

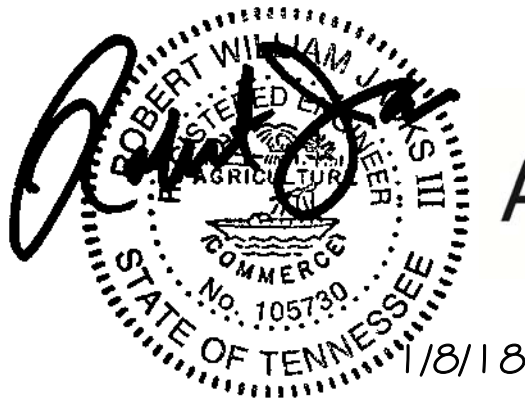
TRANSPORTATION IMPACT STUDY

HICKORY CREEK FARMS

KNOX COUNTY, TENNESSEE

-Prepared For-

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Revised January 2018

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EXECUTIVE SUMMARY

Preface:

Champion Construction, LLC is proposing to develop a residential development adjacent to Hickory Creek Road in west Knox County, TN. The name of the proposed residential development is “Hickory Creek Farms”. The purpose of this study is to determine and evaluate the potential impacts of the proposed development on the adjacent transportation system. The study includes a review of the operating characteristics of the existing transportation system that will provide access to the proposed site. Recommendations and mitigation measures will be analyzed and offered where traffic operations have been estimated to be below traffic engineering standards.

Study Results:

The findings of this study include the following:

- At full build-out, the proposed 115 lot residential development is expected to generate approximately 1,195 new trips on an average weekday. Approximately 91 of these new trips are estimated to occur during the AM peak hour and 120 trips in the PM peak hour at full build-out and occupancy.
- With the addition of Hickory Creek Farms, a proposed new intersection at Hickory Creek Road is anticipated to operate very well in the projected conditions for vehicular traffic in the year 2021.

Recommendations:

The following recommendations are offered based on the study analyses:

- The Hickory Creek Farms residential development is not expected to generate a need for roadway improvements to the adjacent studied roadway. The vehicular capacity of the proposed new intersection and the existing road should be adequate to accommodate this proposed development.
- The internal roadways and intersections within Hickory Creek Farms should include design elements with the appropriate sight distance requirements, appropriate road signage, and construction of sidewalks.

DESCRIPTION OF EXISTING CONDITIONS

■ STUDY AREA:

The proposed location of this new residential subdivision is shown on a map in Figure 1. This development is located adjacent to Hickory Creek Road and is to the west of Knoxville, TN in deep west Knox County. The proposed new development is to be comprised of several new internal paved roadways and will contain 115 single family residential lots on approximately 45.7 acres. In order to analyze the transportation impacts associated with the proposed development, the following existing and proposed roadways and intersections were reviewed where the greatest impact is expected:

- Hickory Creek Road at Nora Mae Lane
- Hickory Creek Road at Proposed New Subdivision Road Entrance (Road “A”)

In the adjacent vicinity of this development, there are several individual farms and residences, unused/agricultural properties, and woodlands. The proposed development site of Hickory Creek Farms currently consists of undeveloped farmland, existing homes, and farm structures.

The proposed site for Hickory Creek Farms is bounded by woodlands and individual residences to the north, farmland and individual residences to the west, Hickory Creek Road to the south and a single farm and residence property to the east.

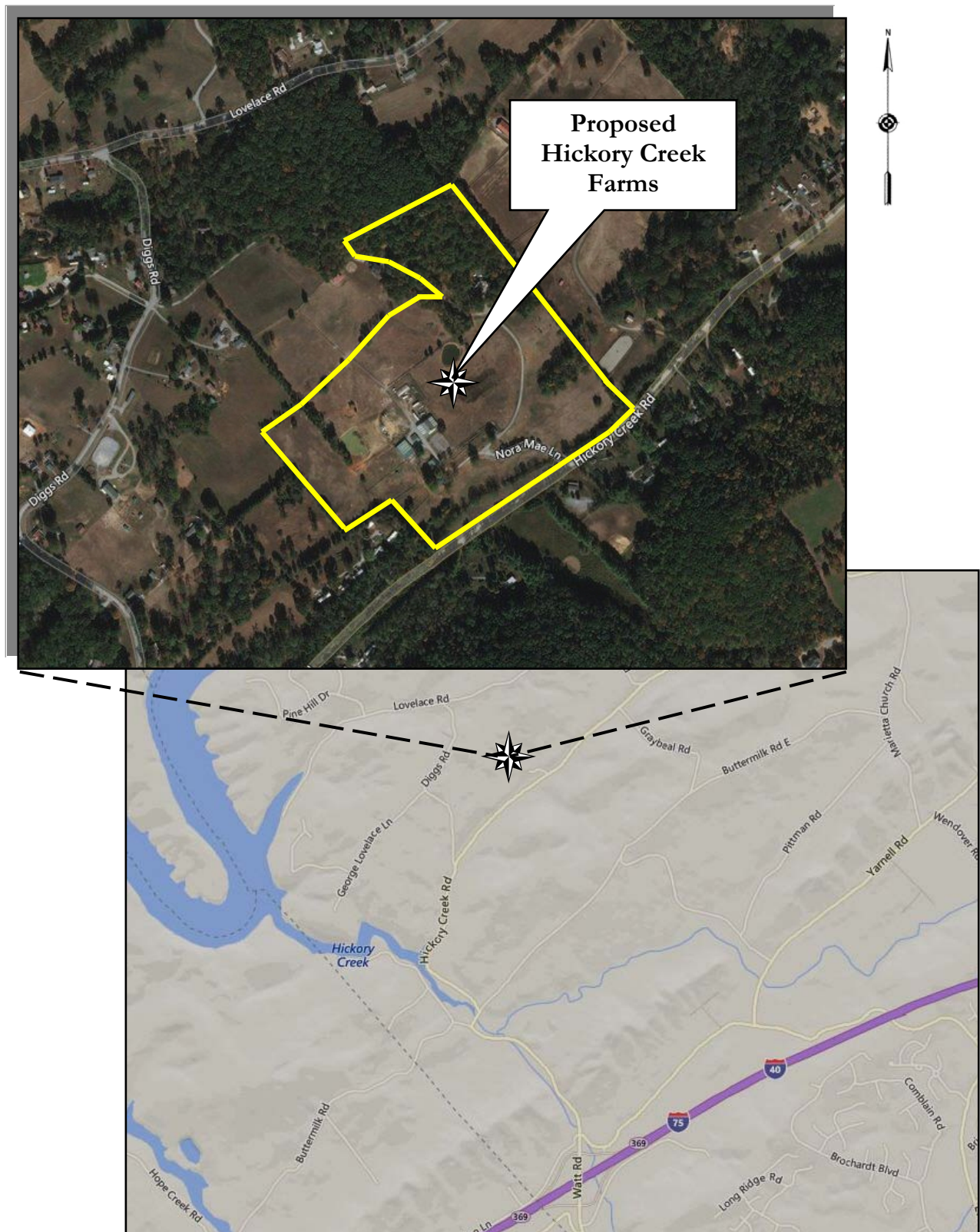


Figure 1
Location Map

▪ **EXISTING ROADWAYS:**

Table 1 shows the characteristics of the key existing roadways included in the study:

TABLE 1
STUDY CORRIDOR CHARACTERISTICS

NAME	CLASSIFICATION ¹	SPEED LIMIT	LANES	ROAD WIDTH ²	TRANSIT ³	PEDESTRIAN FACILITIES	BICYCLE FACILITIES
Hickory Creek Road	Minor Arterial	40 mph	2 undivided	22 feet	None	No sidewalks along roadway	No bike lanes
Nora Mae Lane	Local Street	Not Posted	2 undivided	30 feet ⁴	None	No sidewalks along roadway	No bike lanes

¹ Major Road Plan - May 2011 by Knoxville/Knox County Metropolitan Planning Commission

² Edge of curb to edge of curb or edge of pavements near project site

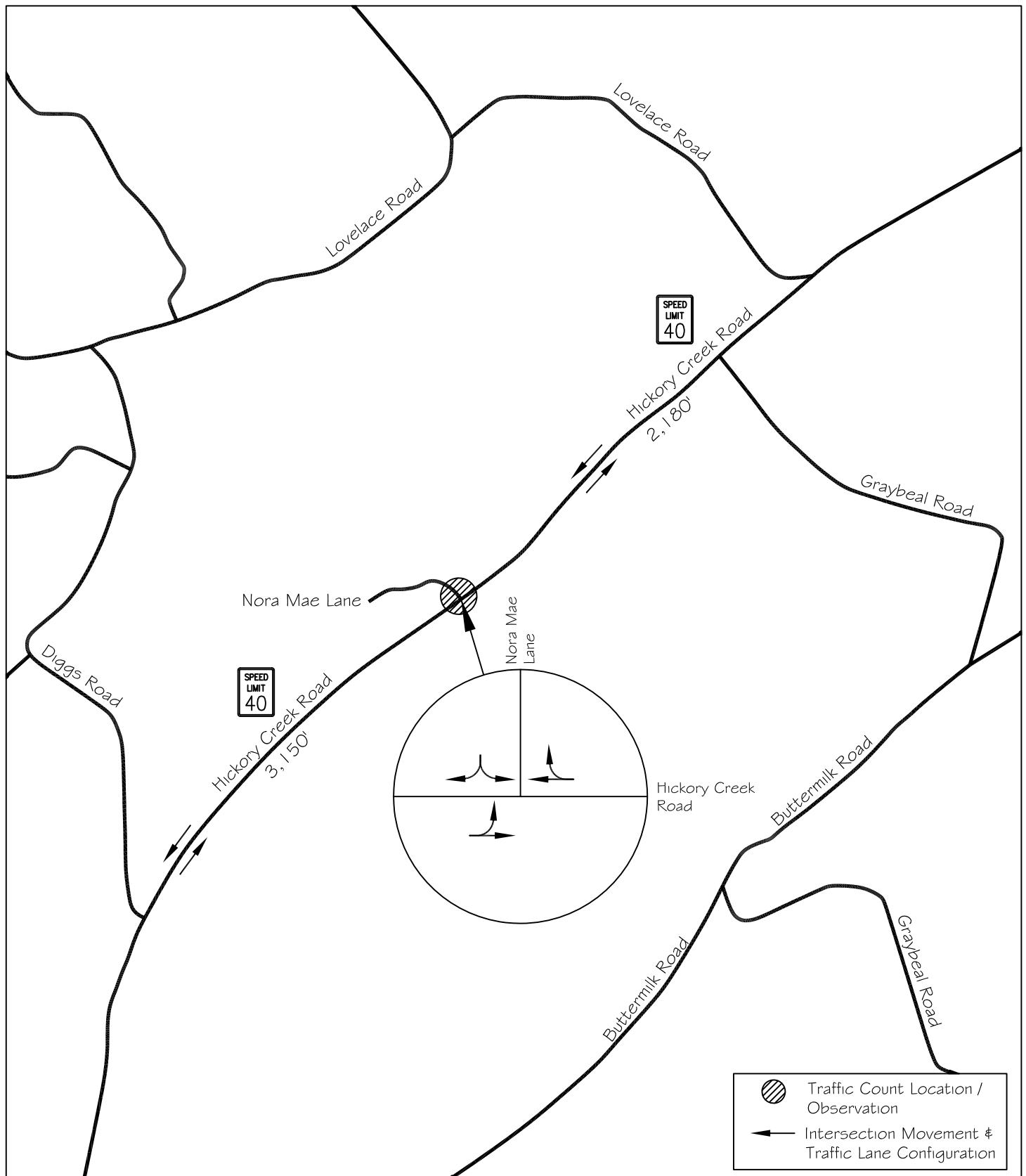
³ According to Knoxville Area Transit System Map

⁴ Width of Nora Mae Lane at intersection with Hickory Creek Road - narrows to single lane

Hickory Creek Road is a minor arterial that traverses in a general northeast-southwest direction and runs in between East Gallaher Ferry Road/Hardin Valley Road on its northeast side to Buttermilk Road to the southwest. Buttermilk Road intersects Everett Road to the west a short distance away and Everett Road intersects Interstate 40/75 just a short distance away to the south. From the intersection of Hickory Creek Road at Nora Mae Lane, Interstate 40/75 is less than 2.5 miles away. Hickory Creek Road provides fairly convenient access to the interstate system to the south and also provides access to Hardin Valley Road which intersects Pellissippi Parkway to the east. Roadway lighting is not provided in this area of Hickory Creek Road.

Nora Mae Lane is a local residential street that provides access to a handful of residences and farm properties and does not provide any outlet. Nora Mae Lane consists of 2 – 15-foot vehicular lanes at the intersection of Hickory Creek Road. The road narrows down significantly as it travels away from Hickory Creek Road. As the road travels away from Hickory Creek Road, it crosses Hickory Creek and then transitions to a single lane. Roadway lighting is not present on Nora Mae Lane. Nora Mae Lane is controlled by a stop sign at its approach to Hickory Creek Road. Hardin Valley Community Park is located across Hickory Creek Road from Nora Mae Lane. The park consists of a baseball field and a single building for community gatherings.

Figure 2 shows the lane configurations of the study area roadway, intersection, and the study traffic count location. It also shows posted speed limits in the area along with distances in between the study area intersection and other intersections. The pages following Figure 2 give an overview of the site study area with photographs.



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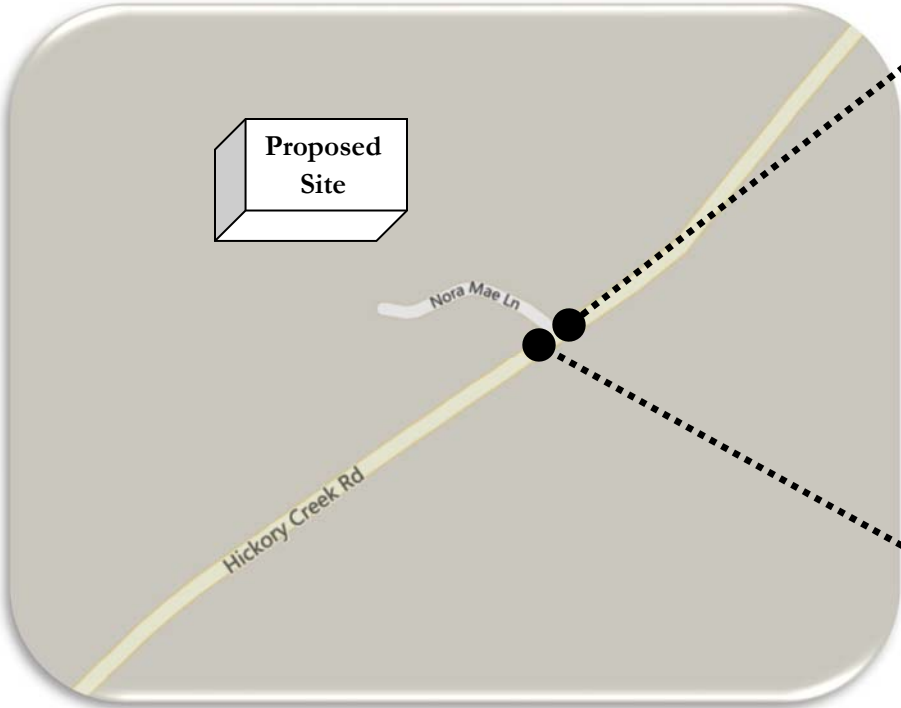
FIGURE 2

Hickory Creek Farms

Traffic Count Location & Existing Lane Configurations

PHOTO EXHIBITS

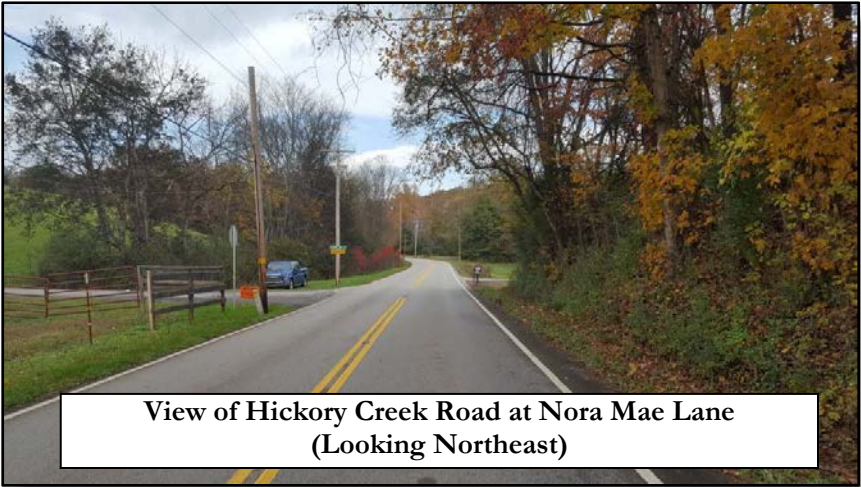
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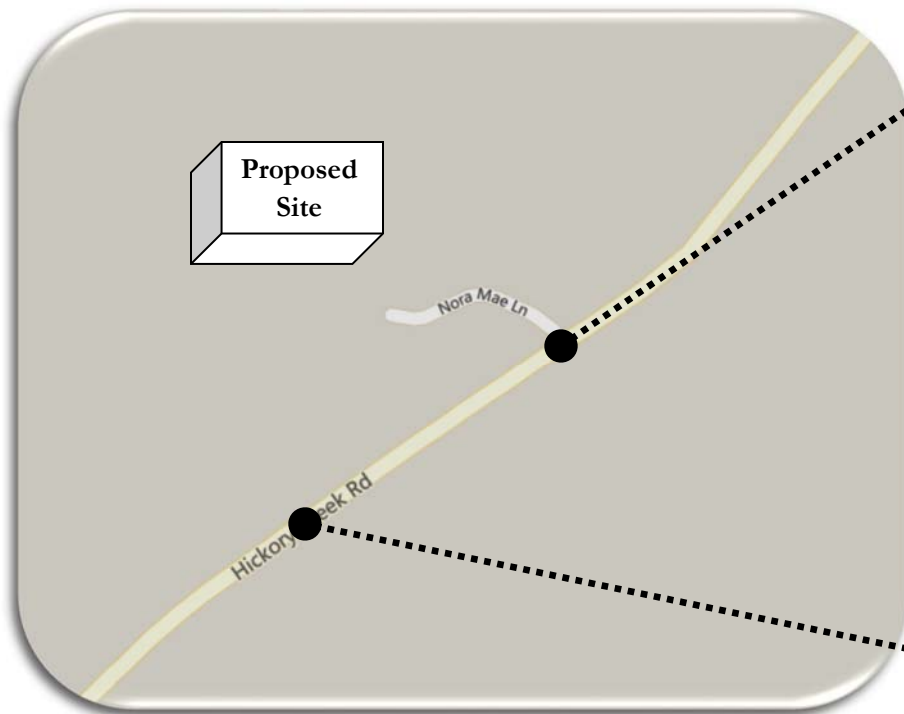
Hickory Creek Road at Nora Mae Lane



View of Hickory Creek Road at Nora Mae Lane
(Looking Southwest)



View of Hickory Creek Road at Nora Mae Lane
(Looking Northeast)



Hickory Creek Road at Nora Mae Lane



View of Nora Mae Lane at Hickory Creek Road
(Looking Northwest)



View of Site at Hickory Creek Road
(Looking Northeast)

■ **EXISTING TRANSPORTATION VOLUMES PER MODE:**

- Existing vehicular roadway traffic:
Average Daily Traffic (ADT) on Hickory Creek Road to the southwest of the project site was reported by the Tennessee Department of Transportation (TDOT) at 1,817 vehicles per day in 2016. From 2006 – 2016, this count station has indicated a 1.1% annual growth rate. Historical traffic count data can be viewed in Appendix A.
- Existing bicycle and pedestrian volumes: The average daily pedestrian and bicycle traffic along the study corridor is not known. None were observed during the traffic counts. It is known that bicycle groups occasionally travel on Hickory Creek Road on weekends.

■ **ON-STREET PARKING:**

Currently, on-street parking is not allowed on any of the studied roadways adjacent to the project site.

■ **PEDESTRIAN AND BICYCLE FACILITIES:**

Bicycle facilities (lanes) and pedestrian sidewalks are not currently available within the project site study area on any of the studied roadways.

■ **WALK SCORE:**

A private company offers an online website that grades and gives scores to locations within the United States based on “walkability”. According to the website, the numerical value assigned (the Walk Score) is based on the distance to the closest amenity in various relevant categories (businesses, schools, parks, etc.).

Appendix B shows a map and gives information for the proposed site development Walk Score at Hickory Creek Road. Based on the project location, the site is given a Walk Score of 0. This Walk Score indicates that the site is exclusively dependent on vehicles for errands and travel. This is due to the complete lack of sidewalks in the study area to outside

destinations/amenities and the distance to any potential destinations/amenities.

■ **TRANSIT SERVICES:**

There are currently no public transit services available in this portion of Knox County. Other transit services include the East Tennessee Human Resource Agency (ETHRA) and the Community Action Committee (CAC) which provides transportation services in Knox County when requested along with private taxis, and ride-sharing opportunities (Uber, etc.).

Knox County school busses were observed at the studied intersection during the traffic counts. One school bus stopped at the intersection of Hickory Creek Road at Nora Mae Lane during the afternoon traffic count to allow for three students to disembark.

PROJECT DESCRIPTION

■ LOCATION AND SITE PLAN:

The proposed plan layout given by Ideal Engineering Solutions, Inc. (originally designed by Jim Sullivan) is shown in Figure 3. As can be seen in the figure, one new entrance will tie onto Hickory Creek Road on the south side of the development. This residential development is expected to be comprised of 115 single family residential lots on approximately 45.7 acres. The residential lots in Hickory Creek Farms will average approximately 1/6 acre to 3/4 acre in size. The existing site has some existing homes and farm buildings that will be removed for the construction of the development. The proposed home sites and roadways are designed to maximize the lots on the property.

The proposed subdivision is expected to be comprised of five new internal paved roadways within the development. Four of the new roads will end in cul-de-sacs and two of these cul-de-sacs will be less than 400 feet. The total length of the roadways within the development will be approximately 4,100 feet.

The actual schedule for completion of this new residential development is dependent on economic factors and construction timelines. This project is also contingent on permitting, design, and other issues. However, for the purposes of this study, it was assumed that the total construction build-out of the development and full occupancy will occur by the year 2021. The developer is planning to begin construction once permits and approvals are acquired and having the first home completed in early 2019.

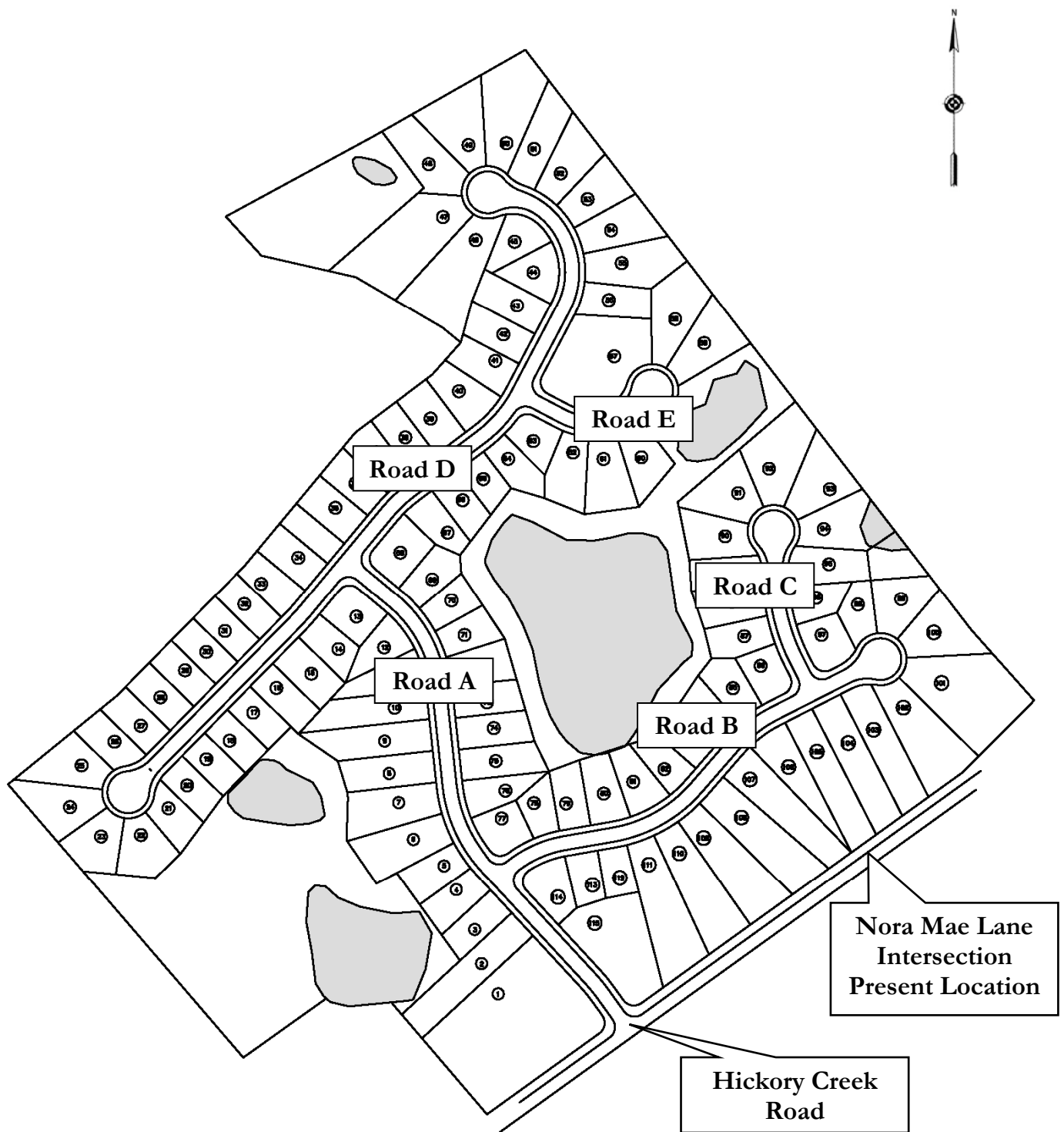


Figure 3
Proposed Plan Layout
Hickory Creek Farms

■ **PROPOSED USES AND ZONING REQUIREMENTS:**

The proposed single-family unit residential development is expected to be comprised of five new internal roadways with 115 lots on approximately 45.7 acres. The property will incorporate lots dedicated to green space that will incorporate the stormwater controls for the development.

The site property is currently zoned as Agricultural (A). The property has recently been requested to be rezoned to Planned Residential (PR). The agenda date for the Knoxville/Knox County Metropolitan Planning Commission (MPC) rezoning was November 9, 2017. The rezoning was approved internally by the MPC and the official determination for rezoning was approved by the Knox County Commission on December 18th, 2017. The adjacent surrounding land uses are the following:

- The properties to the north are zoned Agricultural (A) and consists of undeveloped land/farming areas and single-family homes.
- The properties to the west are zoned Agricultural (A) and consists of undeveloped land/farming areas and single-family homes.
- To the south, the site is bounded by Hickory Creek Road. On the other side of Hickory Creek Road, the property is zoned Agricultural (A) with undeveloped property and single-family residences/farming properties. Hardin Valley Community Park, which is owned by Knox County, is also zoned Agricultural (A) and is to the south of the proposed development.
- The property to the east is zoned Agricultural (A) and consists of undeveloped land/farming area and a single property owner.

The Planned Residential (PR) zone allows for a variety of land uses primarily within the residential realm. Uses permitted in this zone include single family dwellings, duplexes, and multi-dwelling structures and developments. Additionally, commercial uses permitted include community facilities and day care homes. The current zoning map is provided in Appendix C.

■ **DEVELOPMENT DENSITY:**

The proposed density for the residential development is 2.5 dwelling units per acre based on 115 lots on 45.7 acres. The MPC rezoning report (File # 11-B-17-RZ) dated 11/2/17 states that the property is being requested to be changed to Planned Residential (PR). In this report, the MPC staff recommends that the zoning be approved with a density of up to 2 dwelling units per acre. This report is included in Appendix D. However, the developer was requesting a greater density than the MPC recommended 2 dwelling units per acre. During the MPC meeting on November 9th, 2017, the property was granted a density of 2.5 dwelling units per acre. This report analyzes the property of 115 lots which is 2.5 dwelling units per acre.

■ **ON-SITE CIRCULATION:**

The total length of the new internal roadways within the development will be approximately 4,100 feet in length. The roads shown in Figure 3 have been labeled in this report as Road “A” thru Road “E”. The internal roadways for the development will be paved, include 8” extruded concrete curbing and the lane widths will be 13 feet for a total of 26-foot pavement width. A five-foot sidewalk will be provided on one side of the internal roadways.

■ **SERVICE AND DELIVERY VEHICLE ACCESS AND CIRCULATION:**

In addition to passenger vehicles, the proposed internal roadways will also provide access to service, delivery, maintenance, and fire protection vehicles. It is not expected that any of these vehicles will interfere with off-site adjacent roadway operations other than when these vehicles occasionally enter and exit the development. The internal roadways in the subdivision are expected to be able to accommodate these types of vehicles along with passenger vehicles.

TRAFFIC ANALYSIS OF EXISTING AND PROPOSED CONDITIONS

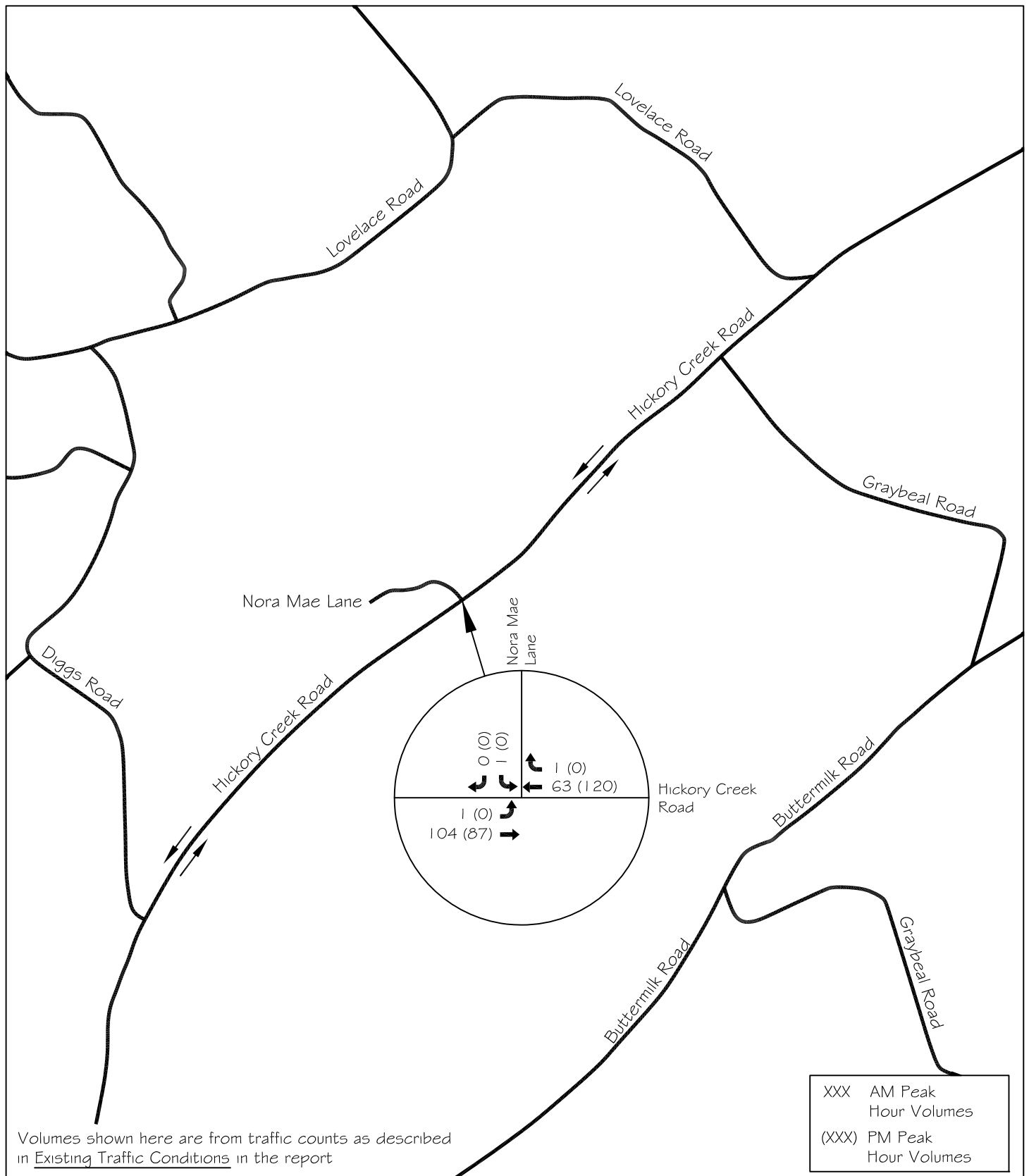
■ EXISTING TRAFFIC CONDITIONS

Traffic counts were conducted at the existing unsignalized intersection of Hickory Creek Road at Nora Mae Lane as directed by Knox County Engineering.

Traffic counts at Hickory Creek Road at Nora Mae Lane were obtained on Wednesday, November 1st, 2017 for a total of 6 hours at the intersection. The counts were conducted during the morning and afternoon peak periods. Local schools were in session when the traffic counts were conducted. Based on the traffic volumes counted at the intersection, the AM peak hour of traffic was observed from 7:15 to 8:15 AM. The PM peak hour of traffic was from 4:45 to 5:45 PM.

The manual tabulated traffic counts can be reviewed in Appendix E. In Figure 4, the volumes shown are from the existing traffic counts volumes during the AM and PM peak hours observed at the intersection. Very low (to non-existent) volumes were observed on Nora Mae Lane.

Due to the increased amount of other residential construction in the area, large amounts of construction traffic was observed during the traffic counts. This construction traffic included dump trucks, trucks with work trailers, larger unit vehicles, and a few semi-tractor trailers. The traffic on Hickory Creek Road was observed to have an overall large (truck) vehicle rate of over 15% during the morning counts and a rate of nearly 9% during the afternoon counts. For this study, all vehicles larger than a standard UPS or FedEx delivery vehicle were classified as a large (truck) vehicle.



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FIGURE 4

Hickory Creek Farms

2017 Peak Hour Traffic Volumes -
EXISTING TRAFFIC CONDITIONS

Capacity analyses were undertaken to determine the existing Level of Service (LOS) for the studied intersection with respect to vehicular traffic. The capacity analyses were calculated by following the methods outlined in the Highway Capacity Manual and using Synchro Traffic Software (Version 8). LOS is a qualitative measurement developed by the transportation profession of how well an intersection or roadway performs based on a driver's perception. LOS designations include LOS A through LOS F. The designation of LOS A signifies a roadway or intersection operating at best, while LOS F signifies road operations at the worst. This grading system provides a reliable straightforward means to communicate road operations to the public. The Highway Capacity Manual (HCM) lists level of service criteria for unsignalized intersections and signalized intersections. For unsignalized intersections, Level of Service is measured in terms of delay (in seconds). This measure is an attempt to quantify delay that includes travel time, driver discomfort, and fuel consumption. The LOS for a two-way stop (or yield) controlled intersection is defined by the delay for each minor approach and major street left-turn movement. Generally, LOS D is usually considered the lowest acceptable LOS by government agencies. Table 2 lists the level of service criteria for unsignalized intersections.

A/B



C/D



E/F



(Source: FDOT)

From the capacity calculations, the results from the existing peak hour vehicular traffic can be seen in Table 3 for the unsignalized intersection of Hickory Creek Road at Nora Mae Lane. The intersection is shown with a LOS designation, delay (in seconds), and v/c ratio (volume/capacity) for the AM and PM peak hours in the table. A v/c ratio of 1 would indicate that the traffic volumes are at the roadway capacity. Appendix F includes the worksheets from the capacity analyses for the existing peak hour vehicular traffic. For the intersection, the existing peak hour levels of service are shown to operate at a very good level during the AM and PM peak hours for vehicular traffic. No results for the PM peak hour are shown in the table due to zero recorded vehicles for the traffic movement.

TABLE 2




**LEVEL OF SERVICE AND DELAY FOR
UNSIGNALIZED INTERSECTIONS**



LEVEL OF SERVICE	DESCRIPTION	DELAY RANGE (seconds/vehicle)
A	Little or no delay	≤ 10
B	Short Traffic Delays	>10 and ≤ 15
C	Average Traffic Delays	>15 and ≤ 25
D	Long Traffic Delays	>25 and ≤ 35
E	Very Long Traffic Delays	>35 and ≤ 50
F	Extreme Traffic Delays	>50

Source: Highway Capacity Manual

**TABLE 3
2017 PEAK HOUR LEVEL OF SERVICE & DELAY - EXISTING TRAFFIC CONDITIONS**

INTERSECTION	TRAFFIC CONTROL	APPROACH	AM PEAK			PM PEAK		
			LOS	DELAY (seconds)	V/C	LOS	DELAY (seconds)	V/C
Hickory Creek Road at Nora Mae Lane	 Unsignalized	Eastbound Left	A	7.4	0.003	A	-	-
		Southbound Left/Right	A	9.8	0.005	A	-	-

Note: All analyses were calculated in Synchro 8 software and reported with HCM 2010 methodology

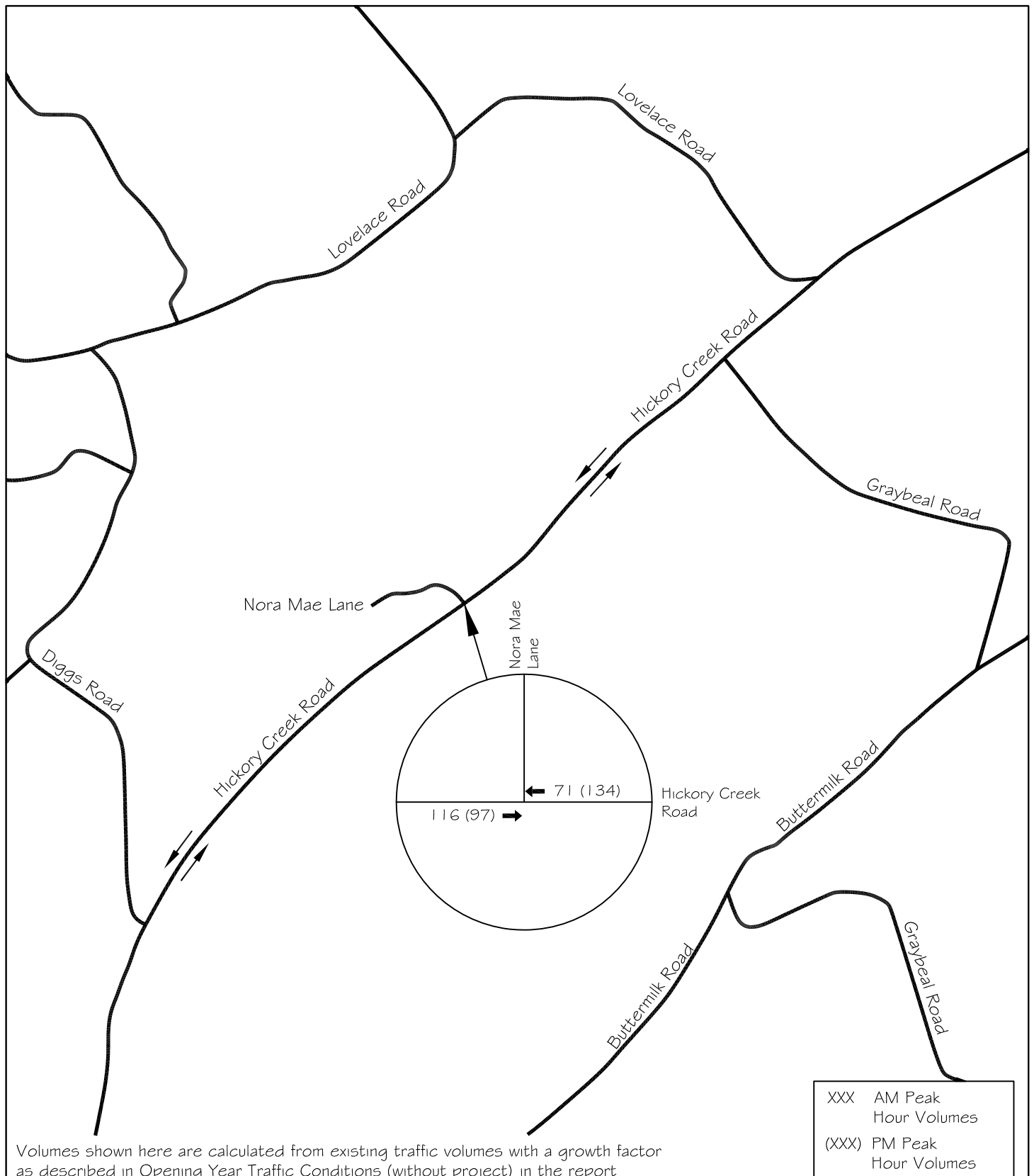
■ **OPENING YEAR TRAFFIC CONDITIONS (WITHOUT PROJECT):**

Opening year traffic volume estimates represent the future condition the proposed study area is potentially subject to without the proposed project being developed (no-build option). As previously stated, the build-out and full occupancy for this proposed new residential development were assumed to occur in the year 2021. This corresponds to almost four years for the development to reach full capacity and occupancy.

Traffic growth on Hickory Creek Road has shown relatively low growth over the past 10 years according to the TDOT count station (historical traffic data is shown in Appendix A). From 2006 thru 2016, the average annual growth rate was calculated to be 1.1%. Currently, there are no known relevant significant upcoming developments adjacent to the proposed site that would indicate large future increased traffic volumes in the study area in the short term. However, there are several residential subdivisions being constructed in the Hardin Valley area.

To insure a reasonable and conservative estimate for this study, a 3% annual growth rate was used to take into account any future development in the area and potential rising travel volumes. This would also take into account traffic generated by the growing construction of additional homes and subdivisions in the Hardin Valley area. The results of this growth rate application to the existing traffic volumes can be seen in Figure 5 for the year 2021. Figure 5 shows the background traffic volumes during the AM and PM peak hours only on Hickory Creek Road. Since Nora Mae Lane will be removed to construct this development, these volumes were not included in Figure 5.

Since the existing intersection of Hickory Creek Road at Nora Mae Lane will not exist in the future development, capacity calculations were not performed for the future conditions in the year 2021. Nonetheless, the projected thru volumes shown in Figure 5 on Hickory Creek Road could potentially exist in the future even without the proposed residential project being constructed and developed.



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FIGURE 5

Hickory Creek Farms

2021 Peak Hour Traffic Volumes -
OPENING YEAR TRAFFIC (WITHOUT
PROJECT)

■ **TRIP GENERATION**

The estimated amount of traffic that will be generated by the proposed residential development was calculated based upon rates and equations for peak hour trips provided by Trip Generation Manual, 9th Edition, a publication of the Institute of Transportation Engineers (ITE). A generated trip is a single or one-direction vehicle movement that is either entering or exiting the study site. The Trip Generation Manual is the traditional and most popular resource for determining trip generation rates when traffic impact studies are produced. The Manual lists and includes data for a variety of land uses and correlates trips generated based on different variables such as dwelling units, square footage, etc. The data from ITE for the proposed land use is shown in Appendix G. A summary of this information is presented in the following table:

TABLE 4
TRIP GENERATION FOR HICKORY CREEK FARMS

ITE LAND USE CODE	LAND USE DESCRIPTION	UNITS	GENERATED DAILY TRAFFIC	GENERATED TRAFFIC AM PEAK HOUR			GENERATED TRAFFIC PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
#210	Single-Family Detached Housing	115 Lots	1,195	25%	75%		63%	37%	
				23	68	91	76	44	120
Total New Volume Site Trips			1,195	23	68	91	76	44	120

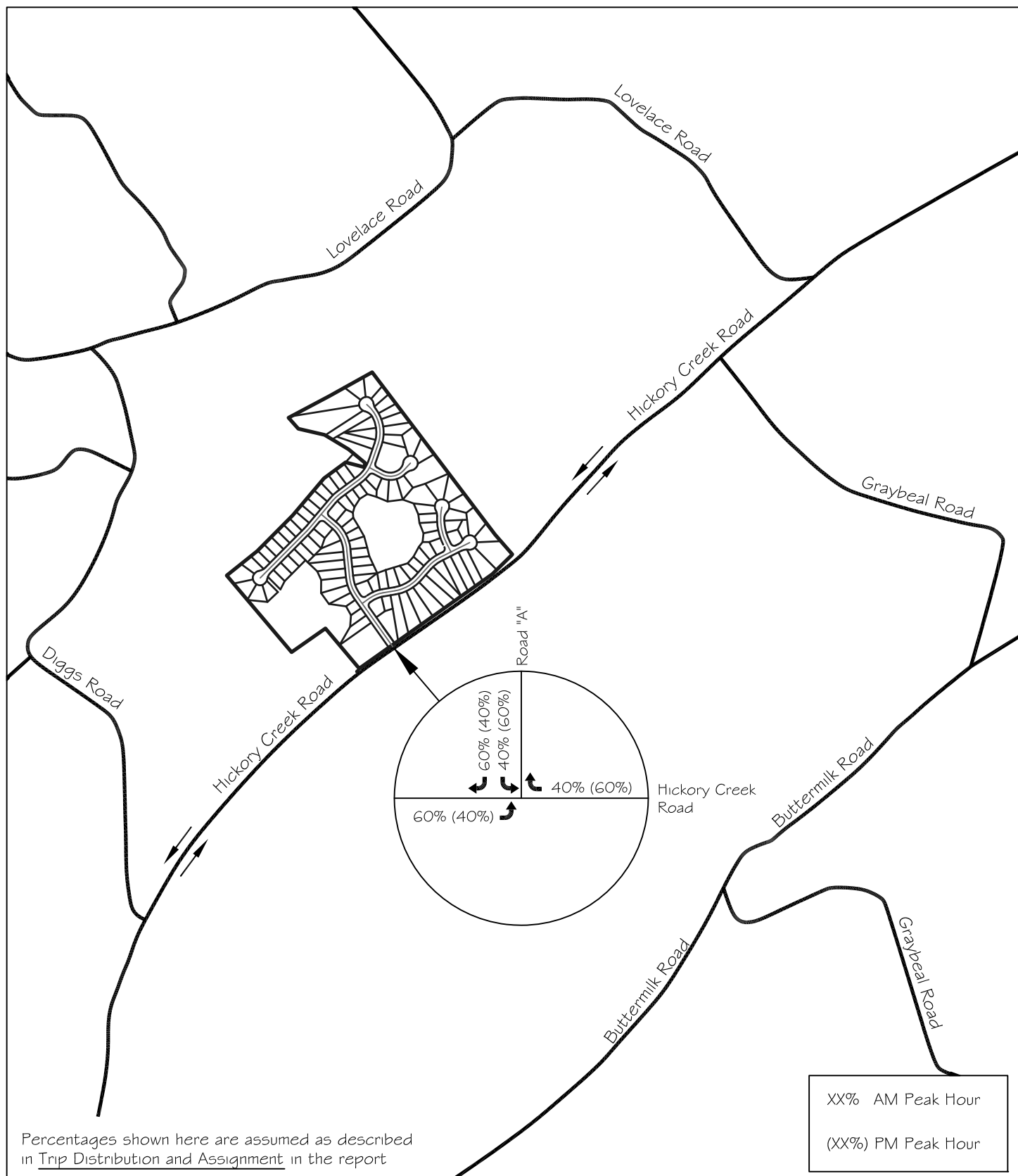
ITE Trip Generation Manual, 9th Edition

With a total of 115 single family residences, based on the calculations, it is estimated that 23 vehicles will enter the development, 68 will exit, for a total of 91 new generated trips during the AM Peak Hour in the year 2021. Similarly, it is estimated that 76 vehicles will enter the development, 44 will exit, for a total of 120 new generated trips during the PM Peak Hour in the year 2021. The calculated trips generated for an average weekday could be expected to be approximately 1,195 vehicles for the entire 115 lot development in the year 2021. No trip reductions were included either for pass-by or internal trips.

■ TRIP DISTRIBUTION AND ASSIGNMENT

Figure 6 shows the projected distribution for traffic entering/exiting the new residential subdivision during the future AM peak hour and the future PM peak hour at the proposed intersection on Hickory Creek Road. The percentages that are shown only pertain to the new trips generated by the new proposed residential dwellings in the subdivision that were calculated from the ITE Trip Generation Manual. There are a variety of developments and destinations that will potentially “attract” the projected traffic to and from the new residential development; Interstate 40/75 to the south, downtown Knoxville, various industries and businesses for employment, and a variety of public and private elementary, middle, and high schools. The projected trip distributions of Figure 6 are based on the existing traffic movements on Hickory Creek Road and are also surmised from surrounding concentrations of development and population.

Figure 7 shows the Traffic Assignment of the computed trips that will be generated by the development (from Table 4) and applied to the various intersection movements based on the assumed distribution of trips shown in Figure 6.



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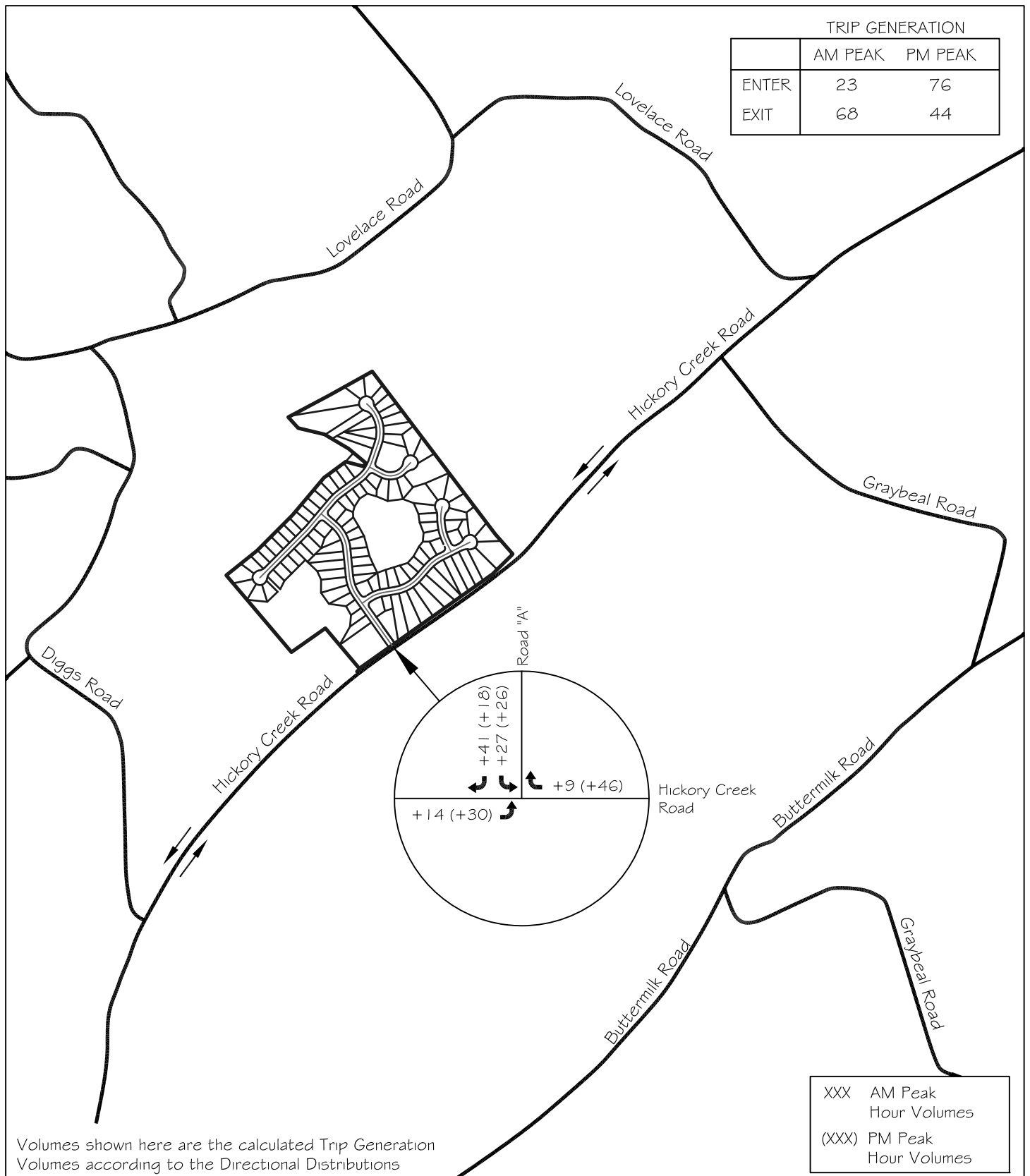


FIGURE 6

Hickory Creek Farms

Directional Distribution of Generated Traffic during AM and PM Peak Hour

TRIP GENERATION		
	AM PEAK	PM PEAK
ENTER	23	76
EXIT	68	44



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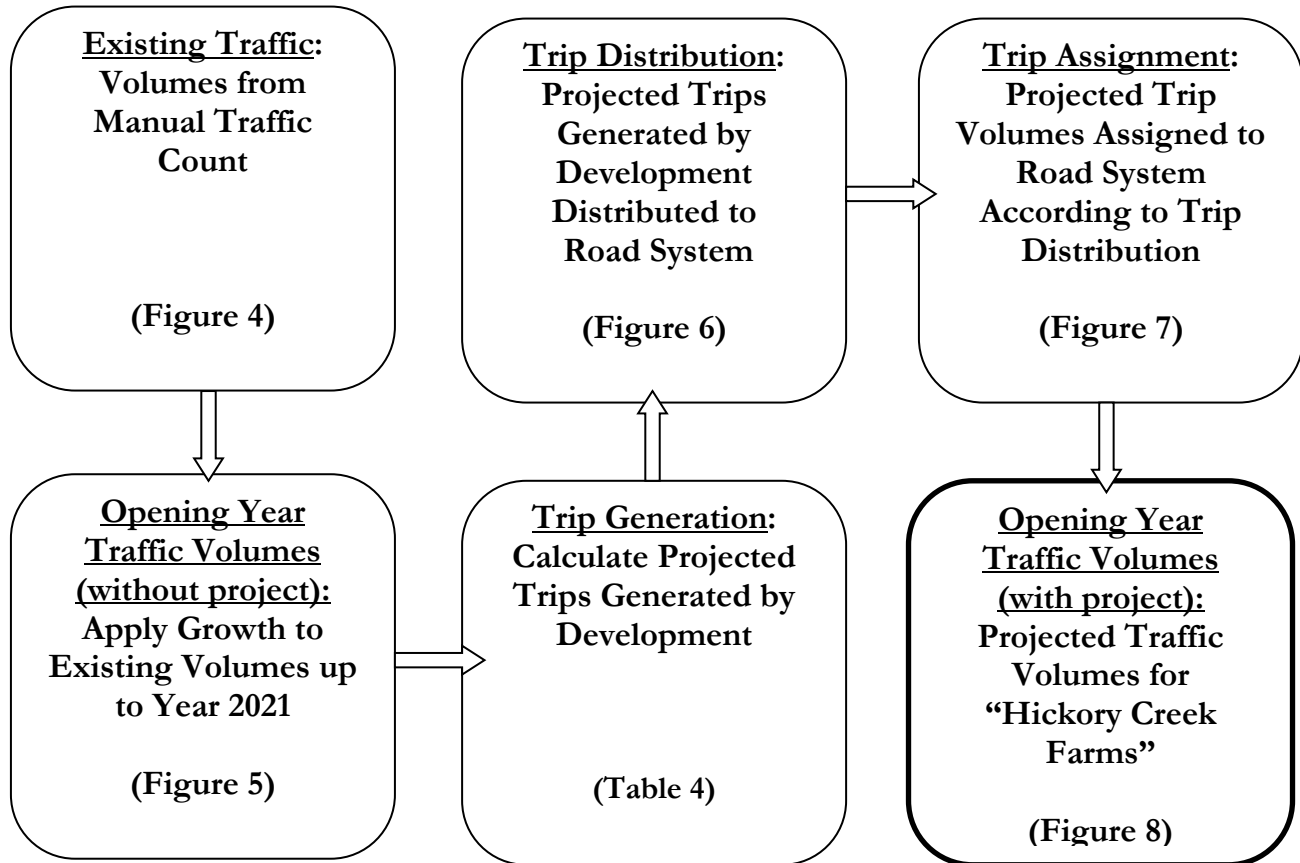
FIGURE 7

Hickory Creek Farms

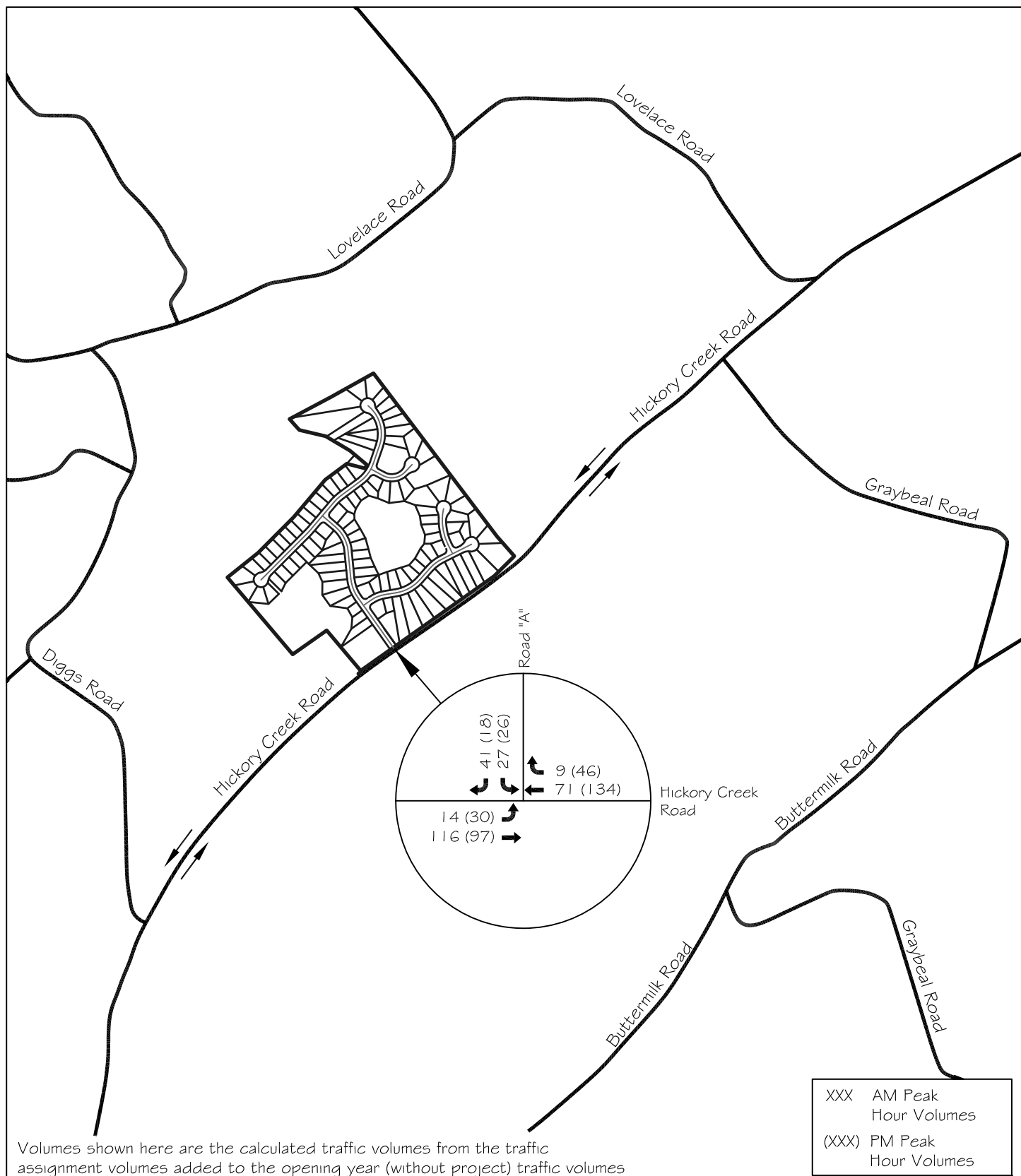
Traffic Assignment of Generated Traffic during AM and PM Peak Hour

■ **OPENING YEAR TRAFFIC CONDITIONS (WITH PROJECT)**

Overall, several additive steps were taken to estimate the total opening year projected traffic volumes at the new intersection on Hickory Creek Road when the residential development is fully constructed and occupied in the year 2021. The steps are illustrated below for clarity:



To calculate the total future projected traffic volumes at the studied intersection, the calculated peak hour traffic (from ITE Trip Generation) generated by the new proposed residential development was added to the 2021 opening year traffic volumes on Hickory Creek Road (shown in Figure 5) in accordance with the predicted directional distributions and assignments (shown in Figures 6 and 7). This procedure was necessary to obtain the total projected traffic volumes at the time the development is fully built-out. Figure 8 shows the projected AM and PM peak hour volumes at the studied intersection for the year 2021.



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FIGURE 8


Hickory Creek Farms

2021 Peak Hour Traffic Volumes -
 OPENING YEAR TRAFFIC (WITH
 PROJECT)

Capacity analyses were undertaken to determine the projected Level of Service (LOS) for vehicles at the studied intersection. Appendix F includes the worksheets for these capacity analyses.

The results of the capacity calculations of the projected peak hour vehicular traffic can be seen in Table 5 for the studied intersection for the year 2021. As can be seen in the table, the new intersection of Hickory Creek Road at Road "A" is calculated to operate very well with respect to the level of service.

TABLE 5
2021 PEAK HOUR LEVEL OF SERVICE & DELAY - OPENING YEAR (WITH PROJECT)

INTERSECTION	TRAFFIC CONTROL	APPROACH	AM PEAK			PM PEAK		
			LOS	DELAY (seconds)	V/C	LOS	DELAY (seconds)	V/C
Hickory Creek Road at Road "A"	 Unsignalized	Eastbound Left	A	7.4	0.010	A	7.7	0.024
		Soutbound Left/Right	A	9.8	0.091	B	10.6	0.071

Note: All analyses were calculated in Synchro 8 software and reported with HCM 2010 methodology

■ **POTENTIAL SAFETY ISSUES**

The study area was investigated for potential safety issues. Several features of the adjacent transportation system were identified and are discussed in the following pages as having potential safety issues.

SPOT SPEED STUDY

A spot speed study was conducted on Hickory Creek Road to sample and tabulate the existing vehicle speeds along the road in the vicinity of the proposed development. The equipment used for the speed study was a Bushnell Speedster III Radar Speed Gun. The vehicles that were tabulated for the spot speed study were the eastbound and westbound motorists along Hickory Creek Road near the intersection with Nora Mae Lane.

As expected, the results of the study indicate that the majority of the traffic along Hickory Creek Road travels at a greater speed than the posted speed limit. The posted speed limit on Hickory Creek Road is 40 mph. The results of the spot speed study indicate that the observed 85th percentile speed was 50 mph. The spot speed field observations are provided in Appendix H.

EVALUATION OF TURN LANE THRESHOLDS

The proposed new intersection on Hickory Creek Road at Road “A” was evaluated for the need for separate left and right turn lanes on Hickory Creek Road for entering vehicles into the development. Based on the projected traffic volumes at the intersection on Hickory Creek Road and according to “Knox County’s Access Control and Driveway Design Policy”, it appears that a separate left turn lane and a separate right turn lane are not warranted for entering vehicles. The Knox County turn lane policy worksheets are located in Appendix I and the results shown in the Appendix are based on the projected volumes during the PM peak hour since this time period is estimated to have the highest turning volumes at the proposed new intersection.

The design policy for turn lane warrants relates volume thresholds based on prevailing speeds for two-lane roadways. The speed classification that was chosen for this evaluation was

based on the spot speed study that showed the 85th percentile speed was 50 mph. Therefore, this study evaluation used the Knox County classification for speeds of 46 to 55 mph and the calculated projected volumes.

■ **EVALUATION OF SIGHT DISTANCE**

Based on an 85th percentile observed speed of 50 mph on Hickory Creek Road; the recommended intersection sight distance is 500 feet looking east and west at the intersection of Hickory Creek Road at Road “A”.

Besides the existing farm fencing and utility poles, there are not any existing features that would potentially interfere with sight distance at the proposed location of the intersection on Hickory Creek Road.



**View of Hickory Creek Road at Proposed Road “A” Intersection
(Looking Southwest)**



**View of Hickory Creek Road at Proposed Road “A” Intersection
(Looking Northeast)**

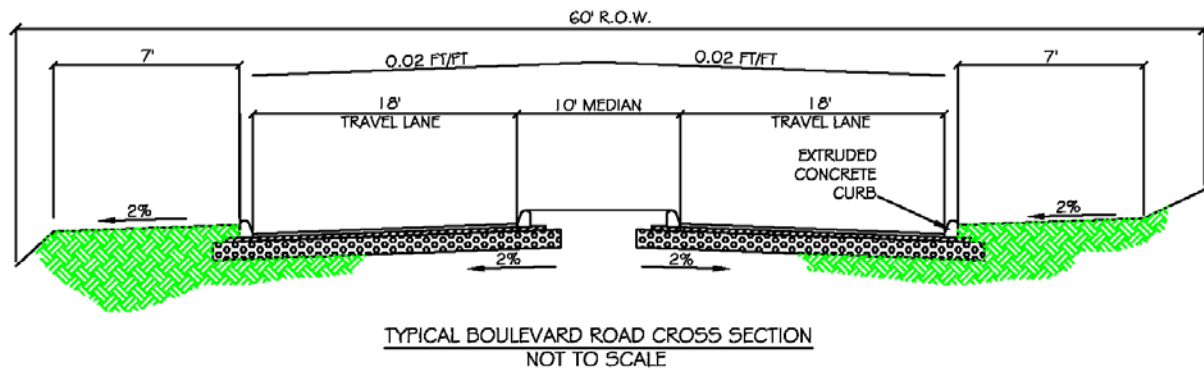
Using a rolling measuring wheel, the sight distance looking west at the proposed new intersection on Hickory Creek Road at Road “A” was measured to be well in excess of the required 500-foot distance at the roadway edge. Sight distance at the proposed new intersection on Hickory Creek Road at Road “A” looking east also was measured to be well in excess of the required 500-foot distance at the roadway edge. Suppressing vegetation at this proposed new intersection will need to be maintained in the future. The site designer should ensure that these sight distance lengths are met and they should be labeled on the plans.

CONCLUSIONS AND RECOMMENDATIONS

The following is an overview of recommendations to minimize the traffic impacts of the proposed development on the surrounding road system while attempting to achieve an acceptable level of traffic flow and safety.

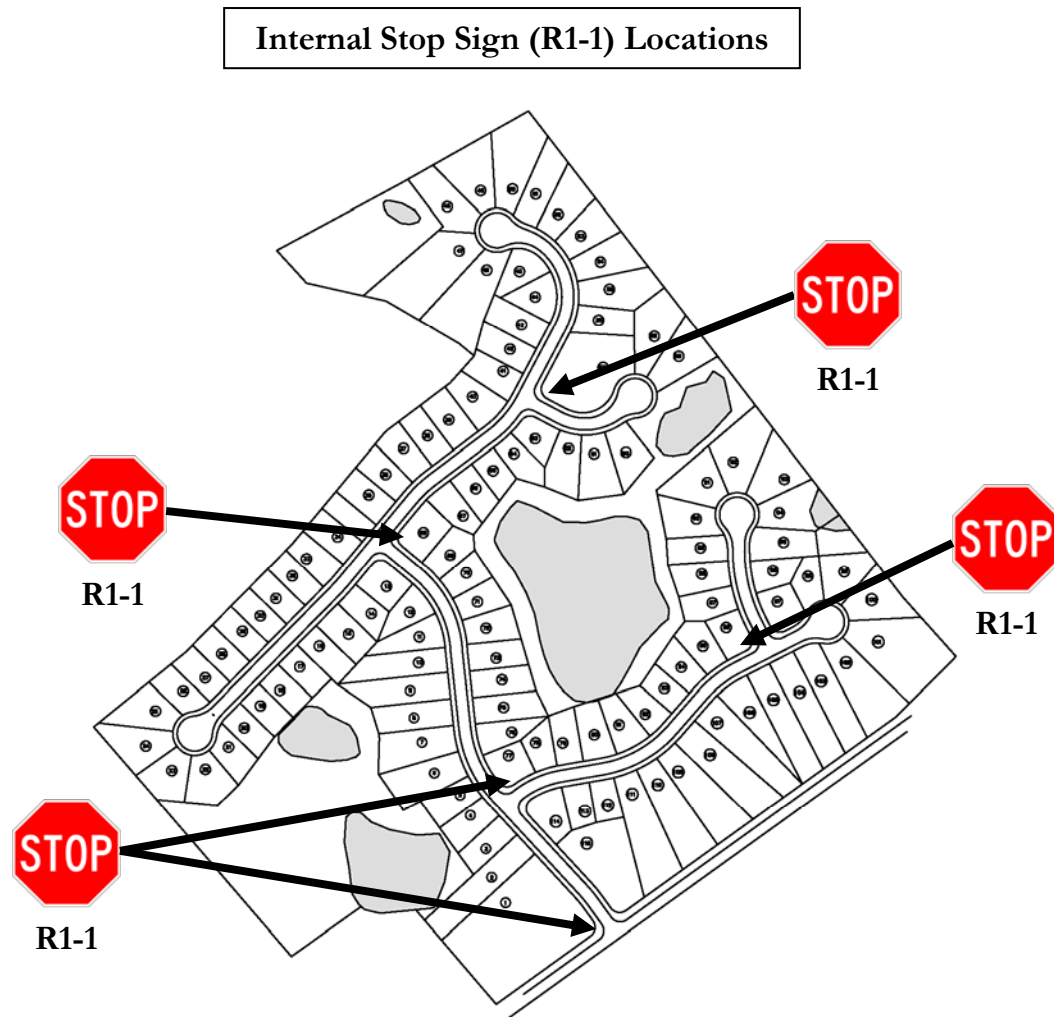
- 1) **Hickory Creek Road at Road “A”:** From the capacity calculations, it has been shown (Table 5) that the traffic at the new intersection at Hickory Creek Road should operate very well with minimal delays during the AM and PM peak periods once the development is complete.
 - 1a) The analysis shows that only a single exiting lane for left and right exiting vehicles is required at the Hickory Creek Road at Road “A” entrance. Also, a separate left turn lane or right turn lane on Hickory Creek Road into the development is not required due to the low projected volumes.
 - 1b) The speed limit on Hickory Creek Road is posted at 40 mph. Based on an 85th percentile observed speed of 50 mph on Hickory Creek Road, the recommended intersection sight distance requirement is 500 feet and is available at the proposed intersection location. The site designer should ensure that these sight distance lengths are met and they should be labeled on the plans. Vegetation should be maintained on the north side of Hickory Creek Road along the right of way to maintain the necessary distances. A land surveyor should measure the sight distance available and verify these estimates. The overall required sight distance should be measured at the proposed location of the intersection at a minimum of 15 feet off of the edge of the roadway per Knox County subdivision regulations (Section 62-88).
 - 1c) It is recommended that the main entrance southbound approach (Road “A”) at the intersection with Hickory Creek Road be designed and constructed with a 24” white stop bar and with a Stop Sign (R1-1). The stop bar should be applied at a minimum of 4 feet away from the edge of Hickory Creek Road and should be placed at the desired stopping point that provides the maximum sight distance.

- 1d) Intersection sight distance at the new proposed Road “A” entrance at Hickory Creek Road must not be impacted by new signage, future landscaping or existing vegetation.
- 1e) Road “A” at the intersection with Hickory Creek Road should be designed and constructed as a boulevard roadway cross section. The boulevard cross section at a minimum should have a 10-foot median with 2 - 18 foot lanes within 60-feet of right-of-way. See below for an example of a boulevard typical section. The boulevard road section of Road “A” should be constructed up to the Road “B” intersection.



- 2) **Hickory Creek Farms Subdivision Internal Roads:** The current layout plan shows several new roadways being constructed within the development as shown in Figure 3.

2a) Stop Signs (R1-1) should be installed at the internal intersections as shown below:



- 2b) It is recommended that a “No Outlet” (W14-2) sign be posted at the entrance of the development on Road “A”.
- 2c) It is recommended that a 25 mph speed limit be posted at the entrance on Road “A” into the new residential subdivision.

- 2d) Sight distance at the new internal intersections must not be impacted by new signage, future landscaping, or parked vehicles. For an assumed posted 25 mph speed for the internal development streets, the internal intersection sight distance requirement is 250 feet. The road layout designer should insure that these sight distance lengths are met, maximized, and they should be labeled on the plans.
 - 2e) All road grade and intersection elements internally and externally should be designed to AASHTO, TDOT, and Knox County Engineering specifications and guidelines to ensure proper operation.
 - 2f) The proposed lots within the development that are adjacent to Hickory Creek Road should not be allowed to have direct access to Hickory Creek Road.
 - 2g) Traffic calming measures could be considered for Road “D”. The road alignment of Road “D” has a fairly long and straight horizontal alignment. The possible need for traffic calming measures inside the project for the new road will need to be coordinated with the Knox County Engineering and Public Works during the detailed design phase. Speed humps should be considered to lower speeds through this portion of the subdivision.
 - 2h) There is an existing residence and property owner located at 2161 Nora Mae Lane that will not be a part of the development. Currently, this property has an access easement across the proposed development property for access to Nora Mae Lane. This property will need to be provided access to Hickory Creek Road during construction and once the development has been constructed. The details of this access will need to be addressed in the detailed design phase.
- 3) **Pedestrian and Bicycle Considerations:** A sidewalk system within Hickory Creek Farms should be constructed.
- 3a) Construct a 5-foot concrete sidewalk with a minimum 2-foot planting strip along all roads within the development. The sidewalks should at a minimum be on one side of each internal roadway.

- 3b) Sidewalks in the development should have appropriate ADA compliant curbed ramps at the intersection corners.
- 3c) All drainage grates and covers for the residential development need to be pedestrian and bicycle friendly.

APPENDIX A

HISTORICAL TRAFFIC COUNT DATA

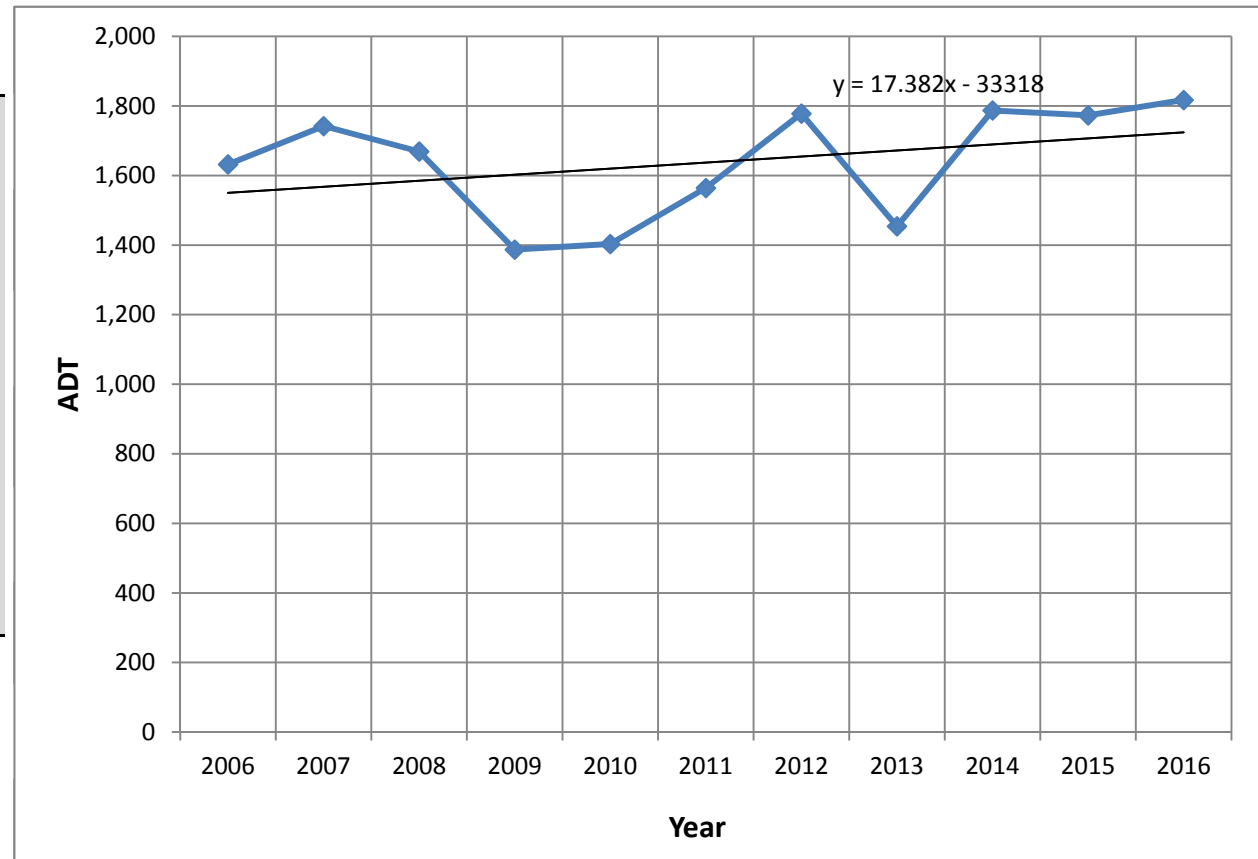
Historical Traffic Counts

Organization: TDOIT

Station ID #: 000135

Location: Hickory Creek Road (near Loudon County line)

YEAR	ADT	Trendline
2006	1,632	
2007	1,742	
2008	1,669	
2009	1,387	
2010	1,403	
2011	1,564	
2012	1,778	
2013	1,454	
2014	1,787	
2015	1,773	
2016	1,817	



2006 - 2016 Growth Rate = 11.3%


Annual Growth Rate = 1.1%


APPENDIX B

WALK SCORE

WALK SCORE


(from walkscore.com)




Walk Score  [Get Scores](#) [Find Apartments](#) [My Favorites](#) [Add to Your Site](#)

 [Go](#)


12708 Hickory Creek Road

Knoxville, Tennessee, 37932

Commute to **Downtown Farragut** 

 22 min  47 min  60+ min [View Routes](#)

[Favorite](#) [Map](#) [Nearby Apartments](#)

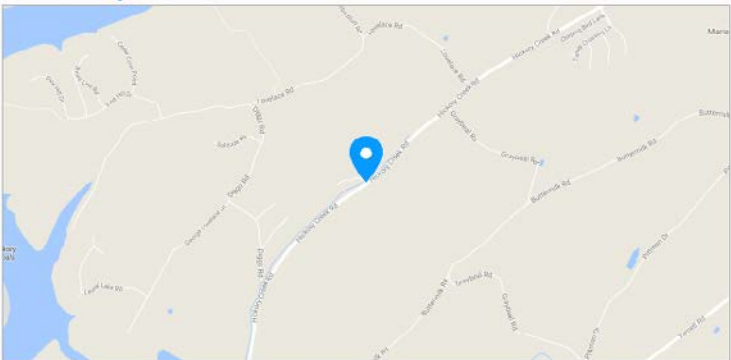
[Looking for a home for sale in Knoxville?](#) 

Walk Score
0

Car-Dependent
Almost all errands require a car.

[About your score](#)

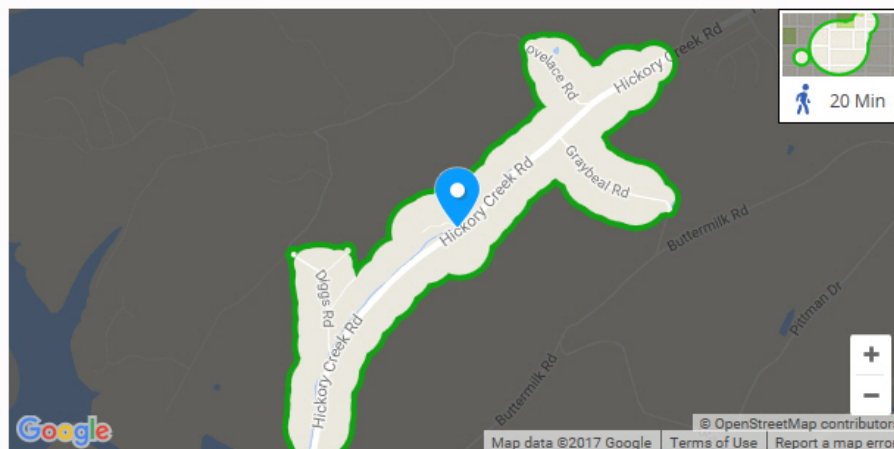
[Add scores to your site](#)



Travel Time Map

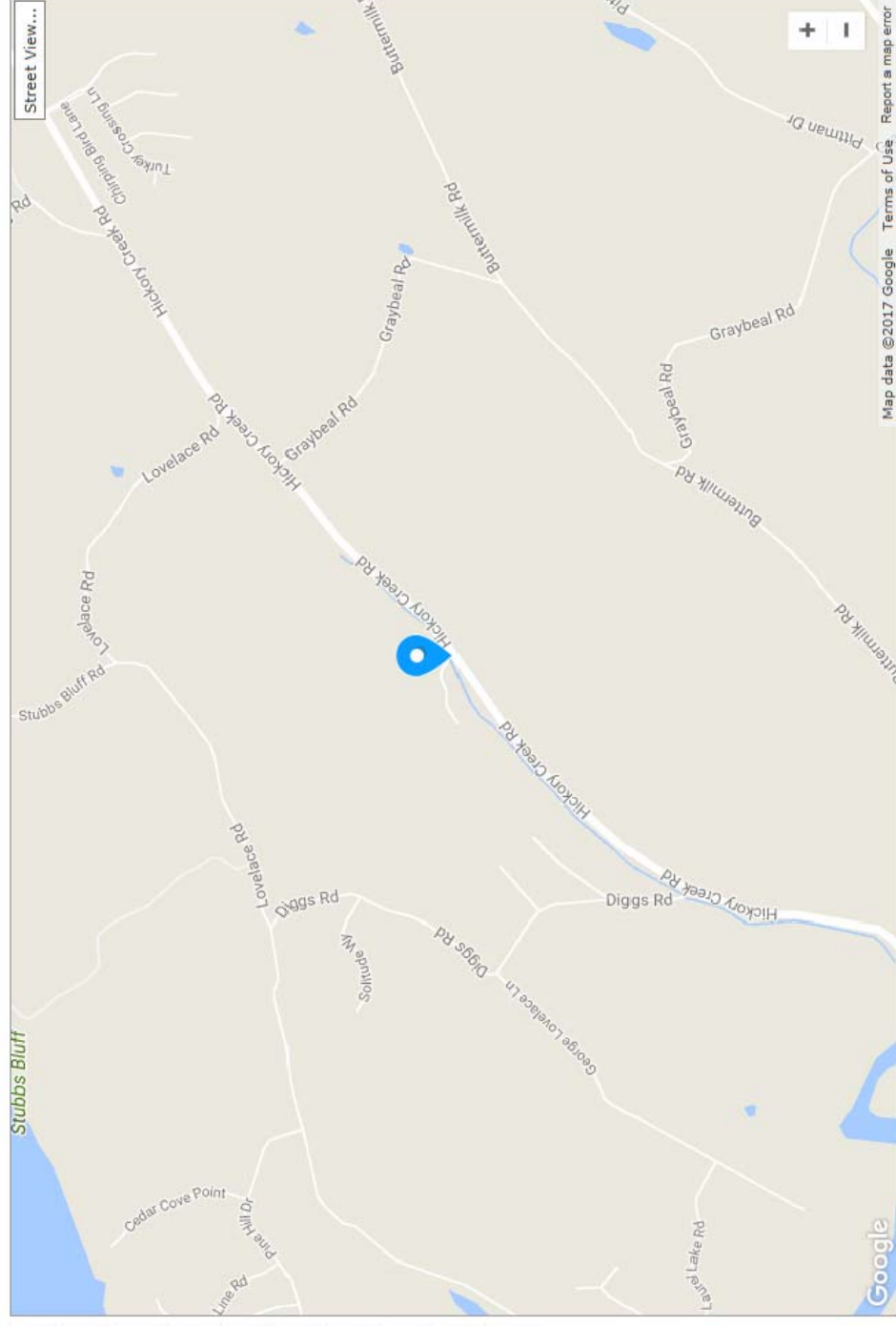
[Add to your site](#)

Explore how far you can travel by car, bus, bike and foot from 12708 Hickory Creek Road.



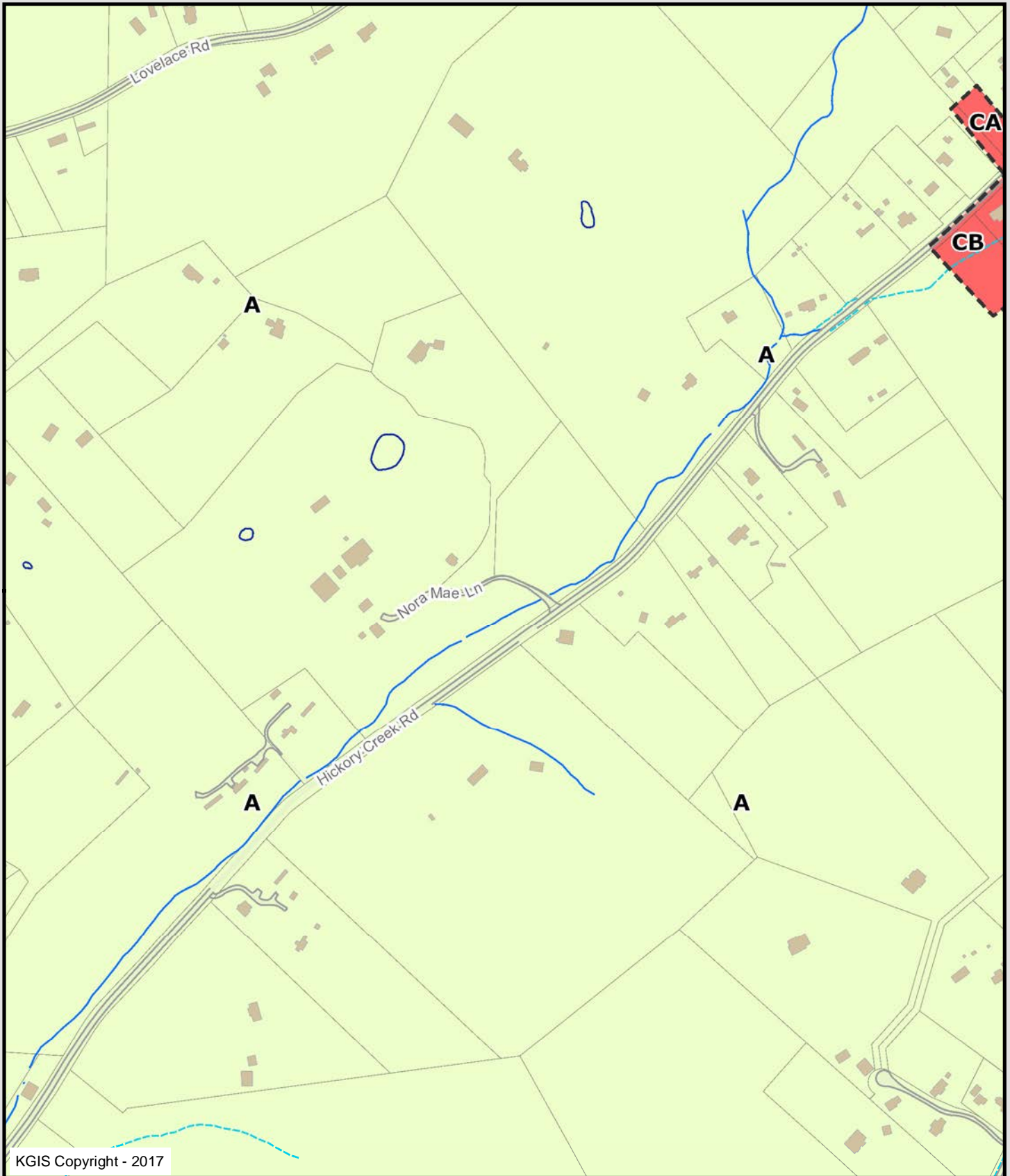
What's Nearby

Restaurants:	
Flying J Travel Center	1.6mi
Coffee:	
Dunkin' Donuts	2.1mi
Bars:	
Lakeside Tavern	6.8mi
Groceries:	
Food City	3.5mi
Parks:	
Hickory Creek Park	1.1mi
Schools:	
St John Neumann School	2.9mi
Shopping:	
Cupids Outlet	1.9mi
Entertainment:	
New Bethel Baptist Church	4.2mi
Errands:	
Farragut Lawn and Tractor	3.1mi
Search Nearby:	



APPENDIX C

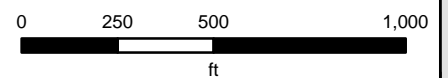
ZONING MAP



Hickory Creek Farms Zoning

Knoxville - Knox County - KUB Geographic Information System

Printed: 11/6/2017 at 10:23:44 AM



KGIS makes no representation or warranty as to the accuracy of his map and its information nor to its fitness for use. Any user of this map product accepts the same AS IS, WITH ALL FAULTS, and assumes all responsibility for the use thereof, and further covenants and agrees to hold KGIS harmless from any and all damage, loss, or liability arising from any use of this map product.

APPENDIX D

KNOXVILLE/KNOX COUNTY METROPOLITAN PLANNING COMMISSION REZONING REPORT

KNOXVILLE/KNOX COUNTY METROPOLITAN PLANNING COMMISSION REZONING REPORT

► **FILE #:** 11-B-17-RZ

AGENDA ITEM #:

AGENDA DATE: 11/9/2017

► **APPLICANT:** KATHY PINKSTON

OWNER(S): Kathy Pinkston

TAX ID NUMBER: 129 04706,04707&04709

[View map on KGIS](#)

JURISDICTION: County Commission District 6

STREET ADDRESS: 2127 Nora Mae Ln

► **LOCATION:** Northwest side Hickory Creek Rd., southwest of Graybeal Rd.

► **APPX. SIZE OF TRACT:** 40.66 acres

SECTOR PLAN: Northwest County

GROWTH POLICY PLAN: Rural Area

ACCESSIBILITY: Access is via Hickory Creek Rd., a minor arterial street with 21' of pavement width within 50' of right-of-way, or Nora Mae Ln., a private easement with varied pavement widths.

UTILITIES: Water Source: West Knox Utility District

Sewer Source: West Knox Utility District

WATERSHED: Hickory Creek

► **PRESENT ZONING:** A (Agricultural)

► **ZONING REQUESTED:** PR (Planned Residential)

► **EXISTING LAND USE:** Vacant land and house

► **PROPOSED USE:** Residential development

DENSITY PROPOSED: 5 du/ac

EXTENSION OF ZONE: No, surrounded by AG plan designation and A zoning

HISTORY OF ZONING: None noted

SURROUNDING LAND USE AND ZONING: North: Vacant land / AG / A (Agricultural)

South: Hickory Creek Rd., house and vacant land / AG / A (Agricultural)

East: Houses and vacant land / AG / A (Agricultural)

West: Houses and vacant land / AG / A (Agricultural)

NEIGHBORHOOD CONTEXT: This area is developed with agricultural and rural residential uses under Agricultural zoning.

STAFF RECOMMENDATION:

► **RECOMMEND that County Commission APPROVE PR (Planned Residential) zoning at a density of up to 2 du/ac. (Applicant requested up to 5 du/ac.)**

PR zoning at the recommended density is consistent with the sector plan recommendation and the Growth Policy Plan and is compatible with surrounding development and zoning. Under PR zoning, a development plan would have to be reviewed and approved by MPC as a use on review and concept plan. The requested density of up to 5 du/ac is not consistent with the policies of the Growth Policy Plan. The recommended density of up to 2 du/ac is also more compatible with the scale of the surrounding development in the area.

COMMENTS:

REZONING REQUIREMENTS FROM ZONING ORDINANCES (must meet all of these):

THE PROPOSED AMENDMENT SHALL BE NECESSARY BECAUSE OF SUBSTANTIALLY CHANGED OR CHANGING CONDITIONS IN THE AREA AND DISTRICTS AFFECTED, OR IN THE CITY/COUNTY GENERALLY:

1. The property is located in the Rural Area on the Growth Policy Plan and is not adjacent to the existing Planned Growth Area. The maximum density allowed by the Growth Plan in this particular situation is 2 du/ac. Staff is recommending approval of the associated sector plan amendment to LDR, which allows the recommended PR zoning and density.
3. Staff has conducted a slope analysis for the property. With application of the residential density guidelines of the Hillside and Ridgetop Protection Plan, using the maximum density of 2 du/ac allowed by the Growth Policy Plan, the recommended density is 1.93 du/ac, consistent with the density recommendation. The slope analysis, map and calculations are attached.
4. The recommended PR zoning up to 2 du/ac allows the property to be developed with up to 81 dwelling units, which is consistent with the policies of the Growth Policy Plan. The current agricultural zoning would require minimum lot sizes of 1 acre and likely yield less than 40 lots, once legal access to the lots is established.
5. The PR zone requires use on review approval of a development plan by MPC prior to construction. This will provide the opportunity for staff to review the plan and address issues such as traffic circulation, lot layout, recreational amenities, drainage, types of units and other potential development concerns. It will also give the opportunity for public comment at the MPC meeting.

THE PROPOSED AMENDMENT SHALL BE CONSISTENT WITH THE INTENT AND PURPOSE OF THE APPLICABLE ZONING ORDINANCE:

1. PR zoning is intended to provide optional methods of land development which encourage more imaginative solutions to environmental design problems. Residential areas thus established would be characterized by a unified building and site development program, open space for recreation and provision for commercial, religious, educational and cultural facilities which are integrated with the total project by unified architectural and open space treatment.
2. Additionally, the zoning states that each development shall be compatible with the surrounding or adjacent zones. Such compatibility shall be determined by the Planning Commission by review of development plans. PR zoning is required by the Growth Policy Plan in the Rural Area if the density is greater than 1 du/ac and staff maintains that PR is the most appropriate zone for this development.

THE PROPOSED AMENDMENT SHALL NOT ADVERSELY AFFECT ANY OTHER PART OF THE COUNTY, NOR SHALL ANY DIRECT OR INDIRECT ADVERSE EFFECTS RESULT FROM SUCH AMENDMENT:

1. In order to allow consideration of densities of up to 3 du/ac in the Rural Area of the Growth Policy Plan, the property must be zoned PR, sewer and water services must be available and the frontage road must connect to a collector or arterial. All of these conditions are met but the property is not adjacent to the Planned Growth Area 3.5 miles east or 1 mile southwest, so the recommended zoning and density are consistent with the policies of the Growth Policy Plan.
2. With the recommended sector plan amendment to LDR, the recommended PR zoning and density are consistent with the sector plan.
3. Sidewalks will be required on at least one side of each street within the development, and possibly along the Hickory Creek Rd. frontage.
4. The PR zoning district has provisions for preservation of open space and providing recreational amenities as part of the development plan. The applicant will be expected to demonstrate how these provisions are met as part of the required development plan review.
5. The proposed PR zoning at a density of up to 5 du/ac would allow for a maximum of 203 dwelling units to be proposed for the site. That number of detached units would add approximately 1980 vehicle trips per day to the street system and would add approximately 83 children under the age of 18 to the school system. At the staff recommended density of up to 2 du/ac, a maximum of 81 dwelling units may be proposed for the site. That number of detached units would add approximately 854 vehicle trips per day to the street system and would add approximately 33 children under the age of 18 to the school system.

THE PROPOSED AMENDMENT SHALL BE CONSISTENT WITH AND NOT IN CONFLICT WITH THE GENERAL PLAN OF KNOXVILLE AND KNOX COUNTY, INCLUDING ANY OF ITS ELEMENTS, MAJOR ROAD PLAN, LAND USE PLAN, COMMUNITY FACILITIES PLAN, AND OTHERS:

1. Staff is recommending approval of an amendment to the Northwest County Sector Plan map to LDR, within which the recommended zoning and density are compatible. The applicant's requested density of up to 5 du/ac is not consistent with the policies of the Growth Policy Plan.
2. Approval of this request could lead to future requests for PR zoning in this area.
3. This proposal does not present any apparent conflicts with any other adopted plans.

Upon final approval of the rezoning, the developer will be required to submit a development plan for MPC

consideration of use on review approval prior to the property's development. The plan will show the property's proposed development, landscaping and street network and will also identify the types of residential units that may be constructed. Grading and drainage plans may also be required at this stage, if deemed necessary by Knox County Engineering and MPC staff.

State law regarding amendments of the general plan (which include Sector Plan amendments) was changed with passage of Public Chapter 1150 by the Tennessee Legislature in 2008. The law provides for two methods to amend the plan at TCA 13-3-304:

1. The Planning Commission may initiate an amendment by adopting a resolution and certifying the amendment to the Legislative Body. Once approved by majority vote of the Legislative Body, the amendment is operative.
2. The Legislative Body may also initiate an amendment and transmit the amendment to the Planning Commission. Once the Planning Commission has considered the proposed amendment and approved, not approved, or taken no action, the Legislative Body may approve the amendment by majority vote and the amendment is operative.

ESTIMATED TRAFFIC IMPACT: 1980 (average daily vehicle trips)

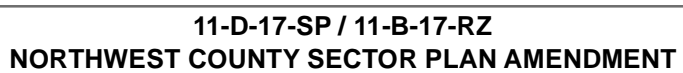
Average Daily Vehicle Trips are computed using national average trip rates reported in the latest edition of "Trip Generation," published by the Institute of Transportation Engineers. Average Daily Vehicle Trips represent the total number of trips that a particular land use can be expected to generate during a 24-hour day (Monday through Friday), with a "trip" counted each time a vehicle enters or exits a proposed development.

ESTIMATED STUDENT YIELD: 83 (public school children, ages 5-18 years)

Schools affected by this proposal: Hardin Valley Elementary, Karns Middle, and Hardin Valley Academy.

- School-age population (ages 5–18) is estimated by MPC using data from a variety of sources.
- Students are assigned to schools based on current attendance zones as determined by Knox County Schools. Zone boundaries are subject to change.
- Estimates presume full build-out of the proposed development. Build-out is subject to market forces, and timing varies widely from proposal to proposal.
- Student yields from new development do not reflect a net addition of children in schools. Additions occur incrementally over the build-out period. New students may replace current population that ages through the system or moves from the attendance zone.

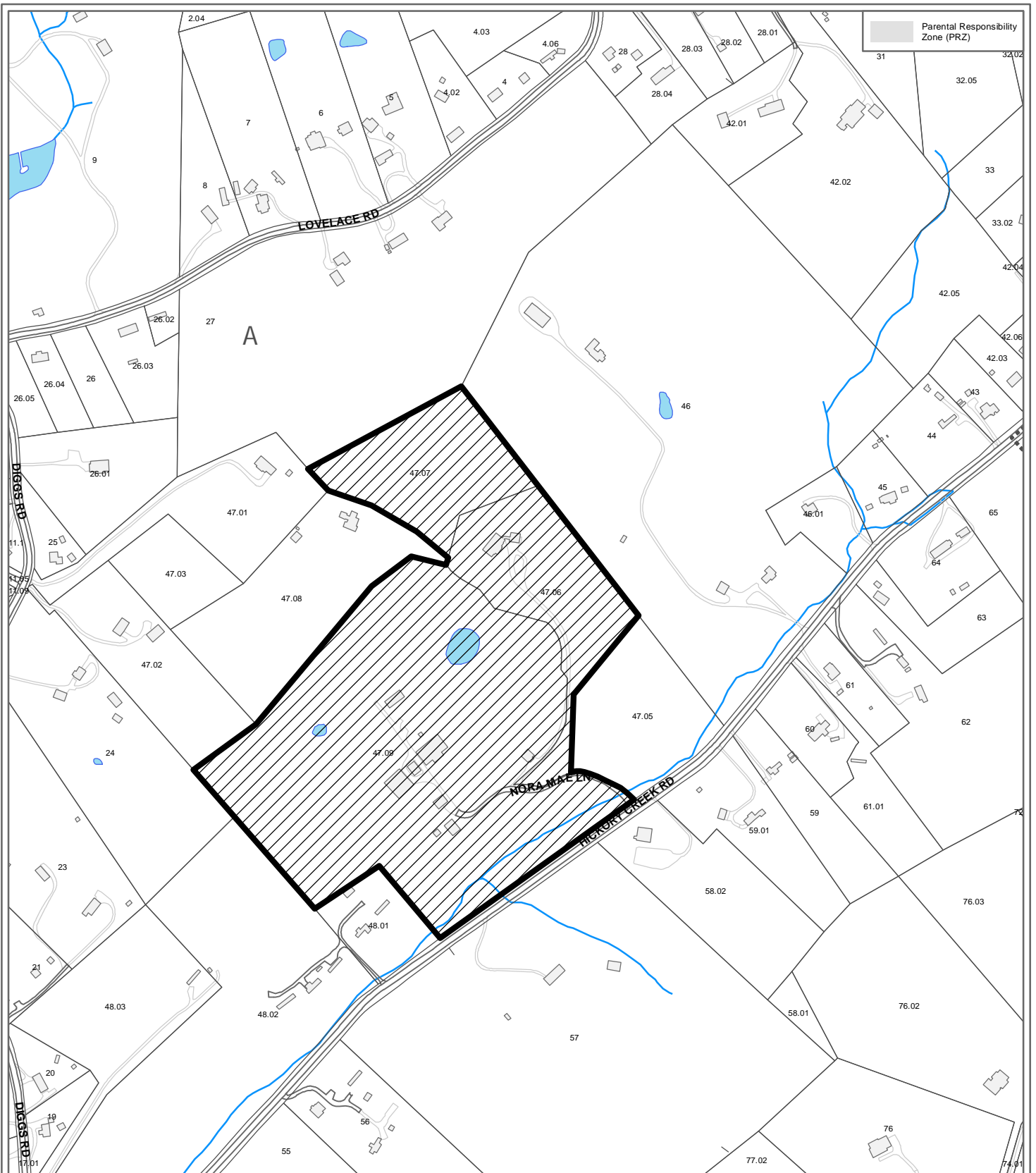
If approved, this item will be forwarded to for action on . If denied, MPC's action is final, unless the action to deny is appealed to . The date of the appeal hearing will depend on when the appeal application is filed. Appellants have to appeal an MPC decision in the County.



A horizontal scale bar with a black top half and a white bottom half. The word "Feet" is centered below the bar. The number "0" is at the left end, and "500" is at the right end.



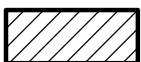
Original Print Date: 10/17/2017 Revised: 11/2/2017
Metropolitan Planning Commission * City / County Building * Knoxville, TN 37902



11-B-17-RZ REZONING

From: A (Agricultural)

To: PR (Planned Residential)



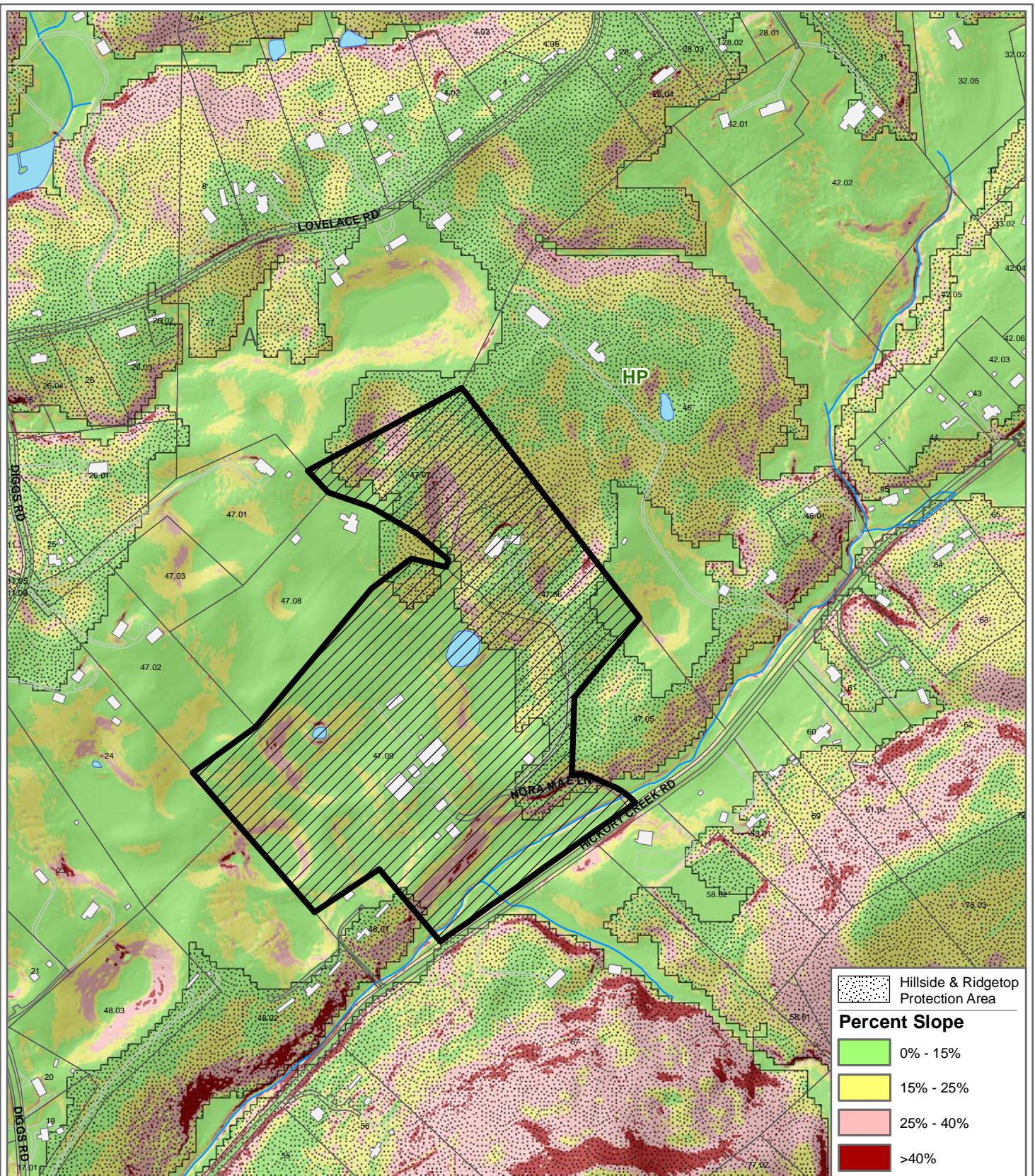
Petitioner: Pinkston, Kathy

Map No: 129

Jurisdiction: County



Original Print Date: 10/17/2017 Revised:
Metropolitan Planning Commission * City / County Building * Knoxville, TN 37902



11-B-17-RZ **REZONING - SLOPE ANALYSIS**

From: A (Agricultural)

To: PR (Planned Residential)



Petitioner: Pinkston, Kathy

Map No: 129

Jurisdiction: County

0 500
Feet



Original Print Date: 11/2/2017 Revised:
Metropolitan Planning Commission * City / County Building * Knoxville, TN 37902

11-B-17-RZ Slope Analysis

			Acreage
Non-Hillside Portions			25.9
Hillside and Ridgetop Protection Area			
Value	Percent Slope	Count	Acres
1	0%-15%	9567	5.49
2	15%-25%	12402	7.12
3	25%-40%	3290	1.89
4	>40%	170	0.10
			14.59
Ridgetop Area			0
Site Total			40.49

MPC STAFF - SLOPE / DENSITY ANALYSIS

11-B-17-RZ - Kathy Pinkston - A to PR

CATEGORY	ACRES	RECOMMENDED DENSITY (Dwelling Units / Acre)	NUMBER OF UNITS
Non-Hillside	25.9	2.00	51.8
0-15% Slope	5.49	2.00	11.0
15-25% Slope	7.12	2.00	14.2
25-40% Slope	1.89	0.50	0.9
Greater than 40% Slope	0.1	0.20	0.0
Ridgetops	0	5.00	0.0
Subtotal: Sloped Land	14.6		26.2
Maximum Density Guideline (Hillside & Ridgetop Protection Plan)	40.5	1.93	78.0
Proposed Density (Applicant)	40.5	5.00	200.0

From Hillside & Ridgetop Protection Plan, page 33

LOW DENSITY AND RURAL RESIDENTIAL USES

Density and Land Disturbance Guidelines

As proposals for changes to the zoning map and development plans/concept plans are considered, the following factors are recommended to determine the overall allowable density for residential rezonings and the overall land disturbance allowable in new development or subdivisions for those portions of parcels that are within the Hillside and Ridgetop Protection Area. These factors should be codified as regulations in the future. The areas of the Growth Policy Plan referenced below are presented on page 18.

Table 3: Residential Density and Land Disturbance Guidelines
for Recommendations on Changes to the Zoning Map and Development Plan/
Concept Plan Review within the Hillside and Ridgetop Protection Area
that is within the Urban Growth and the Planned Growth Area

Percent of Slope	Recommended Maximum Density Factor*	Recommended Maximum Land Disturbance Factor**
0 - 15	Knox County: 5 dua City of Knoxville: 6 dua	100%
15 - 25	2 dua	50%
25 - 40	0.5 dua	20%
40 or more	0.2 dua	10%
Ridgetops***	***	***

dua: dwelling units per acre

* These factors should be considered guidelines to determine an overall recommended residential density for requests for changes to the zoning map to planned residential (RP-1 in the city and PR in the county) zone districts that are considered by the Metropolitan Planning Commission prior to being considered by the appropriate legislative body. The resulting zone district development right would be considered a budget for dwelling units to be applied over the entire proposed development.

** Until such time as regulations are codified by the appropriate legislative body, these factors should be considered guidelines to determine an overall recommended land disturbance area for development plans and concept plans that are considered for approval by the Metropolitan Planning Commission. The overall land disturbance area would be considered a budget for land disturbance to be applied over the entire proposed development.

*** Ridgetops are generally the more level areas on the highest elevations of a ridge. Because the shapes of Knoxville County ridges are so varied (see pages 8 – 9), the ridgetop area should be determined on a case-by-case basis with each rezoning and related development proposal.

*KNOXVILLE-KNOX COUNTY
METROPOLITAN PLANNING COMMISSION
A RESOLUTION AMENDING THE NORTHWEST COUNTY SECTOR PLAN*

WHEREAS, the Knoxville-Knox County Metropolitan Planning Commission, a regional planning commission established pursuant to state statute, has the duty to make, adopt and amend plans for the physical development of Knoxville and Knox County; and

WHEREAS, the Metropolitan Planning Commission pursuant to state statute has prepared and adopted the Knoxville-Knox County General Plan 2033, as the official comprehensive plan for Knoxville and Knox County; and

WHEREAS, the Council of the City of Knoxville and the Commission of Knox County have adopted the Knoxville Knox County General Plan 2033, as the official comprehensive plan for Knoxville and Knox County; and

WHEREAS, the Metropolitan Planning Commission has prepared the Knox County Future Land Use Map, a portion of which is contained within the Northwest County Sector Plan, consistent with the requirements of the General Plan; and

WHEREAS, the Knoxville-Knox County General Plan 2033, provides criteria for periodic updates and amendments of the land use maps contained within plans initiated by the Planning Commission or in response to applications from property owners; and

WHEREAS, Kathy Pinkston, has submitted an application to amend the Sector Plan from Agricultural to Low Density Residential, for property described in the application; and

WHEREAS, the Metropolitan Planning Commission staff recommends approval of a revised amendment to the Northwest County Sector Plan, consistent with General Plan requirements that such amendment represents either a logical extension of a development pattern, or is warranted because of changing conditions in the sector as enumerated in the Plan; and

WHEREAS, the Metropolitan Planning Commission, at its regularly scheduled public hearing on November 9, 2017, after consideration of the staff recommendation and testimony from those persons in support and opposed to the plan amendment, approved the amendment for the subject property, as requested, and/or amended.

NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE-KNOX COUNTY METROPOLITAN PLANNING COMMISSION:

SECTION 1: The Planning Commission hereby adopts the revised amendment to the Northwest County Sector Plan, with its accompanying staff report and map, file #11-D-17-SP.

SECTION 2: This Resolution shall take effect upon its approval.

SECTION 3: The Planning Commission further recommends that The Knox County Commission likewise consider this revised amendment to the General Plan 2033.

Date

Chairman

Secretary

M P C

METROPOLITAN
PLANNING
COMMISSION

T E N N E S S E E

Suite 403 • City County Building
400 Main Street
Knoxville, Tennessee 37902
865 • 215 • 2500
FAX • 215 • 2068
www.knoxmpc.org

☐ **REZONING**
☐ **PLAN AMENDMENT**
Name of Applicant: Kathy PinkstonDate Filed: 9/22/2017Meeting Date: 11/9/2017Application Accepted by: Marc PayneFee Amount: \$3549.50 File Number: Rezoning 11-B-17-RZFee Amount: File Number: Plan Amendment 11-D-17-SP**PROPERTY INFORMATION**

Address: 2150 Norma Mae Lane
General Location: Located off of Hickory Creek
Road 1/2 Hickory Creek Rd
1/2 Norma Mae Ln

Parcel ID Number(s): CLT 129 Parcels 04707,
04706, 04709

Tract Size: 40.66 acresExisting Land Use: Vacant and ResidentialPlanning Sector: Northwest CountyGrowth Policy Plan: RuralCensus Tract: 59.06Traffic Zone: M/A

Jurisdiction: ☐ City Council _____ District
☒ County Commission 6th District

Requested Change**REZONING**FROM: AsTO: PR-15 units/acre**PLAN AMENDMENT**

☐ One Year Plan ☒ _____ Sector Plan

FROM: ATO: LDR**PROPOSED USE OF PROPERTY**Planned ResidentialDensity Proposed 5 Units/Acre

Previous Rezoning Requests: _____

☐ **PROPERTY OWNER** ☐ **OPTION HOLDER**

PLEASE PRINT

Name: Kathy Pinkston

Company: _____

Address: P O Box 23313City: Knoxville State: TN Zip: 37933Telephone: (865) 986-0650

Fax: _____

E-mail: _____

APPLICATION CORRESPONDENCE

All correspondence relating to this application should be sent to:

PLEASE PRINT

Name: Kathy Pinkston

Company: _____

Address: P O Box 23313City: Knoxville State: TN Zip: 37933Telephone: (865) 986-0650

Fax: _____

E-mail: _____

APPLICATION AUTHORIZATION

I hereby certify that I am the authorized applicant, representing
ALL property owners involved in this request or holders of option
on same, whose signatures are included on the back of this form.

Signature: Kathy Pinkston

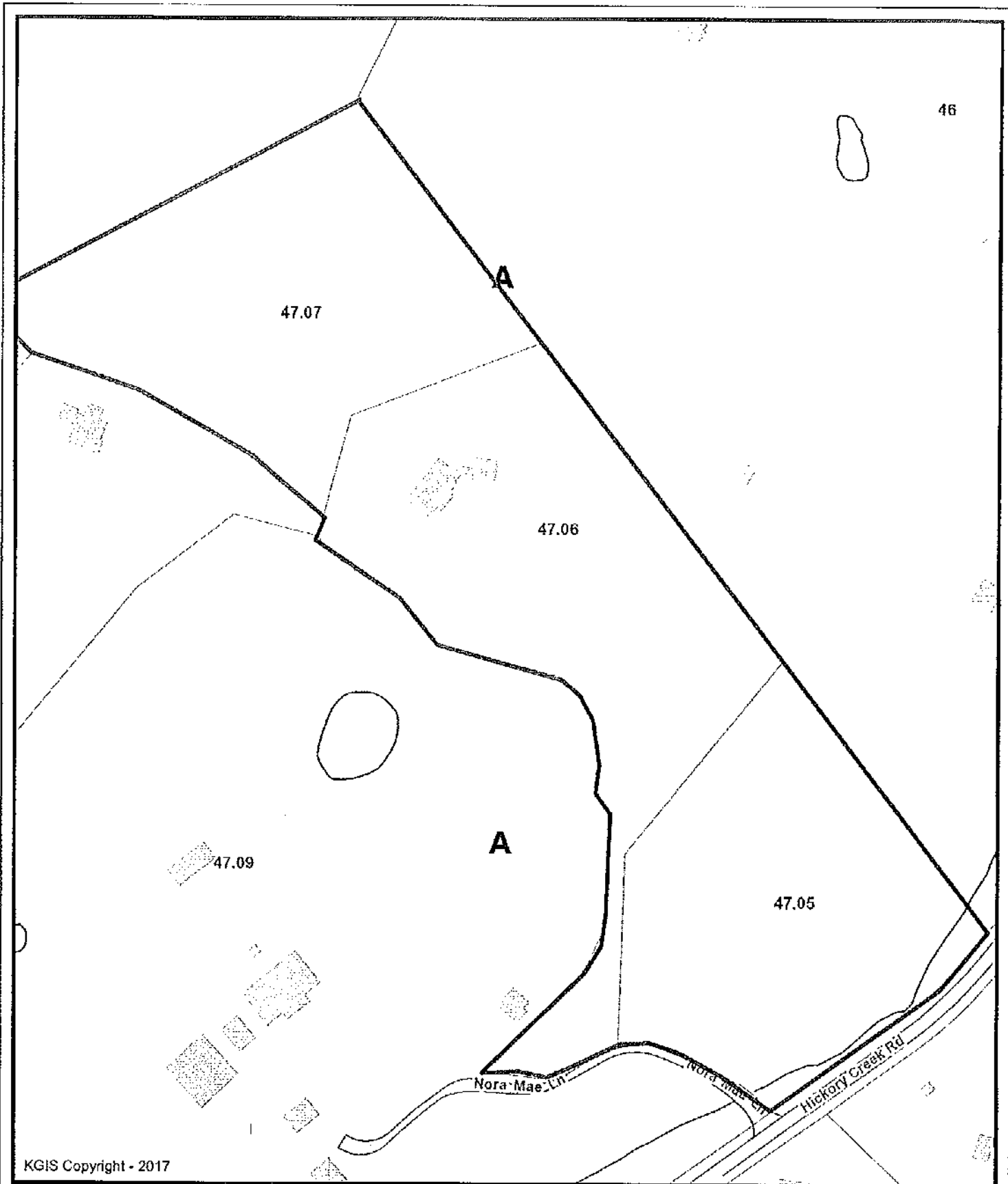
PLEASE PRINT

Name: Kathy Pinkston

Company: _____

Address: P O Box 23313City: Knoxville State: TN Zip: 37933Telephone: (865) 986-0650

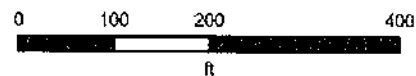
E-mail: _____



Letter Portrait

Printed: 9/22/2017 at 10:02:19 AM

Knoxville - Knox County - KUB Geographic Information System



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REQUIRED SIGN POSTING AGREEMENT FORM

For all rezoning, plan amendment, concept plan, use on review, BZA variance, right-of-way closure, and street name change applications, a sign must be posted on the subject property, consistent with the adopted MPC/BZA Administrative Rules and Procedures. When applicable, MPC staff will provide a sign to post on the property at the time of application.

The sign must be posted in a location that is clearly visible from the nearest adjacent street. If the property has more than one street frontage, then the sign should be placed along the higher classified street. MPC staff may recommend a preferred location for the sign to be posted at the time of application.

The sign must be posted no later than two weeks prior to the scheduled MPC/BZA hearing and must remain in place until after the meeting. In the case of a postponement, the sign can either remain in place or be removed and reposted no later than two weeks prior to the next MPC/BZA meeting.

MPC staff will provide the first sign(s) for no additional charge as part of the application fees. If the sign(s) are lost or stolen and need to be replaced, then the applicant will be responsible for picking up a new sign from the MPC offices. The applicant will be charged a replacement fee for the second sign consistent with the agency's cost of purchasing each sign.

I hereby agree to post the sign provided on the subject property on or before 10/26/2017 consistent with the guidelines provided above; and remove the sign within one week after the MPC/BZA decision.

Signature: _____

Printed name: Brett Jackson

MPC/BZA File #: 11-B-17-R2

APPENDIX E

MANUAL TRAFFIC COUNT DATA

TRAFFIC COUNT DATA

Major Street: Hickory Creek Road (WB - EB)
 Minor Street: Nora Mae Lane (SB)
 Traffic Control: Stop Control on Nora Mae Lane

11/1/2017 (Wednesday)
 Overcast/Mild
 Conducted by: Ajax Engineering

	Nora Mae Lane		Hickory Creek Road		Hickory Creek Road			
TIME	SOUTHBOUND		WESTBOUND		EASTBOUND		VEHICLE	PEAK
BEGIN	LT	RT	THRU	RT	LT	THRU	TOTAL	HOUR
7:00 AM	0	0	9	0	0	14	23	
7:15 AM	0	0	14	0	0	21	35	7:15 AM - 8:15 AM
7:30 AM	1	0	22	0	0	22	45	
7:45 AM	0	0	12	1	1	36	50	
8:00 AM	0	0	15	0	0	25	40	
8:15 AM	0	0	14	0	0	19	33	
8:30 AM	1	0	9	1	0	20	31	
8:45 AM	0	0	8	0	0	18	26	
TOTAL	2	0	103	2	1	175	283	
2:00 PM	0	0	12	1	0	11	24	
2:15 PM	0	0	23	0	0	14	37	
2:30 PM	0	0	16	0	0	7	23	
2:45 PM	0	0	14	0	0	11	25	
3:00 PM	0	0	22	0	0	11	33	
3:15 PM	0	0	16	0	0	9	25	
3:30 PM	0	1	16	1	0	11	29	
3:45 PM	0	0	35	0	0	13	48	
4:00 PM	0	0	20	0	1	17	38	
4:15 PM	0	0	25	0	0	16	41	
4:30 PM	0	0	22	0	0	19	41	
4:45 PM	0	0	32	0	0	28	60	4:45 PM - 5:45 PM
5:00 PM	0	0	24	0	0	16	40	
5:15 PM	0	0	37	0	0	26	63	
5:30 PM	0	0	27	0	0	17	44	
5:45 PM	0	0	24	0	0	18	42	
TOTAL	0	1	365	2	1	244	613	

2017 AM Peak Hour 7:15 AM - 8:15 AM

	Nora Mae Lane		Hickory Creek Road		Hickory Creek Road	
TIME	SOUTHBOUND		WESTBOUND		EASTBOUND	
BEGIN	LT	RT	THRU	RT	LT	THRU
7:15 AM	0	0	14	0	0	21
7:30 AM	1	0	22	0	0	22
7:45 AM	0	0	12	1	1	36
8:00 AM	0	0	15	0	0	25
TOTAL	1	0	63	1	1	104
PHF	0.25	-	0.72	0.25	0.25	0.72

2017 PM Peak Hour 4:45 PM - 5:45 PM

	Nora Mae Lane		Hickory Creek Road		Hickory Creek Road	
TIME	SOUTHBOUND		WESTBOUND		EASTBOUND	
BEGIN	LT	RT	THRU	RT	LT	THRU
4:45 PM	0	0	32	0	0	28
5:00 PM	0	0	24	0	0	16
5:15 PM	0	0	37	0	0	26
5:30 PM	0	0	27	0	0	17
TOTAL	0	0	120	0	0	87
PHF	-	-	0.81	-	-	0.78

Hickory Creek Road at Nora Mae Lane

7 - 9 AM

File Name: am nora mae lane Site Code:
 Location: Knox County, TN Cars and Peds Study Date: 11/01/2017

	Nora Mae Lane Southbound						Hickory Creek Road Westbound						Northbound						Hickory Creek Road Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		0	0	0		0		0	8	0		8						0		0	14	0		14	22
07:15		0	0	0		0		0	14	0		14						0		0	19	0		19	33
07:30		0	0	1		1		0	21	0		21						0		0	19	0		19	41
07:45		0	0	0		0		1	11	0		12						0		0	26	1		27	39
Total	0	0	0	1	0	1	0	1	54	0	0	55	0	0	0	0	0	0	0	0	78	1	0	79	135
08:00		0	0	0		0		0	14	0		14						0		0	21	0		21	35
08:15		0	0	0		0		0	10	0		10						0		0	18	0		18	28
08:30		0	0	1		1		1	7	0		8						0		0	15	0		15	24
08:45		0	0	0		0		0	4	0		4						0		0	13	0		13	17
Total	0	0	0	1	0	1	0	1	35	0	0	36	0	0	0	0	0	0	0	0	67	0	0	67	104
Grand Total	0	0	0	2	0	2	0	2	89	0	0	91	0	0	0	0	0	0	0	0	145	1	0	146	239
Appr %		0	0	100	0			2.2	97.8	0	0			-2	-2	-2	-2			0	99.3	0.7	0		
Total %		0	0	0.8	0			0.8	37.2	0	0			0	0	0	0			0	60.7	0.4	0		
AM Pk Hr		07:15	07:15	07:15	07:15	07:15		07:15	07:15	07:15	07:15	07:15		07:15	07:15	07:15	07:15	07:15		07:15	07:15	07:15	07:15	07:15	07:15
AM Pk Vol		0	0	1	0	1		1	60	0	0	61		0	0	0	0	0		0	85	1	0	86	148
AM PHF		NaN	NaN	0.250	NaN	0.250		0.250	0.714	NaN	NaN	0.726		NaN	NaN	NaN	NaN	NaN		NaN	0.817	0.250	NaN	0.796	0.902

Hickory Creek Road at Nora Mae Lane

7 - 9 AM

File Name: am nora mae lane

Location: Knox County, TN

Site Code:

Study Date: 11/01/2017

Trucks and Bikes

	Nora Mae Lane Southbound						Hickory Creek Road Westbound						Northbound						Hickory Creek Road Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		0	0	0		0		0	1	0		1						0		0	0	0		0	1
07:15		0	0	0		0		0	0	0		0						0		0	2	0		2	2
07:30		0	0	0		0		0	1	0		1						0		0	3	0		3	4
07:45		0	0	0		0		0	1	0		1						0		0	10	0		10	11
Total	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	15	0	0	15	18
08:00		0	0	0		0		0	1	0		1						0		0	4	0		4	5
08:15		0	0	0		0		0	4	0		4						0		0	1	0		1	5
08:30		0	0	0		0		0	2	0		2						0		0	5	0		5	7
08:45		0	0	0		0		0	4	0		4						0		0	5	0		5	9
Total	0	0	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	0	0	0	15	0	0	15	26
Grand Total	0	0	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	0	0	0	30	0	0	30	44
Appr %		-2	-2	-2	-2			0	100	0	0			-2	-2	-2	-2			0	100	0	0		
Total %		0	0	0	0			0	31.8	0	0			0	0	0	0			0	68.2	0	0		
AM Pk Hr		07:45	07:45	07:45	07:45	07:45		07:45	07:45	07:45	07:45	07:45		07:45	07:45	07:45	07:45	07:45		07:45	07:45	07:45	07:45	07:45	07:45
AM Pk Vol		0	0	0	0	0		0	8	0	0	8		0	0	0	0	0		0	20	0	0	20	28
AM PHF		NaN	NaN	NaN	NaN	NaN		NaN	0.500	NaN	NaN	0.500		NaN	NaN	NaN	NaN	NaN		NaN	0.500	NaN	NaN	0.500	0.636

Hickory Creek Road at Nora Mae Lane

7 - 9 AM

File Name: am nora mae lane Site Code:
 Location: Knox County, TN All Vehicles Study Date: 11/01/2017

	Nora Mae Lane Southbound						Hickory Creek Road Westbound						Northbound						Hickory Creek Road Eastbound					
Time	Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00	0	0	0	0	0		0	9	0	0	9		0	0	0	0	0		0	14	0	0	14	23
07:15	0	0	0	0	0		0	14	0	0	14		0	0	0	0	0		0	21	0	0	21	35
07:30	0	0	1	0	1		0	22	0	0	22		0	0	0	0	0		0	22	0	0	22	45
07:45	0	0	0	0	0		1	12	0	0	13		0	0	0	0	0		0	36	1	0	37	50
Total	0	0	1	0	1		1	57	0	0	58		0	0	0	0	0		0	93	1	0	94	153
08:00	0	0	0	0	0		0	15	0	0	15		0	0	0	0	0		0	25	0	0	25	40
08:15	0	0	0	0	0		0	14	0	0	14		0	0	0	0	0		0	19	0	0	19	33
08:30	0	0	1	0	1		1	9	0	0	10		0	0	0	0	0		0	20	0	0	20	31
08:45	0	0	0	0	0		0	8	0	0	8		0	0	0	0	0		0	18	0	0	18	26
Total	0	0	1	0	1		1	46	0	0	47		0	0	0	0	0		0	82	0	0	82	130
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Grand Total	0	0	2	0	2		2	103	0	0	105		0	0	0	0	0		0	175	1	0	176	283
Appr %	00.0	00.0	100.0	00.0			01.9	98.1	00.0	00.0			NaN	NaN	NaN	NaN			00.0	99.4	00.6	00.0		
Total %	00.0	00.0	00.7	00.0			00.7	36.4	00.0	00.0			00.0	00.0	00.0	00.0			00.0	61.8	00.4	00.0		
% Trucks	-	-	00.0	-	00.0		00.0	13.6	-	-	13.3		-	-	-	-	-		-	17.1	00.0	-	17.0	15.5
AM Pk Hr	07:15	07:15	07:15	07:15	07:15		07:15	07:15	07:15	07:15	07:15		07:15	07:15	07:15	07:15	07:15		07:15	07:15	07:15	07:15	07:15	07:15
AM Pk Vol	0	0	1	0	1		1	63	0	0	64		0	0	0	0	0		0	104	1	0	105	170
AM PHF	NaN	NaN	0.250	NaN	0.250		0.250	0.716	NaN	NaN	0.727		NaN	NaN	NaN	NaN	NaN		NaN	0.722	0.250	NaN	0.709	0.850





Hickory Creek Road at Nora Mae Lane





7 - 9 AM

File Name: am nora mae lane
Location: Knox County, TN




All Vehicles





Site Code:
Study Date: 11/01/2017

Hickory Creek Road		In = 176			
Out = 103		145	1	0	0
0	0	30	0	0	0%
0%	0%	62%	0%	0%	0%
Right	Thru	Left	U-Turn		
					

Nora Mae Lane			
Out = 3		In = 2	
0	0	2	0
0	0	0	0
0%	0%	1%	0%
Right	Thru	Left	U-Turn
			

Total Volumes
 07:00 to 09:00
 Volume = 283
 Cars = 239
 Trucks = 44

Hickory Creek Road		Out = 177		In = 105	
2	89	0	0	0	0
0	14	0	0	0	0
1%	36%	0%	0%	0%	0%
Right	Thru	Left	U-Turn		
					

			
U-Turn	Left	Thru	Right
0	0	0	0
0	0	0	0
0%	0%	0%	0%
Out = 0		In = 0	

Hickory Creek Road at Nora Mae Lane

7 - 9 AM





File Name: am nora mae lane





Location: Knox County, TN

Site Code:





Study Date: 11/01/2017





All Vehicles

Hickory Creek Road	0	U-Turn	
	1	Left	
	104	Thru	
	0	Right	

Nora Mae Lane			
0	0	1	0
Right	Thru	Left	U-Turn
			

AM Peak Hour Statistics
 AM Peak Hour Begins: 07:15
 AM Peak Hour Volume: 170
 AM Peak Hour Factor: 0.850

			
U-Turn	Left	Thru	Right
0	0	0	0

Hickory Creek Road	1	Right	
	63	Thru	
	0	Left	
	0	U-Turn	

Hickory Creek Road

2 - 6 PM

File Name: pm nora mae lane
Location: Knox County, TN

Cars and Peds

Site Code:
Study Date: 11/01/2017

	Nora Mae Lane Southbound						Hickory Creek Road Westbound						Northbound						Hickory Creek Road Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
14:00		0	0	0		0		1	9	0		10						0		0	8	0		8	18
14:15		0	0	0		0		0	17	0		17						0		0	11	0		11	28
14:30		0	0	0		0		0	13	0		13						0		0	6	0		6	19
14:45		0	0	0		0		0	10	0		10						0		0	9	0		9	19
Total	0	0	0	0	0	0	0	1	49	0	0	50	0	0	0	0	0	0	0	0	34	0	0	34	84
15:00		0	0	0		0		0	18	0		18						0		0	6	0		6	24
15:15		0	0	0		0		0	16	0		16						0		0	7	0		7	23
15:30		1	0	0		1		1	13	0		14						0		0	10	0		10	25
15:45		0	0	0		0		0	35	0		35						0		0	11	0		11	46
Total	0	1	0	0	0	1	0	1	82	0	0	83	0	0	0	0	0	0	0	0	34	0	0	34	118
16:00		0	0	0		0		0	18	0		18						0		0	14	1		15	33
16:15		0	0	0		0		0	24	0		24						0		0	14	0		14	38
16:30		0	0	0		0		0	20	0		20						0		0	19	0		19	39
16:45		0	0	0		0		0	32	0		32						0		0	28	0		28	60
Total	0	0	0	0	0	0	0	0	94	0	0	94	0	0	0	0	0	0	0	0	75	1	0	76	170
17:00		0	0	0		0		0	24	0		24						0		0	16	0		16	40
17:15		0	0	0		0		0	37	0		37						0		0	24	0		24	61
17:30		0	0	0		0		0	27	0		27						0		0	17	0		17	44
17:45		0	0	0		0		0	24	0		24						0		0	18	0		18	42
Total	0	0	0	0	0	0	0	0	112	0	0	112	0	0	0	0	0	0	0	0	75	0	0	75	187
18:00						0						0						0						0	0
Total	0	0	0	0	0	0	0	0	136	0	0	136	0	0	0	0	0	0	0	0	93	0	0	93	229
Grand Total	0	1	0	0	0	1	0	2	337	0	0	339	0	0	0	0	0	0	0	0	218	1	0	219	559
Appr %		100	0	0	0			0.6	99.4	0	0			-2	-2	-2	-2			0	99.5	0.5	0		

	Nora Mae Lane Southbound						Hickory Creek Road Westbound						Northbound						Hickory Creek Road Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
Total %		0.2	0	0	0			0.4	60.3	0	0			0	0	0	0			0	39	0.2	0		
PM Pk Hr		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45	16:45
PM Pk Vol		0	0	0	0	0		0	120	0	0	120		0	0	0	0	0		0	85	0	0	85	205
PM PHF		NaN	NaN	NaN	NaN	NaN		NaN	0.811	NaN	NaN	0.811		NaN	NaN	NaN	NaN	NaN		NaN	0.759	NaN	NaN	0.759	0.840

Hickory Creek Road

2 - 6 PM

File Name: pm nora mae lane
Location: Knox County, TN

Trucks and Bikes

Site Code:
Study Date: 11/01/2017

	Nora Mae Lane Southbound						Hickory Creek Road Westbound						Northbound						Hickory Creek Road Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
14:00		0	0	0		0		0	3	0		3						0		0	3	0		3	6
14:15		0	0	0		0		0	6	0		6						0		0	3	0		3	9
14:30		0	0	0		0		0	3	0		3						0		0	1	0		1	4
14:45		0	0	0		0		0	4	0		4						0		0	2	0		2	6
Total	0	0	0	0	0	0	0	0	16	0	0	16	0	0	0	0	0	0	0	0	9	0	0	9	25
15:00		0	0	0		0		0	4	0		4						0		0	5	0		5	9
15:15		0	0	0		0		0	0	0		0						0		0	2	0		2	2
15:30		0	0	0		0		0	3	0		3						0		0	1	0		1	4
15:45		0	0	0		0		0	0	0		0						0		0	2	0		2	2
Total	0	0	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	0	0	10	0	0	10	17
16:00		0	0	0		0		0	2	0		2						0		0	3	0		3	5
16:15		0	0	0		0		0	1	0		1						0		0	2	0		2	3
16:30		0	0	0		0		0	2	0		2						0		0	0	0		0	2
16:45		0	0	0		0		0	0	0		0						0		0	0	0		0	0
Total	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	5	0	0	5	10
17:00		0	0	0		0		0	0	0		0						0		0	0	0		0	0
17:15		0	0	0		0		0	0	0		0						0		0	2	0		2	2
17:30		0	0	0		0		0	0	0		0						0		0	0	0		0	0
17:45		0	0	0		0		0	0	0		0						0		0	0	0		0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
18:00						0						0						0						0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
Grand Total	0	0	0	0	0	0	0	0	28	0	0	28	0	0	0	0	0	0	0	0	26	0	0	26	54
Appr %		-2	-2	-2	-2			0	100	0	0			-2	-2	-2	-2			0	100	0	0		

	Nora Mae Lane Southbound						Hickory Creek Road Westbound						Northbound						Hickory Creek Road Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
Total %		0	0	0	0			0	51.9	0	0			0	0	0	0			0	48.1	0	0		
PM Pk Hr		14:15	14:15	14:15	14:15	14:15		14:15	14:15	14:15	14:15	14:15		14:15	14:15	14:15	14:15	14:15		14:15	14:15	14:15	14:15	14:15	14:15
PM Pk Vol		0	0	0	0	0		0	17	0	0	17		0	0	0	0	0		0	11	0	0	11	28
PM PHF		NaN	NaN	NaN	NaN	NaN		NaN	0.708	NaN	NaN	0.708		NaN	NaN	NaN	NaN	NaN		NaN	0.550	NaN	NaN	0.550	0.778

Hickory Creek Road

2 - 6 PM

File Name: pm nora mae lane
Location: Knox County, TN

All Vehicles

Site Code:
Study Date: 11/01/2017

Time	Nora Mae Lane Southbound					Hickory Creek Road Westbound					Northbound					Hickory Creek Road Eastbound					Int Total
	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	
14:00	0	0	0	0	0	1	12	0	0	13	0	0	0	0	0	0	11	0	0	11	24
14:15	0	0	0	0	0	0	23	0	0	23	0	0	0	0	0	0	14	0	0	14	37
14:30	0	0	0	0	0	0	16	0	0	16	0	0	0	0	0	0	7	0	0	7	23
14:45	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	0	11	0	0	11	25
Total	0	0	0	0	0	1	65	0	0	66	0	0	0	0	0	0	43	0	0	43	109
15:00	0	0	0	0	0	0	22	0	0	22	0	0	0	0	0	0	11	0	0	11	33
15:15	0	0	0	0	0	0	16	0	0	16	0	0	0	0	0	0	9	0	0	9	25
15:30	1	0	0	0	1	1	16	0	0	17	0	0	0	0	0	0	11	0	0	11	29
15:45	0	0	0	0	0	0	35	0	0	35	0	0	0	0	0	0	13	0	0	13	48
Total	1	0	0	0	1	1	89	0	0	90	0	0	0	0	0	0	44	0	0	44	135
16:00	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	0	17	1	0	18	38
16:15	0	0	0	0	0	0	25	0	0	25	0	0	0	0	0	0	16	0	0	16	41
16:30	0	0	0	0	0	0	22	0	0	22	0	0	0	0	0	0	19	0	0	19	41
16:45	0	0	0	0	0	0	32	0	0	32	0	0	0	0	0	0	28	0	0	28	60
Total	0	0	0	0	0	0	99	0	0	99	0	0	0	0	0	0	80	1	0	81	180
17:00	0	0	0	0	0	0	24	0	0	24	0	0	0	0	0	0	16	0	0	16	40
17:15	0	0	0	0	0	0	37	0	0	37	0	0	0	0	0	0	26	0	0	26	63
17:30	0	0	0	0	0	0	27	0	0	27	0	0	0	0	0	0	17	0	0	17	44
17:45	0	0	0	0	0	0	24	0	0	24	0	0	0	0	0	0	18	0	0	18	42
Total	0	0	0	0	0	0	112	0	0	112	0	0	0	0	0	0	77	0	0	77	189
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	136	0	0	136	0	0	0	0	0	0	95	0	0	95	231
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	0	1	2	365	0	0	367	0	0	0	0	0	0	244	1	0	245	613
Appr %	100.0	00.0	00.0	00.0		00.5	99.5	00.0	00.0		NaN	NaN	NaN	NaN		00.0	99.6	00.4	00.0		

	Nora Mae Lane Southbound						Hickory Creek Road Westbound						Northbound						Hickory Creek Road Eastbound						
Time		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total	Int Total
Total %		00.2	00.0	00.0	00.0			00.3	59.5	00.0	00.0			00.0	00.0	00.0	00.0			00.0	39.8	00.2	00.0		
% Trucks		00.0	-	-	-	00.0		00.0	07.7	-	-	07.6		-	-	-	-	-		-	10.7	00.0	-	10.6	08.8
PM Pk Hr		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45	16:45
PM Pk Vol		0	0	0	0	0		0	120	0	0	120		0	0	0	0	0		0	87	0	0	87	207
PM PHF		NaN	NaN	NaN	NaN	NaN		NaN	0.811	NaN	NaN	0.811		NaN	NaN	NaN	NaN	NaN		NaN	0.777	NaN	NaN	0.777	0.821

Hickory Creek Road

2 - 6 PM

File Name: pm nora mae lane
Location: Knox County, TN

Site Code:
Study Date: 11/01/2017

All Vehicles

Hickory Creek Road		In = 245		Out = 366	
		0	1	218	0
		0	0	26	0
		0%	0%	40%	0%
	U-Turn				
	Left				
	Thru				
	Right				

Nora Mae Lane			
Out = 3		In = 1	
1	0	0	0
0	0	0	0
0%	0%	0%	0%
Right	Thru	Left	U-Turn

Total Volumes
 14:00 to 18:15
 Volume = 613
 Cars = 559
 Trucks = 54

Hickory Creek Road		Out = 244		In = 367	
		2	337	0	0
		0	28	0	0
		0%	60%	0%	0%
	Right				
	Thru				
	Left				
	U-Turn				

U-Turn	Left	Thru	Right
0	0	0	0
0	0	0	0
0%	0%	0%	0%
Out = 0		In = 0	

Hickory Creek Road





2 - 6 PM

File Name: pm nora mae lane
Location: Knox County, TN





Site Code:
Study Date: 11/01/2017





All Vehicles

Hickory Creek Road	0	U-Turn	
	0	Left	
	87	Thru	
	0	Right	

Nora Mae Lane			
0	0	0	0
Right	Thru	Left	U-Turn
			

PM Peak Hour Statistics
PM Peak Hour Begins: 16:45
PM Peak Hour Volume: 207
PM Peak Hour Factor: 0.821

			
U-Turn	Left	Thru	Right
0	0	0	0

Hickory Creek Road	0	Right	
	120	Thru	
	0	Left	
	0	U-Turn	

APPENDIX F

CAPACITY ANALYSES – HCM WORKSHEETS (SYNCHRO 8)

EXISTING TRAFFIC CONDITIONS

HCM 2010 TWSC
1: Hickory Creek Road & Nora Mae Lane

11/7/2017

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	1	104	63	1	1	0
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	25	72	72	25	25	90
Heavy Vehicles, %	0	18	5	0	0	0
Mvmt Flow	4	144	88	4	4	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	92	0	242
Stage 1	-	-	90
Stage 2	-	-	152
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1515	-	751
Stage 1	-	-	939
Stage 2	-	-	881
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1515	-	749
Mov Cap-2 Maneuver	-	-	749
Stage 1	-	-	939
Stage 2	-	-	878

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1515	-	-	-	749
HCM Lane V/C Ratio	0.003	-	-	-	0.005
HCM Control Delay (s)	7.4	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 TWSC
1: Hickory Creek Road & Nora Mae Lane

11/7/2017

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	87	120	0	0	0
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	25	72	72	25	25	90
Heavy Vehicles, %	0	18	5	0	0	0
Mvmt Flow	0	121	167	0	0	0
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	167	0	-	0	288	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	121	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1423	-	-	-	707	882
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	909	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1423	-	-	-	707	882
Mov Cap-2 Maneuver	-	-	-	-	707	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	909	-
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1423	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

OPENING YEAR TRAFFIC CONDITIONS (WITH PROJECT)

HCM 2010 TWSC
5: Hickory Creek Road & Road "A"

1/8/2018

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	14	116	71	9	27	41
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	72	72	90	90	90
Heavy Vehicles, %	0	19	5	0	0	0
Mvmt Flow	16	161	99	10	30	46

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	109	0	296
Stage 1	-	-	104
Stage 2	-	-	192
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1494	-	699
Stage 1	-	-	925
Stage 2	-	-	845
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1494	-	691
Mov Cap-2 Maneuver	-	-	691
Stage 1	-	-	925
Stage 2	-	-	835

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1494	-	-	-	830
HCM Lane V/C Ratio	0.01	-	-	-	0.091
HCM Control Delay (s)	7.4	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 2010 TWSC
5: Hickory Creek Road & Road "A"

1/8/2018

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	30	97	134	46	26	18
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	78	81	90	90	90
Heavy Vehicles, %	0	3	0	0	0	0
Mvmt Flow	33	124	165	51	29	20

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	217	0	382
Stage 1	-	-	191
Stage 2	-	-	191
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1365	-	624
Stage 1	-	-	846
Stage 2	-	-	846
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1365	-	608
Mov Cap-2 Maneuver	-	-	608
Stage 1	-	-	846
Stage 2	-	-	824

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1365	-	-	-	690
HCM Lane V/C Ratio	0.024	-	-	-	0.071
HCM Control Delay (s)	7.7	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

APPENDIX G

ITE TRIP GENERATION RATES

Land Use: 210

Single-Family Detached Housing

Description

Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

Additional Data

The number of vehicles and residents had a high correlation with average weekday vehicle trip ends. The use of these variables was limited, however, because the number of vehicles and residents was often difficult to obtain or predict. The number of dwelling units was generally used as the independent variable of choice because it was usually readily available, easy to project and had a high correlation with average weekday vehicle trip ends.

This land use included data from a wide variety of units with different sizes, price ranges, locations and ages. Consequently, there was a wide variation in trips generated within this category. Other factors, such as geographic location and type of adjacent and nearby development, may also have had an effect on the site trip generation.

Single-family detached units had the highest trip generation rate per dwelling unit of all residential uses because they were the largest units in size and had more residents and more vehicles per unit than other residential land uses; they were generally located farther away from shopping centers, employment areas and other trip attractors than other residential land uses; and they generally had fewer alternative modes of transportation available because they were typically not as concentrated as other residential land uses.

The peak hour of the generator typically coincided with the peak hour of the adjacent street traffic.

The sites were surveyed between the late 1960s and the 2000s throughout the United States and Canada.

Source Numbers

1, 4, 5, 6, 7, 8, 11, 12, 13, 14, 16, 19, 20, 21, 26, 34, 35, 36, 38, 40, 71, 72, 84, 91, 98, 100, 105, 108, 110, 114, 117, 119, 157, 167, 177, 187, 192, 207, 211, 246, 275, 283, 293, 300, 319, 320, 357, 384, 435, 550, 552, 579, 598, 601, 603, 611, 614, 637, 711, 735

Single-Family Detached Housing (210)

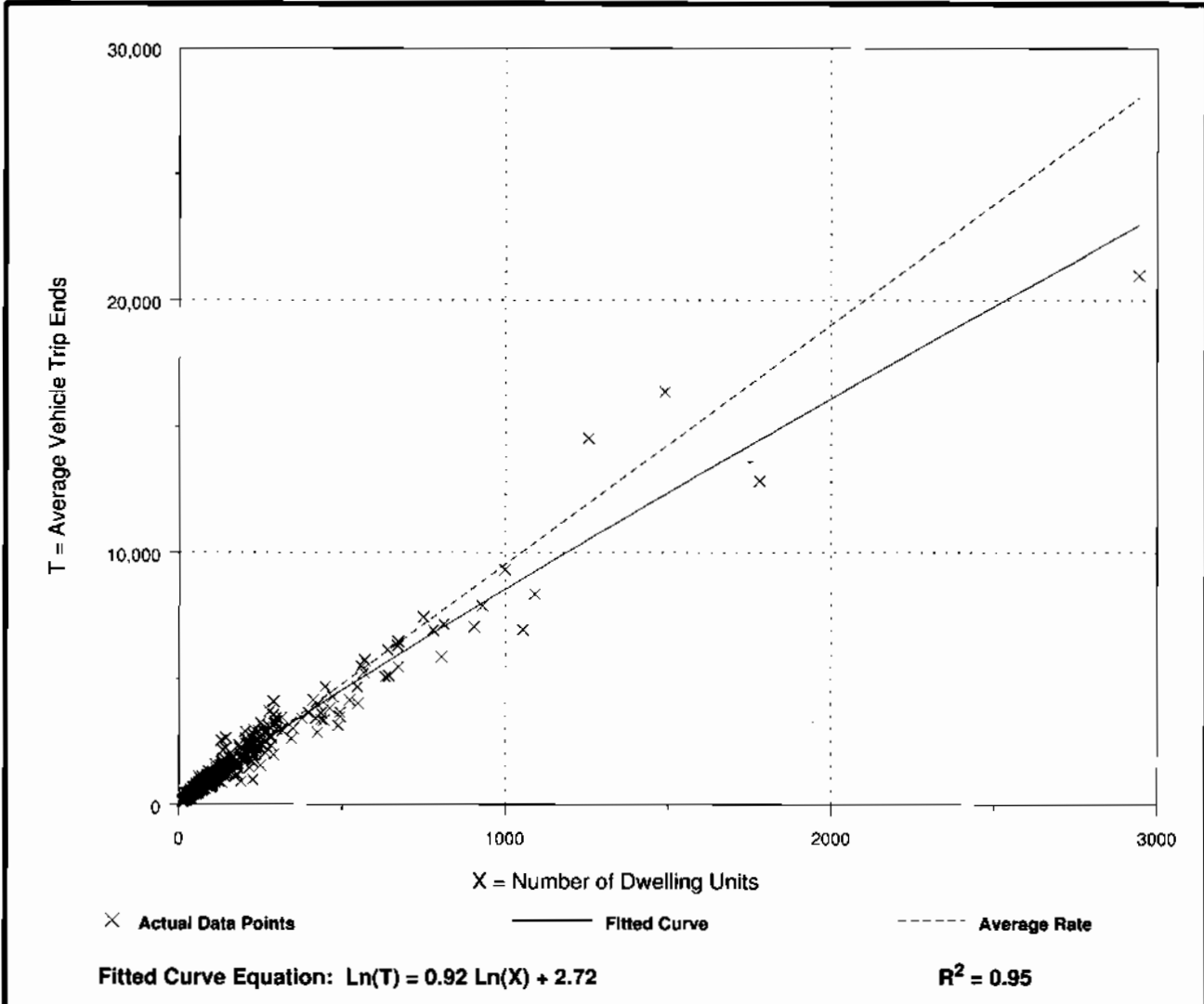
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 355
Avg. Number of Dwelling Units: 198
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.52	4.31 - 21.85	3.70

Data Plot and Equation



Single-Family Detached Housing (210)

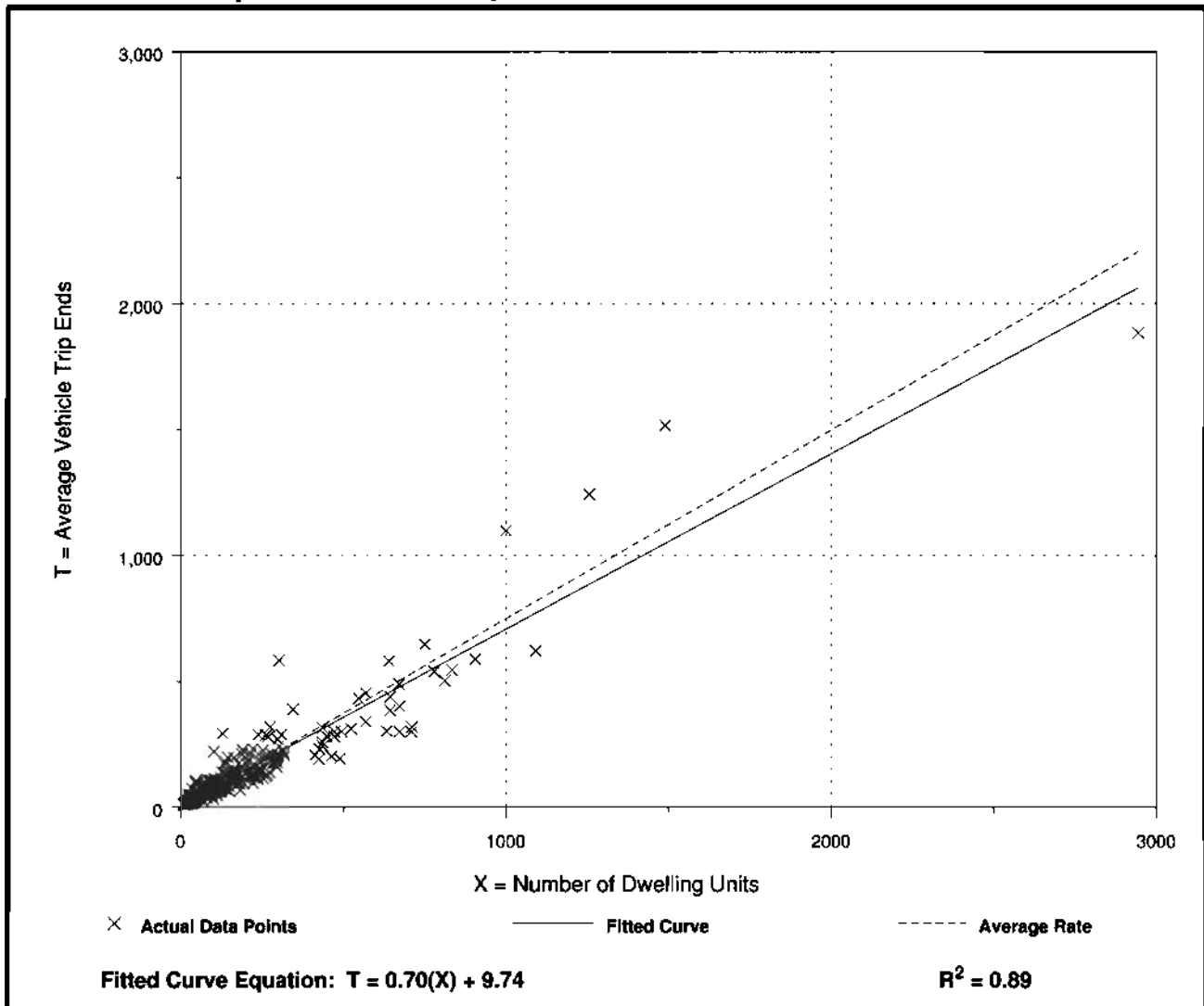
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 292
Avg. Number of Dwelling Units: 194
Directional Distribution: 25% entering, 75% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.75	0.33 - 2.27	0.90

Data Plot and Equation



Single-Family Detached Housing (210)

Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 321
 Avg. Number of Dwelling Units: 207
 Directional Distribution: 63% entering, 37% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.00	0.42 - 2.98	1.05

Data Plot and Equation

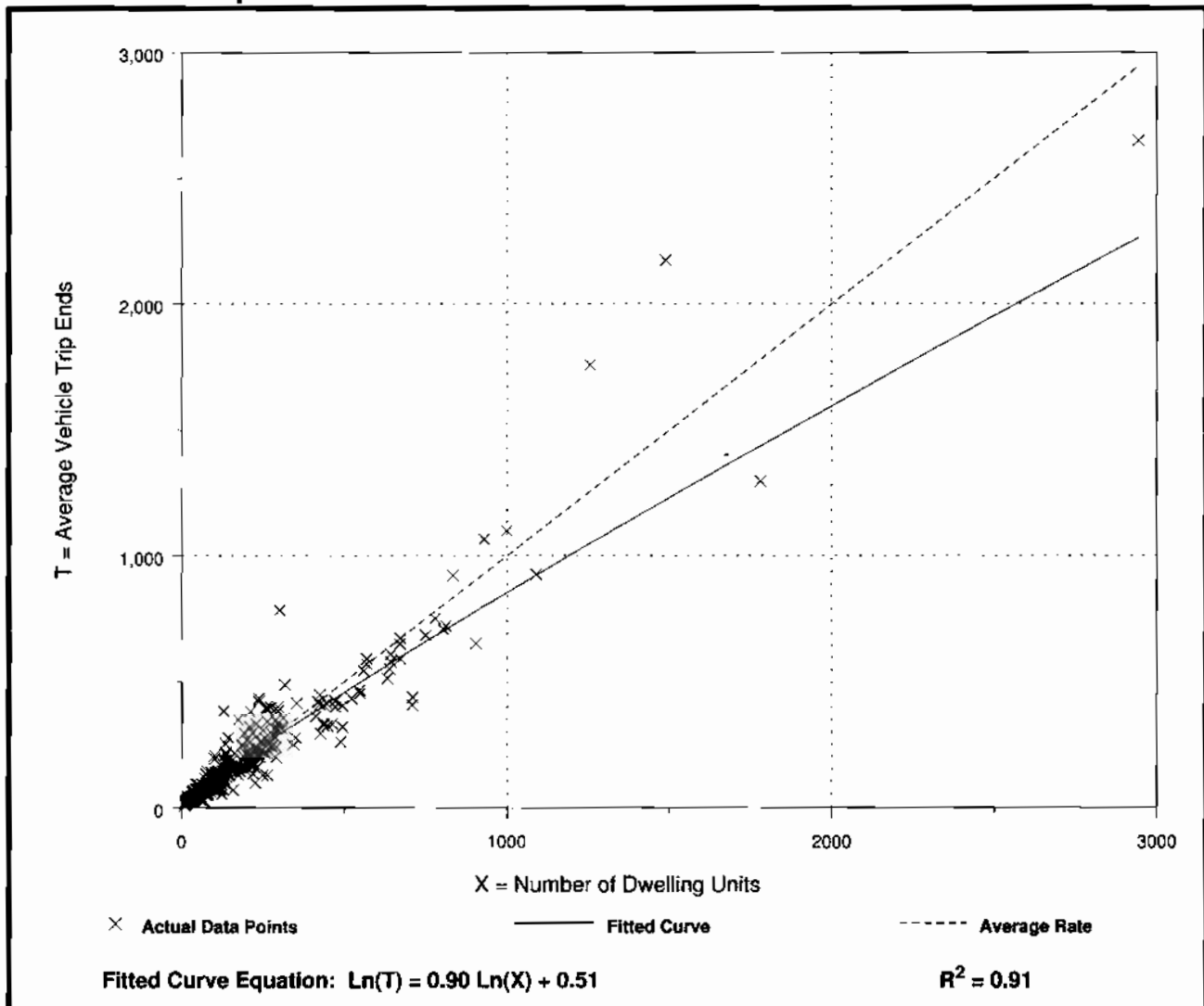


TABLE 4
TRIP GENERATION FOR HICKORY CREEK FARMS

ITE LAND USE CODE	LAND USE DESCRIPTION	UNITS	GENERATED DAILY TRAFFIC	GENERATED TRAFFIC AM PEAK HOUR			GENERATED TRAFFIC PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
#210	Single-Family Detached Housing	115 Lots	1,195	25%	75%		63%	37%	
				23	68	91	76	44	120
Total New Volume Site Trips			1,195	23	68	91	76	44	120

ITE Trip Generation Manual, 9th Edition

TRIP GENERATION FOR HICKORY CREEK FARMS

ITE Trip Generation Manual, 9th Edition

115 Residential Units = X

Weekday:

Fitted Curve Equation: $\ln(I) = 0.92 \ln(X) + 2.72$

$$\ln(I) = 0.92 * 4.74 + 2.72$$

$$\ln(I) = 7.09$$

$$\underline{\underline{T = 1,195 \text{ trips}}}$$

Peak Hour of Adjacent Traffic between 7 and 9 am:

Fitted Curve Equation: $T = 0.70(X) + 9.74$

$$T = 0.70 * 115 + 9.74$$

$$\underline{\underline{T = 91 \text{ trips}}}$$

Peak Hour of Adjacent Traffic between 4 and 6 pm:

Fitted Curve Equation: $\ln(I) = 0.90 \ln(X) + 0.51$

$$\ln(I) = 0.90 * 4.74 + 0.51$$

$$\ln(I) = 4.78$$

$$\underline{\underline{T = 120 \text{ trips}}}$$

APPENDIX H

SPOT SPEED STUDY

SPOT SPEED STUDY

Location: Hickory Creek Road (near Nora Mae Lane)
 Posted Speed Limit: 40 mph
 Equipment: Bushnell Speedster III Radar Speed Gun
 Direction: Eastbound and Westbound

Date: 11/6/2017
 Weather: Mild/Mostly Cloudy
 Time: 3:00 PM

Vehicle #	Speed (mph)
1	36
2	50
3	43
4	45
5	41
6	50
7	46
8	43
9	47
10	44
11	43
12	43
13	52
14	47
15	47
16	40
17	48
18	38
19	40
20	41
21	36
22	49
23	47
24	51
25	38

Vehicle #	Speed (mph)
26	47
27	35
28	54
29	57
30	43
31	49
32	46
33	41
34	36
35	41
36	33
37	47
38	40
39	45
40	46
41	50
42	42
43	49
44	50
45	51
46	46
47	55
48	49
49	47
50	46

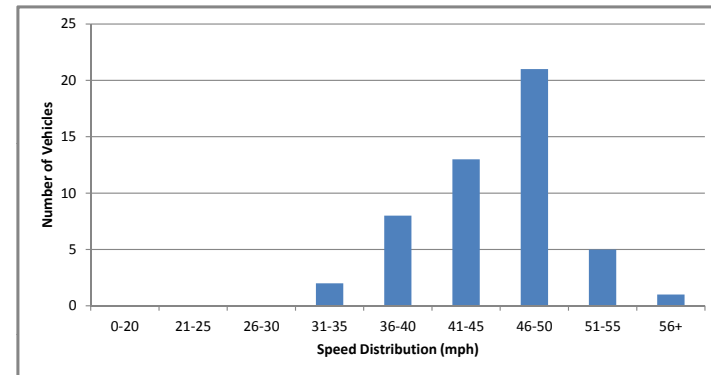
Sample Size Requirements (*ITE Manual of Transportation Engineering Studies*)

$$N = (S * K / E)^2$$

where: N = minimum number of measured speeds
 S = estimated sample standard deviation (mph)
 K = constant corresponding to desired confidence level
 E = permitted error in the average speed estimate (mph)

S = 5 mph (Table 3-2, page 38)
 K = 2.58 (Confidence level of 99% - Table 3-3, page 38)
 E = 2 mph assumed error range

Therefore, N = 42 observations needed



Average speed = 45.0 mph
 50th percentile speed = 46.0 mph
 85th percentile speed = 50.0 mph

APPENDIX I

KNOX COUNTY TURN LANE VOLUME THRESHOLD WORKSHEET

TABLE 6A

**LEFT-TURN LANE VOLUME THRESHOLDS
FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 46 TO 55 MPH**

(If the left-turn volume exceeds the table value a left -turn lane is needed)

OPPOSING VOLUME	THROUGH VOLUME PLUS RIGHT-TURN VOLUME *					
	100 - 149	150 - 199	200 - 249	250 - 299	300 - 349	350 - 399
100 - 149	200	140	100	75	60	50
150 - 199	175	120	85	65	55	45
200 - 249	150	100	75	60	50	40
250 - 299	130	85	65	55	45	35
300 - 349	110	Projected PM Left Turns = 30 < 150 Turn Lane NOT Warranted	60	50	40	30
350 - 399	95		55	45	35	25
400 - 449	80	Turn Lane NOT Warranted	50	40	30	25
450 - 499	70		45	35	25	20
500 - 549	60	50	40	30	25	20
550 - 599	50	45	35	25	20	20
600 - 649	45	40	30	25	20	20
650 - 699	40	35	30	20	20	20
700 - 749	35	35	25	20	20	15
750 or More	35	35	25	20	15	15

OPPOSING VOLUME	THROUGH VOLUME PLUS RIGHT-TURN VOLUME *					
	350 - 399	400 - 449	450 - 499	500 - 549	550 - 599	=/ > 600
100 - 149	50	45	40	35	30	25
150 - 199	45	40	35	30	30	25
200 - 249	40	35	30	25	25	20
250 - 299	35	35	30	25	25	20
300 - 349	30	30	25	25	20	20
350 - 399	25	25	25	20	20	20
400 - 449	25	25	20	20	20	15
450 - 499	20	20	20	20	20	15
500 - 549	20	20	20	20	15	15
550 - 599	20	20	20	15	15	15
600 - 649	20	20	15	15	15	15
650 - 699	20	15	15	15	15	15
700 - 749	15	15	15	15	15	15
750 or More	15	15	15	15	15	15

* Or through volume only if a right-turn lane exists.

TABLE 6B

**RIGHT-TURN LANE VOLUME THRESHOLDS
FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 46 TO 55 MPH**

RIGHT-TURN VOLUME	THROUGH VOLUME PLUS LEFT-TURN VOLUME *					
	<100	100 - 199	200 - 249	250 - 299	300 - 349	350 - 399
Fewer Than 25 25 - 49 50 - 99						
100 - 149 150 - 199		<div>Projected PM Right Turns = 46</div> <div>Turn Lane NOT Warranted</div>				Yes
200 - 249 250 - 299				Yes	Yes	Yes
300 - 349 350 - 399			Yes Yes	Yes Yes	Yes Yes	Yes Yes
400 - 449 450 - 499			Yes Yes	Yes Yes	Yes Yes	Yes Yes
500 - 549 550 - 599	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
600 or More	Yes	Yes	Yes	Yes	Yes	Yes

RIGHT-TURN VOLUME	THROUGH VOLUME PLUS LEFT-TURN VOLUME *					
	350 - 399	400 - 449	450 - 499	500 - 549	550 - 600	+ / > 600
Fewer Than 25 25 - 49 50 - 99			Yes	Yes Yes	Yes Yes	Yes Yes
100 - 149 150 - 199	Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
200 - 249 250 - 299	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
300 - 349 350 - 399	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
400 - 449 450 - 499	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
500 - 549 550 - 599	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
600 or More	Yes	Yes	Yes	Yes	Yes	Yes

* Or through volume only if a left-turn lane exists.