

Section 4.0 Tier 2 Corridor Alternatives

4.1 Design Criteria

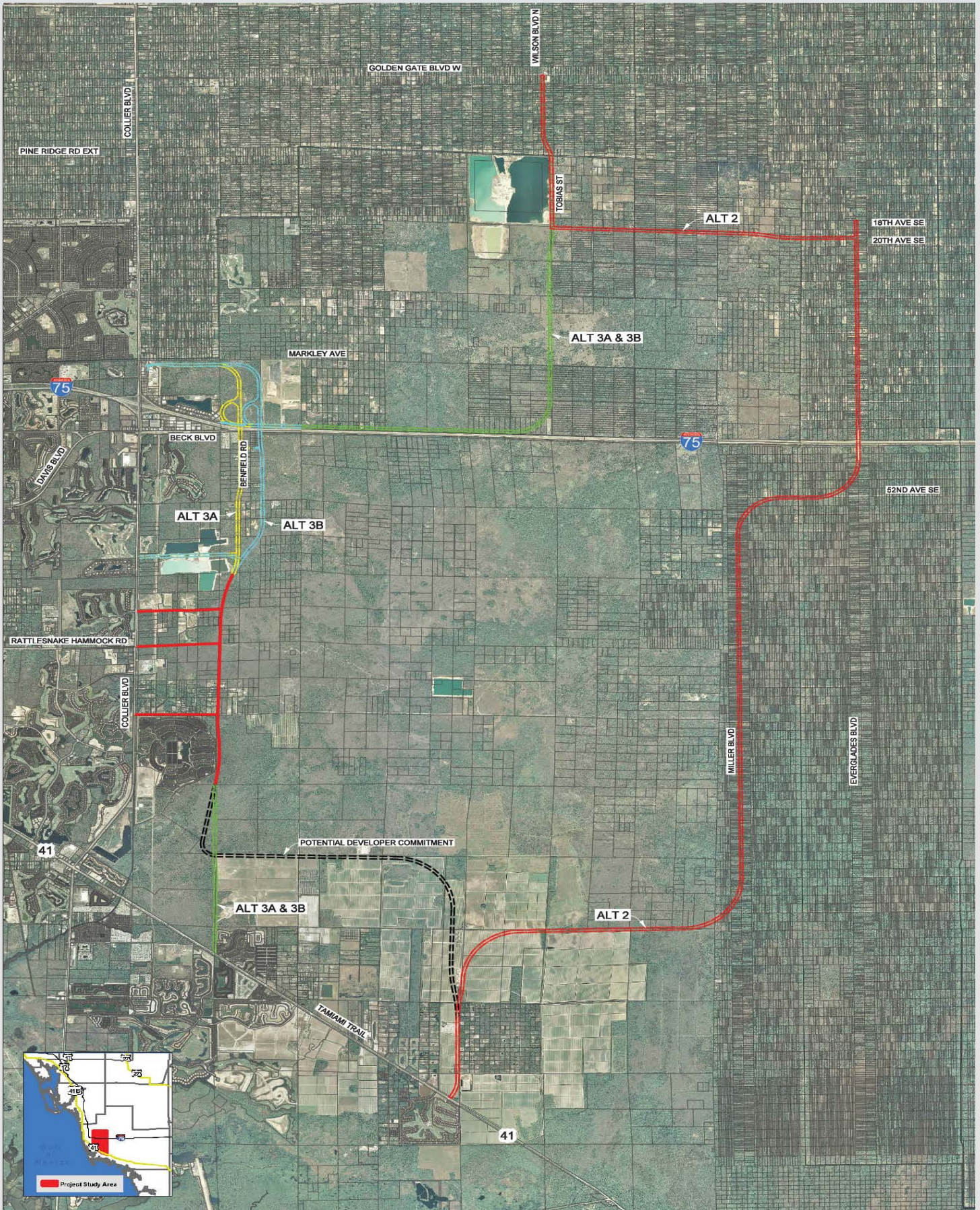
The Tier 2 corridor alternatives were developed using the same design criteria presented in Section 3.1.

4.2 Description of Tier 2 Alternatives

The Tier 1 Findings screened and modified all the corridors down to three build alternatives which are illustrated in Figure 4.2-1 and the No Build alternative. These alternatives were evaluated during the Tier 2 screening.

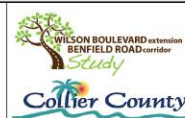
4.2.1 Alternative 1: No Build

The No Build alternative was carried through from the Tier 1 screening. It considered no additional infrastructure to be constructed other than projects identified in the adopted 2030 Financially Feasible LRTP.



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 FIGURE 4.2-1

Tier 2—Corridor Alternatives
 Wilson Boulevard Extension/Benfield Road Corridor Study
 Collier County, Florida



4.2.2 Eastern Corridor

The corridor in the eastern portion of the study area was carried through from the Tier 1 screening.

4.2.2.1 Build Alternative 2

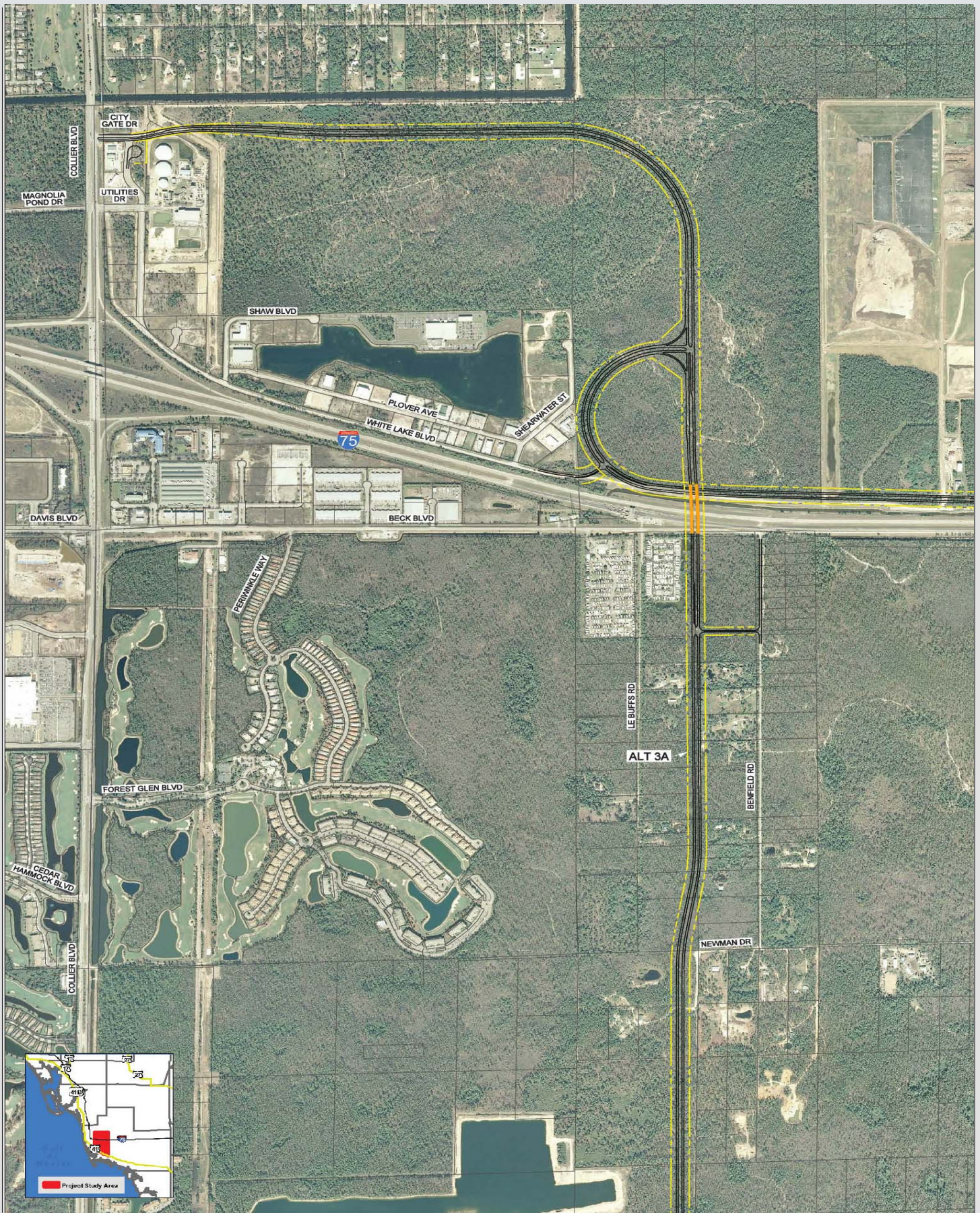
This corridor was previously named Miller Boulevard 01 in the Tier 1 screening with modifications. This corridor starts at US 41 and travels along Six L's Farms Road, then shifting east to Miller Boulevard. The corridor then travels along Miller Boulevard until around 52nd Avenue SE where it turns east and then turns back north to align with Everglades Boulevard. The corridor would cross I-75 and continue north along Everglades Boulevard until around 18th Avenue SE where the corridor would travel west through a "tee" intersection. The corridor would continue west until turning north to align with Wilson Boulevard and then travel north along Wilson Boulevard until it intersects with Golden Gate Boulevard. The total length of this corridor is 21.59 miles.

4.2.3 Western Corridors

Corridors from the four segments that were carried through the Tier 1 screening were combined to create two western corridors.

4.2.3.1 Build Alternative 3A

This corridor includes portions of Tier 1 alternatives S1A3, S2A2 with modifications, S3A5 and S4A1 in the Tier 1 screening. This corridor follows Naples Reserve Boulevard north, avoiding the western boundary of the state owned lands. The corridor continues north approximately one mile east of CR 951/Collier Boulevard with minimal curvature except where it is realigned to the east to avoid impacts to the quarry operations previously disturbed lands. Four possible connection points were identified to connect the corridors and CR 951/Collier Boulevard. Starting on the south end, the first connection follows Sabal Palm Road. The second and third connection extended Rattlesnake Hammock Road and Lord's Way from CR 951/Collier Boulevard to the corridors. The final connection goes through Southern Sand & Stone approximately two miles south of Beck Boulevard. North of the quarry, the corridor continues to travel north along the west side of the properties along Benfield Road and continues north with a grade separation over I-75 that is just east of the existing toll plaza. The corridor continues north and turns west at the north side of the City Gate property and connects to CR 951/Collier Boulevard at the City Gate Boulevard intersection. North of I-75 a "tee" intersection was developed and loops to the southwest under the grade separation with I-75 and continues to the east towards Smith Road. This area is illustrated in Figure 4.2-2. A connection from the loop to White Lake Boulevard is also provided. South of I-75 a connection is provided to Benfield Road. The corridor travels east past Smith Road, on the north side of I-75, until Wilson Boulevard where it would turn north and follow Wilson Boulevard until it intersects Golden Gate Boulevard.




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 FIGURE 4.2-2

Alternative 3A

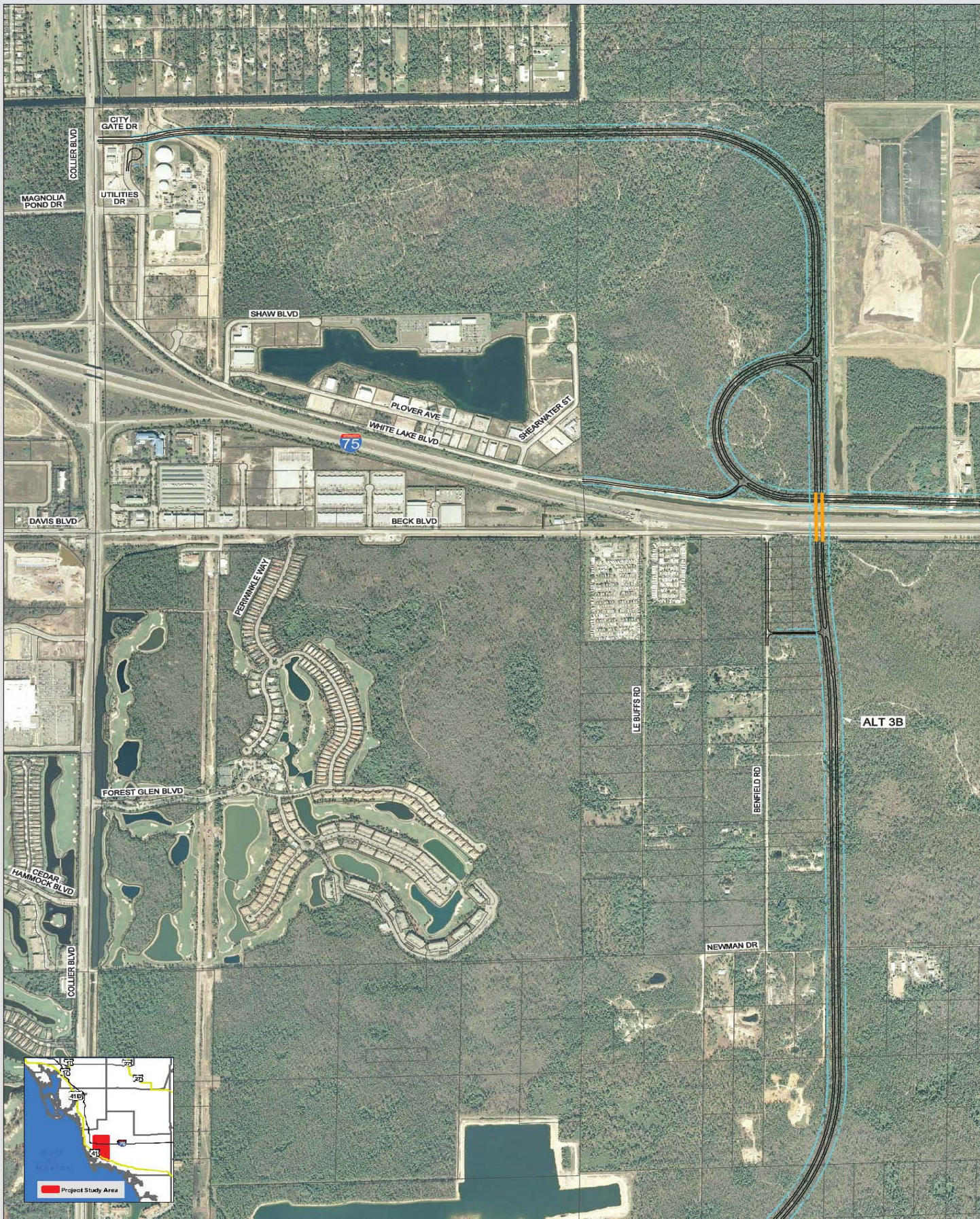
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 Collier County, Florida



4.2.3.2 Build Alternative 3B

This corridor includes portions of Tier 1 alternatives S1A3, S2A2 with modifications, S3A5 with modifications and S4A1 in the Tier 1 screening. This corridor follows Naples Reserve Boulevard north, avoiding the western boundary of the state owned lands. The corridor continues north approximately one mile east of CR 951/Collier Boulevard with minimal curvature except where it is realigned to the east to avoid impacts to the quarry operation's previously disturbed lands. Four possible connectors were identified to connect the corridors and CR 951/Collier Boulevard. Starting on the south end, the first connection follows Sabal Palm Road. The second and third connection extended Rattlesnake Hammock Road and Lord's Way from CR 951/Collier Boulevard to the corridors. The final connection goes through Better Roads Quarry approximately two miles south of Beck Boulevard. North of the quarry, the corridor continues to travel north along the east side of the properties along Benfield Road and continues north with a grade separation over I-75 that is east of the existing toll plaza. The corridor continues north along the west side of the Collier County Landfill and turns west at the north side of the City Gate property and connects to the CR 951/Collier Boulevard at the City Gate Boulevard intersection. North of I-75 a "tee" intersection was developed and loops to the southwest under the grade separation with I-75 and continues to the east towards Smith Road. This area is illustrated in Figure 4.2-3. A connection from the loop to White Lake Boulevard is also provided. South of I-75 a connection is provided to Benfield Road. The corridor travels east past Smith Road, on the north side of I-75, until Wilson Boulevard where it would turn north and follow Wilson Boulevard until it intersects Golden Gate Boulevard.

Note that Alternatives 3A and 3B are very similar, with the main difference being the location of the overpass at I-75 and the connections to the existing roadway system on both the north and south sides of the interstate. Consequently, for purposes of transportation modeling and analysis, a single alternative 3 is documented in the travel demand analysis section of this report.

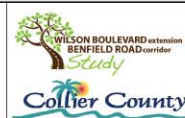


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FIGURE 4.2-3

Alternative 3B

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Collier County, Florida



4.3 Screening of Tier 2 Alternatives

4.3.1 Travel Demand Analysis

CR 951/Collier Boulevard presently experiences operational problems due to capacity constraints that affect traffic flow. Many of the intersections in the corridor currently operate below the Level of Service Standard. In the short term, the Capital Improvement Element (CIE) includes projects that address the level of service deficiencies along the CR 951/Collier Boulevard corridor. Development pressures within the corridor that have arisen over the past decade are expected to continue into the future, with associated increased impact on CR 951/Collier Boulevard.

The purpose of the proposed corridor is to reduce congestion on CR 951/Collier Boulevard by providing an alternative corridor that will improve traffic flow and serve the growing population of Collier County, particularly east of CR 951/Collier Boulevard.

4.3.1.1 Scope and Methodology

This travel demand analysis addresses the identification, development and evaluation of alternate corridors within the project limits with the intent of improving corridor mobility.

Year 2035 daily traffic projections based on the most current available travel demand model were developed. From these projections, associated Levels of Service for each corridor alternative were developed. Other measures of effectiveness such as vehicle miles of travel, and volume to capacity ratios were also developed. These steps are described in greater detail in the following sections.

4.3.1.2 Simulation Model Development

The future year daily traffic projections for this study were obtained using the most current version of the Collier/Lee County travel demand model that was developed in support of the I-75/Everglades Boulevard Interchange Justification Report (IJR) Study that is currently being conducted by Collier County through AIM Engineering. The purpose of the IJR Study is to obtain Federal Highway Administration (FHWA) approval for a new interchange to be located on I-75/Alligator Alley between the existing CR 951/Collier Boulevard and SR 29 interchanges. The IJR study model was calibrated using 2007 land use data and traffic count data and was reviewed and approved for use by the Collier County Transportation Planning Department, the Collier MPO, and the Florida Department of Transportation, District One.

The Year 2035 land use forecasts included in the IJR study model were initially developed by Van Buskirk, Ryffel & Associates (VRA), under contract to the Collier County Growth Management Department, and recently revised by DRW Consulting, in coordination with VRA. The revised 2035 land use data is consistent with the future build-out year land use forecasts previously developed for the Eastern County Property Owners (ECPO) lands located in the Rural Lands Stewardship Area (RLSA), as well as the other portions of Collier County east of CR 951/Collier Boulevard. The Year 2035 roadway network was developed by modifying the currently adopted Year 2030 Cost Feasible LRTP highway network. Key modifications included the coding of eight lanes on the portion of CR 951/Collier County from SR 84/Davis Boulevard

to Magnolia Pond Drive/City Gate Drive and the coding of additional lanes on I-75 from CR951/Collier Boulevard to north of the Collier/Lee County line.

The inclusion of eight lanes (six through lanes + two auxiliary lanes) on CR 951/Collier Boulevard in the vicinity of the I-75 interchange is consistent with the current design plans that are being prepared for Collier County by CH2M Hill. The I-75 laneage identified in the Collier MPO's Year 2030 Needs Plan was coded in the IJR study model to reduce the number of unrealistic travel paths that were projected to occur with the model. The current adopted 2030 Cost Feasible LRTP only provides four lanes on I-75 from the Golden Gate Parkway interchange south and east to the Collier/Broward County line and six lanes on I-75 from the Golden Gate Parkway interchange north to the Collier/Lee County line. Currently, there are four lanes on I-75 throughout all of Collier County; however, two additional lanes (one in each direction) are being constructed from the Golden Gate Parkway interchange northward to the Daniels Parkway interchange in Lee County. Consequently, the laneage and capacity provided on I-75 in the adopted 2030 Cost Feasible LRTP is the same as the laneage and capacity that will be in existence on I-75 as soon as the current construction is completed (i.e., before the end of 2009). The large volume of traffic projected to occur in 2035 and the severe lack of capacity provided on I-75 with the Cost Feasible LRTP, results in a significant amount of unrealistic travel paths being projected by the model. The inclusion of additional lanes (and capacity) on I-75 (through the coding of the 2030 Needs Plan laneage) helped to reduce the number of unrealistic travel paths that were projected to occur. The proposed north-south corridor was coded as a four-lane, divided arterial with a design speed of 45-55 miles per hour from the southern terminus at US 41 to the northern terminus at Golden Gate Boulevard.

A series of travel demand model runs were completed for the study using the model. The three alternatives that were ultimately modeled were the No Build alternative (ALT 1), the Miller Boulevard alternative (ALT 2), and the Wilson/Benfield alternative (ALT 3A/3B). After the model runs were conducted, the following procedure was employed to assess the reasonableness of the 2035 traffic projections:

Screen lines were established to compare total east/west and north-south travel demand within the study area (and portions of Collier County adjacent to the study area).

Select link trace assignments were conducted for roadway links and centroid connectors to compare model estimated origin/destination patterns (travel paths).

Growth trend analyses were conducted for various locations on CR 951/Collier Boulevard using historic traffic count data and independent estimates of 2035 AADT volumes for CR 951/Collier Boulevard were developed for the No Build alternative. These historic growth trend forecasts were compared to the travel demand model forecasts.

The total number of trips generated and assigned to the roadway network from all of the study area TAZs were calculated and compared for the three alternatives.

Nine east/west screenlines (measuring total north-south travel) and five north-south screenlines (measuring total east/west travel) were established. A summary of the screenline volumes for the three alternatives is provided in Appendix 4; p.A4-7. The differences between the screenline volumes for alternative 1 and alternative 2 are all relatively small (i.e., less than 10%). Several of the alternative 3A/3B screenline volumes are also relatively close to the alternative 1 and 2 screenline volumes, however, there are also locations where the differences are much larger. It

appears that there are approximately 18,000 – 25,000 more vehicles crossing the north-south screenlines located between Everglades Boulevard and CR 951/Collier Boulevard and approximately 10,000 – 12,000 more vehicles crossing the east/west screenlines with alternative 3A/3B. The largest difference in the east/west screenline volumes (approximately 50,000 – 53,000 veh/day) is projected for the screenline located just to the north of I-75/Alligator Alley (i.e., Screenline # 7). It should be noted, however, that Screenline # 7 includes the northern extension of Benfield Road which is actually carrying a significant amount of east-west traffic (that is skewing the total north-south volume).

Historic growth trend analyses were conducted for CR 951/Collier Boulevard at the following seven locations:

- North of US 41;
- South of Lely Cultural Boulevard;
- South of Rattlesnake-Hammock Road;
- North of Rattlesnake-Hammock Road;
- Between Davis Boulevard and I-75;
- South of Golden Gate Parkway; and
- North of Golden Gate Parkway

Average Daily Traffic (ADT) volumes for the years 2002 – 2007 were obtained from the 2008 Average Daily Traffic Volume Report published by the Collier County Traffic Operations Department. These historic volumes were input into the FDOT District One TRAFFIC TRENDS software to obtain independent estimates of the 2035 AADT volumes for these seven locations. A summary of the 2035 historic growth trend forecasts along with the estimated future annual growth rates is provided in Appendix 4; p.A4-6. The 2035 AADT volumes forecasted for the No Build alternative with the use of the current travel demand model are also provided in Appendix 4; p.A4-6 (along with the implied model growth rates).

This table indicates that the 2035 AADT volumes estimated from the historic growth trend analyses are higher than the 2035 AADT volumes forecasted with the travel demand model. The historic growth trend analysis does not take into account roadway capacity and the resultant diversion that would be expected to occur when traffic volumes begin to approach capacity. According to the FDOT Generalized Level of Service Volumes, the capacity for a six-lane arterial with an average signalized intersection spacing of ≤ 1.99 signals/mile is 53,500 veh/day. Since the 2035 historic growth trend forecasts for the portions of CR 951/Collier Boulevard from just south of Lely Cultural Boulevard to north of Rattlesnake-Hammock Road greatly exceed this volume, it would seem reasonable to expect a higher level of traffic diversion to occur in this portion of the corridor (especially considering the fact that parallel roadways do exist). Therefore, the 2035 AADT volumes forecasted by the model for this portion of CR 951/Collier Boulevard appear to be reasonable. The one exception to this statement may be CR 951/Collier Boulevard just north of Rattlesnake-Hammock Road.

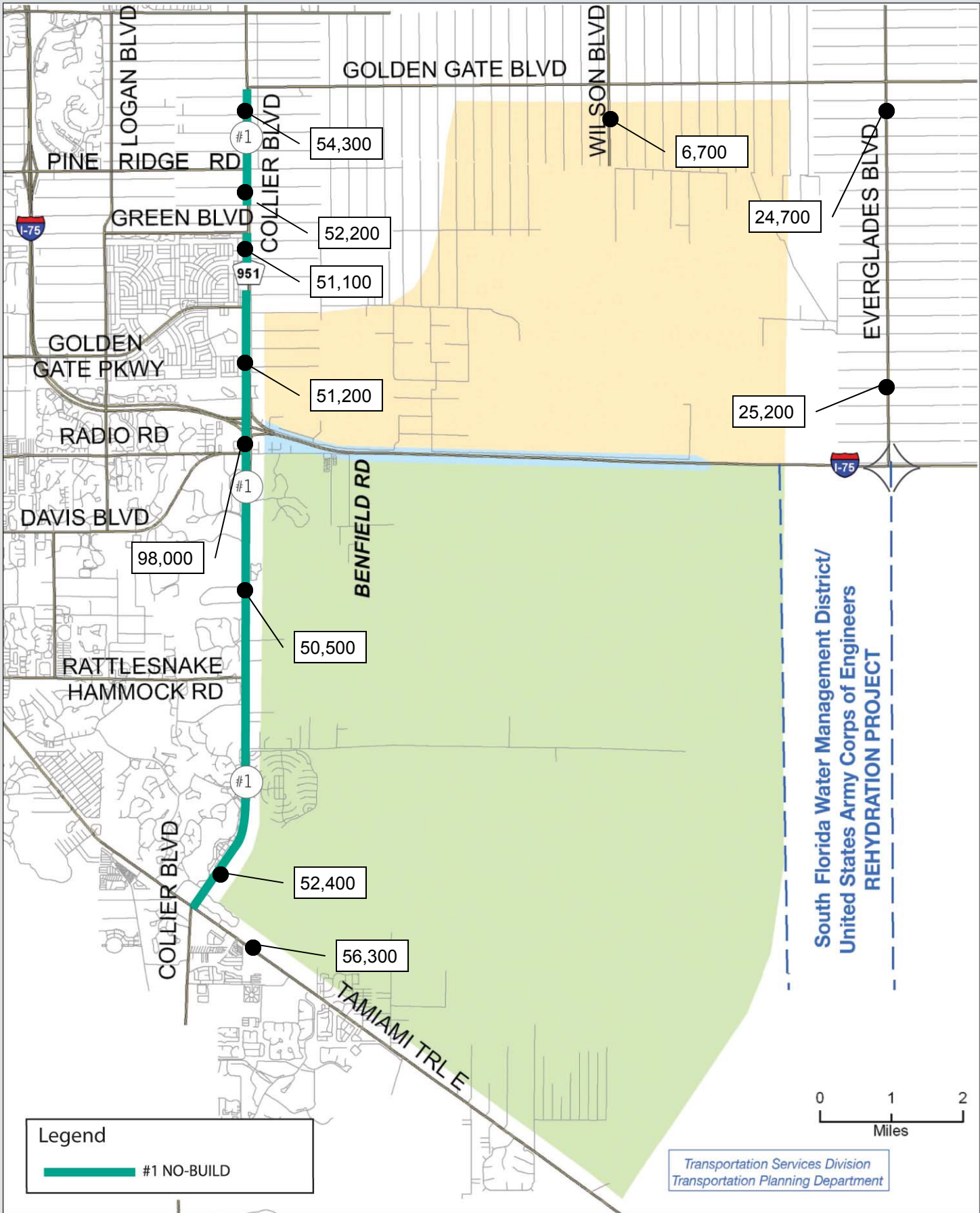
4.3.1.3 Travel Demand Forecasts

Alternative 1: No Build

The No Build analysis was considered with no additional infrastructure constructed other than projects identified in the adopted 2030 Financially Feasible LRTP. The Everglades IJR Study model was (as described above) run with no additional geometric enhancements. For the No Build scenario, projected AADT along CR 951/Collier Boulevard ranged from 50,500 to 98,000 AADT. Associated levels of service ranged from LOS C to F. Figure 4.3-1 illustrates projected AADT volumes in the study area. A table of projected volumes and associated Levels of Service are provided in Appendix 4; pp.A4-1 – A4-2.

Another measure of traffic conditions is vehicle miles of travel (VMT). VMT is not "measured" but is a statistical or modeled quantity. It is the sum of distances traveled by motor vehicles over a specified geographical area corridor within a specified time period. VMT is calculated by multiplying the average number of vehicles in the desired time period by the length of the road. In this case, average annual daily traffic (AADT) was the time period measured. VMT along the corridor ranged from 24,500 to 172,920. This wide range is a function of the length of road, therefore an analysis of VMT on a link-by-link basis is not recommended. Instead, the total VMT along the corridor is the preferred measure of effectiveness. Total VMT along CR 951/Collier Boulevard within the study area is projected to be 623,643.

Another measurement is the volume to capacity ratio (v/c). This provides a simple measurement of the capacity sufficiency on the measured facility. The capacity of a facility was based on values from the existing Collier County LRTP where available. If not, generalized capacities from the FDOT generalized service volume tables was applied.



Projected volume to capacity ratios (v/c) on CR 951/Collier Boulevard ranged from 0.944 to 1.536, with a weighted average v/c ratio on of 0.985. A v/c ratio of greater than 1.0 indicates congested operating conditions. Based on the analysis described above, should no alternative be constructed, operating conditions on some links are projected to exceed a v/c ratio of 1.0 and fail.

Although a no build condition was modeled, capacity improvements may be considered should there be no alternate parallel roadway constructed in an effort to reduce congestion and delay. This may include geometric enhancements at key intersections within the corridor, widening CR 951/Collier Boulevard to an eight lane condition, enhancements at the I-75 interchange, and new interchanges at key locations such as US 41. A detailed intersection analysis is beyond the scope of this study, but some assumptions may be drawn from the analysis provided in terms of possible improvements to CR 951/Collier Boulevard.

As the analysis considered roadway link volumes, the most direct improvement scenario for those segments projected to fail would include the widening of CR 951/Collier Boulevard to that of an eight lane facility, although such an improvement is inconsistent with the existing Collier County Growth Management Plan. An amendment to this plan would be required, which, in turn, necessitates a lengthy analysis and public involvement process. The capacity of an eight-lane facility was compared to that of the existing six lanes of CR 951/Collier Boulevard. An eight-lane scenario provides sufficient capacity to achieve acceptable levels of service, except for the segments from I-75 to Davis Boulevard. As described above, this inclusion of eight lanes is consistent with current design plans. The roadway segments from I-75 to Davis Boulevard are projected to fail in the No Build condition even if an eight-lane configuration was constructed in an effort to relieve congestion.

Alternative 2: Miller Boulevard

The Miller Boulevard alternative would provide a north-south connection to the Collier County Hurricane Evacuation Route Plan. It would improve access to the interstate system for evacuees during an emergency event and improve regional evacuation and emergency response time.

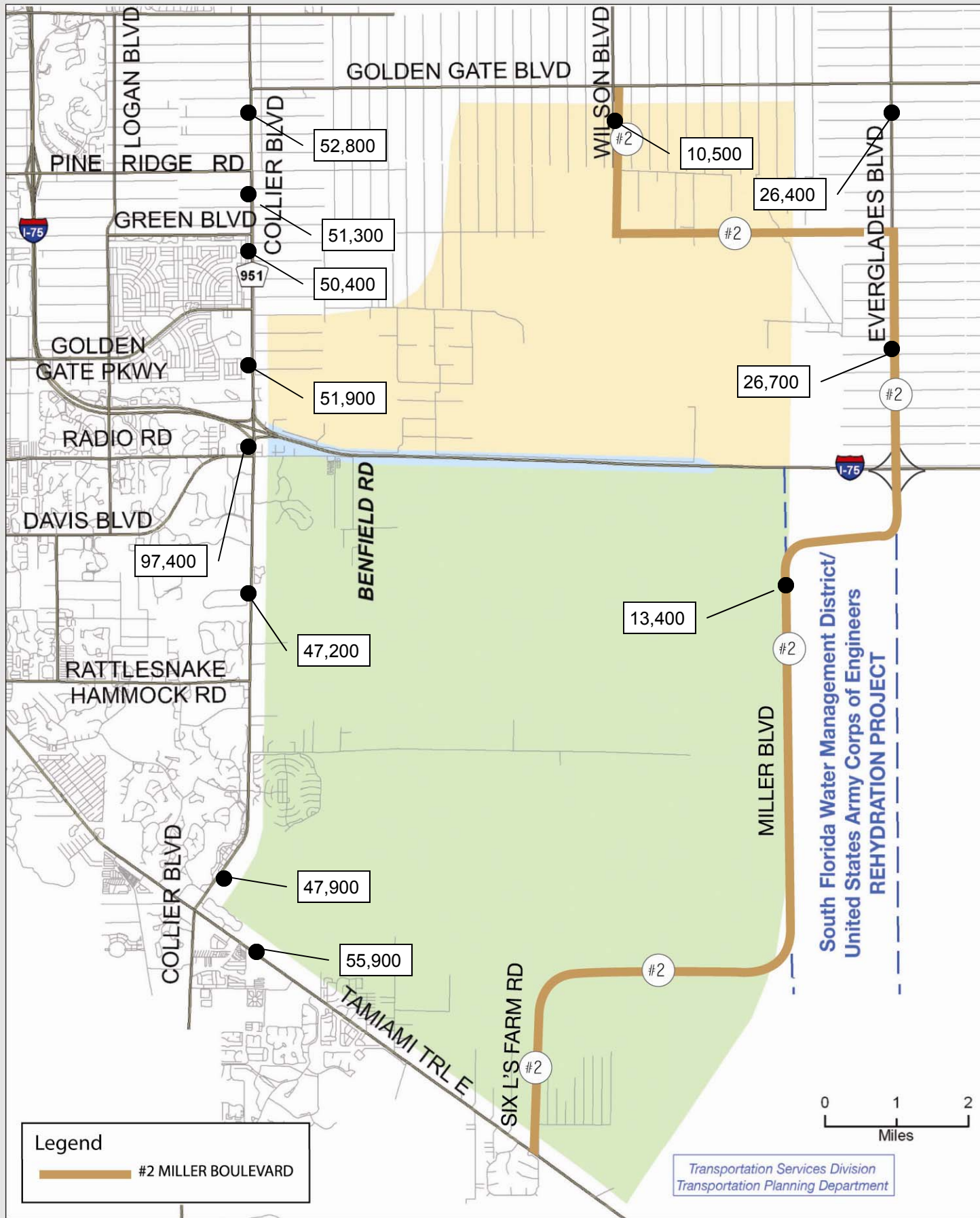
Portions of alternative 2 currently exist as Miller Boulevard, a non-functionally classified local roadway. In order for this alternative to be viable, this facility would be upgraded to meet current design standards.

A measure of effectiveness for each of the alternatives is how much traffic it draws from the parallel facility of CR 951/Collier Boulevard and what the corresponding operating conditions would be. With construction of alternative 2, Miller Boulevard, south of I-75 is projected to draw 13,400 AADT, with a corresponding Level of Service C. At I-75, alternative 2 follows the existing Everglades Boulevard corridor, with a projected AADT of 26,700 (LOS B). Figure 4.3-2 illustrates projected AADT volumes in the study area. A table of projected volumes and associated Levels of Service are provided in Appendix 4; pp.A4-1, A4-2.

Under this alternative, there is only a small amount of traffic diverted from CR 951/Collier Boulevard. Specifically, there is a projected decrease in traffic on CR 951/Collier Boulevard that ranges from 600 to 4,500 AADT (with some segments showing an increase of up to 700 AADT), corresponding to a decrease of 0.61 percent to 8.59 percent. Projected volumes on CR 951/Collier Boulevard result in LOS F operating conditions on some links. As with the No Build scenario, an eight-lane facility within the vicinity of I-75 does not provide sufficient capacity to achieve acceptable LOS. As there is more traffic projected on the Miller Boulevard alternative

than is drawn from CR 951/Collier Boulevard, the projected traffic logically must be derived from another location. As this alternative provides better access between Immokalee and Marco Island, two relatively significant employment/residential communities, origin and destination trips from those two regions would utilize this alternative.

More effective measurements, as described above, are VMT and v/c ratios. There is a total projected reduction in VMT of 4.3 percent, and a reduction of 4.37 percent to the weighted average v/c ratio.



Alternative 3: Wilson/Benfield

This alternative provides greater relief to the parallel facility of CR 951/Collier Boulevard than alternative 2 (Miller Boulevard). This stands to reason due to its greater proximity to CR 951/Collier Boulevard.

There is a projected decrease in traffic on CR 951/Collier Boulevard that ranges from 300 to 15,000 AADT, corresponding to a decrease of 0.59 percent to 28.63 percent. Projected volumes on CR 951/Collier Boulevard result in LOS F operating conditions on some links, although fewer than those for the No Build and Miller Boulevard alternatives. As with the No Build scenario, an eight lane facility within the vicinity of I-75 does not provide sufficient capacity to achieve acceptable LOS.

Under this alternative there is a total projected reduction in VMT of 13.41 percent, and a reduction of 13.5 percent to the weighted average v/c ratio.

Nevertheless, there are projected volumes on CR 951/Collier Boulevard that are still projected to operate below the LOS standard. As with the No Build scenario, an eight lane facility within the vicinity of I-75 does not provide sufficient capacity to achieve acceptable LOS. Figure 4.3-3 illustrates projected AADT volumes in the study area. A table of projected volumes and associated Levels of Service are provided in Appendix 4; pp.A4-1, A4-2.

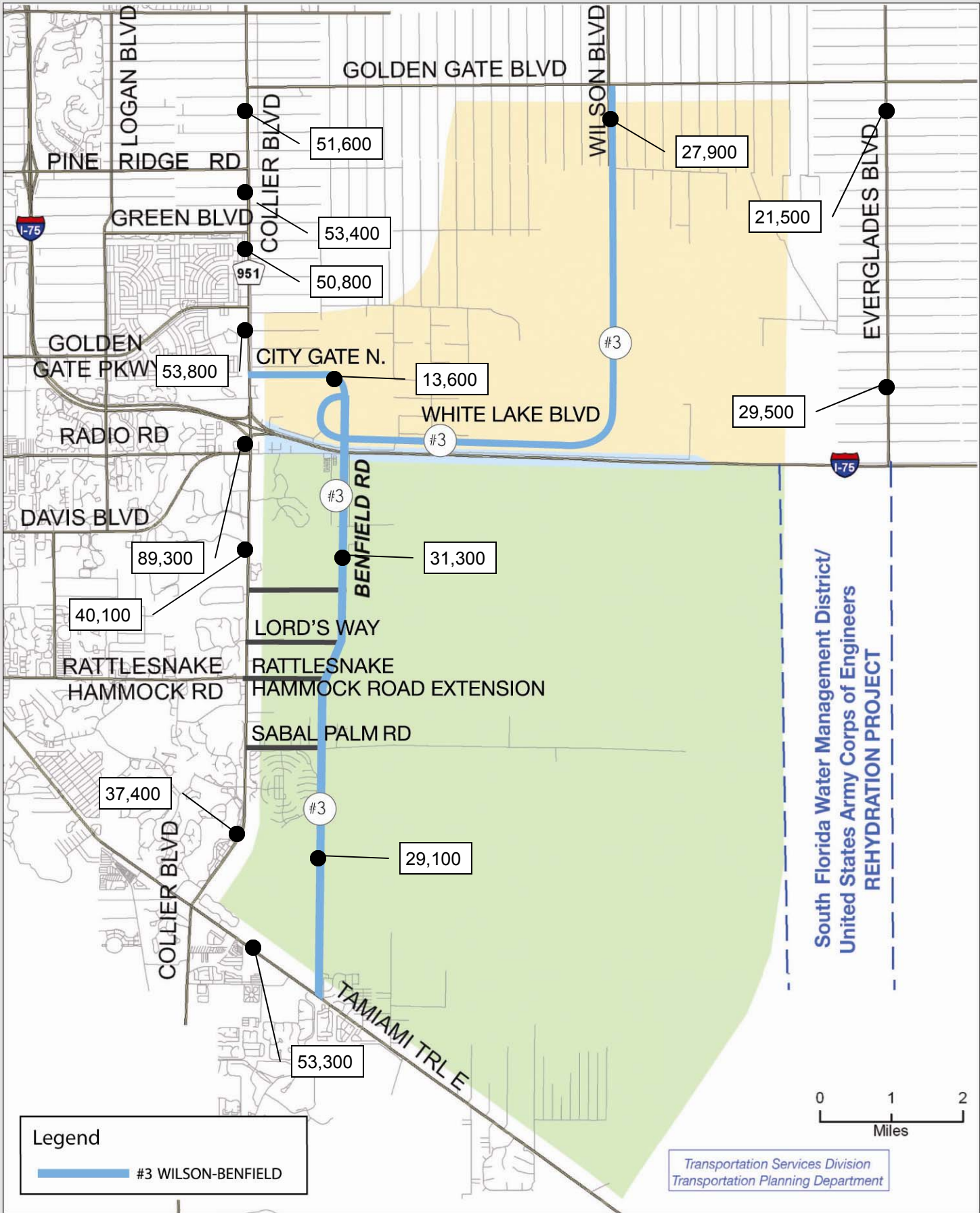


FIGURE 4.3-3

2035 AADT Alternative 3

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