Advanced Traffic Management System Phase II
Traffic Signal Retiming Project

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Manatee County Diversion and Evacuation Routes
Definition and Signal Timing Development

Technical Memorandum 1

Establish Interstate and River Bridge Diversion Route
and Arterial Evacuation Route Scenarios and Criteria

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Introduction

The Manatee County Diversion and Evacuation Routes Definition and Signal Timing Development Project was developed to plan, develop, and implement traffic management measures to minimize the surface street impacts of traffic being diverted from closures of Interstate 75 due to a major incident[1], closures of either of the two Manatee River bridges between Palmetto and Bradenton, and to facilitate hurricane evacuation from the County's barrier islands.

The initial concept for a diversion system grew out of a number of major incidents along Interstate 75 within Manatee County. Most significant of those was the 2008 crash and major fire of a gasoline tanker on the Interstate 75 overpass at US 301, which destroyed segments of the southbound structure. With that closure, a majority of Interstate traffic was routed through downtown Palmetto and Bradenton, resulting in major congestion and delays until the remaining structure could be reconfigured for two-way flow three days later.

In 2010, District One of the Florida Department of Transportation (FDOT) commissioned the development of a draft Concept of Operations for the Manatee County Interstate 75 Corridor Trailblazer Project. This Concept of Operations described a proposed system that would allow for the automatic implementation and monitoring of alternate routes to Interstate 75, allowing the bypassing of the major incident. The draft Concept of Operations was distributed for comment but was never finalized, and implementation of the system has not been funded as a project. However, the draft Concept of Operations document is serving as background and a general starting point for this assignment.

In July of 2011, Manatee County completed the implementation of an Advanced Traffic Management System (ATMS) that provides for the centralized monitoring and supervision of traffic signals throughout the county. In 2014, the FDOT will complete its implementation of the expansion of the Interstate 75 Freeway Management System (FMS) through Manatee County, providing for the detection and verification of incidents and provision of up-to-date information to motorists through a network of cameras, detectors, Dynamic Message Signs (DMSs), and Highway Advisory Radio (HAR) systems. The control function for the State's FMS will be housed in the same facility as the Manatee County ATMS, allowing for the coordinated operation of the freeway and arterial networks.

A major incident on Interstate 75, on October 5, 2012, prompted renewed interest in the concept. A crash in wet weather, involving about fifty vehicles, closed the southbound lanes near the Manatee / Sarasota County Line for about six hours, backing up traffic for miles. As a result, Manatee County requested the opportunity to utilize state funding to develop diversion route timing plans for their ATMS.

The capabilities provided by the ATMS and the FMS will play a major role in the implementation of these diversion routes. Traffic management staff will be able to monitor traffic conditions along both the

[1] The *Traffic Incident Management Handbook* (Federal Highway Administration (FHWA)) defines an *incident* as "any nonrecurring event that causes a reduction of roadway capacity or an abnormal increase in demand."

freeway and the surface streets, provide current traffic information about delays and diversion routes to motorists, and adjust traffic signal timing to best accommodate the increased demands. Law enforcement officers can be relieved of the need to direct traffic or manually control signals, allowing them to concentrate on more important issues at the incident scene or along the diversion route.

This project assignment, which is part of Phase II of the Manatee County ATMS Traffic Signal Retiming Project, has multiple tasks in order to define and implement the strategies. The first task is to establish the diversion routes to be used based on a qualitative traffic engineering review and with input from the agencies responsible for implementing past diversions. Some routes were identified in the draft Concept of Operations for the diversion system. These, and potential alternatives, have been reviewed and evaluated and the findings and recommendations are the basis for this first technical memorandum. A map of the corridors involved is shown in Figure 1.

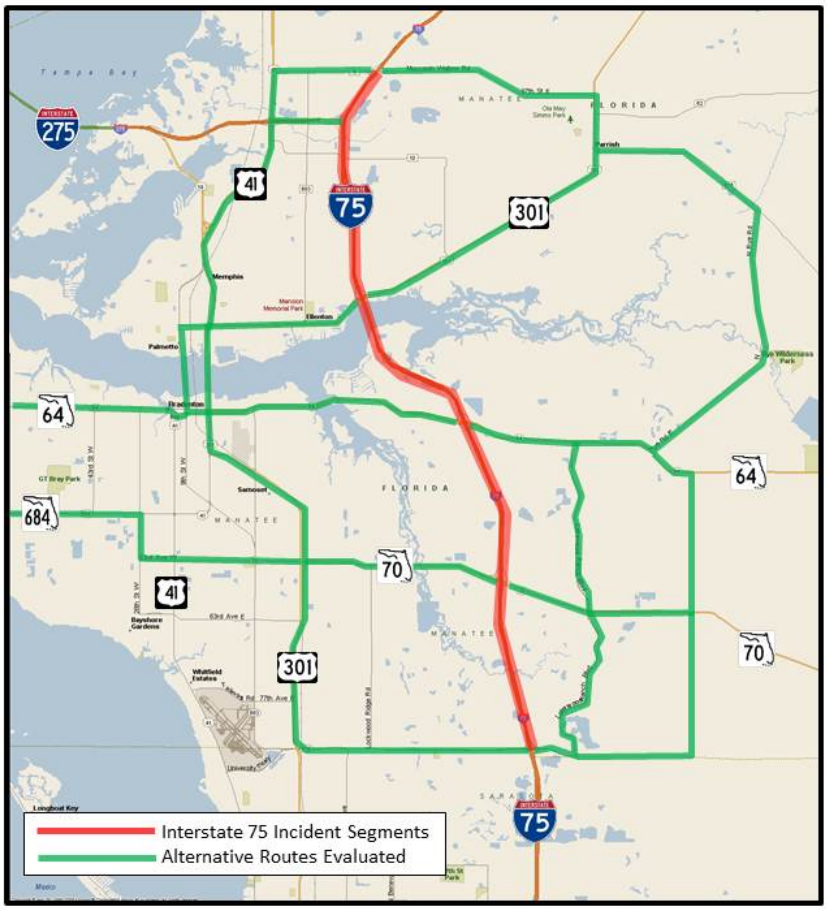


Figure 1 – Area Map

Upcoming tasks include the development of conceptual strategies for diversion route implementation including the development of recommendations related to intersection operations (signalization, signing, temporary lane configuration, law enforcement presence, etc.), corridor operations (signal operations, lane configurations, etc.) and other design concepts; the development, implementation, and field testing of timing patterns for the selected routes; and the development of a diversion route implementation guide that could be used as a "playbook" by transportation officials, law enforcement, and emergency managers in the event of an incident.

This project will also evaluate and make recommendations concerning alternate routes, and develop and implement special timing patterns for when either of the Manatee River bridges (the Hernando DeSoto Bridge, or US 301/US 41, and the Green Bridge, or Business US 41) is impacted by an incident. Both routes are already heavily congested during peak hours; the DeSoto Bridge is particularly narrow for its route significance and the bridge's cross-section does not provide adequate shoulders for moving disabled or crash-damaged vehicles from the through lanes.

Finally, the project will include the development of traffic signal timing patterns favoring traffic evacuating the barrier islands in the event of an approaching tropical storm or hurricane. Two primary evacuation routes have been defined; one originating at the Anna Maria Island Bridge (State Road 64) and the other starting at the Cortez Bridge (State Road 684). These timing patterns will essentially provide for the highly directional flow of traffic toward Interstate 75 as the primary evacuation routes for the beaches.

Ultimately, the success of the project will be directly related to the input from and coordination with various stakeholders. The development of timing patterns is a relatively straightforward process. Coming up with agreements as to how incident diversions and hurricane evacuations should be handled, in advance, will be a critical step toward the success of the project.

Incident Diversion Routes – Design and Implementation

During an incident, multiple agencies will come together to assist in the response to the incident as well as to participate in the diversion and maintenance of traffic around the incident. These include the "First Responders" (Fire / Rescue, Emergency Medical Services, and Law Enforcement), the traffic management organizations (Manatee County Traffic Design, FDOT's SWIFT SunGuide Center staff), roadway operations and maintenance departments (FDOT, Manatee County Public Works, the Cities of Bradenton and Palmetto, and other local municipalities), and the Emergency Management agencies, such as Manatee County's Emergency Management Division of its Public Safety Department. Coordination with, and participation by, all of the stakeholders will be important during this project in order to develop a workable plan that can be implemented quickly through the incident command process; the primary vehicle for coordination for the advanced planning is the FDOT-sponsored Traffic Incident Management (TIM) Team for the Manatee and Sarasota County area.

It must be understood that the routing of Interstate 75 traffic to adjacent surface streets will result in significant congestion, no matter what diversion route tactics are employed. Interstate 75 through portions of Manatee County carries in the range of 100,000 vehicles per day – a demand that far exceeds the capacity of any alternate route. When considering that those alternate routes are also carrying significant amounts of traffic during normal conditions, it is apparent that these will not be perfect solutions.

Each incident is unique. The incident's location; its duration; its time of day / day of week / week of year; the weather conditions; nearby road construction or maintenance projects; all will create a vast variety of scenarios of what could occur. The strategies developed in this project will serve as a starting point for a response to an incident, and active traffic management and fine-tuning will be necessary throughout the duration of the event. However, the preplanning and preparation that will be the result of these efforts will be a major advance in incident management for the Manatee County area.

The Significance of Incidents

Occasionally, it is necessary to close down one or both directions of an Interstate highway due to a major incident, including, but not limited to, a crash with road blockage, a traffic homicide investigation, weather related conditions, or road maintenance activities.

For shorter duration incidents, the common practice has been to attempt to accommodate the additional traffic demand on the surface street network. Because of the lack of time to deploy, detour signs are generally not in place, and motorists are left to either local knowledge or a "follow the leader" approach to get back to their intended route. To maintain traffic flow, law enforcement officers are frequently deployed along the primary diversion route (if one has been defined), directing traffic in the middle of the intersections or manually controlling traffic signals -- efforts that keep them from more important tasks along the corridor.

For a longer duration incident, more resources could be applied to the task of traffic management. Portable message boards, cones and barricades, and signs could be deployed to provide motorist information and guidance. Minor adjustments to traffic signal timing could be implemented. The news media could provide motorist information as part of their regular newscasts. Nevertheless, most incidents required an extensive level of involvement for the responsible agencies.

Technology has advanced significantly over the years. Traffic managers now have the capability to observe and react to traffic conditions as they are occurring. Motorists can easily find alternate routes using Global Positioning System (GPS) technology. Dynamic Message Signs (DMSs), Highway Advisory Radio (HAR) systems, and even some new Smart Phone based applications and social media can provide valuable motorist information about current conditions. And, advanced planning can identify opportunities to prepare for an incident making provisions for capacity enhancements.

Diversion Route Considerations

One of the primary considerations in identifying the diversion route is the route's capacity. The capacity of a highway refers to its traffic carrying capabilities. The capacity of a single lane of traffic on an arterial roadway is approximately 1900 vehicles per hour, reduced by the percentage of green time at any traffic signals along that roadway.

Capacity can also be affected by a number of other factors, including the number of heavy trucks, significant grades, sharp curves or turns, and bottlenecks. Each can cause disruptions to smooth traffic flow, which limits the capability of the roadway to deliver its full capacity.

The advanced traffic engineering work performed in the development of these diversion routes will help to identify the capacity constraints and to develop potential mitigating features to help reduce their impact. For example, during diversion, it may be appropriate to lengthen the traffic signal's cycle length in order to provide additional time to the diversion route, effectively increasing the percentage of green time. During longer duration diversions, it may be beneficial to reconfigure lanes in the approaches to route turns to increase their capacity.

Providing accurate information to motorists about the nature of the incident and potential diversion routes is also important. The implementation of the Interstate 75 FMS will provide for DMSs and HAR notification signs in advance of each interchange within Manatee County. These motorist information devices can be used to provide real-time information about expected delays, alternate routes, and other critical information.

Along the diversion routes themselves, trailblazing signs and portable changeable message signs can be used to help guide motorists. The trailblazing signs can be permanent, portable and deployed for the incident, or of the foldout design, which are permanently mounted but are hinged to allow signs to be opened to display the trailblazing message. Figure 2 is an example of a diversion route trailblazer assembly.

Figure 2

For longer-term incidents, advanced notification of long-distance motorists can be valuable. For example, a major incident in Manatee County on Interstate 75 could be communicated to motorists entering the state with the destination of Miami, allowing them to select an alternate route, such as the Florida Turnpike.

Law enforcement officers will continue to have a role in the diversion route process. The implementation of the ATMS will significantly decrease the need to utilize them for traffic control at signalized intersections. However, as motorists typically do not like waiting in heavily congested traffic, and will violate traffic rules in order to avoid further delay, law enforcement officers can be effective in keeping traffic flow orderly. In addition, those critical resources can be utilized at the incident scene to help reduce the overall duration of the incident.

It is anticipated that these strategies and techniques will be discussed as part of the stakeholder process to identify if and how they might be implemented and to clearly indicate the roles and responsibilities of the participating agencies.

Interstate 75 Diversion Routes

The busiest sections of Interstate 75 through Manatee County carry approximately 100,000 vehicles per day, evenly split between the northbound and southbound directions. Of the 100,000 vehicles per day, approximately 10% use the Interstate during the morning peak hour, and another 10% during the evening peak hour. Therefore, a bidirectional closure of the Interstate could end up routing up to 10,000 vehicles per hour onto the surface streets of Manatee County.

The infrastructure does not exist for a smooth diversion of traffic of this magnitude around an incident on the Interstate. There are alternate routes, but none with the capacity of Interstate 75. And, each of those alternate routes already carries significant levels of traffic on a daily basis. Therefore, the development of diversion routes will be based on providing the best possible routing given the existing conditions.

Five scenarios have been identified related to closures of segments of Interstate 75, and are defined in the following subsections. For each scenario, the available alternate routes will be identified, their capacities and current traffic volumes shown, traffic control devices indicated, roadway conditions noted, and the input from the stakeholder meetings included. Based on this information, the recommended alternative for a northbound, southbound, and bidirectional closure of the Interstate will be shown.

Again, it is anticipated that these scenarios will be discussed as part of the stakeholder process to identify if and how they might be implemented and to clearly indicate the roles and responsibilities of the participating agencies.

Scenario 1 – Closure of Interstate 75 between Moccasin Wallow Road and Interstate 275

Interstate 75 between Moccasin Wallow Road (County Road 683) and Interstate 275 is a six lane freeway, approximately 1.3 miles in length. It is currently carrying approximately 56,000 vehicles per day. The area of closure and the available alternate diversion routes are shown in Figure A-1, in the Appendix, and a summary of segment characteristics is shown in Table 1.

Identification of Available Alternate Routes

For a closure of Interstate 75 between Moccasin Wallow Road and Interstate 275, two primary diversion routes were identified:

Diversion Route 1A - the westerly of the two identified routes, as shown as the red route in Figure A-1. From north to south, the diversion route segments include Moccasin Wallow Road between Interstate 75 and US 41; US 41 between Moccasin Wallow Road and Interstate 275; and Interstate 275 between US 41 and Interstate 75. Route 1A was the proposed route from the draft Concept of Operations.

A key limitation of this route is the minimal capacity of the Moccasin Wallow Road segment. For the most part, Moccasin Wallow Road is a two-lane undivided roadway that intersects with US 41 at a two way stop controlled intersection. The two other segments, US 41 and Interstate 275, offer a higher level of capacity available for use during diversion.

Table 1 – Diversion Scenario 1

		Route Segment	Laneage	Length (miles)	Signalized Intersections	AADT (vpd)	Directional		
							Peak Hr Vol (vph)	Peak Hr Cap (vph)	Excess Cap (vph)
	Segment Being Closed	*Interstate 75* From: *Moccasin Wallow Road* To: *Interstate 275*	6FWY	1.3	-	56,000	2,722	5,500	2,778
Diversion Route 1A	Diversion Route Segment	*Moccasin Wallow Road* From: *Interstate 75* To: *US 41*	2U	2.2	0	3,400	190	800	610
	Diversion Route Segment	*US 41* From: *Moccasin Wallow Road* To: *Interstate 275*	4D	1.1	0	9,300	454	1,740	1,286
	Diversion Route Segment	*Interstate 275* From: *US 41* To: *Interstate 75*	4FWY	1.6	-	43,500	2,173	3,660	1,487
Diversion Route 1B	Diversion Route Segment	*Moccasin Wallow Road* From: *Interstate 75* To: *US 301*	2U	4.9	0	6,238	330	800	470
	Diversion Route Segment	*US 301* From: *Moccasin Wallow Road* To: *64th St E*	2U	1.5	0	7,400	413	710	297
	Diversion Route Segment	*US 301* From: *64th St E* To: *Interstate 75*	4D	6.0	6	33,000	1,648	1,740	92

While lane widths along Moccasin Wallow Road are substandard (approximately 11 foot wide lanes with unpaved shoulders), the pavement conditions along the corridor are relatively good, and no structural limitations were identified.

Diversion Route 1B –the easterly of the two routes, this is shown as the green route in Figure A-1. From north to south, the diversion route segments include Moccasin Wallow Road running east from Interstate 75 to US 301, and US 301 from Moccasin Wallow Road to Interstate 75.

Again, a critical limitation of the route is the capacity constraints of the Moccasin Wallow Road segment, which is a two-lane roadway. The intersection of Moccasin Wallow Road and US 301 is controlled by a stop sign for eastbound traffic. The northernmost 1.5 miles of US 301 is a two lane undivided roadway (with a left turn lane northbound at Moccasin Wallow Road); south of 64th Street East, US 301 becomes a four-lane divided roadway that would provide a much higher level of service during the diversion. However, a major outlet mall at the interchange of US 301 and Interstate 75 attracts significant background traffic, and excess capacity is limited through the Ellenton area.

Other than substandard lane widths along Moccasin Wallow Road (approximately 11 foot wide lanes with unpaved shoulders), the pavement conditions along the corridor are good, and no structural limitations were identified.

Input from Stakeholder meetings

In general, the capacity constraints of Moccasin Wallow Road, both to the west and to the east of Interstate 75, were identified as the primary concern. Several agency representatives suggested signalization of the Moccasin Wallow Road intersection with US 41, not only to better accommodate diversion traffic, but based on their experience with the crash history at the intersection.

One suggestion was made to split the diversion for the southbound direction between Diversion Routes 1A and 1B to better distribute the loading of the corridors.

Recommendations

The recommended routes for incident diversion along this section of Interstate 75 are as follows:

Northbound Diversion - for a closure of this section of northbound Interstate 75, the recommended diversion route would follow Route 1A. Northbound motorists would be directed to exit onto Interstate 275 westbound, with guidance provided through the FDOT's SWIFT SunGuide Center infrastructure (DMSs, HAR, etc.) to exit and turn right onto US 41 northbound. Signing to return to Interstate 75 would be provided at Moccasin Wallow Road, but it is anticipated that those with local knowledge and/or GPS receivers would continue northbound on US 41 to State Road 674 in Sun City Center, or points beyond.

Southbound Diversion – for a closure of this section of southbound Interstate 75, the recommended diversion route would consist of Route 1A. However, Route 1B would be available as an alternate under heavy traffic or long term conditions, and advance signing on the southbound exit ramp from Interstate 75 to Moccasin Wallow Road could direct traffic destined for Interstate 275 and Palmetto to the right (following Route 1A) and traffic destined for Bradenton, Sarasota, and points south directed to the left (following Route 1B).

Bidirectional Diversion – for a bidirectional closure of this section of Interstate 75, the recommended diversion route would be Route 1A. In a bidirectional closure, the use of Route 1B would create a situation where opposing diversion routes would cross each other at the Interstate 75 interchange with Moccasin Wallow Road; therefore Route 1B should not be implemented.

Scenario 2 – Closure of Interstate 75 between Interstate 275 and US 301

Interstate 75 between Interstate 275 and US 301 is a six lane freeway, approximately 4.0 miles in length. It currently carries approximately 79,000 vehicles per day. The area of the closure and available alternate diversion routes are shown in Figure A-2, in the Appendix, and a summary of segment characteristics is shown in Table 2.

Table 2 – Diversion Scenario 2

		Route Segment	Laneage	Length (miles)	Signalized Intersections	AADT (vpd)	Directional		
							Peak Hr Vol (vph)	Peak Hr Cap (vph)	Excess Cap (vph)
	Segment Being Closed	*Interstate 75* From: *Interstate 275* To: *US 301*	6FWY	4.0	-	79,000	3,839	5,500	1,661
Diversion Route 2A	Diversion Route Segment	*Interstate 275* From: *Interstate 75* To: *US 41*	4FWY	1.6	-	43,500	2,173	3,660	1,487
	Diversion Route Segment	*US 41* From: *Interstate 275* To: *US 301*	4D	5.0	4	37,500	1,873	1,740	-133
	Diversion Route Segment	*US 301* From: *US 41* To: *Interstate 75*	4D	3.6	9	32,000	1,642	1,740	98
Diversion Route 2B	Diversion Route Segment	*Moccasin Wallow Road* From: *Interstate 75* To: *US 301*	2U	4.9	0	6,238	330	800	470
	Diversion Route Segment	*US 301* From: *Moccasin Wallow Road* To: *64th St E*	2U	1.5	0	7,400	413	710	297
	Diversion Route Segment	*US 301* From: *64th St E* To: *Interstate 75*	4D	6.0	6	33,000	1,648	1,740	92

Identification of Available Alternate Routes

For a closure of Interstate 75 between Interstate 275 and US 301, two primary diversion routes were identified:

Diversion Route 2A – the westerly of the two identified routes, shown as the red route in Figure A-2. From north to south, the diversion route segments include Interstate 275, between Interstate 75 and US 41; US 41 between Interstate 275 and US 301 in Palmetto; and US 301

between US 41 and Interstate 75 in Ellenton. All three of the segments within this diversion route are multilane facilities. The ramps at the Interstate 275/US 41 interchange are stop sign controlled; the ramp termini for both the US 41/US 301 interchange and the US 301/Interstate 75 interchange are signal controlled. Route 2A was the proposed route from the draft Concept of Operations.

The US 41/US 301 interchange and surrounding area is frequently congested due to area traffic generators, including the Manatee County Convention Center, a Super Wal-Mart, the downtown Palmetto area, and backups from the capacity constrained DeSoto and Green Bridges across the Manatee River.

Pavement conditions along the corridor are good, and no structural limitations were identified.

Diversion Route 2B –the easterly of the two routes, this is shown as the green route in Figure A-2. From north to south, the diversion route segments include Moccasin Wallow Road running east from Interstate 75 to US 301; and US 301 from Moccasin Wallow Road to Interstate 75.

This represents the same route as Route 1B in Scenario 1. As before, a critical limitation of this route is the capacity constraints of the Moccasin Wallow Road segment, which is a two-lane roadway. This route does avoid the recurring congestion of the Palmetto area, but may be subject to possible congestion due to traffic from the outlet mall at the interchange of US 301 and Interstate 75.

Pavement conditions along the corridor are good and no structural limitations were identified.

Input from Stakeholder Meetings

Several representatives of the stakeholder agencies expressed concern about the congestion levels within the Palmetto area. When coupled with normal daily traffic using these roadways, diversion route traffic would create significant congestion. Suggestions were made to utilize the eastern route if possible.

A concern about closure of the northbound lanes at US 301 was raised by the Florida Highway Patrol (FHP) representatives, who noted that a rise in the northbound Interstate 75 bridge over the Manatee River can mask vehicles stopped in the lanes ahead. Warning signs were suggested to be deployed in the event of such a closure.

Recommendations

Northbound Diversion – for a closure of this section of northbound Interstate 75, the recommended diversion route would be Route 2B. Northbound motorists would be directed to exit onto US 301 (a loop ramp), then left onto northbound US 301. Traffic would then be guided to return to Interstate 75 at Moccasin Wallow Road, although those with local knowledge and/or GPS receivers might continue northbound to State Road 674 in Sun City Center. At the Interstate 75 interchange on Moccasin Wallow Road, traffic destined for Interstate 275 and the Sunshine Skyway Bridge would be allowed to turn left onto Interstate 75 southbound; traffic destined for northbound Interstate 75 would turn right onto the northbound Interstate 75 ramps.

Southbound Diversion - for a closure of this section of southbound Interstate 75, the recommended diversion route would consist of Route 2A. Route 2B would be undesirable

because it would require closure of Interstate 75 southbound at Moccasin Wallow Road, closing off access to the unaffected interchange at Interstate 275.

Bidirectional Diversion – for a bidirectional closure of this section of Interstate 75, the recommended diversion route would be a combination of Route 2A (used for southbound traffic) and Route 2B (used for northbound traffic). This combination minimizes the congestion in the downtown Palmetto area by separating the diversion routes from each other.

Scenario 3 – Closure of Interstate 75 between US 301 and State Road 64

Interstate 75 between US 301 and State Road 64 is a six lane freeway, approximately 3.7 miles in length, and carrying approximately 93,500 vehicles per day. This includes the crossing of the Manatee River via the Trooper J. D. Young Bridge. The area of closure and available alternate diversion routes are shown in Figure A-3 in the Appendix, and a summary of segment characteristics is shown in Table 3.

Identification of Available Alternate Routes

For a closure of Interstate 75 between US 301 and State Road 64, three primary diversion routes were identified:

Diversion Route 3A – one of two westerly diversion routes identified, this is shown as the red route in Figure A-3. From north to south, the diversion route segments include US 301 between Interstate 75 and US 41 in Palmetto; US 301/US 41 across the DeSoto Bridge into downtown Bradenton; then State Road 64 from US 41 to Interstate 75. This route was proposed as the diversion route for this section in the draft Concept of Operations.

All sections of this route are multilane divided facilities; State Road 64 provides a six lane divided roadway for its entire length (including the one-way pair of Manatee Avenue East and 6th Avenue East in downtown Bradenton). Pavement conditions along the corridor are good, and no structural limitations were identified.

However, capacity is limited and congestion is a recurring concern in downtown Bradenton; when used previously for diversion, the crossing flows of US 301/US 41 and State Road 64 created near-gridlock conditions. As this is adjacent to Manatee Memorial Hospital, which operates one of the busiest emergency rooms in the area, access through the area is a concern. The turns of the route in downtown would be a significant bottleneck.

Diversion Route 3B – the second of two westerly diversion routes identified, this is shown as the yellow route in Figure A-3. From north to south, the diversion routes include US 301, between Interstate 75 and US 41 in Palmetto; US 41/US 301 across the DeSoto Bridge and through downtown Bradenton; US 301 from its split with US 41 to State Road 70; then State Road 70 to Interstate 75.

The northern portion of Diversion Route 3B is essentially the same as Diversion Route 3A. However, instead of a turn of the diverted traffic in downtown Bradenton, the diversion route continues south along US 301 to State Road 70, then across to Interstate 75. This alternative eliminates the bottleneck due to the turns in the downtown area. Pavement conditions along this corridor are good, and no structural limitations were identified.

Table 3 – Diversion Scenario 3

		Route Segment	Laneage	Length (miles)	Signalized Intersections	AADT (vpd)	Directional		
							Peak Hr Vol (vph)	Peak Hr Cap (vph)	Excess Cap (vph)
	Segment Being Closed	*Interstate 75* From: *US 301* To: *SR 64*	6FWY	3.7	-	93,500	4,544	5,500	956
Diversion Route 3A	Diversion Route Segment	*US 301* From: *Interstate 75* To: *US 41*	4D	3.6	9	32,000	1,642	2,000	358
	Diversion Route Segment	*US 41 / US 301* From: *US 301* To: *SR 64*	4D	1.8	3	54,000	2,697	2,000	-697
						EB / WB	EB / WB	EB / WB	EB / WB
	Diversion Route Segment	*SR 64* From: *US 41* To: *15th St E*	3L / 3L	1.0	3	17,500 / 19,500	1,575 / 1,755	3,020 / 3,020	1,445 / 1,265
	Diversion Route Segment	*SR 64* From: *15th St E* To: *Interstate 75*	6D	4.7	10	43,500	2,185	3,020	835
Diversion Route 3B	Diversion Route Segment	*US 301* From: *Interstate 75* To: *US 41*	4D	3.6	9	32,000	1,642	2,000	358
	Diversion Route Segment	*US 41 / US 301* From: *US 301* To: *SR 64*	4D	1.8	3	54,000	2,697	2,000	-697
	Diversion Route Segment	*US 41* From: *SR 64* To: *US 301*	6D	0.9	4	62,000	3,097	3,020	-77
	Diversion Route Segment	*US 301* From: *US 41* To: *SR 70*	4D	3.5	6	32,000	1,598	2,000	402
	Diversion Route Segment	*SR 70* From: *US 41* To: *Interstate 75*	6D	4.4	11	61,000	2,954	3,020	66
Diversion Route 3C	Diversion Route Segment	*US 301* From: *Interstate 75* To: *Rutland Rd*	4D	6.3	6	33,000	1,648	1,740	92
	Diversion Route Segment	*Rutland Rd* From: *US 301* To: *Rye Rd*	2U	3.9	0	1,294	72	800	728
	Diversion Route Segment	*Rye Rd* From: *Rutland Rd* To: *SR 64*	2U	6.4	0	4,629	258	800	542
	Diversion Route Segment	*SR 64* From: *Rye Rd* To: *Interstate 75*	6D	4.2	6	34,500	1,733	2,670	937

Diversion Route 3C – the easterly route of the three alternatives, this is shown as the green route in Figure A-3. From north to south, this route includes US 301 between Moccasin Wallow Road and County Road 675 (Rutland Road); County Road 675 between US 301 and Rye Road;

Rye Road between County Road 675 and State Road 64; and State Road 64 between Rye Road and Interstate 75.

The majority of this route traverses two-lane undivided roadways, which limits the route's capacity for diversion. However, it does avoid the congestion of downtown Bradenton, which does provide a significant advantage.

Sections of this corridor, primarily along Rye Road, have substandard lane widths, unpaved shoulders, and deteriorating pavement conditions. In addition, two existing structures on County Road 675 have weight limits -- at Gamble Creek, truck restrictions call for a weight limit of 32 tons for a single unit truck, 34 tons for a semi-tractor trailer, and 41 tons for a double unit truck – and at Frye Canal, the bridge has a weight limit of 25 tons for a single unit truck. These would be a consideration in the selection of this route for the diversion of heavy trucks from the Interstate.

Input from Stakeholder Meetings

Concerns about congestion within the downtown areas of Palmetto and Bradenton were the most common comments. A number of stakeholders suggested the Rye Road corridor to the east of Interstate 75 as a means of avoiding the congestion inherent in Palmetto and Bradenton.

Recommendations

The recommended routes for incident diversion along this section of Interstate 75 are as follows:

Northbound Diversion – for a closure of this section of northbound Interstate 75, the recommended diversion route would be Route 3C, with additional signing for heavy trucks to utilize Route 3A. Northbound motorists would be directed to exit the Interstate onto State Road 64, with all but heavy trucks directed to the east to Rye Road. Motorists would then follow the diversion route either to Moccasin Wallow Road or, using local knowledge or GPS receivers, on to State Road 674 in Sun City Center. Heavy trucks would be directed west along State Road 64 to US 301/US 41, then north across the DeSoto Bridge into Palmetto. From there, heavy trucks could follow US 301 back to Interstate 75 or US 41 or US 19 to Interstate 275.

Southbound Diversion – for a southbound closure of this section of Interstate 75, the recommended route would consist of Route 3B. Motorists would be directed to exit the Interstate at US 301, head west to US 41, then south across the DeSoto Bridge. In Bradenton, motorists would continue straight to the US 301 split, following US 301 to State Road 70, where they would turn left toward Interstate 75.

Bidirectional Diversion – for a bidirectional closure of this section of Interstate 75, the recommended diversion routes would be a combination of Route 3B (for southbound traffic) and Route 3C (for northbound traffic).

Scenario 4 – Closure of Interstate 75 between State Road 64 and State Road 70

Interstate 75 between State Road 64 and State Road 70 is a six lane freeway, approximately 3.6 miles in length. Currently, it carries approximately 101,000 vehicles per day. The area of closure and available

alternate diversion routes are shown in Figure A-4, in the Appendix, and a summary of segment characteristics be shown in Table 4.

Identification of Available Alternate Routes

For a closure of Interstate 75 between State Road 64 and State Road 70, three potential diversion routes were identified:

Diversion Route 4A – the westerly of the three identified routes, shown as the red route in Figure A-4. From north to south, the diversion route segments include State Road 64 between Interstate 75 and US 301/US 41; US 301 between State Road 64 and State Road 70; and State Road 70 between US 301 and Interstate 75. All three segments of this corridor are multilane facilities and all turning locations would be at signalized intersections. The route does go through the normally congested intersection of US 301/US 41 and State Road 64 in downtown Bradenton.

Pavement conditions along the corridor are good, and no structural limitations were identified.

Diversion Route 4B – the shortest of the three alternate routes, this uses Lakewood Ranch Road as the diversion route, as shown as the yellow route in Figure A-4. From north to south, the diversion route segments would include State Road 64 from Interstate 75 to Lakewood Ranch Road; Lakewood Ranch Road from State Road 64 to State Road 70; and State Road 70 from Lakewood Ranch Road to Interstate 75. This is the route proposed in the Draft Concept of Operations.

All three segments of this corridor are also multilane facilities and all turn locations would be at signalized intersections. Pavement conditions along this corridor are good, and no structural limitations were identified.

Diversion Route 4C – the more easterly of the three routes, this utilizes a less densely populated route than Lakewood Ranch Road. From north to south, the diversion route segments would include State Road 64 from Interstate 75 to Lorraine Road; Lorraine Road from State Road 64 to State Road 70; and State Road 70 from Lorraine Road to Interstate 75, as shown as the green route in Figure A-4.

Both State Road 64 and State Road 70 are multilane divided roadways. Lorraine Road is a two-lane undivided roadway. The intersection at State Road 64 and Lorraine Road is stop sign controlled for Lorraine; the intersection of Lorraine Road and State Road 70 is signalized. Pavement conditions along sections of Lorraine Road are deteriorating, the roadway is substandard width and has unpaved shoulders, and a structure over a creek (located about one mile south of State Road 64) has a weight restriction of 29 tons for single unit trucks.

Input from Stakeholder Meetings

The general consensus of all involved was that diversion route 4B would likely be the optimal route. Lorraine Road was suggested by some participants as being an alternative route. Route 4A, which included a turn in downtown Bradenton, was not recommended due to the recurring congestion.

Table 4 – Diversion Scenario 4

		Route Segment	Laneage	Length (miles)	Signalized Intersections	AADT (vpd)	Directional		
							Peak Hr Vol (vph)	Peak Hr Cap (vph)	Excess Cap (vph)
	Segment Being Closed	*Interstate 75* From: *SR 64* To: *SR 70*	6FWY	3.6	-	101,000	4,909	5,500	591
Diversion Route 4A	Diversion Route Segment	*SR 64* From: *Interstate 75* To: *15th Street E*	6D	4.7	10	43,500	2,185	3,020	835
	Diversion Route Segment	*SR 64* From: *15th Street E* To: *US 41*	3L / 3L	1.0	3	17,500 / 19,500	1,575 / 1,755	3,020 / 3,020	1,445 / 1,265
	Diversion Route Segment	*US 41* From: *SR 64* To: *US 301*	6D	0.9	4	62,000	3,097	3,020	-77
	Diversion Route Segment	*US 301* From: *US 41* To: *SR 70*	4D	3.5	6	32,000	1,598	2,000	402
	Diversion Route Segment	*SR 70* From: *US 41* To: *Interstate 75*	6D	4.4	11	61,000	2,954	3,020	66
Diversion Route 4B	Diversion Route Segment	*SR 64* From: *Interstate 75* To: *Lakewood Ranch Rd*	6D	2.4	4	34,500	1,733	2,670	937
	Diversion Route Segment	*Lakewood Ranch Rd* From: *SR 64* To: *SR 70*	2D	3.8	5	10,316	553	680	127
	Diversion Route Segment	*SR 70* From: *Lakewood Ranch Rd* To: *Interstate 75*	6D	2.0	6	34,500	1,733	2,670	937
Diversion Route 4C	Diversion Route Segment	*SR 64* From: *Interstate 75* To: *Lakewood Ranch Rd*	6D	2.4	4	34,500	1,733	2,670	937
	Diversion Route Segment	*SR 64* From: *Lakewood Ranch Rd* To: *Lorraine Rd*	4D	2.6	1	19,100	959	1,740	781
	Diversion Route Segment	*Lorraine Rd* From: *SR 64* To: *SR 70*	2U	3.0	1	4,400	228	680	452
	Diversion Route Segment	*SR 70* From: *Lorraine Rd* To: *Interstate 75*	6D	4.0	7	34,500	1,733	2,670	937

Recommendations

The recommended routes for incident diversion along this section of Interstate 75 are as follows:

Northbound Diversion – for a closure of this section of northbound Interstate 75, the recommended diversion route would follow Route 4B. Northbound motorists would be directed to exit onto State Road 70, routed east to the signalized intersection at Lakewood Ranch Road,

then north along Lakewood Ranch Road to State Road 64; then west along State Road 64 to return to Interstate 75.

Southbound Diversion – for a closure of this section of southbound Interstate 75, the recommended diversion route would follow Route 4B. Southbound motorists would be directed to exit onto State Road 64, routed east to the signalized intersection at Lakewood Ranch Road; then south along Lakewood Ranch Road to State Road 70, then west along State Road 70 to return to Interstate 75.

Bidirectional Diversion – for a bidirectional closure of this section of 75, the recommended diversion route would be simultaneous northbound and southbound diversion along Route 4B.

Scenario 5 – Closure of Interstate 75 between State Road 70 and University Parkway

Interstate 75 between State Road 70 and University Parkway is a six lane freeway, approximately 3.7 miles in length, and carrying approximately 106,500 vehicles per day. The area of closure and available alternate diversion routes are shown in Figure A-5 in the Appendix, and a summary of segment characteristics is shown in Table 5.

Identification of Available Alternate Routes

For a closure of Interstate 75 between State Road 70 and University Parkway, three potential diversion routes were identified:

Diversion Route 5A – the westerly of the three identified routes, as shown as the red route in Figure A-5. From north to south, the diversion route segments include State Road 70 between Interstate 75 and US 301; US 301 between State Road 70 and University Parkway; and University Parkway between US 301 and Interstate 75.

All three segments of this corridor are multilane facilities and all turn locations would be at signalized intersections. Pavement conditions along the corridor are good, and no structural limitations were identified.

Diversion Route 5B – the shortest of the three alternate routes, using Lakewood Ranch Road as the diversion route, as shown as the yellow route in Figure A-5. From north to south, the diversion route segments would include State Road 70 from Interstate 75 to Lakewood Ranch Road; Lakewood Ranch Road from State Road 70 to University Parkway; and University Parkway from Lakewood Ranch Road to Interstate 75. This is the route proposed in the Draft Concept of Operations.

All three segments of this corridor are also multilane facilities and all turn locations would be at signalized intersections. Lakewood Ranch Road in this section, however, has a curvilinear parkway design with multiple school crossings, signalized intersections, and one four-way stop intersection. Pavement conditions along this corridor are good, and no structural limitations were identified.

Table 5 – Diversion Scenario 5

	Route Segment	Laneage	Length (miles)	Signalized Intersections	AADT (vpd)	Directional		
						Peak Hr Vol (vph)	Peak Hr Cap (vph)	Excess Cap (vph)
Segment Being Closed	*Interstate 75* From: *SR 70* To: *University Pkwy*	6FWY	3.7	-	106,500	5,176	5,500	324
Diversion Route 5A – Diversion Route	*SR 70* From: *Interstate 75* To: *US 301*	6D	4.4	11	61,000	2,954	3,020	66
Diversion Route 5A – Diversion Route	*US 301* From: *SR 70* To: *University Pkwy*	4D	4.2	4	33,500	1,622	1,820	198
Diversion Route 5A – Diversion Route	*University Pkwy* From: *US 301* To: *Interstate 75*	6D	5.1	10	47,500	2,266	2,750	484
Diversion Route 5B – Diversion Route	*SR 70* From: *Interstate 75* To: *Lakewood Ranch Rd*	6D	2.0	6	34,500	1,733	2,670	937
Diversion Route 5B – Diversion Route	*Lakewood Ranch Rd* From: *SR 70* To: *University Pkwy*	4D	3.8	5	12,900	720	1,460	740
Diversion Route 5B – Diversion Route	*University Pkwy* From: *Lakewood Ranch Rd* To: *Interstate 75*	6D	1.0	5	36,689	1,981	2,740	759
Diversion Route 5C – Diversion Route	*SR 70* From: *Interstate 75* To: *Lorraine Rd*	6D	4.0	7	34,500	1,733	2,670	937
Diversion Route 5C – Diversion Route	*Lorraine Rd* From: *SR 70* To: *University Pkwy*	4D	3.2	4	6,075	301	1,460	1,159
Diversion Route 5C – Diversion Route	*University Pkwy* From: *Lorraine Rd* To: *Lakewood Ranch Rd*	4D	2.1	2	14,800	826	1,820	994
Diversion Route 5C – Diversion Route	*University Pkwy* From: *Lakewood Ranch Rd* To: *Interstate 75*	6D	1.0	5	36,689	1,981	2,740	759

Diversion Route 5C – the most easterly of the three routes, this route is intended to utilize a less densely populated route than Lakewood Ranch Road. From north to south, the diversion route segments would include State Road 70 from Interstate 75 to Lorraine Road; Lorraine Road from State Road 70 to University Parkway; and University Parkway from Lorraine Road to Interstate 75, as shown as the green route in Figure A-5.

Both State Road 70 and University Parkway are multilane divided roadways. Lorraine Road is a four-lane divided roadway. All turns along the route would occur at signalized intersections. Pavement conditions along the corridor are good, and no structural limitations were identified.

Input from Stakeholder Meetings

A common theme of discussions of this section was the suitability of Lakewood Ranch Road as a diversion route for interstate traffic. This section of Lakewood Ranch Road serves essentially as the main street of the Lakewood Ranch community; it has a slow, curvilinear layout with multiple sources of friction. The roadway is heavily landscaped and most likely utilization as a diversion route would result in numerous citizen complaints.

Recommendations

Northbound Diversion – for a closure of this section of northbound Interstate 75, the recommended diversion route would be Route 5C. Northbound motorists would be directed to exit onto University Parkway, routed east to the signalized intersection at Lorraine Road, then north along Lorraine Road to State Road 70, and then left along State Road 70 westbound to return to Interstate 75.

Southbound Diversion – for a closure of this section of southbound Interstate 75, the recommended diversion route would also be Route 5C. Southbound motorists would be directed to exit onto State Road 70, routed east to the signalized intersection at Lorraine Road, then south along Lorraine Road to University Parkway, and then west along University Parkway to return to Interstate 75.

Bidirectional Diversion – for a bidirectional closure of this section of Intersection 75, the recommended diversion route would be simultaneous northbound and southbound diversion along Route 5C.

Manatee River Bridges Diversion Routes

Connecting the Palmetto and Bradenton downtown areas are two major bridges. The Hernando DeSoto Bridge is the older of the two bridges and carries the majority of the traffic; it carries the designations of both US 41 and US 301. The Green Bridge carries Business US 41 and follows the alignment of the original US 41 from Palmetto into the western portion of downtown Bradenton.

Two scenarios for potential incidents were identified for these bridges, as described below.

Scenario 6 – Closure of the Hernando DeSoto Bridge (US 301/US 41) over the Manatee River

The Hernando DeSoto Bridge (US 301/US 41) over the Manatee River is a four-lane divided roadway, approximately 2000 feet in length from shore to shore. It currently carries approximately 54,000 vehicles per day. The area of closure and available alternate diversion routes are shown in Figure A-6, in the Appendix, and a summary of segment characteristics is shown in Table 6.

Identification of Available Alternate Routes

For a closure of the Hernando DeSoto Bridge (US 301/US 41) over the Manatee River, two primary diversion routes were identified:

Diversion Route 6A – the westerly of the two possible diversion routes, and shown as the red route in Figure A-6. From north to south, the diversion route segments include 10th Street West,

from US 301/US 41 to Business US 41; Business US 41 across the Green Bridge to State Road 64 eastbound; and State Road 64 eastbound to return to US 301/US 41.

A key limitation of this route is the existing recurring levels of congestion along the corridor. This route includes turns from single lanes in both downtown Palmetto and downtown Bradenton. However, all turns do occur at signalized intersections. Pavement conditions along the corridor are good, and no structural limitations were identified.

Diversion Route 6B – the easterly of the two possible diversion routes, and shown as the green route in Figure A6. From north to south, the diversion route segments include US 301 to the east, from US 41 to Interstate 75; Interstate 75 from US 301 to State Road 64; and State Road 64 from Interstate 75 to return to US 41/US 301. Pavement conditions along this corridor are good, and no structural limitations were identified.

Input from Stakeholder Meetings

Initially, only Diversion Route 6A had been identified, assuming that the Interstate 75 river crossing would be too far away for local diversion; however, stakeholder input indicated that Diversion Route 6A was not feasible due to the recurring level of congestion. The consensus was that the Interstate 75 bridge over the Manatee River would provide the primary alternate route for a closure on the DeSoto Bridge.

Table 6 – Diversion Scenario 6

		Route Segment	Laneage	Length (miles)	Signalized Intersections	AADT (vpd)	Directional		
							Peak Hr Vol (vph)	Peak Hr Cap (vph)	Excess Cap (vph)
	Segment Being Closed	*US 41 / US 301 (DeSoto Bridge)* From: *10th Street/ US 301* To: *SR 64*	4D	3.2	6	54,000	2,697	2,000	-697
Diversion Route 6A	Diversion Route Segment	*10th Street West* From: *US 41* To: *Bus US 41*	2U	0.7	1	22,000	1,099	1,630	531
	Diversion Route Segment	*Bus US 41* From: *10th Street West* To: *SR 64*	4D	1.9	5	31,000	1,548	1,630	82
						EB / WB	EB / WB	EB / WB	EB / WB
	Diversion Route Segment	*SR 64* From: *Bus US 41* To: *US 41 / US 301*	3L / 3L	0.5	2	17,500 / 19,500	1,575 / 1,755	3,020 / 3,020	1,445 / 1,265
Diversion Route 6B	Diversion Route Segment	*US 301* From: *US 41* To: *Interstate 75*	4D	3.6	9	32,000	1,642	1,740	98
	Diversion Route Segment	*Interstate 75* From: *US 301* To: *SR 64*	6FWY	3.7	-	93,500	4,544	5,500	956
	Diversion Route Segment	*SR 64* From: *Interstate 75* To: *15th St E*	6D	4.7	10	43,500	2,185	3,020	835
						EB / WB	EB / WB	EB / WB	EB / WB
	Diversion Route Segment	*SR 64* From: *15th St E* To: *US 41 / US 301*	3L / 3L	1.0	3	17,500 / 19,500	1,575 / 1,755	3,020 / 3,020	1,445 / 1,265

Recommendations

Northbound Diversion – for a closure of the northbound lanes of the Hernando DeSoto Bridge (US 41/US 301), the recommended diversion route would be Route 6B. Northbound motorists would be directed to turn east onto State Road 64, which they would follow until reaching Interstate 75. At that point, motorists could go northbound to cross the river and reach their destination via local knowledge.

Southbound Diversion – for a closure of the southbound lanes of the Hernando DeSoto Bridge (US 41/US 301), the recommended diversion route would be Route 6B. Southbound motorists would be directed to exit US 41 and then east along US 301 to Interstate 75, where they could turn south to cross the Manatee River.

Bidirectional Diversion – for a bidirectional closure of the Hernando DeSoto Bridge (US 41/US 301), the recommended diversion route would be the combined Route 6B.

Scenario 7 – Closure of the Green Bridge (Business US 41) over the Manatee River

The Green Bridge (Business US 41) over the Manatee River is a four-lane divided roadway, approximately 4000 feet in length from shore to shore. It currently carries approximately 31,000 vehicles per day. The area of closure and available alternate diversion routes are shown in Figure A-7, in the Appendix, and a summary of segment characteristics is shown in Table 7.

Identification of Available Alternate Routes

For a closure of the Green Bridge (Business US 41) over the Manatee River, two primary diversion routes were identified:

Diversion Route 7A –the westerly of the two identified routes, this is shown as the red route in Figure A-7. From north to south, the diversion route segments would include 10th Street east from Business US 41 to US 301; US 301/US 41 south across the Hernando DeSoto Bridge to State Road 64; then State Road 64 westbound to Business US 41.

A key limitation of this route is the existing recurring levels of congestion along the corridor. This route includes turns in both downtown Palmetto and downtown Bradenton. However, all turns do occur at signalized intersections. The pavement conditions along the corridor are good, and no structural limitations were identified.

Diversion Route 7B – the easterly of the two identified routes, this is shown as the green route in Figure A-7. From north to south, the diversion route segments would include 10th Street/US 301 to the east from Business US 41 to Interstate 75; Interstate 75 from US 301 to State Road 64; and State Road 64 from Interstate 75 to return to Business US 41. Pavement conditions along this corridor are good, and no structural limitations were identified.

Table 7 – Diversion Scenario 7

		Route Segment	Laneage	Length (miles)	Signalized Intersections	AADT (vpd)	Directional Peak Hr Vol (vph)	Directional Peak Hr Cap (vph)	Directional Excess Cap (vph)
	Segment Being Closed	*Bus US 41 (Green Bridge)* From: *10th Street West* To: *SR 64*	4D	1.9	5	31,000	1,548	1,630	82
Diversion Route 7A	Diversion Route Segment	*10th Street West* From: *Bus US 41* To: *US 41 / US 301*	2U	0.7	1	22,000	1,099	1,630	531
	Diversion Route Segment	*US 41 / US 301* From: *10th Street/ US 301* To: *SR 64*	4D	3.2	6	54,000	2,697	2,000	-697
						EB / WB	EB / WB	EB / WB	EB / WB
	Diversion Route Segment	*SR 64* From: *Bus US 41* To: *US 41 / US 301*	3L / 3L	0.5	2	17,500 / 19,500	1,575 / 1,755	3,020 / 3,020	1,445 / 1,265
Diversion Route 7B	Diversion Route Segment	*10th Street West* From: *Bus US 41* To: *US 41 / US 301*	2U	0.7	1	22,000	1,099	1,630	531
	Diversion Route Segment	*US 301* From: *US 41* To: *Interstate 75*	4D	3.6	9	32,000	1,642	1,740	98
	Diversion Route Segment	*Interstate 75* From: *US 301* To: *SR 64*	6FWY	3.7	-	93,500	4,544	5,500	956
	Diversion Route Segment	*SR 64* From: *Interstate 75* To: *15th St E*	6D	4.7	10	43,500	2,185	3,020	835
						EB / WB	EB / WB	EB / WB	EB / WB
	Diversion Route Segment	*SR 64* From: *15th St E* To: *US 41 / US 301*	3L / 3L	1.0	3	17,500 / 19,500	1,575 / 1,755	3,020 / 3,020	1,445 / 1,265

Input from Stakeholder Meetings

Initially, only Diversion Route 7A had been identified, assuming that the Interstate 75 river crossing would be too far away for local diversion; however, stakeholder input indicated that Diversion Route 7A was not feasible due to the recurring level of congestion. The consensus was that the Interstate 75 bridge over the Manatee River would provide the primary alternate route for a closure of the Green Bridge.

Recommendations

Northbound Diversion – for a closure of the northbound Green Bridge (Business US 41), the recommended diversion route would be Diversion Route 7B. Northbound motorists would be directed to turn east onto State Road 64, which they would follow until reaching Interstate 75. At that point, motorists could go northbound to cross the river and reach their destination via local knowledge.

Southbound Diversion – for a closure of the southbound Green Bridge (Business US 41), the recommended diversion route would be Diversion Route 7B. Southbound motorists would be

directed to turn east along 10th Street/US 301 to Interstate 75, where they could turn south to cross the Manatee River.

Bidirectional Diversion – for a bidirectional closure of the Green Bridge (Business US 41), the recommended diversion route would be the combined Diversion Route 7B.

Hurricane Evacuation Route Timing

Unlike the incident management diversion routes to be developed for this project, the routes for the evacuation of barrier island residents in the event of an approaching tropical storm or hurricane are predefined by Manatee County Emergency Management and Public Works / Transportation. Two primary routes have been identified – along State Road 64 from Anna Maria Island to Interstate 75, and along State Road 684 and State Road 70 to Interstate 75, as shown in Figure A-8 in the Appendix. Characteristics of the routes are shown in Table 8.

The signal timing for these diversion routes will be developed to provide for a predominantly eastbound flow to ensure the capacity necessary to accommodate the demand coming from the beaches and mainland low lying areas.

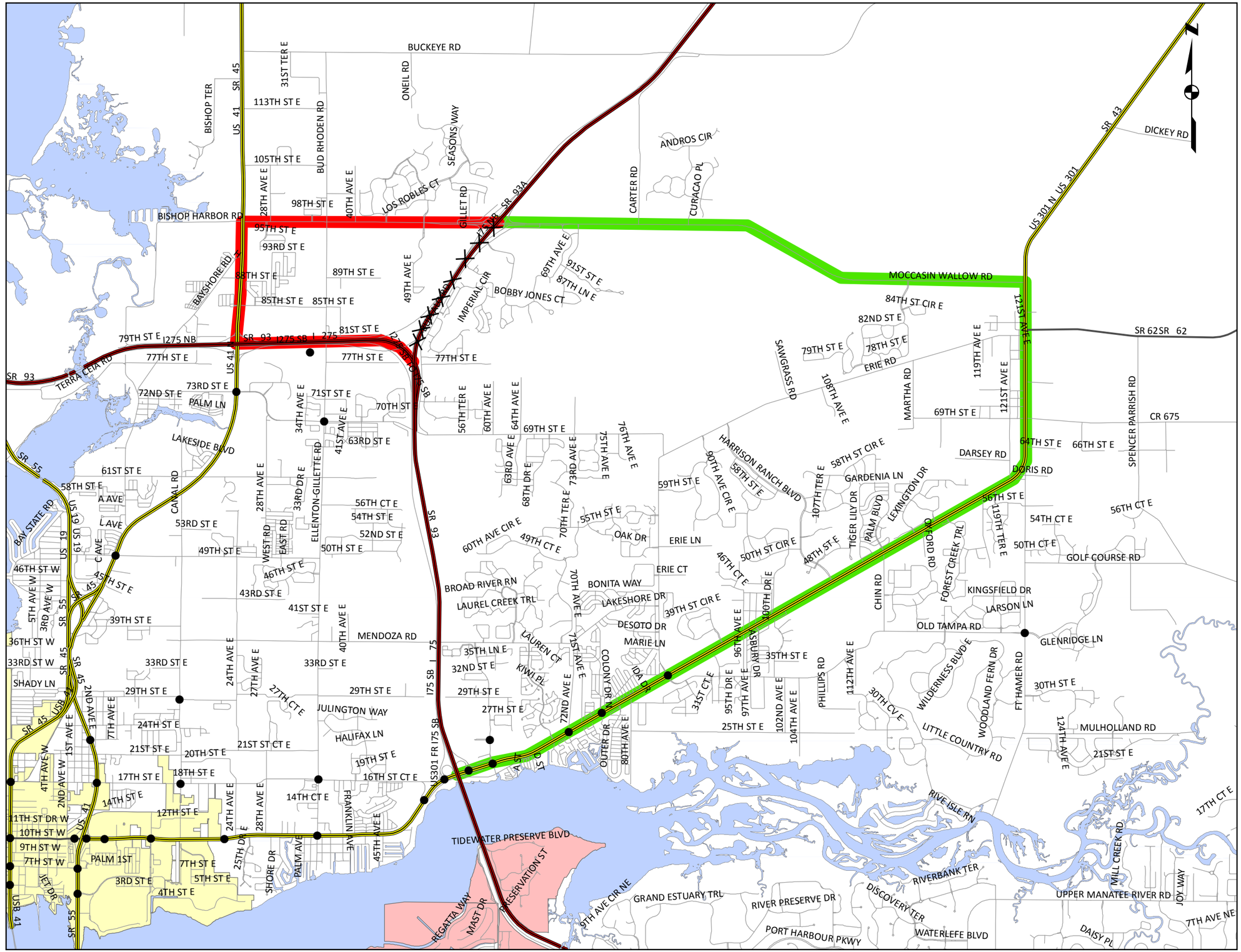
Table 8 – Hurricane Evacuation Routes

		Route Segment	Laneage	Length (miles)	Signalized Intersections	AADT (vpd)	Directional		
							Peak Hr Vol (vph)	Peak Hr Cap (vph)	Excess Cap (vph)
Northern Evacuation Route	Evacuation Route Segment	*SR 64* From: *E Bay Dr* To: *Palma Sola Blvd*	2U	3.9	1	17,500	849	880	31
	Evacuation Route Segment	*SR 64* From: *Palma Sola Blvd* To: *43rd St W*	4D	2.4	6	39,500	1,941	2000	59
	Evacuation Route Segment	*SR 64* From: *43rd St W* To: *15th St W*	5U	1.7	4	44,000	2,162	2100	-62
						EB / WB	EB / WB	EB / WB	EB / WB
	Evacuation Route Segment	*SR 64* From: *15th St W* To: *US 41*	3L	0.8	7	21,000 / 20,000	1,890 / 1,800	3,020 / 3,020	1,130 / 1,220
	Evacuation Route Segment	*SR 64* From: *US 41* To: *15th St E*	3L / 3L	1.0	3	17,500 / 19,500	1,575 / 1,755	3,020 / 3,020	1,445 / 1,265
	Evacuation Route Segment	*SR 64* From: *15th St E* To: *Interstate 75*	6D	4.7	10	43,500	2,185	3,020	835
Southern Evacuation Route	Evacuation Route Segment	*SR 684* From: *Gulf Dr* To: *127th St W*	2U	0.7	1	13,000	631	880	249
	Evacuation Route Segment	*SR 684* From: *127th St W* To: *119th St W*	3U	0.5	1	22,000	1,067	788	-280
	Evacuation Route Segment	*SR 684* From: *119th St W* To: *Palma Sola Blvd*	5U	2.0	2	22,000	1,067	2100	1033
	Evacuation Route Segment	*SR 684* From: *Palma Sola Blvd* To: *26th St W*	4D	3.7	11	51,500	2,531	2000	-531
	Evacuation Route Segment	*SR 684* From: *26th St W* To: *9th St W*	6D	1.0	4	51,500	2,531	3020	489
	Evacuation Route Segment	*SR 684* From: *9th St W* To: *US 41*	4D	0.4	2	41,000	2,048	1630	-418
	Evacuation Route Segment	*SR 70* From: *US 41* To: *Interstate 75*	6D	4.4	11	61,000	2,954	3,020	66

APPENDIX

Figures A-1 through A-8

Figure A - 1



LEGEND

Routes

Diversion 1A

Diversion 1B

Closed Section

Traffic Signals

Manatee County

Revised June 26, 2013

0 0.5 1 2

Miles

MANATEE COUNTY FLORIDA

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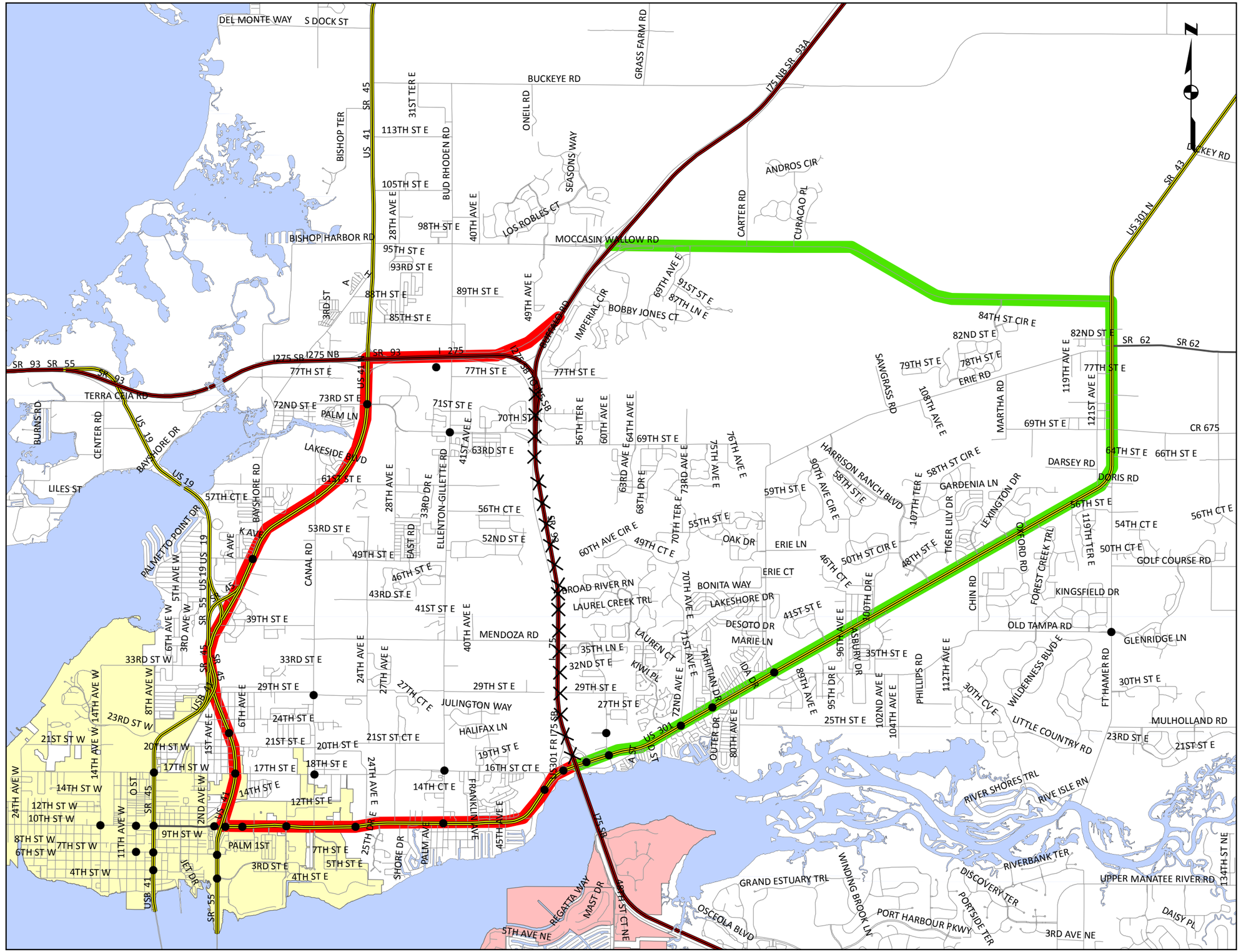
Manatee County
Diversion Routes
Scenario 1

Figure A - 2



LEGEND

Routes

- Diversion 2A
- Diversion 2B
- Closed Section

Traffic Signals

- Manatee County

Revised June 26, 2013

MANATEE COUNTY FLORIDA

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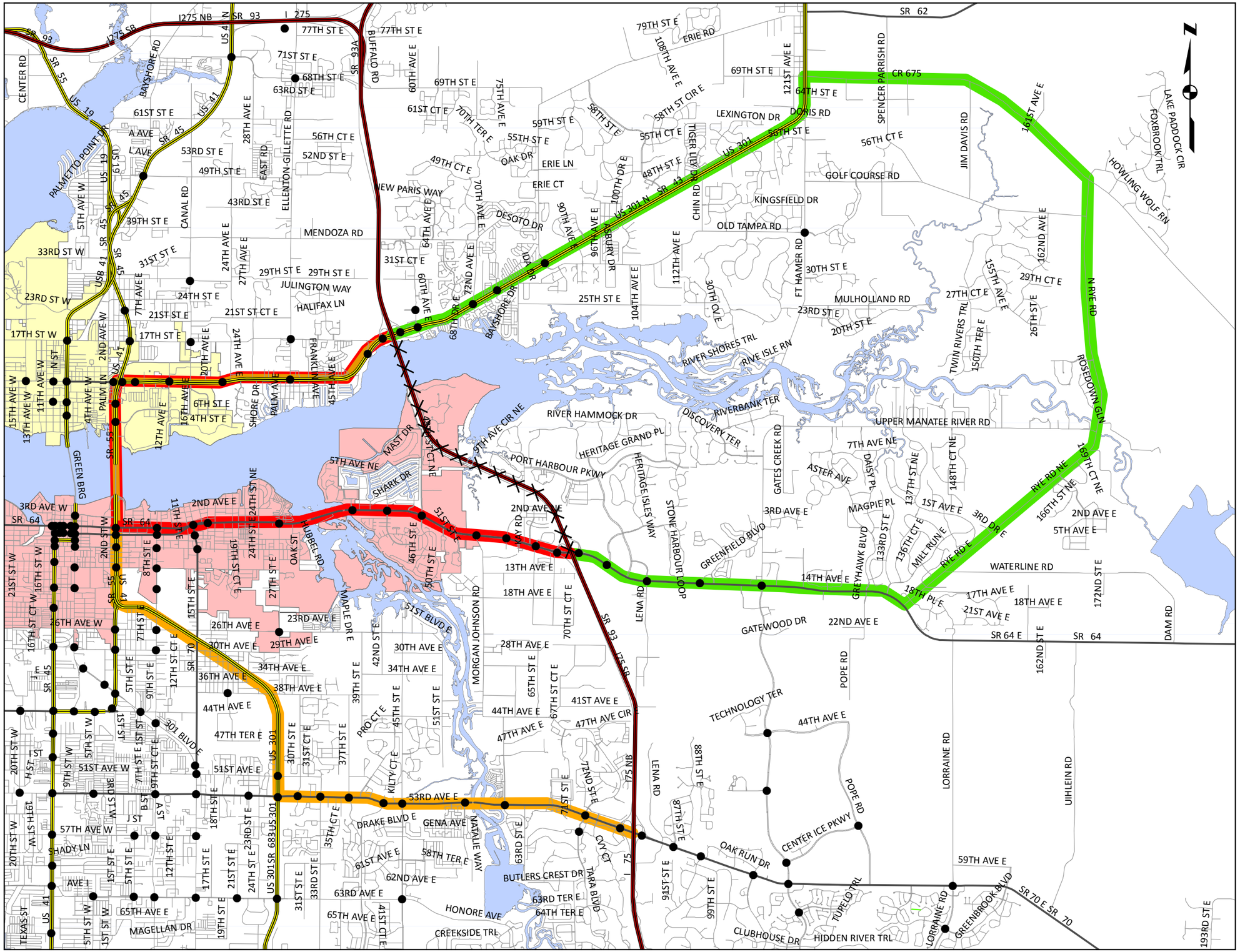
Manatee County
Diversion Routes
Scenario 2

Figure A - 3



LEGEND

Routes

- Diversion 3A
- Diversion 3B
- Diversion 3C
- Closed Section

Traffic Signals

- Manatee County

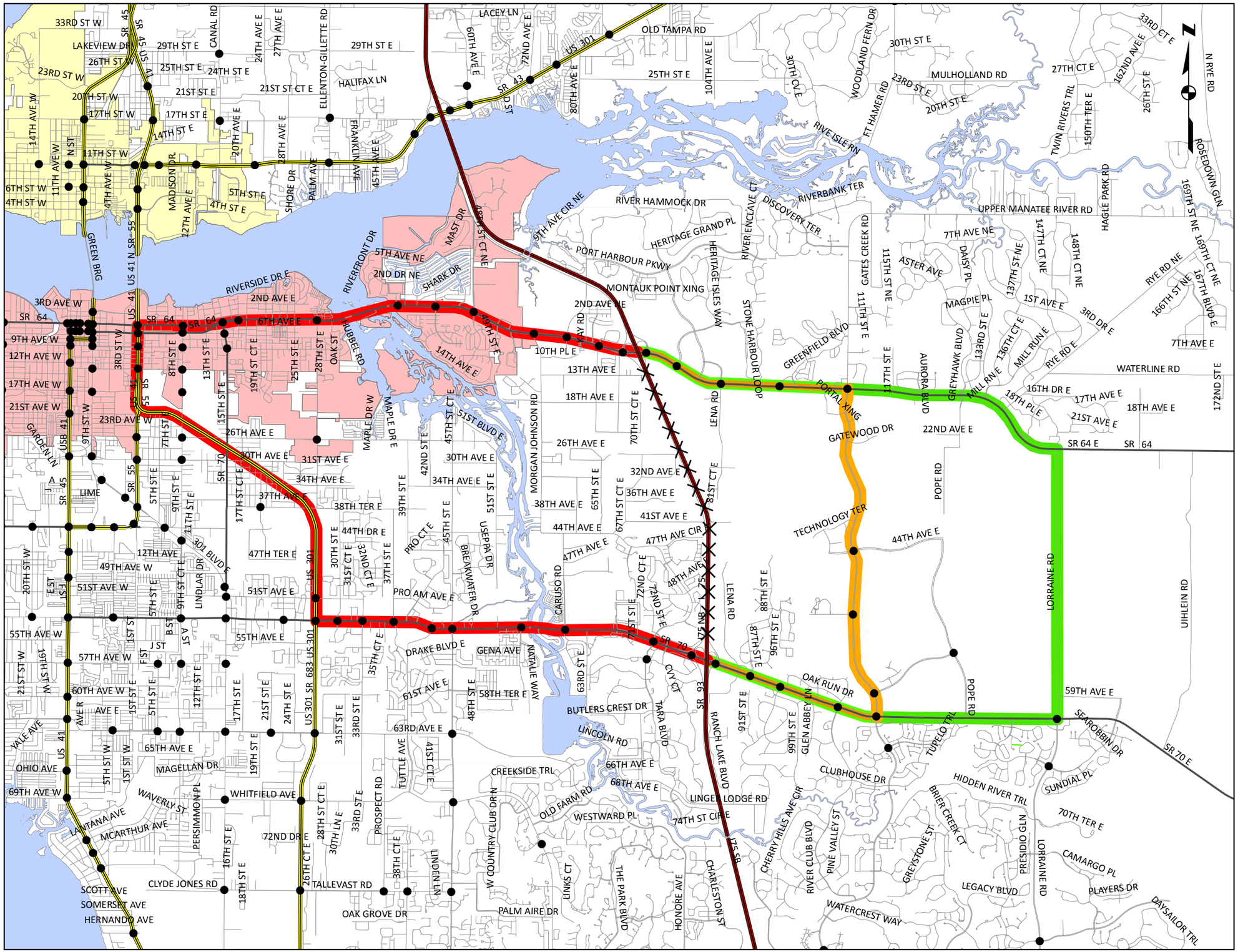
Revised June 26, 2013

MANATEE COUNTY FLORIDA

Albeck Gerken, Inc.
Transportation Engineers

Manatee County
Diversion Routes
Scenario 3

Figure A - 4



MANATEE COUNTY FLORIDA

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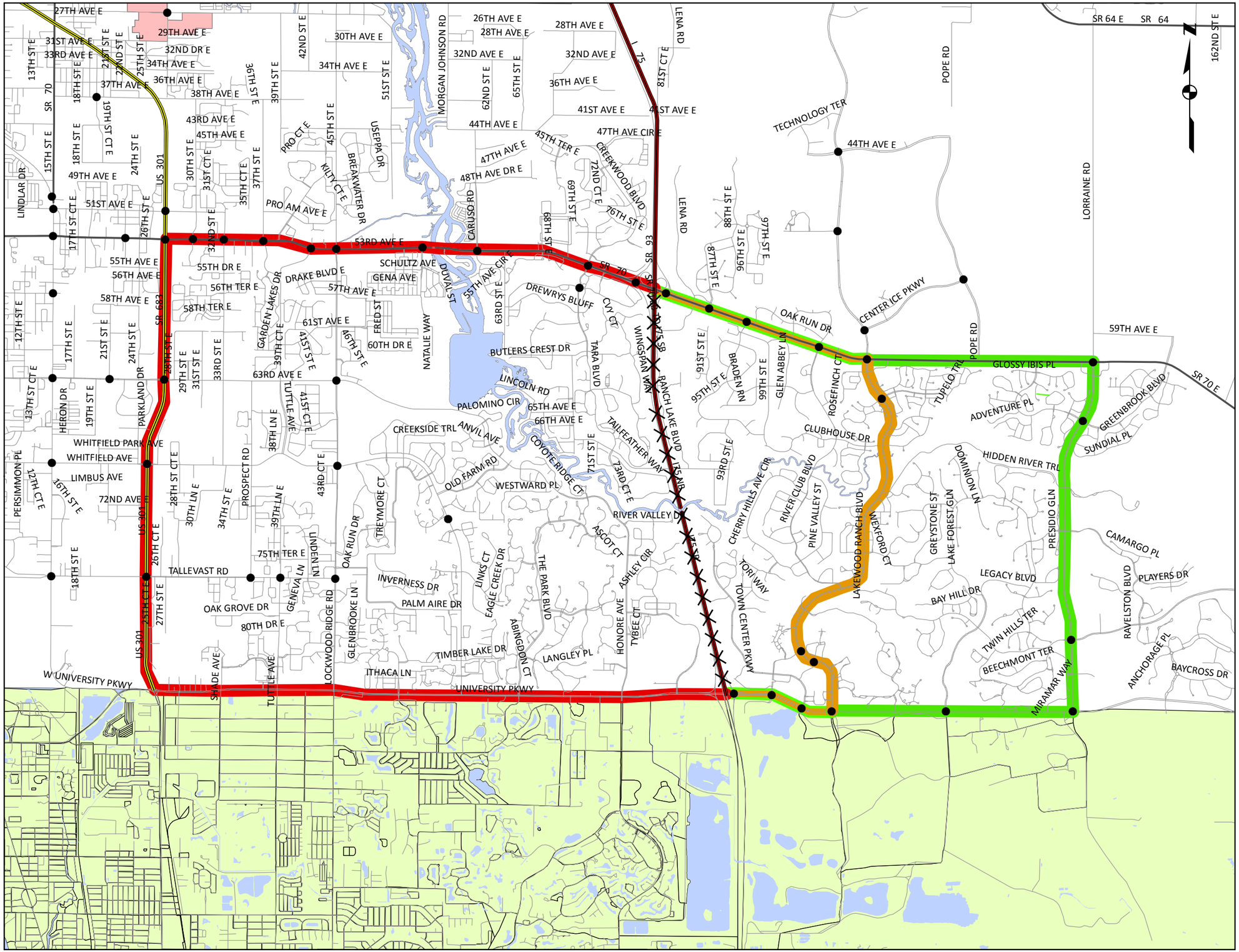
Transportation Engineers

Manatee County
Diversion Routes
Scenario 4

Figure A - 5



LEGEND

Routes

- Diversion 5A
- Diversion 5B
- Diversion 5C
- Closed Section

Traffic Signals

- Manatee County

Revised June 26, 2013

0 0.5 1 2

Miles

MANATEE COUNTY FLORIDA

Albeck Gerken, Inc.
Transportation Engineers

Manatee County
Diversion Routes
Scenario 5

Figure A - 6

LEGEND

Routes

Diversion 6A

Diversion 6B

Closed Section

Traffic Signals

Manatee County

Revised June 26, 2013

0 0.25 0.5 1 1.5

Miles

MANATEE COUNTY FLORIDA

Albeck Gerken, Inc.
Transportation Engineers

Manatee County
Diversion Routes
Scenario 6

Figure A - 7

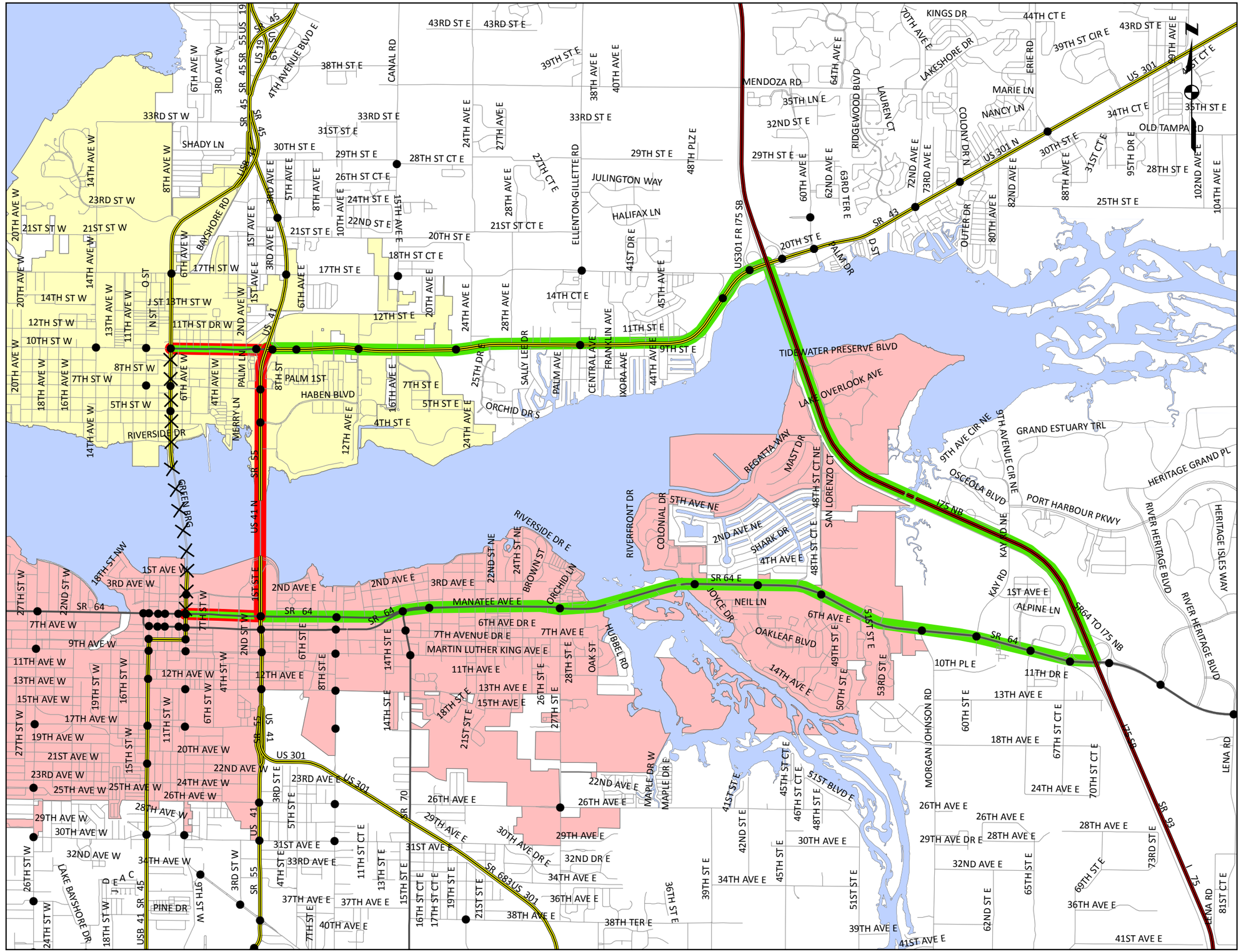

LEGEND
Routes
Diversion 7A
Diversion 7B
Closed Section
Traffic Signals
Manatee County
Revised June 26, 2013
0 0.25 0.5 1 1.5
Miles
N
MANATEE COUNTY
FLORIDA
Albeck Gerken, Inc.
Transportation Engineers
Manatee County
Diversion Routes
Scenario 7

Figure A - 8

LEGEND

Routes

Northern Evacuation

Southern Evacuation

Traffic Signals

Manatee County

Revised June 26, 2013

0 0.5 1 2

Miles

MANATEE COUNTY FLORIDA

Albeck Gerken, Inc.
Transportation Engineers

Manatee County
Northern & Southern
Evacuation Routes