

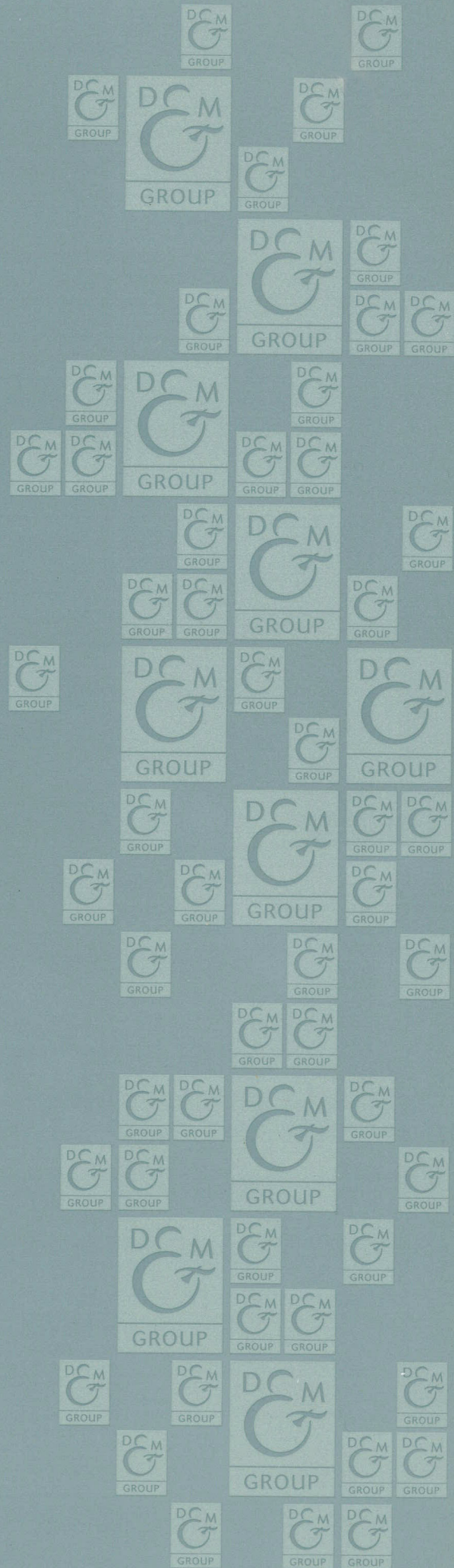


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SNAPPER CREEK PARK AND RIDE FEASIBILITY STUDY FINAL REPORT

JANUARY 1999





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Prepared for:

**Florida Department of Transportation
District Six**

Through:

Gold Coast Commuter Services

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January 1999

SNAPPER CREEK PARK AND RIDE LOT FEASIBILITY STUDY FINAL REPORT

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Introduction

Dames & Moore has been retained by the Florida Department of Transportation (FDOT) to perform transportation planning services through BRW and the Gold Coast Commuter Services (GCCS) Program as part of their optional services team. This study is provided pursuant to the Letter of Authorization for W.P.I. Number(s) 4810344; 6810304, State Project Number(s) 99004-1829;87098-1850, Contract Number C-6184, Authorization Number 6.

Project Background

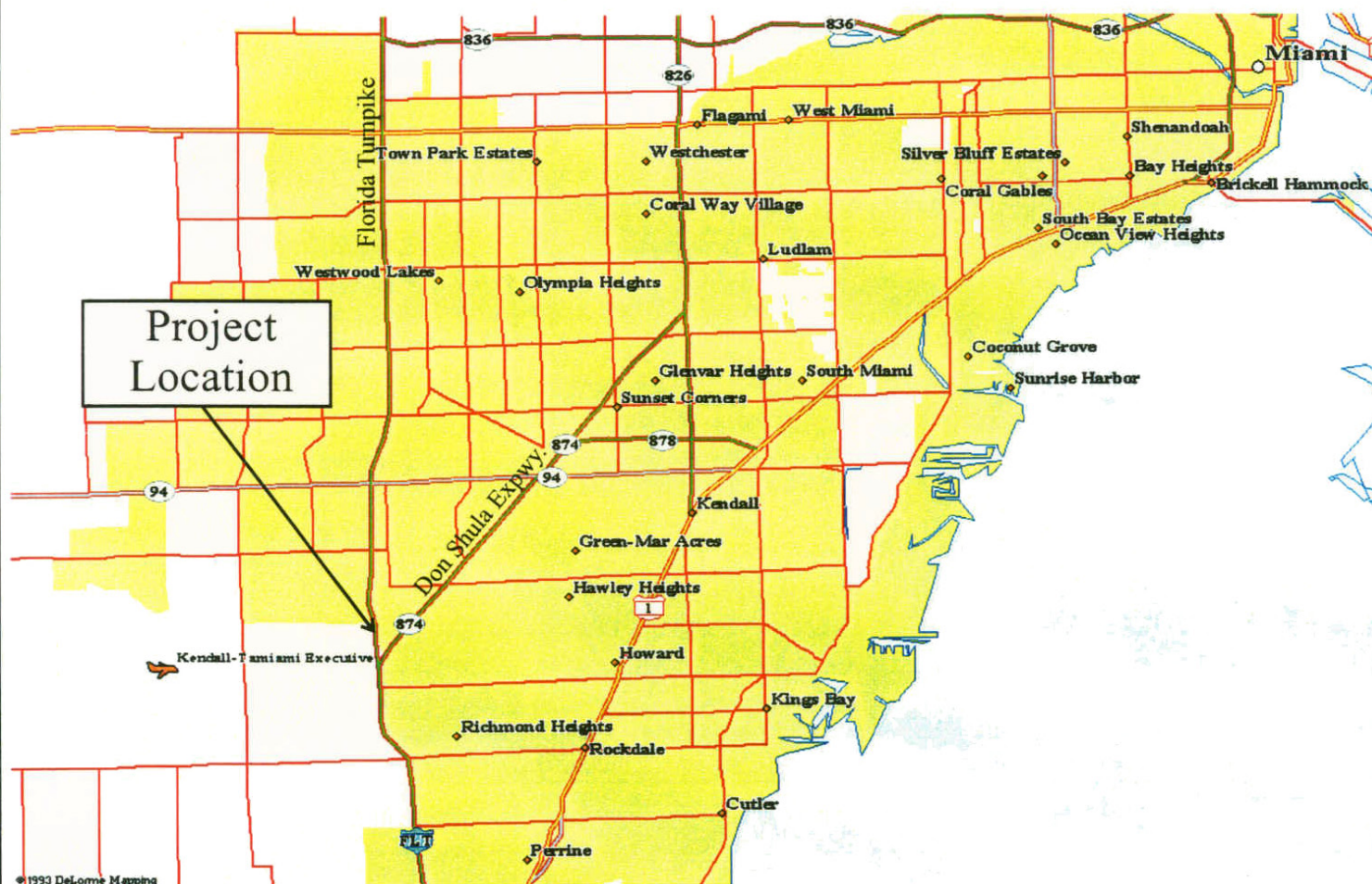
The traffic situation in Miami-Dade County is among the worst in Florida with respect to roadway level of service. The highway facilities within the county are approaching their buildout for capacity. As the roadway supply is being constrained, strategies for managing the peak period demand are being implemented. Elements of this Transportation Demand Management (TDM) can include the increased use of transit, staggered work hours for employees, and ridesharing for carpooling and vanpooling opportunities. Strategies such as these can reduce the amount of traffic on the roadway network, especially at peak periods, and if a large enough group of commuters are taking advantage of these strategies, traffic demand can be reduced to such a level that capacity increases (more highway lanes, etc.) might not be necessary.

Park and ride lots play a vital role in providing TDM opportunities to commuters. These parking lots allow the commuter to come to a central location to park their single occupant vehicle and either access the local transit system or meet up with other commuters in carpools or vanpools. This gets vehicles off the road during major commute periods, reducing vehicular demand.

Park and ride lots are best placed at major intersections or at freeway interchanges in the fringe of the urban area. These locations give a large number of daily commuters the opportunity to easily access the park and ride lots. The lots also act to intercept commuter traffic outside the urban core in order to relieve congestion. The suitability of a site for a new park and ride lot needs to be studied thoroughly to determine its feasibility and effectiveness in the overall TDM strategy for an urban area.

The objective of this study is to assess the feasibility of implementing a park and ride lot at the Snapper Creek Service Plaza on Florida's Turnpike in Miami-Dade County. The feasibility considerations will include the demand for the facility, and accessibility and operational impacts on the Turnpike and the Snapper Creek Service Plaza. The site location is in southwest Miami-Dade County, in the median of the Turnpike, just north of the southern terminus of the Don Shula Expressway (SR 874). A Project Location Map is provided in Figure 1. The Turnpike at this location has 6 general purpose lanes. This is a buildout condition for general purpose lanes on a freeway under Florida Intrastate Highway System (FIHS) policy. With a 1997 traffic volume of 39,700 vehicles per day, the current Level of Service (LOS) for the facility is estimated to be LOS B. This level of service was determined from the FDOT Level of Service Manual Generalized Tables. While this is a good LOS for an urban freeway, there is a toll plaza located just north of the service plaza in which delays can be expected.

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Figure 1
Project Location Map

Analysis of Existing Conditions

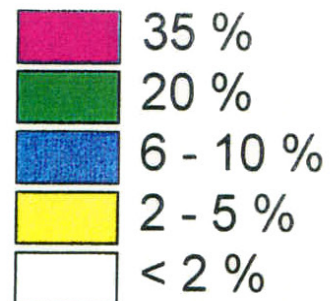
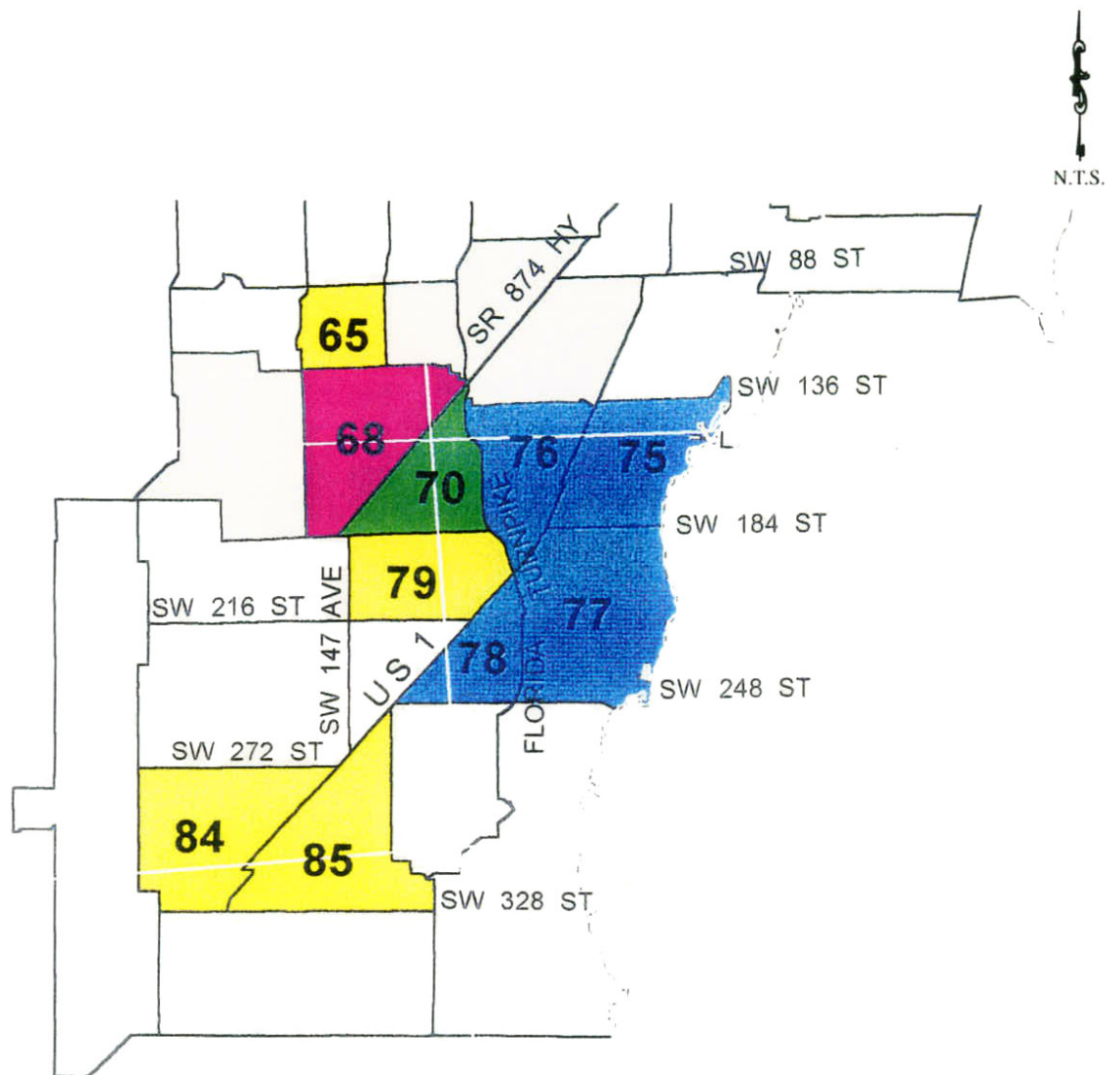
Data collection activities and an on-site reconnaissance of the Snapper Creek Service Plaza were undertaken as a prelude to determining the existing operating conditions of the service plaza and the potential demand for a park and ride lot at this location. Data was collected from various sources to determine traffic volumes, commute patterns, future transit plans, and site specific data about the plans and operations of the service plaza.

A study was completed in April 1996 for the Metro-Dade Transit Agency (MDTA) titled "Patterns of South Dade Commuting and Response of Auto Commuters to the Dixie Busway and the Florida Turnpike" by Behavioral Science Research. Morning commuters were surveyed at three intersections in south Miami-Dade County to collect origin/destination, demographic and driver preference information. Two of these locations were meant to intercept commuters along South Dixie Highway and the third location was meant to intercept commuters utilizing the Turnpike. Figure 2 indicates the areas of origin for the Turnpike commuters and Figure 3 indicates the destinations of the Turnpike commuters. The results of the survey indicate the destinations of Turnpike commuters are geographically diverse and that many of the morning commuters exit the Turnpike at the Don Shula Expressway (SR 874) before getting to the Snapper Creek Service Plaza. The study was undertaken to determine the feasibility of express bus service from the Snapper Creek Service Plaza. The study concluded this would not be a good location for transit service.

The traffic flow patterns mentioned by Turnpike commuters in the Behavioral Science Research report are substantiated by FDOT traffic counts along the Turnpike and the Don Shula Expressway (SR 874). Traffic volumes provided by FDOT Central Office indicate a 1997 Annualized Average Daily Traffic (AADT) of 106,300 vehicles per day on the Turnpike between SW 152nd Street and the Don Shula Expressway. North of the Shula on the Turnpike, just south of the Snapper Creek Service Plaza, the 1997 AADT is 39,700 vehicles per day. The majority of the northbound morning peak period traffic is exiting onto the Don Shula Expressway and not passing by the Turnpike service plaza.

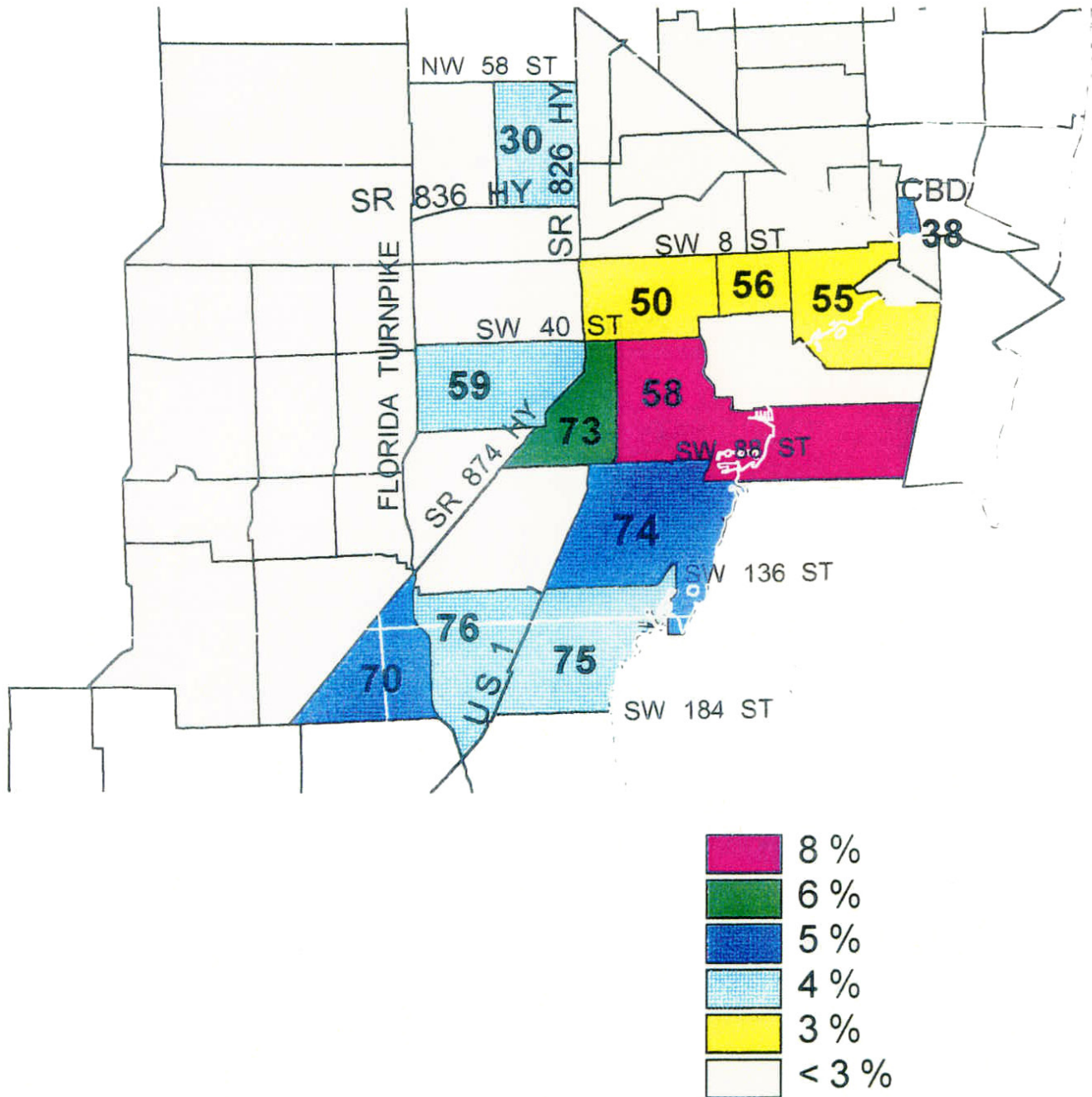
In looking at the feasibility of establishing a new park and ride lot in south Miami-Dade County, a survey of existing park and ride lots by GCCS was utilized to locate lots in the area of the service plaza. The results of this survey are found in Figure 4. As shown in the figure, there is an existing park and ride lot located at the intersection of SW 152nd Street and the Turnpike. This lot is two miles south of the Snapper Creek Service Plaza and is just south of the interchange with the Don Shula Expressway (SR 874). This gives the lot the capability to intercept traffic from the Turnpike, the Don Shula Expressway, SW 152nd Street, and SW 117th Avenue.

The existing SW 152nd Street lot has 100 parking spaces, covered waiting areas with benches, and access to local transit service. Despite these amenities and its pass-by traffic, there is low utilization of this park and ride lot by commuters. FDOT District Six reports their field visits at the lot have shown around ten vehicles parked there. A field visit to this lot was conducted as part of this study and only three vehicles were parked at the lot on that weekday afternoon. A major deficiency noted with respect to this lot was the lack of any signage advising commuters of the park and ride lot along the Turnpike.



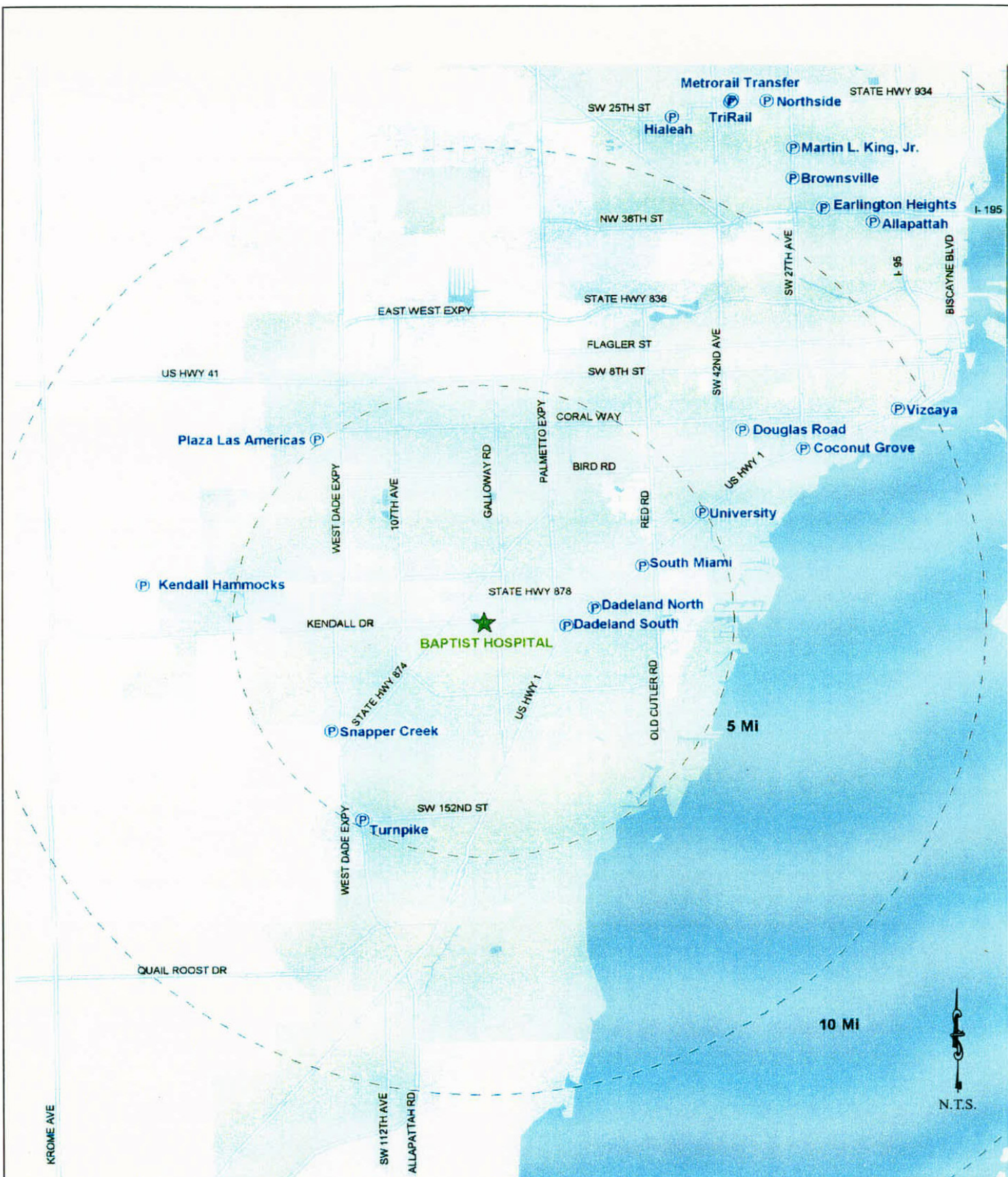
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Figure 2
Commuter Origins



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Figure 3
Commuter Destinations



Source: Gold Coast Commuter Services



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Figure 4
Miami-Dade County
Park & Ride Lots

While there are nearly 40,000 vehicles per day utilizing the Turnpike next to the Snapper Creek Service Plaza, Turnpike marketing staff report only 800 to 900 of those vehicles are entering and exiting the service plaza daily. This puts Snapper Creek in last place of all service plazas on Florida's Turnpike for pass-by capture. The reason for this is that while most service plazas are in rural areas with few amenities nearby, Snapper Creek is located in a highly developed urban area with many services available to the traveler just off the freeway. An aerial of the surrounding area is shown in Figure 5. Also, the average traveler along this section of the Turnpike is a home-to-work commuter, rather than a long-distance recreational or business traveler. This reduces the demand for the on-freeway amenities provided at the service plaza.

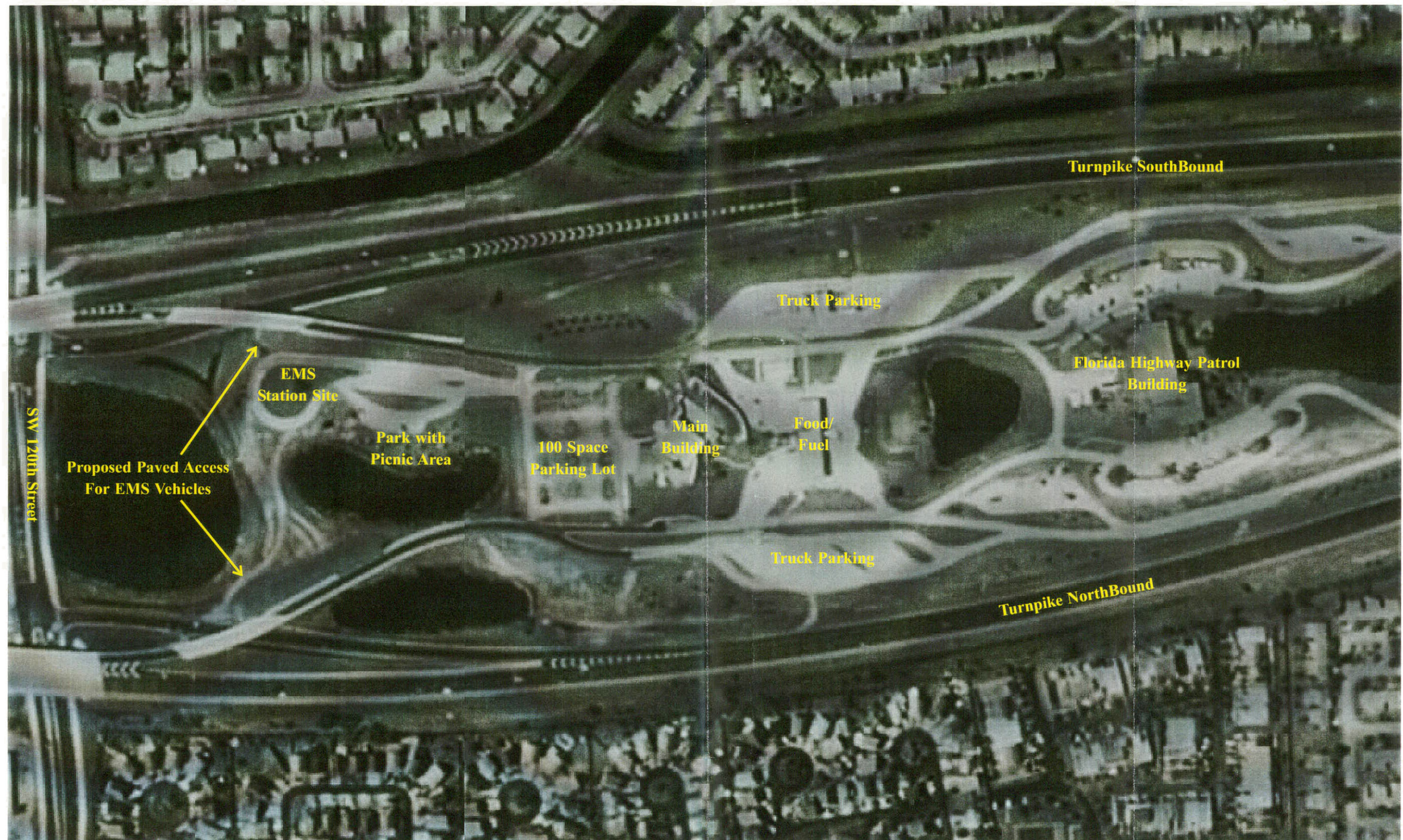
The Snapper Creek Service Plaza has quite a few amenities for the traveling public. An aerial of the service plaza is provided in Figure 6. At the heart of the plaza is a food/fuel facility with 16 gas positions and 6 diesel positions. Four of the diesel positions along with 30 semi-tractor parking spaces are physically separated from the other fueling positions to keep semi-tractors from mixing with other vehicles for safety. The food/fuel facility also has a convenience store and fast food takeout restaurant. There is unstriped parallel parking around the facility for customer parking.

The main building just south of the food/fuel facility contains rest rooms, telephones, vending machines, tourist information, and temporarily houses the Florida Highway Patrol (FHP) Troop K Headquarters. There is a 100 space parking lot on the south side of the main building. The actual Troop K Headquarters are located on the north end of the service plaza and are being renovated. Renovation completion is scheduled for October 1998.

On the southeast quadrant of the service plaza, there is a park with a lake, covered picnic areas, and 11 parking spaces. The southwest quadrant of the service plaza will contain a Metro-Dade Emergency Medical Services (EMS) station which will provide service to the Turnpike and to the surrounding community from exclusive access roads connecting the service plaza to Turnpike entrance and exit ramps from SW 120th Street. Ground breaking on the project took place during September 1998. The new access road for the EMS station is necessary since you cannot enter the Snapper Creek Service Plaza on the Turnpike from SW 120th Street. This access dilemma is evident since employees of the service plaza have cut a dirt path for their vehicles from these Turnpike entrance and exit ramps off of SW 120th Street to the south end of the plaza.

There are several systems planning activities with respect to the Turnpike which are relevant to TDM strategies in general and the potential for park and ride service at the Snapper Creek Service Plaza specifically. As mentioned previously, the Turnpike is currently built out with 6 general purpose travel lanes. Consistent with FIHS policy, the facility can still be augmented with 4 special use lanes. The Turnpike District is considering High Occupancy Vehicle (HOV) lanes and High Occupancy Toll (HOT) lanes for this. HOV lanes allow vehicles with two or more occupants to travel in less congested lanes, physically separated from the general purpose travel lanes. HOT lanes are physically similar to HOV lanes, however HOT lanes will utilize a reduced toll fare for vehicles with two or more occupants and a higher fare for single occupant vehicles. As the Sunpass Electronic Toll Collection system comes online, reduced tolls for HOV's will be a policy consideration. With its location just south of a major toll plaza, the Snapper Creek Service Plaza may be a reasonable location for commuters to meet up and take advantage of the opportunity to travel on less congested lanes and pay a reduced toll.





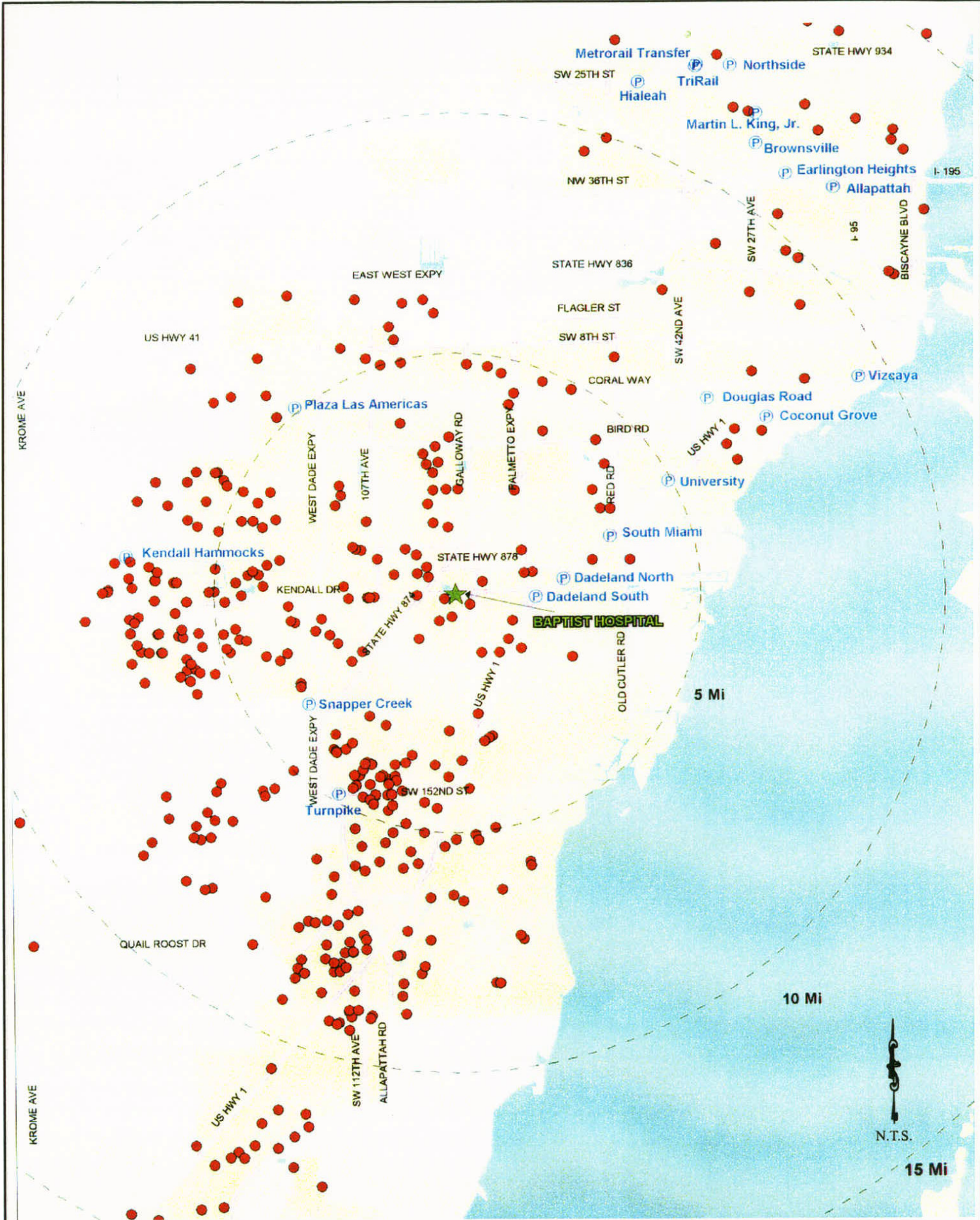
Local access has always been an issue with respect to the Snapper Creek Service Plaza, particularly access to SW 120th Street along the southern boundary of the plaza. The paved access roads being provided to the new EMS station would be an opportunity for pedestrian and vehicular access to the service plaza from SW 120th Street. These access roads would be on high-speed entrance and exit ramps to the Turnpike and the safety of having the general public use these roads needs to be analyzed. Speed differentials of conflicting traffic movements and sight distance challenges due to the braided ramp configuration of the SW 120th Street interchange are two factors for consideration in the analysis. While Turnpike planning staff will not yet commit to the concept of non-Turnpike access, they are willing to consider it. The Turnpike will dispatch someone from their traffic operations staff to the plaza to review the concept in the near future.

There are two TDM programs underway which could benefit from a park and ride lot at the Snapper Creek Service Plaza. GCCS has established a Transportation Management Initiative (TMI) in the area west of the Miami International Airport. As this area is directly north of the service plaza and the Turnpike runs along the western boundary of the TMI area, a park and ride lot at the service plaza could intercept south Miami-Dade commuters for ridesharing opportunities.

Another GCCS initiative underway is to provide TDM services to Baptist Hospital. With over 2,000 employees, Baptist Hospital is currently experiencing significant traffic and parking challenges around its facilities. A recent event at the hospital had over 500 of the 2,000 employees sign up for ridematching services. A map showing where the Baptist Hospital employees interested in ridesharing live is shown in Figure 7. The figure shows many of the employees live south of the Snapper Creek Service Plaza and could benefit from a park and ride lot to intercept commuters on their way into work at the hospital. Baptist Hospital is willing to look at the feasibility of having shuttle buses pick up employees at park and ride lots and bring them into the hospital.

There is an initiative underway to establish an interlocal agreement between the Turnpike District and Miami-Dade County which will utilize the floor area in the main building to establish a south Miami-Dade tourist and visitors center. The center could include car rental capability and shuttle bus service to and from Miami International Airport.

As the plans for this new amenity are developed, its impact on the existing parking supply will need to be analyzed. If transit service is established for this tourist center, physical limitations to the lot adjacent to the main building will need to be analyzed. Adequate turning radii and lane width for transit vehicles and convenient boarding/alighting areas are some of the topics for consideration. As the service plaza is currently designed, heavier vehicles are physically separated from mixing with autos. Transit service would necessitate bringing these vehicles in closer to the main building or having the transit passengers board and alight in the current heavy vehicle area and walking to the main building. The latter of these two options would subject the transit patron to several pedestrian/vehicle conflict points, with the vehicles moving at high speeds as they are entering/exiting the Turnpike.



Source: Gold Coast Commuter Services



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Figure 7
Baptist Hospital
Employees Surveyed

Estimation of Park and Ride Facility Demand

In order to estimate the demand of a park and ride facility at the Snapper Creek Service Plaza, the "Sketch Planning for Urban Fringe Facilities" technique found in Chapter 4 of the FDOT State Park and Ride Lot Program Planning Manual was used. The methodology assumes that park and ride demand is a function of the traffic volumes of the adjacent roadways with access to the park and ride site.

The first step of this four step process is to identify and collect peak hour peak direction traffic data for the roadways which are expected to produce park and ride customers. As the only roadway with access to the Snapper Creek Service Plaza is the Turnpike, it will be the only road necessary to collect data for. As mentioned earlier, the AADT for this segment of the Turnpike is 39,700 vehicles per day.

Step 2 is to determine the design period, which is the time in which there is a definite peaking of traffic on the facility. Table 4-4 in the Manual suggests using a design period of 45 minutes for AADT volumes between 35,000 and 49,999 so this is what was used.

Step 3 is to calculate the design period traffic. Reducing the daily volume of 39,700 vehicles per day to a peak hour-peak direction volume (K_{100} factor of 0.09, D factor of 0.6), the estimated morning peak hour volume in the northbound direction of the Turnpike would be 2,143 vehicles per hour. If 75 percent, or 45 minutes, of the peak hour volume is used, 1,608 vehicles are estimated for the design period.

Step 4 is to determine the number of parking spaces required for the park and ride lot. The demand equation for this is:

$$\text{DEMAND} = a * V_p + b * V_s$$

where V_p is the design period traffic on the primary facility

V_s is the design period traffic on the secondary facilities

a,b are diversion factors for traffic on the primary and secondary facilities

a = 0.03 and b = 0.01

Since there is currently no access to SW 120th Avenue and it would not be recommended to provide access to the general public at the Turnpike entrance ramps due to the potential dangers mentioned in the Existing Conditions section of this report, it is assumed there are no secondary facilities in the demand equation. Demand will be based upon capturing 3 percent of the northbound design period traffic on the Turnpike.

$$\text{DEMAND} = 0.03 * 1,608 + 0.01 * 0$$

$$\text{DEMAND} = 48 \text{ parking spaces}$$

This demand for park and ride space can be considered a conservative number since it is assuming there is a transit ridership component to this scenario. There is currently no transit service by MDTA and as the Behavioral Science Research Study concluded, the Snapper Creek Service Plaza would have a low probability of success as a transit-oriented park and ride facility. As the travel

characteristics of this area evolve, particularly the continuing development in western Miami-Dade County, the propensity for transit service at this location could become viable.

At the service plaza, there is currently a 100 space parking lot located just south of the main building. The lot is heavily underutilized. Usually less than ten vehicles are parked at any given time for just a few minutes per vehicle so travelers can access restrooms and telephones. This lot alone should be able to handle the existing park and ride demand as well as future demand.

Development of Alternatives

Based upon the current and expected ridership demand for a park and ride lot at the Snapper Creek Service Plaza, the existing 100 space parking lot adjacent to the main building could be utilized for the park and ride lot. This is an open area with good visibility from the service plaza entrance ramp allowing commuters to easily spot each other and park close to one another before ridesharing to their destinations. The main building has restrooms, vending machines, telephones, and is air conditioned. Food and other items are also available at the next building to the north, less than a 30 second walk away. Fuel is available on-site and is easily accessed. Police and Emergency personnel are also on-site. If the issue of public access to the service plaza from SW 120th Street can be resolved with the Turnpike District, the paved roadway being provided with the new EMS station could provide vehicular and pedestrian access to the park and ride lot.

In the event some sort of transit service is provided to the Snapper Creek Service Plaza, it is recommended that the service drive along the south side of the main building be utilized for transit. This area is currently being used by FHP as their parking area. The service drive was designed to accommodate larger vehicles so there is a good lane width and turning radii. Transit vehicles would enter the service plaza from the southbound direction and enter the service drive from the west side. Transit patrons can board and alight at the south end of the main building and walk through the main building to the park and ride lot.

In order to promote this lot for park and ride use, information signage on the Turnpike is essential to make people aware of the lot's location.

Conclusions and Recommendations

Based upon the travel characteristics of commuters using the Turnpike in south Miami-Dade County and the utilization rates of existing park and ride lots in the area, a new park and ride lot at the Snapper Creek Service Plaza is not recommended. Here were some of the determining factors:

- There is an existing park and ride lot at the next interchange to the south (SW 152nd Street) with exposure to over 100,000 vehicles per day along the Turnpike with access to local arterials, yet its observed utilization is ten vehicles or less per day. Snapper Creek has just under 40,000 vehicles per day exposure with no access to local roads.
- The 1996 Behavioral Science Research study showed how dispersed the travel patterns of the Turnpike commuter passing the Snapper Creek Service Plaza are. These dispersed patterns make for difficulty in ridematching and transit service.

- As mentioned in the Estimation of Park and Ride Facility Demand section, the estimated demand of 48 parking spaces at Snapper Creek for park and ride is conservative since there is no transit service. Also, the underutilization at the SW 152nd Street park and ride lot with high Turnpike volume and two major arterials accessing the site suggests that this area does not need another park and ride lot.
- Finally, it must be pointed out once again that to have vehicular and pedestrian access of the general public to the Snapper Creek Service Plaza from SW 120th Street is a potentially dangerous situation since the access roads will be coming off the northbound entrance and southbound exit ramps to the Turnpike. Speed differentials of conflicting traffic movements and sight distance challenges due to the braided ramp configuration of the SW 120th Street interchange are two factors which make this a dangerous situation for providing this type of access to the general public.

The resources of Gold Coast Commuter Services should continue to be utilized to provide ridematching services to south Miami-Dade residents. Signage advising commuters about the location of the existing park and ride lot at SW 152nd Street is needed to better market the facility. Gold Coast's work with Baptist Hospital and the Airport West TMI are just two examples of TDM initiatives which could make use of a park and ride lot in south Miami-Dade to take vehicles off the highway system. As future initiatives in south Miami-Dade come to fruition that would bring pass-by commuters into the service plaza, the potential for a park and ride lot at this location should be reanalyzed.