QUESTION 21
TRANSPORTATION

INTRODUCTION

Over the past couple of months the applicant for the Restoration DRI has worked diligently with the review agencies to refine the Development Plan. As it pertains to the refinements, the majority of the development area has been shifted eastward adjacent to I-95 and, as discussed below in the next section, the plan incorporates Traditional Neighborhood Development (TND) and Transit Oriented Development (TOD) concepts. It is also important to note that, due to the site redesign, the Airport Road extension has been removed entirely from the plan. Additionally, the portion of the property within the City of New Smyrna Beach has been removed from the DRI. Below is a discussion regarding the master plan refinements and how the traffic analyses were revised to address these changes. Additionally, attached are the responses to the agency comments on the second sufficiency submittal.

MASTER PLAN OVERVIEW

The development of the revised land use and transportation plan for this Restoration project has followed several guiding principles. The revised plan attempts to accommodate different types of homes, neighborhoods, employment, recreational activities, and social interactions in order to enhance the resident's quality of life; and to serve the development by balancing the needs of automobiles, bicycles, pedestrians and transit. The plan facilitates an internal transportation system that encourages increased mobility options, and provides for energy efficient transportation alternatives while minimizing environmental impacts. The desired outcome is to create a safe, accessible, convenient, and efficient transportation system for residents, employees and visitors, in coordination with the needs of land use activities, population densities, housing and employment patterns.

Land Use/Transportation Strategy

The development plan will be implemented through a combination of strategies, including a land use mix strategy, a network connectivity strategy and an urban design strategy. The land use mix strategy provides for the density and intensity of development needed to support mobility alternatives. The network connectivity strategy provides for reduced and more direct travel making walking and cycling more feasible. The urban design strategy provides for a pleasant experience whether on foot, cycle, transit vehicle, or car.

- ***Land Use Mix***

The land use mix strategy encourages development that supports all forms of mobility, especially walking, cycling, and future transit use through neo-traditional, New Urbanism, and mixed-use development practices at transit oriented densities. The objective of the land use mix strategy is to support a land use pattern that allows for shorter trip lengths and fewer trips, regardless if transit is implemented on site or not. Daily activities can be located within walking distance of residences over time, resulting in fewer vehicle trips. A greater mix and range of land uses can be located within walking distance of potential future transit stops, thereby improving the convenience of those forms of mobility. Even if trips are made using a vehicle, a greater mix of land uses with the appropriate site design can reduce the number of individual vehicle trips by parking once and conveniently and comfortably walking to multiple destinations in the same district.

- ***Network Connectivity***

The network connectivity strategy provides for mobility-enhancing features according to neo-traditional or New Urbanism standards, which characteristically have well-connected street and sidewalk networks. The objectives of the network connectivity strategy are to increase personal route options and allow more direct travel between destinations within the Restoration project. These facilities will provide safe and convenient movement on the development site for all users, particularly pedestrians. As connectivity increases, travel distances decrease. A more accessible system can make non-motorized travel more attractive by improving walking and cycling conditions, particularly when paths provide shortcuts. Shortcuts can make walking and cycling relatively faster than driving to a destination. Shortcuts can also support future transit use by shortening the distance to the potential future transit stop.

- ***Urban Design***

The urban design portion of the strategy encourages pedestrian, cycle, and potential future transit use within the Restoration project by including features that create safe, comfortable, and attractive environments for users. The developers will implement street design standards that ensure that major new streets are designed for transportation modal choice. Alternative transportation modes become more viable when both the density of development reaches a critical mass and the safety, comfort, and convenience needs of users are met. The objective of the urban design strategy is to use the design of the built environment to influence peoples' choice of transportation mode. These could include pedestrian features, such as wide sidewalks and canopies over sidewalks, to cyclist features, such as secure and covered bicycle parking. The hope is that residents will consider walking, bicycling, and future transit as realistic options for some of their trips and will choose to exercise these options, based partly upon the development's design that contains amenities meeting their travel needs.

Transit Oriented Development

From a land use standpoint, the development generally follows Transit Oriented Development (TOD) practices and principles. TOD is a strategy that allows moderate to higher density development within easy walking distance to alternative modes of transportation. The mix of development is typically residential, employment and retail, and is designed primarily for pedestrians without excluding automobiles. By promoting TOD, the Restoration development is seeking to align transportation investments with a more livable, mixed use, walkable community. TODs have four basic, essential characteristics that include a greater density than a community average; a mix of uses; a quality pedestrian environment and a defined center. While the overall Restoration project will have a gross density of 1.6 dwelling units per acre, due to the massive environmental restoration and clustering into a compact development, the majority of the development will be in a denser north south corridor paralleling I-95. Taking this into account, the gross density within that higher intensity residential and transit ready area is six dwelling units per acre. The density range within the clustered development will range from 3.5 units per acre to 36 units per acre.

The benefits of TOD are many, and include:

- Provision of mobility choices, especially for the young, old, those without cars and the disabled.
- Increase in utilization of other forms of mobility, including bicycles, pedestrian features and transit, which assists in the provision of transportation system capacity.

- Reduction of Vehicle Miles of Travel (VMT), on a household basis by 20 to 40 percent.
- Increase in disposable household income, though the reduction of driving related costs and potentially, the reduction in the number of cars per household.
- Reduction of air pollution and energy consumption rates.
- Protection of single-family neighborhoods by directing higher density development to appropriate areas.
- Reduction in overall infrastructure costs due to more compact and infill development.

The Restoration development will have a linear corridor that is transit ready, and is aligned with activity centers. Activity centers will be mixed-use, transit-ready areas around employment clusters that integrate mid- to high-density residential uses in and around proposed nonresidential districts. This will achieve a greater balance of land uses in a compact area, promote more efficient use of land and infrastructure, provide opportunities for affordable housing, and encourage more non-automotive modes of travel.

Alternative Forms of Mobility

With the proper land use planning and urban design, pedestrian and bicycle systems are alternative modes of travel to the personal vehicle that can serve to enhance overall mobility. In order to fully realize the potential of these systems as alternative transportation modes, the appropriate mix of land uses must exist within a relatively close proximity, the infrastructure for utilizing these alternative modes must be in place and a viable interface between these alternative modes with other modes of travel, such as the personal vehicle and public transit, must be developed. Restoration has taken great strides in the re-planning of the project in encouraging both pedestrian and bicycle activity, not only as an alternative means of transportation but also as a valuable form of recreation. Finally, the advent of some form of internal transit will shape the development program from initiation of Phase I to potential implementation in Phase III, resulting in higher internal capture rates in the later phases. This higher internal capture will occur with or without the implementation of transit due to the land use density, intensity, site design and mix of use.

- ***Pedestrian Facilities and Access to Transportation***

A pedestrian-friendly environment is crucial to the success of mobility options. Development in Restoration will have the necessary space along the property frontage for the construction of public sidewalk facilities. Pedestrian access from the development sites to public sidewalks, the removal of barriers between properties, and safe and convenient on-site pedestrian circulation are more examples of internal improvements that increase connectivity. Protection from weather extremes is an important consideration when choosing to walk or use alternative forms of transportation. The provision of refuge for walkers, such as awnings within the activity centers will be important. Aesthetic improvements, such as a pleasant streetscape, sidewalk furniture and lighting not only create a sense of place; they also supply additional shade and safety. When the special needs of those with disabilities are properly considered, walking truly becomes the most accessible mode of transportation. With pedestrian facilities providing connections within the Restoration community, walking can become the most desirable mode of transportation.

- ***Bicycle Improvements***

The importance of the bicycle as a transportation choice has not yet been fully explored by the development community in past projects. Bicycles are suitable for both short and longer distance travel. This can make the bicycle a practical alternative to the car, especially if a good network is

available, which could be as simple as the provision of a safe street environment. Other potential improvements include the provision of bicycle parking close to the site, or the alteration of walkways to accommodate bicycles. The provision of bicycle connections that "shorten" the distance between land uses can reduce Vehicle Miles of Travel (VMT) and improve overall mobility.

- ***Internal Transit Improvements***

As previously mentioned, the Restoration project will utilize the planned Williamson Boulevard as the north south mobility spine for the project. Williamson Boulevard will also be an important transportation facility for the region. This roadway facility will be heavily landscaped and will have one-way frontage roads with parking within the activity centers. Williamson Boulevard will be designed to accommodate the potential for six lanes of traffic, with the outside lane designated as a potential transit facility. This transit facility, if warranted and feasible, could potentially take the form of either a streetcar or Bus Rapid Transit (BRT) project. In addition, if warranted at the time of analysis, the project could have an internal bus circulator in conjunction with the potential transit facility. Streetcars and BRT are briefly discussed below.

Streetcars are rail transit vehicles that run on rails embedded in the street, designed for local transportation, and powered by electricity received from an overhead wire. In the past, some streetcars, in cities where overhead wires were forbidden, received their electric power from a "slot" in the street.

In addition, a few were powered by storage batteries. There is a current streetcar running in Galveston, Texas that has a diesel engine. However, for the most part, streetcars are powered by electric motors with an overhead wire and a trolley pole. Streetcars are different than buses, and are also different than Light Rail Transit. According to the American Public Transit Association, the main difference is purpose: streetcars are for local transportation, whereas Light Rail Transit may operate ten or twenty miles out beyond the downtown, running at high speeds between suburban stations spaced a mile or more apart. Streetcars operate in an activity center, such as a downtown, with multiple stops, sometimes at every street corner. The streetcar has lower construction and operating costs, due to its construction methods, type of vehicles, and operating characteristics. There has been a renaissance of streetcars, with networks being constructed in cities such as Seattle, Portland, Charlotte and Dallas (which also have Light Rail Transit), and planned in cities such as Atlanta, Miami, and Washington DC. They are also being explored for implementation in new towns and activity centers thought the US. The range of vehicle could be from modern looking streetcars to vintage replica trolleys.

Bus Rapid Transit (BRT) consists of a spectrum of bus transportation investments that include low-cost investments such as traffic signal pre-emption at intersections to higher-cost investments such as exclusive rights-of-way. The magnitude of the investment is generally matched to the conditions of the transportation system, higher demand corridors typically warrant exclusive rights-of-way whereas localized operational problems can generally be solved with signal improvements and bus priority strategies on existing streets. Conceived as an integrated, well-defined system, BRT can provide high operating speeds, reliable and convenient service, and customer amenities that can match the quality of rail transit when implemented in appropriate settings. In this setting, bus lanes and bus signal priority could be considered for Williamson Boulevard, if warranted in later phases. Bus lanes are a lane on an urban arterial or city street, which is reserved for the exclusive or near-exclusive use of buses. An example is the exclusive bus lane on Magnolia Avenue in downtown Orlando for LYMMO. Bus signal priority is preferential treatment of buses at intersections, which involves the extension of green time or actuation of the green signal at signalized intersections upon detection of

an approaching bus. Intersection priority can be particularly helpful when implemented in conjunction with bus lanes. Again, this occurs with the LYMMO system in Orlando. This Williamson facility could utilize modern day buses, or replica trolley buses.

Implications of Master Plan Changes

The revised Restoration land use and transportation plan is unique, and those unique characteristics have an impact on the revised transportation analysis. The major impact is on the anticipated internal capture of the project, which in turn, has an impact on the total amount of estimated external trips. With the previous submittals, the transportation-modeling tool was utilized to estimate internal capture. This was a purely mathematical exercise, and resulted in an internal capture of approximately 34 percent for Phase I, 30 percent for Phase II, and 27 percent for Phase III. Given the nature of the previous land use program, this internal capture was, in all likelihood, technically correct, but intuitively does not make sense for the revised Plan. Due to the revised land use plan and program as well as the resulting transportation plan, it was determined that the transportation planning tool does not take into account the characteristics of applied Transit Oriented Development practices and principles, New Urbanism projects or Traditional Neighborhood Development techniques. Thus, while the model was utilized for Phase I, the internal capture was adjusted for Phases II and III. The resulting internal capture for Phase I is now approximately 28 percent; Phase II is now 35 percent; and Phase III is estimated at 50 percent. This is approximately six percent less for Phase I, five percent more for Phase II, and 23 percent higher for Phase III from the previous submittal.

Furthermore, it is anticipated that these higher internal capture rates will be realized due solely on the impact of the land use and internal transportation network changes to the Restoration Plan. The new compact activity center development concept, with surrounding neighborhoods located on a well connected mobility network, the mix of uses and availability of services will encourage shorter trips and less trip making, resulting in a higher internal capture without the provision of an on-site transit facility or services. The provision of an internal transit service/facility in Phase III, if warranted, could have the potential of driving the internal capture rates for the Restoration development even higher that those utilized in the revised transportation analysis. These rates will be reassessed as part of the future monitoring and modeling program.

TRIP GENERATION

Total Trip Generation

When comparing the latest plan to the previously proposed plans it is important to note that, similar to the previous plans, the development's initial access will only be provided via Indian River Boulevard without any direct connection to S.R. 44. Overall, the mixture of uses is similar to that presented in previous analyses. Retail for Phase I has been reduced by 200,000 square feet to better reflect the real timing of commercial development and relation to residential development. As a result, it can be seen from the attached trip generation table (Table 21-B-1 in *Appendix A*) that the revised total PM peak-hour trip generation potential for Phase I of 3,540 trips is approximately 21 percent less than that from Phase I in the last sufficiency response which had a total PM peak-hour trip generation potential of 4,476 trips. The total trip generation projections for Phases II and III are also provided as Tables 21-B-2 and 21-B-3, respectively, in *Appendix A*.

Internal Capture

Additionally, because the new plan embraces Traditional Neighborhood Development (TND), Transit Oriented Development (TOD), and New Urbanism sustainability concepts it can be expected to have increased interaction amongst the various uses. Thus, it is appropriate to expect a higher rate of internal capture under the new plan as compared to the previous plans. However, it is recognized that the benefits of TND and TOD will increase as the development matures and more of the non-residential development is in place. Therefore, for Phase I the internal capture rate of the project was conservatively calculated using the model. This is the same analysis approach as that used in the previous submittals. As can be seen in Table 21-B-1 in *Appendix A*, under the new plan 28.1 percent of the Phase I PM peak-hour trips will be internal as compared to 33.9 percent in the last sufficiency response. As it pertains to new external PM peak-hour trips, the new Phase I program will generate 2,545 trips versus 2,957 trips generated by the Phase I program in the last sufficiency response (a reduction of approximately 14 percent).

As it pertains to Phases II and III, the revised development plan is one of a sustainable nature that incorporates TND, TOD, and New Urbanism concepts such as high densities, a grid network of streets, and walkability. In the end, the Restoration DRI will clearly be a place where one can live, work, and play without the need to get into a vehicle to travel within the development. This will also reduce auto dependence and the extent to which residents of the development travel external to the community. It is clear that this development is incorporating all the necessary concepts to achieve a high level of internal capture. This level of internal capture is not recognized by current models because TND is relatively new. Therefore, the original methodology for determining internal capture for this development is no longer useful. Given the TND plan, internal capture targets have been developed. An internal capture target of 35 percent has been set for Phase II. This is a modest increase compared to Phase I. The goal for Phase III (buildout) is 50 percent. In order to achieve the Phase III development program, typical TND densities will be required causing the project to be better integrated with a higher emphasis placed on mobility as compared to most traditional master-planned communities. The resulting new external trip generation projections for Phases II and III are provided in Tables 21-B-2 and 21-B-3, respectively (*Appendix A*). The extent to which the development achieves the planned TND/TOD nature and land use balance can be monitored in conjunction with Phase II and Phase III monitoring. Refined project impacts for Phases II and III will be developed in the monitoring studies.

TRIP DISTRIBUTION

As previously mentioned, the extension of Airport Road has been eliminated from the DRI. Thus, for Phase I the only access will be via Indian River Boulevard which is an access scenario previously analyzed. Recognizing this and that the Phase I land-use mix is effectively consistent with previous submittals, with the exception of the reduction in retail square footage, it can be concluded that the external trip distribution of the proposed development as obtained from an updated model is relatively consistent with the trip distribution identified in the previous submittals (see Table 21-D-2 and Figures 21-D-1 through 21-D-3 in *Appendix A*). *Appendix B* includes the total volume and select-zone model plots for Phases I through III.

It is important to note that the study area for Phase I is essentially the same as that included in the last sufficiency response with the exclusion of a few roadway segments which are no longer significant in the first phase as a result of the reduction in trip generation potential. *Appendix A* includes Tables 21-D-1 through 21-D-6 which summarizes the significance evaluation for each of the Phases.

FUTURE BACKGROUND VOLUMES

Future background volumes were calculated using the same approach as the previous submittals (see Tables 21-D-7 through 21-D-12 in *Appendix A*).

FUTURE CONDITIONS LEVEL OF SERVICE ANALYSES

External Roadway Segments

The project volumes for the study roadways were then added to the background volumes to obtain the total future volumes. As can be seen in Tables 21-F-1 through 21-F-2 in *Appendix A*, the total volume projections for all study roadways in Phase I are less than the total volume projections included in the second sufficiency response. Below is a summary of roadway segments significantly and adversely impacted by the proposed development (Williamson Boulevard from Indian River Boulevard to S.R. 44 is addressed in the internal roadways section):

Phase I

- Westbound Taylor Road (S.R. 421) from Dunlawton Avenue/Taylor Road intersection to I-95 Northbound Ramps (PM)

- It should be noted that Indian River Boulevard from Williamson Boulevard to I-95 does not have an assigned capacity, but based on the projected Phase I peak-hour peak-directional volume of 1,424 as provided in Table 21-F-2 in *Appendix A*, four lanes will be required for this section.

As it relates to Phases II and III, the operating conditions of the roadway segments were evaluated by comparing the projected volumes to the generalized service volumes. Those roadway segments with projected volumes that exceed the generalized service volume are summarized below. Therefore, for those roadway segments identified below the developer will commit to conducting more refined operational analyses at time of M&M should these roadway segments be significantly impacted by the development. The results of those analyses could reveal that adequate capacity exists, intersection improvements are needed, or roadway widening is required to provide adequate capacity.

Phase II

- S.R. 44 from Glencoe Road to I-95
- I-95 from S.R. 44 to I-4/S.R. 400
- U.S. 1 from Riverside Drive to S.R. 442
- Dunlawton Avenue from Taylor Road to Clyde Morris Boulevard
- Taylor Road (S.R. 421) from Dunlawton Avenue/Taylor Road intersection to I-95
- Taylor Road from Dunlawton Avenue to Clyde Morris Boulevard

Phase III

- S.R. 44 from S.R. 415 to Airport Road (this assumes a rural service standard, which may not be appropriate when Phase III occurs)
- S.R. 44 from I-95 to Mission Drive
- I-95 from S.R. 44 to U.S. 92
- Old Mission Road from S.R. 442 to Josephine Street
- U.S. 1 from Riverside Drive to S.R. 442
- Dunlawton Avenue from Taylor Road to Clyde Morris Boulevard

- Taylor Road (S.R. 421) from Dunlawton Avenue/Taylor Road intersection to I-95
- Taylor Road from Dunlawton Avenue to Clyde Morris Boulevard

Intersections

Based on the roadway segment tables, it is clear that the total volume projections for all study roadways for Phase I are less than the total volume projections in the previous sufficiency response. The previous analyses for the intersections of Dunlawton Avenue/Yorktowne Boulevard and Dunlawton Avenue/Clyde Morris Boulevard showed these intersections will operate acceptably. Therefore, these intersection analyses have not been updated. However, the intersection analyses for all other locations were updated. The revised intersection volume projections and revised HCS analyses for all intersections with the exception of those identified above are provided in *Appendix D*. Additionally, tables summarizing the results of the intersection analyses are also provided in *Appendix D*. Based on the analyses, the following improvement needs were identified at the study intersections:

A. S.R. 44 at Airport Road
   - Signalization

B. S.R. 442 at I-95 Southbound Ramps (see improvement concept in *Appendix E*)
   - Signalization
   - 2nd southbound left-turn lane
   - 2nd eastbound through lane
   - Southbound right-turn lane to be free-flow
   - 2nd eastbound departing/receiving lane for southbound dual lefts

C. S.R. 442 at I-95 Northbound Ramps (see improvement concept in *Appendix E*)
   - Signalization
   - 2nd eastbound through lane
   - Extend eastbound left-turn lane to SB ramps

D. Park Avenue at Old Mission Road
   - Signalization

E. Taylor Road (S.R. 421) at I-95 Southbound Ramps
   - Add 3rd southbound left-turn lane

F. Taylor Road (S.R. 421) at I-95 Northbound Ramps
   - Add 3rd westbound through lane to feed westbound left-turn lane at the southbound ramps

Internal Roadway Segments

The only roadway considered in the internal roadway analysis was Williamson Boulevard from Indian River Boulevard to S.R. 44. The extension of Williamson Boulevard up to S.R. 44 is not required until Phase II. Based on the volume projections provided in Tables 21-D-17 through 21-D-18 in *Appendix A*, this roadway will need four lanes through buildout of the project.

MITIGATION

The improvement needs for Phase I are those intersection improvements discussed above along with the four-laning of Indian River Boulevard from Williamson Boulevard to I-95. As provided in the mitigation summary table included in *Appendix E*, the project's proportionate-share responsibility for Phase I is $9,769,129. It should be noted that the deficiency identified on Taylor Road (S.R. 421) between I-95 and the Taylor Road/Dunlawton Avenue intersection is addressed through the inclusion of an additional westbound lane at the I-95 northbound ramps intersection.

The applicant will coordinate with the City relative to the four-lane extension of Indian River Boulevard from Williamson Boulevard to I-95. The applicant will work with the City regarding responsibility for construction of this section of roadway. Recognizing that it will be a city roadway impacted by multiple developments and that the City of Edgewater has its own transportation impact fees, in accordance with State Statutes, the applicant will coordinate with the City relative to obtaining credits against impact fees for any dollars expended toward Indian River Boulevard.

As it pertains to S.R. 442 at I-95, the developer will coordinate with FDOT relative to whether the applicant will make a proportionate-share contribution to FDOT or actually construct the improvements. Additionally, it should be recognized that some of the development's proportionate-share pertains to mitigating impacts at the I-95/S.R. 421 interchange located approximately 12 miles away. The majority of the trips on which the proportionate-share contribution is based have the other trip end in the vicinity of Port Orange thus the majority of these trips are likely accounted for in the City of Port Orange's concurrency management system. Consideration could be given towards the application of these dollars towards the S.R. 442/I-95 interchange such that the interchange can accommodate additional growth in the City of Edgewater.

Last, recognizing that all the proportionate-share amounts pertain to roadways on the county's impact fee system with the exception of Indian River Boulevard, in accordance with State Statutes, the applicant will coordinate with the County relative to obtaining credits against impact fees for these mitigation dollars.

ADDITIONAL LONG-RANGE PLANNING CONSIDERATIONS

It is recognized that the DRI analysis will be considered along with system-wide long range transportation studies to determine the future needs for the area. The Phase III (2023) analysis is based on a comparison of future volumes to generalized service volumes. The generalized service volumes represent capacities based on generalized assumptions with regard to roadway characteristics and do not necessarily reflect capacities more specific to the study roadways. Additionally, the analyses, in some instances, make use of conservatively high annual growth rates particularly when considering the significant slowdown in the economy as well as the continued increase in gas prices. As such, there is certainly a potential that the 2023 analyses are seriously overstating roadway improvement needs through 2023. Below is a discussion pertaining to three roadway sections and how the identified improvement needs are potentially overstated. The additional assessments below are for informational purposes only and all future needs will be reevaluated in the future in the monitoring and modeling studies.

Old Mission Road from S.R. 442 to Josephine Street – based on a HIGHPLAN analysis which considers actual roadway conditions and 2023 volumes, this section is projected to operate acceptably with two lanes through 2023 (see Appendix F of the second sufficiency response). Thus the four-laning identified by using generalized service volumes may not be needed by 2023.

S.R. 44 from I-95 to Mission Drive – the capacity identified for this section by Florida Department of Transportation is 1,860 vph. Currently, the majority of this section is free-flow thereby with a likely capacity

closer to 2,500. It is recognized that there are likely to be two additional signals on this section by 2023. However, the generalized capacity of 1,860 assumes an average g/c ratio of 0.44 for the major street through movement. Because turning movement information and signal timing information is not available for the future signal locations, we can only provide a qualitative assessment of the future capacity of this section. First, the side-street volumes at most of the signals on this section are expected to be relatively low, thus the g/c ratio for the major street through movement at most signals is likely to be in excess of 0.5. Based on a g/c ratio of 0.5, the capacity of a roadway increases to over 2,100. Therefore, given that the 2023 volume projections are below 2,000, it is reasonable to expect that this section will operate at an acceptable level with the existing four lanes.

U.S. 1, south of S.R. 442 – when considering U.S. 1 south of S.R. 442, a conservatively high annual growth rate of three to four percent was applied whereas the historical annual growth rate is around 0.5 percent. Should traffic volumes grow at a rate more consistent with observed rates, this section will operate acceptably with four lanes in 2023.

EAST CENTRAL FLORIDA REGIONAL PLANNING COUNCIL (LETTER DATED JANUARY 17, 2008)

22. Where on the site is development proposed to occur for each phase?

Because access will only be provided via Indian River Boulevard in the first phase, the development is expected to begin in the south from Indian River Boulevard and gradually extend northward through buildout of the development.

23. Indian River Boulevard should be identified as SR 442 only to avoid confusion.

Indian River Boulevard is a state facility east of I-95, but not west of I-95. Thus, for east of I-95, we show Indian River Boulevard also as S.R. 442.

24. The proposal to spend over $68 million to construct two roadways, both of which are developer-required facilities does not address the $29 million of unmet needs in the vicinity where project impacts are being experienced for Phase I. Both appear to be exclusively for project access and no credit should be given. Furthermore, to expect this excess to account for future impacts in not acceptable.

Please see the revised mitigation discussion in the introductory memorandum.

25. The table of contents in the appendix should list each table and figure.

The requested table of contents has been provided in this sufficiency response with each appendix.

26. Average trip lengths for this project are twice the highest trip lengths for the rest of the county. This suggests that the design will require more infrastructure than development within the existing urban fabric. Please comment.

It should be noted that the data provided in the last sufficiency did not indicate that the average trip length was double the rest of the county, but rather the average trip length clearly exceeds the county average trip length. The resulting average trip lengths demonstrate that the analysis is highly conservative in terms of the size of the study area. Given the extent of the trip lengths, it

is highly likely that the site will not generate at the same average rate as ITE, particularly in the first phase, but rather generate trips at a reduced rate as motorists would look to consolidate trips if they are of a substantial length. In addition, the project has been redesigned taking into consideration the desire to reduce offsite impacts through the incorporation of TND/TOD concepts. Thus, the high level of internal interaction anticipated at buildout of the project will both reduce the number of offsite long distance trips as well as reduce the project's average trip length.

27. Please document current accident rates where the project is projected to be significant and adverse. If any of the intersections exhibit an accident rate 20% over what would normally be expected, please explain why this is occurring and how this may be ameliorated.

This request is not consistent with the approved methodology nor was it made in the first two sets of sufficiency comments. Therefore, this comment will not be addressed given that this is a new request that is inconsistent with the methodology.

CITY OF EDGEWATER (LETTER DATED JANUARY 11, 2008)

Provide verification that sufficient right-of-way reservation for the extension and widening of Opossum Camp Road (S.R. 442) from I-95 to the westerly property line has been addressed

The developer has and will continue to work with Mercedes Homes as well as Farmton regarding right-of-way for Indian River Boulevard/Opossum Camp Road. However, it is unclear at this time whether or not all the right-of-way will be provided within the Restoration DRI or if a portion will come from property immediately south of Restoration DRI. It should be noted that for the purposes of the development, the extension of Indian River Boulevard is only needed between I-95 and Williamson Boulevard. In spite of this fact, the developer is ensuring that development does not impede the opportunity to extend Indian River Boulevard from Williamson Boulevard to the westerly property line.

TINDALE-OLIVER AND ASSOCIATES COMMENTS FROM DOUG COXON (MEMO DATED JANUARY 8, 2008)

We have reviewed and confirmed that Phase I trip generation was estimated correctly using Institute of Transportation Engineers (ITE) published data.

Please note that trip generation for Phase I has been modified based on the development program revisions. However, it is expected this same conclusion should be observed.

In comparing Table 21-B-la (without Airport Road Extension) with Table 21-B-lb (with Airport Road Extension), we note that land use data for single-family and senior adult housing were reallocated between two pairs of TAZs_ In particular, under the with Airport Road extension scenario, 450 single-family dwelling units were removed from TAZ 2349 and added to TAZ 2449 and 250 senior adult housing dwelling units were removed from TAZ 2444 and added to TAZ 2448. The reallocation results in a ten percent increase in estimated trip generation: 2,957 PM "new external" peak hour trip ends for the Phase I without Airport Road extension scenario and 3,252 "new external" PM peak hour trip ends for the Phase I with Airport Road extension scenario. It is not immediately clear to us why the without Airport Road extension site plan would be different than the with Airport Road extension site plan. Clearly, dwelling units built prior to the extension of Airport Road are not going to be deconstructed or moved when Airport Road is extended. We would request

that the applicant limit the Phase I analysis to a single site plan, or that the applicant split Phase I into two Phases, Phase Ia (without Airport Road extension) and Phase lb (with Airport Road extension), and seek specific approval only for Phase la.

The analysis has been revised to include only one Phase I development scenario. Thus, this comment is no longer applicable.

We have reviewed and confirmed that the Phase I internal capture percentages applied to the peak hour trip generation estimates are substantially the same as the modeled daily internal capture percentages. The internal capture rate for TAZ 2343 should be 31.5 percent (30482/1932), not 15.7 percent. Although this error results in an apparent greater network impact, the underestimated internal-captured trips contribute to less than one percent of total trips generated by Phase I. Therefore, no changes are required.

Comment noted.

Based on the modeled internal capture, about one-fourth of project site retail trip generation is captured internally by project site residential uses and about one-fourth of project site residential trip generation is captured internally by project site retail uses. A limited review of the FSTTTMS model productions and attractions data indicates that home-based shopping trips make up as little as 15 percent of residential trip generation. Thus, it appears that the applicant is suggesting that all of the retail needs of the project site residential uses will be met by the project site retail uses. We would request that the applicant provide a matrix identifying each project site TAZ by land use; showing the total, internal, and external trip generation for each project site TAZ; and showing that the number of internally-captured trips between each pair of project site TAZs, as a percentage of the relevant inbound or outbound trip end generation of each TAZ of the pair, does not exceed the internal capture rules-of-thumb established in *Trip Generation Handbook* (Institute of Transportation Engineers, 2nd Edition, June 2004, pages 93-94), or explaining why such exception is reasonable for this particular project.

It is first important to note that the method for calculating internal capture was discussed at length with the review agencies and evolved through the methodology process. Ultimately, the methodology employed was one suggested by FDOT and agreed to by all review agencies as the approach was determined to be the most appropriate for this particular development as it is logical and the results generated are reasonable. Due to the remote location of the project site and the large number of age-restricted residential units, we feel that comparing the internal capture rates to the ITE rule-of-thumb rates would be inappropriate. Also, it is important to note that the ITE internal capture trips are comprised of several other trip types than just home-based shopping trips. Additionally, internalization is reflective of those internal trips which are pass-by trips for the retail development. Therefore, as indicated in ITE's Trip Generation Handbook, 2nd Edition, we have used caution in considering the use of ITE's internal capture factors and have determined that they are not appropriate, particularly given that the ITE rates are based on limited data.

For informational purposes, attached in *Appendix A* is a table for Phase I summarizing the interaction between each TAZ within the project.

We have reviewed and confirmed that Phase I pass-by capture does not exceed 10 percent of the adjacent street background traffic volume. Pass-by capture is a relatively insignificant component of total project site trip generation, comprising less than one percent of PM peak hour gross trip generation.

In the revised analysis there is no pass-by trip reduction. It should be recognized that this presents a highly conservative analysis as all external trips are treated as new external trips.

Modeling

We were able to successfully run the models using the model input files provided by the applicant. Although our model run results generally match those provided by the applicant, we could not replicate the applicant's model run results on our computers. In most cases, our modeled volumes were lower than the applicants. However, the differences are not significant. For instance, on SR-44, east of Airport Road, our model run indicates a total daily volume of 26,055 (about a 0.6 percent decrease) compared to 26,207 based on the applicant's model run for Phase 1 – 2013 without Airport Road extension scenario. Therefore, no changes are required.

The new model input and output files are included in *Appendix B.*

We have reviewed the socioeconomic data adjustments documented in Appendix 21-D of the September 8, 2006, Application for Development Approval. The adjustments are not consistent. In some cases, the interpolated values were applied; in other cases, values representing all or part of identified vested development projects were applied. We would ask the applicant to explain the rationale behind these adjustments.

The analysis is consistent in that the interpolated socioeconomic data was compared with the calculated vested socioeconomic data which was determined based on input from the review agencies. Ultimately, the higher value of the two was then applied to the model in all cases to provide a more conservative analysis. This information was provided to all review agencies and found to be acceptable.

It was stated that CFRPM version 4.02 was used. The CFRPM version 4.02 has two model scenarios: 2000 and 2025. A new 2013 model scenario was created for the Phase I analysis. We would ask the applicant to explain how the 2013 model network was derived and to list all network changes made to incorporate committed roadway improvements.

The 2013 model network was derived by altering the 2025 model network to reflect only those improvements committed within the next three years as summarized in the committed improvements table (Table 21 A-4) provided on page 21-7 of the ADA. Additionally, the roadway network within the development was also included in the model.

The model output files provided by the applicant were reviewed. The modeled trip generation for the Phase I without Airport Road extension scenario generally matches the 1TE trip generation estimate.

The model has been revised based on the development program and master plan changes. Thus, this same conclusion should be observed.

It appears that the 18-hole golf course was not specifically modeled. Since golf course trip generation comprises about one percent of PM peak hour gross trip generation, no changes are required.

It should be noted that the golf course has now been eliminated from the plan and thus completely removed from the revised analysis provided in this sufficiency response.

Trip Distribution and Assignment

We have reviewed and confirmed that the Phase I traffic assignment generally agrees with the model output files provided by the applicant for both the without Airport Road extension and the with Airport Road extension scenarios. In addition, for the Phase I – 2013 without Airport Road extension scenario, the trip distribution of the site plan analyzed in the November 26, 2007 responses to second review agency request for additional information is generally in agreement with that documented in the applicanT's March 5, 2007, responses to the first review agency request for additional information. For the Phase I - 2013 with Airport Road extension scenario, project assignment to Airport Road has increased from 27.4 percent to 48.0 percent as a result of the geographic adjustments of site land uses, including swapping the primary and age-restricted residential units and relocating the town center westerly to the northeast quadrant of the Indian River Boulevard/Airport Road intersection. The resulting shift in trip distribution appears to be reasonable provided that the big trip generators on site-the primary residential development and the town center-will have direct access to Airport Road.

Comment noted.

For the Phase I - 2013 without Airport Road extension scenario, the geographic adjustments did not change the network of significant impact, except for the addition of Old Mission Road from Indian River Boulevard to Park Avenue for the AM peak hour conditions. For the Phase I - 2013 with Airport Road extension scenario, as a result of the geographic adjustments, the segment of I-95 from SR-44 to Indian River Boulevard was removed from and the segment of SR-44 from Pioneer Trail to SR-415 was added to the network of significant impact for the AM peak hour conditions and the segment of SR-415 from Howland Boulevard to SR-44 was added to the network of significant impact for the PM peak hour conditions. These changes in the network of significant impact are sensible as more site-generated traffic is expected o use Airport Road to access the highway network to the west of the site.

Comment noted.

Roadway Service Volumes

We have reviewed the service volumes used in the analysis. In Table 21-A-1, the existing and existing-plus-committed service volumes for some state roads (e.g., SR-44) are not consistent with the service volumes in the FDOT generalized tables (FDOT Quality/Level of Service Handbook, 2002). We would ask the applicant to provide a note identifying the source of the service volumes used for each link.

The service volumes used within the study are consistent with those agreed upon with all review agencies. The service volumes for all state roadways were obtained from FDOT's LOS_ALL Spreadsheet. For county roadways, the service volumes were obtained from the county. For all other roadways, the service volumes were developed based on FDOT's LOS Handbook.

Future Background AADT

We have reviewed the development of the future background AADT volumes, as documented in Table 21-D-7a. In general, it appears that the 2013 background AADT volumes were estimated by factoring up the 2006 existing AADT volumes either by 2.0 percent per year or by an observed historical background traffic volume growth rate for each link. In some cases, the default 2.0 percent per year growth rate was used although higher observed growth rates were indicated by the historical counts (e.g., 5.2 percent per year on Old. Mission Road from Park Avenue to Josephine Street and 6.1

percent per year on Dunlawton Avenue from Taylor Road to Clyde Morris Boulevard). We would ask the applicant to provide an explanation for all cases where the minimum growth rate of 2.0 percent per year was used rather than the higher observed growth rate.

The applied growth rates were calculated/identified in accordance with the approved methodology where it was determined that the model was a more appropriate tool for forecasting future growth because it is based on future development projections at the buildout years of the development. Additionally, given the magnitude of the development, it is highly likely that a portion of existing trips on the existing roadway network will now be captured by the project and become project trips particularly given the lack of shopping destinations within the City of Edgewater. The model accounts for such interaction and altering of existing trips whereas the application of historical growth rates would not account for such interaction. Thus, the historical growth rates were not used for calculating the future background volumes. Regardless, there are five roadway segments in Phase I whereby the applied annual growth rate is less then the historical growth provided in revised Table 21-D-7.

As it pertains to S.R. 442 from I-95 to Old Mission Road, the historical annual growth rate is shown to be 3.3 percent. Even with the application of this growth rate, the resulting total PM peak-hour peak-directional volume would be 1,394 on this four-lane section, which is well below the roadway's capacity. For Taylor Road and Dunlawton Avenue, the historical annual growth rate of 6.1 percent was based on counts between 2000 and 2005. However, upon a more detailed review of the County's historical traffic data, it is more logical that the trend be based on the years between 2003 and 2006 as there was a large jump in volume between 2002 and 2003 (between 1997 and 2002 the volume was consistently in the mid 20,000s including a 2002 volume of 26,000). This jump would result in an overstatement of historical growth if it were included. The 2003 volume of 33,500 as compared to the 2006 volume of 35,500 yields an annual growth rate of less than two percent (in fact the 2006 volume was less than the 2005 volume of 37,500). Thus, the application of the two percent annual growth rate is comparable to the recent trend observed on the roadway.

For Old Mission Road between S.R. 442 and Park Avenue and from Park Avenue to Josephine Street, even with the application of the historical annual growth rate the result is southbound peak-hour volumes of 446 and 606, respectively, both of which are below the generalized service volume.

Intersection Analysis

For the existing conditions intersection capacity analyses, the raw turning movement count volumes were used, rather than adjusted, peak season (K_{100}) volumes. This does not seem to violate the agreed-upon transportation analysis methodology; therefore, no changes are required.

Comment noted.

SR-442/01d Dawson Ranch Road

We would ask the applicant to add the SR-442/Old Dawson Ranch Road intersection to the list of study intersections.

An analysis of the above-mentioned intersection as provided in *Appendix F* shows that this intersection will operate acceptably at buildout of Phase I.

Taylor Road/I-95 SB Ramps

A third southbound left turn lane is proposed to mitigate project traffic impacts at the Taylor Road/I-95 SB Ramps intersection, necessitating three receiving lanes for eastbound Taylor Road between Williamson Boulevard and the I-95 NB Ramps. We would ask the applicant to include the three-laning of the eastbound section of Taylor Road as a required mitigation measure, or, if the three-liming of this roadway segment is a committed improvement, to provide relevant supporting documents.

Taylor Road has a third eastbound receiving lane.

SR-44/I-95 NB Ramps

The intersection analysis of SR-44/I-95 NB Ramps ignored the westbound right turn movement. As the analysis indicated, the westbound thru movement has a 95th percentile queue length of about 800 feet during the PM peak hour under future with Phase I and with Airport Road extension conditions. A thru queue of this length will block access to the existing right turn lane during the PM peak hour. Given the forecast westbound right turn volume of 440 vph during PM peak hour, we would ask the applicant to reanalyze the intersection by including the westbound right turn movement and to identify whether the right turn lane needs to be lengthened so that thru queues do not block right turn entrance and the right turn queue can be adequately accommodated.

It should be noted that based on the revised HCS analysis, the westbound through has an overall delay of 10.7 seconds per vehicle (LOS B) with the westbound right-turns excluded from the analysis. If the right-turns are included in the analysis and not given a right-turn lane but rather coded so that there is a shared through/right-turn lane, the westbound delay increases to only 15.3 seconds per vehicle (LOS B), an increase of 4.6 seconds. It should be noted that for this second scenario, the volume for all other movements were set to 0 as they are irrelevant as it pertains to determining how the westbound right-turn vehicles impact the westbound through movement. A comparison of the two HCS printouts is provided in *Appendix F*. Recognizing that the overall intersection delay with the exclusion of the westbound right-turns is 22.1 seconds per vehicle and that the inclusion of rights only increases the westbound through delay by 4.6 seconds, it is clear that this intersection will still operate well at level of service B with the existing turn lane lengths and thus the westbound right-turn lane does not need to be extended.

SR-442/I-95 NB Ramps

A peak hour factor of 0.95 and an I-factor of 0.5 for the eastbound left and thru movements were used for the SR-442/I-95 NB Ramps intersection for the 2013 AM peak hour with improvements condition. We would ask the applicant to document the appropriateness of these factors or amend the analysis.

The analysis was revised such that the existing peak-hour factors were used for the northbound right-turn and westbound right-turn movements. Recognizing that the project will contribute a significant amount of traffic to all other movements and that with significant volume increases it is not unusual to experience peak-hour factors around 0.95, a peak-hour factor of 0.92 was applied to all other movements. As for the I-factor, the analysis is now based on Synchro, thus there is no I-factor input.

SR-442/I-95 SB Ramps

At the SR-442/I-95 SB Ramps intersection, the southbound left turn volume is 678 vph and southbound right turn volume is 344 vph during the PM peak hour for the 2013 with Phase I with Airport Road extension scenario. The HCS analysis indicates that a 95th percentile queue length of

about 990 feet for southbound left turn movement would occur. However, the intersection analysis ignored the southbound right turn movement. Given the forecast southbound right turn volume of 344 vph, the queue on the southbound ramp could back onto the I-95 mainline. The SR-442/I-95 SB Ramps intersection analysis also indicates a 95th percentile queue length of about 710 feet for the eastbound thru movement. A thru queue of this length would extend past Old Dawson Ranch Road. We would ask the applicant to reanalyze the intersection by including the southbound right turn movement and to identify whether off-ramp and/or roadway widening is required to provide adequate storage for queued vehicles.

The analysis was revised using Synchro and including the southbound right-turn lane. Additionally, a second southbound left-turn lane is now proposed along with additional improvements at the interchange resulting in a projected 95th-percentile queue length of 253 feet. Thus, the queue will not extend back onto I-95.

As for the eastbound through movement, a 95th-percentile queue length of 515 feet is projected whereas Old Dawson Ranch Road will be located approximately 900 feet west of the I-95 southbound ramps.

Queue Length Analysis

We would ask the applicant to provide a 95th percentile queue length analysis at all study intersections to determine whether auxiliary turn lanes need to be lengthened so that (1) thru queues do not block access to turn lanes and (2) queued turning vehicles do not block thru lanes.

KHA was advised by the City's consultant that this comment pertains only to those study intersections located within the City of Edgewater. Thus, this comment only pertains to the following locations:

- S.R. 442 at U.S. 1
- S.R. 442 at Old Mission Road
- S.R. 442 at I-95 Northbound Ramps
- S.R. 442 at I-95 Southbound Ramps
- Old Mission Road at Park Avenue

Additionally, it is important to note that although it is desirable to have all turn lanes of sufficient length to accommodate the 95th percentile queues, it sometimes is unrealistic, particularly if the queue length of a through movement is extensive. The important consideration with respect to this analysis, and the approved methodology under which it was conducted, is whether or not the queue lengths will cause the intersection to have unacceptable operating conditions.

As it pertains to the S.R. 442 interchange, substantial improvements are proposed which will address this concern. Further, this concern does not pertain to the Old Mission Road/Park Avenue intersection as it has no turn lanes.

As for S.R. 442 at Old Mission Road, an HCS printout is provided in *Appendix F* showing that the 95th percentile queue lengths do not exceed the turn lane lengths, thus the turn lane lengths will not impact the HCS results are appropriate.

For the U.S. 1/S.R. 442 intersection, a SimTraffic analysis was conducted. This analysis evaluates the existing turn lane lengths. Based on the SimTraffic analyses, as provided in *Appendix F*, the S.R. 442/U.S. 1 intersection will operate acceptably with the existing turn lane lengths.

Corridor Preservation

Now is the time for the City of Edgewater to request the developer to preserve one or two east-west corridors through the project site to provide for eventual east west travel from one side of I-95 to the other without need of going through the interstate interchange intersections.

Consideration was given to preserving such a corridor. However, based on discussions with City staff, it was determined that there are substantial environmental constraints relative to providing an additional east/west roadway and thus it was agreed that the ability to construct an additional east/west roadway is unrealistic. It is also important to note that the developer is proposing significant improvements to the S.R. 442 interchange and will be conducting monitoring and modeling studies prior to each phase at which time the operating conditions of the interchange intersections will be assessed and project impacts mitigated if deficiencies are identified.

CITY OF NEW SMYRNA BEACH (LETTER DATED JANUARY 17, 2008)

Comment 24: **While the study radius defined by State Statute exceeds the City's LDR, the intersections in the City of New Smyrna Beach must operate at a LOS "D" with the Restoration project trips added.**

The intersection analyses have been conducted in accordance with the approved methodology which stipulated the use of the ECFRPC's intersection analysis methodology.

VOLUSIA COUNTY GROWTH AND RESOURCE MANAGEMENT (LETTER DATED JANUARY 15, 2008)

Question 21, Transportation: **See attached memorandum dated January 14, 2008 from the County's Traffic Engineer which contains the comments related to the applicant's response to the transportation questions of this ADA. The sufficiency response for the ADA needs to include information as requested in the County Traffic Engineer's memorandum.**

Please see the responses below to the comments provided in the County Traffic Engineer's memorandum.

VOLUSIA COUNTY TRAFFIC ENGINEERING (LETTER DATED JANUARY 14, 2008)

In particular, the mitigation plan does not adequately address the following:

- **Internal roads within the site (Airport Road, Williamson Boulevard, and Indian River Extension). If Airport Road and Williamson Boulevard are proposed to be built, need to specify limits. In addition it should be noted that the development contributes 100% of the necessary need of the road. Especially since reference was made to future level-of-service issues along Interstate 95 and US 1 with the proposed mitigation of a parallel facility west of Interstate 95.**

  For the first phase, Indian River Boulevard is proposed to be constructed as a four-lane roadway from Williamson Boulevard to I-95. Williamson Boulevard will only be extended from Indian River

Boulevard northward as development in the first phase requires as its extension to S.R. 44 is not required until Phase II.

With the eventual extension to S.R. 44, Williamson Boulevard will function as a county thoroughfare providing a four mile north/south alternative between S.R. 442 and S.R. 44 that will remove local traffic from I-95 as well as attract other non-project regional traffic from Old Mission Road and U.S. 1, including traffic from the Reflections development as well as anticipated traffic from the Farmton property located immediately south of Restoration DRI. In fact, this section of Williamson Boulevard will ultimately be connected to the existing portions of Williamson Boulevard which will then be a regional four-lane roadway traversing more than 23 miles all the way up to the City of Ormond Beach. Thus, at the time Williamson Boulevard is extended to S.R. 44 and that there is excess capacity (capacity above and beyond that consumed by project-related trips) along the portion of Williamson Boulevard that the developer constructs, then the developer will request that credit be given to the developer for this excess capacity.

- **The proportionate % share of the trips using new proposed site access roads off-site does not seem reasonable. We believe that since the proposed development is causing the need for the road construction, the development should contribute 100% of the necessary need of the road.**

  The proportionate-share calculations are consistent with the formula provided in Chapter 9J-2 which is based on the amount of capacity consumed by the development as compared to the total capacity of the facility. Any excess capacity will likely be used by non-project related traffic such as traffic from the Reflections development, traffic from eventual development around the S.R. 442/I-95 interchange, traffic from anticipated development on the Farmton property, and those vehicles in Edgewater east of I-95 traveling to/from the west on S.R. 44. Thus, there clearly will be a regional need for this roadway as demonstrated by it's classification in the County's comprehensive plan as a county thoroughfare, the fact that it will ultimately be an extension of a four-lane roadway that traverses 23 miles within the County, and the fact that it provide relief to I-95, Old Mission Road, and U.S. 1.

- **Any proposed request for Volusia County Transportation Impact Fee Credits and how they are applied should be under separate agreement.**

  Comment acknowledged.

FLORIDA DEPARTMENT OF TRANSPORTATION (LETTER DATED JANUARY 11, 2008)

4. No further comment regarding the internal capture for the "with" versus "without" Airport Road scenarios.

It appears that the land use intensities and corresponding trip generation data were never updated in Table 21-B-1a. This information should be revised and the corresponding significance tests, and intersection analyses recalculated to reflect the updated trip generation. Table 21-B-la (page 74 in the revised submittal) is exactly the same as the table provided in the 1st Sufficiency Response (page 15) except for the internal capture percentages identified for each TAZ. Table 21-B-la of the revised analysis also conflicts with Table 21-B-lb (page 97), which shows different intensities for the land uses in TAZ's 2349, 2444, 2448, and 2449. For instance the revised Table 21-B-la shows 1,411 units for TAZ 2349, however Table 21-B-1 b shows only 961 units for the same TAZ. The land use

intensities and corresponding trip generation for Phase 1 conditions should be consistent between these two tables.

The trip generation tables have been revised accordingly based on the latest development plan and program and are included in *Appendix A*.

8. In the tables showing maximum impact determinations, please include an analysis of the ends of all significantly impacted roadways. For the 2014 "without airport road scenario" SR 442 is not included in the table shown on page 85. Given the statements above regarding Airport Road and the timing of impacts, a sub-phase for Phase 1 is recommended.

The tables that have been provided were prepared in accordance with numerous discussions with the agencies. From those discussions it was agreed to provide the maximum impact table to provide a more microscopic evaluation of the roadway segments that are one link beyond significance and consider the maximum percent assignment versus the average percent assignment to provide a worst-case evaluation. As it pertains to S.R. 442, it is significantly impacted by the project in the first phase and thus the evaluation of this segment is provided in the Table 21-F series in *Appendix A*. The applicant is not agreeable to sub-phasing as the analysis is evaluating a worst-case scenario and the applicant has already agreed to provide monitoring and modeling studies at the end of Phase I and Phase II.

9. No further comment regarding the distribution in the vicinity of Old Mission Road. As part of modeling and monitoring, verification should be required for the revised model projections of a 7.2 percent capture between the Restoration DRI and Reflections development.

This request is not unreasonable if at the time of the monitoring and modeling study it is reasonably feasible to verify the interaction between the two developments.

13. As illustrated by the revised analysis, the model is sensitive to changes in both the intensity of land use and location of the uses. Therefore, depending upon which portions of the Phase 1 development program are initially constructed, the "60 percent of Phase 1" condition could result in much different internal capture percentages than assumed for full build-out of Phase I. As identified in, Comment 31 at 1st Sufficiency, Phase 1 should be broken into two sub-phases - with Phase 1 a constituting 60% of the development program. The land uses, corresponding trip generation, and significance adversity tests should be shown for the 60% condition suitable for inclusion in the development order.

In the revised analyses, only one scenario is provided for Phase I whereby the only access is via Indian River Boulevard. Thus, the 2013 analyses with access via only Indian River Boulevard present a maximum-impact scenario. Further, the development program and impact of Phase I have been reduced. Therefore, there is now no need for a sub-phase. Monitoring and modeling studies will be provided prior to Phase II and Phase III development.

14. Based upon the revised Table 21-F-2b, the project significantly impacts the segment of 1-95 during Phase 1. A mitigation plan needs to be identified for the segment of I-95 from SR 421 to 1-4. Based upon the applicants assertion that the adverse condition will not occur until the end of Phase 1, splitting Phase 1 into two sub-phases would provide the applicant an opportunity at the end of the first sub-phase (assumed to be around the 60% level) to do monitoring and modeling of the I-95 capacity conditions.

The analysis has been conducted in accordance with the approved methodology. Additionally, with the reduced development program in these revised analyses, the project is no longer significant in Phase I on I-95 from S.R. 421 to I-4. Thus, a mitigation plan is not required for Phase I relative to I-95 and sub-phasing is not needed. Monitoring and modeling studies for Phases II and Phase III will address the impacts on I-95.

27. No further comment. The FDOT will work with the applicant in drafting development order conditions pertaining to the provision of bicycle, pedestrian, and transit facilities.

Comment noted.

28. The original comment was regarding the SR 44/I-95 interchange (Not the interchange at SR 442). Again, traffic ops will need to review any proposed changes for signal timing optimization. During the a.m. peak hour, the Restoration development is shown to add 137 trips to the northbound left-turn at the SR 44/I-95 northbound ramp. This is a significant impact and the analysis shows that the left-turn movement on the interchange exit ramp will be operating at a LOS "E" with a v/c of 0.95. During the p.m. peak hour, an additional 224 trips are being added to the NB left-turn and the movement again fails with a v/c of 1.10. Please identify an appropriate mitigation for the failing left-turn movement.

With respect to the SR 44/I-95 SB ramp intersection, please analyze all movements at the study intersection. The analysis worksheet on Page 223 does not include any lanes or volumes for the southbound movements. Although it is recognized that the Restoration project is not adding any new trips to the southbound movement, the additional traffic being added along SR 44 is taking away capacity from the off-ramp and therefore the operations for the SB movement need to be evaluated.

Based on the revised analysis, all significantly-impacted movements at the S.R. 44/I95 northbound ramps intersection are projected to operate acceptably with existing signal timings. As it pertains to the intersection of S.R. 44 at the I-95 southbound to westbound off-ramp, HCS does not provide a Yield analysis. Thus, we conducted a conservative analysis whereby the southbound right-turn movement operates under STOP control and we reduced the southbound right-turn volume by 25 percent to account for those vehicles that effectively keep moving under the Yield control (see Appendix D). With this analysis, the southbound right-turn movement operates at level of service D and the 95th-percentile queue length is 110 feet (AM) and 148 feet (PM) as compared to a ramp length in excess of 1,400 feet. Therefore, based on this highly conservative analysis his movement will operate acceptably at buildout of Phase I.

29. In the revised analysis, the percentage of heavy vehicles should better reflect the existing count data. During the a.m. peak hour at the SR 442/I-95 SB Ramps, the southbound approach is comprised of 13% trucks and the westbound approach is comprised of 16% trucks. It is recognized that the percentage of trucks will likely be lower with the introduction of development trips, however the percentage will still be higher than the default 2% currently used in the analysis. The 2010 analysis provided only shows the intersection operating as under the existing two-way stop control. The analysis worksheets and summary do not show the interchange ramp intersections to be signalized until 2011. Under TWSC, the southbound ramp intersection does not operate acceptably during the p.m. peak hour. The southbound left-turn movement is shown to have an LOS F, v/c ratio of 2.3, and a queue of 56 vehicles. The analysis provided for the existing conditions (from 1st Sufficiency) indicate the southbound left currently operate at a v/c ratio of 0.92 and a LOS E. Similarly, at the northbound ramp, the northbound left-turn goes from an LOS B

under existing conditions to an LOS F under 2010 conditions. The additional project trips being added along SR 442 is directly impacting the capacity of the northbound and southbound left-turn movement, causing them to fail under 2010 conditions and likely require signalization much earlier in the development program. Based upon the revised volume identified for the "with airport road connection" scenario, a signal will be required at the SR 442/I-95 interchanges during Phase 1 regardless of whether or not the airport road connection is made. Please provide the HCS output worksheets for the SR 442 at I-95 NB ramp intersection "with airport road". It appears that page 315 of the appendix was intended to be the worksheet for the NB ramps, however the SB ramps was provided instead.

The revised analysis utilizes the existing truck percentages for the following movements:

I-95 northbound ramps
- Eastbound through
- Westbound through
- Westbound right

I-95 southbound ramps
- Southbound left
- Westbound left

For all other movements, the vast majority of the volumes will consist of project-related trips and thus a truck percentage of two percent was applied. Additionally, in the revised analysis, we are showing the need for dual southbound left-turn lanes in the first phase along with two receiving lanes. These analyses are provided in *Appendix D*.

29a. New Comment: The plan provided for the SR 442/I-95 interchange essentially extends the eastbound left-turn movement from the Northbound ramps west through the I-95 SB ramp intersection. Although this creates two eastbound lanes entering the I-95 SB ramp intersection one of those lanes immediately is dropped as a turn lane. Given the large imbalance of traffic, the study shows excessive eastbound queues resulting at the NB ramp intersection which will extend 46 vehicles (1150 feet) for the 95th percentile queue. This will effect the operations of the upstream signal. The volume imbalance also means that the eastbound traffic at the SB ramp intersection will not be split 50/50 between the two lanes and therefore the intersection operations under the improved condition will be worse than what is being shown. A more detailed analysis of the improvements should be conducted in Synchro (or similar) to evaluate the interchange ramps as a system and identify whether the identified improvements will be sufficient for storing the identified queues.

The analysis has been revised using Synchro such that the lane distribution is evaluated appropriately. The introductory memorandum addresses the improvement needs at the interchange. The interchange analyses are provided in *Appendix D*.

30. Given that the development plan has changed late in this review process, additional iterations of review may be required for review of the intersection analysis.

Comment noted. However, it is important to note that the Phase I trip generation potential is approximately 14 percent less than the previous two submittals and that the distribution of trips and the background volumes are effectively unchanged. Thus, the result is a Phase I analysis that

has volume projections effectively consistent with previous submittals with the exception that, in most all cases, the volume projections are less than those included in the previous submittals. Phases II and III will be subject to monitoring and modeling; thus the need for additional iterations of review may not be as critical as originally thought.

31. Monitoring of the study intersections should also be required at the 60% development level. As stated in the original comment, the information in this study relies heavily on assumptions that the airport road connections will divert traffic away from I-95 and US 1. Given that improvements associated with the I-95/SR 442 interchange are tied to the same 60% level, monitoring and modeling of the 1-95 interchanges should also be conducted at the 60% level to verify that the assumed improvements proposed in the study are in fact appropriate.

The analysis has been revised to include only one Phase I scenario which only includes access via Indian River Boulevard. Thus, the reasoning behind sub-phasing is no longer applicable. Additionally, the Phase I analysis has been conducted in accordance with the approved methodology and the applicant has agreed to monitoring and modeling studies at the end of Phases I and II. Therefore, the applicant is not agreeable to sub-phasing.

New Comment: The analysis provided indicates that a signal is required at the I-95/SR 442 interchange ramps during Phase 1. Please include this cost in the proportionate share calculations.

This cost has been included in the mitigation discussion in the introductory memorandum.

New Comment: Table 21-F-2b on page 119 appears to have some errors in the top row of the table where "#Value!" is shown for several of the entries.

The tables have been revised accordingly to eliminate the errors.

The segment of SR 44 from Kepler Rd to I-4 is shown as being significant and adverse under Phase I in Table 21-F-2b on page 119. This segment should have a service volume of 817 as shown in Table 21-F-2b (and on page 9 of the 1st sufficiency response). The service volume should be updated in the significance determination table on page 107. Note that the significance % shown in Table 21-F-2b is being incorrectly calculated. 42 trips/817 service volume = 5.14%, instead of the 2.38% shown in Table 2-F-2b.

In the revised tables, the portion of S.R. 44 from Kepler Road to I-4 has subsequently been separated into two sections because the portion from Summit Avenue to I-4 is actually four-laned. For the two-lane section between Kepler Road and Summit Avenue, a service volume of 817 vehicles per hour was applied. As can be seen in Tables 21-D-1 and 21-D-2, S.R. 44 west of I-4 is not significantly impacted by the project in the first phase.

Given that this section is significant and adverse in Phase I, please provide an appropriate mitigation and corresponding estimate of proportionate share cost.

This section is no longer significant and adverse in Phase I, thus a mitigation plan is not provided for this roadway segment.

Please revise all significance determination tables, including Table 21-D-2b, to include ALL links within the project vicinity (as identified in Table 21-A-1 of the 1st Sufficiency response). Currently,

the segment of SR 44 from Kepler Rd to I-4 is not being evaluated for significance under the "without airport rd" scenario.

All significance determination tables for Phase I have been revised accordingly (see revised Tables 21-D-1 and 21-D-2 in *Appendix A*).

New Comment: Taylor Rd from 1-95 to Dunlawton Avenue is identified as being significant and the total future volume exceeds the service volume. Update Table 21-F-2b on page 119 to reflect that this segment is both significant and adverse under Phase 1 (it is unclear why the table indicates "no*" in the significance and adverse column?). Please identify a mitigation and associated cost for this segment.

The introductory memorandum identifies the need for an additional westbound lane that would feed the westbound left-turn lane at the I-95 southbound ramps intersection. The introductory memorandum then continues to identify the project's proportionate-share responsibility as 46 percent conservatively based on the intersection impacts as a proportionate-share calculation based on the roadway segment improvement would yield a proportionate share of 20 percent (153 project trips /[3330-2570]).

New Comment: For all FDOT facilities, intersections where signal optimization is identified for mitigation, coordination is required with FDOT traffic operations to approve cycle lengths of 70 seconds or similar. This includes the recommended improvements to the signal timing at the SR 44/SR 415 intersection.

Based on the revised analyses, the only FDOT intersections that require signal timing adjustments are those that also require additional physical improvements. The S.R. 44/S.R. 415 intersection is projected to operate acceptably with existing signal timings.

New Comment: Analysis is provided for the SR 421 (Taylor Road/Williamson Road) at 1-95 SB Ramps on pages 246 and 247, however this intersection is not shown in the intersection significance/adversity tests on pages 207 through 211 and should be added. The analysis shows the northbound ramp intersection to be failing, with 186 project trips being added to the failing westbound movement. It is recognized that improvements were recently constructed at this interchange and that the applicant is willing to contribute their proportionate share of these improvements. However, the project is adding 186 vehicles to the westbound left-turn maneuver at the SB Ramps. This causes the left-turn movement to fail. Please identify the required mitigation to provide acceptable operations at this intersection.

The proposed mitigation plan for this interchange is discussed in the introductory memorandum.

New Comment: For the intersection of SR 44/Airport Road under the "With Airport Road" scenario, please maintain consistent lane configurations between the a.m. and p.m. peak hour analyses for the mitigated condition. The p.m. peak hour analysis shows an additional westbound left-turn and an additional northbound right-turn lane.

The "with Airport Road" scenario has been excluded from the revised analyses. Thus, this comment is no longer applicable.

New Comment: Under the "with airport road" scenario, the southbound left-turn at SR 44/Sugarmill Drive is shown to have a level-of-service "F" during the p.m. peak hour. Although the project is not adding any trips to the southbound left-turn, it is significantly increasing the conflicting volume along SR 44 which is worsening the capacity condition for the southbound left.

A similar scenario exists at SR 44/Glencoe Road, where the addition of major street conflicting volumes are worsening the capacity conditions for the minor street. Please identify the needed improvements to mitigate the intersection deficiencies. An additional analysis is necessary to evaluate the intersection under only background 2013 traffic to demonstrate that the intersections are already failing under background conditions.
The project is no longer significant in the first phase up to Sugarmill Drive, thus this comment is no longer applicable.

New Comment: Additional coordination is required with FDOT regarding the proposed mitigation plan. As identified in the Summary of Intersection Improvement Needs on Pages 179 and 180, all intersections requiring signalization or other improvements need to be identified along with estimated costs for improvement in the mitigation tables. Currently the mitigation tables do not include any of the required intersection signalization.

The mitigation plan provided in the introductory memorandum has been revised to account for intersection signalization.

As discussed at the methodology meeting and in the original ADA submittal, the FDOT does not support the applicant's premise that by constructing "excess regional capacity" mitigation impacts are addressed. As currently shown on Page 343, the applicant is asserting that in excess of $40 million should be credited towards Phase 2 and 3 from improvements constructed during Phase 1. The analysis demonstrating that the excess capacity provides any tangible regional benefit is lacking. Additionally, as these connections primarily support the proposed development, it would not be appropriate to base future credits solely on the estimation of Phase 1 need and proportionate share. These types of considerations would need to consider full project impact and the relationship of these improvements to the benefiting the regional transportation system.

First, it should be noted that Airport Road has been removed from the development and that the extension of Williamson Boulevard up to S.R. 44 is not anticipated until Phase II at the earliest. Thus, this particular item is not necessarily applicable at this time based on the change in plan and analyses. However, it is important to note that Williamson Boulevard is shown on Volusia County's thoroughfare plan and will ultimately provide an alternative north/south route spanning more than four miles between Indian River Boulevard and S.R. 44. In fact, this section of Williamson Boulevard will ultimately become part of County thoroughfare that traverses more than 23 miles through the County. Additionally, this roadway is fully expected to take local non-project traffic off of Interstate 95, as well as other parallel facilities. As such, based on a long-term perspective, it is clear that the extension of Williamson Boulevard will ultimately provide a regional benefit.

It is also noted that before agreeing to proposed improvement costs to be used in proportionate share calculations the FDOT will need to review the supporting documentation for the cost and coordinate with the FOOT estimating unit. Due to remaining concerns about the traffic study, it is recommended that agreement be made on what improvements need to be included in the mitigation plan and the percent responsibility. Additional technical factors such as project costs will need to be negotiated at future project meetings.

Please see the revised mitigation plan in the introductory memorandum.

In summary, the FDOT is not prepared to find the study sufficient. The FDOT does not support the proposed mitigation plan and recommends additional analysis to be completed by the applicant and meetings to resolve outstanding issues with both the technical study and the applicant's approach in

mitigating anticipated impacts.

It is believed that the revised analyses provided herein address any outstanding technical comments. Additionally, we will continue to work with FDOT with regards to the mitigation plan.

THE NATURE CONSERVANCY (LETTER DATED JANUARY 15, 2008)

- **TNC recommends that the proposed Williamson Road extension exit the property to the south at SR422 much closer to I-95 (such as where "Road C" is presently shown intersecting Indian River Blvd.) This would more appropriately serve lands annexed by the City of Edgewater near I-95 south of Indian River Blvd rather than impact areas of unincorporated Volusia County. The current site plan presupposes extension of the Williamson Road south into property that has been protected in perpetuity by conservation easement through an approved mitigation bank.**

  It is important to note that the alignment of Williamson Boulevard was developed based on discussions with the County and working with the property owner to the south. However, the applicant recognizes the benefits of shifting Williamson Boulevard further east, and thus in response has relocated Williamson Boulevard approximately one mile east of the alignment shown in the plan provided in the second sufficiency response. This roadway will align with the western driveway of the Reflections development. Recognizing that this roadway, due to its functional classification, will carry a higher amount of traffic, this new location of Williamson Boulevard is ideal as any further shift eastward might adversely impact the S.R. 442/I-95 interchange.

- **The extension of Indian River Blvd, which straddles the property's southern boundary, creates another significant barrier to habitat connectivity between preserved lands in the proposed project and mitigation lands to the south. No wildlife crossings have been indicated for this road. In addition, the proposed Airport Road extension constitutes a major impact along the length of Spruce Creek to the west. To the greatest extent possible, these roadways should be located central to the footprint of developed lands. The peculiar right angle intersection of Airport Road and Indian River Blvd suggests that future inappropriate extensions of either one of these roads into protected conservation areas may be pursued in the future.**

  The extension of Airport Road through the Restoration DRI has been fully excluded. Additionally, Indian River Boulevard has been shortened substantially and will only be extended from I-95 to Williamson Boulevard (approximately 25 percent of the southern boundary) for the purposes of this project.

- **It is not clear why Road A, Road B, and Indian River Blvd are all needed. These roads in combination with Williamson Blvd and Airport Road have the effect of compartmentalizing ecosystems and reducing the viability of that habitat for bear and other wildlife. The additional road parallel and east to Airport Blvd creates an unnecessary additional barrier to wildlife movement, requiring a double set of wildlife crossings. The compartmentalization of habitat disturbs normal ecosystem functions and increases the likelihood that wildlife will enter neighboring commercial and residential areas.**

  The plan has been changed substantially in response to various agency comments. As a part of this plan, the number and location of the internal roadways have been planned in an effort to minimize the impacts discussed above.