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DRAFT

TECHNICAL MEMORANDUM #3

FREIGHT MOVEMENT STUDY

Freight Movement Improvement Plan

Prepared for:

DADE COUNTY METROPOLITAN PLANNING ORGANIZATION

Prepared by:

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MAY, 1996

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1. INTRODUCTION

The Dade County Metropolitan Planning Organization (MPO) is conducting the Dade County Freight Movement Study. The Corradino Group (TCG), a transportation planning and engineering firm, has been retained by the County to perform the study. The purpose of this study is to identify ways to improve freight movement on the surface transportation network through improvements to the roadway system and incorporating freight movement into Dade County's transportation planning process.

1.1 PURPOSE OF REPORT

This report is the third in a series that documents work on the study. The following tasks are represented in this report:

- Task 6: Freight Movement Improvement Plan
- Task 7: Recommendations

This report presents the "Freight Movement Improvement Plan" proposed for Dade County. This plan builds upon work conducted during the study. Recommendations have been proposed that encompass data requirements of the Freight Movement Improvement Plan, acknowledgment of existing and conditions and potential facility developments in Dade County, and input from representatives of both private and public sector entities interested in freight movement in Dade County. The Freight Movement Improvement Plan, presented in Chapter 2, is conceptual and builds upon the detailed recommendations and improvements identified in the report.

1.2 PROJECT OVERVIEW

1.2.1 <u>Review of Project Purpose</u>

The MPO Freight Movement Study was intended to:

- Preliminarily investigate major freight movement patterns in Dade County
- Evaluate the requirements for initiating a freight movement forecasting module
- Develop a series of initial short-range transportation improvement recommendations
- Develop a freight interest representation mechanism for the local MPO transportation planning process

The study began with a relatively small base of consolidated information on freight movement in Dade County. In transportation planning, little attention has historically been paid to freight and its impacts on traffic. Traditional planning has focused on roadway and passenger transport

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modes. There is relatively little strategic planning or freight movement forecasting done for this vital transportation sector. In Dade County, there is virtually none performed, with the exception of addressing specific Seaport and Airport freight ground transportation access concerns.

1.2.2 Freight Planning and Surveys in Other Communities

A review was made of other MPO's to determine their approach to freight movement planning. The following summarizes the results of this survey:

- Hillsborough County (Tampa), Florida Recently completed a truck route plan that identified roadways suitable for trucks. The routes most suited for trucks were posted and information provided to trucking industries in the area. Their model was adjusted to include truck traffic for future planning efforts.
- New Orleans Began studying goods movement when ISTEA was implemented. They are currently relying on national statistics for forecasts of truck traffic in the metropolitan area. They are currently doing field observations to identify operational problems on known links between the National Highway System and the major industrial parks, freight terminals, and airports in their area. They are nearing completion of the Tchoupitoulas Port Access Roadway to the Port of New Orleans which will be an exclusive truck access (a five-mile road from the Pontchartrain Expressway to the port).
- Baltimore A Regional Freight Movement Task Force was established that discussed freight movement issues, barriers, and constraints. The key role of the Task Force is to build consensus and develop priorities for trucking and rail freight movement with an emphasis on getting these priorities into the Long Range Plan and the Transportation Improvement Program.
- Los Angeles The Southern California Association of Governments currently spends about \$750,000 annually on goods movement planning. Major projects include ground access studies to major airports and the possibility of creation of a freight airport, studies of railroad grade crossings, and involvement in the National Freight Partnership. They believe they do not have a good measure of what truck traffic exists and are looking for help from the State.

The approach taken by the Dade County Metropolitan Planning Organization to begin incorporating freight movement planning into its overall planning process does not appear to be inconsistent with activities occurring at other MPO's. Each MPO contacted appears to be following an approach dictated by the Intermodal Transportation Surface Efficiency Act and local considerations.

ISTEA has served as a stimulus for these and other communities to begin freight planning. As noted in Technical Memorandum No. 2, communities such as Chicago, Phoenix, El Paso, Vancouver, and New York/New Jersey have conducted surveys to determine travel characteristics. These surveys have ranged in cost from \$65,000 to \$90,000 for telephone and/or

mailback surveys to over \$300,000 for roadside interviews (in New York-New Jersey, 14,671 interviews were conducted to obtain trucker travel characteristics).

1.2.4 <u>Summary of Findings</u>

The MPO freight movement study has resulted in several findings:

- Much of the truck travel in the County occurs north of SR 836. The Port of Miami, Miami International Airport, and FEC Intermodal Yard in Hialeah are major freight intermodal hubs.
- While the private sector has concerns relative to congestion, specific locations with geometric deficiencies, etc. there was not a major identification of problems and concerns identified by the private sector in meetings held as part of the study. Most input came from the public sector representatives.
- There is significant movement from Dade County to Broward County and Port Everglades.
- Based on the origin-destination survey conducted at the heaviest traveled roads are: I-95, SR 112, SR 836, SR 826, NW 25th Street, NW 74th Street, and Okeechobee Road.
- Travel patterns are generally concentrated in the northern to northwestern part of the County, there are numerous individual trip ends.
- The current situation where trucks and buses must access the Port of Miami via downtown streets is a major concern. Other concerns include access from the airport west cargo area to SR 826 and western Dade County beyond SR 826, the worsening level of service on roadways throughout Dade County, and the effect of trucks on pavement and bridges.
- There currently is no mechanism in the Dade County travel model to estimate truck travel patterns for long-range planning.
- On-site data collection efforts were much more successful than "outreach" (i.e., telephone, mailback survey) efforts in acquiring information on truck travel.
- There is no consistent approach to freight movement planning; rather, local governments appear to be tailoring their planning to local conditions. There are a number of important study efforts occurring relative to freight movement that can be drawn upon and coordinated to feed into improve freight movements in Dade County.
- There is no consolidated database of truck movements in Dade County; the District VI of the Florida Department of Transportation (DOT) maintains classification counts at specific locations in Dade County.

• Freight movement issues and planning are becoming increasingly important in Dade County's Transportation Planning Process. The County's Draft Mobility Management Process/Congestment Management System (MMP/CMS) includes factors in its corridor evaluation process that are key to freight movement.

2. FREIGHT MOVEMENT IMPROVEMENT PLAN

Historically, transportation planning has focused on passenger travel by automobile and other modes. Given that truck travel represents nearly 10% of all vehicular traffic and that issues associated with truck travel are factors in areas such as accidents, pavement life, and congestion as well as economic areas such as the cost of goods, the MPO is taking steps to include freight movement and truck travel in its planning process.

Through this study of freight movement in Dade County, a preliminary investigation has been made of freight movement patterns in the county. A "Freight Movement Planning Process" was defined in Technical Memorandum No. 2 that presents a systematic guideline for accommodating freight movement concerns into the Dade County planning process. Within the structure of the Freight Movement Planning Process are specific recommendations for transportation planning, involvement of the freight community (public and private) in the planning process, and short-term infrastructure improvement considerations to improve freight mobility.

The Dade County Freight Movement Improvement Plan encompasses two elements:

- Continued and coordinated planning with incorporation of both private and public freight sector representation.
- Systematic implementation of short-term and long-term operational improvements to facilitate truck movements on major truck corridors, major intermodal terminal points, and at "hot spots" as identified through the planning process.

The following discussion highlights key recommendations and improvement options identified through the Freight Movement Study.

2.1 PLANNING RECOMMENDATIONS

2.1.1 <u>Recommendation 1: Establish Dade County Freight and Truck Committee</u>

The County should establish a Freight and Truck Committee to participate within the overall transportation planning process and provide input to the Transportation Improvement Program (TIP), which is the primary mechanism for transportation improvement project implementation. The committee would function within the overall planning process as a technical committee at a parallel level with the Congestion Management Committee.

Cost: It is estimated by The Corradino Group that the cost to Dade County would be the time of individuals working for Dade County departments who would sit on the Committee. This could include a representative of the Metropolitan Planning Organization, Dade County Public Works, the Port of Miami, Miami International Airport, and representatives of other County entities who may be on the panel.

Benefit: The benefit would be in that future planning and implementation efforts would be steered by public and private sector input of those most directly involved and most knowledgeable of freight movement. As a standard, it is recommended that at least one private sector representative be on the committee for every public sector person.

2.1.2 <u>Recommendation 2: Modify Dade County Travel Model to Truck Element</u>

Travel demand forecasting for Dade County follows FSUTMS¹ conventions. The model has approximately 1,200 zones and is fully operational on RS/6000 computer platforms. The model should be modified to include truck traffic as defined in Technical Memorandum No. 2 (and to be documented in the final report). It should be noted that the proposed model structure provides only for modeling truck traffic. The influence of other modes as well as the zones which will not be captured by the usual trip generation rates needs to be modeled through special generation techniques similar to those employed in auto trips.

Cost: It is estimated by The Corradino Group that the cost of modifying the Dade Travel model to include truck traffic would be \$75,000.

Benefit: The inclusion of trucks in the Dade County model will allow for a quantifiable data assessment to be used when assessing priorities for truck travel. The benefits of implementing a truck model would include better estimates of travel and congestion on arterial roadways as well as on freeways, because trucks have a greater impact on congestion than do cars. Generally, in an analysis of level-of-service and capacities, each truck is assigned a weight of more than one car using a vehicle equivalency factor. Thus, without a truck model, congestion on roadways with high truck percentages may be understated. A truck model would correct this.

Additionally, better estimates of truck volumes would improve pavement design procedures for new roadways, and reconstruction of existing roadways. This is because the primary input to most pavement design methods is the percentage or volume of large trucks over the planned life of the pavement. The number of autos has no impact in the pavement design calculations (generally, calculations of pavement and sub-grade depth). Thus, better estimates of truck volume would result in more efficient use highway construction and maintenance dollars by preventing over-design of low truck volume roads, and under-design of high truck volume roads.

2.1.3 <u>Recommendation 3: Conduct Origin-Destination/Travel Survey Suitable for Dade</u> <u>County Travel Model.</u>

Purpose: The County should build upon the database for truck movement established in this study to provide a comprehensive origin-destination profile for truck travel to be used in model development. Surveys to accomplish this activity would ideally be based on driver interviews and data obtained from waybill records at intermodal centers. Specific information to be required will be truck trip length distribution and origin-destination by type. Based on experience from review of survey activities in other communities and gained during this MPO

¹ Florida Standard Urban Transportation Model Structure (FSUTMS). FSUMTS is the Florida Department of Transportation's model structure for travel forecasting.

Freight Movement Study, the best approach for conducting the survey will be through driver interviews or collection of "synthetic" information (waybills, etc.).

Cost: Based on the range of origin-destination surveys identified for areas similar to Dade County, the cost for this survey would be \$190,000.

Benefit: The benefit of this expanded data collection effort to Dade County will be realized in the ability to incorporate truck traffic into the travel forecasting effort, thus ensuring that project prioritization through transportation planning efforts include the fullest level of recognition of truck movements. In addition, the County will be able to identify "hot spots" of truck activity that may be suitable for short-term, implementable transportation improvements.

2.1.4 <u>Recommendation No. 4: Conduct Industry/Location Specific Surveys</u>

The level of survey activity needed to develop a statistically valid profile of all freight movement in Dade County was beyond the scope of the MPO Freight Movement Plan. As noted in Technical Memoranda Nos. 1 and 2, two surveys were conducted to obtain an understanding of the characteristics of shippers in various industries and an overall profile of freight movement. In addition to the origin-destination survey conducted as part of the effort to establish a valid transportation modeling base in Dade County that includes freight, it is recommended that the County conduct a series of narrow survey efforts targeted at specific segments of freight movement.

The following are identified as key areas for additional surveys:

- Port of Miami (Monday and Friday surveys should be conducted as the port has indicated that there is significant difference in the type of activity on those days. The surveys should include vehicle profiles, travel patterns, number of trips per day, key roadways traveled, access/egress options to access the port.)
- Airport West area (An origin-destination survey was conducted as part of the recent "N.W. 25 Street Engineering Concept Study conducted by the Florida Department of Transportation). A strong interaction between the airport and the northwest Miami area was noted. However, no information on trucker activity outside of the relationship of the trip to SR 826 was noted. Surveys to understand will be key to roadway projects in West Dade.
- Private Sector Truck Operations Survey: Although this MPO Freight Movement Study incorporated private sector representation in both the surveys conducted, the large number of private sector companies (over 800) providing truck-related transportation in Dade County, as well as the different types of companies (i.e., truckload, less-than-truckload, service delivery) warrant examination. It is recommended that private companies be targeted for survey and analysis based on their size. Rather than attempting to collect original data, it is recommended that provided by the companies be utilized for analysis.

Cost: The surveys for each of the above efforts, as well as others identified through the planning, would likely be done over a period of time. Surveys at bigger facilities such as the Port of Miami and Airport West area should be in the range of \$50,000 each. A program to develop statistically valid private operations data beyond the level of origin-destination data will be more complex and could cost in the \$190,000 range, similar to the origin destination survey identified above.

Benefit: In discussions concerning the Freight Movement Study with representatives of major intermodal facilities, it was clear there are large gaps of information and analysis that are needed to improve freight movement concerns in these areas. Such analyses were beyond the scope of this study. It is believed that each of the individual areas identified above warrant individual attention and emphasis. Such studies are needed specification of meaningful, short term solutions to freight issues in these areas.

2.1.5 <u>Recommendation No. 5: Improve Monitoring of Truck Traffic on the Roadways</u>

Through both this MPO Freight Movement Study and through recent work associated with development of the Southeast Florida Regional Travel Model, it has been observed that an increased capacity for identification of truck travel volumes would be desirable for planning purposes. The MPO should examine both local and state programs for development of classification counts for truck traffic to determine opportunities for better monitoring of truck traffic.

Cost: The cost of increased monitoring of truck traffic will be associated with improvements to counting stations and staff time for processing.

Benefit: The availability of improved truck traffic monitoring will provide a supportive data base for truck travel model development.

2.2 DADE TRANSPORTATION IMPROVEMENTS FOR TRUCKING AND FREIGHT MOVEMENT

This section identifies transportation improvements that are being considered or are recommended for consideration for implementation. Through work in this study, the consultant identified three key areas of emphasis for freight movement consideration, including the roadway linkages between the three locations. These were the Port of Miami, the Miami International Airport, and the west/northwest commercial area.

The identification of improvement alternatives for freight movement in the county was based on review of information developed in this Freight Movement Study, discussions with representatives of major intermodal facilities, and review of Dade County planning documents such as the Transportation Improvement Program (TIP).

It should be noted that this section does not identify specific "recommendations" for implementation by Dade County. Rather, it identifies projects that correlate to key areas of

freight movement and concern developed during the study. Specific project development and prioritization occurs through Dade County and MPO planning processes.

2.2.1 Improvement No. 1: Port of Miami Tunnel

It is recommended that this MPO Freight Movement Study recognize the port tunnel project as a viable and necessary project. No other alternative surfaced through the study process that would replace more cost effectively the overall function of the port tunnel. Since the initiation of this study in 1995, the Port of Miami tunnel project has been included in the listing of "Federally Funded Projects of the Fiscal Year 1996-2000 Transportation Improvement Program" of the Transportation Improvement Program, Fiscal Years 1996 - 2000.² In addition, an FDOT sponsored PD&E study on the project has been completed.³ The Port has identified access improvement for trucks as a major priority. Currently, trucks must pass through downtown during trips to and from the Port. Congestion in the downtown and conflicts with traffic and development such as Bayside have been major concerns. The port tunnel will link truck traffic from the port with I-395. The tunnel will eliminate conflicts in downtown Miami and ease congestion in that area. Combined with a Biscayne Busway, the tunnel could also be used as part of a strategy to accommodate increased container activity at the port.

Cost: The total cost identified for the Port of Miami tunnel as estimated in the FDOT PD&E report is \$351,503,564. The schedule for completion is sixty months.

Benefit: The port tunnel will afford relief to downtown congestion and should result in reduced travel times and associated cost savings to trucking companies operating in and out of the port. Information produced during this Freight Movement Study indicated significant truck movement to the north, northwest and west. The tunnel will complement those movements. The "truckway" mentioned above has been cited as a potential link to the Buena Vista yards, which would make that facility more suitable for accommodating intermodal container traffic consistent with Port plans to expand its container business.

2.2.2 Improvement No. 2: NW 25th Street Improvements

The Miami International Airport Westside Cargo Area (WCA) is a major distribution center for airport-related truck traffic. The Florida Department of Transportation recently engaged a consultant to prepare an engineering concept report⁴ to address existing conditions and present comparative analyses of improvement concepts for the NW 25th Street corridor between NW 87th Avenue and NW 67th Avenue.

² Transportation Improvement Program, Fiscal Years 1996-2000, Metropolitan Planning Organization for the Miami urbanized Area, Adopted May 4, 1995

³ Port of Miami Tunnel & Access Improvements PD&E Study, prepared by Post, Buckley, Schuh & Jernigan, prepared for Florida Department of Transportation, District 6, October 1994.

⁴ Engineering Concept Study, N.W. 25th Street from N.W. 87th Avenue to N.W. 67th Avenue, "Engineering Concept Report," prepared by Marlin Engineers for the Florida Department of Transportation, November 1995.

The corridor, which is heavily used by vehicles traveling between SR-826/Palmetto Expressway and the main cargo and maintenance facilities of Miami International Airport, also was identified in this MPO Freight Movement Study as a major corridor even though the surveys of this study did not expressly include airport traffic (the decision was made that because of the ongoing FDOT work that work would be relied upon as a preliminary information base for the study. Surveys conducted as part of the work concluded that over 50% of the trucks leaving the WCA (the report indicated that 1,253 trucks entered the WCA daily while 1,330 exited the facility) were going west of SR-826 or directly to the interchange and 81% of the trucks entering the WCA were coming from west of SR 826 or directly from the interchange.

The study provided documentation and evaluation of concept alternatives to improve the operation of NW 25th Street together with providing adequate truck access between SR 826 and the WCA. These included constructing a viaduct above the NW 25th Street Canal; widening of NW 25th Street; locating a viaduct above the NW 25th Street median; and locating a viaduct above the FEC railroad tracks.

Cost: The improvements had cost estimates ranging from \$12,450,000 (widening of NW 25th Street) to \$43,770,000 (viaduct over the NW 25th Street tracks.

Benefit: The WCA is currently undergoing expansion. Increased capacity will place greater demands on traffic in the corridor. Because of the link between the WCA and West Dade, as demonstrated through the origin-destination survey conducted in the FDOT study, improvements to this corridor will serve to meet future industry growth and truck movement activity.

2.2.3 Improvement No. 3: Downtown Miami Street Improvements

A preliminary evaluation of truck traffic movement between the Port of Miami and the downtown roadway system was conducted by the firm of Beiswenger, Hoch and Associates⁵ with the principal objective of improving existing operational routes. The report identifies that the main points of conflict associated with trucks are related to turning movements in the downtown where existing conditions and design are not suitable for the number of trucks serving the Port of Miami. Key intersections identified for improvement were:

- NE 2nd Avenue and NE 5th Street
- NE 1st Avenue and NE 6th Street
- Eastbound ramp at I-395 and NE 2nd Avenue

The intersection of NE 5th Street and NE 2nd Avenue has very tight left turns from 2nd Avenue to 5th Street. Trucks essentially are forced to use all lanes when making the left turn movement. The solutions proposed for this location are redesign of the intersection with consideration given to the option to design a left turn in between the columns of the Metrorail utilizing right-of-way acquired from an existing parking lot and signalization improvements. At NE 1st Avenue and NE 6th Street, conditions associated with geometric design of the roadway (turning radius) and

⁵ Port of Miami - City Street Improvements, prepared by Beiswenger, Hoch and Associates, Inc., July 1995.

the location of a house immediately on a corner where many trucks make turns posed a concern. The proposed solution is intersection redesign. The study of the eastbound ramp at I-395 and NE 2nd Avenue revealed that trucks frequently hit the pier cap while making a right turn movement; drive over the curb and gutter when trying to avoid hitting the cap while turning; and avoid the intersection. The solution proposed for this location was to redesign the intersection to provide adequate turning radius and proper clearances for structures and to redesign the signalization.

Cost: No costs were identified in the report.

Benefit: The report identified improvements on key truck routes through downtown that would improve truck passages through the downtown. These improvements were identified on the main truck routes through the downtown.

2.2.4 Improvement No. 4: Biscayne Truckway

The consideration of a truckway on existing Florida East Coast (FEC) rail line from downtown to the Buena Vista yards at approximately Biscayne Boulevard and 36th Street has been identified as a key improvement that would allow the port and the railroad to optimize handling of container traffic from the Port of Miami. Currently, there is little activity on the tracks with only a few trains using the tracks to access the port. Most rail intermodal container traffic occurs at the FEC Hialeah Intermodal yard, which requires a seven mile trip for trucks hauling containers from the port to the yard for transfer to train. Increasing operations at the Buena Vista yard would be a significant opportunity for reduction of truck traffic on roadways and for increasing port container traffic. The FEC and the port have examined the possibility of such a truckway.

The rail line for most of the corridor north of the Miami Arena is 100', which would be sufficient for the truckway. However, there would have to be a coordinated signlized crossing programs, as with the trains, which would necessitate the operation of convoys. One option considered has been construction of an elevated truckway. While this would be more expensive than the atgrade truckway, it would eliminate the need for signalization.

Another opportunity for the link to the Buena Vista yard will be the development of the Port tunnel. Current design configurations have the tunnel linking with I-395. A ramp from I-395 to the Biscayne Truckway would remove the need for traffic on the Biscayne Truckway to pass through downtown. On the other hand, the Biscayne Truckway may be an opportunity for linking truck traffic to I-395 in the short-term prior to completion of the port tunnel.

Cost: No costs have been identified for the truckway.

Benefit: The benefit of the truckway would be two-fold. One, it would create opportunities for greater concentration of intermodal activity at the Buena Vista yards and would remove some traffic from the roadway system as trucks formerly traveling to the FEC Hialeah Yard would be traveling to Buena Vista and would not be using the roadway system. Second, it could represent a short-term opportunity for moving trucks through and out of Miami with some level of separation from the roadway network.

2.2.5 Improvement No. 5: Okeechobee Road Truck Corridor Improvements

When the results of the origin-destination survey conducted as part of the Freight Movement Study were plotted in a TRANPLAN simulation, Okeechobee Road appeared to have a higher concentration of truck trips than were referenced by drivers as a road cited by drivers as a road traveled on during the trip. It ranked 7th in terms of reports from drivers but, with the exception of the downtown area, has the greatest distribution of truck trips as simulated by the model (note, the model assigns routes linking origin and destination and may not reflect the route actually taken for a trip). This indicates that while Okeechobee Road should be the most efficient route for truck trips, it is not being used. There may be potential for greater utilization of Okeechobee Road by trucks.

Cost: Detailed analysis of the Okeechobee Road corridor was not conducted.

Benefit: Okeechobee Road passes through concentrations of commercial and industrial activity. There are gravel companies in the area of the HEFT that have significant movements of truck activity. Southest of the Palmetto, the corridor is constrained with minimal opportunity for expansion. There are many trucking companies and distributors located in this area. Improvements to the corridor could provide enhanced movement for these users and relieve some truck traffic from other major congested facilities.

2.2.6 Other Considerations

The County and FDOT District VI are establishing a program to monitor and control traffic with an IVHS system that will provide information about traffic flow over the entire region. This and other Intelligent Transportation System (ITS) opportunities for freight should be monitored as they evolve. These may have particular importance relative to minimizing congestion resulting from accidents involving heavy trucks, which have been cited as being responsible for disproportionate traffic slowdown as a result of incident. In December 1994, Dade County established an ITS coordinating committee to plan for a comprehensive integrated ITS program for the Miami urbanized area and give support for the development and future application of ITS technologies in Dade County. This committee is the appropriate source for information concerning future ITS developments that may be beneficial to freight movement in the County.

Hillsborough County has established a county truck route plan. There is no current adopted truck route plan in Dade County. The purpose of the Hillsborough plan was developed in response to complaints by citizens that trucks were using county roads that were not suitable for large vehicles. The improvement of projects that remove truck traffic on local roads (such as the Port Tunnel) and the growth of areas with major commercial and industrial concentrations such as northwest Dade are seen as being the catalyst for incorporating planning for trucks in facility design considerations.

3. <u>NEXT STEPS</u>

Following review and comment by the Metropolitan Planning Organization, members of the Steering Committee, and presentation to the Transportation Planning Council of the Metropolitan Planning Organization, a final report for the Freight Movement Study will be prepared. This report will present project recommendations, document all work conducted in the study, and address all comments from staff and other reviewers.