion is anticipated:

Middle

□ Not applicable – existing school capacity is anticipated to be sufficient.

X School expansion or construction within the next five years is not anticipated to address concerns.

□ School expansion or construction within the next five years may address concerns at these grade levels:

□ Elementary □ Middle □ High

Thank you for sharing this information with the Town of Apex Planning Board and Town Council as they consider the proposed rezoning/development.

Sincerely,

Glenn Carrozza

Glenn Carrozza