



COCONUT ROAD TRAFFIC STUDY

FROM ESTERO BAY TO THREE OAKS PARKWAY

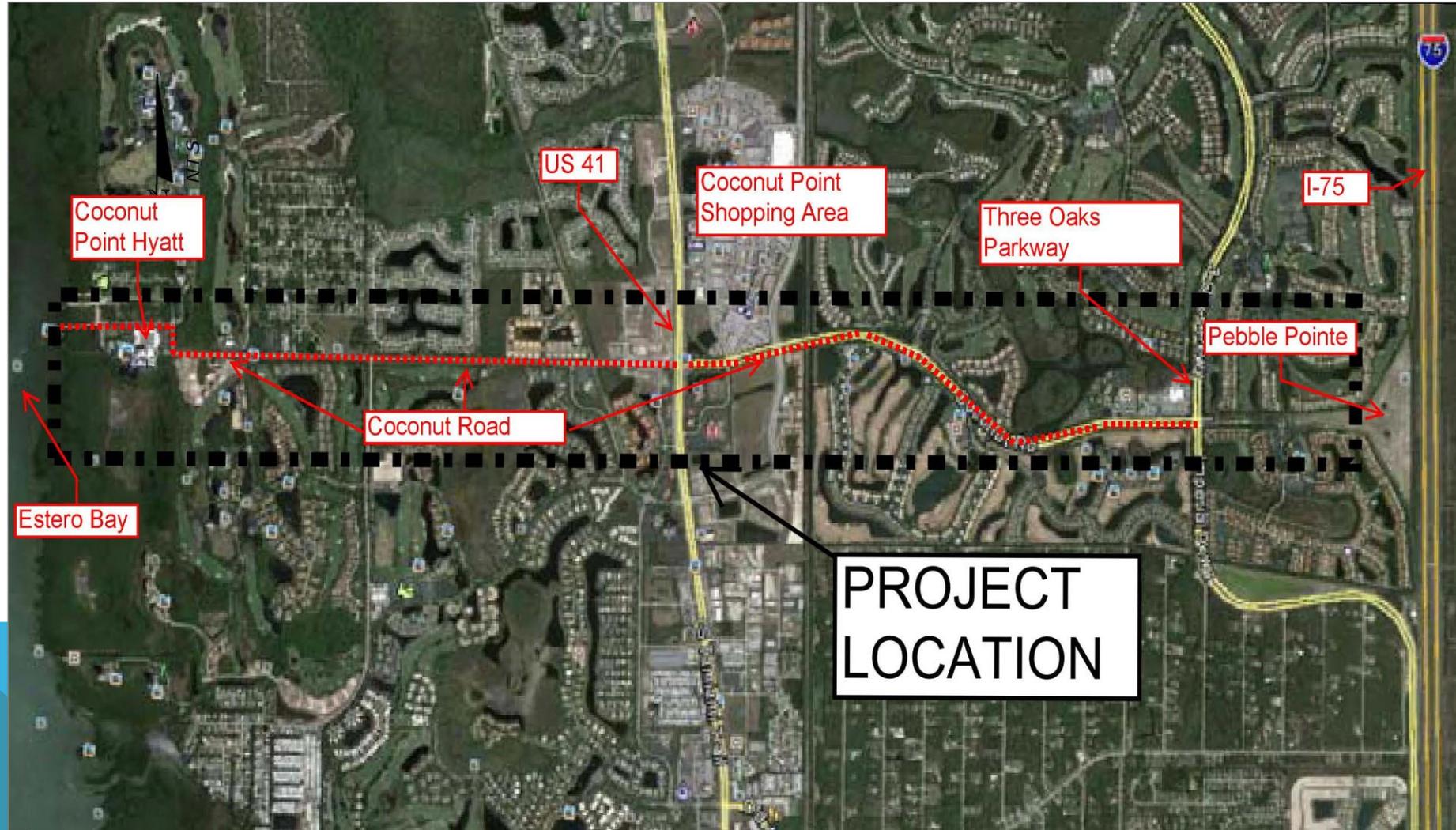
VILLAGE OF ESTERO COUNCIL PRESENTATION

APRIL 20, 2016



SUMMARY OF COCONUT ROAD TRAFFIC STUDY

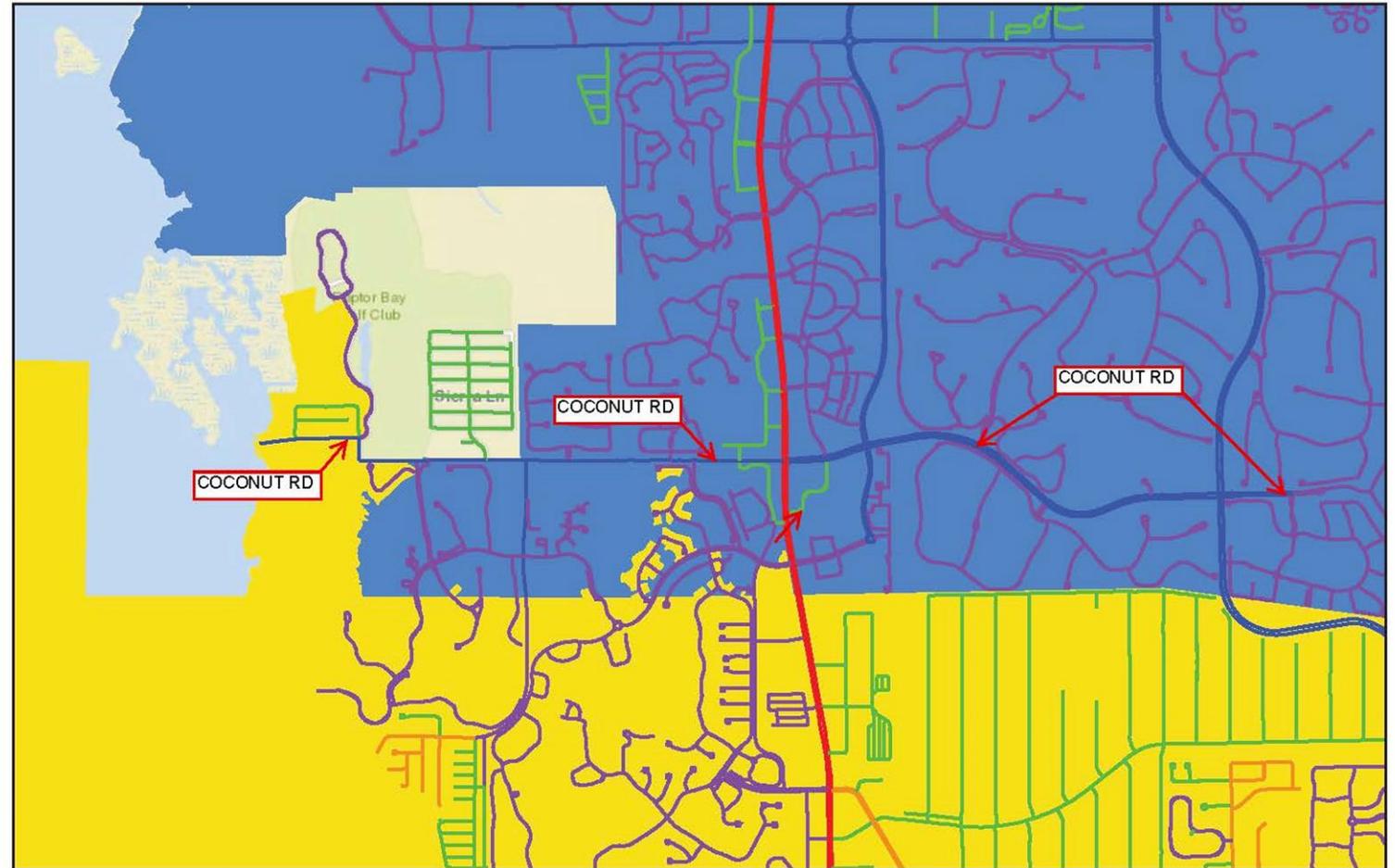
- The Study
- Study Findings
- Recommendations



THE STUDY

Lee County Road Maintenance

- Examined existing and future conditions of the roadway.
- Collected traffic counts during peak season 2016.
- Added trips from future developments impacting Coconut Road in the City of Bonita Springs, unincorporated Lee County and the Village of Estero to the existing counted traffic.
- Analyzed the intersection of US 41 and Coconut Road in terms of delay based on vehicle turning movement counts.



February 12, 2016

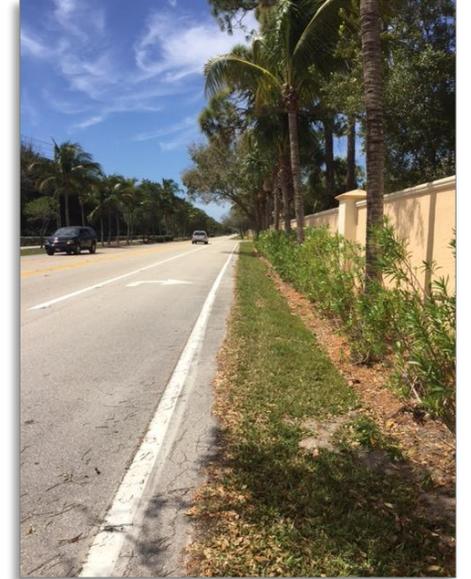
AGOL_Layers_DOT_4614
County Maintained
State Maintained
Non-County Maintained
Privately Maintained
City of Bonita Springs
AGOL_Layers_LCGIS_3867
City of Bonita Springs
Village of Estero

1:36,112
0 0.3 0.6 1.2 mi
0 0.5 1 2 km

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand),

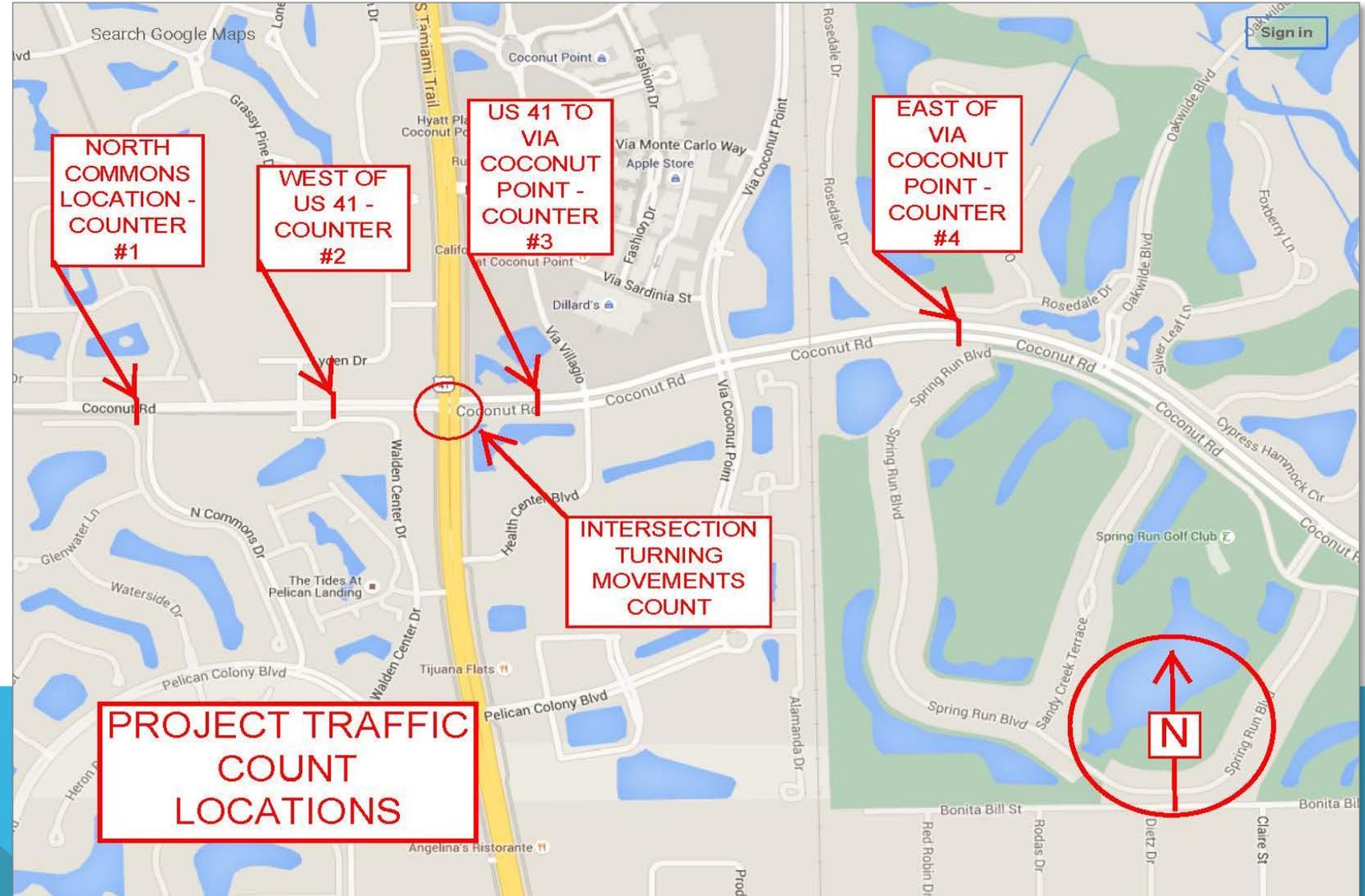
EXISTING CONDITIONS

- Major collector under the jurisdiction and maintenance of Lee County. US 41 is an arterial under the jurisdiction of the FDOT.
- West of US 41 – mainly 2 lane undivided roadway, turn lanes and sidewalk along the south side of the roadway.
- East of US 41 – 4 lane divided roadway with on street bike lanes and asphalt path along the south side of the roadway.
- The Lee County 2035 Metropolitan Planning Organization (MPO) Long Range Transportation Plan indicates existing road conditions to remain (i.e. no improvements planned).



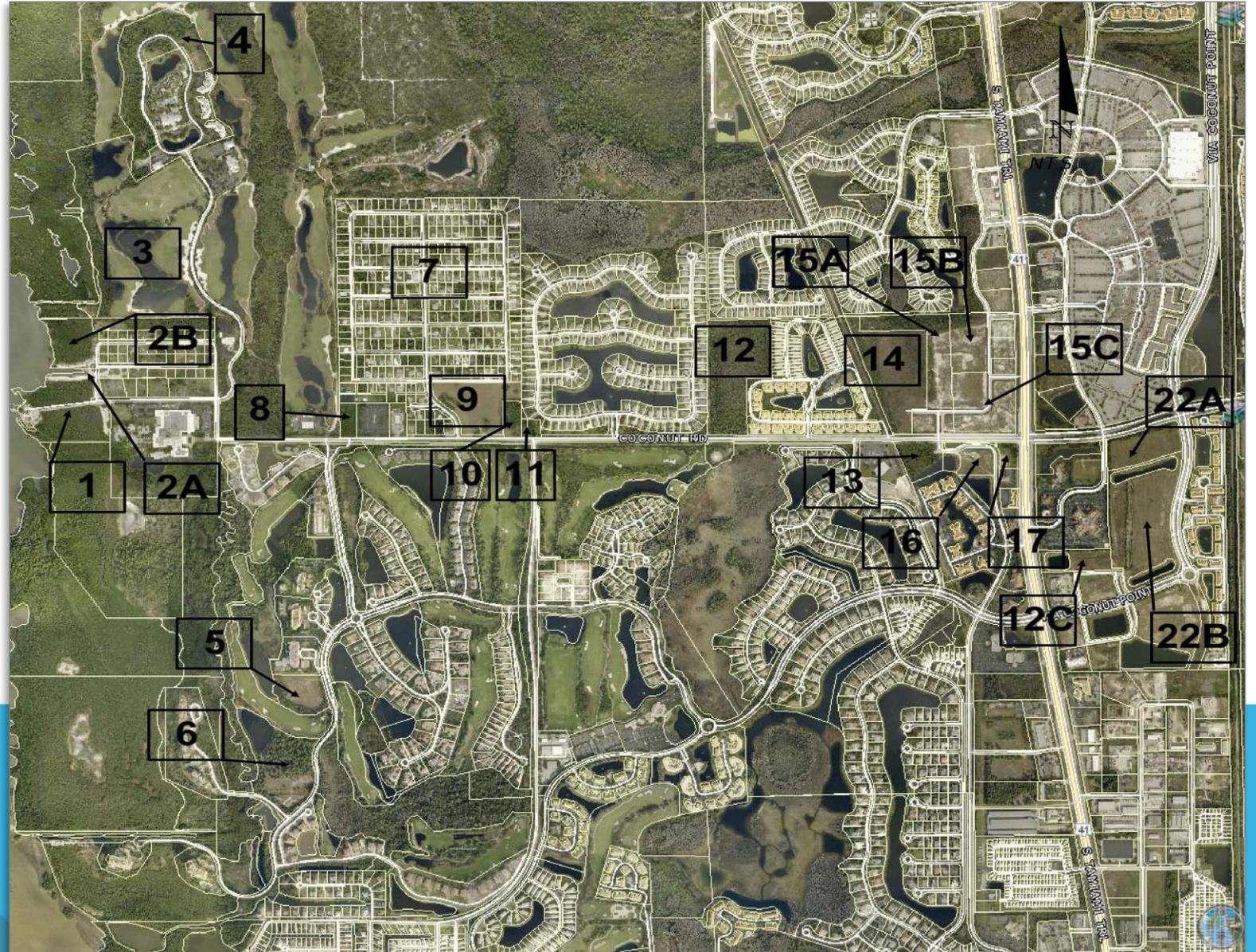
TRAFFIC COUNTS - EXISTING CONDITIONS

- **Collected Traffic Tube Counts During Peak Season (Multiple Days February 2016).**
- **Intersection turning movement counts (AM and PM Peak period).**



FUTURE DEVELOPMENT CONDITIONS

- Development potential along the roadway corridor estimated.
- Looked at short term (5 year) and long term (10 year-buildout) scenarios.
- Used Institute of Transportation Engineers (ITE) standards to generate trips for proposed development.
- Estimated % of trips using Coconut Road based on existing studies and staff review.



FUTURE DEVELOPMENT CONDITIONS – TABLE 9

ID #	PARCEL NAME	DEVELOPMENT PARAMETERS	ZONING APPROVALS NOT YET CONSTRUCTED	POTENTIAL FUTURE CONSTRUCTION PERMITTING
1	Pelican Landing Community Assoc.	Marina – 20 berths; Restaurant – 3,000sf		X
2A	Estero Bay Marine LLC (Weeks Fish Camp)	Residential – Multi Family – 360 dwelling units – high-rise buildings		X
2B				
3	WCI/Pelican Landing DRI (Raptor Bay)	Residential – Multi Family – 360 dwelling units – high-rise buildings		X
4	Pelican Landing Timeshare Ventures LP	Timeshare – Rental Townhouses – 267 dwelling units	X	
5	WCI Communities Inc (Altaira High Rise)	High-Rise Residential Condominium/ Townhouse – 76 dwelling units	X	
6	WCI Communities Inc (Two Future High Rises)	Residential – Multi Family – 150 dwelling units – high-rise buildings	X	
7	Eldorado Acres Subdivision	Residential – Single Family –98 dwelling units – platted lots	X	
8	John T. Watson	Residential – Single Family –2 dwelling units	X	
9	Judy K. Doyle	Residential – Single Family –15 dwelling units	X	
10	Dhaliwal + J/T	Residential – Single Family –3 dwelling units	X	
11	Dhaliwal + J/T		X	
12	Dewane/Docese of Venice	Residential – Multi Family – 93 dwelling units		X
13	Coconut Road Associates LLC	General Office Building – 122,484sf	X	
14	HG Coconut LLC	Shopping Center – 210,000sf; Medical Office Building – 40,000sf Multi-Family Residential – 525 dwelling units; Assisted Living – 152 beds Hotel – 130 Rooms	X	
15A	OBE Florida CRE Holdings LLC			
15B				
15C				
16	Allsee Investment LP	General Office Building – 27,500sf	X	
17	Naples Diagnostic Imaging	General Office Building – 15,000sf	X	
22A	Lee Memorial Health System	Acute Care Hospital – 160 beds; Shopping Center – 60,000sf Medical Office Building – 198,000sf; General Office Building – 102,000sf	X	
22B				
22C				

FUTURE DEVELOPMENT CONDITIONS (5 YEAR) – TABLE 11A

Traffic Distribution* - Developments with Zoning Approvals – Not Yet Constructed

ID #	Parcel Name	Traffic Dist. %	Spring Creek to US 41		Traffic Dist. %	US 41 to Via Coconut Point		Traffic Dist. %	Via Coconut Point to Three Oaks Parkway	
			Enter	Exit		Enter	Exit		Enter	Exit
4	WCI/Pelican Landing Timeshare Ventures LP	100%	WB-98	<u>EB-94</u>	25%	WB-25	<u>EB-24</u>	20%	WB-20	<u>EB-19</u>
5	WCI Communities Inc. (Altaira High Rise)	100%	WB-18	<u>EB-11</u>	20%	WB-4	<u>EB-2</u>	15%	WB-3	<u>EB-2</u>
6	WCI Communities Inc. (Two Future High Rise)	100%	WB-56	<u>EB-28</u>	20%	WB-11	<u>EB-6</u>	15%	WB-8	<u>EB-4</u>
7	Eldorado Acres Subdivision	100%	WB-21	<u>EB-60</u>	20%	WB-4	<u>EB-12</u>	15%	WB-3	<u>EB-9</u>
8	John T. Watson	100%	WB-1	<u>EB-1</u>	20%	WB-0	<u>EB-0</u>	15%	WB-0	<u>EB-0</u>
9	Judy K. Doyle	100%	WB-12	<u>EB-7</u>	20%	WB-2	<u>EB-1</u>	15%	WB-2	<u>EB-1</u>
10/ 11	Dhaliwal + J/T	100%	WB-2	<u>EB-1</u>	20%	WB-0	<u>EB-0</u>	15%	WB-0	<u>EB-0</u>
13	Coconut Road Associates LLC	75%	WB-28	<u>EB-134</u>	20%	WB-7	<u>EB-36</u>	15%	WB-6	<u>EB-27</u>
14/ 15	HG Coconut LLC/OBE Florida CRE Holdings LLC	20%	WB-125	<u>EB-128</u>	30%	WB-188	<u>EB-193</u>	25%	WB-157	<u>EB-161</u>
16	Allsee Investment LP	100%	WB-19	<u>EB-90</u>	20%	WB-4	<u>EB-18</u>	15%	WB-3	<u>EB-14</u>
17	Naples Diagnostic Imaging	100%	WB-16	<u>EB-79</u>	20%	WB-3	<u>EB-16</u>	15%	WB-2	<u>EB-12</u>
22	Lee Memorial Health System	20%	<u>EB-41</u>	WB-82	25%	<u>EB-51</u>	WB-102	20%	<u>EB-41</u>	WB-82
Peak Direction Total			<u>EB – 674</u>			<u>EB – 359</u>			<u>EB – 290</u>	

Note(s): *Peak hour, peak direction traffic volumes are **Bold and Underlined** as applicable.

Note: 5 year condition (2021) identified, but specific year of occurrence may vary depending on when units are constructed.

FUTURE DEVELOPMENT CONDITIONS (10 YEAR--BUILDOUT)

Table 11B
Traffic Distribution* - Developments with Potential Future Construction Permitting

ID #	Parcel Name	Traffic Dist. %	Spring Creek to US 41		Traffic Dist. %	US 41 to Via Coconut Point		Traffic Dist. %	Via Coconut Point to Three Oaks Parkway	
			Enter	Exit		Enter	Exit		Enter	Exit
1	Pelican Landing Community Association	100%	WB-20	<u>EB-14</u>	20%	WB-4	<u>EB-3</u>	15%	WB-3	<u>EB-2</u>
2	Estero Bay Marine LLC (Weeks Fish Camp)	100%	WB-115	<u>EB-57</u>	25%	WB-29	<u>EB-14</u>	20%	WB-23	<u>EB-11</u>
3	WCI/Pelican Landing DRI	100%	WB-115	<u>EB-57</u>	25%	WB-29	<u>EB-14</u>	20%	WB-23	<u>EB-11</u>
12	Dewane/Diocese of Venice	100%	WB-38	<u>EB-19</u>	20%	WB-8	<u>EB-4</u>	15%	WB-8	<u>EB-3</u>
Peak Direction Total			<u>EB – 147</u>			<u>EB – 35</u>			<u>EB – 27</u>	

Note(s): *Peak hour, peak direction traffic volumes are **Bold and Underlined** as applicable.

Table 11C
Traffic Distribution* - Total Future Projected Development Potential

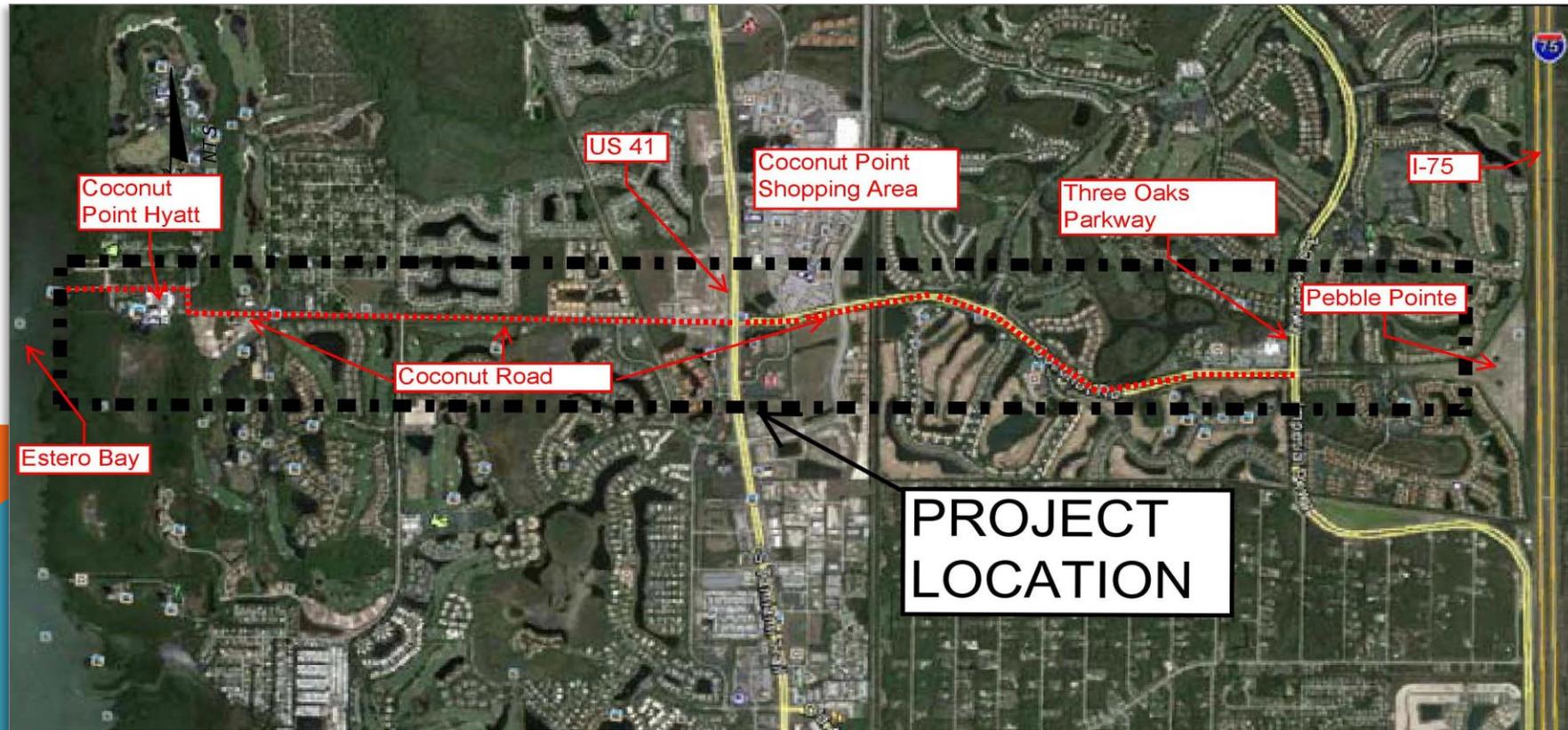
Coconut Road Development Potential	Spring Creek to US 41	US 41 to Via Coconut Point	Via Coconut Point to Three Oaks Parkway
Development Zoning Approvals	EB – 674	EB – 359	EB – 290
Development Potential Future Construction Permitting	EB – 147	EB – 35	EB – 27
Total Peak Hour Traffic Volume	<u>EB – 821</u>	<u>EB – 394</u>	<u>EB – 317</u>

Note(s): *Peak hour, peak direction traffic volumes are **Bold and Underlined** as applicable.

Note: 10 year build out identified (2026), but specific year of occurrence may vary depending on when units are constructed.

STUDY FINDINGS

- Coconut Road currently operates at a satisfactory Level of Service (called LOS C). Minimum LOS is E. LOS is a rating system used, A thru F, where A is the best (least congestion/delay) and F is the worst (most congestion/delay). Countywide, typical minimum standards are D and E. F is always failure.
- The section of Coconut Road west of US 41 is projected to be operating at a failing Level of Service (F) in the future as developments are completed in approximately 5 years (+).
- The intersection of US-41 and Coconut Road is currently operating at a satisfactory Level of Service, although the eastbound and westbound approaches experience significant delay.
- The intersection is projected to fail in the future as developments are completed in approximately 5 years (+).
- Lee County does not currently have plans to improve the capacity of Coconut Road based on their financially feasible road plan.



STUDY FINDINGS – ROADWAY LEVELS OF SERVICE/CONGESTION

Table 7
Coconut Road – Estimated 2016 LOS

COCONUT ROAD LINK VOLUMES - CAPACITY ANALYSIS											
TCS COUNTER LOCATION	ROADWAY SEGMENT	LEE COUNTY LINK ID NUMBER	2016 PK HR,PK DIR VOLUME	ROAD TYPE (1)	PERFORMANCE STANDARD (1)		2013 LINK SPECIFIC SERVICE VOLUMES, PK HR, PK DIR LOS (2)			PROJECTED 2016 LOS	
					LOS	CAPACITY	C	D	E		
2	FROM SPRING CREEK RD TO US 41	05000	522	2LN	E	860	550	860	860	C	
3	FROM US 41 TO VIA COCONUT POINT	05030	632	4LD	E	1,790	1,310	1,790	1,790	C	
4	FROM VIA COCONUT POINT TO THREE OAKS PARKWAY	05030	717	4LD	E	1,790	1,310	1,790	1,790	C	

NOTES: (1) 2015 LEE COUNTY CONCURENCY REPORT
(2) REFER TO 2013 LEE COUNTY LINK SPECIFIC SERVICE VOLUMES

Table 13
Coconut Road – Estimated Future 2021 LOS

COCONUT ROAD LINK VOLUMES - CAPACITY ANALYSIS											
TCS COUNTER LOCATION	ROADWAY SEGMENT	LEE COUNTY LINK ID NUMBER	2021 BACKGROUND TRAFFIC (1)	2021 ESTIMATED DEVELOPED TRAFFIC (2)	2021 TOTAL ESTIMATED TRAFFIC	PERFORMANCE STANDARD (3)		2013 LINK SPECIFIC SERVICE VOLUMES, PK HR, PK DIR LOS (4)			PROJECTED 2021 LOS
						LOS	CAPACITY	C	D	E	
2	FROM SPRING CREEK RD TO US 41	05000	522	674	1,196	E	860	550	860	860	F
3	FROM US 41 TO VIA COCONUT POINT	05030	664	359	1,023	E	1,790	1,310	1,790	1,790	C
4	FROM VIA COCONUT POINT TO THREE OAKS PARKWAY	05030	754	290	1,044	E	1,790	1,310	1,790	1,790	C

NOTES: (1) SEE TABLE 12 OF THIS REPORT
(2) SEE TABLE 11 OF THIS REPORT
(3) 2015 LEE COUNTY CONCURENCY REPORT
(4) REFER TO 2013 LEE COUNTY LINK SPECIFIC SERVICE VOLUMES

Table 14
Coconut Road – Estimated Future 2026 LOS

COCONUT ROAD LINK VOLUMES - CAPACITY ANALYSIS											
TCS COUNTER LOCATION	ROADWAY SEGMENT	LEE COUNTY LINK ID NUMBER	2026 BACKGROUND TRAFFIC (1)	2026 ESTIMATED DEVELOPED TRAFFIC (2)	2026 TOTAL ESTIMATED TRAFFIC	PERFORMANCE STANDARD (3)		2013 LINK SPECIFIC SERVICE VOLUMES, PK HR, PK DIR LOS (4)			PROJECTED 2021 LOS
						LOS	CAPACITY	C	D	E	
2	FROM SPRING CREEK RD TO US 41	05000	522	821	1,343	E	860	550	860	860	F
3	FROM US 41 TO VIA COCONUT POINT	05030	698	394	1,092	E	1,790	1,310	1,790	1,790	C
4	FROM VIA COCONUT POINT TO THREE OAKS PARKWAY	05030	792	317	1,109	E	1,790	1,310	1,790	1,790	C

NOTES: (1) SEE TABLE 12 OF THIS REPORT
(2) SEE TABLE 11 OF THIS REPORT
(3) 2015 LEE COUNTY CONCURENCY REPORT
(4) REFER TO 2013 LEE COUNTY LINK SPECIFIC SERVICE VOLUMES

Note: 5 year (2021) and 10 year (2026) build out identified, but specific years of occurrence may vary depending on when units are constructed.

STUDY FINDINGS – US 41 AND COCONUT ROAD INTERSECTION LEVEL OF SERVICE/DELAY

Table 13A
Intersection LOS – Existing 2016 Traffic

Intersection Configuration	EB Approach Delay*/LOS	WB Approach Delay*/LOS	NB Approach Delay*/LOS	SB Approach Delay*/LOS	Overall Delay*/LOS
AM Peak Hour					
Existing 2016	63.7/E	64.8/E	24.2/C	32.8/C	37.7/D
PM Peak Hour					
Existing 2016	85.7/F	85.0/F	24.3/C	22.7/C	38.4/D

NOTE(S) *Approach Delay in s/veh.

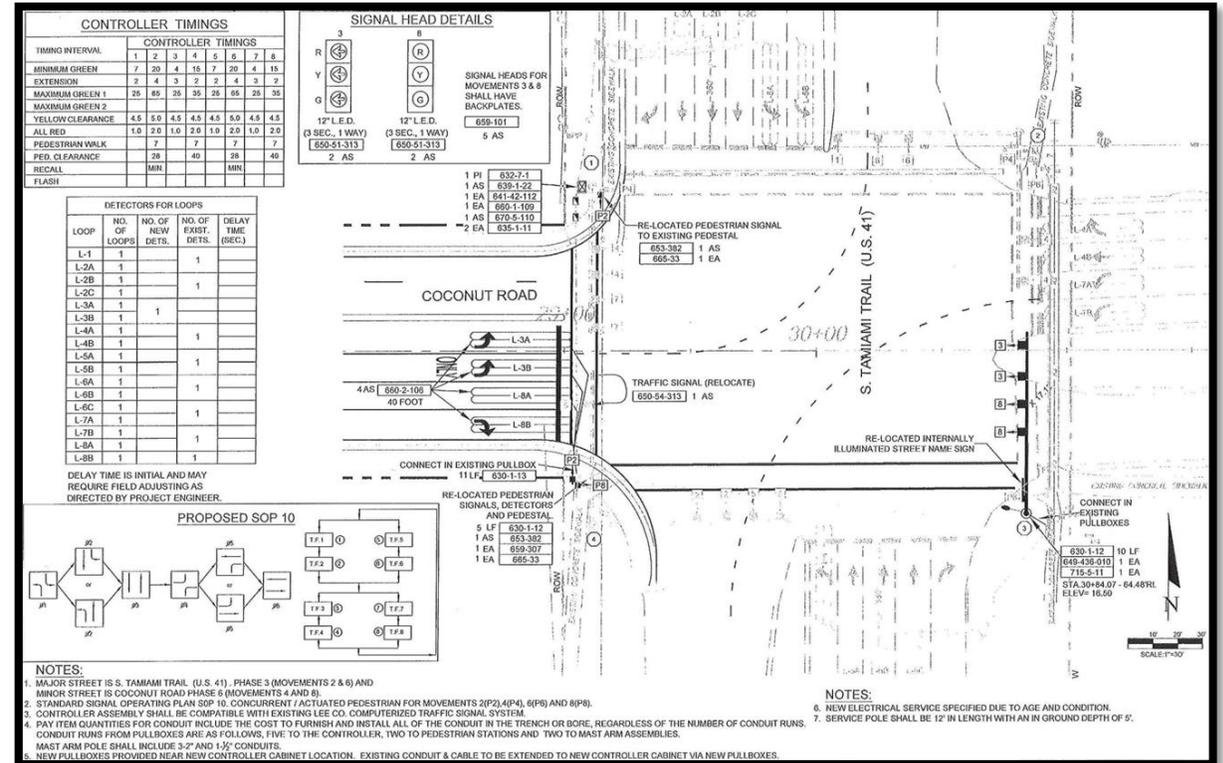
Table 15

Level of Service for Signalized Intersections

HCM-Based Level of Service and Delay Ranges

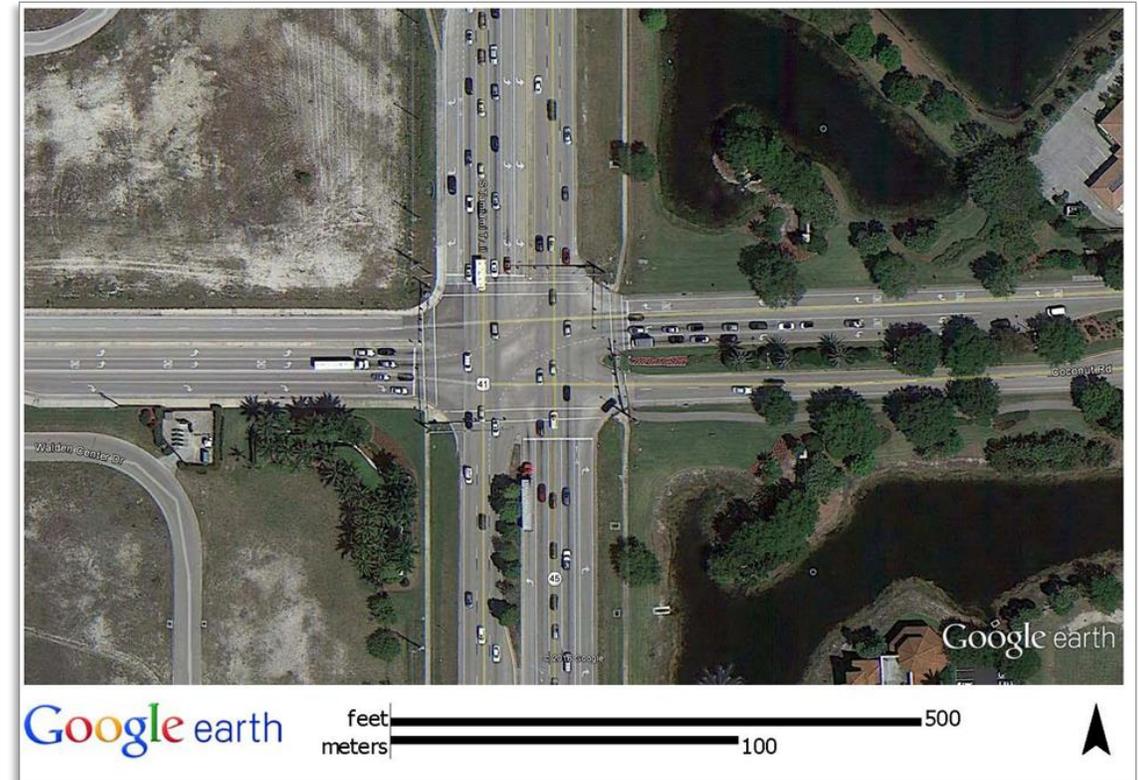
Average Delay (seconds / vehicle)		LOS
Signalized Intersections	Unsignalized intersections	
< 10.0	< 10.0	A
> 10.0 to < 20.0	> 10.0 to < 15.0	B
> 20.0 to < 35.0	> 15.0 to < 25.0	C
> 35.0 to < 55.0	> 25.0 to < 35.0	D
> 55.0 to < 80.0	> 35.0 to < 50.0	E
> 80.0	> 50.0	F

Source: HCM 2010



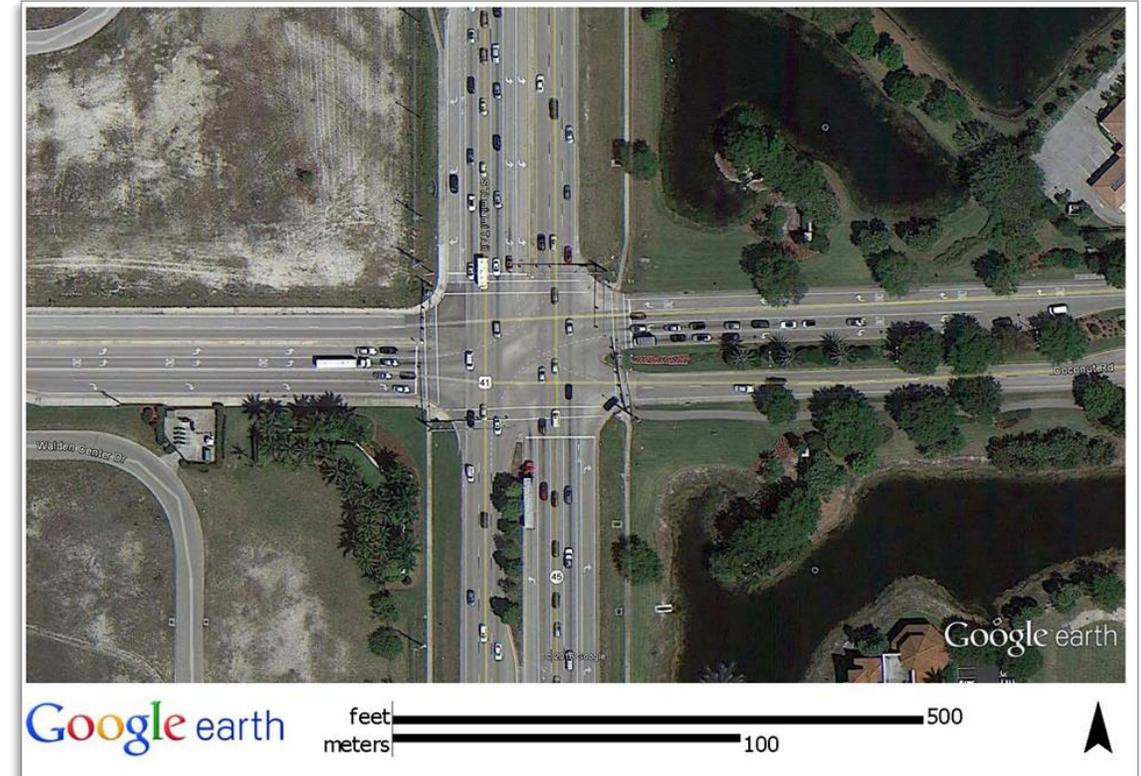
STUDY – US 41 AND COCONUT ROAD INTERSECTION LEVEL OF SERVICE/DELAY

Table 13B					
Intersection AM LOS – Future Background and Development Traffic (2021 and 2026)					
Intersection Configuration	EB Approach Delay*/LOS	WB Approach Delay*/LOS	NB Approach Delay*/LOS	SB Approach Delay*/LOS	Overall Delay*/LOS
AM Peak Hour					
Future 2021	85.4/F	85.3/F	25.4/C	24.0/C	39.0/D
AM Peak Hour					
Future 2026	85.4/F	85.8/F	26.6/C	25.5/C	39.9/D
NOTE(S) *Approach Delay in s/veh.					
Table 13C					
Intersection PM LOS – Future Background and Development Traffic (2021 and 2026)					
Intersection Configuration	EB Approach Delay*/LOS	WB Approach Delay*/LOS	NB Approach Delay*/LOS	SB Approach Delay*/LOS	Overall Delay*/LOS
PM Peak Hour					
Future 2021	156.9/F	148.4/F	49.6/D	40.2/D	80.3/F
PM Peak Hour					
Future 2026	219.5/F	209.9/F	68.0/E	41.3/D	108.5/F
NOTE(S) *Approach Delay in s/veh.					



STUDY RECOMMENDATIONS – US 41 AND COCONUT ROAD INTERSECTION LEVEL OF SERVICE/DELAY IMPROVEMENTS

- **Signal retiming and intersection geometric improvements** are recommended to promote safety, decreased vehicle delay and improve capacity.
- **Geometric Improvements:**
 - Coconut Road – extend eastbound right-turn lane and extend westbound dual left-turn lanes; on
 - US 41 (SR 45) – extend southbound right-turn lane and provide northbound dual left-turn lanes.
- **Coordination:** Work with Lee County and FDOT on programing and funding the intersection improvements.



Intersection Configuration	EB Approach Delay*/LOS	WB Approach Delay*/LOS	NB Approach Delay*/LOS	SB Approach Delay*/LOS	Overall Delay*/LOS
PM Peak Hour					
Future 2021	61.6/E	61.3/E	43.2/D	39.4/D	48.0/D
PM Peak Hour					
Future 2026	59.0/E	63.9/E	56.4/E	51.5/D	56.5/E
NOTE(S)	*Approach Delay in s/veh.				

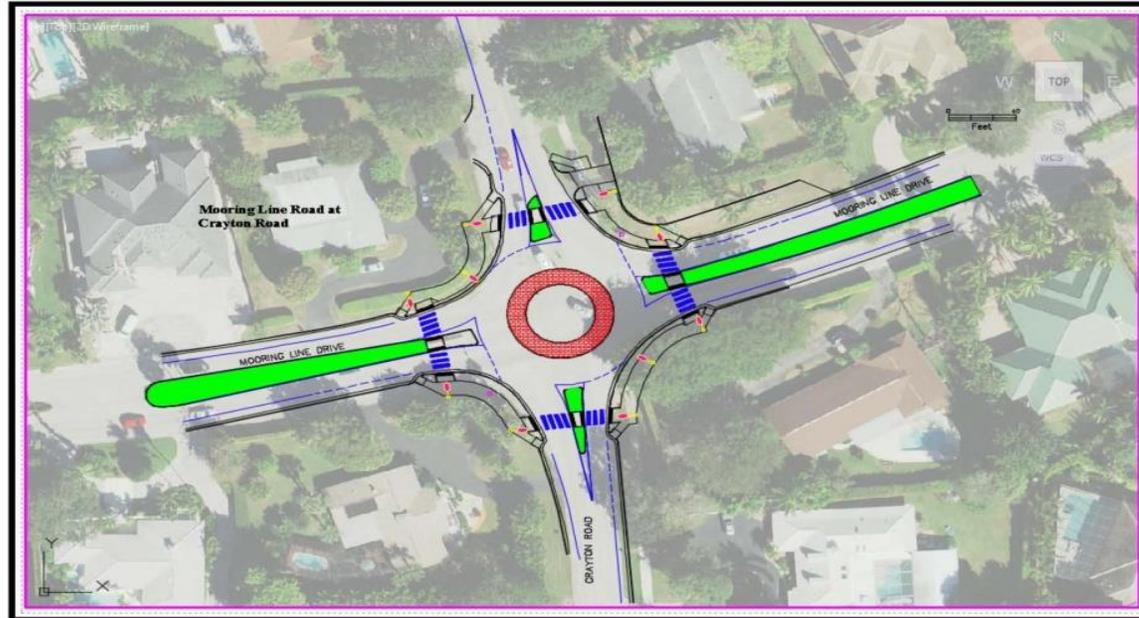
STUDY RECOMMENDATIONS – IMPROVEMENTS TO COCONUT ROAD WEST OF US 41

- **Alternatives: Do nothing, 4-laning, or**
- **Two-Lane Enhanced Alternative** – pursue a feasibility study to determine the alternative of creating a series of roundabouts in order to gain capacity, improve safety and maintain compatibility.



STUDY RECOMMENDATIONS – IMPROVEMENTS TO COCONUT ROAD WEST OF US 41--EXAMPLE

Roundabout - Mooring Line Drive at Crayton Road



Benefits of a roundabout

- Most drivers will not have to stop
- If stopped, very short 5 to 7 seconds
- Much safer - signals are not a safety measure (75% fewer conflict points)
- Pedestrian mobility almost no waiting to cross
- Safer for bicyclist
- Short crossings for pedestrians 100 feet vs 2 x 16'
- Prettier—landscape islands and paver apron.
- Quieter—due to slower vehicle speeds



Similar roundabout in Clearwater Beach, FL



Note: Public Meeting Exhibit Provided by Michael Wallwork for Roundabout Concept in Naples, FL

STUDY RECOMMENDATIONS – IMPROVEMENTS TO COCONUT ROAD WEST OF US 41

- **Two-Lane Enhanced Alternative**
– pursue a feasibility study to determine the alternative of creating a series of roundabouts in order to gain capacity, improve safety and maintain compatibility.
- **Work with the City of Bonita Springs, Lee County, the Lee County MPO, and developers** to program and identify the appropriate funding sources for the roadway improvements.





QUESTIONS?

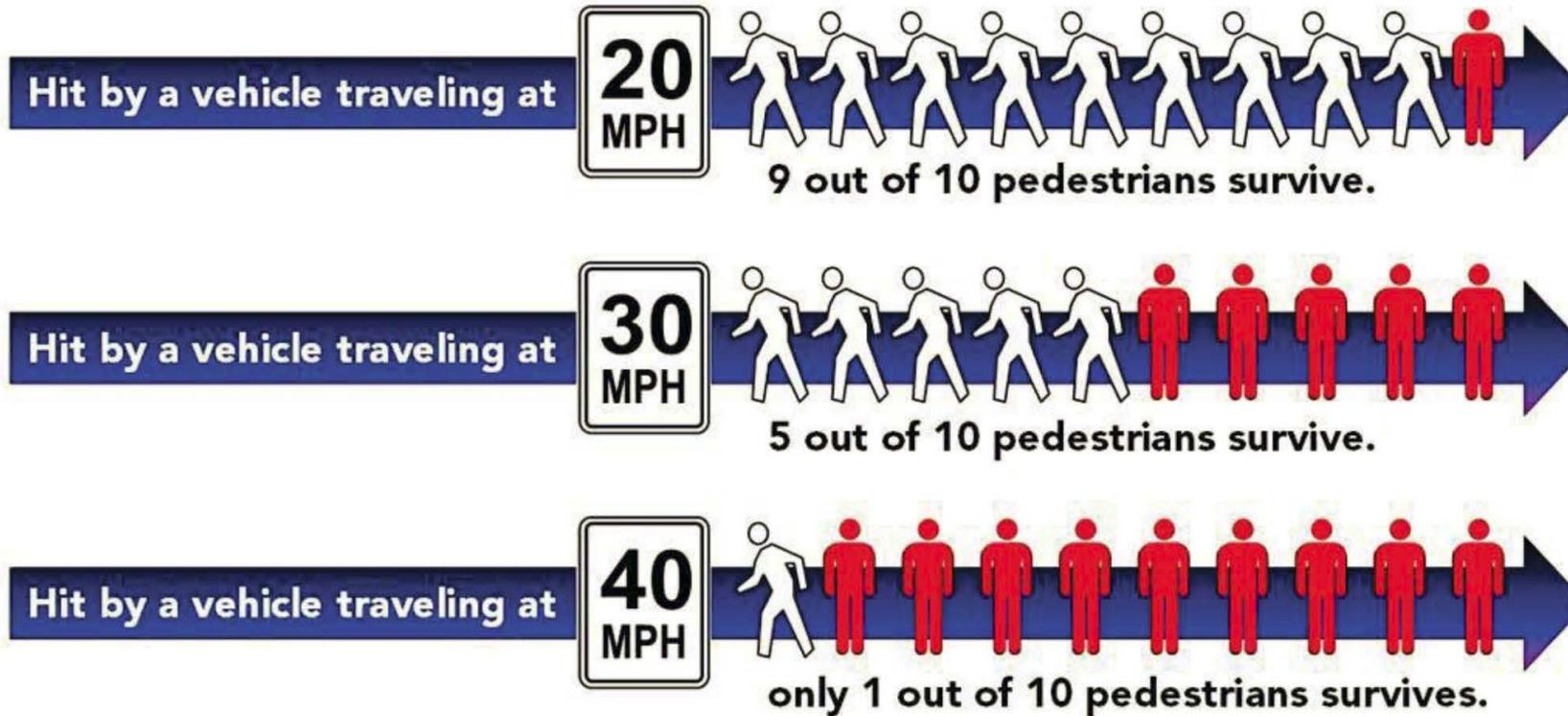
COCONUT ROAD TRAFFIC STUDY

FROM ESTERO BAY TO THREE OAKS PARKWAY
VILLAGE OF ESTERO COUNCIL PRESENTATION
APRIL 20, 2016





Speed and Pedestrian Fatalities





Google earth

feet 1000
meters 500



EXAMPLE of Roundabouts in Series: La Jolla Blvd in California, with 5 Roundabouts in less than 3,000 ft; this was a 5 lane roadway modified to a 2 lane divided roadway with the roundabouts and it carries more 20,000 vehicles per day.

FHWA Proven Countermeasures



Roundabouts



Corridor Access Management



Backplates with Retroreflective Borders



Longitudinal Rumble Strips and Stripes on Two-Lane Roads



Enhanced Delineation and Friction for Horizontal Curves



Safety EdgesSM



Medians and Pedestrian Crossing Islands in Urban and Suburban Areas



Pedestrian Hybrid Beacon



Road Diet

