



# INDIAN TRAIL

## NORTH CAROLINA

### Wesley Chapel Stouts Road Corridor Study



September 2017



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## 1.0 EXECUTIVE SUMMARY

Wesley Chapel Road/ Wesley Chapel – Stouts Road is an important roadway connector from the Sun Valley area to US 74, connecting residents, businesses, commercial and industrial uses in the Town of Indian Trail with multiple, unsignalized intersections. The 2015 Average Annual Daily Traffic (AADT) along Wesley Chapel Road/ Wesley Chapel – Stouts Road are between 16,400 and 18,700 vehicles per day. From this point forward in this study, the Wesley Chapel Road/ Wesley Chapel – Stouts Road Corridor will be referred to as the Wesley Chapel Road Corridor.

The objective of the Wesley Chapel Road Corridor Study is to develop a multimodal (cars, transit, pedestrians, cyclists) transportation plan that is complementary to the existing and future surrounding land uses while being practical and suitable for implementation by the Town of Indian Trail. The multimodal transportation plan will integrate existing and projected land use patterns with strategic transportation needs and improvements along Wesley Chapel Road to account for future growth and managing access and volumes. An overall vision for mobility and development along the corridor and will include implementation strategies and performance criteria that supports the Town's and community's vision as well as the 2014 Town of Indian trail Comprehensive Plan.

Following initial corridor inventory, analyses of existing conditions, and initial stakeholder input in January 2017, four goals were identified for the Wesley Chapel Road Corridor Study.

- **Goal #1:** Enhance multimodal operations, connectivity and accessibility within the corridor, creating an environment that supports all users safely
- **Goal #2:** Support sustainable growth and economic development along the corridor that builds critical mass and encourages vertical mixed-uses in future buildings
- **Goal #3:** Improve capacity, safety, and a function of Wesley Chapel Road as both a key local and regional automotive route
- **Goal #4:** Develop a unified streetscape appearance to enhance corridor character and set the future development tone

The Study held a total of four public participation meetings: two stakeholder advisory group meetings and two public engagement meetings. Participants provided their likes and dislikes, challenges and opportunities, as well as their vision for incorporating street elements, addressing mobility/ capacity, urban design and economic development along the Wesley Chapel Road Corridor. During the public participation meetings, stakeholders and the public were presented with two Boulevard section alternatives (Alternatives 1a and 1b) and two Village Center section alternatives (Alternatives 2a and 2b), in addition to potential roundabouts at identified intersections. A total of five roundabouts are proposed along the Wesley Chapel Road Corridor, at the intersections of Taylor Glen Lane/ Tanglewood Drive, Fulton Ridge Drive/ Inlet Way, Sun Valley Commons, Bethel Lane and Archie Hargette Road.

The Boulevard section alternatives consists of four travel lanes (two lanes in each direction), a divided median with a bicycle lane and pedestrian usage incorporated on both sides of the roadway. Alternative 1a (Bike Lanes) proposes a four-foot bike lane and six-foot sidewalk on both sides of the roadway. Alternative 1b (Multi-Use Path) incorporates many of the same design elements as Alternative 1a, but eliminates the inclusion of the bike lane along the outside travel lanes and proposes a multi-use path in lieu of a sidewalk outside of the roadway segment.

The Village Center section alternative consists of four travel lanes (two lanes in each direction), a divided median, bike lanes, tree zones and pedestrian usage incorporated on both sides of the roadway. Alternative 2a (Bike Lanes) proposes a four-foot bike lane on both sides of the roadway. Alternative 2b (Bike Lanes with Striped Buffer) proposes a four-foot bike lane on both sides of the roadway and includes the use of a three-foot striped buffer along the outside travel lanes.

Based on the public participation and comment forms collected, a preferred alternative was selected that combines the Boulevard section Alternative 1b (Multi-Use Path) with the Village Center section Alternative 2b (Bike Lanes with Striped Buffer).

## 2.0 INTRODUCTION AND BACKGROUND



Wesley Chapel Road is a two-lane, rural roadway connecting US 74 (W Hwy 74) and Old Monroe Road/ Old Charlotte Highway (SR 1009). It serves as an important connector from the Sun Valley area to US 74, connecting residents, businesses, commercial and industrial uses. Multiple, unsignalized intersections and driveway connections, as well as an at-grade railroad/ roadway crossing with CSX Transportation are located within the corridor. Four public

schools (Shiloh Elementary, Sun Valley Elementary, Sun Valley Middle, and Sun Valley High School) are located within the study corridor. The 2015 AADTs along the corridor are between 16,400 and 18,700 vehicles per day traveling along Wesley Chapel Road.

The Town continues to emphasize a multi-modal transportation solution. Due to the variety of land uses along Wesley Chapel Road, as well as planned and proposed land use changes and development, managing growth and development needs will be critical to addressing transportation and land use compatibility and ensuring the long-term viability of the Wesley Chapel Road corridor.

The overall objective is to develop a multi-modal transportation plan that is complementary to the existing and future surrounding land uses while being practical and suitable for implementation by the Town of Indian Trail. This integrated transportation and land use plan integrates existing and projected land use patterns with strategic transportation needs and improvements along Wesley Chapel Road to account for future growth while managing access and volumes. This plan reflects and supports the development objectives of the Town to ensure that the traffic needs will be addressed as the Town continues to grow along Wesley Chapel Road.



This plan reflects and supports the development objectives of the Town to ensure that the traffic needs will be addressed as the Town continues to grow along Wesley Chapel Road.

### 2.1 Study Area

The project corridor consists of the entire length of Wesley Chapel Road from the roundabout at Goldmine Road to US 74. The study area extends one-quarter mile on either side of Wesley Chapel Road and is shown on the study area map.

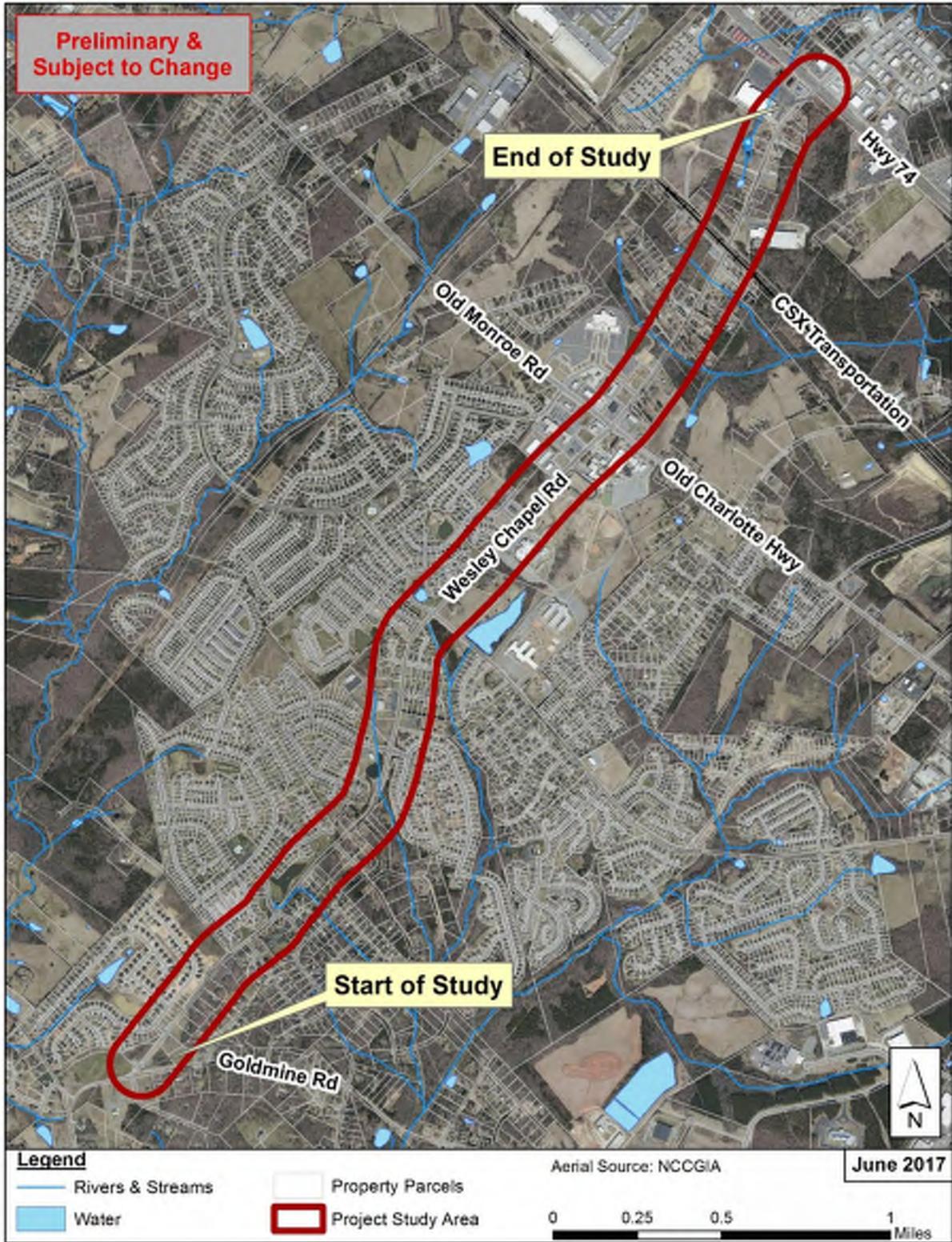


Figure 2-1 – Study Area Map

### 3.0 GOALS AND OBJECTIVES

The vision of the Wesley Chapel Corridor Study is to develop a multimodal transportation network that is complimentary to the existing and future surrounding land uses while being practical and suitable for implementation by the Town of Indian Trail. To achieve this vision, goals and their respective objectives, were identified through initial public engagement and stakeholder meetings held in January 2017 (See Section 7.0 – Public Participation for a more comprehensive detail of the stakeholder input). Four goals were identified for the Wesley Chapel Road Corridor Study.

- **Goal #1:** Enhance multimodal operations, connectivity and accessibility within the corridor, creating an environment that supports all users safely
- **Goal #2:** Support sustainable growth and economic development along the corridor that builds critical mass and encourages vertical mixed-uses in future buildings
- **Goal #3:** Improve capacity, safety, and a function of Wesley Chapel Road as both a key local and regional automotive route
- **Goal #4:** Develop a unified streetscape appearance to enhance corridor character and set the future development tone

#### Goal #1

The objectives identified to enhance multimodal, operations, connectivity and accessibility within the corridor, creating an environment that supports all users safely are listed below:

- Safely facilitate bicycle and pedestrian movements within the corridor
- Create better pedestrian connections between neighborhoods and other land uses
- Enhance pedestrian access to adjacent land uses
- Create safe and attractive pedestrian areas along the corridor



#### Goal #2

The objectives identified to support sustainable growth and economic development along the corridor that builds critical mass and encourages vertical mixed-uses in future buildings are listed below.



- Ensure consistency of transportation action(s) with economic development action(s)
- Accommodate anticipated economic activity
- Support sustainable forms of development
- Enhance quality of life conditions
- Maintain small town feel and character
- Conduct market research to understand future development needs for the corridor
- Establish Architectural Design Guidelines

### **Goal #3**

The objectives identified to improve capacity, safety and function of Wesley Chapel Road as both a key local and regional automotive route are listed below.

- Reduce congestion
- Improve access management
- Incorporate traffic calming along corridor and “cut-through” cross streets
- Modernize the roadway
- Create consistent roadway sections
- Maintain reliable and consistent traffic operations throughout the corridor as growth continues



### **Goal #4**

The objectives identified to develop a unified streetscape appearance to enhance corridor character and set the future development tone are listed below.



- Develop Street Design Guidelines
- Create landscape zones
- Protect neighborhood gateways

## 4.0 SUMMARY OF EXISTING PLANS AND POLICIES

### 4.1 Indian Trail Comprehensive Plan

The 2014 Indian Trail Comprehensive Plan updates the vision and goals established as part of the 2005 Comprehensive Plan. The “Vision” presented in the Plan, identified a variety of transportation options with opportunities for walking, biking, transit and automobiles by connecting all of the Town’s villages, downtown and commercial corridors. A few of the listed goals outlined in the 2014 Comprehensive Plan included:

- Relieve congestion throughout Indian Trail through an improved thoroughfare plan and multi-modal transportation options (automobiles, bicycles, pedestrian and mass transit)
- Improve bicycle and pedestrian connectivity between existing and future uses
- Implement the Town of Indian Trail Bicycle Master Plan and Comprehensive Pedestrian Plan



The Plan identifies Wesley Chapel Road as a major roadway servicing Sun Valley Village. Wesley Chapel Road connects older subdivisions with newer subdivisions but lack of continuous sidewalk along the roadway makes pedestrian and bicyclist travel challenging. The commercial center at Old Monroe Road and Wesley Chapel Road is becoming a Sub-regional Center, which is planned to be the Town’s Shopping and Entertainment District. The Sun Valley Village Plan recommends Wesley Chapel Road as a four-lane Village Center Boulevard through Sun Valley Village and Wesley Chapel Road as a four-lane Village Center Boulevard from the intersection with Old Monroe Road, past Sun Valley Middle School, to the Wesley Chapel Town Limits. The Village Plan also proposes a Town of Indian Trail Gateway on Wesley-Chapel Road and village identifying markers placed on Wesley Chapel Road at the CSX Railroad. The Plan recommends Wesley Chapel Road receive gateway streetscape treatments, with pedestrian scale lighting, banners, street trees, median plantings and street furnishings.

### 4.2 Indian Trail Bicycle Master Plan

The Indian Trail Bicycle Master Plan adopted on June 14, 2011, ensures the implementation of the Vision set forth in the 2005 Comprehensive Plan and improving connectivity and bicycle mobility for the community. The Plan identified the users of the future bicycle network, through countless public outreach sessions, their needs and the best way to serve their needs through establishing goals. A few goals listed in the Plan include:

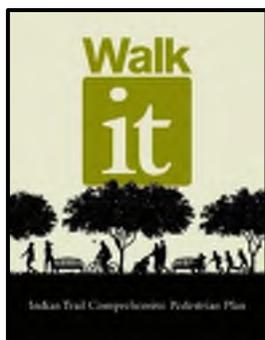
- Improve bicycle connectivity between existing and future residential subdivisions schools and other destinations throughout town
- Improve bicycle safety on existing roads
- Indian Trail’s future bicycle infrastructure should connect to surrounding communities and their bicycle facilities
- The Town should work with NCDOT to reduce automobile speeds on roadways



The Town takes a focus on making improvements to neighborhood streets and connecting existing and future subdivisions by incorporating neighborhood loops. The Plan proposes two neighborhood loops (#7 and #15) within the corridor.

The Plan also identifies town-wide connectors to ensure cyclists to commute to and from work and list Town-wide Connector #4 within the corridor.

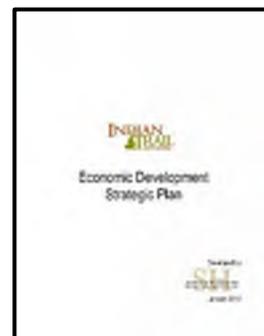
### 4.3 Indian Trail Comprehensive Pedestrian Plan



The Indian Trail Comprehensive Pedestrian Plan adopted on January 27, 2009, provides an inventory of existing pedestrian facilities, identifies deficiencies within the pedestrian network and provides guidance towards improving pedestrian mobility. The Plan provides a prioritized list of project recommendations based on current conditions, public input and the Town's Visions and Goals. The Plan proposed sidewalks along both sides of Wesley Chapel Road and Old Monroe Road. A proposed greenway connects to Wesley Chapel Road from the west, parallel Hawfield Drive.

### 4.4 Economic Development Plan

An Economic Development Strategic Plan was prepared for the Town of Indian Trail in January 2012, as a strategic plan for economic progress. Goals and action steps were recognized to carry Indian Trail forward the next three to five years. Infrastructure, including transportation, was identified as a weakness in the Town and was a high priority of the citizens for improvements. The Plan presented action steps to invest in road/street improvements.



### 4.5 Union County Multimodal Transportation Plan



The 2014 Union County Multimodal Transportation Plan was initiated to identify a sustainable land use and transportation strategy for Union County. The Plan focuses on an integrated approach that considers land use development initially, followed by transportation scenarios that took into account an array of factors to find the best, most cost-feasible set of recommendations.

## 4.6 Union County Critical Intersection Analysis

The Union County Critical Intersection Analysis, adopted June 2016, identified locations throughout the County that exhibited congestion and safety issues. Further evaluation of 15 intersections were selected as “Critical Intersection Locations.” The intersection of Wesley Chapel Road and Rogers Road was one of the 15 identified. Traffic concerns with current and future volumes were a result from land use intensity in the area was identified as a deficiency. The analysis suggested the following roadway improvements to address the deficiency:



- Exclusive right on northbound Wesley Chapel Road
- Through/right-turn lane on northbound Wesley Chapel Road that extends to Sun Valley Middle School
- Dual left-turn lane on southbound Wesley Chapel Road
- Add northbound left-turn lane on Wesley Chapel Road to Treeside Lane

## 4.7 Carolina Thread Trail Master Plan

The Carolina Thread Trail Master Plan, adopted September 2011, serves as a guiding document for Carolina Thread Trail development within the County and participating cities and towns within Union County. There are two, proposed new trails along and near Wesley Chapel Road.



- **Carolina Thread Trail Route A** – A new trail approximately 7.7 miles in length, from the Mecklenburg County line, following Stallings Road, to the proposed trail at Oak Springs Road. The new trail will connect to the proposed trail along Crooked Creek, traveling south to Wesley Chapel Road until the segment ends, connecting with Carolina Thread Trail Route B.
- **Carolina Thread Trail Route B** – A new trail approximately 9.9 miles in length from the Mecklenburg County line, following Campus Ridge Road to Old Monroe Road, joining the proposed trail along Old Monroe Road (Old Charlotte Highway). The proposed trail continues until connecting with segment C (City of Monroe proposed trail).

## 4.8 Indian Trail Park and Greenway Master Plan



The Indian Trail Park and Greenway Master Plan, adopted February 2010, is a continuation of the implementation of the Indian Trail 2005 Comprehensive Plan. The Plan complements and supplements the previous planning efforts through providing recommendations to improve the overall quality of life for the Town’s residents. The Plan establishes a ten-year vision with recommendations and implementation strategies for recreational facilities within the Town and provides a proposed Parks and Greenways system for development.

## 4.9 NCDOT STIP Projects

There are four projects under the 2016-2025 State Transportation Improvement Program (STIP) that are within or in proximity to the project study corridor.

- **STIP W-5220** – The project is to convert existing full movement signalized intersections to signalized superstreet design along US 74, from Fairview Road to Wesley Chapel Road. Construction scheduled for the spring 2017.
- **STIP U-4714** –The project is to widen approximately 6.5 miles of East John Street and Old Monroe Road (SR 1957), from Trade Street (SR 2074) to Wesley Chapel Road, in Mecklenburg and Union Counties. Right of way acquisition scheduled to begin in Fiscal Year (FY) 2020 and construction scheduled to begin in FY 2022.
- **STIP EB-5723** – The project is to construct a multi-use path approximately 2.3 miles from the western municipal limits of Indian Trail to Sardis Church Road (SR 1516) along US 74 in Union County, North Carolina. Right of way acquisition scheduled to begin in FY 2019 and construction scheduled to begin in FY 2020.
- **STIP P-5704** – The project is to extend rail siding from milepost 311.8 to milepost 316.9, a total of 10,000 feet in Union County. Construction scheduled to begin in FY 2018.

Refer to **Appendix A – Study Location and Constraints Map** for locations of the aforementioned projects.

## 5.0 CURRENT CONDITIONS AND TRENDS

### 5.1 Land Use Conditions & Trends

The current zoning map, which was adopted in August 2013, lists zoning districts along the corridor as residential; business and commercial; industrial; conditional; and overlay. The Regional Business District is mainly zoned along the corridor between US 74 and CSX Railroad; a light industrial district at the northwest quadrant of Wesley Chapel Road and CSX Railroad; general and neighborhood business districts at the intersection of Wesley Chapel Road and Old Monroe Road/ Old Charlotte Highway; and residential districts occupy the rest of the corridor to Monroe-Weddington Road.



The residential district is a mix of low, medium and high density single-family. A Village Overlay District has been established at the intersection of Wesley Chapel Road and Old Monroe Road/ Old Charlotte Highway currently zoned as General and Neighborhood Business District.

Current uses along the corridor include big box and other regional retail stores toward US 74 with light industrial adjacent to CSX Railroad. Businesses around the Old Monroe Road/ Old Charlotte Highway and Wesley Chapel Road area include Wells Fargo Bank, Harris Teeter, gas station, and neighborhood strip commercial centers such as The Shops at Sun Valley, Sun Valley Commons and Sun Valley Corner. Sun Valley High School, Sun Valley Middle School, and single-family residences largely comprise the rest of the corridor from Goldmine Road to Sun Valley Middle School.

The southern section of the corridor with its proximity to schools and retail, consists of single-family residential. The high school is undergoing building and facilities expansion to meet the growing student population.

The Town's population has grown since 2010 as population estimates completed by the US Census, shows a growth of 10.6 % during the five year period (**Table 5-1: Town of Indian Trail Population Estimates**).

**Table 5-1: Town of Indian Trail Population Estimates**

<b>2010</b>	33,518
<b>2012</b>	34,800
<b>2015</b>	37,073
<b>Change (2010-2015)</b>	+ 3,555
<b>% Change (2010-2015)</b>	10.6%

Source: US Census Quick Facts (<https://www.census.gov/quickfacts/table/PST045215/3733560.00>)

### 5.1.1. Park & Recreation, Open Space

Per the Town's Zoning Map, no parks or open space is zoned along the Wesley Chapel Road corridor, although the Town's Pedestrian Plan does provide a proposed greenway connection to the corridor and sidewalk along the stretch of this corridor. On a site visit, intermittent concrete sidewalks are found along portions of the corridor adjacent to the neighborhood commercial. On other sections of the corridor, concrete sidewalk is only found on one side of the road and non-existent in others.

### 5.1.2. Schools

Sun Valley High School is located at the southeast corner of the intersection of Old Monroe Road/ Old Charlotte Highway and Wesley Chapel Road. Sun Valley Middle School is located along the corridor and across from Wells Fargo Bank and neighborhood businesses, approximately a quarter mile southwest of the Old Monroe Road/ Old Charlotte Highway and Wesley Chapel Road intersection.

### 5.1.3. Development Trends

An indication of current positive economic activity along this corridor can be seen with construction activities in various places along Wesley Chapel Road. Construction activities have increased interest in properties along the corridor and "For Sale" signs are seen on vacant properties close to US 74.



*New Construction in Sun Valley Commons*



*New Construction in the Shops at Sun Valley*



*Other New Construction*



*For Sale Sign*

### Building Form

The commercial buildings along the corridor consist of single-story brick with landscaped parking lot in front. This is typical of what is found in most auto-oriented commercial development in the region. Building materials are either brick with painted concrete or painted concrete masonry block. The commercial buildings are mostly built in the last decade or so and do not have significant architectural interest.



*Neighborhood Retail*



*Neighborhood Grocery*

The residential homes are relatively new, predominantly built within in the past 15 years, and are constructed well. Architectural style varies from single-story ranch to double-story suburban. Driveways are common though some alleys are present.



*Single-Story Ranch Style Home*



*Double-Story Home*

### Approved Development

Several development plans have recently been approved along this corridor and its adjacent vicinity that are either under construction or are expected to be constructed soon. These include:

- A 316-unit age-restricted residential development on the west side of Wesley Chapel Road just north of the roundabout at Goldmine Road (Hawfield Village)
- Publix Grocery at the intersection Wesley Chapel Road and Old Monroe Road/Old Charlotte Highway (Shoppes at Hanfield Village) currently under construction
- Sun Valley High School expansion currently in the planning and design phase

### Roadway Improvement

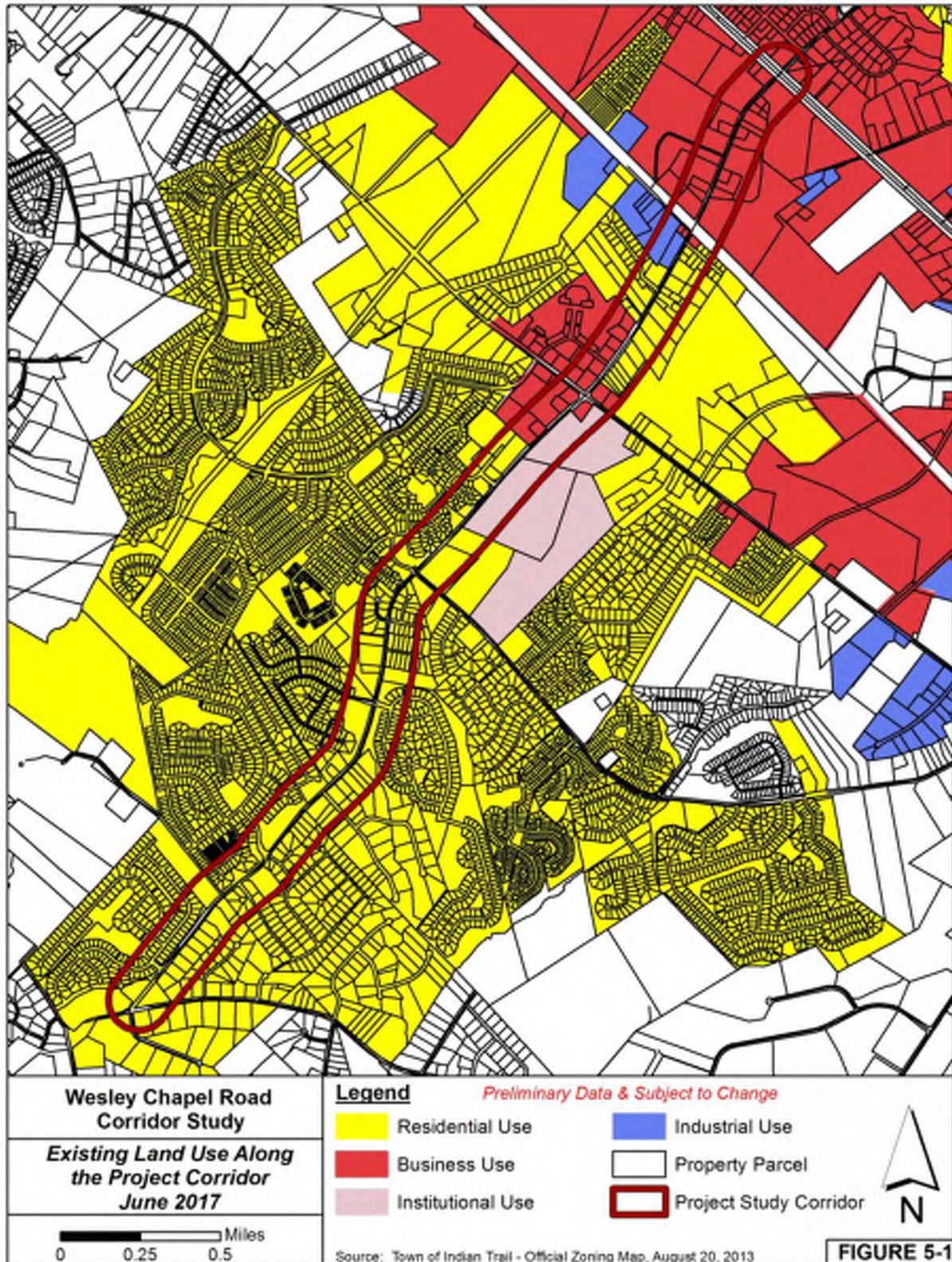
- Sidewalk on Rogers Road from the Town limits to Wesley Chapel Road

### Future Development Under Consideration

- 92 single family homes west of Mustang Drive (Steepleton Subdivision – disapproved by Council 5/24/2017)

The Town's existing land use within the study limits is summarized in **Figure 5-1**.

**Figure 5-1 – Existing Land Use Map**



## 5.2 Streetscape Elements

The Town's Unified Development Ordinance details specific minimum requirements for all development, private or public, within its boundaries. This includes landscaping, street trees, gateway features and lighting.

### Landscaping

From buffer yard plantings, perimeter screening, and parking lot landscaping the Town's Ordinance purpose is to 1) minimize adverse aesthetic impacts of land uses; 2) improve and protect the Town's environment and ecological balance; 3) enhance the environment and visual quality; 4) reduce the incompatibility between land uses; and 4) require the planting and replacement of trees removed from private property.

### Street Trees

Since most of the commercial developments along the corridor are relatively new, the majority of the street trees are newly planted and have not grown to their full tree canopy. Tree species include Red Maple, Laurel Oak and Zelkova.

Along Wesley Chapel Road, no uniform street trees were found within the right-of-way.

### Gateway Features

The free standing entrance gateway signs to private developments along the corridor are visually pleasant with materials, colors, plantings meeting the Town's Ordinance. The gateway signs are made of red bricks with a natural stone cap. Low plantings are typically installed in front of the brick wall/gateway sign.



*Free-Standing Retail Sign*



*Free-Standing Sign to Residential Community*

### Lighting



Per the Town's Ordinance, residential streets shall have decorative street lighting fixture and these can be found at the residential developments along the corridor. For collector or thoroughfare, cobrahead lighting fixture which conform to NCDOT standards, which includes full cutoff style, high pressure sodium or metal halide lighting elements.

Existing cobrahead lighting fixture attached to the wooden utility poles are inconsistently spaced creating dark zones at night where light fixtures are not present.



## 5.3 Traffic Conditions

### 5.3.1. Vehicular Travel

#### Posted Speed

The posted speed limit throughout Wesley Chapel Road is 45 mph and 35 mph in the designated school zone during traditional school days.

#### Access Management

Access control exists along the project study corridor in the use of concrete medians. Concrete medians are found within the project study corridor at the following locations:

- *Wesley Chapel Road* – Roundabout with Goldmine Road
- *Old Monroe Road* – intersection with Wesley Chapel Road
- *Wesley Chapel Road (north side)* – intersection with Old Monroe Road/ Old Charlotte Highway
- *Wesley Chapel Road* – intersection with US 74 (extend medians as part of STIP Project W-5520)
- *US 74* – intersection with Wesley Chapel Road (extend medians as part of STIP Project W-5220)

#### Typical Sections

- The corridor consists of two 11' lanes and no paved shoulders
- Left turn lanes are located at the following locations: Westport Lane, Taylor Glenn Lane/ Tanglewood Drive, Fulton Ridge Drive/ Inlet Way, Rogers Road, and Sun Valley Middle and High School
- Single lane roundabout at Wesley Chapel Road and Goldmine Road Intersection
- Monolithic Concrete Islands at the approaches to the following intersections: Goldmine Road, Old Charlotte Highway, and US 74.
- Right turn lane at Old Monroe Road intersection and entrance to Lowe's Home Improvement located at US 74
- At-grade railroad crossing near Orr Road intersection



### 5.3.2. Bicycles

Wesley Chapel Road and Old Monroe Road are designated by the NCDOT Division of Bicycle and Pedestrian Transportation as bike routes..

The Town of Indian Trail Bicycle Master Plan 2011 proposes the following bicycle paths within the corridor.

### Neighborhood Loop #7

- Length: 5.2 miles
- Loops Wesley Chapel Road, traveling Old Monroe Road/ Old Charlotte Highway east, south and west along Rogers Road and north along Pony Tail Lane.
- Connects multiple neighborhoods within the project corridor to the Sun Valley Village Center and four schools.

### Neighborhood Loop #15

- Length: 1.1 Miles
- From Rogers Road, travel along Meriwether Lewis to Stremlet Way, west to Brook Valley Run, north to Inlet Way that connects east to Wesley Chapel Road.
- Provides a connection between Rogers Road and Wesley Chapel Road and connects the neighborhoods of Brook Valley and Meriweather.

### Town-wide Connector #4

- Utilizes Wesley Chapel Road, connecting three Village Centers and three proposed park locations identified in the Park and Greenway Master Plan. Town-wide Connector #4 will provide a suitable west to east connection through the Town of Indian Trail.

There are no existing trails within the project corridor. However, there are several proposed trails within the project corridor.

- A designated Carolina Thread Trail proposed along Old Monroe Road/ Old Charlotte Highway.
- A designated Carolina Thread Trail proposed to the east of Rosetta Drive, travels east of the project corridor, crosses west over Sardis Church Road, just north of the US 74, the north end of the project corridor.
- A proposed trail connects to Wesley Chapel Road at the west, parallel to Hawfield Drive.

## 5.3.3. Pedestrians

### 5.3.3.1. Sidewalks & Crosswalks

#### Sidewalks

Existing five-foot wide sidewalk locations along project study corridor (North Side):

- Sheridan Neighborhood entrance
- Hawfield Drive to Pinewood Forest Drive (Taylor Glen Neighborhood)
- Fulton Ridge Drive to Hilton Way (in front of the Wesley Chapel Child Development Center)
- South of Rogers Road to Treeside Lane (Holly Park Neighborhood)
- Old Monroe Road/Old Charlotte Highway intersection (from the Shops at Sun Valley to the Sun Valley Commons entrance)
- South of US 74 (Lowe's Home Improvement)

Existing sidewalk locations along project study corridor (South Side):

- Brook Valley Neighborhood (five-foot width)
- Chelsea Place Neighborhood – From Dresden Court to Rogers Road (~4.5' width)
- From Rogers Road to north of Old Monroe Road/ Old Charlotte Highway intersection including Sun Valley Middle and Sun Valley High School (five-foot width)

There are no proposed sidewalks within the project study corridor.

### Crosswalks

There are four crosswalk locations, both signalized and unsignalized, within the project study corridor.

- *Unsignalized:* Wesley Chapel Road and Goldmine Road (Roundabout).
- *Unsignalized:* Wesley Chapel Road and Treeside Lane – access to/ from Sun Valley Middle School.
- *Signalized:* intersection of Wesley Chapel Road and Rogers Road.
- *Signalized:* intersection of Wesley Chapel Road and Old Monroe Road/ Old Charlotte Highway.

There is a proposed crosswalk across US 74 with NCDOT's W-5520 project.

### 5.3.3.2. Pedestrian Signals

Pedestrian signals are present at the Rogers Road and Old Monroe Road/ Old Charlotte Highway intersections.

There is a proposed pedestrian signal at the US 74/ Wesley Chapel Road intersection as part of the NCDOT W-5520 project.

### 5.3.3.3. Pedestrian Refuge

Aside from the Goldmine Road roundabout, no pedestrian refuges are present along this corridor.

### 5.3.3.4. ADA/PROWAG Assessment

The grades on the existing sidewalks appear to meet Americans with Disabilities Act (ADA) and Public Rights-of-Way Accessibility Guidelines (PROWAG) requirements however, some of the ramps are not compliant. About half of the ramps crossing side streets are missing the detectable warnings (truncated domes).

The intersection at the Rogers Road does not meet ADA/PROWAG standards. Although there are crosswalks across Wesley Chapel Stouts Road, ramps are missing on the north side.

## 6.0 ENVIRONMENTAL CONDITIONS

### 6.1 Geological Conditions

The Wesley Chapel Road project study corridor is located geologically within the Charlotte Belt, where the geological units consists of Phyllite and Schist rocks.

### 6.2 Water Resources

#### Streams and Basins

The project study corridor is divided between two major river basins, the Yadkin and Catawba with the approximate dividing line between the basins being Old Monroe Road / Old Charlotte Highway. The northern portion of the project study corridor is located within the Yadkin River Basin with the southern portion located within the Catawba River Basin. Unnamed Tributaries of the South Fork Crooked Creek within the study limits travel through the Yadkin River Basin. Unnamed Tributaries of the East Fork Twelve-mile Creek within the study limits travel through the Catawba River Basin. Water resources within the project study corridor are shown in **Figure 6-1 – Streams & Basins** and summarized in **Table 6-1 – Streams & Basins** below.

**Table 6-1 – Streams & Basins**

Map ID #	Stream Name	Tributary	River Basin	Length (ft)
1	Unnamed Stream	South Fork Crooked Creek Tributary 4	Yadkin	3,227
2	Unnamed Stream	South Fork Crooked Creek Tributary 3	Yadkin	2,416
3	Unnamed Stream	South Fork Crooked Creek Tributary 3	Yadkin	2,821
4	Unnamed Stream	East Fork Twelvemile Creek Tributary 4	Catawba	1,094
5	Unnamed Stream	East Fork Twelvemile Creek Tributary 4	Catawba	4,670
6	Unnamed Stream	East Fork Twelvemile Creek Tributary 4	Catawba	3,369

Source: Union County GIS – Streams

#### Wetlands

Wetlands are defined as areas inundated by surface or groundwater with a frequency to support and under normal circumstances do or would support a prevalence of vegetative or aquatic life. Three wetland types, freshwater ponds, freshwater emergent wetland and freshwater forested/shrub wetland, have been previously been identified within the project study corridor and shown in **Figure 6-2 – Wetlands** and summarized in **Table 6-2 – Wetlands**.

**Table 6-2 – Wetlands**

Map ID #	Wetland Type	Cowardin Type	Quantity	Acreage	Description
1,3 & 5	Freshwater Pond	PUBHh	3	1.28	Pond
2 & 6	Freshwater Emergent Wetland	PEM1C	2	0.63	Herbaceous march, fen, swale and wet meadow
4	Freshwater Forested/Shrub Wetland	PFO1A	1	2.41	Forested swamp or wetland shrub bog or wetland

Source: USFWS Wetland Data by State. <https://www.fws.gov/wetlands/Data/State-Downloads.html>

Figure 6-1 – Streams & Basins

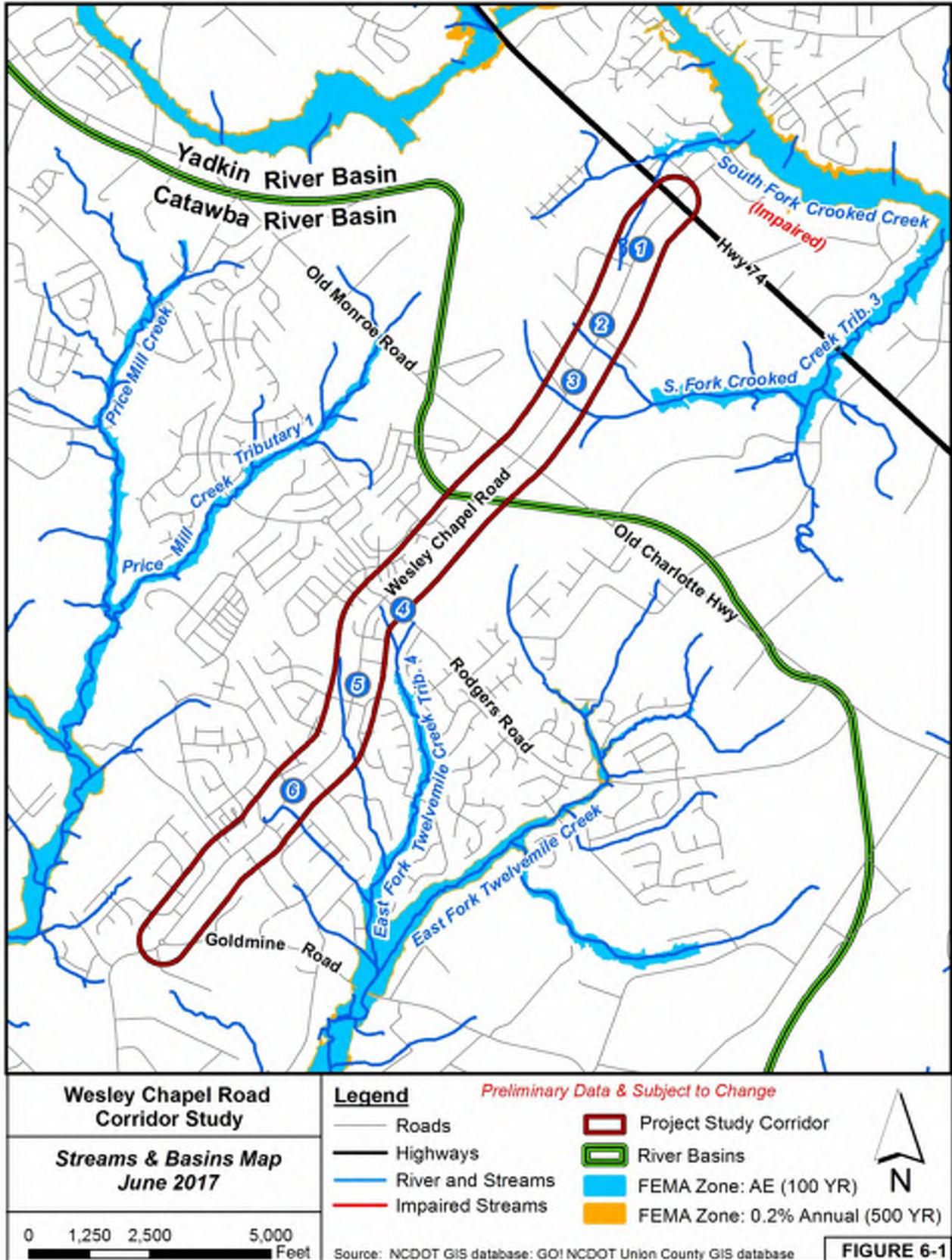
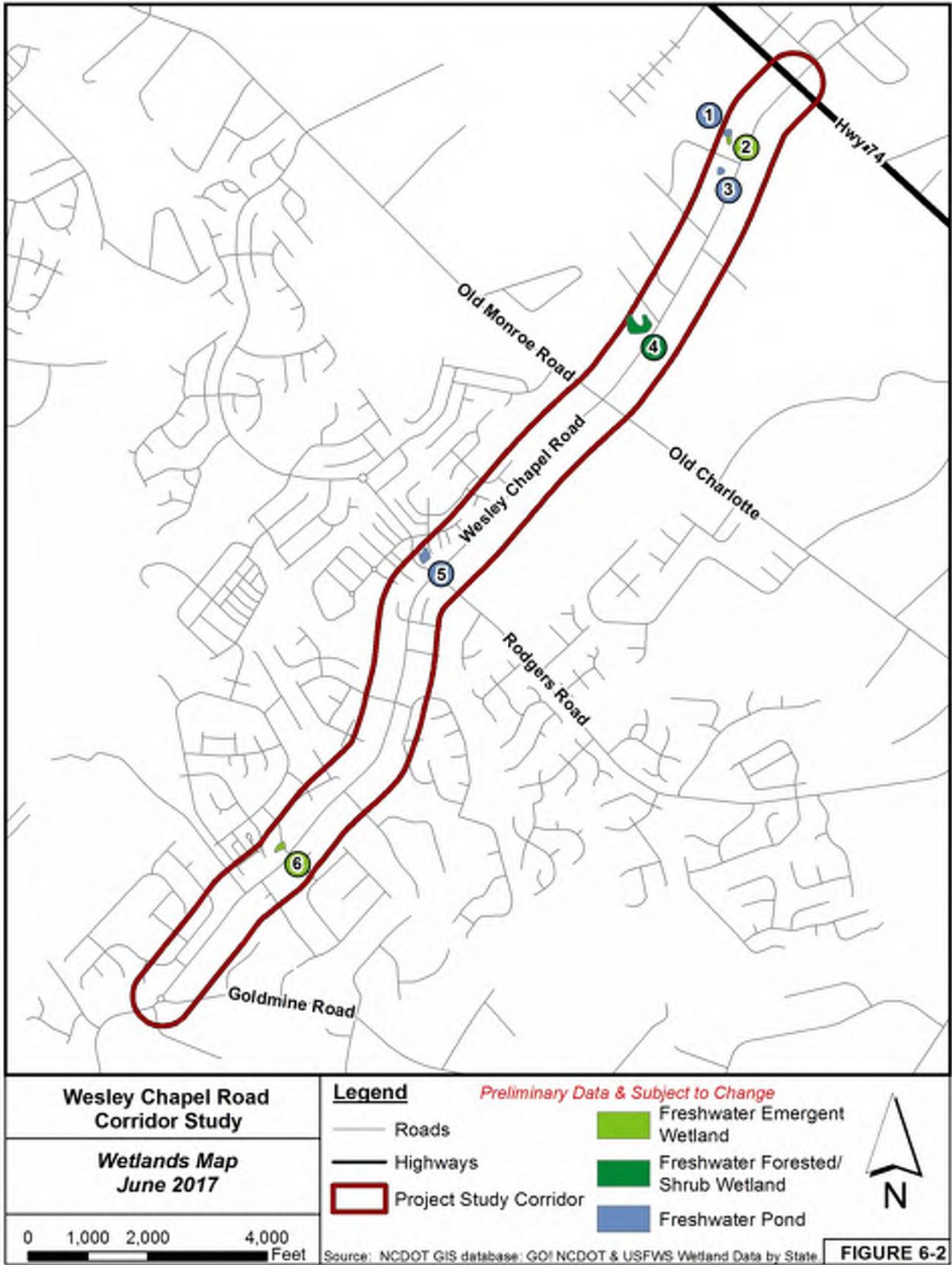


Figure 6-2 – Wetlands



### Water Quality

Wesley Chapel Road is located within the permitted NPDES Phase II jurisdiction of the Town of Indian Trail. Construction site runoff and post-construction site runoff of stormwater from any development or redevelopment must be controlled and managed in accordance with the Town's NPDES Stormwater Program. There are no High Quality Water or Outstanding Resource Water Management Zones within the vicinity of the project study corridor. The South Fork Crooked Creek is the only impaired water body near the project study corridor. However, the creek is outside the limits of the project.

### Flood Control

There are no designated flood zones within the project study corridor. The project study corridor area has been determined to be outside the 0.2% annual chance floodplain based on Federal Emergency Management Agency information for Union County (2008). The closest 100-year floodplain is located southeast of the Wesley Chapel Road and Rogers Road intersection. This floodplain is a tributary of the East Fork Twelvemile Creek with the highest Base Flood Elevation of 620 feet, North American Vertical Datum (NAVD). The lowest elevation of Wesley Chapel Road in this area is approximately 132 feet, NAVD.

## 6.3 Cultural Resources

There are a total of 14 cultural resources within a mile radius of the project study corridor and shown in **Table 6-3 – Cultural Resources**. Of the 14 cultural resources designations, two sites are within the project study corridor. Cultural resources and designations are shown in **Figure 6-3 – Cultural Resources**.

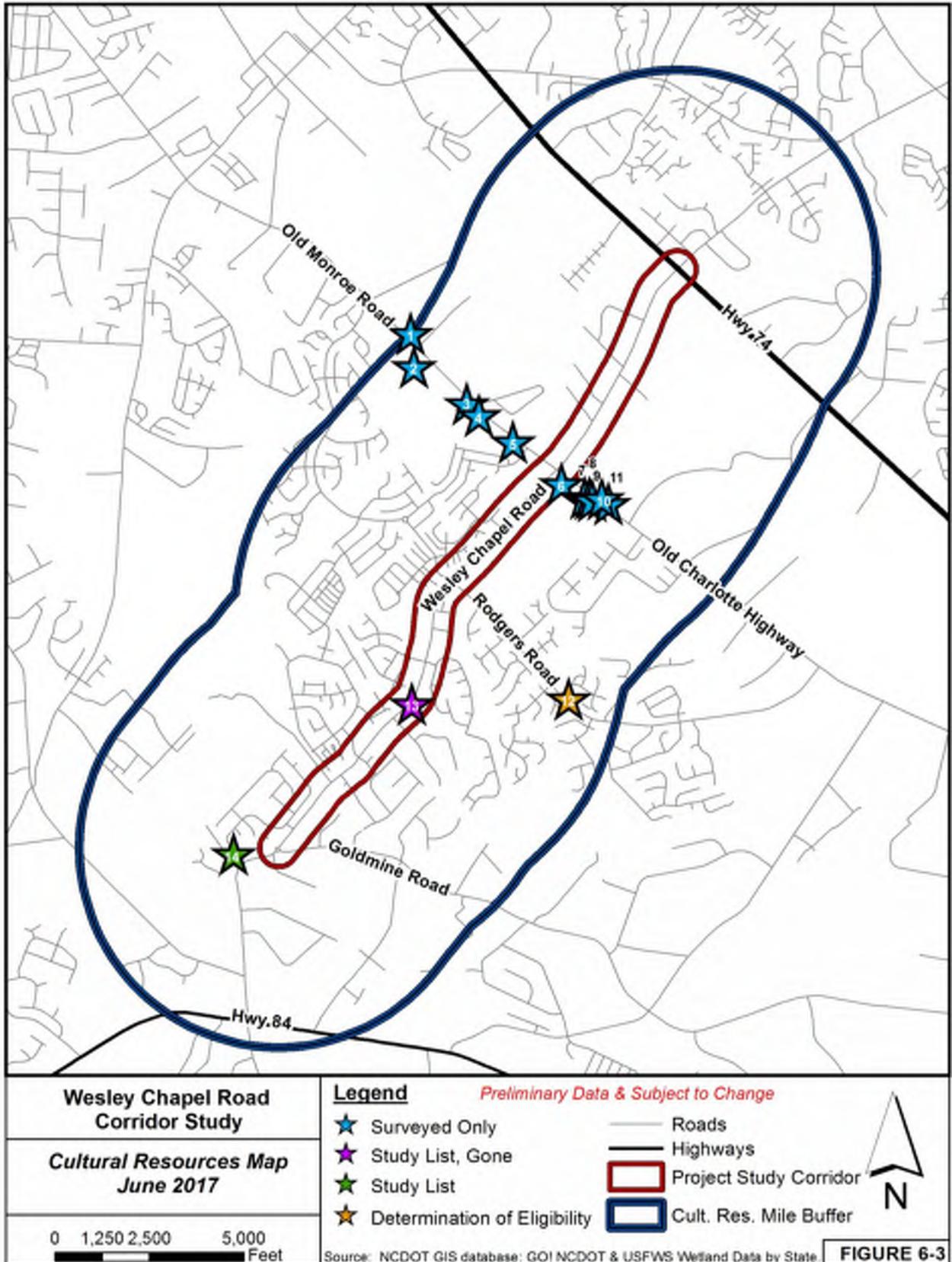
**Table 6-3 – Cultural Resources**

Site Name	Map ID #	Status	Location	Within Study Corridor?
House	1	Surveyed Only	5833 Old Monroe Rd.	No
House	2	Surveyed Only	West side of Old Monroe Rd./Radiator Rd. intersection	No
House	3	Surveyed Only	6232 Old Monroe Rd.	No
House	4	Surveyed Only	6308 Old Monroe Rd.	No
House	5	Surveyed Only	6516 Old Monroe Rd.	No
Sun Valley High School	6	Surveyed Only	5211 Old Charlotte Hwy.	Yes
House	7	Surveyed Only	5117 Old Charlotte Hwy.	No
House	8	Surveyed Only	5113 Old Charlotte Hwy.	No
House	9	Surveyed Only	5109 Old Charlotte Hwy.	No
House	10	Surveyed Only	5106 Old Charlotte Hwy.	No
House	11	Surveyed Only	5102 Old Charlotte Hwy.	No
Cyrus Marian Rogers House	12	Determination of Eligibility	Rogers Rd., 1.4 miles SW of SR 1009	No
William D. Hawfield House (Gone?)	13	Study List, Gone	East side of SR 1377, 1.3 miles S of SR 1009	Yes
Houston Family House	14	Study List	North side of SR 1162, at jct. with Tan Yard Rd.	No

Source: North Carolina State Historic Preservation Office:

<http://www.hpo.ncdcr.gov/gis/CountyDisclaimers.html#DataDownload> Date: 12.01.2016

Figure 6-3 – Cultural Resources



## 6.4 Threatened and Endangered Species

The Endangered, Threatened, Federal Species of Concern and Candidate Species for Union County are listed below in **Table 6-4 – Endangered, Threatened and Candidate Species and Federal Species of Concern, Union County**.

**Table 6-4 – Endangered, Threatened & Candidate Species & Federal Species of Concern, Union County**

Common Name	Scientific Name	Federal Status	Record Status
American Eel	<i>Anguilla rostrata</i>	FSC	Current
Carolina Darter	<i>Etheostoma collis collis</i>	FSC	Current
Atlantic Pigtoe	<i>Fusconaia masoni</i>	FSC	Current
Carolina Creekshell	<i>Villosa vaughaniana</i>	FSC	Current
Carolina heelsplitter	<i>Lasmigona decorata</i>	E	Current
Savannah Lilliput	<i>Toxolasma pullus</i>	FSC	Current
Yellow Lampmussel	<i>Lampsilis cariosa</i>	FSC	Probable/Potential
Dwarf Aster	<i>Eurybia mirabilis</i>	FSC	Current
Georgia Aster	<i>Symphyotrichum georgianum</i>	C	Current
Michaux's sumac	<i>Rhus michauxii</i>	E	Current
Prairie Birdsfoot-Trefoil	<i>Lotus unifoliolatus</i> var. <i>helleri</i>	FSC	Current
Schweinitz's Sunflower	<i>Helianthus schweinitzii</i>	E	Current
Shoals Spiderlily	<i>Hymenocallis coronaria</i>	FSC	Probable/Potential
Virginia Quilwort	<i>Isoetes virginica</i>	FSC	Historic

Source: US Fish & Wildlife Service (USFWS) <https://www.fws.gov/raleigh/species/cntylist/union.html>  
03.25.2015

## 6.5 Hazardous Materials

A GIS data analysis was completed for the project study area for hazardous material sites including brownfields, active and inactive waste sites, landfills, manufactured gas plant sites and underground storage tanks (USTs). There are nine sites listed as hazardous materials within and in proximity to, the project study corridor and are shown in **Table 6-5 – Hazardous Materials**. Of the nine sites, three are located within the project study corridor. The three hazardous sites consists of two, underground storage tanks (USTs) and a hazardous waste site, shown in **Figure 6-4 – Hazardous Materials**.

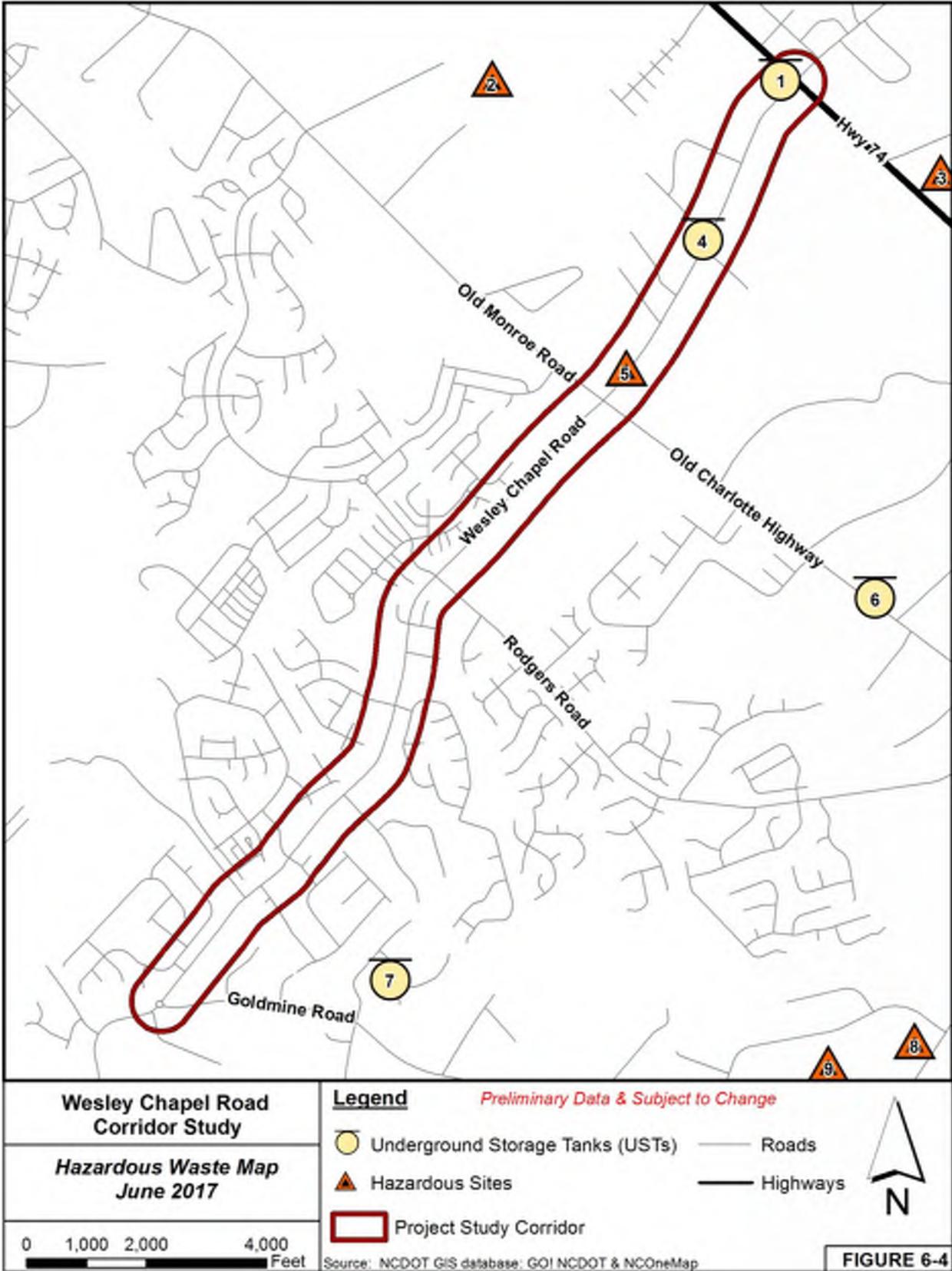
There is an active hazardous waste site located within the project study corridor. CVS Pharmacy #1742 is located along Wesley Chapel Road near the Sun Valley Commons. The site is regulated by the hazardous waste portions of the Resource Conservation and Recovery Act (RCRA) as a Large Quantity Generator.

**Table 6-5 – Hazardous Materials**

Map ID #	Site Name	Hazardous Waste/USTs	ID #	Address	Within Project Study Corridor?
1	Sun Valley Grocery	USTs	MO-3331	5107 W. Hwy. 74	Yes
2	Radiator Specialty Co.	Hazardous Waste	NCD091245969	600 Radiator Rd.	No
3	Dale Jarrett Ford Inc.	Hazardous Waste	NCR000139493	88 Dale Jarrett Blvd.	No
4	Orr Property	USTs	MO-7533	3303 Wesley Chapel-Stouts Rd.	Yes
5	CVS Pharmacy #1742	Hazardous Waste	NCR000151506	2901 Wesley Chapel Stouts Rd.	Yes
6	Barnette's Service & Grocery	USTs	MO-3825	4610 Old Charlotte Hwy	No
7	Quedenfeld Residence	USTs	MO-6351	903 Bradford Place	No
8	Goodrich Customer Service	Hazardous Waste	NCR000009738	4115 Corporate Center Dr.	No
9	Bonakemi Monroe	Hazardous Waste	NCR000010215	4275 Corporate Center Dr.	No

Source: NC OneMap Hazardous Waste data, cited January 3, 2017.

Figure 6-4 – Hazardous Materials



## 7.0 PUBLIC PARTICIPATION

### 7.1 Stakeholder Advisory Group Meetings

Two stakeholder advisory group meetings were held for the Wesley Chapel Road Corridor Study. The first stakeholders meeting took place on January 10, 2017 and the second meeting was held April 4, 2017.

#### **Stakeholder Advisory Group Meeting #1**

The first stakeholder advisory group meeting was held on Tuesday, January 10, 2017 at the Town's Administrative Building. A total of 11 participants attended. Detailed discussions were held with the stakeholders that shed light on the issues, opportunities and constraints related the Wesley Chapel Road Corridor Study. The specific stakeholders in attendance represented home owner associations, Town staff and business owners. The discussion focused on:

- Challenges and opportunities
- Likes and dislikes about the corridor
- Mobility
- Parking
- Urban design
- Economic development

#### **Stakeholder Advisory Meeting #2**

The second stakeholder advisory group meeting was held on Tuesday, April 4, 2017 at the Indian Trail Civic Building. A total of 12 participants attended. Discussions focused on roundabout alternatives shown for the intersections with Fulton Ridge Drive/ Inlet Way and Taylor Glen Lane/ Tanglewood Drive, both north of the Goldmine Road roundabout at the south end of the project corridor. Roundabouts at additional intersections along the Wesley Chapel Road Corridor were discussed including at Rogers Road, Sun Valley Middle School and at locations between Old Monroe Road and US 74. Roundabout alternatives have received favorable support from the stakeholders as the design contributes strongly to the "small town feel" the Town is wanting to provide throughout the corridor.

Currently, improvements to this corridor are not in the State Transportation Improvement Plan (STIP) and have not been evaluated in the Charlotte Regional Transportation Planning Organization (CRTPO) Strategic Transportation Investments (STI) prioritization process. CRTPO potentially could include the corridor (or divide the corridor into two segments) in the next round of STI prioritization process. The divided segments include the following: Goldmine Road to Rogers Road and Rogers Road to US 74.

It was mentioned NCDOT would consider a traffic signal at the intersection of Treeside Lane and Sun Valley Middle School, but does not have the necessary funds or the required widening width for the turn lanes. Pedestrian signals would be considered, but funding remains an issue. It was stated that a roundabout alternative should be considered as part of the Wesley Chapel Road Corridor Study.

## 7.2 Public Engagement Meetings

A total of two public engagement meetings were held for the Wesley Chapel Corridor Study. A broader community engagement meeting was held on Wednesday, January 25, 2017 with a second public engagement meeting held on Tuesday, May 2, 2017 to follow-up on the issues, comments and preferences expressed in the January 25, 2017 public meeting.

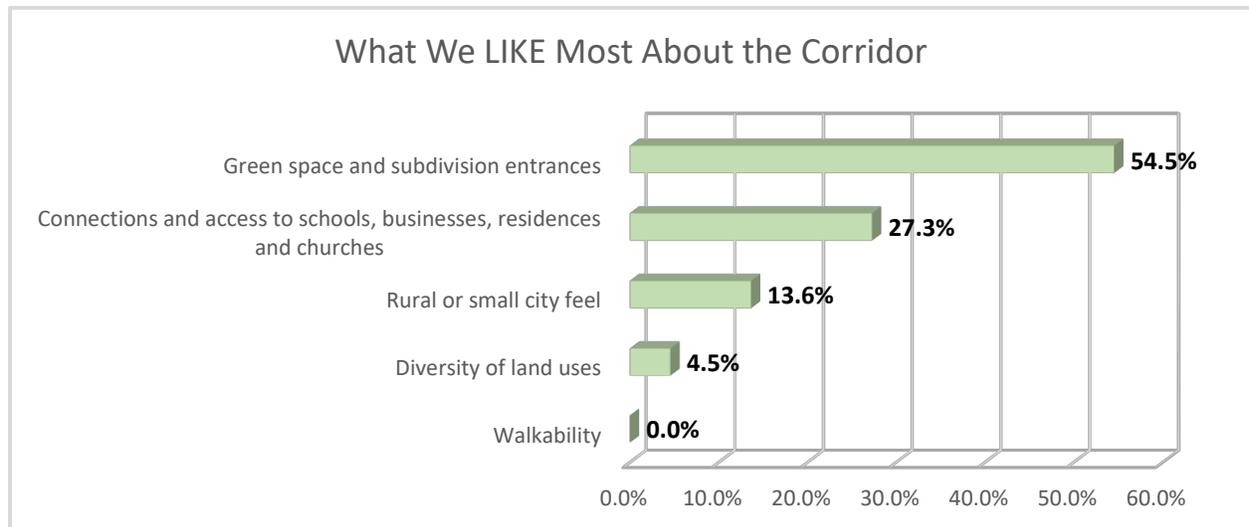
### **Public Engagement Meeting #1**

A total of 30 participants attended the first public meeting on January 25, 2017, at the Town of Indian Trail Civic Building. Attendees were asked to rank their preferences amongst the following categories for the Wesley Chapel Road Corridor:

- Likes
- Dislikes
- Objectives
- Street Elements
- Addressing Capacity

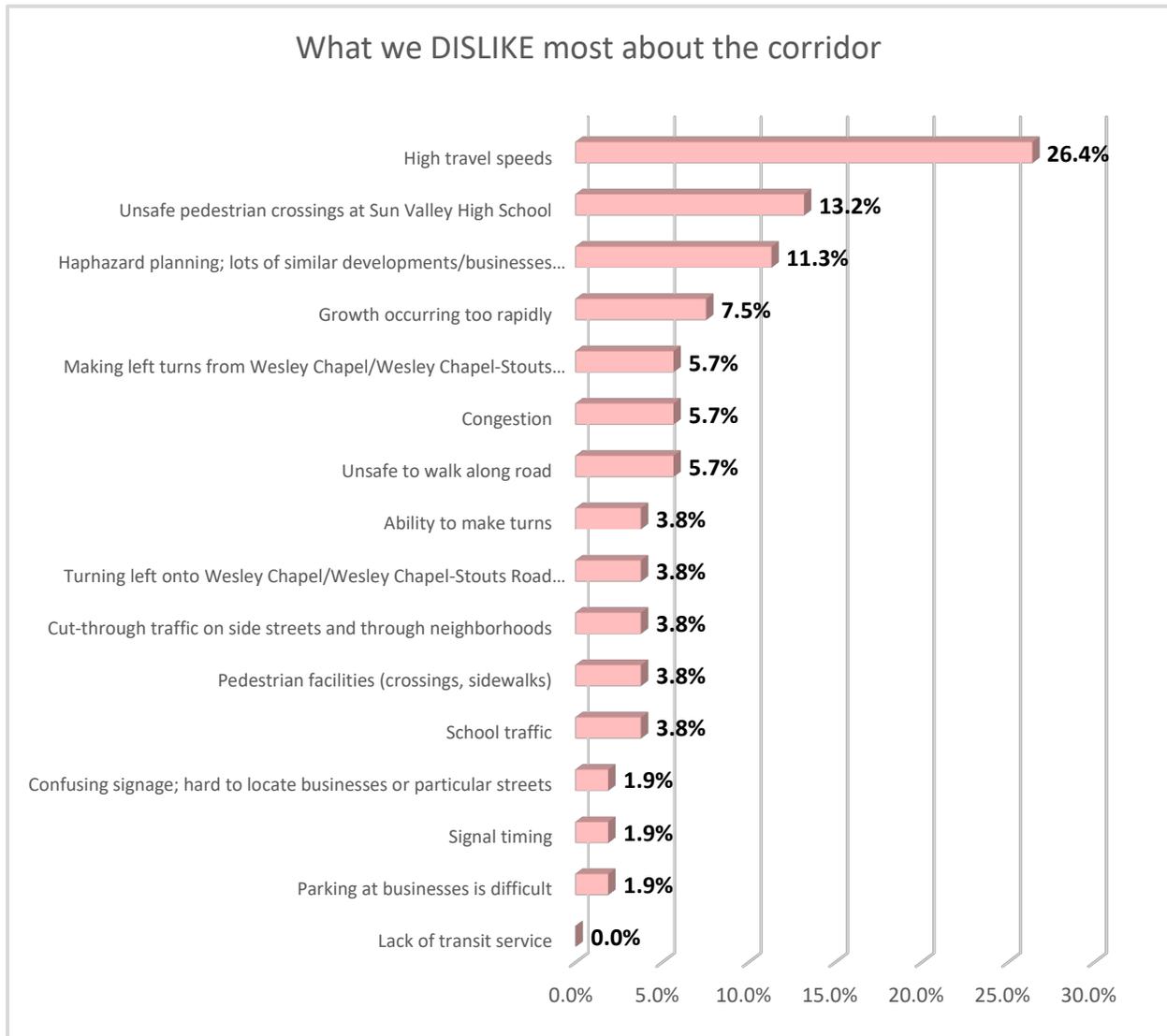
### **Likes**

Participants were asked to vote on what they like most about the Wesley Chapel Road Corridor by selecting one of the following categories. The graph below summarizes the results.



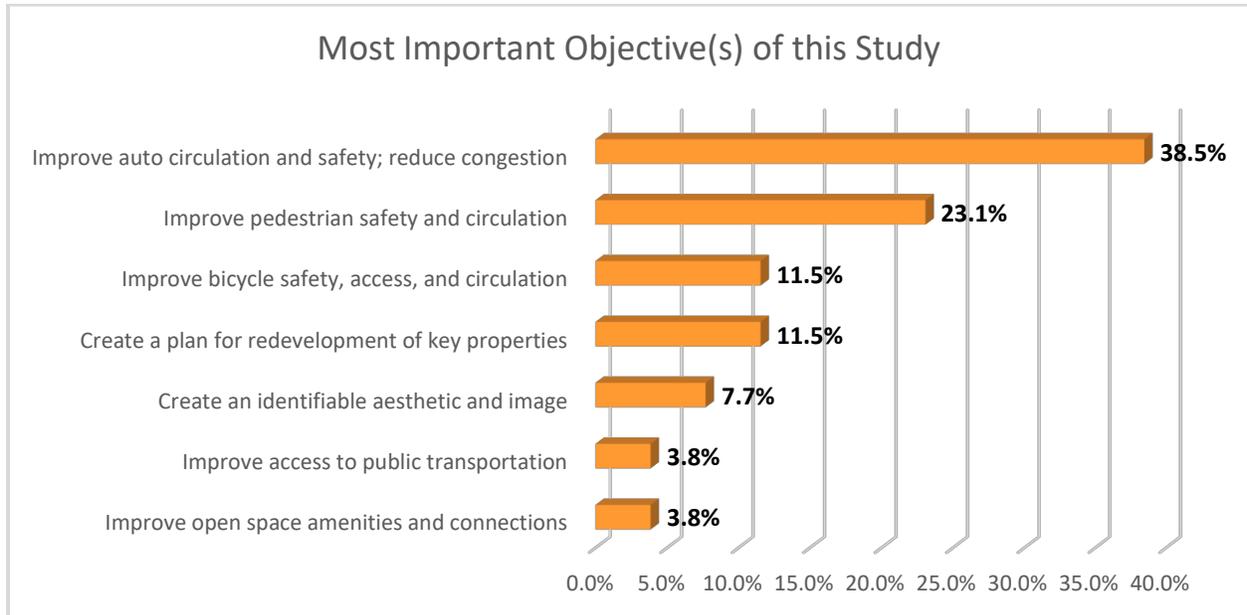
## Dislikes

Participants were asked to vote on what they disliked the most about the Wesley Chapel Road Corridor by selecting up to three of the following categories. The graph below summarizes the results.



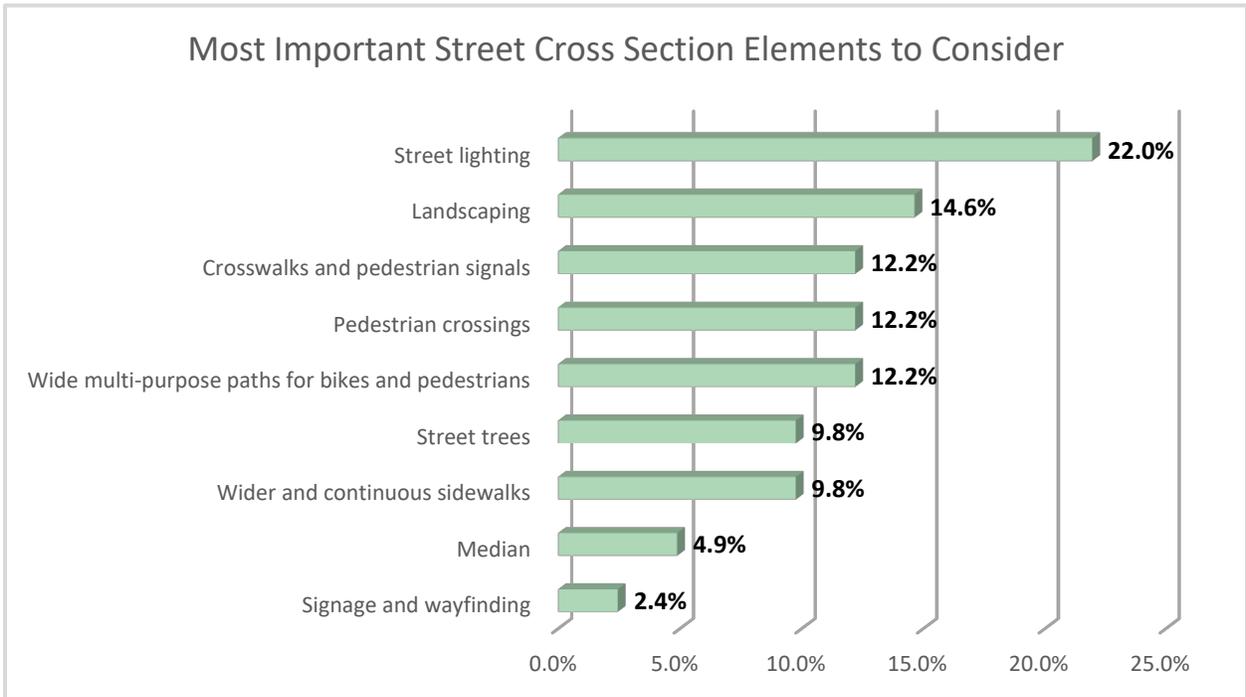
### Objectives

Participants were asked to vote on what the most important objectives of the Wesley Chapel Road Corridor by selecting up to three of the following categories. The graph below summarizes the results.



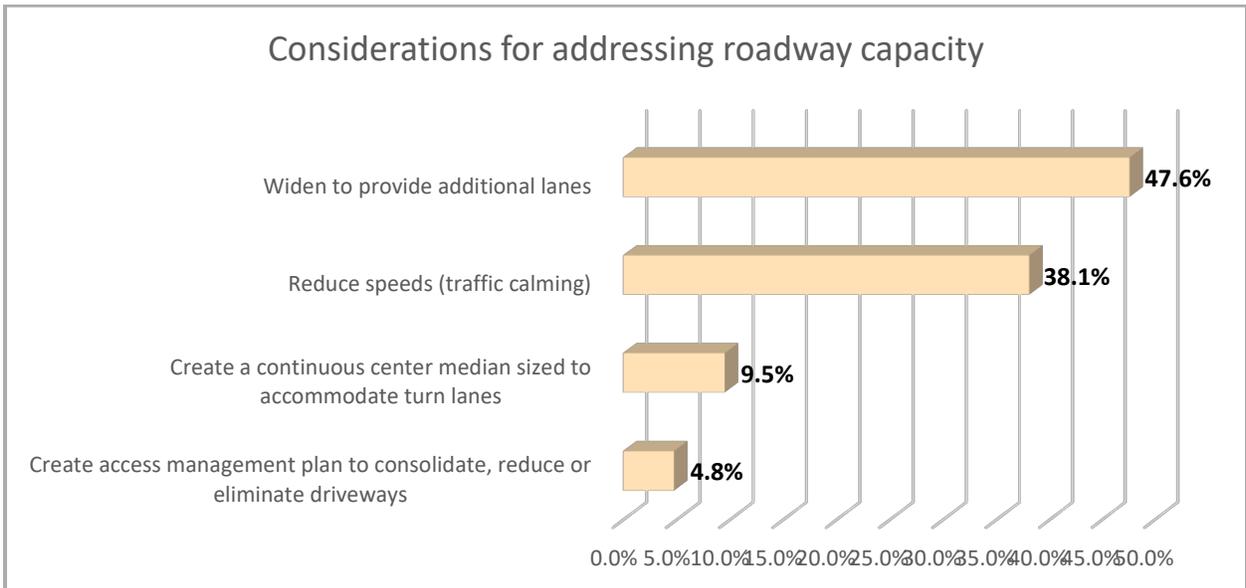
### Street Elements

Participants were asked to vote on what street elements to consider for the Wesley Chapel Road Corridor by selecting up to three of the following categories. The graph below summarizes the results.



Addressing Capacity

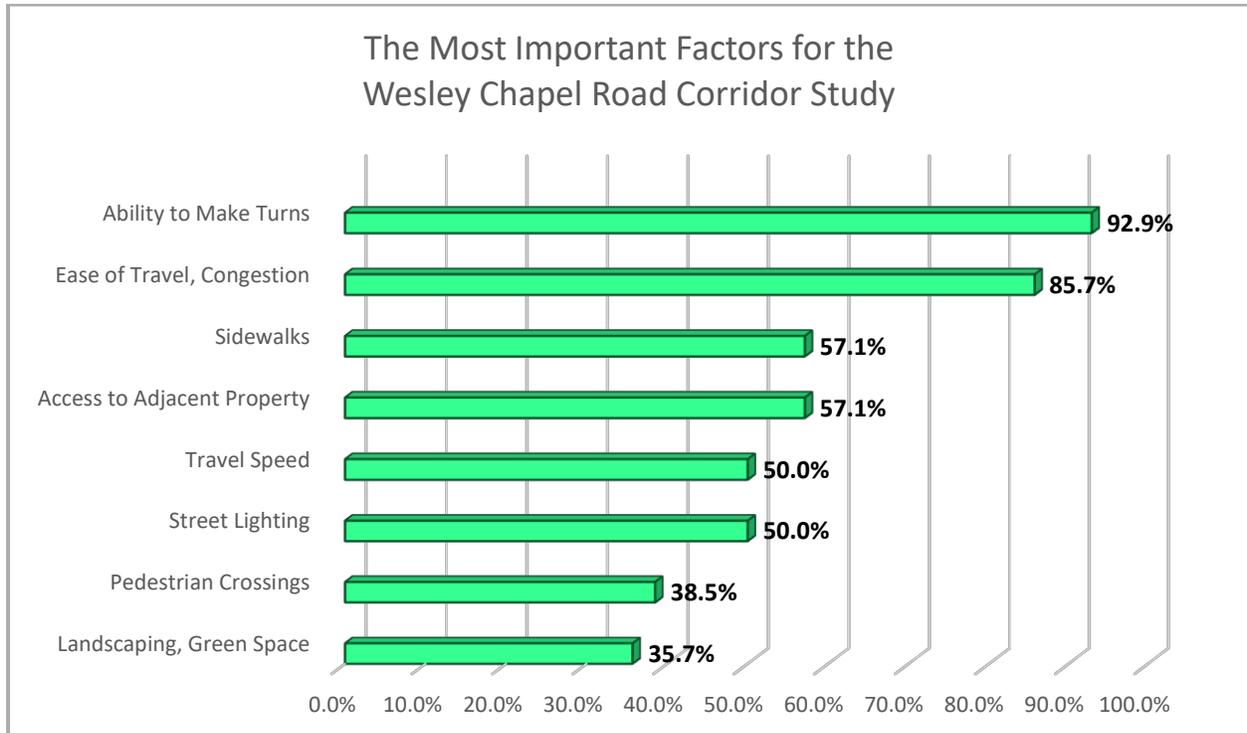
Participants were asked to vote on considerations for addressing roadway capacity for the Wesley Chapel Road Corridor by selecting up to three of the following categories. The graph below summarizes the results.



## Public Engagement Meeting #2

A total of 20 participants attended the second public engagement meeting on Tuesday, May 2, 2017, at the Town of Indian Trail Civic Building. The meeting summarized the initial public engagement from the first public meeting, goals and objectives and provided draft alternatives for the Wesley Chapel Road Corridor.

The most important factors for the Wesley Chapel Road Corridor were gathered from the initial public meeting and presented on May 2, 2017. The graph below summarizes the eight most important factors.



## 8.0 TRAFFIC ANALYSIS

The intent of the Wesley Chapel Stouts Road Corridor Study is to determine improvements that will protect the mobility and access of the corridor for decades to come. A detailed traffic analysis was completed to assess the operational performance of Existing (2016), No Build (2040), and Build (2040) scenarios. The following summarizes the results of the analysis. Reference is made to the complete traffic report dated for additional details and documentation.

The study area for the analysis includes Wesley Chapel-Stouts Road/Wesley Chapel Road from Goldmine Road (SR 1162) to US 74. The following intersections will be analyzed:

- Wesley Chapel Road at Goldmine Road (SR 1162)
- Wesley Chapel Road at Taylor Glenn Lane/Tanglewood Drive
- Wesley Chapel Road at Fulton Ridge Drive/Inlet Way
- Wesley Chapel Road at Rogers Road (SR 1353) - Signalized
- Wesley Chapel Road at Sun Valley Middle School/Treeside Lane
- Wesley Chapel-Stouts Road at Old Charlotte Highway/Old Monroe Road (SR 1009) - Signalized
- Wesley Chapel-Stouts Road at Sun Valley Commons Driveway - Signalized
- Wesley Chapel-Stouts Road at Barry Plastics Plant Driveway
- US-74 at Wesley Chapel-Stouts Road / Sardis Church Road (SR 1367) - Signalized

### Year 2016 Existing

The 2016 AADT can be estimated based on the historic AADT's. It varies along the roadway and is broken down into the following segments:

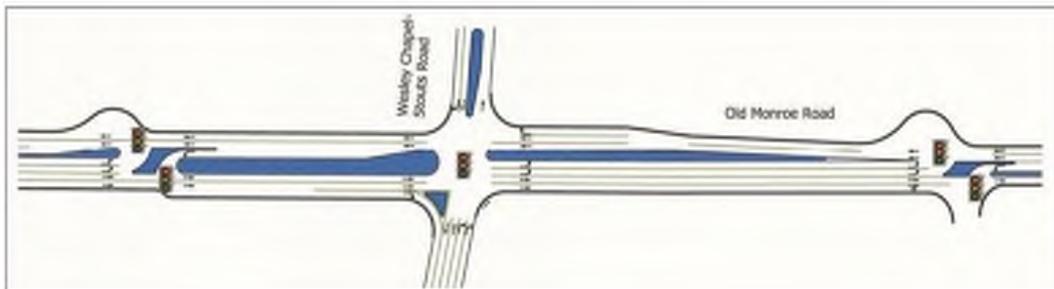
- Between US-74 and Old Monroe Road - 16,500
- Between Old Monroe Road and Rogers Road -18,000
- Between Rogers Road and Goldmine Road - 13,000 to about 10,000 (drops due to residential subdivisions in this segment)

The percentage of heavy trucks is 6.3%. The directional split is 47% northbound and 53% southbound.

### Year 2040 No-Build Conditions

For comparative purposes, an analysis of the no-build conditions was conducted. This analysis reviews traffic volumes for all proposed factors that will influence the study area between the existing conditions and the expected conditions during the 2040 design year. Projects on or near the study area that are expected to influence this project include:

- Under W-5520 - US-74 synchronized street design
- Under U-4714 - Michigan Left at Wesley Chapel-Stouts Road/Old Monroe Road. See Exhibit 5 from the East John Street/Old Monroe Road Improvement Project Build Traffic Operations Technical Memorandum, dated July 2015.



**Figure 8-1 – Proposed Michigan Left Intersection at Old Monroe Road and Wesley Chapel-Stouts Road (U-4714)**

- Renovations to Sun Valley High School which include new access strategies:
  - New bus access from Wesley Chapel Road
  - New Staff parking lot along Wesley Chapel Road OR
  - One combined access point, near the existing stadium
- The Shoppes at Hanfield Village: new development in northeast quadrant of intersection of Wesley Chapel-Stouts Road and Old Monroe Rd/Old Charlotte Highway. Addition of 4th approach at both of the following intersections:
  - Wesley Chapel-Stouts Road at Sun Valley Commons Shopping Center entrance
  - Old Charlotte Highway at Sun Valley High School Main entrance

### **Year 2040 Build Conditions**

Due to the high projected volume on Wesley Chapel-Stouts Road, the preferred alternative will be a proposed four-lane median-divided roadway with roundabouts, where feasible, at intersections, with the exception of US-74 and Old Monroe Road/Old Charlotte Highway intersections. This alternative includes any proposed improvements along the corridor as shown in the 2040 no-build conditions, such as the Michigan left on Old Monroe Road, as well as the proposed widening along Wesley Chapel Road. At intersections where roundabouts are not feasible (roundabouts requiring more than 2-lanes to meet capacity and operational requirements), a traditional unsignalized or signalized intersection was evaluated. Locations that roundabouts are not considered feasible are when it would require more than a two-lane roundabout to have enough capacity for an acceptable level of service, or where existing queuing in turn lanes cannot be addressed under this project, like at Sun Valley Middle School. Two additional locations between US-74 and Sun Valley Commons will be reviewed as roundabouts to allow for u-turn movements along the divided corridor and for potential future access for development along the corridor.

After review of existing conditions, it was determined that a roundabout would not be a good solution for the intersection of Wesley Chapel Road at Sun Valley Middle School/Treeside Lane. This is due to the inadequate amount of on-site storage for the middle school for parent pick-up and drop-off. In the afternoon, the traffic queues along Wesley Chapel Road from the north and south, waiting to gain access to the school. Until the storage on-campus is improved, an exclusive southbound left lane and exclusive right lane will remove these waiting vehicles from the flow of traffic on Wesley Chapel. Therefore, this location was analyzed as unsignalized or signalized under this study.

US-74 and Old Monroe Road/Old Charlotte Highway were analyzed as they are proposed in W-5520 and U-4714, respectively, with the addition of the extra through lane in each direction on Wesley Chapel-Stouts Road.

Intersection	MOE	Movement	2016		2040		2040 Build			
			Existing		No-Build		RAB		Signals	
			AM	PM	AM	PM	AM	PM	AM	PM
Wesley Chapel Road and Goldmine Road	Roundabout	Intersection	B	B	C	C	F	F	/	/
Wesley Chapel Road and Taylor Glenn Lane/ Tanglewood Drive	Unsignalized	EB	E	F	F	F	/	/	/	/
	Roundabout	Intersection	/	/	/	/	B	C	/	/
Wesley Chapel Road and Fulton Ridge Drive/ Inlet Way	Unsignalized	WB/ EB	F	F	F	F	/	/	/	/
	Roundabout	Intersection	/	/	/	/	C	C	/	/
Wesley Chapel Road and Rogers Road	Roundabout (3 lane)	Intersection	/	/	/	/	D	E	/	/
	Signalized	Intersection	C	C	E	D	/	/	D	C
		NBL	B	C	B	C	/	/	B	E
		NBT	D	D	F	D	/	/	D	D
		NBR	D	D	F	D	/	/	B	A
		SBL	D	C	F	F	/	/	E	D
		SBT	B	B	B	B	/	/	B	C
		SBR	B	B	B	B	/	/	A	A
		EBL	D	C	E	D	/	/	E	D
		EBT	D	C	F	D	/	/	F	D
		EBR	D	C	F	D	/	/	B	A
WBL	E	C	F	F	/	/	F	E		
WBT	C	C	D	D	/	/	C	C		
WBR	B	A	D	A	/	/	C	A		
Wesley Chapel Road and Sun Valley Middle School drop-off/ Treeside Lane	Unsignalized	EB	F	F	F	F	F	F	/	/
	Signalized	Intersection	/	/	/	/	/	/	C	B
		NBL	/	/	/	/	/	/	A	D
		NBTR	/	/	/	/	/	/	C	A
		SBL	/	/	/	/	/	/	A	A
		SBTR	/	/	/	/	/	/	A	B
		EBL	/	/	/	/	/	/	F	D
		EBTR	/	/	/	/	/	/	/	/
		WBL	/	/	/	/	/	/	D	D
WBT	/	/	/	/	/	/	/	/		
WBR	/	/	/	/	/	/	A	A		
Wesley Chapel Road and Proposed HS Access	Roundabout (3 lane)	Intersection	/	/	/	/	C	F	/	/
	Signalized	Intersection	/	/	/	/	/	/	B	F
		NBL	/	/	/	/	/	/	C	C
		NBTR	/	/	/	/	/	/	A	B
		SBL	/	/	/	/	/	/	D	A
		SBTR	/	/	/	/	/	/	C	F
		EBLTR	/	/	/	/	/	/	E	C
		EBL	/	/	/	/	/	/	/	/
WBLTR	/	/	/	/	/	/	C	B		

Table 8-1 – Intersection Level of Service (LOS)

Intersection	MOE	Movement	2016		2040		2040 Build			
			Existing		No-Build		RAB		Signals	
			AM	PM	AM	PM	AM	PM	AM	PM
Wesley Chapel-Stouts Road and Old Charlotte Hwy/Old Monroe Road	Signalized	Intersection	C	C	/	/	/	/	/	/
		NBL	C	E	/	/	/	/	/	/
		NBT	D	D	/	/	/	/	/	/
		NBR	B	A	/	/	/	/	/	/
		SBL	D	C	/	/	/	/	/	/
		SBT	C	D	/	/	/	/	/	/
		SBR	A	A	/	/	/	/	/	/
		EBL	B	C	/	/	/	/	/	/
		EBT	D	D	/	/	/	/	/	/
		EBR	A	A	/	/	/	/	/	/
		WBL	D	C	/	/	/	/	/	/
		WBT	C	D	/	/	/	/	/	/
WBR	A	A	/	/	/	/	/	/		
NB Wesley Chapel-Stouts Road and EB Old Monroe Rd/Old Charlotte Highway	Signalized	Intersection	/	/	B	B	/	/	D	C
		EBT	/	/	C	C	/	/	E	C
		EBR	/	/	A	A	/	/	A	A
		NBT	/	/	C	B	/	/	C	C
		NBR	/	/	C	B	/	/	F	C
SB Wesley Chapel-Stouts Road and WB Old Monroe Rd/Old Charlotte Highway	Signalized	Intersection	/	/	B	C	/	/	D	D
		SBT	/	/	C	C	/	/	C	C
		SBR	/	/	C	B	/	/	E	E
		WBT	/	/	B	C	/	/	D	E
		WBR	/	/	B	C	/	/	C	C
Wesley Chapel-Stouts Road and Sun Valley Commons Entrance	Roundabout	Intersection	/	/	/	/	B	D	/	/
	Signalized	Intersection	A	A	B	C	/	/	/	/
		NBL	A	A	A	B	/	/	/	/
		NBT	/	/	B	D	/	/	/	/
		NBR	A	B	A	A	/	/	/	/
		SBL	/	/	A	C	/	/	/	/
		SBT	A	B	B	C	/	/	/	/
		SBR	A	A	A	A	/	/	/	/
		EBL	/	/	C	D	/	/	/	/
		EBTR	B	B	B	A	/	/	/	/
		WBL	/	/	C	A	/	/	/	/
WBT	/	/	/	/	/	/	/	/		
WBR	/	/	B	D	/	/	/	/		
Wesley Chapel-Stouts Road and Bethel Lane	Roundabout	SB	/	/	/	/	C	C	/	/
Wesley Chapel-Stouts Road and Barry Plastics Plant Driveway	Unsignalized	WB	C	D	C	E	C	C	C	C
Wesley Chapel-Stouts Road and Archie Hargette Road	Roundabout	EB/NB	/	/	/	/	C	B	/	/

Table 8-1 – Intersection Level of Service (LOS) (continued)

Intersection	MOE	Movement	2016		2040		2040 Build			
			Existing		No-Build		RAB		Signals	
			AM	PM	AM	PM	AM	PM	AM	PM
Sardis Church Road and WB US 74	Signalized	Intersection	/	/	B	B	/	/	C	C
		SBR	/	/	C	D	/	/	C	E
		EBL	/	/	C	C	/	/	C	D
		WBT	/	/	B	B	/	/	B	B
		WBR	/	/	A	A	/	/	A	A
Wesley Chapel-Stouts Rd and EB US 74	Signalized	Intersection	/	/	B	C	/	/	F	E
		NBR	/	/	E	C	/	/	F	F
		WBL	/	/	C	D	/	/	C	C
		EBT	/	/	B	B	/	/	E	E
		EBR	/	/	A	A	/	/	E	C
Wesley Chapel-Stouts Road and US 74	Signalized	Intersection	D	E	/	/	/	/	/	/
		NBL	E	F	/	/	/	/	/	/
		NBTR	D	D	/	/	/	/	/	/
		SBL	E	E	/	/	/	/	/	/
		SBTR	D	D	/	/	/	/	/	/
		EBL	F	F	/	/	/	/	/	/
		EBT	D	D	/	/	/	/	/	/
		EBR	A	A	/	/	/	/	/	/
		WBL	E	F	/	/	/	/	/	/
		WBT	D	E	/	/	/	/	/	/
WBR	A	A	/	/	/	/	/	/		

**Table 8-1 – Intersection Level of Service (LOS) (continued)**

#### Wesley Chapel Road at Goldmine Road

This intersection operates at an acceptable level of service during the existing and 2040 no-build scenarios. However, due to the large increase in traffic if this is the only regional north south road to become a 4-lane section by 2040, the single lane roundabout has a LOS F in the 2040 build scenario. This intersection would need to be reviewed again during the next phase of the project development (in conjunction with future planning and design) of the widening along Wesley Chapel Road.

#### Wesley Chapel Road at Taylor Glenn Lane/Tanglewood Drive

This intersection currently experiences delay in both AM and PM peaks. In 2040 under No-Build conditions, the delay increases significantly for the eastbound movements. Due to the volume and queue reported under 2040 No-Build conditions, this intersection warrants review for potential improvements. With the proposed 4-lane divided section and a roundabout installed, this location returns to acceptable levels of service.

#### Wesley Chapel Road at Fulton Ridge Road/Inlet Way

This intersection currently experiences delay in the AM and PM peaks. Under 2040 No-build conditions, the existing delays increase and significant delays are experienced by both of the side streets. With the proposed 4-lane divided section and a roundabout installed, this location returns to acceptable levels of service.

#### Wesley Chapel Road at Rogers Road

Currently this intersection operates at an acceptable level of service. However, with the continued growth in this area, under 2040 No-Build conditions, this intersection experiences unacceptable levels of service in the AM peak. A roundabout configuration was modeled for this location under the proposed project, but with the high volumes on Wesley Chapel Road under 2040 Build conditions, a three lane roundabout would be needed to handle the high volumes. Therefore, this was also analyzed maintaining signalized control, with geometric improvements. Once again, due to the high volumes, multiple improvements are needed to get this location to operate at an acceptable level of service in 2040 under Build conditions.

#### Wesley Chapel Road at Sun Valley Middle School/Treeside Lane

This intersection currently operates at LOS F (with excessively high delay, reported as errors in Synchro) on the eastbound and westbound approaches), but does not warrant signalization. In the 2040 No-build scenario, this remains true. In the 2040 Build scenario, the increase in side street traffic due to the divided roadway warrants the review of a signal at this location. Under signalized conditions, this intersection operates at acceptable levels of service.

#### Wesley Chapel Road at Proposed Sun Valley High School/Shopping Center Drive

Concurrent with this study, Union County Public Schools is proposing renovations to Sun Valley High School which will include revising access location. There are two alternatives being considered: having two restricted movement access points or having one full access location directly across from a shopping center driveway. Full movement locations are being analyzed under this project as roundabouts. The proposed access was analyzed as a roundabout and would not operate at acceptable level of service in the 2040 Build conditions, based on the current regional model projections. For consistency a signal analysis was also performed and a signal would operate at an acceptable level of service during the AM peak, but not during the PM peak. Due to the unknown timing of any corridor widening, the operation of the access points prior to any widening, and the uncertain time frame when a traffic signal would be warranted between now and 2040, two access points are being recommended to the school.

#### Wesley Chapel Road at Old Monroe Road/Old Charlotte Highway

The traditional intersection operates at an acceptable level of service under 2016 existing conditions. When the Michigan left configuration is installed, the intersection is modeled as two intersections. In the 2040 No-Build scenario, this intersection continues to operate at an acceptable level of service. However, due to the large increase in traffic if a 4-lane section was built under the 2040 Build scenario, the operation of some of the individual movements degrades, but the overall LOS for the intersection remains a LOS D or better in both the AM and PM peak.

#### Wesley Chapel Road at Sun Valley Commons Entrance/Hanfield Development

This intersection currently operates at an acceptable level of service as a signalized intersection in both existing and 2040 No-Build scenarios. It was analyzed as a roundabout under the proposed project and it operates at acceptable levels of service in both AM and PM peaks.

#### Wesley Chapel Road at Bethel Lane/future development

This intersection was analyzed as a roundabout under the proposed project. The intention is that it will be located in conjunction with future development in the area. A more detailed analysis will be needed at that time. Based on the information currently available, the roundabout would operate at an acceptable level of service in both AM and PM peaks.

#### Wesley Chapel-Stouts Road at Berry Plastics entrance

This intersection operates at an acceptable level of service in the existing, 2040 No-build, and 2040 Build scenarios. Unsignalized intersections are considered acceptable if traffic volume on the stop-controlled movement is less than 100 vehicles and the queue is less than 250 feet and do not warrant additional lanes or signalization.

#### Wesley Chapel Road at Archie Hargette Road/future development

This intersection was analyzed as a roundabout under the proposed project. The intention is that it will be located in conjunction with future development in the area. A more detailed analysis will be needed at that time. Based on the information currently available, the roundabout would operate at an acceptable level of service in both AM and PM peaks.

#### Wesley Chapel-Stouts Road/Sardis Church Road at US-74

The traditional intersection operates at an acceptable level of service under 2016 existing conditions. With the synchronized streets configuration installed, the intersection is modeled as two intersections. In the 2040 No-Build scenario, this intersection continues to operate at an acceptable level of service. However, the signal for northbound Wesley Chapel-Stouts Road operates at an unacceptable overall LOS during both AM and PM peak hours in the 2040 Build scenario. This intersection would need to be reviewed again in conjunction with any planned widening along Wesley Chapel Road. Verification of the traffic volumes and growth in the area would need to be confirmed closer to the actual design of the project.

## 8.1 Roadway Safety

The crashes at the intersections of Wesley Chapel-Stouts Road/Old Monroe Road and Wesley Chapel-Stouts Road/US-74 were not analyzed due to the concurrent projects that will change the geometrics at these intersections.

Based on the crash data from NCDOT 11/1/2011 – 10/31/2016, there were 432 total crashes within the study area, including 1 fatal crash. The areas along Wesley Chapel Road that have consistent, repetitive crashes are listed below:

- Taylor Glenn/Tanglewood - Mainly left turn crashes
- Pinewood Forest - Mainly rear end and object crashes
- Fulton Ridge/Inlet - Several left turn and angle crashes, and rear end crashes
- Rogers Road - Rear end crashes, North/south left turn collisions, Right turn crashes
- Treeside Lane/Sun Valley Middle School - Mostly rear end crashes and several left turn crashes
- Harris Teeter/Sun Valley High School - Several left turn crashes, one angle crash, and Rear end crashes
- Shell/Pizza Hut - Fair amount of left turn crashes and Several right turn and rear end crashes
- CVS/Sun Valley Commons - southbound rear end crashes often during afternoon congested periods
- Railroad Tracks - Rear end crashes
- Berry Plastics Driveway - Primarily rear end crashes
- Lowes Home Improvement - About 40% left turn crashes and rear end crashes
- Exxon - There had been several left turn crashes

The fatality was on Wesley Chapel north of Taylor Glenn/Tanglewood. The driver was going south and hit a mailbox at 60 mph, no one else was involved.

The access management for the proposed median divided roadway would reduce the number of conflict points along the corridor and would likely reduce the number of left turn and angle crashes currently seen along the corridor. The rear-end crashes would also hopefully be reduced by reducing the congestion along the corridor and reducing the need for aggressive driving that might be adding to the characteristics along the roadway that lead to rear end crashes. The reduction in congestions will also reduce the number of right turn crashes because there should be larger gaps for right turning traffic.

## 8.2 Summary of Traffic Analyses

Operations analyses were performed to assess 2016 Existing, 2040 No-Build, and 2040 Build conditions for the proposed four-lane median-divided roadway. The proposed widening project will incorporate access management strategies. Both US-74 and Old Monroe Road are to remain configured as proposed under the upcoming projects, W-5520 and U-4714, respectively. Under 2040 Build Conditions, in line with the desire for a multi-modal, low speed “village” type environment, roundabouts were considered at the remaining locations as the preferred treatment. Due to safety concerns at the intersection of Wesley Chapel Road at Sun Valley Middle School/Treeside Lane, a roundabout was not analyzed due to off-site queuing during AM and school PM peaks. Based on the results of the analysis, five of the full access locations along the corridor are proposed to be roundabouts. The analysis indicates that Rogers Road, a full access location, would likely need to remain signalized. The proposed Sun Valley High School one access alternative, also would not operate well as a roundabout and would need to be reviewed for signalization.

Due to the high projected volumes based on this being the preferred north-south corridor (because other corridors in the area are still two-lane) it is recommended that in the next stage of this project, traffic forecasts are re-examined in light of the high growth rate in this region and the likelihood of adjacent corridors also being widened between now and 2040.

Figure 8-2 – Intersection Traffic Analysis Summary (Goldmine Road to Rogers Road) – 2040 Build

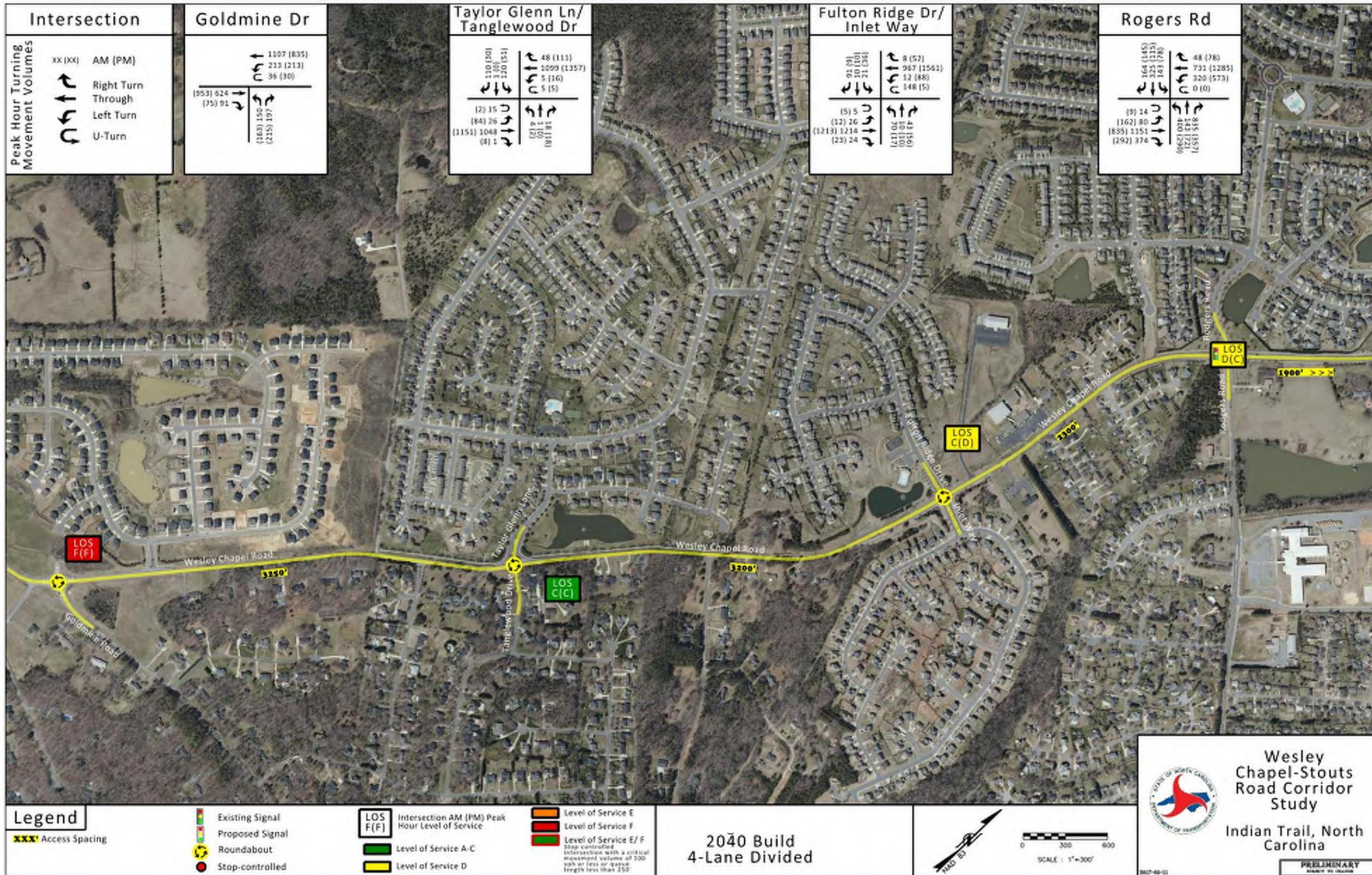
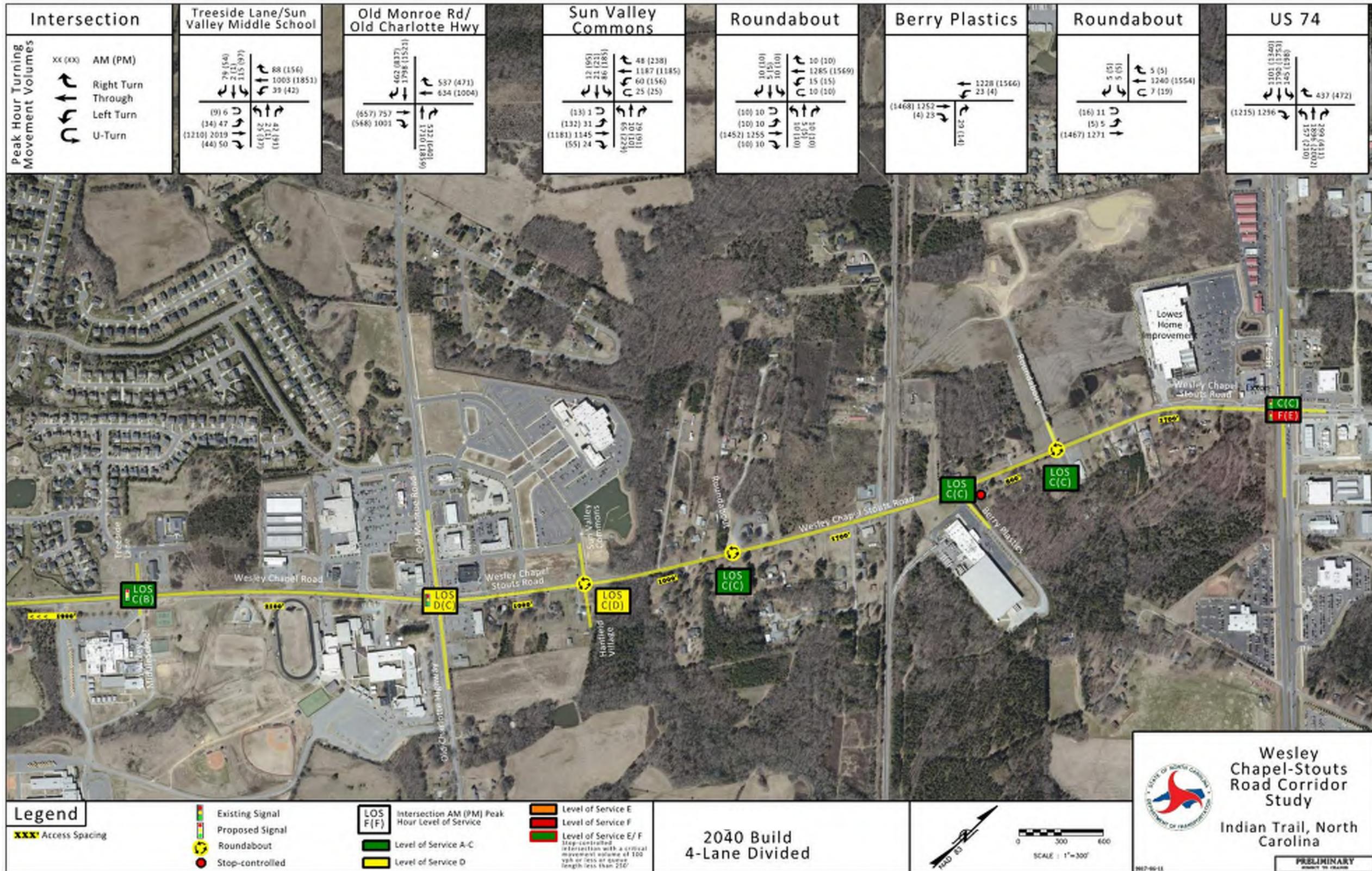


Figure 8-3 – Intersection Traffic Analysis Summary (Rogers Road to US 74) – 2040 Build



## 9.0 ALTERNATIVES

### 9.1 Alternatives Considered

Due to existing roadway and land use characteristics, the corridor was divided into two context zones comparable to the 2009 Comprehensive Plan. These zones are briefly described as follows:

- Context Zone 1 – Wesley Chapel Road from Goldmine Road to Sun Valley Middle School – This segment of the corridor is characterized by mostly single-family residential property with occasional churches.
- Context Zone 2 – Wesley Chapel Road/Wesley Chapel Stouts Road from Sun Valley Middle School to the existing CSX Railroad Crossing – This segment is largely characterized by commercial land use and schools between Sun Valley Middle School and Sun Valley Commons. The segment from Sun Valley Commons to the CSX railroad crossing is mostly underdeveloped and anticipated to be developed as a continuation of the adjacent commercial land uses to the south.
- Context Zone 3 – Wesley Chapel Stouts Road from the existing CSX Railroad Crossing to US 74 – With the exception of the commercial land uses at the intersection of US 74, this segment of the corridor is largely underdeveloped. Berry Plastics (industrial use) is located at the CSX railroad and the underdeveloped land is anticipated to transition from industrial uses near the railroad to commercial uses near US 74.

In an effort to manage growth and development, the 2009 Comprehensive Plan identifies the preferred Wesley Chapel Road typical section to include four travel lanes (two in each direction), median-divided with curb and gutter, bike lanes and sidewalks to be placed on both sides. Two alternatives, a Boulevard section design and a Village Center section design, were presented at the Stakeholder Advisory Group and Public Engagement Meetings held during the corridor study. Each of the two alternatives proposed two variations in design, for a total of four alternatives. Roundabouts were evaluated at several intersections along the Wesley Chapel Road Corridor and presented at the meetings.

The Boulevard section alternatives consists of four travel lanes (two lanes in each direction), a divided median with a bicycle lane and pedestrian usage incorporated on both sides of the roadway. The Boulevard section design concept is segmented into two alternatives (known as) Alternative 1a and Alternative 1b. Alternative 1a (Bike Lanes) proposes a four-foot bike lane and six-foot sidewalk on both sides of the roadway. Alternative 1b (Multi-Use Path) incorporates many of the same design elements as Alternative 1a, but eliminates the inclusion of the bike lane on the outside travel lanes and proposes a multi-use path in lieu of a sidewalk outside of the roadway segment.

The Village Center section alternative consists of four travel lanes (two lanes in each direction), a divided median, bike lanes, tree zones and pedestrian usage incorporated on both sides of the roadway. The Village Center section design concept is segmented into two alternatives (known as) Alternative 2a and Alternative 2b. Alternative 2a (Bike Lanes) proposes a four-foot bike lane on both sides of the roadway. Alternative 2b (Bike Lanes with Striped Buffer) proposes a four-foot bike lane on both sides of the roadway and includes the implementation of a three-foot striped buffer between the outside travel lanes and bike lanes.

### 9.1.1. Alternative 1a (Bike Lanes)

The Boulevard section Alternative 1a (Bike Lanes) proposes four, 11-foot travel lanes (two in each direction), with a four-foot bike lane and curb and gutter along each travel direction. Eight-foot planting strip and six-foot sidewalk are placed along both sides of the roadway. A 14 to 18-foot raised median with curb and gutter divides the roadway segments. The posted speed limit is 35-45 miles per hour (mph). The design concept for Alternative 1a (Bike Lanes) is shown in the figure below.

Alternative 1a (Bike Lanes) would be implemented along the Wesley Chapel Road corridor, traveling south to north (start of project to end of project) from:

- Goldmine Road Roundabout to Sun Valley Middle School
- CSX Railroad to US 74



**Figure 9-1 – Alternative 1a – Boulevard Section**

### 9.1.2. Alternative 1b (Multi-Use Path)

The Boulevard section Alternative 1b (Multi-Use Path) proposes four, 11-foot travel lanes (two in each direction) and curb and gutter along the outside travel lane. Eight-foot planting strip and ten-foot, multi-use path are placed along both sides of the roadway. A 14 to 18-foot raised median with curb and gutter divides the roadway segments. The posted speed limit is 35-45 mph. The design concept for Alternative 1b (Multi-Use Path) is shown in the figure below.

Alternative 1b (Multi-Use Path) would be implemented along the Wesley Chapel Road corridor, traveling south to north (start of project to end of project) from:

- Goldmine Road Roundabout to Sun Valley Middle School
- CSX Railroad to US 74



Figure 9-2 – Alternative 1b – Boulevard Section





## 9.2 Preferred Alternative

The two alternatives with their variation designs (four alternatives in total) and proposed roundabouts were presented during the four public involvement meetings held for the Corridor Study. Discussions during the Stakeholder Advisory Group and Public Engagement Meetings favored a bike-friendly alternative. The participants preferred a separate multi-use path over a bike lane next to the outside travel lane for the Boulevard section. The participants were in favor of incorporating roundabouts into the design based on the strong contribution to a “small town feel” not perceived by implementing signalized intersections along the corridor.

Based on stakeholder input and engineering analyses, the preferred alternative includes the implementation of both:

- Alternative 1b (Boulevard Section with Multi-Use Path) from Goldmine Road to Sun Valley Middle School and from the CSX Railroad Crossing to US 74
- Alternative 2b (Village Center Section with Buffered Bike Lanes) from Sun Valley High School to the CSX Railroad Crossing

The preferred alternative proposes five, multi-lane roundabouts along designated intersections on the Wesley Chapel Road corridor. The locations of the roundabouts from south to north (start of project to end of project) include

- Taylor Glen Lane/Tanglewood Drive
- Fulton Ridge Drive/ Inlet Way
- Sun Valley Commons
- Bethel Lane (location subject to refinement based on future development)
- Archie Hargette Road (location subject to refinement based on future development)

Additionally, grade separating Wesley Chapel Stouts Road over the existing CSX railroad is recommended prior to or concurrently with the recommended widening and complete street improvement recommendations along the corridor between Old Monroe Road and US 74.



Figure 9-5 – Proposed Typical Roundabout Design along the Corridor

### 9.3 Estimated Costs

The 2017 cost estimates for the Wesley Chapel Road Corridor Study is provided in **Table 9-1 – Project Cost Estimates**. In addition to the estimated project costs for implementing the entire recommended corridor improvements, pricing has been divided in the event corridor improvements are funded or implemented in two phases – Goldmine Road to Rogers Road and Rogers Road to US Highway 74.

**Table 9-1 – Project Cost Estimates**

Baseline Cost	Goldmine Rd to US 74		Goldmine Rd to Rogers Rd		Rogers Rd to US 74	
	Quantity	\$* (Thou.)	Quantity	\$* (Thou.)	Quantity	\$* (Thou.)
Roadway Widening	3.6 mi.	\$18,000	1.7 mi	\$8,500	2 mi	\$10,000
Roundabouts	5 units	\$1,000	2 units	\$400	3 units	\$600
New/Modified Signals	3 units	\$900	1 unit	\$300	3 units	\$900
Street Lighting	3.6 mi	\$900	1.7 mi	\$425	2 mi	\$500
Ped-Scale Lighting	1.4 mi	\$840	--	--	1.4 mi	\$840
At-Grade RR Xing	--	--	--	--	--	--
Grade Separation RR Xing	1 unit	\$3,200	--	--	1 unit	\$3,200
Force Main Relocation	19,000 LF	\$1,330	9,000 LF	\$630	10,000 LF	\$700
Water Main Relocation	19,000 LF	\$1,330	9,000 LF	\$630	10,000 LF	\$700
30% Misc. Factor	--	\$8,250	--	\$3,266	--	\$5,232
15% Eng. & Conting.	--	\$5,363	--	\$2,123	--	\$3,401
R/W Costs	--	\$16,445	--	\$6,510	--	\$10,429
<b>Total Project Costs</b>	--	<b>\$57,558</b>	--	<b>\$22,784</b>	--	<b>\$36,502</b>

\* Cost based on May/June 2017 pricing

## 10.0 RECOMMENDATIONS

### 10.1 Land Use

The Town's official zoning map dated August 20, 2013, identified this corridor as having several types of residential zoning districts, light industrial district, general business district with a minor neighborhood business district, and regional business district. The residential districts vary from single-family low density to single-family high density and are located along the south side of Wesley Chapel Road. Light industrial district is zoned in areas between Orr Road and Bethel Road while the general business district occupies the three corners of Old Monroe Road and Wesley Chapel Road. A small area at the southwest quadrant of Old Monroe Road and Wesley Chapel Road is zoned as small neighborhood business district and the land between CSX Railroad and US-74 is zoned primarily as regional business district.

A vast majority of the land along the corridor between Rogers Road and Goldmine Road, and from Rosetta Drive to Orr Road is zoned residential use. Commercial development along this corridor is found at the corners of Old Monroe Road and Wesley Chapel Road.

#### 10.1.1 Zoning

The construction of the Monroe Bypass and the US 74 improvement have attracted new development for the Town of Indian Trail with significant development activity at the corner of Wesley Chapel Road and Old Monroe Road. Other sections along Wesley Chapel Road are also experiencing new commercial development.

The growth along Wesley Chapel Road has provided an economic boost to the area and adjusting the current zoning map would be needed to better reflect the changing physical environment of the corridor. It would also enhance the Town's vision as a corridor where people can live, work and play in a safe environment. Adding a park and open space zone and expanding the neighborhood business, multi-family residential and light industrial districts to the current zoning map along this corridor would be recommended.

##### 10.1.1. Park and Open Space

This area would be located along Wesley Chapel Road adjacent to the school grounds. With recreational facilities available at the school grounds, this area could become a future outdoor activity center for the Town. It would be close to neighborhood commercial and residential areas thereby encouraging users to walk to the open space.

##### 10.1.2. Neighborhood Business

With new development happening around this section of the Town, spillover growth is likely to occur along the Wesley Chapel Road Corridor. To anticipate this growth, the areas currently zoned as an overlay district with a neighborhood and general business designations should be expanded to include more neighborhood businesses.

##### 10.1.3. Multi-family Residential

This area could be located adjacent to the proposed neighborhood district at the intersection of Old Monroe Road and Wesley Chapel Road which is currently zoned as low density single-family.

This could also provide housing options for folks who may not be interested in single-family homes.

#### 10.1.4. Light Industrial

This zone is recommended for the areas along the west side of CSX Railroad and south of Wesley Chapel Road. This use could be easily served by rail or road much like the light-industrial use at the north side of Wesley Chapel Road.

### 10.2 Complete Streets

In line with the goals and objectives developed for this project and with input from the community and stakeholders, it is recommended that elements of the 2009 NCDOT Complete Streets policy be incorporated during the final design of the Wesley Chapel Road Corridor Study. By definition, a complete street is designed and operated to accommodate users of all ages and abilities in a safe environment. This includes pedestrians, bicyclists, motorists and transit riders. The policy “directs the Department to consider and incorporate several modes of transportation when building new projects or making improvements to existing infrastructure.” It further states that this new approach would benefit the following.

- Making it easier for travelers to get where they need to go
- Encouraging the use of alternative forms of transportation
- Increasing connectivity between neighborhoods, streets and transit systems
- Improving safety for pedestrians, cyclists and motorists

As noted in Section 9, the preferred alternative includes the implementation of both:

- Alternative 1b (Boulevard Section with Multi-Use Path) from Goldmine Road to Sun Valley Middle School and from the CSX Railroad Crossing to US 74
- Alternative 2b (Village Center Section with Buffered Bike Lanes) from Sun Valley High School to the CSX Railroad Crossing

The recommended sections for improvement for this corridor (four lane village center and four lane boulevard) can be aligned with the cross sections established in the NCDOT Complete Streets Planning and Design Guidelines, July 2012. While it may not be possible to incorporate all the elements of the Complete Street cross section to the proposed design of the Wesley Chapel Road Corridor due to existing site conditions, as many of these elements should be considered and implemented during the final design.

### 10.3 Access Management Opportunities

Access management is a set of techniques that transportation officials can use to control access to highways, arterials, and other roadways from adjacent development with focus on location, spacing, and design of entrances. The benefits of access management include improved movement of traffic, reduced crashes, and fewer vehicle conflicts. Access Management is one of the key components of a quality mobility corridor. Controlling curb cuts and left turns will limit confusion and conflicts for drivers. In turn, corridor carrying capacity and predictability improves. The access management plan was developed to identify system-level spacing standards for intersections, signals and driveways. It also identifies potential connectivity improvements through redevelopment as well as the placement of a plantable median. By spacing signals and

intersections at appropriate intervals, progression controlled traffic becomes more manageable. That is, the signals can be timed (and phased) so that vehicular platoons can traverse the corridor in a more consistent manner. This allows the greatest efficiency for travel along the corridor. It is also recommended that the posted speed limit be a consistent 35 mph along the entire corridor. Current NCDOT policy requires 1200 feet minimum spacing between full access median crossovers for divided highways with posted speed limits of 45 mph and less. The availability of adequate alone is not justification for a crossover and openings are dependent upon design constraints such as adequate storage for left turning vehicles at intersections. Where spacing requirements are not met and there is a defined need for left turn access, directional crossovers were considered. The following summarizes the recommended access management plan subject to be refined as (re)development occurs and the project advances through more detailed planning and design phases.

**Table 10-1 – Access Management Plan (see also Figures 8-2 and 8-3)**

Location	Recommended Access	Spacing from Previous Full Movement Access
Goldmine Road	Full movement (roundabout)	0'
Westport Lane	Directional crossover	
Hawfield Drive	Directional crossover	
Woodbridge Drive	Directional crossover	
Tanglewood Dr./Taylor Glen Ln.	Full movement (roundabout)	3250'
Pinewood Forest Drive	Directional crossover	
Inlet Way/Fulton Ridge Dr.	Full movement (roundabout)	3200'
Hilton Way	Directional crossover	
Dresden Ct./Wilkerson Rd.	Directional crossover	
Rogers Road	Full movement (signal)	2300'
Sun Valley Middle School	Directional crossover	
Treeside Ln.	Full movement (unsignalized)	1900'
Sun Valley High School	Directional crossover	
The Shops at Sun Valley	Directional crossover	
Old Charlotte Highway/Old Monroe Road	Michigan Left (signal)	2100'
Sun Valley Commons	Full movement (roundabout)	1000'
Bethel Lane	Full movement (roundabout)	1000'
Berry Plastics entrance	Directional crossover	
Archie Hargette Road	Full movement (roundabout)	2500'
Lowe's	Directional crossover	
US Highway 74	Synchronized street (signal)	1700'

## 10.4 Intersection Concepts

Based on the results of the traffic operations analysis, crash data analysis, and community input to encourage safer, more responsible driving while also maintaining consistent traffic flow, several intersections along the corridor were evaluated for roundabout concepts. Roundabouts help address safety and congestion concerns at intersections. They are designed to enhance traffic efficiency, safety and aesthetics, and minimize delay and cost for all users including motorists, pedestrians and bicyclists. As noted in the Traffic Operations Technical Memorandum, the following intersections are recommended as proposed roundabouts:

- Wesley Chapel Road and Goldmine Road (existing roundabout)
- Wesley Chapel Road and Tanglewood Dr./Taylor Glen Ln.

- Wesley Chapel Road and Inlet Way/Fulton Ridge Dr.
- Wesley Chapel Stouts Road and Sun Valley Commons
- Wesley Chapel Stouts Road and Bethel Lane
- Wesley Chapel Stouts Road and Archie Hargette Road

Due to the likelihood of redevelopment along the corrido between Sun Valley Commons and US Highway 74, the locations of the roundabouts proposed at Bethel Lane and Archie Hargette Road intersections may be shifted to maintain compatibility with adjacent land uses. In addition, the Wesley Chapel Road and Rogers Road intersection (currently signalized) was evaluated for a roundabout concept, but required a three-lane roundabout solution to maintain acceptable levels of service using 2040 regional model volumes. It is recommended that a more detailed analysis be performed for a potential roundabout solution at the Rogers Road intersection during the more detailed planning and design phase of the project as traffic projections are refined based on updated model information. Furthermore, a roundabout is not recommended at the Treeside Lane and Sun Valley Middle School entrance due to excessive queuing within the intersection during school arrival and departure times causing complete gridlock within the roundabout.

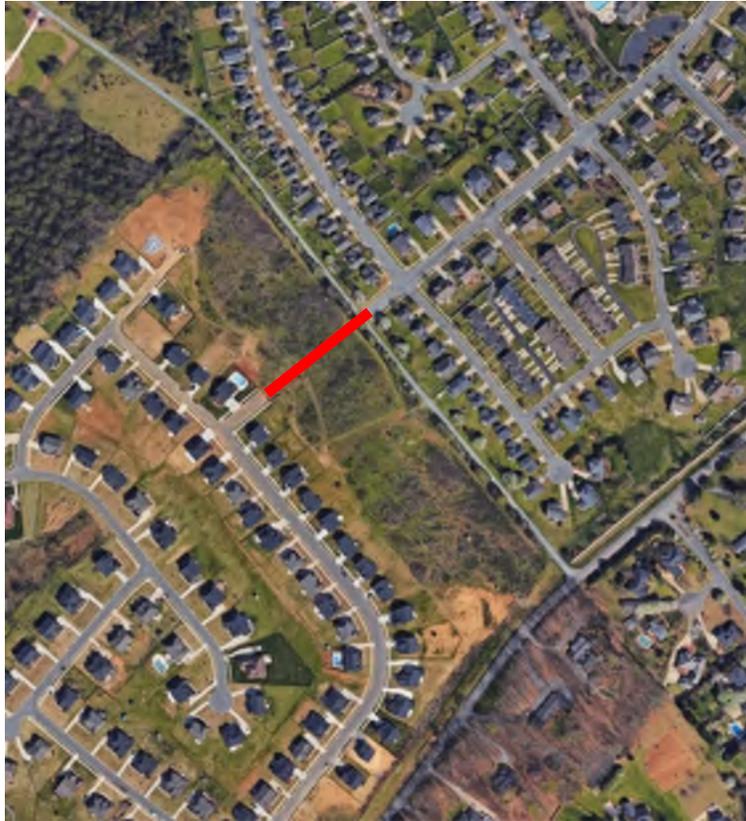
Roundabouts shall be designed to accommodate vehicles, pedestrians, bicyclists, emergency responders, and trucks using the most current NCDOT, FHWA (MUTCD), AASHTO and Transportation Research Board's (TRB) NCHRP Report 672 guidance.

## 10.5 Additional Recommendations

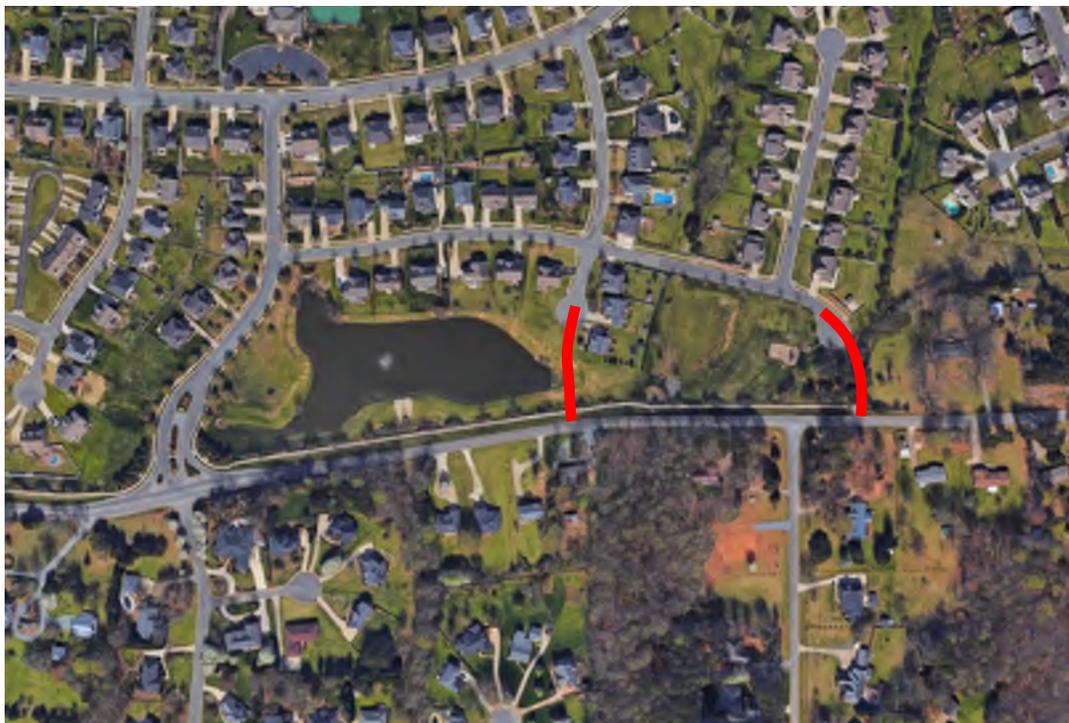
Several horizontal and vertical curves within the existing corridor do not meet design criteria for the recommended design speed of 50 mph (posted 45 mph) within the Boulevard section of the corridor between Goldmine and Sun Valley Middle School. Detailed planning and design phases should develop geometric improvements that meet design criteria for the approved design speed unless valid constraints require design exception.

In addition, potential street improvements and connections located in proximity to Wesley Chapel Road are recommended that could provide additional interconnectivity, helping ease automobile pressures on the intersections and allowing users additional options for circulating along the Corridor.

- The planned interconnections between Sheridan and Taylor Glenn residential developments via the future Hawfield Village development could help with access to and from each of these residential developments.
- Extend Savoy Court or Matilda Lane to connect with Wesley Chapel Road at the Taylor Glenn subdivision. Both of these extensions would relieve traffic at Taylor Glenn Lane and Wesley Chapel Road, but physical constraints of the pond and utilities would need to be considered for feasibility. The extension connection would likely be a Town-initiated project.
- Extend Holly Villa Circle to connect with Wesley Chapel Road at the Holly Park subdivision. This extension would help relieve traffic at Rogers Road and Wesley Chapel Road. The extension connection would likely be a Town-initiated project.



**Figure 10-1 – Hawfield Village Planned Connection**



**Figure 10-2 – Recommended Savoy Court and Matilda Lane Extensions**



**Figure 10-3 – Recommended Holly Villa Circle Extension**

Suggested improvements to Rogers Road west of Wesley Chapel Road include redefining the street section within the existing 30' pavement width considering elements of raised median islands, bike lanes, curb extensions, or other traffic calming measures while restricting on-street parking between Wesley Chapel Road and the roundabout at Brandon Oaks Parkway. The Rogers Road improvements would likely be a Town-funded project.

## 10.6 Implementation and Funding

Implementation of these improvements should be approached in a phased manner. Phase 1 would include the design, right-of-way acquisition, and construction of Wesley Chapel and Wesley Chapel Stouts Road from Rogers Road to US Highway 74. Funding for design, right-of-way acquisition, and construction is not currently programmed as part of the Town's CIP or the NCDOT STIP. It is anticipated that private redevelopment along the Phase 1 section would trigger NCDOT and the Town to commence this work. Right-of-way dedication and improvements associated with any redevelopment would help defray public sector costs for this section. The remaining costs could be included as part of the next STIP prioritization process (SPOT 5.0). Phase 2 would continue the improvements from Goldmine Road to Rogers Road and could also be included in the next STIP prioritization process.

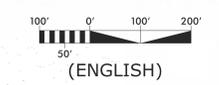
Outside the phased priority segments of the main corridor, the implementation of potential off-corridor projects identified in the study would likely be Town-initiated projects. Town funding for these improvements would need to be programmed and approved as part of future CIP budgets.



Figure 10-4 - Corridor Recommendations Map

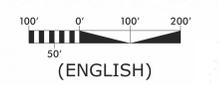


Figure 10-4 - Corridor Recommendations Map



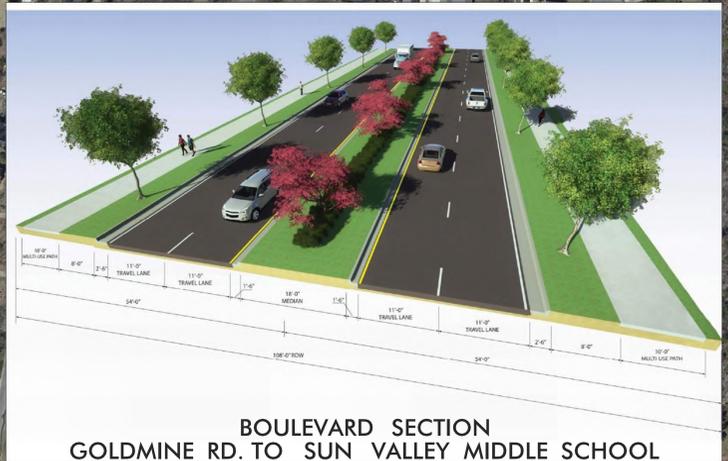
**LEGEND**

	PROPOSED PAVEMENT AND SHOULDERS
	PROPOSED CONCRETE STRUCTURES, ISLAND, SIDEWALK, CURB, AND GUTTER
	PROPOSED GRASS AREA



**LEGEND**

	PROPOSED PAVEMENT AND SHOULDERS
	PROPOSED CONCRETE STRUCTURES, ISLAND, SIDEWALK, CURB, AND GUTTER
	PROPOSED GRASS AREA

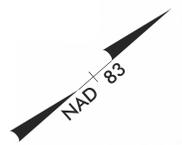




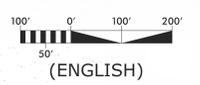
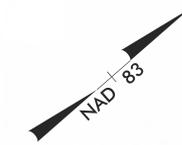


CONCEPTUAL PLANS  
 SUBJECT TO CHANGE

Figure 10-6 - Corridor Recommendations Map

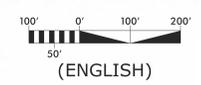


CONCEPTUAL PLANS  
 SUBJECT TO CHANGE



**LEGEND**

- PROPOSED PAVEMENT AND SHOULDERS
- PROPOSED CONCRETE STRUCTURES, ISLAND, SIDEWALK, CURB, AND GUTTER
- PROPOSED GRASS AREA

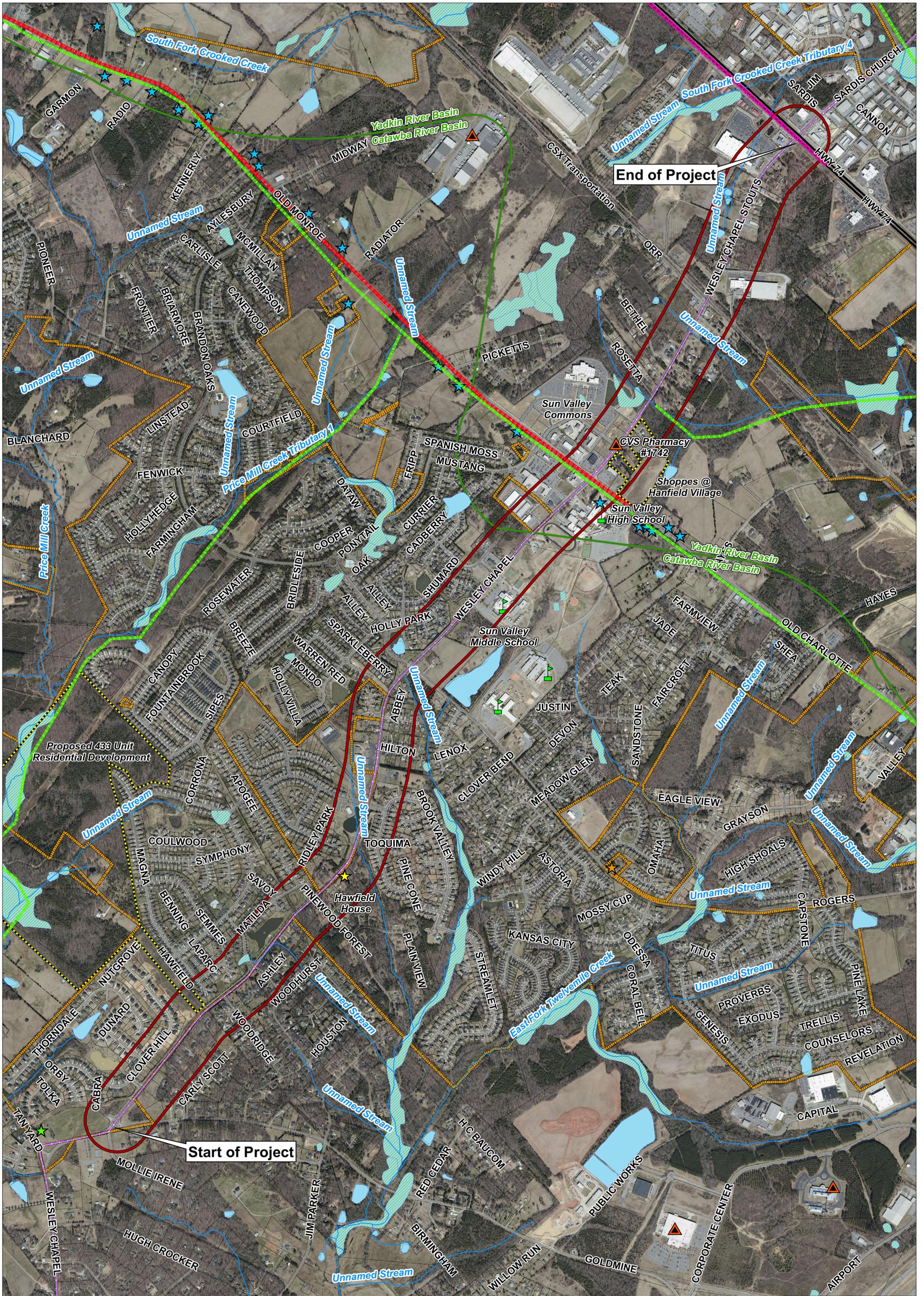


**LEGEND**

- PROPOSED PAVEMENT AND SHOULDERS
- PROPOSED CONCRETE STRUCTURES, ISLAND, SIDEWALK, CURB, AND GUTTER
- PROPOSED GRASS AREA

# **Appendix**

## **A**



Town of Indian Trail - Union County      Wesley Chapel-Stouts Road Corridor Study - From Goldmine Road (SR 1162) to US 74      January 2017

<b>Legend</b>		<b>Preliminary Data &amp; Subject to Change</b>	
★ SHPO - Determination of Eligibility	▲ Hazardous Waste Site	— Roads	— Proposed Carolina Thread Trail
★ SHPO - Study List	🏫 Public Schools	— Highways	— Rivers and Streams
★ SHPO - Study List, Gone	▬ NCDOT STIP Project U-4714	— Railroads	🟦 Body of Water
★ SHPO - Surveyed Only	▬ NCDOT STIP Projects W-5520 & EB-5723	— NCDOT Bike Routes	🟩 Wetlands
			🟩 River Basins
			🔴 Project Study Limits
			🔲 Property Parcels
			🟡 Approved Developments
			🟠 Municipal Boundary

0      0.25      0.5      1 Miles

Source: NC OneMap, NC Center for Geographic Information & Analysis, NC 911 Board

