3.0 INDIVIDUAL ALTERNATIVE ANALYSES

3.1 ALTERNATIVE 1

3.1.1 Alternative Description

The No-Action Alternative is the current roadway network including those improvements which will be constructed within five (5) years (2015 – 2019). This includes the FDOT's planned expansion of SR 54 to 6 lanes between the Suncoast Parkway and US 41.

3.1.2 Construction, Right-of-Way, and Mitigation Costs

There would be no construction, right-of-way or mitigation costs incurred by the No Action Alternative.

3.1.3 Traffic Assessment

No mobility improvement would result with Alternative 1. The TBRPM assessment determined Average Travel Speed within the Study Area will be 18.9 mph and the weighted Volume to Capacity ratio will be 1.110 without adding the additional lanes proposed by the LRTP. The slower the average travel speed and the higher the volume to capacity ratio, the lower the quality of service for individual vehicles and higher congestion levels result.

There would be no improvement in Vehicle Miles Traveled (VMT), Vehicle Hours of Travel (VHT), Speed, Volume to Capacity Ratio (Congestion) or the number of Crashes per day. Over time mobility will worsen as the area develops and the population grows.

There would be no cost savings associated with reduced travel time, no savings in fuel costs and no reduction of carbon emissions and greenhouse gases.

3.1.4 Hurricane Evacuation

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, the No Action Alternative is shown to require 23.4 hours to essentially complete evacuation of the Coastal Population. For purposes of this evaluation, evacuation was considered "essentially complete" when 99% of the evacuating population have traveled outside of the evacuation zone.

A consistent assumption made for the analysis was that up to 12 hours is required for all evacuees to leave their homes in all scenarios. In the traffic model, the last evacuees leave their driveways during the 30-minute time period from 11.5 to 12 hours from the time of the evacuation order. Thus the additional time beyond 12 hours represents the time needed to clear the evacuation zone. As stated above, the No Action condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours. This alternative will not improve evacuation time for the coastal population.

3.1.5 Logistics

Obstacles to Construction:

This alternative is inconsistent with Pasco County's Long Range Transportation Plan which calls for four additional lanes in central Pasco County. As there is no construction associated with the No Action alternative, no permit from FDOT would be required.

Correspondence from FDOT provided in Attachment E indicates "an additional route, Ridge Road, would be necessary to fully accommodate the Pasco residents in the coastal communities" for both mobility and evacuation.

Impacts to Residences and Businesses:

No residences or businesses would be impacted by the No Action alternative.

3.1.6 Environmental Impacts

There would be no impacts, direct or indirect, to wetlands, streams, habitat, wildlife, or plant species as a result of the No Action alternative.

3.1.7 Archaeological/Historical Impacts

No direct or indirect impacts to archaeological sites or historic structures would result with this alternative.

3.1.8 Summary

Alternative 1, the No Action alternative, will not result in improved mobility nor will it reduce the time to evacuate the coastal population. Therefore, the project purpose would not be met by the No Action Alternative. Hurricane evacuation from the coastal evacuation zone would continue to worsen as the area develops and the population grows. Likewise, Average Travel Speed, Vehicle Miles of Travel, the weighted Volume to Capacity Ratio (congestion level), and the number of crashes per year will not be improved and will continue to worsen over time as the area develops and the population grows.

No construction, right-of-way or mitigation costs would be incurred by Alternative 1.

Alternative 1 is inconsistent with the Long Range Transportation Plan and is, therefore, not supported by the FDOT.

3.2 ALTERNATIVE 2

3.2.1 Alternative Description

Alternative 2 is the at grade extension of existing Ridge Road to US 41 constructing 4 lanes both west and east of the Suncoast Parkway. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

This alternative is predominantly a limited access roadway approximately 8.9 miles in length. Within the western-most 1.5 miles, adjacent to existing development, there are provisions for two commercial driveway connections and two residential street connections. Other than these connections, there will be no additional access in the section of the proposed road west of the Suncoast Parkway. Immediately east of the Suncoast Parkway interchange there is a proposed driveway connection to a commercial parcel. This connection will not provide access to undeveloped land other than the commercial parcel. Consistent with the 2040 Long Range Transportation Plan (LRTP), future north-south roadways between the Suncoast and US 41 (Sunlake Road and Asbel Road) will cross Ridge Road Extension by overpasses without connections (see Attachment A, Appendix A-3).

Pasco County was a participant in the partnering meetings held during the design and permitting for the Suncoast Parkway. These meetings included all the agencies responsible for the permitting of the Suncoast including the USACE. As a result of guidance received at these meetings Pasco County developed alternative routes to extend Ridge Road that would intersect with the future interchange (See Attachment A, Appendix A-4). The location of the future interchange was coordinated with the Turnpike Enterprise and agencies to accommodate design requirements (allowable window) for spacing between the interchange and adjacent toll facilities. The Suncoast Parkway and the overpass for the future interchange with the Ridge Road Extension were subsequently constructed. Alternative 2 is one of the alternatives that pass through the existing overpass. Completion of the interchange by constructing ramps to provide access to and from the Ridge Road Extension and the Suncoast are part of the improvements included with this alternative.

Pasco County also entered into agreements with both the Southwest Florida Water Management District (SWFWMD) and the FDOT to identify and retain the necessary right-of-way for the Ridge Road Extension through the Serenova Preserve that was created as part of the wetlands mitigation plan for the Suncoast Parkway. (See Attachment A, Appendices A-1 and A-2.)

3.2.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is simply an estimate to use for comparison purposes. Alternative 2's Construction Cost is estimated at $76,806,000; Right-of-Way Cost is estimated at $22,405,000, and Compensatory Mitigation Costs are estimated at $3,240,000. The total estimated cost for Alternative 2 is $102,451,000. (See Table 1-1)

3.2.3 Traffic Assessment

Extending Ridge Road to the east from its current terminus to intersect with the Suncoast Parkway and US 41 has been a part of Pasco County's Long Range Transportation plan since 1995. This extension would reduce travel time and distance caused by the current configuration of a four lane east-west roadway ending at the intersection with two lane north-south roadways that result in north-south travel of about 5 miles or more to get to the nearest east-west arterial to be able to continue east-west travel within the County.

The mobility provided by Alternative 2 is demonstrated in the traffic assessment (attached as Attachment C) increasing Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.8 miles per hour, a 10% increase.

Average travel speed is a measure that consistently is reported by the Florida Standard Urban Travel Model Structure (FSUTMS), of which the Tampa Bay Regional Planning Model (TBRPM) is the local adaptation. This is one of many measures considered by transportation planners as they develop their respective transportation network plans – higher speeds indicating delivery of better quality of service and better mobility. This measure is usually reported on a county-wide basis; however, in this case it is being reported for the study area. Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads.

Even though the improved road network attracted an additional 73,859 vehicle-miles of travel per day, the increase in average travel speed still resulted in reduced overall travel time by 1,859 vehicle-hours per day. The savings of 1,859 vehicle-hours per day translates to an estimated cost savings in time along of roughly $11.1 million per year. This does not consider other travel time reductions outside of the study network from where the additional travel was attracted. The value of time saved assumes a value of $12.5/hour/person and 1.31 persons per vehicle. Additional benefits are also realized, because this estimate does not include savings in fuel costs or a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 2 increased Vehicles Miles Traveled (VMT) by 8%, reduced Vehicle Hours of Travel (VHT) by 2%, reduced the volume to capacity ratio (v:c) by 7% (reducing congestion), and reduced the number of crashes per day by 2%, a reduction of 62 crashes per year.

3.2.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, the No Action Alternative is shown to require 23.4 hours to essentially complete the evacuation of the Coastal Population. For purposes of this evaluation, evacuation was considered "essentially complete" when 99% of the evacuating population have traveled outside of the evacuation zone. The roadway improvement under Alternative 2 is shown to result in 16.8 hours to essentially complete the evacuation of this same population. This is a 6.6 hour reduction in evacuation time from the Coastal Area.

A consistent assumption made for the analysis was that up to 12 hours is required for all evacuees to leave their homes in all scenarios. In the traffic model, the last evacuees leave their driveways during the 30-minute time period from 11.5 to 12 hours from the time of the evacuation order. Thus, the additional time beyond 12 hours represents the time needed to clear the evacuation zone. As indicated above, in the "No Action" condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in Alternative 2 condition the same occurred after 16.8 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(16.8-12)/(23.4-12)) under the model which recognizes the delay in some evacuees leaving their homes. Using this calculation, a 42.5 percent improvement would occur with Alternative 2 compared to the "No Action" alternative.

3.2.5 Logistics

Obstacles to Construction:

This alternative is consistent with Pasco County's Long Range Transportation Plan and does not require a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates "an additional route, Ridge Road, would be necessary to fully accommodate the Pasco residents in the coastal communities" for both mobility and evacuation.

Impacts to Residences and Businesses:

The assessment of impacts to residences and businesses can be found in Attachment E. Alternative 2 was shown to result in the acquisition of twenty two (22) residences and relocation of the families living there. These homes are located in a subdivision just to the west of US 41. This subdivision did not exist at the time that permitting began. In addition to the relocation of the existing homes, 85 vacant lots will be taken. This alignment goes right through this platted neighborhood, bisecting internal residential roadways. Because Alternative 2 is a limited access facility, access to much of this subdivision would have to be replaced by constructing a bridge

for a neighborhood road to allow traffic to go over the RRE. This cost was not included in the construction cost estimate for Alternative 2.

No businesses were found to be impacted by this alternative.

3.2.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, streams, habitat impacts and wildlife and plant species impacts likely to result from each alternative.

Wetland Impacts:

Alternative 2 is projected to have a direct impact on 21.6 acres of wetlands. Of these 19.0 acres are Palustrine Forested and 2.6 acres are Palustrine Emergent. Additionally 1.2 acres of surface waters are estimated to potentially be impacted. Alternative 2 is projected to have 192.9 acres of indirect wetland impacts within 300' on both sides of the alignment.

Overall, wetlands along this alternative are moderate in quality; however, quality varies with location. West of the Serenova Preserve, the wetlands are typically low quality due to hydrological alterations, abundant nuisance species, and low quality surrounding uplands. Within the Serenova Preserve, the wetlands are generally high quality. East of the Serenova Preserve and west of the CSX railway, the wetlands are moderate quality as their hydrology has some alteration such as ditching, and most of the surrounding uplands have been converted to pine plantation. East of the CSX railway, the wetlands are moderate in quality as many have been incorporated into a residential stormwater management system, most of the surrounding uplands have been converted to residential, and reduced water quality is encouraging the proliferation of nuisance species especially along wetland edges.

With the exception of the crossing of the Pithlachascotee, the Palustrine Forested wetlands are isolated to semi-isolated systems which sometimes have narrow stringers (narrow bands of cypress, often in border areas of wet prairie or along ditches) that connect them. The wetlands are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, sawgrass, lizard's tail, and a variety of sedges. Hydroperiods are variable but typically longer than the hydroperiods in the Palustrine Emergent wetlands.

A second form of Palustrine Forest wetland occurs in riverine settings along streams. The palustrine forested wetland along the Pithlachascotee is a riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress.

Several types of Palustrine Emergent wetlands occur along this alignment. West of the Suncoast Parkway, the Palustrine Emergent wetlands are generally referred to as shallow wet prairies or savannas that are on the fringes of forested wetlands. Some form shallow connectors between forested wetlands when water levels are high. They are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, nutrushes and yellow-eyed-grasses. Most have a characteristic suite of small shrubs and herbaceous plants including water toothleaf, St. John's worts, meadow-beauties, and rosegentians. These wetlands typically have short hydroperiods. All provide foraging habitat for listed wading birds during periods of high water.

East of the Suncoast Parkway there is one Palustrine Emergent wetland that has a long hydroperiod and relatively deep water. This system is surrounded by Palustrine forest (cypress swamp) and is dominated by floating-leaved emergents: white water lily, and spatterdock.

The direct impacts to open surface water are to stormwater management ponds in a residential development and borrow areas. In the area of the development, direct impacts to wetlands have been avoided by routing of the road through uplands (now developed). Indirect impacts to wetlands will occur, and the roadway design could cause further indirect impacts wetlands that are currently incorporated into the surface water management system for the development.

Depending on water levels, all of the wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat function, but in addition, these floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

Stream Impacts:

The alignment for Alternative 2 results in one crossing over the Pithlachascotee River resulting in an estimated 148 linear feet of stream impacts. Since the crossing will be bridges, these will be indirect impacts. At the point of crossing, the stream is small and intermittent with a poorly defined channel. The stream is bordered on either side by the Palustrine Forested wetlands described above. Bridging will extend over the entire wetland floodplain associated with the river crossing. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and

largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water.

This alignment does not impact Five-Mile Creek.

3.2.7 Other Environmental Impacts

Wildlife Impacts:

Potential effects on listed wildlife species were evaluated by intensive sampling of the alignments that pass through the Serenova Preserve and adjacent undeveloped lands for federally listed species with potential to occur in Pasco County, and regional knowledge of the Cardno staff of the listed species that occur or potentially occur in the Study Area and the habitat requirements for these species. Alternative 2 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Low impact. The impact to the eastern indigo snake will be minimized by providing wildlife crossings, excluding the snake from the roadway within the Serenova Preserve, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat, and the wetland mitigation to be provided for the project should functionally replace those losses. The floodplain management ponds and stormwater treatment ponds required by the ERP are expected to increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, due to loss of habitat in the roadway footprint. Potential impacts to gopher tortoise will be mitigated by relocating the tortoises prior to construction following FFWCC requirements. For other state listed species, Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading by a bridge, Low Impact could occur to the, state listed wading birds, pine snake, Sherman's fox squirrel, and black bear, which may lose some habitat due to construction. Species with Moderate potential for impact include Florida sandhill crane, Southeastern American Kestrel, Florida mouse, gopher frog, and short-tailed snake. The distinction between Low and Moderate depends on population levels and species habitat requirements. Potential impacts include road strikes, which will be minimized with appropriate fencing through the Serenova Preserve, direct vehicle strikes for species that can evade the fencing (e.g., Florida sandhill crane), habitat fragmentation (e.g., gopher frog), and roadway noise/disturbance. Appropriate habitat and adequate habitat connectivity via wildlife underpasses within the Serenova Preserve will be provided to maintain the populations. Roadway impacts are likely to have little effect on their population sizes. Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 2, and they will experience similar disturbances. The impact minimization and compensatory mitigation provided for listed species will similarly maintain appropriate habitat for these species.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred along this alignment. The impact potential was not set to None only because surveys were limited to the preferred alignment, and the species are poorly

studied. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction.

More detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 2 was estimated to directly impact approximately 108.9 acres of natural habitat of which approximately 87.3 acres are uplands and 21.6 are wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods, hardwood-conifer mixed forest, cypress, freshwater marsh, shrub and brushland, palmetto prairie and longleaf pine-xeric oak (sandhill). Other than direct impacts, the primary impact to habitats will likely be changes in land management, increased areas of ecotone habitat in forested areas and some habitat fragmentation. Habitat fragmentation will be largely mitigated by establishing wildlife corridors with appropriate habitat under the roadway. Most of the native upland habitats are fire-dependent, and the land managing agency is likely to have smoke issues that will require more careful planning and notification and may reduce its opportunities to burn near the road. Reduced fire frequency has the potential to reduce the value of natural habitats to wildlife populations, as discussed above. The scaled Integrated Wildlife Habitat Ranking System (IWRS) Comparative Score was 3.4 (the range for all alternatives was 0.5 to 3.4).

3.2.8 Archaeological/Historical Impacts

Archaeological/Historical impacts were measured by estimating the number of acres of archaeological and/or historical sites as identified in the Florida Master Site File within the Right-of-Way for each alternative. Alternative 2 was determined to potentially impact 31.6 acres of archaeological/historical sites. The type of potentially impacted resources, as identified from the Cultural Resource Roster provided by the Florida Division of Historical Resources, includes five previously recorded archaeological sites. There were no historical bridges, cemeteries, standing structures or resource groups within the limits of this alternative.

Within 300 feet on both sides of Alternative 2, it is estimated that 42.8 acres of indirect impacts to archaeological/historic resources could potentially occur.

A more detailed analysis will be conducted after a final alternative is identified.

3.2.9 Summary

Compared to the No Action Alternative, this alternative reduces time to evacuate the coastal population by 6.6 hours which is a 42.5% improvement compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 2 improves mobility by increasing Average Travel Speed by 10%; increasing Vehicle Miles of Travel by 8%; reducing Vehicle Hours of Travel by 2.0%; reducing the weighted Volume to Capacity Ratio (congestion level) by 7% and improving Safety by reducing crashes 2% per day, a reduction of 62 crashes per year within the Study Area.

The total cost for Alternative 2 is $102,451,000 which is $25,792,000 more than the cost of the proposed project, Alternative 5. This increased cost is due primarily to the cost to acquire right-of-way, none of which has been acquired east of the Suncoast Parkway, and the cost to acquire 22 homes, relocate families, and acquire 85 vacant lots. This alignment goes right through this platted neighborhood, bisecting internal residential roadways. Because Alternative 2 is a limited access facility, access to much of this subdivision would have to be replaced by constructing a bridge for a neighborhood road to allow traffic to go over the RRE. This cost was not included in the construction cost estimate for Alternative 2.

Alternative 2 does not have logistical or technical factors that make it unavailable or unobtainable by the applicant. This alternative is consistent with the Long Range Transportation Plan and is supported by the FDOT.

3.3 ALTERNATIVE 3

3.3.1 Alternative Description

Alternative 3 is the at grade extension of existing Ridge Road to US 41 constructing 4 lanes both west and east of the Suncoast Parkway. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

This alternative is predominantly a limited access roadway approximately 8.7 miles in length. Within the western-most 1.5 miles, adjacent to existing development, there are provisions for two commercial driveway connections and two residential street connections. Other than these connections, there will be no additional access in the section of the proposed road west of the Suncoast Parkway. Immediately east of the Suncoast Parkway interchange there is a proposed driveway connection to a commercial parcel. This connection will not provide access to undeveloped land other than the commercial parcel. Consistent with the 2040 LRTP, future north-south roadways between the Suncoast and US 41 (Sunlake Road and Asbel Road) will cross Ridge Road Extension by overpasses without connections (see Attachment A, Appendix A-3).

Pasco County was a participant in the partnering meetings held during the design and permitting for the Suncoast Parkway. These meetings included all the agencies responsible for the permitting of the Suncoast including the USACE. As a result of guidance received at these meetings Pasco County developed alternative routes to extend Ridge Road that would intersect with the future interchange (See Attachment A, Appendix A-4). The location of the future interchange was coordinated with the Turnpike Enterprise and agencies to accommodate design requirements (allowable window) for spacing between the interchange and adjacent toll facilities. The Suncoast Parkway and the overpass for the future interchange with the Ridge Road Extension were subsequently constructed. Alternative 3 is one of the alternatives that passes through the existing overpass. Completion of the interchange by constructing ramps to provide access to and from the Ridge Road Extension and the Suncoast is part of the improvements included with this alternative.

Pasco County also entered into agreements with both the SWFWMD and the FDOT to identify and retain the necessary right-of-way for the Ridge Road Extension through the Serenova preserve that was created as part of the wetlands mitigation plan for the Suncoast Parkway. (See Attachment A, Appendices A-1 and A-2.)

3.3.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final

costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 3's Construction Cost is estimated at $75,713,000; Right-of-Way Cost is estimated at $511,000, and Compensatory Mitigation Costs are estimated at $4,065,000. The total estimated cost for Alternative 3 is $80,289,000. (See Table 1-1)

3.3.3 Traffic Assessment

The improved mobility provided by Alternative 3 is demonstrated in the traffic assessment (Attachment C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.8 miles per hour, a 10% increase.

Average travel speed is a measure that consistently is reported by the Florida Standard Urban Travel Model Structure (FSUTMS), of which the Tampa Bay Regional Planning Model (TBRPM) is the local adaptation. This is one of many measures considered by transportation planners as they develop their respective transportation network plans – higher speeds indicating delivery of better quality of service and better mobility. This measure is usually reported on a county-wide basis; however, in this case it is being reported for the Study Area. Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads.

Even though the improved road network attracted an additional 73,859 vehicle-miles of travel per day, the increase in average travel speed still resulted in reduced overall travel time by 1,859 vehicle-hours per day. The savings of 1,859 vehicle-hours per day translates to an estimated cost savings in time along of roughly $11.1 million per year. This does not consider other travel time reductions outside of the study network from where the additional travel was attracted. The value of time saved assumes a value of $12.5/hour/person and 1.31 persons per vehicle. Additional benefits are also realized, because this estimate does not include savings in fuel costs or a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 3 increased Vehicles Miles Traveled (VMT) by 8%, reduced Vehicle Hours of Travel (VHT) by 2% reduced the volume to capacity ratio (v:c) by 7% (reducing congestion) and reduced the number of crashes per year by 2% per day, a reduction of 62 crashes per year.

3.3.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, the No Action Alternative is shown to require 23.4 hours to essentially complete the evacuation of the Coastal Population. For purposes of this evaluation, evacuation was considered "essentially complete" when 99% of the evacuating population have evacuated outside of the evacuation zone. The roadway improvement under Alternative 3 is shown to result in 16.8 hours to essentially complete the evacuation of this same population. This is a 6.6 hour reduction in evacuation time from the Coastal Area.

A consistent assumption made for the analysis was that up to 12 hours is required for all evacuees to leave their homes in all scenarios. In the traffic model, the last evacuees leave their driveways during the 30-minute time period from 11.5 to 12 hours from the time of the evacuation order. Thus, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in Alternative 3 condition the same occurred after 16.8 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(16.8-12)/(23.4-12)) under the model which recognizes the delay in some evacuees leaving their homes. Using this calculation, a 42.5 percent improvement would occur with Alternative 3 compared to the "No Action" alternative.

3.3.5 Logistics

Obstacles to Construction:

This alternative is consistent with Pasco County’s Long Range Transportation Plan and does not require a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates “an additional route, Ridge Road, would be necessary to fully accommodate the Pasco residents in the coastal communities” for both mobility and evacuation.

Impacts to Residences and Businesses:

The assessment of impacts to residences and businesses can be found in Attachment E. Alternative 3 was shown to result in no impacts to residences or businesses.

3.3.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, stream impacts, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetland Impacts:

Alternative 3 is projected to have a direct impact on 27.1 acres of wetlands. Of these, 21.2 acres are Palustrine Forested and 5.9 acres are Palustrine Emergent. Impacts to surface waters are estimated at 0.3 acres. Alternative 3 is projected to have a potential indirect impact on 206.6 acres of wetlands within 300’ of both sides of the alignment.

Overall, wetlands along this alternative are moderate in quality; however, quality varies with location. West of the Serenova Preserve, the wetlands are typically low quality due to hydrological alterations, abundant nuisance species, and low quality surrounding uplands Within the Serenova Preserve, the wetlands are generally high quality. East of the Serenova Preserve and west of the Five-Mile Creek crossing, the wetlands are moderate quality as their hydrology

has some alteration such as ditching, and most of the surrounding uplands have been converted to pine plantation. East of the creek, the wetlands are low in quality as many appear to have been dewatered by residential development to the north.

With the exception of the crossing of the Pithlachascotee, the Palustrine Forested wetlands are isolated to semi-isolated systems which sometimes have narrow stringers (narrow bands of cypress, often in border areas of wet prairie or along ditches) that connect them. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, sawgrass, lizard's tail, and a variety of sedges. Hydroperiods are variable but typically longer than the hydroperiods in the Palustrine Emergent wetlands.

A second form of Palustrine Forest wetland occurs in riverine settings along streams. The palustrine forested wetland along the Pithlachascotee are a riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress.

Several types of Palustrine Emergent wetlands occur along this alignment. West of the Suncoast Parkway, the Palustrine Emergent wetlands are generally referred to as shallow wet prairies or savannas that are on the fringes of forested wetlands. Some form shallow connectors between forested wetlands when water levels are high. They are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, nutrushes and yellow-eyed-grasses. Most have a characteristic suite of small shrubs and herbaceous plants including water toothleaf, St. John's worts, meadow-beauties, and rosegentians. These wetlands typically have short hydroperiods. All provide foraging habitat for listed wading birds during periods of high water.

East of the Suncoast Parkway there is one Palustrine Emergent wetland that has a long hydroperiod and relatively deep water. This system is surrounded by Palustrine forest (cypress swamp) and is dominated by floating-leaved emergents: white water lily, and spatterdock.

The direct surface water impacts are to borrow areas.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat function, but in addition, these floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

Stream Impacts:

There are two stream crossings for Alternative 3: The Pithlachascotee River and Five-Mile Creek with a total of 618 linear feet of impacts.

The alignment for Alternative 3 results in one crossing over the Pithlachascotee River resulting in an estimated 148 linear feet of impacts. Since the crossing will be bridges, these will be indirect impacts. At the point of the Pithlachascotee River crossing, the stream channel is poorly defined, small and intermittent. The stream is bordered on either side by the Palustrine Forested wetlands described above. Bridging will extend over the entire wetland floodplain associated with the river crossing. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water.

This alignment crosses Five-Mile Creek in an area where the creek has been substantially altered. It has been ditched since the late 1950s and the original Palustrine Forested wetland has been mostly cut. The channel is appropriately described as a shallow ditch. The alignment crosses at an angle, and impacts approximately 470 linear feet of the stream as measured along the ditch which is at an oblique angle to the direction of the road. The Five-Mile Creek will be routed through a culvert under the RRE. The same fish species are anticipated but with an emphasis on small fish such as mosquitofish. This portion of Five-Mile Creek is upstream of a former sand mine, and the stream rerouting that was done to make the stream bypass the old mine pits includes impediments to fish that might otherwise move upstream during periods of high water. Flow is intermittent.

3.3.7 Other Environmental Impacts

Wildlife Impacts:

Potential effects on listed wildlife species were evaluated by intensive sampling of the alignments pass through the Serenova Preserve and adjacent undeveloped lands for federally listed species with potential to occur in Pasco County, and regional knowledge of the Cardno staff of the listed species that occur or potentially occur in the Study Area and the habitat requirements for these species. Alternative 3 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Low impact. The impact to the eastern indigo snake will be minimized by providing wildlife crossings, excluding the snake from the roadway within the Serenova Preserve, and adhering to

USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat, and the wetland mitigation to be provided for the project should functionally replace those losses, while the floodplain management ponds and stormwater treatment ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, and due to loss of habitat in the roadway footprint. It will be mitigated by relocating tortoises prior to construction following FFWCC requirements. For other state listed species, Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading by a bridge, Low Impact could occur to state listed wading birds, pine snake, Sherman's fox squirrel, and black bear, which may lose some habitat due to construction. Species with Moderate potential for impact include Southeastern American Kestrel, Florida sandhill crane, Florida mouse, gopher frog, and short-tailed snake. The distinction between Low and Moderate depends on population levels and species habitat requirements. Potential impacts include road strikes, which will be minimized with appropriate fencing through the Starkey Wilderness Area, direct vehicle strikes for species that can evade the fencing (e.g., Florida sandhill crane), habitat fragmentation (e.g., gopher frog), anticipated changes in land management near the road (such as reduced fire frequency), and roadway noise/disturbance. Appropriate habitat and adequate habitat connectivity via wildlife underpasses within the Starkey Wilderness Area will be provided to maintain the populations. Roadway impacts are likely to have little effect on their population sizes. Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 3, and they will experience similar disturbances. The impact minimization and compensatory mitigation provided for listed species will similarly maintain appropriate habitat for these species.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred on the site. The impact potential was not set to None only because surveys were limited to the preferred alignment, and species are poorly studied. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 3 was estimated to impact approximately 115.4 acres of natural habitat including approximately 88.3 acres of uplands and 27.1 are wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods, hardwood-conifer mixed forest, cypress, freshwater marsh, shrub and brushland, palmetto prairie and longleaf pine-xeric oak (sandhill). Other than direct impacts, the primary impact to habitats will likely be changes in land management, increased areas of ecotone habitat in forested areas and some habitat fragmentation. Habitat fragmentation will be largely mitigated by establishing wildlife corridors with appropriate habitat under the roadway. Most of the native upland habitats are fire-

dependent, and the land managing agency is likely to have smoke issues that will require more careful planning and notification and may reduce its opportunities to burn near the road. Reduced fire frequency has the potential to reduce the value of natural habitats to wildlife populations, as discussed above. The scaled IWRS habitat value was 3.3. The range for all alternatives was 0.5 to 3.4.

3.3.8 Archaeological/Historical Impacts

Alternative 3 was found to have direct impacts to 17.7 acres of archaeological/historic sites within the right-of-way and 32.5 acres of potential indirect impacts to archaeological/historic sites within 300 feet on both sides of the right-of-way. No historic structures are anticipated to be impacted.

A more detailed analysis will be conducted after a final alternative is identified.

3.3.9 Summary

Compared to the No Action Alternative, Alternative 3 reduces time to evacuate the coastal population by 6.6 hours which is a 42.5% improvement compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 3 improves mobility by increasing Average Travel Speed by 10%; increasing Vehicle Miles of Travel by 8%; reducing Vehicle Hours of Travel by 2.0%; reducing the Volume to Capacity Ratio (congestion level) by 7% and improving Safety by reducing crashes 2% per day, a reduction of 62 crashes per year within the Study Area.

The total cost for Alternative 3 is $80,289,000 which is $3,630,000 more than the cost of the proposed project, Alternative 5. This increased cost is predominantly due to design and construction cost differences.

Alternative 3 does not have logistical or technical factors that make it unavailable or unobtainable by the applicant. This alternative is consistent with the Long Range Transportation Plan and is supported by the FDOT.

3.4 ALTERNATIVE 4

3.4.1 Alternative Description

Alternative 4 is the at grade extension of existing Ridge Road to US 41 constructing 4 lanes both west and east of the Suncoast Parkway. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

This alternative is predominantly a limited access roadway approximately 8.7 miles in length. Within the western-most 1.5 miles, adjacent to existing development, there are provisions for two commercial driveway connections and two residential street connections. Other than these connections, there will be no additional access in the section of the proposed road west of the Suncoast Parkway. Immediately east of the Suncoast Parkway interchange there is a proposed driveway connection to a commercial parcel. This connection will not provide access to undeveloped land other than the commercial parcel. Consistent with the 2040 LRTP, future north-south roadways between the Suncoast and US 41 (Sunlake Road and Asbel Road) will cross Ridge Road Extension by overpasses without connections (see Attachment A, Appendix A-3).

Pasco County was a participant in the partnering meetings held during the design and permitting for the Suncoast Parkway. These meetings included all the agencies responsible for the permitting of the Suncoast including the USACE. As a result of guidance received at these meetings Pasco County developed alternative routes to extend Ridge Road that would intersect with the future interchange (See Attachment A, Appendix A-4). The location of the future interchange was coordinated with the Turnpike Enterprise and agencies to accommodate design requirements (allowable window) for spacing between the interchange and adjacent toll facilities. The Suncoast Parkway and the overpass for the future interchange with the Ridge Road Extension were subsequently constructed. Alternative 4 is one of the alternatives that passes through the existing overpass. Completion of the interchange by constructing ramps to provide access to and from the Ridge Road Extension and the Suncoast is part of the improvements included with this alternative.

Pasco County also entered into agreements with both the SWFWMD and the FDOT to identify and retain the necessary right-of-way for the Ridge Road Extension through the Serenova preserve that was created as part of the wetlands mitigation plan for the Suncoast Parkway. (See Attachment A, Appendices A-1 and A-2)

3.4.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final

costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 4 has an estimated Construction Cost of $75,062,000; Right-of-Way Cost is estimated at $8,832,000, and Compensatory Mitigation Costs are estimated at $4,080,000. The total estimated cost for Alternative 4 is $87,974,000. (See Table 1-1)

3.4.3 Traffic Assessment

Extending Ridge Road to the east from its current terminus to intersect with the Suncoast Parkway and US 41 has been a part of Pasco County's Long Range Transportation plan since 1995. This extension would reduce travel time and distance caused by the current configuration of a four lane east-west roadway ending at the intersection with two lane north-south roadways that result in north-south travel of about 5 miles or more to get to the nearest east-west arterial to be able to continue east-west travel within the County.

The improved mobility provided by Alternative 4 is demonstrated in the traffic assessment (attached as Appendix C) increasing Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.8 miles per hour, a 10% increase.

Average travel speed is a measure that consistently is reported by the Florida Standard Urban Travel Model Structure (FSUTMS), of which the Tampa Bay Regional Planning Model (TBRPM) is the local adaptation. This is one of many measures considered by transportation planners as they develop their respective transportation network plans – higher speeds indicating delivery of better quality of service and better mobility. This measure is usually reported on a county-wide basis; however, in this case it is being reported for the study area. Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads.

Even though the improved road network attracted an additional 73,859 vehicle-miles of travel per day, the increase in average travel speed still resulted in reduced overall travel time by 1,859 vehicle-hours per day. The savings of 1,859 vehicle-hours per day translates to an estimated cost savings in time along of roughly $11.1 million per year. This does not consider other travel time reductions outside of the study network from where the additional travel was attracted. The value of time saved assumes a value of $12.5/hour/person and 1.31 persons per vehicle. Additional benefits are also realized, because this estimate does not include savings in fuel costs or a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 4 increased Vehicles Miles Traveled (VMT) by 8%, reduced Vehicle Hours of Travel (VHT) by 2% reduced the volume to capacity ratio (v:c) by 7% (reducing congestion) and reduced the number of crashes per year by 2% per day, a reduction of 62 crashes per year.

3.4.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, the No Action Alternative is shown to require 23.4 hours to essentially complete the evacuation of the Coastal Population. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. The roadway improvement under Alternative 4 is shown to result in 16.8 hours to essentially complete the evacuation of this same population. This is a 6.6 hour reduction in evacuation time from the Coastal Area.

A consistent assumption made for the analysis was that up to 12 hours is required for all evacuees to leave their homes in all scenarios. In the traffic model, the last evacuees leave their driveways during the 30-minute time period from 11.5 to 12 hours from the time of the evacuation order. Thus, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in the Alternative 3 condition the same occurred after 16.8 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(16.8-12)/(23.4-12)) under the model which recognizes the delay in some evacuees leaving their homes. Using this calculation, a 42.5 percent improvement would occur with Alternative 4 compared to the "No Action" alternative.

3.4.5 Logistics

Obstacles to Construction:

This alternative is consistent with Pasco County’s Long Range Transportation Plan and does not require a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates “an additional route, Ridge Road, would be necessary to fully accommodate the Pasco residents in the coastal communities” for both mobility and evacuation.

Impacts to Residences and Businesses:

The assessment of impacts to residences and businesses can be found in Attachment E. Alternative 4 was shown to result in impacts to 5 residences, acquisition of 11 residences and relocation of the families in the homes to be acquired. No impacts to businesses are anticipated.

3.4.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 4 is projected to have a direct impact on 27.2 acres of wetlands. Of these, 20.4 are Palustrine Forested and 6.8 are Palustrine Emergent. Potential impacts to surface waters are 1.2 acres. Indirect wetland impacts within 300' on both sides of the alignment are estimated at 204.3 acres.

Overall, wetlands along this alternative are moderate in quality; however, quality varies with location. West of the Serenova Preserve, the wetlands are typically low quality due to hydrological alterations, abundant nuisance species, and low quality surrounding uplands Within the Serenova Preserve, the wetlands are generally high quality. East of the Serenova Preserve and west of the Five-Mile Creek crossing, the wetlands are moderate quality as they hydrology has some alteration such as ditching, and most of the surrounding uplands have been converted to pine plantation., East of the creek, the wetlands are low in quality as many appear to have been dewatered by residential development to the north.

With the exception of the crossing of the Pithlachascotee River and Five-Mile Creek, the Palustrine Forested wetlands are isolated to semi-isolated systems which sometimes have narrow stringers (narrow bands of cypress, often within broader areas of wet prairie or along ditches) that connect them. The wetlands are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, sawgrass, lizard's tail, and a variety of sedges. Hydroperiods are variable but typically longer than the hydroperiods in the shallow Palustrine Emergent wetlands.

A second form of Palustrine Forest wetland occurs in riverine settings along streams. The palustrine forested wetland along the Pithlachascotee is a riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. The wetlands at the Five-Mile Creek crossing are similar though more disturbed due to the ditch.

While the acreage of Palustrine Emergent wetlands is much lower than the acreage of Palustrine Forested wetlands, the Palustrine Emergent wetlands are more variable in character. West of the CSX railway, the Palustrine Emergent wetlands are generally shallow wet prairies or savannas on the fringes of forested wetlands. Some form shallow connectors between forested wetlands when water levels are high. They are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, nutrushes and yellow-eyed-grasses. Many have a characteristic suite of small shrubs and herbaceous plants including water toothleaf, St. John's worts, meadow-beauties, and rosegentians. These wetlands typically have short hydroperiods, though there are several deep marshes in the area between the Suncoast Parkway and the railroad. Typical species in the marsh include pickerelweed, arrowroot, white water lily, sawgrass and spatterdock.

A Palustrine Emergent wetland occurs at the crossing of Five-Mile Creek. This was once forested but has been cleared and is now highly disturbed. In the area of the crossing, the creek is best described as a shallow ditch bordered by a disturbed, mostly herbaceous wetland. Further east and north of the creek is a series of highly disturbed isolated, shallow, wet prairie wetlands. All are dominated by maidencane, broomsedges, blackberry, Peruvian primrose-willow, and dogfennel. Also in this area are what appear to be two mitigation wetlands, both currently mostly herbaceous, but one of which is intended to become a cypress wetland.

Most of the direct impacts to isolated Palustrine Emergent wetlands occur at Five Mile Creek or north of the creek near the eastern end of the road extension. These also lie between a planned wildlife corridor (Tierra Del Sol Preserve) owned by Pasco County and the Tierra Del Sol residential development.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

The direct impacts to open surface water are to a cattle pond and a surface water management pond that is part of the surface water management system for a residential development.

Stream Impacts:

There are two stream crossings for Alternative 4--the Pithlachascotee River and Five-Mile Creek for a total of 426 linear feet.

The alignment for Alternative 4 results in one crossing over the Pithlachascotee River resulting in an estimated 148 linear feet of stream impacts. At the point of the Pithlachascotee River crossing, the stream is small and intermittent and has a poorly defined channel. The stream is bordered on either side by the Palustrine Forested wetlands described above. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water

This alignment crosses Five-Mile Creek in an area where the creek has been substantially altered. It is ditched, but bordered by a Palustrine Forested wetland which has been partially dewatered by the ditch. The Palustrine Forested wetland is bordered by two mitigation wetlands both of which are currently marsh; one of them has cypress saplings and will eventually become forested. Measured along the ditch, there are approximately 278 linear feet of impacts. The same fish species are anticipated but with an emphasis on small fish such as mosquitofish. This portion of Five-Mile Creek is upstream of a former sand mine, and the old mine area is an impediment to fish that might otherwise move upstream during periods of high water. Flow is intermittent.

3.4.7 Other Environmental Impacts

Wildlife Impacts**:**

Potential effects on listed wildlife species were evaluated by intensive sampling of the alignments that pass through the Serenova Preserve and adjacent undeveloped lands for federally listed species with potential to occur in Pasco County, and regional knowledge of the Cardno staff of the listed species that occur or potentially occur in the Study Area and the habitat requirements for these species. Alternative 4 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Low impact. That impact to the eastern indigo snake will be minimized by providing wildlife crossings, excluding the snake from the roadway within the Serenova Preserve, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat, and the wetland mitigation to be provided for the project should functionally replace those losses, while the floodplain management ponds and stormwater treatment ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing due to loss of habitat in the roadway footprint. It will be mitigated by relocating tortoises prior to construction following FFWCC requirements. For other state listed species, Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading by bridges. Low Impact could occur to state listed wading birds, Sherman's fox squirrel, pine snake and black bear, which may lose some habitat due to construction. Species with Moderate potential for impact include Southeastern American kestrel, Florida sandhill crane, Florida mouse, gopher frog, and short-tailed snake. The distinction between Low and Moderate depends on population levels and species habitat requirements. Potential impacts include road strikes, which will be minimized with appropriate fencing through the Serenova Preserve, direct vehicle strikes for species that can evade the fencing (e.g., Florida sandhill crane), habitat fragmentation (e.g., gopher frog), anticipated changes in land management near the road (such as reduced fire frequency), and roadway noise/disturbance. Appropriate habitat and adequate habitat connectivity via wildlife underpasses within the Serenova Preserve will be provided to maintain the populations. Roadway impacts are likely to have little effect on their population sizes. Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 4, and they will experience similar

disturbances. The impact minimization and compensatory mitigation provided for listed species will similarly maintain appropriate habitat for these species.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred on the site. A Very Low Impact rating on federally listed plants was given to all of the centrally located alternatives including Alternative 4 given that the site is not within the known range, the quality of potential habitat is low for all of them due to existing and likely future land management, and none was found in the areas surveyed in 2013. Some minor impact (Low) will likely occur to state listed plant species.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 4 was estimated to directly impact approximately 114.8 acres of natural habitat of which approximately 87.6 acres are uplands and 27.2 are wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods, hardwood-conifer mixed forest, cypress, freshwater marsh, shrub and brushland, palmetto prairie and longleaf pine-xeric oak (sandhill). Other than direct impacts, the primary impact to habitats will likely be changes in land management, increased areas of ecotone habitat in forested areas and some habitat fragmentation. Habitat fragmentation will be largely mitigated by establishing wildlife corridors with appropriate habitat under the roadway. Most of the native upland habitats are fire-dependent, and the land managing agency is likely to have smoke issues that will require more careful planning and notification and may reduce its opportunities to burn near the road. Reduced fire frequency has the potential to reduce the value of natural habitats to wildlife populations, as discussed above. The scaled IWRS habitat value was 3.3. The range for all alternatives was 0.5 to 3.4.

3.4.8 Archaeological/Historical Impacts

Archaeological/Historical impacts were measured by estimating the number of acres of archaeological and/or historical sites as identified in the Florida Master Site File within the Right-of-Way for each alternative. Alternative 4 was determined to potentially impact 18.9 acres of archaeological/historical sites and 33.1 acres of potential indirect impacts on resources that lie within 300 feet on both sides of the alignment. There were no historical bridges, cemeteries, standing structures or resource groups within the limits of this alternative.

A more detailed analysis will be conducted after a final alternative is identified.

3.4.9 Summary

Compared to the No Action Alternative, this alternative reduces time to evacuate the coastal population by 6.6 hours which is a 42.5% improvement compared to the No Action Alternative.

Compared to the No Action Alternative, Alternative 4 improves mobility by increasing Average Travel Speed by 10%; increasing Vehicle Miles of Travel by 8%; reducing Vehicle Hours of Travel by 2.0%; reducing the Volume to Capacity Ratio (congestion level) by 7% and improving Safety by reducing crashes 2% per day, a reduction of 62 crashes per year within the Study Area.

The total cost for Alternative 4 is $87,974,000 which is $11,315,000 more than the cost of the proposed project, Alternative 5. This increased cost is due primarily to the cost to acquire right-of-way, none of which has been acquired east of the Suncoast Parkway, and the cost to impact 5 residences, acquire 11 homes and relocate families.

Alternative 4 does not have logistical or technical factors that make it unavailable or unobtainable by the applicant. This alternative is consistent with the Long Range Transportation Plan and is supported by the FDOT. Alternative 4 would, however, result in impacts to 5 homes, acquisition of 11 homes and the relocation of the families occupying these homes. No impacts to businesses are anticipated.

3.5 ALTERNATIVE 5

3.5.1 Alternative Description

Alternative 5 is the at grade extension of existing Ridge Road to US 41 constructing 4 lanes both west and east of the Suncoast Parkway. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

This alternative is predominantly a limited access roadway approximately 8.7 miles in length. Within the western-most 1.5 miles, adjacent to existing development, there are provisions for two commercial driveway connections and two residential street connections. Other than these connections, there will not be any additional access in the section of the proposed road west of the Suncoast Parkway. Immediately east of the Suncoast Parkway interchange there is a proposed driveway connection to a commercial parcel. This connection will not provide access to undeveloped land other than the commercial parcel. Consistent with the 2040 LRTP, future north-south roadways between the Suncoast and US 41 (Sunlake Road and Asbel Road) will cross Ridge Road Extension by overpasses without connections (see Attachment A, Appendix A-3).

Pasco County was a participant in the partnering meetings held during the design and permitting for the Suncoast Parkway. These meetings included all the agencies responsible for the permitting of the Suncoast including the USACE. As a result of guidance received at these meetings Pasco County developed alternative routes to extend Ridge Road that would intersect with the future interchange (See Attachment A, Appendix A-4). The location of the future interchange was coordinated with the Turnpike Enterprise and agencies to accommodate design requirements (allowable window) for spacing between the interchange and adjacent toll facilities. The Suncoast Parkway and the overpass for the future interchange with the Ridge Road Extension were subsequently constructed. Alternative 5 is one of the alternatives that passes through the existing overpass. Completion of the interchange by constructing ramps to provide access to and from the Ridge Road Extension and the Suncoast is part of the improvements included with this alternative.

Pasco County also entered into agreements with both the SWFWMD and the FDOT to identify and retain the necessary right-of-way for the Ridge Road Extension through the Serenova Preserve that was created as part of the wetlands mitigation plan for the Suncoast Parkway. The SWFWMD concurred with the Ridge Road Extension alignment in 1997 and issued an Environmental Resource Permit for the construction of the Ridge Road Extension in 2003. (See Attachment A, Appendices A-1 and A-2)

3.5.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation

credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and may be lower. The $150,000 figure is simply an estimate to use for comparison purposes. Alternative 5's Construction Cost is estimated at $71,966,000; Right-of-Way Cost is estimated at $508,000, and Compensatory Mitigation Costs are estimated at $4,185,000. The total estimated cost for Alternative 5 is $76,659,000. (See Table 1-1)

3.5.3 Traffic Assessment

Extending Ridge Road to the east from its current terminus to intersect with the Suncoast Parkway and US 41 has been a part of Pasco County's Long Range Transportation plan since 1995. This extension would reduce travel time and distance caused by the current configuration of a four lane east-west roadway ending at the intersection with two lane north-south roadways that result in north-south travel of about 5 miles or more to get to the nearest east-west arterial to be able to continue east-west travel within the County.

The improved mobility provided by Alternative 5 is demonstrated in the traffic assessment (attached as Appendix C) increasing Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.8 miles per hour, a 10% increase.

Average travel speed is a measure that consistently is reported by the Florida Standard Urban Travel Model Structure (FSUTMS), of which the Tampa Bay Regional Planning Model (TBRPM) is the local adaptation. This is one of many measures considered by transportation planners as they develop their respective transportation network plans – higher speeds indicating delivery of better quality of service and better mobility. This measure is usually reported on a county-wide basis; however, in this case it is being reported for the study area. Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads.

Even though the improved road network attracted an additional 73,859 vehicle-miles of travel per day, the increase in average travel speed still resulted in reduced overall travel time by 1,859 vehicle-hours per day. The savings of 1,859 vehicle-hours per day translates to an estimated cost savings in time along of roughly $11.1 million per year. This does not consider other travel time reductions outside of the study network from where the additional travel was attracted. The value of time saved assumes a value of $12.5/hour/person and 1.31 persons per vehicle. Additional benefits are also realized, because this estimate does not include savings in fuel costs or a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 5 increased Vehicles Miles Traveled (VMT) by 8%; reduced Vehicle Hours of Travel (VHT) by 2%; reduced the volume to capacity ratio (v:c) by 7% (reducing congestion); and, reduced the number of crashes per day by 2%, a reduction of 62 crashes per year.

3.5.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, the No Action Alternative is shown to require 23.4 hours to essentially complete the evacuation of the Coastal Population. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. The roadway improvement under Alternative 5 is shown to result in 16.8 hours to essentially complete the evacuation of this same population. This is a 6.6 hour reduction in evacuation time from the Coastal Area.

A consistent assumption made for the analysis was that up to 12 hours is required for all evacuees to leave their homes in all scenarios. In the traffic model, the last evacuees leave their driveways during the 30-minute time period from 11.5 to 12 hours from the time of the evacuation order. Thus, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in Alternative 5 condition the same occurred after 16.8 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(16.8-12)/(23.4-12)) under the model which recognizes the delay in some evacuees leaving their homes. Using this calculation, a 42.5 percent improvement would occur with Alternative 5 compared to the "No Action" alternative.

3.5.5 Logistics

Obstacles to Construction:

This alternative is consistent with Pasco County’s Long Range Transportation Plan and does not require a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates “an additional route, Ridge Road, would be necessary to fully accommodate the Pasco residents in the coastal communities” for both mobility and evacuation.

Impacts to Residences and Businesses:

The assessment of impacts to residences and businesses can be found in Attachment E. Alternative 5 was shown to result in no impacts to residences or businesses.

3.5.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 5 is projected to have a direct impact on 27.9 acres of wetlands. Of these 21.7 are Palustrine Forested and 6.2 are Palustrine emergent. There are 0.3 acres of direct impact to surface waters. Indirect impacts to wetlands within 300' of both sides of the alignment total 204.5 acres.

Overall, wetlands along this alternative are moderate in quality; however, quality varies with location. West of the Serenova Preserve, the wetlands are typically low quality due to hydrological alterations, abundant nuisance species, and low quality surrounding uplands Within the Serenova Preserve, the wetlands are generally high quality. East of the Serenova Preserve and west of the Five-Mile Creek crossing, the wetlands are moderate quality as they hydrology has some alteration such as ditching, and most of the surrounding uplands have been converted to pine plantation. East of the creek, the wetlands are low in quality as many appear to have been dewatered by residential development to the north.

With the exception of the crossing of the Pithlachascotee River and Five-Mile Creek, the Palustrine Forested wetlands are isolated to semi-isolated systems which sometimes have narrow stringers (narrow bands of cypress, often in border areas of wet prairie or along ditches) that connect them. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, lizard's tail, and a variety of sedges. Hydroperiods are variable but typically longer than the hydroperiods in the Palustrine Emergent wetlands.

A second form of Palustrine Forest wetland occurs in riverine settings along streams. The palustrine forested wetland along the Pithlachascotee is a riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. The wetlands at the Five-Mile Creek crossing would historically have been similar, but at this crossing, most of the forested wetlands have been cleared and are now classified as Palustrine Emergent.

While the acreage of Palustrine Emergent wetlands is much lower than the acreage of Palustrine Forested wetlands, the Palustrine Emergent wetlands are more variable in character. West of the CSX railway, the Palustrine Emergent wetlands are generally shallow wet prairies or savannas on the fringes of forested wetlands. Some form shallow connectors between forested wetlands when water levels are high. They are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, nutrushes and yellow-eyed-grasses. Many have a characteristic suite of small shrubs and herbaceous plants including water toothleaf, St. John's worts, meadow-beauties, and rosegentians. These wetlands typically have short hydroperiods, though there is one deep marsh in the area between the Suncoast Parkway and the railroad. Typical species in the marsh include pickerelweed, arrowroot, white water lily, sawgrass and spatterdock.

A Palustrine Emergent wetland occurs at the crossing of Five-Mile Creek. This was once forested but has been cleared and is now highly disturbed. In the area of the crossing, the creek is best described as a shallow ditch bordered by a disturbed, mostly herbaceous wetland. Further east and north of the creek is a series of highly disturbed isolated, shallow, wet prairie wetlands. All are dominated by maidencane, broomsedges, blackberry, Peruvian primrose-willow, and dogfennel.

Most of the direct impacts to isolated Palustrine Emergent wetlands occur at Five Mile Creek or north of the creek near the eastern end of the road extension. These also lie between a planned wildlife corridor (Tierra Del Sol Preserve) owned by Pasco County and the Tierra Del Sol residential development.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

The direct impacts to open surface waters are to borrow areas.

Stream Impacts:

There are two stream crossings for Alternative 5--the Pithlachascotee River and Five-Mile Creek for a total of 618 linear feet of stream crossings.

The alignment for Alternative 5 results in one crossing over the Pithlachascotee River resulting in an estimated 148 linear feet of stream impacts. Since the crossing will be bridges, these will be indirect impacts. At the point of the Pithlachascotee River crossing, the stream is small and intermittent and has a poorly defined channel. The stream is bordered on either side by Palustrine Forested wetlands described above. Bridging will extend over the entire wetland floodplain associated with the river crossing. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water. Impacts to the Pithlachascotee River are the same for this alternative and all other alternatives that cross through the Serenova Preserve.

This alignment crosses Five-Mile Creek in an area where the creek has been substantially altered. It has been ditched since the late 1950s and the original Palustrine Forested wetland has been mostly cut. The channel is appropriately described as a shallow ditch. The alignment crosses at an angle, and impacts approximately 470 linear feet of the stream as measured along the ditch. The Five-Mile Creek will be routed through a culvert under the RRE. The crossing follows the same alignment as Alternatives 3, 6 and 7. The same fish species are anticipated but with an emphasis on small fish such as mosquitofish. This portion of Five-Mile Creek is upstream of a former sand mine, and the stream rerouting that was done to make the stream bypass the old mine pits includes impediments to fish that might otherwise move upstream during periods of high water. Flow is intermittent.

3.5.7 Other Environmental Impacts

Wildlife Impacts:

Potential effects on listed wildlife species were evaluated by intensive sampling of the alignments pass through the Serenova Preserve and adjacent undeveloped lands for federally listed species with potential to occur in Pasco County, and regional knowledge of the Cardno staff of the listed species that occur or potentially occur in the Study and the habitat requirements for these species. Alternative 5 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Low impact. The impact to the eastern indigo snake will be minimized by providing wildlife crossings, excluding the snake from the roadway within the Serenova Preserve, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat, and the wetland mitigation to be provided for the project should functionally replace those losses, while the floodplain management ponds and stormwater treatment ponds required by the ERP are expected to increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, and due to loss of habitat in the roadway footprint. Potential impact to gopher tortoise will be mitigated by relocating the tortoises prior to construction following FFWCC requirements. For other state listed species, Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading by a bridge, Low Impact could occur to Sherman's fox squirrel, state listed wading birds, pine snake, and black bear, which may lose some habitat due to construction. Species with Moderate potential for impact include Florida sandhill crane, Southeastern American kestrel, Florida mouse, gopher frog, and short-tailed snake. The distinction between Low and Moderate depends on population levels and species habitat requirements. Potential impacts include road strikes, which will be minimized with appropriate fencing through the Serenova Preserve, direct vehicle strikes for species that can evade the fencing (e.g., Florida sandhill crane), habitat fragmentation (e.g., gopher frog), anticipated changes in land management near the road (such as reduced fire frequency), and roadway noise/disturbance. Appropriate habitat and adequate habitat connectivity via wildlife underpasses within the Serenova Preserve will be provided to maintain the populations. Roadway impacts are likely to have little effect on their population

sizes. Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 5, and they will experience similar disturbances. The impact minimization and compensatory mitigation provided for listed species will similarly maintain appropriate habitat for these species.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred along this alignment. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal. Habitat quality is low for Britton's beargrass due to a long history of inappropriate land management. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 5 was estimated to impact approximately 115.2 acres of natural habitat including approximately 87.3 acres of uplands and 27.9 acres of wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods, hardwood-conifer mixed forest, cypress, freshwater marsh, shrub and brushland, palmetto prairie and longleaf pine-xeric oak (sandhill). Other than direct impacts, the primary impact to habitats will likely be changes in land management, increased areas of ecotone habitat in forested areas and some habitat under the roadway. Most of the native upland habitats are fire-dependent, and the land managing agency is likely to have smoke issues that will require more careful planning and notification and may reduce its opportunities to burn near the road. Reduced fire frequency has the potential to reduce the value of natural habitats to wildlife populations, as discussed above. The scaled IWRS habitat impact value was 3.4. The range for all alternatives was 0.5 to 3.4.

3.5.8 Archaeological/Historical Impacts

Alternative 5 is estimated to potentially have a direct impact to 13.1 acres of archaeological/historic sites within the alignment and to have potential indirect impacts to 43.3 acres of resources within 300 feet on both sides of the alignment. No historic structures or bridges will be impacted by this alternative.

A more detailed analysis will be conducted after a final alternative is identified.

3.5.9 Summary

Compared to the No Action Alternative, this alternative reduces time to evacuate the coastal population by 6.6 hours which is a 42.5% improvement compared to the No Action Alternative.

Compared to the No Action Alternative, Alternative 5 improves mobility by increasing Average Travel Speed by 10%; increasing Vehicle Miles of Travel by 8%; reducing Vehicle Hours of Travel by 2.0%; reducing the Volume to Capacity Ratio (congestion level) by 7% and improving Safety by reducing crashes 2% per day, a reduction of 62 crashes per year within the Study Area.

The total cost for Alternative 5 is $76,659,000. This cost is due primarily to construction costs and mitigation costs.

Alternative 5 does not have logistical or technical factors that make it unavailable or unobtainable by the applicant. This alternative is consistent with the Long Range Transportation Plan and is supported by the FDOT.

3.6 ALTERNATIVE 6

3.6.1 Alternative Description

Alternative 6 is the extension of existing Ridge Road to US 41 constructing 4 lanes both west and east of the Suncoast Parkway. Alternative 6 includes 4 lanes elevated through the majority of both upland and wetland segments of the Serenova Preserve. East of the Suncoast Parkway the 4 lanes are at grade. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

This alternative utilizes the same alignment as Alternative 5 for the proposed project and passes through the existing overpass at the Suncoast Parkway that was constructed by Florida's Turnpike Enterprise to accommodate a future interchange with the Ridge Road Extension. Completion of the interchange by constructing ramps to provide access to and from the Ridge Road Extension and the Suncoast is part of the improvements included with this alternative.

3.6.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 6's Construction Cost is estimated at $192,785,000; Right-of-Way Cost is estimated at $508,000; and, Compensatory Mitigation Costs are estimated at $3,270,000. The total estimated cost for Alternative 6 is $196,563,000. (See Table 1-1)

3.6.3 Traffic Assessment

Extending Ridge Road to the east from its current terminus to intersect with the Suncoast Parkway and US 41 has been a part of Pasco County's Long Range Transportation plan since 1995. This extension would reduce travel time and distance caused by the current configuration of a four lane east-west roadway ending at the intersection with two lane north-south roadways that result in north-south travel of about 5 miles or more to get to the nearest east-west arterial to be able to continue east-west travel within the County.

The improved mobility provided by Alternative 6 is demonstrated in the traffic assessment (attached as Appendix C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.8 miles per hour, a 10% increase.

Average travel speed is a measure that consistently is reported by the Florida Standard Urban Travel Model Structure (FSUTMS), of which the Tampa Bay Regional Planning Model (TBRPM) is the local adaptation. This is one of many measures considered by transportation planners as they develop their respective transportation network plans – higher speeds indicating delivery of better quality of service and better mobility. This measure is usually reported on a county-wide

basis; however, in this case it is being reported for the study area. Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads.

Even though the improved road network attracted an additional 73,859 vehicle-miles of travel per day, the increase in average travel speed still resulted in reduced overall travel time by 1,859 vehicle-hours per day. The savings of 1,859 vehicle-hours per day translates to an estimated cost savings in time along of roughly $11.1 million per year. This does not consider other travel time reductions outside of the study network from where the additional travel was attracted. The value of time saved assumes a value of $12.5/hour/person and 1.31 persons per vehicle. Additional benefits are also realized, because this estimate does not include savings in fuel costs or a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 6 increased Vehicles Miles Traveled (VMT) by 8%; reduced Vehicle Hours of Travel (VHT) by 2%; reduced the volume to capacity ratio (v:c) by 7% (reducing congestion); and, reduced the number of crashes per day by 2%, a reduction of 62 crashes per year.

3.6.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, the No Action Alternative is shown to require 23.4 hours to essentially complete the evacuation of the Coastal Population. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. The roadway improvement under Alternative 6 is shown to result in 16.8 hours to essentially complete the evacuation of this same population. This is a 6.6 hour reduction in evacuation time from the Coastal Area.

A consistent assumption made for the analysis was that up to 12 hours is required for all evacuees to leave their homes in all scenarios. In the traffic model, the last evacuees leave their driveways during the 30-minute time period from 11.5 to 12 hours from the time of the evacuation order. Thus, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in Alternative 6 condition the same occurred after 16.8 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(16.8-12)/(23.4-12)) under the model which recognizes the delay in some evacuees leaving their homes. Using this calculation, a 42.5 percent improvement would occur with Alternative 6 compared to the "No Action" alternative.

3.6.5 Logistics

Obstacles to Construction:

This alternative is consistent with Pasco County’s Long Range Transportation Plan and does not require a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates “an additional route, Ridge Road, would be necessary to fully accommodate the Pasco residents in the coastal communities” for both mobility and evacuation.

Impacts to Residences and Businesses:

This alternative is shown to have no impacts to residences or businesses.

3.6.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 6 is projected to have a direct impact on 21.8 acres of wetlands. Of these 17.2 acres are Palustrine Forested and 4.6 are Palustrine Emergent. In order to construct a safe intersection between the proposed RRE and the Suncoast Parkway, approximately 1 acre of wetland impact within the Serenova Preserve is required. All other permanent impact to wetlands within the Serenova Preserve are indirect with the exception of small impacts associated with the bridge piling, as all wetlands will be bridge in this area. An estimated 0.3 acres of surface waters may potentially be impacted. Additionally, some 199.1 acres of indirect impacts within 300' on both sides of the alignment are estimated for this alternative.

Overall, wetlands along this alternative are moderate in quality; however, quality varies with location. West of the Serenova Preserve, the wetlands are typically low quality due to hydrological alterations, abundant nuisance species, and low quality surrounding uplands. Within the Serenova Preserve, the wetlands are generally high quality. East of the Serenova Preserve and west of the Five-Mile Creek crossing, the wetlands are moderate quality as they hydrology has some alteration such as ditching, and most of the surrounding uplands have been converted to pine plantation. East of the creek, the wetlands are low in quality as many appear to have been dewatered by residential development to the north. Direct impacts to high quality wetlands have been avoided since the roadway is elevated through the Serenova Preserve.

With the exception of the crossing of the Pithlachascotee River and Five-Mile Creek, the Palustrine Forested wetlands are isolated to semi-isolated systems which sometimes have narrow stringers (narrow bands of cypress, often in border areas of wet prairie or along ditches) that connect them. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, sawgrass, lizard's tail, and a variety of sedges. Hydroperiods are variable but typically longer than the hydroperiods in the Palustrine Emergent wetlands.

A second form of Palustrine Forest wetland occurs in riverine settings along streams. The palustrine forested wetland along the Pithlachascotee is a riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. The wetlands at the Five-Mile Creek crossing would historically have been

similar, but at this crossing, most of the forested wetlands have been cleared and are not classified as Palustrine Emergent.

While the acreage of Palustrine Emergent wetlands is much lower than the acreage of Palustrine Forested wetlands, the Palustrine Emergent wetlands are more variable in character. West of the CSX railway, the Palustrine Emergent wetlands are generally shallow wet prairies or savannas on the fringes of forested wetlands. Some form shallow connectors between forested wetlands when water levels are high. They are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, nutrushes and yellow-eyed-grasses. Many have a characteristic suite of small shrubs and herbaceous plants including water toothleaf, St. John's worts, meadow-beauties, and rosegentians. These wetlands typically have short hydroperiods, though there is one deep marsh in the area between the Suncoast Parkway and the railroad. Typical species in the marsh include pickerelweed, arrowroot, white water lily, sawgrass and spatterdock.

A Palustrine Emergent wetland occurs at the crossing of Five-Mile Creek. This was once forested but has been cleared and is now highly disturbed. In the area of the crossing, the creek is best described as a shallow ditch bordered by a disturbed, mostly herbaceous wetland. Further east and north of the creek is a series of highly disturbed isolated, shallow, wet prairie wetlands. All are dominated by maidencane, broomsedges, blackberry, Peruvian primrose-willow, and dogfennel.

Most of the direct impacts to isolated Palustrine Emergent wetlands occur at Five Mile Creek or north of the creek near the eastern end of the road extension. These also lie between a planned wildlife corridor (Tierra Del Sol Preserve) owned by Pasco County and the Tierra Del Sol residential development. Direct impacts will be avoided within the Serenova Preserve other than the 1 acre of impact required for the intersection with the Suncoast Parkway, but indirect impacts will include construction disturbances and shading.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

The direct impact to open surface water is to a borrow area.

Stream Impacts:

There are two stream crossings for Alternative 6: The Pithlachascotee River and Five-Mile Creek with a total of 618 linear feet of impacts.

The alignment for Alternative 6 results in one crossing over the Pithlachascotee River with an estimated 148 linear feet of stream impacts. Since the crossing will be bridges, these will be indirect impacts. At the point of the Pithlachascotee River crossing, the stream has a poorly defined channel, and it is intermittent. The stream is bordered on either side by Palustrine Forested wetlands described above, and the canopy extends completely across the channel. Bridging will extend over the entire wetland floodplain associated with the river crossing. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water. Impacts to the Pithlachascotee River are the same for this alternative and the proposed alternative, Alternative 5.

This alignment crosses Five-Mile Creek in an area where the creek has been substantially altered. It has been ditched since the late 1950s and the original Palustrine Forested wetland has been mostly cut. The channel is appropriately described as a shallow ditch. The alignment crosses at an angle, and impacts approximately 470 linear feet of the stream as measured along the ditch. The crossing follows the same alignment as Alternatives 3,5 and 7. The Five-Mile Creek will be routed through a culvert under the RRE. The same fish species are anticipated but with an emphasis on small fish such as mosquitofish. This portion of Five-Mile Creek is upstream of a former sand mine, and the stream rerouting that was done to make the stream bypass the old mine pits includes impediments to fish that might otherwise move upstream during periods of high water. Flow is intermittent.

3.6.7 Other Environmental Impacts

Wildlife Impacts:

Potential effects on listed wildlife species were evaluated by intensive sampling of the alignments pass through the Serenova Preserve and adjacent undeveloped lands for federally listed species with potential to occur in Pasco County, and regional knowledge of the Cardno staff of the listed species that occur or potentially occur in the Study and the habitat requirements for these species. Alternative 6 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Very Low impact. The impact to the eastern indigo snake will be minimized by the roadway being elevated to avoid both uplands and wetlands to the extent feasible within the Serenova Preserve, excluding the snake from the at-grade sections of roadway within the Serenova Preserve, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the snake is reduced relative to

Alternative 5 because the snake is not only excluded from the roadway, continuity of its habitat is maintained more effectively. The impact to the wood stork is to foraging habitat, and impacts within the Serenova Preserve will be minimized by elevation of the roadway over wetlands. The wetland mitigation to be provided for the project should functionally replace losses of wetlands that will remain outside of the Serenova Preserve and where the roadway could not be elevation. The floodplain management ponds and stormwater treatment ponds required by the ERP are expected to increase available foraging habitat. Elevation of large sections of roadway within the Serenova Preserve minimizes impacts within the preserve to both upland and wetland species. Very Low impact is anticipated for the gopher tortoise, state listed and proposed for federal listing, and due to loss of habitat in the at-grade sections of roadway. It will be mitigated by relocating tortoises prior to construction following FFWCC requirements. For other state listed species, Very Low Impact may occur to the Suwannee cooter, pine snake, state listed wading birds and Florida black bear. Low Impact could occur to Southeastern American kestrel, Florida mouse, gopher frog and Sherman's fox squirrel which may continue to lose some habitat due to construction. No species were given a Moderate impact rating. Potential impacts include road strikes, which will be minimized with elevation of the roadway and appropriate fencing through the Serenova Preserve, direct vehicle strikes for species that can evade the fencing (e.g., Florida sandhill crane), and anticipated changes in land management near the road (such as reduced fire frequency), and roadway noise/disturbance. Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 6, and they will experience similar disturbances. Impacts to these species will be substantially minimized by the extensive roadway elevation within the Serenova Preserve which will minimize habitat fragmentation and the potential for vehicle strikes. The impact minimization and compensatory mitigation provided for listed species will maintain appropriate habitat for these species.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred on the site. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal. Habitat quality is low for Britton's beargrass due to long term inappropriate management. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 6 was estimated to impact approximately 73.6 acres of natural habitat including approximately 51.8 acres of natural uplands and 21.8 acres are wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods, cypress, freshwater marsh, shrub and brushland and longleaf pine-xeric oak (sandhill). Other than direct impacts, the primary impact to habitats will likely be changes in land management, increased areas of ecotone habitat in forested areas and some habitat fragmentation. Most of the native

upland habitats are fire-dependent, and the land managing agency is likely to have smoke issues that will require more careful planning and notification and may reduce its opportunities to burn near the road. Reduced fire frequency has the potential to reduce the value of natural habitats to wildlife populations, as discussed above. The scaled IWRS habitat impact value was 2.3. The Wildlife Habitat Impact score identifies the impacts on wildlife habitat in the area assessed and incorporates a weighting factor related to the quality of the habitat. Impacts to higher quality wildlife habitat result in a higher numerical score than the score for lower quality habitat of the same size area. Bridging reduces impacts to wildlife habitat and thus reduces the numerical score. The range for all alternatives was 0.5 to 3.4.

3.6.8 Archaeological/Historical Impacts

Alternative 6 is shown to have direct impacts to 13.1 acres of historic or archaeological sites and indirect impact to 43.3 acres of sites within 300 feet of both sides of the alignment. No historic structures or bridges are impacted.

A more detailed analysis will be conducted after a final alternative is identified.

3.6.9 Summary

Compared to the No Action Alternative, this alternative reduces time to evacuate the coastal population by 6.6 hours which is a 42.5% improvement compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 6 improves mobility by increasing Average Travel Speed by 10%; increasing Vehicle Miles of Travel by 8%; reducing Vehicle Hours of Travel by 2.0%; reducing the Volume to Capacity Ratio (congestion level) by 7% and improving Safety by reducing crashes 2% per day, a reduction of 62 crashes per year, within the Study Area.

The total cost for Alternative 6 is $196,563,000 which is $119,904,000 more than the Proposed Project, Alternative 5. This cost is due primarily to construction costs associated with additional bridging.

Alternative 6 does not have logistical or technical factors that make it unavailable or unobtainable by the applicant. This alternative is consistent with the Long Range Transportation Plan and is supported by the FDOT.

3.7 ALTERNATIVE 7

3.7.1 Alternative Description

Alternative 7 is the extension of existing Ridge Road to US 41 constructing 4 lanes both west and east of the Suncoast Parkway. Alternative 7 includes the extension of Ridge Road as a 4 lane facility west of Suncoast Parkway with segments of the roadway on bridges through all wetland and some upland portions of the Serenova Preserve. East of Suncoast Parkway this alternative is 4 lanes at grade. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

This alternative utilizes the same alignment as Alternative 5 for the proposed project and passes through the existing overpass at the Suncoast Parkway that was constructed by Florida's Turnpike Enterprise to accommodate a future interchange with the Ridge Road Extension. Completion of the interchange by constructing ramps to provide access to and from the Ridge Road Extension and the Suncoast is part of the improvements included with this alternative.

3.7.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 7's Construction Cost is estimated at $131,887,000; Right-of-Way Cost is estimated at $508,000; and, Compensatory Mitigation Costs are estimated at $3,270,000. The total estimated cost for Alternative 7 is $135,665,000. (See Table 1-1)

3.7.3 Traffic Assessment

Extending Ridge Road to the east from its current terminus to intersect with the Suncoast Parkway and US 41 has been a part of Pasco County's Long Range Transportation plan since 1995. This extension would reduce travel time and distance caused by the current configuration of a four lane east-west roadway ending at the intersection with two lane north-south roadways that result in north-south travel of about 5 miles or more to get to the nearest east-west arterial to be able to continue east-west travel within the County.

The improved mobility provided by Alternative 7 is demonstrated in the traffic assessment (attached as Appendix C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.8 miles per hour, a 10% increase.

Average travel speed is a measure that consistently is reported by the Florida Standard Urban Travel Model Structure (FSUTMS), of which the Tampa Bay Regional Planning Model (TBRPM)

is the local adaptation. This is one of many measures considered by transportation planners as they develop their respective transportation network plans – higher speeds indicating delivery of better quality of service and better mobility. This measure is usually reported on a county-wide basis; however, in this case it is being reported for the study area. Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads.

Even though the improved road network attracted an additional 73,859 vehicle-miles of travel per day, the increase in average travel speed still resulted in reduced overall travel time by 1,859 vehicle-hours per day. The savings of 1,859 vehicle-hours per day translates to an estimated cost savings in time along of roughly $11.1 million per year. This does not consider other travel time reductions outside of the study network from where the additional travel was attracted. The value of time saved assumes a value of $12.5/hour/person and 1.31 persons per vehicle. Additional benefits are also realized, because this estimate does not include savings in fuel costs or a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 7 increased Vehicles Miles Traveled (VMT) by 8%; reduced Vehicle Hours of Travel (VHT) by 2%; reduced the volume to capacity ratio (v:c) by 7% (reducing congestion); and, reduced the number of crashes per day by 2%, a reduction of 62 crashes per year.

3.7.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, the No Action Alternative is shown to require 23.4 hours to essentially complete the evacuation of the Coastal Population. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. The roadway improvement under Alternative 7 is shown to result in 16.8 hours to essentially complete the evacuation of this same population. This is a 6.6 hour reduction in evacuation time from the Coastal Area.

A consistent assumption made for the analysis was that up to 12 hours is required for all evacuees to leave their homes in all scenarios. In the traffic model, the last evacuees leave their driveways during the 30-minute time period from 11.5 to 12 hours from the time of the evacuation order. Thus, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in Alternative 7 condition the same occurred after 16.8 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(16.8-12)/(23.4-12)) under the model which recognizes the delay in some evacuees leaving their homes. Using this calculation, a 42.5 percent improvement would occur with Alternative 7 compared to the "No Action" alternative.

3.7.5 Logistics

Obstacles to Construction:

This alternative is consistent with Pasco County's Long Range Transportation Plan and does not require a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates "an additional route, Ridge Road, would be necessary to fully accommodate the Pasco residents in the coastal communities" for both mobility and evacuation.

Impacts to Residences and Businesses:

This alternative is expected to have no impacts on residences or businesses.

3.7.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 7 is projected to have a direct impact on 21.8 acres of wetlands, of which 17.2 acres are Palustrine Forested and 4.6 acres are Palustrine Emergent. In order to construct a safe intersection between the proposed RRE and the Suncoast Parkway, approximately 1 acre of wetland impact within the Serenova Preserve is required. All other permanent impacts to wetlands within the Serenova Preserve are indirect with the exception of small impacts associated with bridge piling, as all wetlands will be bridged in this area. Additionally 0.3 acre of surface waters are estimated to be potentially impacted. Alternative 7 is projected to have 207.0 acres of indirect wetland impacts within 300' on both sides of the alignment are estimated for this alternative.

Overall, wetlands along this alternative are moderate in quality; however, quality varies with location. West of the Serenova Preserve, the wetlands are typically low quality due to hydrological alterations, abundant nuisance species, and low quality surrounding uplands. Within the Serenova Preserve, the wetlands are generally high quality. East of the Serenova Preserve and west of the Five-Mile Creek crossing, the wetlands are moderate quality as they hydrology has some alteration such as ditching, and most of the surrounding uplands have been converted to pine plantation., East of the creek, the wetlands are low in quality as many appear to have been dewatered by residential development to the north. Direct impacts to high quality wetlands have been avoided since the roadway is bridged over wetlands the Serenova Preserve.

With the exception of the crossing of the Pithlachascotee River and Five-Mile Creek, the Palustrine Forested wetlands are isolated to semi-isolated systems which sometimes have narrow stringers (narrow bands of cypress, often in border areas of wet prairie or along ditches)

that connect them. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, sawgrass, lizard's tail, and a variety of sedges. Hydroperiods are variable but typically longer than the hydroperiods in the Palustrine Emergent wetlands. Most of the direct impacts to isolated Palustrine Forested wetlands occur either west of the Pithlachascotee or east of the Suncoast Parkway since the roadway is mostly on bridges across the Serenova Preserve. Indirect impacts will occur within the preserve including construction disturbances, and depending on the vegetation height, permanent conversion to herbaceous wetlands, and shading.

A second form of Palustrine Forest wetland occurs in riverine settings along streams. The palustrine forested wetland along the Pithlachascotee is a riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. The wetlands at the Five-Mile Creek crossing would historically have been similar, but at this crossing, most of the forested wetlands have been cleared and are now classified and Palustrine Emergent.

While the acreage of Palustrine Emergent wetlands is much lower than the acreage of Palustrine Forested wetlands, the Palustrine Emergent wetlands are more variable in character. West of the CSX railway, the Palustrine Emergent wetlands are generally shallow wet prairies or savannas on the fringes of forested wetlands. Some form shallow connectors between forested wetlands when water levels are high. They are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, nutrushes and yellow-eyed-grasses. Many have a characteristic suite of small shrubs and herbaceous plants including water toothleaf, St. John's worts, meadow-beauties, and rosegentians. These wetlands typically have short hydroperiods, though there is one deep marsh in the area between the Suncoast Parkway and the railroad. Typical species in the marsh include pickerelweed, arrowroot, white water lily, sawgrass and spatterdock.

A Palustrine Emergent wetland occurs at the crossing of Five-Mile Creek. This was once forested but has been cleared and is now highly disturbed. In the area of the crossing, the creek is best described as a shallow ditch bordered by a disturbed, mostly herbaceous wetland. Further east and north of the creek is a series of highly disturbed isolated, shallow, wet prairie wetlands. All are dominated by maidencane, broomsedges, blackberry, Peruvian primrose-willow, and dogfennel.

Most of the direct impacts to isolated Palustrine Emergent wetlands occur at Five Mile Creek or north of the creek near the eastern end of the road extension. These also lie between a planned wildlife corridor (Tierra Del Sol Preserve) owned by Pasco County and the Tierra Del Sol residential development. Direct impacts will be avoided within the Serenova Preserve other than the 1 acre of impact required for the intersection with the Suncoast Parkway, but indirect impacts will include construction disturbances and shading.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

The impact to open surface water is to a borrow area.

Stream Impacts:

There are two stream crossings for Alternative 7: The Pithlachascotee River and Five-Mile Creek for a total of 618 linear feet of impacts.

The alignment for Alternative 7 results in one crossing over the Pithlachascotee River resulting in an estimated 148 linear feet of stream impacts. Since the crossing will be bridges, these will be indirect impacts. At the point of the Pithlachascotee River crossing, the stream has a poorly defined channel, and it is intermittent. The stream is bordered on either side by Palustrine Forested wetlands described above, and the canopy extends completely across the channel. Bridging will extend over the entire wetland floodplain associated with the river crossing. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water.

This alignment crosses Five-Mile Creek in an area where the creek has been substantially altered. It has been ditched since the late 1950s and the original Palustrine Forested wetland has been mostly cut. The channel is appropriately described as a shallow ditch. The alignment crosses at an angle, and impacts approximately 470 linear feet of the stream as measured along the ditch. The crossing follows the same alignment as Alternatives 3, 5 and 6. The Five-Mile Creek will be routed through a culvert under the RRE. The same fish species are anticipated but with an emphasis on small fish such as mosquitofish. This portion of Five-Mile Creek is upstream of a former sand mine, and the stream rerouting that was done to make the stream bypass the old mine pits includes impediments to fish that might otherwise move upstream during periods of high water. Flow is intermittent.

3.7.7 Other Environmental Impacts

Wildlife Impacts:

Potential effects on listed wildlife species were evaluated by intensive sampling of the alignments pass through the Serenova Preserve and adjacent undeveloped lands for federally listed species with potential to occur in Pasco County, and regional knowledge of the Cardno staff of the listed species that occur or potentially occur in the Study and the habitat requirements for these species. Alternative 7 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Very Low impact. That impact to the eastern indigo snake is minimized by the extensive lengths of elevated roadway across wetlands within the Serenova Preserve, excluding the snake from the roadway by fencing within the Serenova Preserve, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat, and the elevation of the roadway to avoid wetlands within the Serenova Preserve reduces potential losses of foraging habitat. Losses that do occur should be functionally replaced by wetland mitigation, and the floodplain management ponds and stormwater treatment ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, due to loss of habitat in the roadway footprint. It will be mitigated by relocating tortoises prior to construction following FFWCC requirements. For other state listed species, Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading by a bridge. Elevation of the roadway over wetlands within the Serenova Preserve also results in a Very Low impact rating for the Florida black bear which would have ample connectivity of habitats without risk of vehicle strikes and for state listed wading birds since wetland foraging habitats will be maintained. Elevation results in a Low impact rating for pine snake, and Sherman's fox squirrel. Species with Moderate potential for impact include southeastern American kestrel, Florida sandhill crane, gopher frog, Florida mouse and short-tailed snake. The distinction between Low and Moderate depends on population levels and species habitat requirements. In addition, appropriate fencing will be installed along those portions of the alignments that are at-grade through the Serenova Preserve to prevent vehicle strikes. Indirect impacts such as changes in land management near the road (such as reduced fire frequency) and roadway noise/disturbance will still occur. Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 7. Similar types of impacts will occur, but they will be minimal within the Serenova Preserve for species that use wetlands as habitat or movement corridors. The impact minimization and compensatory mitigation provided for listed species will maintain appropriate habitat for these species. Relative to alternatives 2-5, impacts are lower for this alternative for all species that benefit from the roadway being raised over wetlands or which readily use wetlands as movement corridors.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred along this alternative. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal.

Habitat quality is low for Britton's beargrass due to long term inappropriate management. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 7 was estimated to impact approximately 96.0 acres of natural habitat including approximately 74.2 acres of uplands and 21.8 acres of wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods, hardwood-conifer mixed forest, cypress, freshwater marsh, shrub and brushland, palmetto prairie and longleaf pine-xeric oak (sandhill). Other than direct impacts, the primary impact to habitats will likely be changes in land management. Most of the native upland habitats are fire-dependent, and the land managing agency is likely to have smoke issues that reduce its opportunities to burn near the road. Reduced fire frequency has the potential to reduce the value of natural habitats to wildlife populations, as discussed above. The scaled IWRS habitat impact value was 2.9. The Wildlife Habitat Impact score identifies the impacts on wildlife habitat in the area assessed and incorporates a weighting factor related to the quality of the habitat. Impacts to higher quality wildlife habitat result in a higher numerical score than the score for lower quality habitat of the same size area. Bridging reduces impacts to wildlife habitat and thus reduces the numerical score. The range for all alternatives was 0.5 to 3.4.

3.7.8 Archaeological/Historical Impacts

This alternative is anticipated to have 13.1 acres of direct impacts to archaeological/historic sites and 43.3 acres of indirect impacts within 300 feet on both sides of the proposed alignment. No impacts to historic bridges or structures will occur.

A more detailed analysis will be conducted after a final alternative is identified.

3.7.9 Summary

Compared to the No Action Alternative, this alternative reduces time to evacuate the coastal population by 6.6 hours which is a 42.5% improvement compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 7 improves mobility by increasing Average Travel Speed by 10%; increasing Vehicle Miles of Travel by 8%; reducing Vehicle Hours of Travel by 2.0%; reducing the Volume to Capacity Ratio (congestion level) by 7% and improving Safety by reducing crashes 2% per day, a reduction of 62 crashes per year within the Study Area

The total cost for Alternative 7 is $135,665,000 which is $59,006,000 more than the cost of the Proposed Project, Alternative 5. This cost is due primarily to construction costs associated with additional bridging.

Alternative 7 does not have logistical or technical factors that make it unavailable or unobtainable by the applicant. This alternative is consistent with the Long Range Transportation Plan and is supported by the FDOT.

3.8 ALTERNATIVE 8

3.8.1 Alternative Description

Alternative 8 is the at grade expansion of SR 52 to 10 lanes west of the Suncoast Parkway and to 6 lanes east. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

SR 52 is currently 6 lanes west of the Suncoast Parkway and 2 lanes east. Alternative 8 adds 4 more lanes at grade to convert the 6-lane divided facility to a 10-lane divided facility west of the Suncoast and from a 2-lane undivided facility to a 6-lane divided facility east of the Suncoast.

3.8.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 8's Construction Cost is estimated at $129,463,000; Right-of-Way Cost is estimated at $7,169,000, and Compensatory Mitigation Costs are estimated at $390,000. The total estimated cost for Alternative 8 is $137,022,000. (See Table 1-1)

3.8.3 Traffic Assessment

The extent of improved mobility provided by Alternative 8 is demonstrated in the traffic assessment (attached as Attachment C) increasing Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 19.9 miles per hour, a 5% increase. Average travel speed is a measure that consistently is reported by the Florida Standard Urban Travel Model Structure (FSUTMS), of which the Tampa Bay Regional Planning Model (TBRPM) is the local adaptation. This is one of many measures considered by transportation planners as they develop their respective transportation network plans – higher speeds indicating delivery of better quality of service and better mobility. This measure is usually reported on a county-wide basis; however, in this case it is being reported for the study area. Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads.

Even though the improved road network attracted an additional 73,859 vehicle-miles of travel per day, the increase in average travel speed still resulted in reduced overall travel time by 1,859 vehicle-hours per day. The savings of 1,859 vehicle-hours per day translates to an estimated cost savings in time along of roughly $11.1 million per year. This does not consider other travel time reductions outside of the study network from where the additional travel was attracted. The value of time saved assumes a value of $12.5/hour/person and 1.31 persons per

vehicle. Additional benefits are also realized, because this estimate does not include savings in fuel costs or a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 8 increased Vehicles Miles Traveled (VMT) by 3%; reduced Vehicle Hours of Travel (VHT) by 2%; reduced the volume to capacity ratio (v:c) by 3% (reducing congestion); but increased the number of crashes per day by 4%, an increase of 139 crashes per year.

3.8.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, this alternative requires 19.5 hours to essentially complete the evacuation of the Coastal Population, compared to 23.4 hours for the "No Action" Alternative. For purposes of this evaluation, evacuation was considered "essentially complete" when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 3.9 hour reduction in evacuation time for population within the Coastal Area.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the "No Action" condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 19.5 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(19.5-12)/(23.4-12)), or a 34.2 percent improvement would occur with this alternative compared to the "No Action" alternative.

3.8.5 Logistics

Obstacles to Construction:

This alternative is inconsistent with Pasco County's Long Range Transportation Plan (LRTP) and requires a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates that FDOT does not support any alternative that is not consistent with the LRTP. Further, Paul Steinman, FDOT District 7 Secretary, indicates that FDOT does not support the expansion of state roadways that are not managed roadways, such as limited access roadways beyond 6 lanes at grade due to safety factors. (See Appendix E for additional information on safety issues.) It is unlikely FDOT would make its right-of-way available nor issue a permit for construction of Alternative 8 because of these safety issues.

Impacts to Residences and Businesses:

This alternative is expected to impact 20 residences of which 10 will require acquisition and relocation of the families. Alternative 8 will also impact 6 businesses.

3.8.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 8 is projected to have a direct impact on 2.6 acres of wetlands, 2.3 acres of which are Palustrine Forested and 0.3 acres are Palustrine Emergent. All direct impacts are to fringes of wetlands along the edge of the existing SR 52 right of way. There are no impacts to surface waters. The impact areas are typically moderate in quality. There are 112.0 acres of indirect impacts within 300' of both sides of the alignment.

Direct impacts are to forested systems, predominantly isolated and semi-isolated cypress-dominated Palustrine Forested wetlands. Most are dome swamps, but there are several cypress fringes along the edges of marshes and lakes. All are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, lizard's tail, and a variety of sedges. Hydroperiods are variable. The Palustrine Emergent impact appears on aerial photographs from 1995 through 2014 to be dubiously wetland and is managed as pasture.

A second form of Palustrine Forested wetland occurs in riverine setting along the Pithlachascotee River where it is crossed by SR 52. New direct impacts due to the crossing are entirely to disturbed areas on the south side of the existing road, but indirect impacts may occur on the north side. The forested wetland on the north side of the crossing is a riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. The impact area is a remnant between the existing roadway and a farm road.

Depending on water levels, all of the wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetland north of the Pithlachascotee River provides similar habitat function, but in addition, it is known to be a movement corridor for a number of species, especially when dry. The wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

Potential indirect impacts may occur to additional acreage of Palustrine Forested wetland, Palustrine Emergent wetlands, and lakes. These include potential changes in water quality and timing of runoff, trash, disturbance to wildlife habitat, and temporary disturbance during construction.

Stream Impacts:

The alignment for Alternative 8 results in one crossing over the Pithlachascotee River resulting in an estimated 120 linear feet of stream impact most of which is already impacted by the existing SR 52, and only approximately 40 feet of the impacts are new. The existing SR 52 crosses the stream on a concrete structure with 3 culverts, and the culverted area is included within the 120 linear feet. The crossing is bordered on the north side by the type of Palustrine Forested wetlands described above. On the south side, where new impacts will occur, the impact is to a narrow band of residual Palustrine Forested wetland which lies between the existing SR 52 and a farm road crossing. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water

3.8.7 Other Environmental Impacts

Wildlife Impacts:

Alternative 8 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have Very Low and Low impacts respectively. Given the sensitivity of the eastern indigo snake to roadways and habitat fragmentation, it is likely that few, if any, eastern indigo snakes inhabit the areas likely to be directly impacted by the roadway, and any additional impact to the eastern indigo snake will be minimized by adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat. Losses that do occur should be functionally replaced by wetland mitigation, and the floodplain management ponds and surface water management ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, and due to loss of habitat in the roadway footprint. It will be mitigated by relocating tortoises prior to construction following FFWCC requirements. For other state listed species, Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading at the Pithlachascotee River crossing. Widening of the roadway may also increase the potential of black bear mortality which was given a Low impact rating. While outside of a black bear population center, bears do occasionally wander to the Serenova Preserve, and widening of the SR 52 roadway increases the potential for vehicle strikes. The road widening may increase the chances of impacts to wading birds, decrease foraging habitat quality, and potentially affect future nesting areas (no colonial nesting areas are reported from wetlands to be directly impacted). However, the wetland mitigation and surface water management system will likely result in no loss of habitat.

Likewise, a Low impact is likely for the Florida sandhill crane, gopher frog, southeastern American kestrel, pine snake, and Sherman's fox squirrel, Florida mouse and short-tailed snake. Indirect impacts such as roadway noise/disturbance and construction disturbance may also occur.

Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 8. Similar types of impacts will occur, but the incremental extent of the impact will likely be minimal as the existing roadway is already causing the majority of the overall impact. The impact minimization and compensatory mitigation provided for listed species will maintain appropriate habitat for these species in those areas where any habitat remains near the existing SR 52.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred along this alternative. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal. Habitat quality is very low for Britton's beargrass due to long term inappropriate management. There is potential, likely Low, that impacts could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction. There are no conservation requirements or mitigation requirements for state-listed plant species.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 8 was estimated to impact approximately 11.8 acres of natural habitat including approximately 9.2 acres of uplands and 2.6 acres of wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods and hardwood forest (overgrown sandhill). This alternative will likely not cause new changes in land management. The scaled IWRS habitat value was 1.4. The range for all alternatives was 0.5 to 3.4.

Additional detail is provided in Attachment H.

3.8.8 Archaeological/Historical Impacts

This alternative is anticipated to have 0.9 acres of direct impacts to archaeological/historic sites and 3.8 acres of indirect impacts within 300 feet on either side of the proposed alignment. Direct impact to 1 historic structure and indirect impact to 8 historic structures within 300 feet on either side of the proposed alignment may potentially occur as a result of Alternative 8.

A more detailed analysis will be completed once a final alternative has been selected.

3.8.9 Summary

Compared to the No Action Alternative, this alternative reduces time to evacuate the coastal population by 3.9 hours which is a 34.2% improvement compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 8 improves mobility by increasing Average Travel Speed by 5%; increasing Vehicle Miles of Travel by 3%; reducing Vehicle Hours of Travel by 2.0%; reducing the Volume to Capacity Ratio (congestion level) by 3%, but reduces Safety by increasing crashes 4% per day, an increase of 139 crashes per year within the Study Area.

The total cost for Alternative 8 is $137,022,000 which is $60,363,000 more than the cost of the Proposed Project, Alternative 5. This cost is due primarily to construction costs and acquisition of right-of-way.

Alternative 8 is inconsistent with the Long Range Transportation Plan and is not supported by the FDOT because it would be a road that exceeds 6 general use lanes at grade and is considered to be less safe for pedestrians, bicycles and automobiles. Alternative 8 will impact 10 homes, requiring the acquisition of 10 additional homes and relocation of the residents, and will impact 6 businesses. Alternative 8 would directly impact 1 listed historic property and indirectly impact 8 listed historic properties.

3.9 ALTERNATIVE 9

3.9.1 Alternative Description

Alternative 9 is the expansion of SR 54 to 10 lanes both west and east of the Suncoast Parkway by adding 4 at grade lanes. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

SR 54 is currently a 6-lane facility west of the Suncoast Parkway with both urban and rural typical sections. The urban segments will be widened to the outside adding 2 lanes to each side to create a 10-lane section. In the rural segment the 10-lane section will be created by adding 1 lane to the inside and 1 lane to the outside to convert it to an urban 10 lane typical section. For this alternatives analysis SR 54 on the east side of the Suncoast Parkway will be assumed to have the planned widening to 6 lanes completed. Alternative 9 therefore would expand SR 54 east of the Suncoast Parkway from 6-lanes to 10-lanes by adding 4 lanes at grade to the outside of the existing lanes.

3.9.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 9 ’s Construction Cost is estimated at $205,780,000; Right-of-Way Cost is estimated at $7,785,000 and Compensatory Mitigation Costs are estimated at $225,000. The total estimated cost for Alternative 9 is $213,790,000. (See Table 1-1)

3.9.3 Traffic Assessment

The extent of improved mobility provided by Alternative 9 is demonstrated in the traffic assessment (included as Attachment C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 21.8 miles per hour, a 15 percent increase. Average travel speed is a measure that consistently is reported by the Florida Standard Urban Travel Model Structure (FSUTMS), of which the Tampa Bay Regional Planning Model (TBRPM) is the local adaptation. This is one of many measures considered by transportation planners as they develop their respective transportation network plans – higher speeds indicating delivery of better quality of service and better mobility. This measure is usually reported on a county-wide basis; however, in this case it is being reported for the study area.

Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads. Thus, the change is distributed over 2.15 to 2.23 million vehicle-miles of travel per day in the study network. Per the TBRPM, the change in average travel speed reduced travel time by 8,496 vehicle-hours per day, and the improved conditions attracted an additional 146,316 vehicle-

miles of travel per day into the study network. The savings of 8,496 vehicle-hours per day translates to an estimated cost savings in time alone of roughly $50.8 million per year. This does not consider the travel time reduced outside of the study network from where the additional travel was attracted, and assumes a value of $12.5/hour/person and 1.31 persons per vehicle. Additional savings are also realized, because this estimate does not include savings in fuel costs. Additionally, this increase in travel speed would result in a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 9 increased Vehicles Miles Traveled (VMT) by 7%; reduced Vehicle Hours of Travel (VHT) by 7%; reduced the volume to capacity ratio (v:c) by 9% (reducing congestion); and, increased the number of crashes per day by 10%, an increase in 372 crashes per year.

3.9.4 Hurricane Evacuation Assessment

This alternative increases reliance on the SR 54 corridor for evacuation. Evacuating residents must go either north to SR 52 or south to SR 54 to allow for evacuation away from the coastal Pasco County. During Tropical Storm Debby in 2012, SR 54 experienced extreme flooding in western Pasco County. (See Attachment E, Appendix E-6) During this flooding event, portions of two lanes of US 19 were flooded as well as two lanes of the existing four lane Ridge Road extension. Only the flooding on SR 54 within the developed area of coastal Pasco County, west of Starkey Road, precluded all evacuation traffic.

The Hurricane Evacuation Assessment (Attachment D) that was conducted did not assume that SR 54 was flooded. Assuming that no flooding occurred, Alternative 9 required 17.1 hours to essentially complete the evacuation of the coastal Pasco County population, compared to 23.4 hours for the “No Action” Alternative. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 6.3 hour reduction in evacuation time from the Coastal Area. Again, this analysis did not assume that flooding would occur.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 17.1 hours. Assuming that flooding does not occur, the percentage reduction in evacuation zone clearance time was calculated as 100*(1-(17.1-12)/(23.4-12)), or a 55.3 percent improvement would occur with this alternative compared to the "No Action" alternative.

3.9.5 Logistics

Obstacles to Construction:

This alternative is inconsistent with Pasco County's Long Range Transportation Plan (LRTP) and requires a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E, Appendix E-4 indicates that FDOT does not support any alternative that is not consistent with the LRTP. Further, Paul Steinman, FDOT District 7 Secretary, indicates that FDOT does not support the expansion of roadways beyond 6 general use lanes at grade due to safety factors. (See Appendix E, for additional detail on safety issues.) It is unlikely that FDOT would issue a permit for construction of Alternative 9.

Impacts to Residences and Businesses:

This alternative is expected to impact 3 residences and will also impact 17 businesses. Two additional businesses will require acquisition.

3.9.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 9 is projected to have a direct impact on 1.5 acres of wetlands and 2.2 acres of surface waters. Of the wetland impacts, 1.0 acres are Palustrine Forested and 0.5 acres are Palustrine Emergent. Direct wetland impacts along this alternative are restricted to narrow linear bands along the existing SR 54 roadway. There are 155.8 acres of potential indirect impacts within 300' of both sides of the alignment. The impact areas are generally moderate in quality but toward the low end of the moderate quality range.

The majority of direct impacts are either to edges of dome swamp Palustrine Forested wetlands or to the wet prairie Palustrine Emergent fringes that often form the ecotone between the forested wetlands and surrounding uplands. There are also minor impacts to deep marsh Palustrine Emergent wetlands and to a few deeper systems that were mapped as lakes but which are known to be deep marshes in the area of impact.

The Palustrine Forested systems have already been impacted by the existing SR 54 with the existing impact generally resulting in a loss of the original ecotone and a fairly abrupt drop-off from the road shoulder into the wetland. Most of the systems are dominated by pond cypress, but some swamp tupelo is present. Shallow fringes may have dahoon holly, red maple, and/or laurel oak. The groundcover varies depending on land use. Where the wetlands are in pastures, the groundcover may have soft rush (*Juncus effusus*), ferns (*Blechnum serrulatum*, *Woodwardia virginiana*), warty sedge (*Carex verrucosa*), cattail (*Typha domingenensis*),

pickerelweed, and other species tolerant of grazing. In more developed areas, a fringe of Peruvian primrose-willow (*Ludwigia peruviana*) is common. The wet prairie areas frequently have grasses and grass-like species including bluestem grasses (*Andropogon* spp.), soft rush, coinwort (*Centella asiatica*), panic grasses especially torpedo grass (*Panicum repens*), and a variety of other grazing-tolerant species including sedges (*Cyperus* spp.), nut rushes (*Rhynchospora* spp.), carpetgrasses (*Axonopus* spp.) and Paspalum species. The deep marshes typically vary between floating-leaved species such as water-lily (*Nymphaea odorata*) when the water is deep and bare ground or dog fennel (*Eupatorium capillifolium*) when they are dry.

Depending on water levels, these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat functions. All of the wetlands provide water retention and reduce the potential for downstream flooding. Some receive direct run-off from the existing roadway, and storm water retention areas pop-off into many of the systems.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

Potential indirect impacts include changes in hydrologic regime if included in the water management system, trash, and temporary disturbance during construction.

Stream Impacts:

Alternative 9 has no stream impacts.

3.9.7 Other Environmental Impacts

Wildlife Impacts:

Alternative 9 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have Very Low and Low impacts respectively. The habitat along this alignment is extremely marginal for the eastern indigo snake due both to absence of appropriate uplands and a high level of habitat fragmentation and development. The impact to the wood stork is to foraging habitat. Habitat losses that do occur should be functionally replaced by wetland mitigation, and the stormwater treatment ponds required by the ERP could actually increase available foraging habitat. Very Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing. Most of the potential gopher tortoise habitat along SR 54 has already been developed, and any remaining

habitat is of low quality. Any impact will be mitigated by relocating tortoises prior to construction following FFWCC requirements. Expansion of the roadway could increase the existing potential for vehicle impacts with the Florida sandhill crane, and there could be minor losses of breeding habitat. However, the roadway is already developed, so the expansion would only cause a minor increment to the existing level of impact so the estimated level of impact was Low. While not known to occur in the direct impact areas, there is some very minor potential for impacts to the gopher frog, southeastern American kestrel, pine snake, gopher frog, short-tailed snake, black bear and Sherman's fox squirrel. Indirect impacts such as disturbance by roadway noise/disturbance will occur. Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant occur in habitats along the roadway, however, substantial loss of habitat is not anticipated.

There is a very high probability that no federally listed plant species occur along this alternative. There potential habitat for a few state-listed species, but given the narrow impact width, the likelihood of impact is Low.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 9 was estimated to directly impact 2.7 acres of natural habitat including 1.2 acres of naturally vegetated uplands and 1.5 acres of wetlands. There are no natural habitats with more than 2 acres of direct impact. The scaled IWRS habitat value was 2.0. The range for all alternatives was 0.5 to 3.4.

3.9.8 Archaeological/Historical Impacts

This alternative is anticipated to have 6.2 acres of direct impacts to archaeological/historic sites and 17.5 acres of indirect impacts within 300 feet on both sides of the proposed alignment. Indirect impact to 4 historic structures may potentially occur as a result of Alternative 9.

A more detailed analysis will be conducted after a final alternative is identified.

3.9.9 Summary

Compared to the No Action Alternative, without flooding this alternative reduces time to evacuate the coastal population by 6.3 hours which is a 55.3% improvement compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 9 improves mobility by increasing Average Travel Speed by 15%; increasing Vehicle Miles of Travel by 7%; reducing Vehicle Hours of Travel by 7%; reducing the Volume to Capacity Ratio (congestion level) by 9%. Safety is not improved by this alternative as daily crash rates are increased by 10%, increasing crashes by 372 per year in the Study Area.

The total cost for Alternative 9 is $213,790,000 which is $137,131,000 more than the cost of the Proposed Project, Alternative 5. This cost is due primarily to construction costs and acquisition of right-of-way.

Alternative 9 is inconsistent with the Long Range Transportation Plan and is not supported by the FDOT because it is a road that exceeds 6 general use lanes at grade and is considered to be less safe for pedestrians, bicycles and automobiles. Alternative 9 impacts 3 residences, 4 historic properties, 17 businesses and requires the acquisition of 2 businesses.

3.10 ALTERNATIVE 10

3.10.1 Alternative Description

Alternative 10 is the construction of Tower Road as a 4-lane at grade facility starting at Starkey Blvd. and ending at US 41. An overpass at the Suncoast Parkway (i.e. no connection to the Suncoast Parkway) is included in this alternative. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

3.10.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 10's Construction Cost is estimated at $90,169,000; Right-of-Way Cost is estimated at $7,408,000; and, Compensatory Mitigation Costs are estimated at $3,330,000. The total estimated cost for Alternative 10 is $100,907,000. (See Table 1-1)

3.10.3 Traffic Assessment

The improved mobility provided by Alternative 10 is demonstrated in the traffic assessment (attached as Appendix C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 19.6 miles per hour, a four percent increase. Average travel speed is a measure that consistently is reported by the Florida Standard Urban Travel Model Structure (FSUTMS), of which the Tampa Bay Regional Planning Model (TBRPM) is the local adaptation. This is one of many measures considered by transportation planners as they develop their respective transportation network plans – higher speeds indicating delivery of better quality of service and better mobility. This measure is usually reported on a county-wide basis; however, in this case it is being reported for the study area.

Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads. Thus, the change is distributed over 2.15 to 2.18 million vehicle-miles of travel per day in the study network. Per the TBRPM, the change in average travel speed reduced travel time by 2,666 vehicle-hours per day, and the increase in travel attracted into the study network because of the improved conditions attracted an additional 30,151 vehicle-miles of travel per day. Not considering the travel time reduced outside of the study network from where the additional travel was attracted, at a value of $12.5/hour/person and 1.31 persons per vehicle, the savings of 2,666 vehicle-hours per day translates to an estimated cost savings in time alone of roughly $15.9 million per year. Additional savings are also realized, because this estimate does not

include savings in fuel costs. Additionally, this increase in travel speed would result in a reduction of carbon emission and greenhouse gases.

As regards other measures of mobility, Alternative 10 increased Vehicles Miles Traveled (VMT) by 1%; reduced Vehicle Hours of Travel (VHT) by 2%; reduced the volume to capacity ratio (v:c) by 5% (reducing congestion); and, increased the number of crashes per day by 2%, an increase in 80 crashes per year.

3.10.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, this alternative would require 21.8 hours to essentially complete the evacuation of the Coastal Population, compared to 23.4 hours for the “No Action” Alternative. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 1.6 hour reduction in evacuation time from the Coastal Area.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “no action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 21.8 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(21.8-12)/(23.4-12)), or a 14.0 percent improvement would occur with this alternative compared to the "No Action" alternative.

3.10.5 Logistics

Obstacles to Construction:

As this alternative is consistent with Pasco County’s Long Range Transportation Plan (LRTP) and does not require a permit from FDOT to construct, there are no obstacles to construction.

Impacts to Residences and Businesses:

Alternative 10 is expected to impact 6 residences and require acquisition of an additional 14 homes and relocation of families and impacts to 1 business. This alternative goes right through an existing neighborhood just to the west of US 41. Access is provided to the neighborhood by a circle street called Wisteria Loop. The right of way which would be acquired for this alternative would disconnect Wisteria Loop, resulting in the creation of two cul-de-sacs or local road connections to the extension of Tower Road.

3.10.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 10 is projected to have a direct impact on 22.2 acres of wetlands. Of these 14.9 acres are Palustrine Forested and 7.3 acres are Palustrine Emergent. There are 1.8 acres of surface waters. This alternative will potentially have indirect impact on 171.7 acres of wetlands within 300' on both sides of the alignment.

The great majority of wetlands along this alternative are cypress-dominated dome swamps and strands, all Palustrine Forested. Also present are feeder wetlands associated with the South and Sandy Branches of the Anclote River. Toward the eastern end, there are a few deep marshes and lake/pond edges (Palustrine Emergent), and wet prairies (Palustrine Emergent) are found along the edges of the forested wetlands though these are typically mapped as part of the forested wetlands or as pasture. The surface waters are stormwater management ponds and borrow areas.

The cypress-dominated Palustrine Forested wetlands range from isolated systems to sloughs. Most have some degree of hydrological alteration which ranges in severity from minor to extensive due to ditches and/or impoundment, or both. Most are surrounded by pasture, though toward the eastern end, some are in rural residential settings. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Most show evidence of logging, but most remain forested. Herbaceous vegetation is variable and fluctuates with antecedent rainfall conditions. When wet, the typical wetland groundcover includes pickerelweed, lizard's tail, and a variety of sedges. When dry for extended periods, the groundcover often becomes dominated by dog fennel.

Two small headwater forested wetland branches of the Anclote River, Sandy Branch and the South Branch, are crossed by this alternative. At the crossing locations, these were originally forested, but currently both are disturbed, and the South Branch is forested and the Sandy Branch has been cleared into marsh. The hydrology is altered. The Sandy Branch, as it currently exists, is recognizable as a stream system on the downstream side of the crossing – upstream, the original forested wetland has altered connectivity and considerable drainage from upstream enters the system from an upland-cut ditch. The South Branch is forested but just upstream from where the stream crosses a utility pipeline in a shallow swale. The forested crossing is dominated by a mixture of cypress and hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo.

Three types of Palustrine Emergent wetlands occur along this alignment: shallow wet prairies along the fringes of forested systems or areas which were once forested but due to logging, ditching, and land management are now herbaceous. The Palustrine Emergent wetlands include several open swales that were apparently created when a utility pipeline was constructed, and these are maintained as herbaceous. Toward the eastern end, there are several deep marshes along the edges of lakes. The wet prairies are dominated by grasses and grass-like species including soft rush, little blue maidencane, maidencane, beakrushes, torpedo grass, and sedges. In the less disturbed systems, there are also small shrubs and herbaceous plants including St. John's worts and meadow-beauties. These wetlands typically have short hydroperiods. The open swales along the pipeline are dominated by grasses.

The deeper marshes and lake fringes include water lilies, pickerelweed, arrowroot, maidencane, cattails, and Peruvian primrose-willow. All provide foraging habitat for listed wading birds during periods of high water.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat function, but in addition, these floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from both adjacent pastures and upstream wetlands.

Potential indirect impacts include changes in water quality, increased disturbance such as noise, and temporary disturbance during construction.

Stream Impacts:

There are two stream headwater forested wetland crossings for Alternative 10: forested headwater wetlands of the South and Sandy branches of the Anclote River.

Both stream headwater forested wetland crossings occur where there is existing impact in the form of a pipeline. At the Sandy Branch, the original Palustrine Forested system has been replaced with a marshy Palustrine Emergent system. There is a berm (old railroad bed) just upstream of the crossing, and the water crosses the berm through a culvert. There was likely no historic channel. At the South Branch, the crossing is in a forested area just upstream of the

pipeline. At the South Branch, no channel is apparent on recent aerial photography, but the wetland appears to be somewhat impounded during periods of high water. At both crossings, flow is intermittent.

At each crossing there is approximately 106 feet of linear impact for a total of 212 linear feet for this alternative.

3.10.7 Other Environmental Impacts

Wildlife Impacts:

Alternative 10 passes predominantly through agricultural lands, and toward the eastern end, rural residential areas. This alternative was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Very Low and Low impacts respectively. The impact to the eastern indigo snake is minimized by the very low likelihood of the snake occupying pasturelands or rural residential landscapes, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat which exists in wetlands and ditches along this alignment. The impact was considered to be Low because most of the land is already approved for development, so the impacts will likely occur irrespective of the road, Losses that do occur should be functionally replaced by wetland mitigation, and the surface water management ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, and due to loss of habitat in the roadway footprint, though given the relatively poor drainage and intensive pasture management in the area, few tortoises are likely to be present. Any impact to tortoises will be mitigated by relocating tortoises prior to construction following FFWCC requirements. There may be Moderate impacts to the Florida sandhill crane as it is known to nest and forage in wetlands close to this alternative. Likewise the southeastern American kestrel is known to nest and forage near the alignment. However, the approved developments along this alignment may cause the same level of impact irrespective of the road. Habitat is lacking for the other state listed species, mostly due to existing land uses and poor drainage, so they were given Very Low impact ratings.

Indirect impacts such as changes in land management near the road (mowing) and roadway noise/disturbance will also occur. Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 10. Similar types of impacts will occur to these species. The impact minimization and compensatory mitigation provided for listed species will maintain appropriate habitat for these non-listed species. There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred on the alternative. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal. Habitat quality is very low for Britton's beargrass due to inappropriate soils and inappropriate habitats. There is potential that impacts, likely Low, could occur to state listed plant species such as *Sacoilea lanceolata*, *Litsea aestivalis*, *Zephranthes*

atamasca var*. treatii*, *or Z. simpsonii*, and *Pteroglossapsis ecristata*. There are no conservation requirements nor mitigation requirements for state-listed plant species.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 10 was estimated to impact approximately 40.6 acres of natural habitat including approximately 18.4 acres of uplands. Natural habitats with more than 2 acres of impact include pine flatwoods, palmetto prairie, stream swamps, cypress swamps and freshwater marshes. The scaled IWRS habitat value was 1.8. The range for IWRS habitat impact value for all alternatives was 0.5 to 3.4.

More detail is provided in Attachment H.

3.10.8 Archaeological/Historical Impacts

Alternative 10 is estimated to have direct impact on 23.4 acres of historic sites and 24.3 acres in indirect impact to sites within 300' on both sides of the alignment.

Alternative 10 will have no direct impact on historic structures but may have indirect impact on 2 structures within 300 feet on both sides of the alignment.

A more detailed analysis will be conducted after a final alternative is identified.

3.10.9 Summary

Compared to the No Action Alternative, this alternative reduces time to evacuate the coastal population by 1.6 hours which is a 14% improvement compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 10 improves mobility by increasing Average Travel Speed by 4%; increasing Vehicle Miles of Travel by 1%; reducing Vehicle Hours of Travel by 2%; reducing the Volume to Capacity Ratio (congestion level) by 5%, and reduces Safety by increasing the crash rate 2% per day, an increase in 80 crashes per year within the Study Area.

The total cost for Alternative 10 is $100,907,000 which is $24,248,000 more than the Proposed Project, Alternative 5. This cost is due primarily to construction costs and acquisition of right-of-way costs.

Alternative 10 is consistent with the Long Range Transportation Plan. Alternative 10 will have an impact on residences and businesses impacting 6 residences, requiring acquisition of 14 residences and relocation of the families within these homes. This alternative will also impact 1 business.

3.11 ALTERNATIVE 11

3.11.1 Alternative Description

Alternative 11 is the expansion of SR 54 to 10-lanes (6 at Grade and 4 Elevated) on both the east and west sides of the Suncoast Parkway. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross sections are shown in Appendix A-2.

SR 54 is currently a 6-lane facility west of the Suncoast Parkway and 4-lane east. For this alternatives analysis SR 54 on the east side of the Suncoast Parkway will be assumed to have the planned widening to 6 lanes completed. Alternative 11 expands SR 54 from 6 lanes to 10 lanes west of the Suncoast Parkway and from 6 lanes to 10 lanes east of the Suncoast Parkway by adding 4 elevated lanes within the median of SR 54 from Starkey Blvd. to US 41. Ramps are included before and after major intersecting north-south roadways to provide for access between the elevated lanes and the at-grade SR 54.

3.11.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 11's Construction Cost is estimated at $1,365,268,000; Right-of-Way Cost is estimated at $3,854,000; and, Compensatory Mitigation Costs are estimated at $30,000. The total estimated cost for Alternative 11 is $1,369,152,000. (See Table 1-1)

3.11.3 Traffic Assessment

The improved mobility provided by Alternative 11 is demonstrated in the traffic assessment (Attachment C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 22.1 miles per hour, a 17% increase.

Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads. Thus, the change is distributed over 2.15 to 2.33 million vehicle-miles of travel per day in the study network. Per the TBRPM, the change in average travel speed reduced travel time by 8,725 vehicle-hours per day, and the increase in travel attracted into the study network because of the improved conditions attracted an additional 173,083 vehicle-miles of travel per day. Not considering the travel time reduced outside of the study network from where the additional travel was attracted, at a value of $12.5/hour/person and 1.31 persons per vehicle, the savings of 8,725 vehicle-hours per day translates to an estimated cost savings in time alone of roughly

$52.1 million per year. Additional savings are also realized because this estimate does not include savings in fuel costs. Additionally, this increase in travel speed would result in a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 11 increased Vehicles Miles Traveled (VMT) by 8%; reduced Vehicle Hours of Travel (VHT) by 8%; reduced the volume to capacity ratio (v:c) by 17% (reducing congestion); and, reduced the number of crashes per day by 4%, a reduction of 161 crashes per year.

3.11.4 Hurricane Evacuation Assessment

This alternative increases reliance on the SR 54 corridor for evacuation. Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, this alternative requires 25.8 hours to essentially complete the evacuation of the Coastal Population, compared to 23.4 hours for the “No Action” Alternative. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 2.4 hour *increase* in evacuation time from the Coastal Area.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 25.8 hours. The percentage increase in evacuation zone clearance time was calculated as 100*(1-(25.8-12)/(23.4-12)), or a 21.1 percent increase would occur with this alternative compared to the "No Action" alternative.

3.11.5 Logistics

Obstacles to Construction:

Alternative 11 is consistent with the Long Range Transportation Plan and is likely to receive a permit from FDOT.

Impacts to Residences and Businesses:

Alternative 11 is expected to impact 2 residences and 10 businesses, 2 of which would require acquisition.

3.11.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 11 is projected to have a direct impact on 0.2 acres of wetlands, 134.0 acres of indirect impacts to wetlands within 300' on both sides of the alignment, and 0.8 acres of impacts to surface waters. The wetland impacts are to Palustrine Forested wetlands. The impacts are to fringes of cypress or mixed cypress-hardwood wetlands.

Depending on water levels, these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat function, but in addition, these floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

The wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorous and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

Compared to the other alternatives direct impacts to wetlands are lower since the roadway is elevated above most of them. Potential indirect impacts include shading, changes in function, trash, potential bird strikes to wading birds, and temporary disturbance during construction.

Stream Impacts:

There are no stream crossing impacts for Alternative 11.

3.11.7 Other Environmental Impacts

Wildlife Impacts:

Potential effects on listed wildlife species were evaluated using regional knowledge of the Cardno staff of the listed species that occur or potentially occur in Pasco County and the habitat requirements for these species. There is essentially no impact to ground-dwelling wildlife as the roadway is elevated and follows a route that is already bordered in most areas by development. Any losses that do occur should be functionally replaced by wetland mitigation, and the

floodplain management ponds and stormwater treatment ponds required by the ERP would likely increase available foraging habitat for wading birds.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 11 was estimated to impact 0.4 acres of natural habitat. The scaled IWRS habitat impact value was 0.5. The range of habitat impact value for all alternatives was 0.5 to 3.4.

3.11.8 Archaeological/Historical Impacts

This alternative is expected to have direct impact to 4.1 acres of historic sites and indirect impact to 18.1 acres of historic sites within 300 feet on both sides of the alignment. While there are no direct impacts to historic structures, indirect impact to 3 structures could potentially occur within 300 feet on both sides of the alignment.

A more detailed analysis will be conducted after a final alternative is identified.

3.11.9 Summary

Compared to the No Action Alternative, this alternative increases the time to evacuate the coastal population by 2.4 hours which is a 21.1% increase when compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 11 improves mobility by increasing Average Travel Speed by 17%; increasing Vehicle Miles of Travel by 8%; reducing Vehicle Hours of Travel by 8%; reducing the Volume to Capacity Ratio (congestion level) by 17% and improving Safety by reducing the crash rate 4% per day, a reduction of 161 crashes per year within the Study Area.

The total cost for Alternative 11 is $1,369,152,000 which is $1,292,493,000 more than the Proposed Project, Alternative 5. This cost is due primarily to construction costs.

Alternative 11 is consistent with the Long Range Transportation Plan and would likely receive a permit from FDOT.

3.12 ALTERNATIVE 12

3.12.1 Alternative Description

Alternative 12 is the construction of Tower Road as a 2-lane at grade facility starting at Starkey Blvd. and ending at US 41 and the at grade expansion of SR 54 to 8 lanes west and to 8 lanes east of the Suncoast Parkway. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

SR 54 is currently a 6-lane facility west of the Suncoast Parkway and 4-lane east. For this alternatives analysis, SR 54 on the east side of the Suncoast Parkway will be assumed to have the planned widening to 6 lanes completed. Alternative 12 includes the expansion of SR 54 to 8-lanes west of the Suncoast Parkway and to 8-lanes east of the Suncoast Parkway by adding at grade lanes. The construction of a 2-lane Tower Road from Starkey Blvd. to US 41 is also a part of this alternative.

3.12.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 12 's Construction Cost is estimated at $186,414,000; Right-of-Way Cost is estimated at $8,615,000; and, Compensatory Mitigation Costs are estimated at $2,010,000. The total estimated cost for Alternative 12 is $197,039,000. (See Table 1-1)

3.12.3 Traffic Assessment

The improved mobility provided by Alternative 12 is demonstrated in the traffic assessment (attached as Appendix C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.6 miles per hour, a 9% increase.

Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads. Thus, the change is distributed over 2.15 to 2.24 million vehicle-miles of travel per day in the study network. Per the TBRPM, the change in average travel speed reduced travel time by 5,390 vehicle-hours per day, and the increase in travel attracted into the study network because of the improved conditions attracted an additional 84,410 vehicle-miles of travel per day. Not considering the travel time reduced outside of the study network from where the additional travel was attracted, at a value of $12.5/hour/person and 1.31 persons per vehicle, the savings of 5,390 vehicle-hours per day translates to an estimated cost savings in time alone of roughly $32.2 million per year. Additional savings are also realized, because this estimate does not

include savings in fuel costs. Additionally, this increase in travel speed would result in a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 12 increased Vehicles Miles Traveled (VMT) by 4%; reduced Vehicle Hours of Travel (VHT) by 5%; reduced the volume to capacity ratio (v:c) by 7% (reducing congestion); but increased the number of crashes per day by 6%, increasing the number of crashes per year by 226.

3.12.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, this alternative requires 26.0 hours to essentially complete the evacuation of the Coastal Population, compared to 23.4 hours for the “No Action” Alternative. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 2.6 hour increase in evacuation time from the Coastal Area.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “no action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 26.0 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(26.0-12)/(23.4-12)), or a 22.8 percent increase would occur with this alternative compared to the "No Action" alternative.

3.12.5 Logistics

Obstacles to Construction:

This alternative is inconsistent with Pasco County’s Long Range Transportation Plan (LRTP) and requires a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E, Appendix E-4 indicates that FDOT does not support any alternative that is not consistent with the LRTP. Further, Paul Steinman, FDOT District 7 Secretary, indicates that FDOT does not support the expansion of roadways beyond 6 lanes at grade due to safety factors. (See Appendix E for additional detail on safety issues.) It is unlikely that FDOT would issue a permit for construction of Alternative 12.

Impacts to Residences and Businesses:

Alternative 12 is expected to impact 22 residences, 12 of which would require acquisition and relocation of the families living in those residences. Additionally, 14 businesses would be impacted, of which 1 would require acquisition.

3.12.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, stream impacts and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 12 is projected to have a direct impact on 13.4 acres of wetlands and 2.4 acres of surface waters. Of these, 8.2 acres are Palustrine Forested, and 5.2 acres are Palustrine Emergent. There are 265.2 acres of indirect impacts within 300 feet on both sides of the alignment. Most of the direct impacts are to wetlands of moderate quality, many of which are toward the lower end of the moderate quality range.

The great majority of wetlands along this alternative are cypress-dominated dome swamps and strands, all Palustrine Forested. Also present are feeder wetlands associated with two branches of the Anclote River. Toward the eastern end of the Tower Road portion of the alternative, there are a few deep marshes and wet prairies (both Palustrine Emergent) found along the edges of the forested wetlands though typically mapped as part of the forested wetlands or as pasture.

Along the Tower Road portion of the alternative, the cypress-dominated Palustrine Forested wetlands range from isolated systems to sloughs. Most have some degree of hydrological alteration which ranges in severity from minor to extensive due to ditches and/or impoundment, or both. Most are surrounded by pasture, though toward the eastern end, some are in rural residential settings. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Most show evidence of logging, but most remain forested. Herbaceous vegetation is variable and fluctuates with antecedent rainfall conditions. When wet, the typical wetland groundcover includes pickerelweed, lizard's tail, and a variety of sedges. When dry, the groundcover is often dominated by dog fennel.

Along the SR 54 portion of the alternative, the typical Palustrine Forested system has already been impacted by the existing SR 54 with the impact generally resulting in a loss of the original ecotone and a fairly abrupt drop-off from the road shoulder into the wetland. Most of the systems are dominated by pond cypress, but some swamp tupelo is present. Shallow fringes may have dahoon holly, red maple, and/or laurel oak. The groundcover varies depending on land use. Where the wetlands are in pastures, the groundcover may have soft rush (*Juncus effusus*), ferns (*Blechnum serrulatum*, *Woodwardia virginiana*), warty sedge (*Carex verrucosa*), cattail (*Typha domingenensis*), pickerelweed, and other species tolerant of grazing. In more developed areas, a fringe of Peruvian primrose-willow (*Ludwigia peruviana*) is common. The wet prairie areas frequently have grasses and grass-like species including bluestem grasses (*Andropogon* spp.), soft rush, coinwort (*Centella asiatica*), panic grasses especially torpedo grass (*Panicum repens*), and a variety of other grazing-tolerant species including *Cyperus*,

Rhynchospora, *Axonopus* and *Paspalum* species. The deep marshes typically vary between floating-leaved species such as water-lily when the water is deep and bare ground or dog fennel when they are dry.

Two small branches of the Anclote River, Sandy Branch and the South Branch, cross the Tower Road portion of this alternative. At the crossing locations, these crossings were originally forested, but currently both are disturbed. The South Branch is forested but the hydrology is altered. The crossing is just upstream from where the stream crosses a utility pipeline in a shallow trough. The forested crossing is dominated by a mixture of cypress and hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo. The Sandy Branch crossing is co-located with the utility pipeline. The Sandy Branch, as it currently exists, is recognizable as a stream system on the downstream side of the crossing – upstream, the original forested wetland has altered connectivity and considerable drainage from upstream enters the system from an upland-cut ditch.

Several types of Palustrine Emergent wetlands occur along this alternative, mostly but not entirely on the Tower Road portion of the alternative: shallow wet prairies along the fringes of forested systems or which were once forested but due to logging, ditching, and land management are now herbaceous, several open swales that were apparently created when a pipeline was constructed and which are maintained as herbaceous, and toward the eastern end, several deep marshes along the edges of lakes. The wet prairies are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, torpedo grass, and sedges. Some have a characteristic suite of small shrubs and herbaceous plants including St. John's worts and meadow-beauties. These wetlands typically have short hydroperiods. The open swales along the pipeline are dominated by grasses. The marshes include water lilies, pickerelweed, arrowroot, maidencane, cattails, and Peruvian primrose-willow. All provide foraging habitat for listed wading birds during periods of high water.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat function, but in addition, the floodplain wetlands potentially movement corridors for a number of species, but that potential is limited for this alternative due to limited habitat upstream of the crossings. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from both adjacent pastures and upstream wetlands.

Potential indirect impacts include changes in water quality, increased disturbance such as noise, and temporary disturbance during construction.

Stream Impacts:

There are two headwater forested wetland stream crossings for Alternative 12 on the Tower Road portion: the South and Sandy branches of the Anclote River.

Both headwater forested wetland stream crossings occur where there is existing impact in the form of a pipeline. At the Sandy Branch, the original Palustrine Forested system has been replaced with a marshy Palustrine Emergent system. There is a berm (old railroad bed) just upstream of the crossing, and the water crosses the berm through a culvert. There was likely no historic channel. At the South Branch, the crossing is in a forested area just upstream of the pipeline. At the South Branch, no channel is apparent on recent aerial photography, but the wetland appears to be somewhat impounded during periods of high water. At both crossings, flow is intermittent.

At each crossing there is approximately 60 feet of impact for a total of 120 linear feet.

3.12.7 Other Environmental Impacts

Wildlife Impacts:

Alternative 12 passes predominantly through agricultural lands and rural residential areas along the Tower Road portion of the alternative, and agricultural, residential, and commercial areas along the SR 54 portion of the route.

This alternative was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Very Low and Low impacts respectively. The impact to the eastern indigo snake is minimized by the low likelihood of the snake occupying pasturelands or rural residential landscapes and landscapes where habitats are highly fragmented, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat. Foraging habitats exist along both alignments in this alternative. However, losses that occur should be functionally replaced by wetland mitigation, and the floodplain and surface water management ponds required by the ERP could actually increase available foraging habitat. Moderate impact could occur to the Florida sandhill crane and southeastern American kestrel as habitat exists for both species along both alignments in this alternative. Most new impacts would occur along the Tower Road alignment. However, since much of this alignment is already approved for development, these impacts may occur despite the road. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, and due to loss of habitat in the roadway footprint, though given the relatively poor drainage and intensive pasture management along the Tower Road alignment and development along SR 54, few tortoises are likely to be present. Any impact to tortoises will be mitigated by relocating tortoises

prior to construction following FFWCC requirements. Habitat is very marginal or lacking for the other state listed species, mostly due to existing land uses and they were given Very Low impact potentials. Indirect impacts such as changes in land management near the road (mowing) and roadway noise/disturbance will still occur.

Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are relatively abundant in the area of Alternative 12. Similar types of impacts will occur to these species. The impact minimization and compensatory mitigation provided for listed species will maintain appropriate habitat for these species.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred on the alternative. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal. Habitat quality is extremely low for Britton's beargrass due to absence of appropriate native plant communities. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 12 was estimated to impact approximately 25.6 acres of natural habitat including approximately 12.2 acres of uplands and 13.4 acres of wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods, cypress swamp, freshwater marsh, and palmetto prairie. The scaled IWRS habitat impact value was 2.6 within a range of 0.5 to 3.4 for all alternatives included in this analysis.

3.12.8 Archaeological/Historical Impacts

Alternative 12 was determined to have direct impact on 13.2 acres of archaeological sites and 37.7 acres of indirect impacts on site within 300 feet on both sides of the alignment. While no historic structures will be directly impacted by Alternative 12, 6 historic structures could potentially be indirectly impacted within 300 feet on both sides of the alignment.

A more detailed analysis will be conducted upon selection of a final alternative.

3.12.9 Summary

Compared to the No Action Alternative, this alternative increases the time to evacuate the coastal population by 2.6 hours which is a 22.8% increase when compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 12 improves mobility by increasing Average Travel Speed by 9%; increasing Vehicle Miles of Travel by 4%; reducing Vehicle Hours of Travel by 5%; reducing the Volume to Capacity Ratio (congestion level) by 7%, and increasing the crash rate 6% per day, an increase of 226 crashes per year within the Study Area.

The total cost for Alternative 12 is $197,039,000 which is $120,380,000 more than the Proposed Project, Alternative 5. This cost is due primarily to construction costs and right of way acquisition costs.

Alternative 12 is not consistent with the Long Range Transportation Plan and is unlikely to receive a permit from FDOT due to safety concerns. Alternative 12 will have an unacceptable impact on residences and businesses, impacting 22 residences of which 12 would require acquisition and relocation of families and 14 businesses of which 1 business would require acquisition.

3.13 ALTERNATIVE 13

3.13.1 Alternative Description

Alternative 13 is the widening of SR-52 by adding 2 lanes at grade and the widening of SR-54 by adding 2 lanes at grade. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

SR 52 is currently a 6-lane facility west of the Suncoast Parkway and 2-lane east. SR 54 is currently a 6-lane facility west of the Suncoast Parkway and 4-lane east. For this alternatives analysis SR 54 on the east side of the Suncoast Parkway will be assumed to have the planned widening to 6 lanes completed. Alternative 13 includes the expansion of SR 52 to 8-lane facility west of the Suncoast Parkway and to 4-lane east by adding at grade lanes. This Alternative also includes the expansion of SR 54 to 8 lanes from Starkey Blvd. to the Suncoast Parkway and to 8 lanes east of the Suncoast Parkway by adding two at grade lanes.

3.13.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 13's Construction Cost is estimated at $183,664,000; Right-of-Way Cost is estimated at $8,547,000; and, Compensatory Mitigation Costs are estimated at $210,000. The total estimated cost for Alternative 13 is $192,421,000. (See Table 1-1)

3.13.3 Traffic Assessment

The improved mobility provided by Alternative 13 is demonstrated in the traffic assessment (attached as Appendix C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.8 miles per hour, a 10% increase.

Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads. Thus, the change is distributed over 2.15 to 2.27 million vehicle-miles of travel per day in the study network. Per the TBRPM, the change in average travel speed reduced travel time by 4,886 vehicle-hours per day, and the increase in travel attracted into the study network because of the improved conditions attracted an additional 114,368 vehicle-miles of travel per day. Not considering the travel time reduced outside of the study network from where the additional travel was attracted, at a value of $12.5/hour/person and 1.31 persons per vehicle, the savings of 4,886 vehicle-hours per day translates to an estimated cost savings in time alone of roughly $29.2 million per year. Additional savings are also realized, because this estimate does not

include savings in fuel costs. Additionally, this increase in travel speed would result in a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 13 increased Vehicles Miles Traveled (VMT) by 5%; reduced Vehicle Hours of Travel (VHT) by 4%; reduced the volume to capacity ratio (v:c) by 6% (reducing congestion); and increased the number of crashes per day by 7%, increasing crashes by 266 per year.

3.13.4 Hurricane Evacuation Assessment

Alternative 13 requires 20.4 hours to essentially complete the evacuation of the Coastal Population, compared to 23.4 hours for the “No Action” Alternative. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 3.0 hour improvement in evacuation time from the Coastal Area.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 20.4 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(20.4-12)/(23.4-12)), or a 26.3 percent improvement would occur with this alternative compared to the "No Action" alternative.

3.13.5 Logistics

Obstacles to Construction:

This alternative is inconsistent with Pasco County’s Long Range Transportation Plan (LRTP) and requires a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E, Appendix E-4 indicates that FDOT does not support any alternative that is not consistent with the LRTP. Further, Paul Steinman, FDOT District 7 Secretary, indicates that FDOT does not support the expansion of roadways beyond 6 general use lanes at grade due to safety factors. (See Appendix E for additional detail on safety issues.) It is unlikely that FDOT would issue a permit for construction of Alternative 13 .

Impacts to Residences and Businesses:

Alternative 13 is expected to impact 22 residences of which 9 will require acquisition and relocation of families. Additionally, 17 businesses will be impacted of which 1 will require acquisition.

3.13.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, stream impacts and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 13 is projected to have a direct impact on 1.4 acres of wetlands and 0.9 acres of surface waters. Of the wetland impacts, 1.2 acres are Palustrine Forested and 0.2 acres are Palustrine Emergent. There are 208.0 acres of potential indirect impacts. All direct impacts are to fringes of wetlands along the edge of the existing SR 52 and SR 54 rights of way. Most of the impacts are to wetlands that are of moderate quality.

Direct impacts are to forested systems, predominantly isolated and semi-isolated cypress-dominated Palustrine Forested wetlands. Most are dome swamps, but there are several cypress fringes along the edges of marshes and lakes. All are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, lizard's tail, and a variety of sedges. Hydroperiods are variable.

A second form of Palustrine Forest wetland occurs in the riverine setting along the Pithlachascotee River. This forested wetland is riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. This wetland is a narrow band of residual riverine forest between the existing SR 52 roadway and an agricultural road.

The Palustrine Emergent impacts are to small fringes of wetlands, all disturbed due to close proximity to existing roadways.

Depending on water levels, all of the wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetland at the Pithlachascotee River provides similar habitat functions, but the habitat functions are limited due to its existing fragmentation. The wetlands along the river are believed to be a movement corridor for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved

constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

Surface water impacts are to open stormwater management ponds.

Stream Impacts:

There is one stream crossing for Alternative 13 on SR 52: the Pithlachascotee River.

The alignment for Alternative 13 results in one crossing over the Pithlachascotee River with an estimated 120 linear feet of stream impacts almost all of which are already impacted by the existing SR 52 which crosses the river over three concrete culverts. Only approximately 10 feet would be new impact. At the point of the Pithlachascotee River crossing, the stream channel is small and intermittent. The stream is bordered on either side by Palustrine Forested wetlands described above, but the direct impact is entirely on the south side. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water.

3.13.7 Other Environmental Impacts

Wildlife Impacts:

Alternative 13 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Very Low and Low impact respectively. Given the sensitivity of the eastern indigo snake to roadways, it is likely that few, if any, eastern indigo snakes inhabit the areas likely to be directly impacted by the SR 54 alignment and recent surveys for the indigo snake indicate that few are likely near the SR 52 alignment. Any impact to the eastern indigo snake will be minimized by adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat. Habitat losses should be functionally replaced by wetland mitigation, and the floodplain and surface water management ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, and due to loss of habitat in the roadway footprint, mostly along SR 52. Impacts will be mitigated by relocating tortoises prior to construction in accordance with FFWCC requirements. For other state listed species, Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading at the Pithlachascotee River crossing at SR 52. Widening of the roadway along SR 52 may increase the potential of black bear mortality. While outside of a black bear population center, bears do occasionally wander to the non-managed Serenova Preserve, and widening of the SR 52 roadway increases the potential for vehicle strikes. Low impact potential exists for pine snake, short-tailed snake, and Sherman’s fox squirrel as habitat impacts would occur along the SR 52 alignment. Widening of the SR 54 portion of the

alternative would have little or no effect on the on these species or on the black bear. Indirect impacts such as increases in roadway noise/disturbance may occur.

Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 13, mostly along the SR 52 alignment. Similar types of impacts will occur to non-listed species, but the incremental extent of the impact will likely be very low as the existing SR 52 and SR 54 roadways are likely already causing the majority of the overall impact. The impact minimization and compensatory mitigation provided for listed species will maintain and potentially improve habitat for these species in the area close to this alternative.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred along this alternative. Both of the road widening areas are outside of the known range of Cooley's water-willow and Brooksville bellflower, and habitat quality is marginal. Habitat quality along SR 52 is low for Britton's beargrass due to existing inappropriate management, and appropriate habitat is lacking along SR 54. There is potential, likely Low, that impacts could occur to state listed plant species such as *Sacoilea lanceolata*, *Litsea aestivalis*, *Zephranthes atamasca* var*. treatii*, *or Z. simpsonii*, and *Pteroglossapsis ecristata* due to roadway widening along SR 52. Impacts to state listed plant species are highly unlikely along SR 54 as the area of direct impacts is already very highly altered. There are no conservation requirements nor mitigation requirements for state-listed plant species.

Habitat Impacts:

Based on this analysis, Alternative 13 was estimated to impact approximately 8.3 acres of natural habitat including approximately 6.9 acres of uplands and 1.4 acres of wetlands. The only natural habitat with more than 2 acres of impact was pine flatwoods. This alternative will likely not cause new changes in land management. The scaled IWRS habitat value was 2.4 within a range of 0.5 to 3.4 for all alternatives included in this analysis.

3.13.8 Archaeological/Historical Impacts

This alternative is anticipated to have direct impacts to 2.0 acres of historic sites and indirect impacts to 8.0 acres of sites within 300 feet on either side of the alignment. One historic structure will be directly impacted and 12 indirectly impacted within 300 feet on both sides of the alignment.

A more detailed analysis will be conducted after a final alternative is identified.

3.13.9 Summary

Compared to the No Action Alternative, this alternative decreases the time to evacuate the coastal population by 3.0 hours which is a 26.3% improvement when compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 13 improves mobility by increasing Average Travel Speed by 10%; increasing Vehicle Miles of Travel by 5%; reducing Vehicle Hours of Travel by 4%; reducing the Volume to Capacity Ratio (congestion level) by 6%, but increasing the crash rate 7% per day, an increase in 266 crashes per year within the Study Area.

The total cost for Alternative 13 is $192,421,000 which is $115,762,000 more than the cost of the Proposed Project, Alternative 5. This cost is due primarily to construction costs and right of way acquisition.

Alternative 13 is not consistent with the Long Range Transportation Plan and is unlikely to receive a permit from FDOT due to safety concerns. Alternative 13 will have an impact on residences and businesses, impacting 22 residences of which 9 would require acquisition and relocation of families and 17 businesses of which 1 business would require acquisition.

3.14 ALTERNATIVE 14

3.14.1 Alternative Description

Alternative 14 is the widening of SR-52 by adding 2 lanes at grade and constructing a 2-lane Tower Road. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

SR 52 is currently a 6-lane facility west of the Suncoast Parkway and 2-lane east. Alternative 14 expands SR 52 from 6 lanes to 8 lanes west of the Suncoast Parkway and to 4 lanes east of Suncoast Parkway by adding 2 at grade lanes. This alternative also includes the construction of a 2-lane Tower Road.

3.14.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 14 ’s Construction Cost is estimated at $141,492,000; Right-of-Way Cost is estimated at $11,542,000; and, Compensatory Mitigation Costs are estimated at $2,145,000. The total estimated cost for Alternative 14 is $155,179,000. (See Table 1-1)

3.14.3 Traffic Assessment

The improved mobility provided by Alternative 14 is demonstrated in the traffic assessment (attached as Appendix C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.0 miles per hour, a 6% increase.

Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads. Thus, the change is distributed over 2.15 to 2.21 million vehicle-miles of travel per day in the study network. Per the TBRPM, the change in average travel speed reduced travel time by 2,971 vehicle-hours per day, and the increase in travel attracted into the study network because of the improved conditions attracted an additional 60,405 vehicle-miles of travel per day. Not considering the travel time reduced outside of the study network from where the additional travel was attracted, at a value of $12.5/hour/person and 1.31 persons per vehicle, the savings of 2,971 vehicle-hours per day translates to an estimated cost savings in time alone of roughly $17.8 million per year. Additional savings are also realized, because this estimate does not include savings in fuel costs. Additionally, this increase in travel speed would result in a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 14 increased Vehicles Miles Traveled (VMT) by 3%; reduced Vehicle Hours of Travel (VHT) by 3%; reduced the volume to capacity ratio (v:c) by 5% (reducing congestion); and increased the number of crashes per day by 4%, an increase of 131 crashes per year within the Study Area.

3.14.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, this alternative requires 22.7 hours to essentially complete the evacuation of the Coastal Population, compared to 23.4 hours for the “No Action” Alternative. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 0.7 hour improvement in evacuation time from the Coastal Area.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “no action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 22.7 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(22.7-12)/(23.4-12)), or a 6.1 percent improvement would occur with this alternative compared to the "No Action" alternative.

3.14.5 Logistics

Obstacles to Construction:

This alternative is inconsistent with Pasco County’s Long Range Transportation Plan (LRTP) and requires a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates that FDOT does not support any alternative that is not consistent with the LRTP. Further, Paul Steinman, FDOT District 7 Secretary, indicates that FDOT does not support the expansion of roadways beyond 6 general use lanes at grade due to safety factors. (See Attachment E for additional detail on safety issues.) It is unlikely that FDOT would issue a permit for construction of Alternative 14.

Impacts to Residences and Businesses:

This alternative is anticipated to have direct impact on 40 residences of which 21 will require acquisition and relocation of families. Alternative 14 will also impact 6 businesses.

3.14.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, stream, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 14 is projected to have a direct impact on 14.3 acres of wetlands and 1.5 acres of surface waters. Of the wetland impacts, 9.1 acres are Palustrine Forested and 5.1 acres are Palustrine Emergent. Indirect impacts to 269.2 acres of wetlands may also occur within 300 feet on both sides of the alignment. Most of these wetlands are moderate in quality.

Along both routes in this alternative, the majority of direct impacts are to forested systems, predominantly isolated and semi-isolated cypress-dominated Palustrine Forested wetlands ranging from isolated systems to sloughs. Most of the impacts are to fringes of wetlands along either the roads or along an abandoned railway. Most have some degree of hydrological alteration which ranges severity from minor to extensive due to ditches and/or impoundment, or both. Along SR 52, these wetlands are typically in either semi-natural settings or have adjacent development. Along Tower Road, most are surrounded by pasture, though toward the eastern end, some are in rural residential settings. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Most show evidence of logging, but most remain forested. Herbaceous vegetation is variable and fluctuates with antecedent rainfall conditions. When wet, the typical wetland groundcover includes pickerelweed, lizard's tail, and a variety of sedges. When dry for extended periods, the groundcover often becomes dominated by dog fennel.

A second form of Palustrine Forested wetland occurs in a riverine setting along the Pithlachascotee River where the stream is crossed by SR 52. New direct impacts due to the crossing are entirely to a strip of disturbed riverine wetland on the south side of the existing road, but indirect impacts may occur on the north side. The forested wetland is a fragment of a former continuous riverine wetland dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. The impact is to a narrow strip of residual riverine wetland between the existing SR 52 and a farm road.

Two small headwater forested wetland branches of the Anclote River, Sandy Branch and the South Branch, cross the Tower Road portion of this alternative. At the crossing locations, the wetlands were originally forested, but currently both are disturbed. The South Branch crossing is forested and the Sandy Branch has been cleared and is marshy. The hydrology is altered. The Sandy Branch, as it currently exists, is recognizable as a stream system on the downstream side of the crossing – upstream, the original forested wetland has altered connectivity, and considerable drainage from upstream enters the system from an upland-cut ditch. The South Branch is forested but the crossing is just upstream from an existing disturbed area where the stream crosses the utility pipeline in a shallow trough. The forested crossing is

dominated by a mixture of cypress and hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo.

Along both the SR 52 and Tower Road portions of the alignment, there are Palustrine Emergent wetlands, predominantly shallow wet prairies along the fringes of forested systems. Other areas were once forested, but due to logging, ditching, and conversion to pasture, are now herbaceous. Many are open swales that were apparently created when the pipeline was constructed and are maintained as herbaceous. There are several deep marshes along fringes of lakes. The wet prairies are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, torpedo grass, meadow-beauties, and sedges. Some have a characteristic suite of small shrubs and herbaceous plants including St. John's worts. The wet prairie wetlands typically have short hydroperiods. The open swales along the pipeline are dominated by grasses. The deep marshes include water lilies, pickerelweed, arrowroot, maidencane, cattails, and Peruvian primrose-willow.

Depending on water levels, all of the wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands along streams provide similar habitat function, but in addition, they are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat function, but in addition, these floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

The surface waters are open stormwater management ponds and borrow areas.

Stream Impacts:

There are three stream crossings for Alternative 14: The Pithlachascotee River at SR 52, and the headwater forested wetland South and Sandy branches of the Anclote River.

The crossing over the Pithlachascotee River results in an estimated 120 linear feet of stream impacts the large majority of which are already impacted by the existing SR 52 which crosses the stream on a concrete structure with 3 metal culverts. Only about 10 linear feet is new impact. The crossing is bordered on the north side by the Palustrine Forested wetlands described above. On the south side, where most new impacts will occur, the area is disturbed. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water.

Both Anclote branch crossings occur where there is existing impact in the form of a pipeline. At the Sandy Branch, the original Palustrine Forested system has been replaced with a marshy Palustrine Emergent system. There is a berm (old railroad bed) just upstream of the crossing, and the water crosses the berm through a culvert. There was likely no historic channel. At the South Branch, the crossing is in a forested area just upstream of the pipeline. At the South Branch, no channel is apparent on recent aerial photography, but the wetland appears to be somewhat impounded during periods of high water. A both crossings, flow is intermittent. At each crossing there is approximately 60 feet of linear impact.

3.14.7 Other Environmental Impacts

Wildlife Impacts:

Alternative 14 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have Very Low and impact potentials respectively. Given the sensitivity of the eastern indigo snake to roadways and habitat fragmentation, it is likely that few, eastern indigo snakes inhabit the areas likely to be directly impacted by either the SR 52 or Tower Road alignments, and any impacts to the eastern indigo snake will be minimized by adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat. Losses that do occur should be functionally replaced by wetland mitigation, and the floodplain management ponds and stormwater treatment ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, and due to loss of habitat in the roadway footprint, mostly along SR 52. Few tortoises occur along the Tower Road alignment due to poor drainage and past land management. Any impacts to tortoises will be mitigated by relocating tortoises prior to construction following FFWCC requirements. For other state listed species, Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading at the Pithlachascotee River crossing at SR 52. Widening of the roadway along SR 52

may also increase the potential of black bear mortality. While outside of a black bear population center, bears do occasionally wander to the Serenova Preserve, and widening of the SR 52 roadway increases the potential for vehicle strikes. Widening of the Tower Road alignment would have no effect on the Suwannee cooter or black bear. A Moderate impact potential exists for the Florida sandhill crane as increased road strikes could occur along both alignments and some nesting habitat may be impacted, especially along the Tower Road portion of the alignment. A Low impact potential exists for the gopher frog, southeastern American kestrel, pine snake, and Sherman's fox squirrel, Florida mouse and short-tailed snake. Indirect impacts such as increases in roadway noise/disturbance may occur.

Non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 14.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred along this alternative. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal. Habitat quality is very low for Britton's beargrass due little suitable habitat, and the only potentially suitable habitat has a long history of inappropriate management. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 14 was estimated to directly impact approximately 33.0 acres of natural habitat including approximately 18.8 acres of uplands and 14.3 acres of wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods, cypress, stream and freshwater marsh. This alternative is not likely to affect land management practices. The scaled IWRS habitat value was 2.4 within a range of 0.5 to 3.4 for all alternatives included in this analysis.

3.14.8 Archaeological/Historical Impacts

Alternative 14 is anticipated to have direct impact 14.6 acres of historic sites within the alignment. An additional 37.4 acres of indirect impacts may occur within 300 feet on both sides of the alignment. One historic structure will be directly impacted and 10 additional structures within this same 300 feet on both sides of the alignment may have indirect impacts.

A more detailed analysis will be conducted after a final alternative is identified.

3.14.9 Summary

Compared to the No Action Alternative, this alternative minimally improves the time to evacuate the coastal population by 0.7 hours which is a 6.1% increase when compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 14 improves mobility by increasing Average Travel Speed by 6%; increasing Vehicle Miles of Travel by 3%; reducing Vehicle Hours of Travel by 3%; reducing the Volume to Capacity Ratio (congestion level) by 5%, but increases the crash rate 4% per day, an increase of 131 crashes per year within the Study Area.

The total cost for Alternative 14 is $155,179,000 which is $78,520,000 more than the cost of the Proposed Project, Alternative 5. This cost is due primarily to construction costs and right of way acquisition costs.

Alternative 14 is not consistent with the Long Range Transportation Plan and is unlikely to receive a permit from FDOT due to safety concerns. Alternative 14 will have an impact on residences and businesses, impacting 40 residences of which 21 would require acquisition and relocation of families and impacts to 6 businesses.

3.15 ALTERNATIVE 15

3.15.1 Alternative Description

Alternative 15 includes the at grade construction of both Ridge Road Extension and Tower Road as 2-lane facilities with the addition of an overpass at Suncoast Parkway for Tower Road. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2. The 2-lane RRE alignment for this alternative follows the same alignment as Alternative 5. Completion of the interchange by constructing ramps to provide access to and from the Ridge Road Extension and the Suncoast is part of the improvements included with this alternative.

3.15.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 15's Construction Cost is estimated at $111,060,000; Right-of-Way Cost is estimated at $6,164,000; and, Compensatory Mitigation Costs are estimated at $3,975,000. The total estimated cost for Alternative 15 is $121,199,000. (See Table 1-1)

3.15.3 Traffic Assessment

The improved mobility provided by Alternative 15 is demonstrated in the traffic assessment (attached as Appendix C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.7 miles per hour, a 9% increase.

Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads. Thus, the change is distributed over 2.15 to 2.30 million vehicle-miles of travel per day in the study network. Per the TBRPM, the change in average travel speed reduced travel time by 2,727 vehicle-hours per day, and the increase in travel attracted into the study network because of the improved conditions attracted an additional 145,316 vehicle-miles of travel per day. Not considering the travel time reduced outside of the study network from where the additional travel was attracted, at a value of $12.5/hour/person and 1.31 persons per vehicle, the savings of 2,727 vehicle-hours per day translates to an estimated cost savings in time alone of roughly $16.3 million per year. Additional savings are also realized, because this estimate does not include savings in fuel costs. Additionally, this increase in travel speed would result in a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 15 increased Vehicles Miles Traveled (VMT) by 7%; reduced Vehicle Hours of Travel (VHT) by 2%; reduced the volume to capacity ratio (v:c) by 6% (reducing congestion); and increased the number of crashes per day by 1%, an increase of 18 crashes per year in the Study Area.

3.15.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, this alternative requires 19.3 hours to essentially complete the evacuation of the Coastal Population, compared to 23.4 hours for the “No Action Alternative. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 4.1 hour improvement in evacuation time from the Coastal Area.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “no action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 19.3 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(19.3-12)/(23.4-12)), or a 36% improvement would occur with this alternative compared to the "No Action" alternative.

3.15.5 Logistics

Obstacles to Construction:

Alternative 15 is consistent with the Long Range Transportation Plan and does not require a permit from the FDOT to construct.

Impacts to Residences and Businesses:

Alternative 15 is expected to impact 1 business and 20 residences of which 12 will require acquisition and relocation of families. This alternative clips the southern edge of an existing well-established neighborhood just to the west of US 41. Access is provided to the neighborhood by a circle street called Wisteria Loop. The right of way which would be acquired for this alternative would disconnect Wisteria Loop, resulting in the creation of two cul-de-sacs or providing access to Tower Road in two locations.

3.15.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, stream and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 15 is projected to have a direct impact on 26.5 acres of wetlands and 1.7 acres of surface waters. The wetland impacts on the RRE portion of the alternative are 13.4 and on the Tower Road portion of the alternative are 13.1. Of these, 18.5 acres are Palustrine Forested and 8.1 acres are Palustrine Emergent. This alternative could have indirect impacts on 342.7 acres of wetlands within 300 feet on both sides of the alignment.

Overall, along this alternative the wetlands are moderate in quality; however, quality varies with location. Along the northern route within this alternative, west of the Serenova Preserve, the wetlands are typically low in quality due to hydrological alterations, abundant nuisance species, and low quality uplands. Within the Serenova Preserve, the wetlands are generally high quality. East of the Serenova Preserve and west Five-Mile Creek, the wetlands are moderate quality as the hydrology has some alteration such as ditching, and most of the surrounding uplands have been converted to pine plantation or pasture. From Five-Mile Creek to US 41, the wetlands are predominantly low in quality as they are located either on a highly disturbed section of Five-Mile Creek or an old agricultural land to the north of the creek. Along Tower Road, most of the wetlands are moderate in quality as most have been logged, altered by ditching, impounded, and/or surrounded by agriculture or residential development.

With the exception of the stream crossings, the Palustrine Forested wetlands are isolated to semi-isolated systems which sometimes have narrow stringers that connect them. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, lizard's tail, and a variety of sedges. Hydroperiods are variable but typically longer than the hydroperiods in the Palustrine Emergent wetlands. Forested Palustrine wetlands west of the Pithlachascotee River are hydrologically altered and may experience both high and low water level extremes. Wetlands in the Serenova Preserve are generally in very good condition though some have evidence of past hydrological alteration. Wetlands east of the Suncoast but west of the Five-Mile Creek Crossing are generally in good condition and well hydrated. Wetlands along the Tower Road route are generally in fair condition with most impacts being adjacent to areas that are already disturbed due to drainage, agriculture, and residential development. They are generally fringes of larger systems.

A second form of Palustrine Forest wetland occurs in riverine settings along streams. The palustrine forested wetland along the Pithlachascotee is a riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. The Palustrine Forested wetlands at the Five-Mile Creek and South Branch of the Anclote are similar but more disturbed due to existing alterations and hydrological changes. At Five-Mile Creek, the wetlands are ditched, at the South Branch, the wetland appears on aerial photographs to be impounded during periods of high water.

Within the Serenova Preserve, the Palustrine Emergent wetlands are generally referred to as shallow wet prairies or savannas that are on the fringes of forested wetlands. Some form

shallow connectors between forested wetlands when water levels are high. They are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, nutrushes and yellow-eyed-grasses. Many have a characteristic suite of small shrubs and herbaceous plants including water toothleaf, St. John's worts, meadow-beauties, and rosegentians. These wetlands typically have short hydroperiods. Along the Tower Road alignment, some Palustrine Emergent wetlands were likely created by the cutting of cypress wetlands, and most are hydrologically altered. In addition to the species listed above, many have abundant soft rush, a species associated with grazing.

East of the Suncoast Parkway along the central route and along the eastern part of the Tower Road route, there are impacts to the fringes of deep Palustrine Emergent wetlands and the wetland fringes of lakes. These have long hydroperiods and relatively deep water when fully hydrated. The wetland vegetation varies with changes in depth but generally includes pickerelweed, arrowroot, white water lily, sawgrass, and spatterdock as dominant species

Palustrine Emergent wetlands also occur at the crossing of Five-Mile Creek and at the Sandy Branch Crossing. These were once forested but have been cleared. The Sandy Branch crossing is a constructed swale that crosses an existing pipeline. The hydrology is disrupted by an upstream berm along an old railroad grade.

The wetlands at Five-Mile creek are highly disturbed by a combination of ditching (apparently constructed in the 1950s) and land uses. It is dominated by broomsedges, maindencane, blackberry, and species tolerant of disturbance. Just north of the creek the alignment crosses through an emergent wetland that appears to be created and which has some young cypress trees planted in it. The remaining wetlands to the east appear to be both shallow and likely drier than they would have been historically. They are dominated by dog fennel, blackberry, and species tolerant of grazing. These wetlands lie between a planned wildlife corridor (Tierra Del Sol Preserve) owned by Pasco County and the Tierra Del Sol residential development.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat function, but in addition, these floodplain wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

Stream Impacts:

There are four stream crossings for Alternative 15: The Pithlachascotee River, Five-Mile Creek, headwater forested wetlands of the South Branch of the Anclote, and Sandy Branch of the Anclote for a total of 399 linear feet of impacts.

The alignment for Alternative 15 results in one crossing over the Pithlachascotee River resulting in an estimated 124 linear feet of stream impacts. At the point of the Pithlachascotee River crossing, the stream channel is small, has a poorly defined channel, and is intermittent. The stream is bordered on either side by the Palustrine Forested wetlands described above. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water.

This alignment crosses Five-Mile Creek in an area where the creek has been substantially altered. It is ditched, and the original Palustrine Forested wetland has been cut. The ditch is approximately 20-ft across at top of bank. The alignment crosses at an angle, and impacts approximately 155 linear feet of the stream as measured along the ditch. The same fish species are anticipated but with an emphasis on small fish such as mosquitofish. This portion of Five-Mile Creek is upstream of a former sand mine, and the stream rerouting that was done to make the stream bypass the old mine pits includes impediments to fish that might otherwise move upstream during periods of high water. Flow is intermittent.

The alignment crosses the headwater forested wetlands of the South and Sandy Branches of the Anclote along the Tower Road alignment. Both areas have been altered by construction of a Tampa Bay Water pipeline and the remnants of an old railroad grade. The crossing at the Sandy Branch is best described as constructed swales. At the South Branch, the crossing is in a forested area just upstream of the pipeline. Flow is intermittent. The linear length of each crossing is approximately 60 feet.

3.15.7 Other Environmental Impacts

Wildlife Impacts:

Alternative 15 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Low impact potential. The impact to the eastern indigo snake is minimized by the excluding the snake from the roadway within the Serenova Preserve, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat. Losses that do occur should be functionally replaced by wetland mitigation, and the floodplain and surface water management ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and

proposed for federal listing, and due to loss of habitat in the roadway footprint. It will be mitigated by relocating tortoises prior to construction following FFWCC requirements.

For other state listed species, Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading by the Pithlachascotee Bridge. Low impact rating for the Florida black bear is appropriate within the Serenova Preserve with a Very Low potential being appropriate for the Tower Road alignment. A Moderate impact potential exists for the Florida sandhill crane, southeastern American kestrel, Florida mouse, gopher frog, and short-tailed as occupied habitat exists along one or alignments. A Low impact potential for Sherman's fox squirrel was assigned given low population levels due to past land management in the Serenova Preserve area and mostly inappropriate habitats east of the Suncoast Parkway and along the Tower Road alignment The distinction between Low and Moderate depends on population levels and species habitat requirements. In addition, appropriate fencing will be installed along those portions of the alignments that are at-grade through the Serenova Preserve to prevent vehicle strikes. Indirect impacts such as changes in land management near the road (such as reduced fire frequency) and roadway noise/disturbance will still occur.

Non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 15. Similar types of impacts will occur to these species. The impact minimization and compensatory mitigation provided for listed species will maintain appropriate habitat for these species.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred on the site. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal. Habitat quality is low for Britton's beargrass due to inappropriate management. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 15 was estimated to impact 86.8 acres of natural habitat of which 60.3 are uplands. Natural habitats with more than 2 acres of impact include pine flatwoods, hardwood-conifer mixed forest, cypress, freshwater marsh, shrub and brushland, xeric oak, and longleaf pine-xeric oak forest. Other than direct impacts, the primary impact to habitats will likely be changes in land management along the central (Serenova Preserve) route. Most of the native habitats are fire-dependent, and it is probable that the land managing agencies will avoid burning near the road. Reduced fire frequency has the potential to reduce the value of natural habitats to wildlife populations, as discussed above. Development is occurring along the Tower Road route, and the development will decrease habitat quality along that route. The scaled IWRS habitat value was 3.0 with decreased habitat value anticipated as

development progresses along the Tower Road route. The IWRS habitat value had a range of 0.5 to 3.4 for all alternatives included in this analysis. This alternative results in habitat fragmentation in the Serenova Preserve essentially equal to that of a four lane road through the area because there is little difference between the fragmentation of a two lane road and a four lane road.

3.15.8 Archaeological/Historical Impacts

Alternative 15 is expected to have a direct impact on 22.5 acres of historic sites and indirect impact to 79.8 acres of historic sites within 300 feet on both sides of the alignment. There would be no direct impact to historic structures but 2 structures within the same 300 feet on both sides of the alignment could experience indirect impacts.

3.15.9 Summary

Compared to the No Action Alternative, this alternative reduces time to evacuate the coastal population by 4.1 hours which is a 36% improvement compared to the No Action Alternative. Compared to the No Action Alternative, Alternative 15 improves mobility by increasing Average Travel Speed by 9%; increasing Vehicle Miles of Travel by 7%; reducing Vehicle Hours of Travel by 2%; reducing the Volume to Capacity Ratio (congestion level) by 6%, but reduces Safety by increasing crashes 1% per day, an increase of 18 crashes per year within the Study Area.

The total cost for Alternative 15 is $121,199,000 which is $44,540,000 more than the cost of the Proposed Project, Alternative 5. This increased cost is due primarily to construction costs and the cost to acquire right-of-way, none of which has been acquired east of the Suncoast Parkway for Tower Road.

Alternative 15 does not have logistical or technical factors that make it unavailable or unobtainable by the applicant. This alternative is consistent with the Long Range Transportation Plan and is supported by the FDOT. Alternative 15 would, however, result in impacts to 20 homes, of which 12 would require acquisition and the relocation of the families occupying these homes. Additionally, 1 business would be impacted.

3.16 ALTERNATIVE 16

3.16.1 Alternative Description

Alternative 16 is the extension of existing Ridge Road and the widening of SR 52 by adding 2 lanes at grade to each roadway. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

SR 52 is currently a 6-lane facility west of the Suncoast Parkway and 4-lane east. Alternative 16 expands SR 52 from 6 lanes to 8 lanes west of the Suncoast Parkway and from 2 lanes to 4 lanes east of Suncoast Parkway by adding 2 lanes. The 2-lane RRE alignment for this alternative follows the same alignment as Alternative 5. Completion of the interchange by constructing ramps to provide access to and from the Ridge Road Extension and the Suncoast is part of the improvements included with this alternative.

3.16.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 16's Construction Cost is estimated at $134,661,000; Right-of-Way Cost is estimated at $6,097,000; and, Compensatory Mitigation Costs are estimated at $2,010,000. The total estimated cost for Alternative 16 is $142,768,000. (See Table 1-1)

3.16.3 Traffic Assessment

The improved mobility provided by Alternative 16 is demonstrated in the traffic assessment (attached as Appendix C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 20.6 miles per hour, a 9% increase.

Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads. Thus, the change is distributed over 2.15 to 2.31 million vehicle-miles of travel per day in the study network. Per the TBRPM, the change in average travel speed reduced travel time by 2,057 vehicle-hours per day, and the increase in travel attracted into the study network because of the improved conditions attracted an additional 153,909 vehicle-miles of travel per day. Not considering the travel time reduced outside of the study network from where the additional travel was attracted, at a value of $12.5/hour/person and 1.31 persons per vehicle, the savings of 2,057 vehicle-hours per day translates to an estimated cost savings in time alone of roughly $12.3 million per year. Additional savings are also realized, because this estimate does not

include savings in fuel costs. Additionally, this increase in travel speed would result in a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 16 increased Vehicles Miles Traveled (VMT) by 7%; reduced Vehicle Hours of Travel (VHT) by 2%, reduced the volume to capacity ratio (v:c) by 5% (reducing congestion), and reduced the number of crashes per day by 0.3%, a reduction of 11 crashes per year.

3.16.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, this alternative requires 26.0 hours to essentially complete the evacuation of the Coastal Population, compared to 23.4 hours for the “No Action” Alternative. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 2.6 hour increase in evacuation time from the Pasco County Coastal Area.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 26.0 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(26.0-12)/(23.4-12)), or a 22.8 percent increase would occur with this alternative compared to the "No Action" alternative.

3.16.5 Logistics

Obstacles to Construction:

This alternative is inconsistent with Pasco County’s Long Range Transportation Plan (LRTP) and requires a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates that FDOT does not support any alternative that is not consistent with the LRTP. Further, Paul Steinman, FDOT District 7 Secretary, indicates that FDOT does not support the expansion of roadways beyond 6 general use lanes at grade due to safety factors. (See Appendix E for additional detail on safety issues.) It is unlikely that FDOT would issue a permit for construction of Alternative 16.

Impacts to Residences and Businesses:

This alternative is expected to impact 20 residences of which 9 would be acquired and the families relocated. In addition, 5 businesses would be impacted.

3.16.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, stream and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 16 is projected to have a direct impact on 13.4 acres of wetlands and 0.2 acres of surface waters. The wetland impacts on the RRE portion of the alternative are 13.4 and on the SR 52 portion of the alternative is zero. Of the wetland acres, 10.4 acres are Palustrine Forested and 3.0 are Palustrine Emergent. Alternative 16 is anticipated to have 286.7 acres of indirect impacts.

Overall, along this alternative, the wetlands are moderate in quality; however, quality varies with location. Along the southern route within this alternative, west of the Serenova Preserve, the wetlands are typically low in quality due to hydrological alterations, abundant nuisance species, and low quality uplands. Within the Serenova Preserve, the wetlands are generally high quality. East of the Serenova Preserve and west of Five Mile Creek, the wetlands are moderate quality as the hydrology has some alteration such as ditching, and most of the surrounding uplands have been converted to pine plantation or pasture. East of Five-Mile Creek, the wetlands are predominantly low in quality as they are located either on a highly disturbed section of Five-Mile Creek or an old agricultural land to the north of the creek. Along the SR 52 route within this alternative, most of the wetlands are moderate in quality as most are fringes along the existing SR 52 roadway. Some have additional alterations including ditches, agriculture, and residential development.

With the exception of the crossings of the Pithlachascotee River and Five-Mile Creek, the Palustrine Forested wetlands are isolated to semi-isolated systems which sometimes have narrow stringers (narrow bands of cypress within wet prairies or along ditches) that connect them. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, lizard's tail, and a variety of sedges. Hydroperiods are variable but typically longer than the hydroperiods in the Palustrine Emergent wetlands.

A second form of Palustrine Forest wetland occurs in riverine settings along streams. The Palustrine Forested wetlands along the Pithlachascotee are riverine systems dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. The SR 52 crossing is already disturbed due to the existing roadway, and new direct impacts due to the crossing are entirely to disturbed areas on the south side of the existing road. The disturbance is to a remnant of Palustrine Forested wetland between the existing roadway and a farm road. Indirect impacts may occur on the north side of SR 52, but all direct impacts are on the south side. At Five-Mile Creek, the wetland is ditched and only a small area of forested wetland remains. It is disturbed due to the ditch and past land uses.

West of the Suncoast Parkway, the Palustrine Emergent wetlands are shallow wet prairies or savannas that are on the fringes of forested wetlands. Some form shallow connectors between forested wetlands when water levels are high. They are dominated by grasses and grass-like species including little blue maidencane, maidencane, beakrushes, nutrushes and yellow-eyed-grasses. Many have a characteristic suite of small shrubs and herbaceous plants including water toothleaf, St. John's worts, meadow-beauties, and rosegentians. These wetlands typically have short hydroperiods.

Palustrine Emergent wetlands also occur at the crossing of Five-Mile Creek. These were once forested riverine systems but have been cleared. Just north of the creek is an emergent wetland that appears to be created and which has some young cypress trees planted in it. Further to the east and north of the creek are a series of highly disturbed isolated systems. These disturbed wetlands are dominated by maidencane, broomsedge, Peruvian primrose-willow, and dogfennel. All provide foraging habitat for listed wading birds during periods of high water.

East of the Suncoast Parkway, and west of the CSX railway, there are impacts to one Palustrine Emergent wetland that has a long hydroperiod and relatively deep water when fully hydrated. The wetland vegetation varies with changes in depth but generally includes pickerelweed, arrowroot, white water lily, sawgrass, and spatterdock as dominant species

Depending on water levels, all of the wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat function, but in addition, they are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

Stream Impacts:

There are three stream crossings for Alternative 16: two for the Pithlachascotee River and one for Five-Mile Creek with a total of 399 linear feet of impacts.

The alignment for Alternative 16 results in two crossings over the Pithlachascotee River resulting in an estimated 244 linear feet of stream impacts. At the point of the Pithlachascotee River crossing within the Serenova Preserve, the stream channel is poorly defined and

intermittent. The stream is bordered on either side by Palustrine Forested wetlands described above. The SR 52 crossing has an estimated 120 linear feet of stream impact the large majority of which is already impacted by the existing SR 52 which crosses the stream on a concrete structure with 3 culverts. The existing roadway crossing is the majority of the impact with only approximately 10 feet being new. The crossing is bordered on the north side by the Palustrine Forested wetlands. On the south side, where any new impacts will occur, the impact is to a narrow remnant of riverine forest between the existing roadway and a farm road. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water

This alignment crosses Five-Mile Creek in an area where the creek has been substantially altered. It has been ditched since the late 1950s, and the original Palustrine Forested wetland has been mostly cut. The channel is appropriately described as a shallow ditch. The alignment crosses at an angle, and impacts approximately 155 linear feet of the stream as measured along the ditch. The same fish species are anticipated but with an emphasis on small fish such as mosquitofish. This portion of Five-Mile Creek is upstream of a former sand mine, and the stream rerouting that was done to make the stream bypass the old mine pits includes impediments to fish that might otherwise move upstream during periods of high water. Flow is intermittent.

3.16.7 Other Environmental Impacts

Wildlife Impacts:

Alternative 16 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Low impact. That impact to the eastern indigo snake will be minimized by providing wildlife crossings, excluding the snake from the roadway within the Serenova Preserve, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat, and the wetland mitigation to be provided for the project should functionally replace those losses, while the floodplain and surface water management ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, due to loss of habitat in the roadway footprint. It will be mitigated by relocating tortoises prior to construction following FFWCC requirements.

For other state listed species, species with Moderate potential for impact include southeastern American kestrel, Florida sandhill crane, Florida mouse, gopher frog, short-tailed snake and black bear. Low Impact could occur to the, pine snake and Sherman’s fox squirrel which may lose some habitat due to construction. The black bear was assigned a Moderate impact potential as it may have increased risk of roadway mortality due to the widening of both SR 52 and construction of the Ridge Road extension. The distinction between Low and Moderate

depends on population levels and species habitat requirements. Potential impacts include road strikes, which will be minimized with appropriate fencing through the Serenova Preserve, direct vehicle strikes for species that can evade the fencing (e.g., Florida sandhill crane), habitat fragmentation (e.g., gopher frog), anticipated changes in land management near the road (such as reduced fire frequency), and roadway noise/disturbance. Appropriate habitat and adequate habitat connectivity via wildlife underpasses within the Serenova Preserve will be provided to maintain the populations. Roadway impacts are likely to have little effect on their population sizes. Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading by bridges at the Pithlachascotee River crossings.

Non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 16 , and they will experience similar disturbances. The impact minimization and compensatory mitigation provided for listed species will similarly maintain appropriate habitat for these species. Due to the combination of broadening one roadway and creating another, this alternative, overall, will likely have a greater impact on wildlife than any alternative that is a single roadway, including Alternative 5.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred along this alternative. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal. Habitat quality is low for Britton's beargrass due to inappropriate management. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction. Such impacts would be most likely within the Serenova Preserve.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 16 was estimated to impact 61.7 acres of natural habitat of which approximately 48.3 acres are uplands. Natural habitats with more than 2 acres of impact include pine flatwoods, hardwood-conifer mixed forest, cypress, freshwater marsh, shrub and brushland, palmetto prairie and longleaf pine-xeric oak (sandhill). Other than direct impacts, the primary impact to habitats will likely be changes in land management. Most of the native upland habitats are fire-dependent, and the land managing agency is likely to have smoke issues that reduce its opportunities to burn near the road. Reduced fire frequency has the potential to reduce the value of natural habitats to wildlife populations, as discussed above. The scaled IWRS habitat value was 1.8 within a range of 0.5 to 3.4 for all alternatives included in this analysis. This alternative results in habitat fragmentation in the Serenova Preserve essentially equal to that of a four lane road through the area because there is little difference between the fragmentation of a two lane road and a four lane road.

Detail is provided in Attachment H.

3.16.7 Archaeological/Historical Impacts

This alternative is anticipated to have direct impacts to 9.2 acres of historic sites and indirect impacts to 47.9 acres within 300 feet on both sides of the alignment. One historic structure may be directly impacted and 8 structures may sustain indirect impacts within 300 feet on both sides of the alignment.

A more detailed analysis will be conducted after a final alternative is identified.

3.16.9 Summary

Compared to the No Action Alternative, this alternative increases the time to evacuate the coastal population by 2.6 hours which is a 22.8% increase. Compared to the No Action Alternative, Alternative 16 improves mobility by increasing Average Travel Speed by 9%; increasing Vehicle Miles of Travel by 7%; reducing Vehicle Hours of Travel by 2%; and, reducing the Volume to Capacity Ratio (congestion level) by 5%. The crash rate will remain unchanged within the Study Area.

The total cost for Alternative 16 is $142,768,000 which is $66,109,000 more than the cost of the Proposed Project, Alternative 5. This cost is due primarily to construction costs and right of way acquisition costs.

Alternative 16 is not consistent with the Long Range Transportation Plan and is unlikely to receive a permit from FDOT due to safety concerns with roadways over 6 general use lanes at grade. Alternative 16 will have an impact on residences and businesses, impacting 20 residences of which 9 would require acquisition and relocation of families and impacts to 5 businesses.

3.17 ALTERNATIVE 17

3.17.1 Alternative Description

Alternative 17 is the extension of existing Ridge Road as a 2-lane roadway and the expansion of SR 54 to 8 lanes west of the Suncoast Parkway and 6 lanes east by adding 2 lanes at grade. The alignment for this alternative is shown in Attachment A, Appendix A-1 and the typical cross section is shown in Appendix A-2.

SR 54 is currently a 6-lane facility west of the Suncoast Parkway and 4-lane east. For this alternatives analysis SR 54 on the east side of the Suncoast Parkway will be assumed to have the planned widening to 6 lanes completed. The 2-lane RRE alignment for this alternative follows the same alignment as Alternative 5. Completion of the interchange by constructing ramps to provide access to and from the Ridge Road Extension and the Suncoast is part of the improvements included with this alternative.

3.17.2 Construction, Right-of-Way, and Mitigation Cost Estimates

The methodologies and worksheets for estimating Construction and Right-of-Way Costs are provided in Attachment B. Compensatory mitigation costs were estimated assuming that each acre of direct wetland impact would cost $150,000 to mitigate. The asking price for mitigation credits varies by type of wetland and by individual bank. Asking prices for six mitigation banks within Pasco, Hillsborough and Polk Counties can range from $120,000 to $180,000, but final costs are negotiated and usually lower. The $150,000 figure is an estimate to use for comparison purposes. Alternative 17's Construction Cost is estimated at $174,524,000; Right-of-Way Cost is estimated at $2,868,000; and, Compensatory Mitigation Costs are estimated at $2,055,000. The total estimated cost for Alternative 17 is $179,447,000. (See Table 1-1)

3.17.3 Traffic Assessment

The improved mobility provided by Alternative 17 is demonstrated in the traffic assessment (attached as Appendix C) to increase Average Travel Speed within the Study Area from 18.9 mph for the No Action Alternative to 21.7 miles per hour, a 15 percent increase.

Network average travel speed was derived by dividing the estimated vehicle-miles of travel in the study network by the estimated vehicle-hours of travel on the same roads. Thus, the change is distributed over 2.15 to 2.35 million vehicle-miles of travel per day in the study network. Per the TBRPM, the change in average travel speed reduced travel time by 5,385 vehicle-hours per day, and the increase in travel attracted into the study network because of the improved conditions attracted an additional 200,012 vehicle-miles of travel per day. Not considering the travel time reduced outside of the study network from where the additional travel was attracted, at a value of $12.5/hour/person and 1.31 persons per vehicle, the savings of 5,385 vehicle-hours per day translates to an estimated cost savings in time alone of roughly $32.2 million per year. Additional savings are also realized, because this estimate does not

include savings in fuel costs. Additionally, this increase in travel speed would result in a reduction of carbon emissions and greenhouse gases.

As regards other measures of mobility, Alternative 17 increased Vehicles Miles Traveled (VMT) by 9%; reduced Vehicle Hours of Travel (VHT) by 5%; reduced the volume to capacity ratio (v:c) by 8% (reducing congestion); but increased the number of crashes per day by 3%, an increase of 113 crashes per year.

3.17.4 Hurricane Evacuation Assessment

Based on the Hurricane Evacuation Assessment (Attachment D) that was conducted, this alternative requires 15.8 hours to essentially complete the evacuation of the Coastal Population, compared to 23.4 hours for the “No Action” Alternative. For purposes of this evaluation, evacuation was considered “essentially complete” when 99% of the evacuating population have evacuated outside of the evacuation zone. This is a 7.6 hour reduction in evacuation time from the Coastal Area.

Since the analysis uses the first 12 hours of evacuation time for all evacuees to leave their homes in all scenarios, the additional time beyond 12 hours represents the additional time needed to clear the evacuation zone. As indicated above, in the “No Action” condition, 99 percent of the evacuees had cleared the evacuation zone after 23.4 hours, and in this alternative the same occurred after 15.8 hours. The percentage reduction in evacuation zone clearance time was calculated as 100*(1-(15.8-12)/(23.4-12)), or a 66.7 percent improvement would occur with this alternative compared to the "No Action" alternative.

3.17.5 Logistics

Obstacles to Construction:

This alternative is inconsistent with Pasco County’s Long Range Transportation Plan (LRTP) and requires a permit from FDOT to construct. Correspondence from FDOT provided in Attachment E indicates that FDOT does not support any alternative that is not consistent with the LRTP. Further, Paul Steinman, FDOT District 7 Secretary, indicates that FDOT does not support the expansion of roadways beyond 6 general use lanes at grade due to safety factors. (See Attachment E for additional detail on safety issues.) It is unlikely that FDOT would issue a permit for construction of Alternative 17.

Impacts to Residences and Businesses:

Alternative 17 is anticipated to impact 2 residences and 12 businesses of which 1 would require acquisition.

3.17.6 Environmental Impacts

The methodologies, sources, and outcomes of the environmental assessment for each alternative are provided in Attachments F, G, H and I. The assessment includes wetlands, wildlife and plant species, and habitat impacts likely to result from each alternative.

Wetlands:

Alternative 17 is projected to have a direct impact on 13.7 acres of wetlands and 1.0 acre of surface waters. Of these, 10.5 acres are Palustrine Forested and 3.2 acres are Palustrine Emergent. There are 281.6 acres of potential indirect impacts.

Overall, along this alternative, the wetlands are moderate in quality; however, quality varies with location. Along the northern route within this alternative, west of the Serenova Preserve, the wetlands are typically low in quality due to hydrological alterations, abundant nuisance species, and low quality surrounding uplands. Within the Serenova Preserve, the wetlands are generally high quality. Wetlands east of the Suncoast Parkway and west of the File-Mile Creek Crossing are generally of moderate quality as some are ditched and most are surrounded by pine plantation of pasture. From the creek crossing to US 41, the wetlands are predominantly low in quality as most are located either on a highly disturbed section of Five-Mile Creek or an old agricultural land to the north of the creek. Along the SR 54 route within this alternative, most of the wetlands are moderate in quality as most are fringes along the existing SR 54 roadway. Most have existing alterations including ditches, agriculture, and residential development.

With the exception of the crossing of the Pithlachascotee River and Five-Mile Creek, the Palustrine Forested wetlands are predominantly isolated to semi-isolated systems which sometimes have narrow stringers (narrow bands of cypress within wet prairies or along ditches) that connect them. They are characteristically dominated by pond cypress with occasional individuals of swamp tupelo, dahoon holly, and red maple. Herbaceous vegetation is variable, but common species include pickerelweed, lizard's tail, and a variety of sedges. Hydroperiods are variable but typically longer than the hydroperiods in the Palustrine Emergent wetlands. Forested Palustrine wetlands west of the Pithlachascotee River are hydrologically altered and may experience both high and low water level extremes. Wetlands in the Serenova Preserve are generally in very good condition though some have evidence of past hydrological alteration.

Along the SR 54 portion of the alternative, the typical Palustrine Forested system has already been impacted by the existing SR 54 with the impact generally resulting in a loss of the original ecotone and a fairly abrupt drop-off from the road shoulder into the wetland. Where the wetlands are in pastures, the groundcover may have soft rush (*Juncus effusus*), ferns (*Blechnum serrulatum*, *Woodwardia virginiana*), warty sedge (*Carex verrucosa*), cattail (*Typha domingenensis*), pickerelweed, and other species tolerant of grazing. In more developed areas, a fringe of Peruvian primrose-willow (*Ludwigia peruviana*) is common.

A second form of Palustrine Forest wetland occurs in riverine settings along streams. The Palustrine Forested wetland along the Pithlachascotee is a riverine system dominated by hardwoods especially swamp laurel oak, red maple, and occasional individuals of swamp tupelo and bald cypress. The Palustrine Forested wetlands at the Five-Mile Creek crossing is similar though more disturbed due the creek having been ditched, and most of the wetland has been cleared and is now Palustrine Emergent.

Within the Serenova Preserve, the Palustrine Emergent wetlands are generally shallow wet prairies or savannas that are on the fringes of forested wetlands. Some form shallow connectors between forested wetlands when water levels are high. They are dominated by grasses and grass-like species including little blue maidencane (*Amphicarpum muhlenbergianum*), maidencane (*Panicum hemitomon*), beakrushes (*Rhynchospora* spp.), nutrushes (*Scleria* spp.) and yellow-eyed-grasses (*Xyris* spp.). Many have a characteristic suite of small shrubs and herbaceous plants including water toothleaf, St. John's worts (*Hypericum* spp.), meadow-beauties (*Rhexia* spp.), and rosegentians (*Sabatia* spp.). These wetlands typically have short hydroperiods. Along SR 54, wet prairie areas frequently have grasses and grass-like species including bluestem grasses (*Andropogon* spp.), soft rush, coinwort (*Centella asiatica*), panic grasses especially torpedo grass (*Panicum repens*), and a variety of other grazing-tolerant species including *Cyperus*, *Rhynchospora*, *Axonopus* and *Paspalum* species.

Palustrine Emergent wetlands also occur at the crossing of Five-Mile Creek. This area was once forested but has been cleared for many years. Just north of the creek is an emergent wetland that appears to have been created and which has some young cypress trees planted in it. Further to the east and further from the creek are a series of highly disturbed isolated systems. These disturbed wetlands are dominated by maidencane, broomsedges (*Andropogon* spp.), Peruvian primrose-willow (*Luwigia peruviana*), blackberry (*Rubus* sp.) and dogfennel (*Eupatorium capillifolium*). All provide foraging habitat for listed wading birds during periods of high water.

East of the Suncoast Parkway, and west of Five Mile Creek, there are impacts to one Palustrine Emergent wetland that has a long hydroperiod and relatively deep water when fully hydrated. The wetland vegetation varies with changes in depth but generally includes pickerelweed (*Pontederia cordata*), arrowroot (*Sagittaria* spp.), white water lily (*Nymphaea odorata*), sawgrass (Cladium jamaescense), and spatterdock (*Nuphar lutea*) as dominant species.

Along SR 54, the wetlands are mostly forested and have a long history of alteration due to agriculture. Some have more recent alterations due to development along SR 54.

Depending on water levels, all of these wetlands provide foraging and roosting habitat for wading birds, cover for small birds and migratory birds, water sources for mammals and resting habitats when dry, and habitat for an array of reptiles and amphibians. Some amphibians, including the gopher frog, depend on the isolated wetlands for breeding since there are no fish. The Palustrine Forested wetlands provide similar habitat function, but in addition, the floodplain

wetlands are known to be movement corridors for a number of species, especially when dry. All of the wetlands provide water retention and reduce the potential for downstream flooding.

All of the wetlands are important to elemental cycling, especially the cycling of carbon, sulfur, phosphorus and nitrogen. In areas where there is grazing currently, or in the recent past, the wetlands provide water quality treatment through capture of sediments and uptake of dissolved constituents from non-point-sources, especially nitrogen and phosphorus. The wetlands along streams also provide treatment for non-point-source materials that come from off-site.

The surface waters are surface water management areas and borrow areas.

Stream Impacts:

There are two stream crossings for Alternative 17: The Pithlachascotee River and Five-Mile Creek.

The alignment for Alternative 17 results in one crossing over the Pithlachascotee River resulting in an estimated 124 linear feet of stream impacts. At the point of the Pithlachascotee River crossing, the stream channel is small and poorly defined. The stream is intermittent. The stream is bordered on either side by the Palustrine Forested wetlands described above. Fish use is limited to typical assemblages found in intermittent streams in west-central Florida including mosquitofish, gar, sunfish, catfish, tadpole madtom, hogsucker, and largemouth bass, some of which move upstream from reaches with year-round flows into this intermittent flow area during periods of high water. Impacts to the Pithlachascotee River are at the same location for this alternative and Alternative 5, but the linear feet of impact is less given that the road has fewer lanes.

This alignment crosses Five-Mile Creek in an area where the creek is substantially altered. It has been ditched since the late 1950s, and the original Palustrine Forested wetland has been mostly cut. The channel is appropriately described as a shallow ditch. The alignment crosses at an angle, and impacts approximately 155 linear feet of the stream as measured along the ditch. The same fish species are anticipated but with an emphasis on small fish such as mosquitofish. This portion of Five-Mile Creek is upstream of a former sand mine, and the stream rerouting that was done to make the stream bypass the old mine pits includes impediments to fish that might otherwise move upstream during periods of high water. Flow is intermittent.

3.17.7 Other Environmental Impacts

Wildlife Impacts:

Alternative 17 was determined to have No Impact on any federally listed species except the eastern indigo snake and wood stork, which could have a Low impact. That impact to the eastern indigo snake is minimized by excluding the snake from the roadway within the Serenova

Preserve, and adhering to USFWS and FFWCC procedures that are designed to avoid accidental mortality during construction. The impact to the wood stork is to foraging habitat. Losses to habitat should be functionally replaced by wetland mitigation, and the floodplain management ponds, and stormwater treatment ponds required by the ERP could actually increase available foraging habitat. Low impact could also occur to the gopher tortoise, state listed and proposed for federal listing, and due to loss of habitat in the roadway footprint. It will be mitigated by relocating tortoises prior to construction following FFWCC requirements.

Species with Moderate potential for impact include Florida mouse, southeastern American kestrel, Florida sandhill crane, gopher frog, Florida mouse, and short-tailed snake. Low impact may occur to the pine snake, Sherman's fox squirrel, and black bear. The distinction between Low and Moderate depends on population levels and species habitat requirements. Appropriate fencing will be installed along the Ridge Road alignment within the Serenova Preserve to prevent vehicle strikes. A Very Low Impact may occur to the Suwannee cooter due to temporary impacts during construction and shading by a bridge. Indirect impacts such as changes in land management near the road (such as reduced fire frequency) and roadway noise/disturbance will still occur. Most impacts are due to Ridge Road alignment as the SR 54 alignment has less available habitat and the habitat is fragmented.

Other, non-listed, wildlife, such as deer, fox, opossum, raccoon, rabbits, most mice, most birds, small fish, and amphibians are abundant in the area of Alternative 17and will experience similar types of impacts. The impact minimization and compensatory mitigation provided for listed species will maintain appropriate habitat for these species.

There is a high probability that none of the federally listed plant species for which surveys were conducted have ever occurred on the alternative. The alternative is outside of the known range of Cooley's water-willow and Brooksville bellflower and habitat quality is marginal. Habitat quality is low for Britton's beargrass due to inappropriate management. There is potential that impacts, likely Low, could occur to state listed plant species due to changes in land management or direct impacts due to roadway construction. Any impacts would be along the northern route within this alternative.

A more detailed discussion of the species and their habitat requirements is provided in Attachment I.

Habitat Impacts:

Based on this analysis, Alternative 17 was estimated to impact 62.1 acres of natural habitat of which approximately 48.4 acres are uplands and 13.7 are wetlands. Natural habitats with more than 2 acres of impact include pine flatwoods, hardwood-conifer mixed forest, cypress, freshwater marsh, shrub and brushland, xeric oak, and longleaf pine-xeric oak forest. Other than direct impacts, the primary impact to habitats will likely be changes in land management. Most of the native habitats are fire-dependent, and it is probable that the land managing agencies will avoid burning near the road. Reduced fire frequency has the potential to reduce

the value of natural habitats to wildlife populations, as discussed above. The scaled IWRS habitat value was 3.1 within a range of 0.5 to 3.4 for all alternatives included in this analysis. This alternative results in habitat fragmentation in the Serenova Preserve essentially equal to that of a four lane road through the area because there is little difference between the fragmentation of a two lane road and a four lane road.

Detail is provided in attachment H.

3.17.8 Archaeological/Historical Impacts

This alternative is anticipated to have direct impacts to 10.0 acres of historic sites and indirect impacts to 48.2 acres within 300 feet on both sides of the alignment. No historic structures will be directly impacted and 4 structures may sustain indirect impacts within 300 feet on both sides of the alignment.

A more detailed analysis will be conducted upon selection of a final alternative.

3.17.9 Summary

Compared to the No Action Alternative, this alternative reduces the time to evacuate the coastal population by 7.6 hours which is a 66.7% reduction. Compared to the No Action Alternative, Alternative 17 improves mobility by increasing Average Travel Speed by 15%; increasing Vehicle Miles of Travel by 9%; reducing Vehicle Hours of Travel by 5%; reducing the Volume to Capacity Ratio (congestion level) by 8%, and increasing the crash rate 3% per day, an increase of 113 crashes per year within the Study Area.

The total cost for Alternative 17 is $179,447,000 which is $102,788,000 more than the cost of the Proposed Project, Alternative 5. This cost is due primarily to construction costs.

Alternative 17 is not consistent with the Long Range Transportation Plan and is unlikely to receive a permit from FDOT due to safety concerns associated with roadways that exceed 6 general use lanes at grade. Alternative 17 will have impacts on residences and businesses, impacting 2 residences and 11 businesses, one business of which will require acquisition.