

SECTION 3

Alternatives

3.1 Introduction

National Environmental Policy Act (NEPA) regulations administered by the Council on Environmental Quality (CEQ) state that lead agencies shall "...rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives that were eliminated from detailed study, briefly discuss the reasons for their having been eliminated" (40 CFR 1502.14). The environmental review process requires a reasonable range of alternatives that might accomplish the proposed project objectives be identified and evaluated. The following outlines the CEQ Regulations that the Federal official should apply and assess in evaluating the alternatives analyzed in an Environmental Assessment.

- Section 1502.14(a). Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- Section 1502.14(b). Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- Section 1502.14(c). Include reasonable alternatives not within the jurisdiction of the lead agency.
- Section 1502.14(d). Include the no action alternative for evaluation.
- Section 1502.14(e). Include appropriate mitigation measures not already included in the proposed action or alternatives.

The following alternatives discussion describes the Proposed Action, a number of reasonable alternatives and the No Action Alternative. Some of these alternatives were eliminated because they did not meet the purpose and need and/or because they were infeasible or not reasonable based on physical or regulatory constraints. The alternatives discussion also presents the following:

- The list of alternatives to be considered
- Identification of the preferred alternative

- Explanation of why initial alternatives were eliminated from detailed study
- Description of the reasonable alternatives

3.2 Alternatives Considered

The following alternatives were considered and are described in more detail as part of this section:

- Alternative transportation modes
- Other Airports
- On-Airport Alternative 1 – No Action
- On-Airport Alternative 2 – Extend Runway 9R-27L to a total length of 7,350 feet. The extension would include 1,798 feet of additional runway to the west and 550 feet of additional runway to the east.
- On-Airport Alternative 3 – Extend Runway 9R-27L to a total length of 7,350 feet. The extension would include 2,348 feet of additional runway to the west.
- On-Airport Alternative 4 – Extend Runway 9L-27R to a total length of 7,350 feet. The extension would include 1,599 feet of additional runway to the west and 750 feet of additional runway to the east.
- On-Airport Alternative 5 – Extend Runway 13-31 to a total length of 7,350 feet. The extension would include 1,675 feet of additional runway to the northwest and 1,674 feet of additional runway to the southeast.

The alternatives listed above represents the broad range of options that are reasonable and practicable for meeting the purpose and need of the Proposed Action. Each of these alternatives are analyzed to determine if they meet the initial screening criteria outlined below. If an alternative passes the initial screening criteria, that alternative is carried forward for further evaluation.

3.3 Alternatives Screening Criteria

As part of the alternatives evaluation an initial screening process was conducted to determine if the alternative satisfies the purpose and need, if the alternative is feasible both in terms of cost and constructability, and if the alternative meets the site-specific goals established by the airport sponsor.

3.3.1 Purpose and Need

For an alternative to meet the Purpose and Need criteria, the alternative must provide sufficient runway length to allow aircraft to conduct non-stop operations to medium- and long-haul destinations from TMB without imposing weight restrictions that result in limiting certain business jet aircraft from operating at the Airport. The alternative also must provide sufficient runway length required to allow TMB to fulfill its role as a designated reliever airport to Miami International Airport and provide an additional measure of safety for all aircraft operations. If the alternative does not meet all of the criteria outlined in the purpose and need, it will not be considered further in the screening process as a viable alternative.

3.3.2 Cost and Constructability Considerations

If the alternative meets the Purpose and Need criteria, the alternative is carried forward in the screening process and is evaluated against cost and constructability considerations. As part of this process, certain factors are considered that could have a direct effect on the alternative and that could effect the implementation of the alternative at TMB. These factors include the need to acquire additional land, the need to relocate aviation related facilities, the need to relocate navigation aids (NAVAIDS), the need to realign or relocate roadways, the presence of construction complexities, and the overall cost.

Land Acquisition - To make the Proposed Action financially feasible, the Airport sponsor does not want to acquire additional land to accommodate the extension of Runway 9R-27L. Therefore, all safety areas, runway protection areas, and approach lighting systems need to be contained on Airport property. Because of the existing development and proposed developments surrounding TMB, the ability to acquire additional land is difficult and expensive. Therefore, alternatives that do not require the acquisition of property are considered to be more viable than those alternatives that require acquisition of property. Each alternative carried forward to this screening process is given a ranking based on the total number of acres of land needed to be acquired. The rankings are as follows: None - no acquisition is necessary; Low - represents an acquisition of less than 10 acres; Moderate - represents an acquisition of between 10 and 20 acres; and High - represents an acquisition of more than 20 acres.

Relocate Aviation-Related Facilities – Certain aviation-related facilities, such as Fixed Base Operators (FBOs), require direct access to the airfield and their location on the airfield is important with the type of operations these facilities serve. The relocation of other aviation-related facilities, such as NAVAIDS, is considered to be an impact because of the cost associated with relocation and the disruption to the operation of the Airport. Each alternative was given one of the following rankings: None – no relocation of aviation-related facilities is necessary; Low - requires relocation of the glideslope portion of the instrument landing system (ILS); Moderate - requires relocation of the entire ILS or purchase of a new ILS; and High - requires relocation of the ILS, purchase of a new ILS, and the potential of other aviation facilities and jet services to relocate closer to the primary runway.

Operational Impacts During Construction - The evaluation of whether or not the alternative would interrupt operations during construction was considered under this parameter. The FAA has guidelines for construction activities within the airport's operating area. Based on these guidelines a number of different operational measures could be implemented to allow construction on the runways and taxiways that could limit the amount of interference with aircraft operating at TMB while construction activities are occurring. Each alternative was given one of the following rankings: None – no construction impacts would occur; Low – construction would affect only one runway; Moderate – construction would affect two runways; and High – construction would affect all three runways.

Relocation of Public Roads – This evaluation was based on a determination of whether any public roads would need to be relocated. Based on FAA design criteria, the runway safety area and obstacle free zone should remain free of objects, which includes roads. The only exception is for objects that need to be located in these areas because of their function to the airport. Each alternative was given one of the following rankings: None – no relocation of a public road would occur; Low – relocation of one minor or secondary road would occur; Moderate – relocation of one arterial road; and High – relocation of more than one arterial road.

Safety Area and Protection Zone Complexities – This evaluation was based on a determination of whether the runway safety area and / or the obstacle free zone would require additional measures to ensure that no obstacles exist in either area. Based on FAA design criteria, the runway safety area should remain free of objects except for objects that need to be located in the runway safety area because of the function of the object. The obstacle free zone also should be clear of obstacles to protect the airspace around the approach lighting system. Both of these safety areas are located off the ends of a runway. Each alternative was given one of the following rankings: None – no changes to the runway safety area or obstacle free zone would occur; Low – grading and clearing would be required for the runway safety area and obstacle free zone; Moderate – extensive clearing and grading, including the construction of a culvert or the crossing of the canal, would be required to provide a runway safety area or obstacle free zone; and High – the relocation of businesses and industries is required to provide a runway safety area or obstacle free zone.

Cost Requirements – The evaluation of cost is based on the cost of the runway and taxiway construction, drainage, earthwork, navigational aids, and lighting and marking. Additionally, cost estimates include land acquisition, business relocation, removal of obstructions in the approach areas, and roadway realignment or relocation. The estimated cost of each alternative is provided to allow for a comparison of costs across all alternatives.

3.3.3 Miami-Dade Aviation Department Goals

If the alternative meets the cost and constructability considerations, the alternative is carried forward in the screening process and is evaluated against MDAD objectives. These objectives are associated with parameters that affect the location and operation of the proposed runway extension and with parameters that enable MDAD to meet the demand of the general aviation business fleet. These are noted below:

1. MDAD will not acquire any additional land in order to accommodate the runway extension and the runway extension must remain within the existing boundaries of the Airport property.
2. The runway safety areas, including the obstacle free zone, the approach lighting system, and runway protection zones need to remain within the existing boundaries of the Airport property.
3. The proposed north-south realignment of Southwest 157th Avenue has been established and no further adjustments to the realignment can be made for the purposes of accommodating additional runway length on the west end of Runway 9R-27L.
4. A precision instrument approach capability will be maintained for the Runway 9R end.
5. The proposed extension to the runway must meet the needs of the existing and future general aviation activity to the extent possible and feasible given the parameters identified above.

Keeping the runway extension, the runway safety areas, the approach lighting system, and the runway protection zones on Airport property is important because it makes the project financially feasible for MDAD and because the land surrounding TMB has been and continues to be developed by private entities and acquisition of additional land would be difficult, expensive and time intensive.

3.4 Alternatives Evaluation

The alternatives evaluation includes a description of each alternative and an evaluation based on the screening criteria. If the alternative meets the purpose and need screening criteria, the cost and constructability screening criteria, and the MDAD objectives screening criteria, the alternative is carried forward and more detailed analysis is conducted to determine which alternative presents the best option for MDAD to meet the purpose and need of the Proposed Action. Table 3-1, which is presented at the end of this section, summarizes the alternatives screening analysis. Additionally, a recommendation of the preferred alternative is provided and is based on the methodology and approach conducted for the alternatives evaluation.

3.4.1 Other Modes of Transportation

Other modes of transportation include the use of ground transportation, such as roadways, conventional railroad, and high speed rail. These other modes of transportation do not meet the purpose and need screening criteria because:

- the use of modes of transportation other than aviation does not meet the objective to allow specific business jet aircraft to provide non-stop flights with a stage length of 2,000 nautical miles or greater;

- the problem associated with weight restricted business jet aircraft operating at TMB is not improved or alleviated;
- the failure to extend the runway will result in TMB not fulfilling its role as a general aviation reliever airport to Miami International Airport; and
- the purpose of implementing improvements at the Airport that would enhance the safety of aircraft operating at TMB would not be met.

Automobiles, buses and railroads all play an important role in the overall transportation system and these other modes of transportation compliment air transportation at TMB. Air travel is the mode of transportation that gets people and goods to places faster and more efficiently than other modes of transportation. Because this alternative does not meet the purpose and need screening criteria, it was not carried forward to the next level of screening.

3.4.2 Use of Alternate Airport

This alternative analyzed the use of one of the other nearby airports to supplement the demands of business jet traffic at TMB. The only other general aviation airport in Miami-Dade County with a runway capable of serving the type of jet traffic currently using TMB is Opa-locka Executive Airport (OPF), which is 20 miles northeast of TMB. OPF has a total of four runways and one of the runways has a length of more than 7,350 feet. The distance from Opa-locka to the city center of Miami is a few miles less than the distance from TMB to the city center of Miami but the travel time is much longer. In addition, TMB is closer to many of the south Miami resorts as well as the residential areas of Coral Gables and Ocean Reef. Compared to OPF, this makes TMB more attractive to the users of corporate jets.

OPF also is a reliever airport to MIA and could help to fulfill the purpose of accommodating business jets requiring a 7,350-foot runway. However, TMB is where the demand exists for business jet aircraft and the demand at TMB is forecasted to increase for aircraft that require a longer runway. The use of OPF for these types of operations would not relieve the existing weight restrictions associated with the existing runway length at TMB and TMB would still have weight restrictions to more than 700 annual operations. Additionally, the use of OPF would not result in enhanced safety benefits at TMB.

Since the use of an alternate airport would not fulfill the purpose and need criteria, this alternative was not carried forward to the next level of screening.

3.4.3 Alternative 1: No Action Alternative

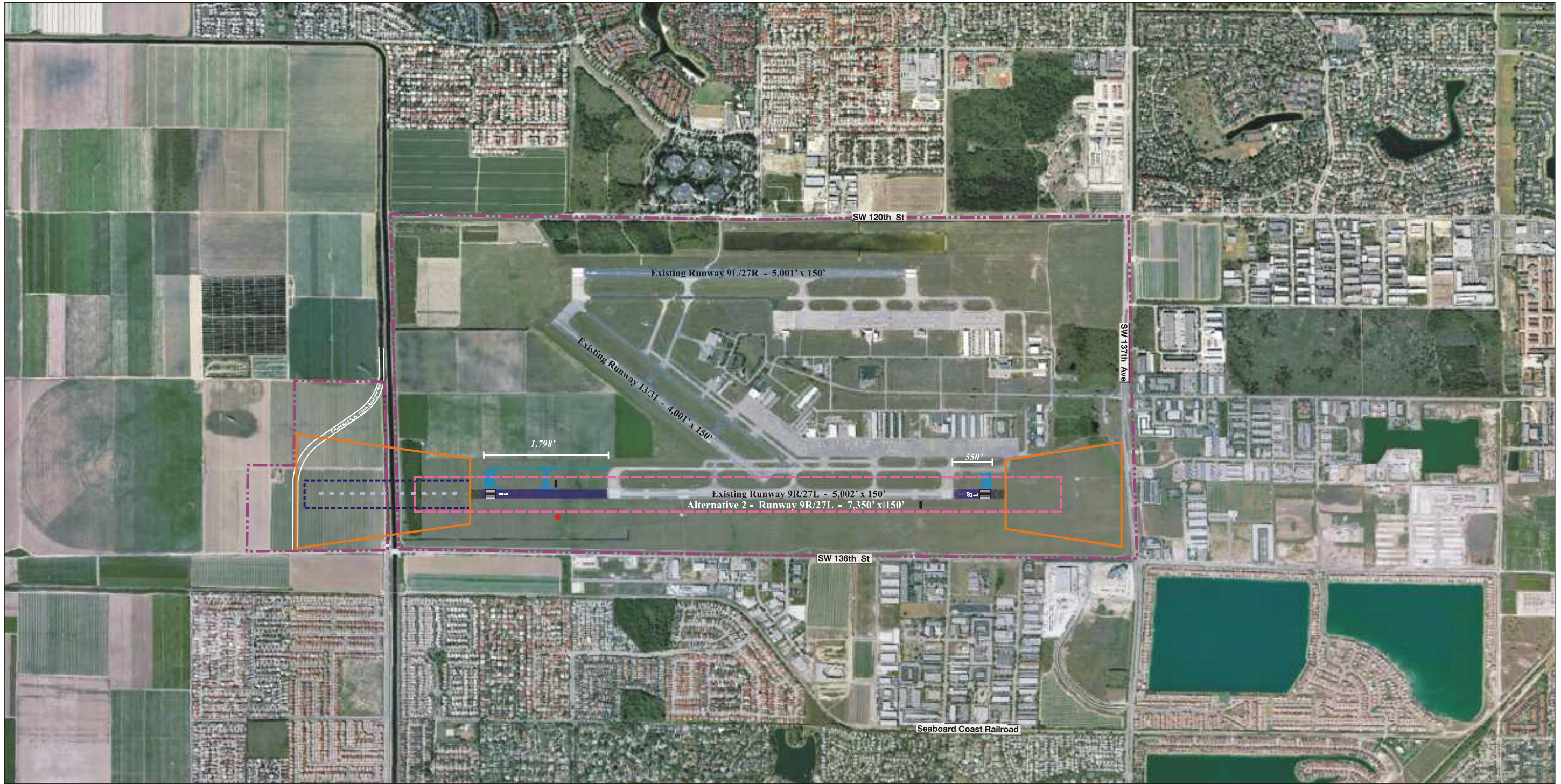
The No Action Alternative would result in no physical changes to Runway 9R-27L (see the existing airport configuration on **Figure 1-2**). This No Action Alternative does not meet the purpose and need criteria because it would not provide the Airport with the ability to serve general aviation business jet aircraft flying non-stop to medium- and long-haul destinations without imposing significant weight restrictions. In addition, the No Action Alternative does not

provide additional safety measures associated with extending Runway 9R-27L nor does the No Action Alternative enhance the reliever airport role by providing a longer runway. Although the No Action Alternative does not meet the purpose and need criteria, it is retained for detailed environmental analysis and baseline comparative purposes to fulfill FAA's responsibility under NEPA and the CEQ Guidelines.

3.4.4 Alternative 2: Extend Runway 9R-27L at Both Ends

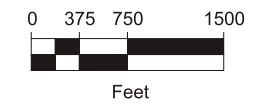
Alternative 2 is the Proposed Action as presented by MDAD and includes extending the approach end of Runway 9R by 1,798 feet and extending the approach end of Runway 27L by 550 feet for a total runway length of 7,350 feet. Alternative 2 also would provide and maintain fully compliant runway safety areas at both runway ends. The following elements, which are depicted on **Figure 3-1**, are included as part of Alternative 2:

- construct 1,798-foot long, 150 foot-wide extension at the approach end of Runway 9R;
- extend the non-paved runway safety area, relocate the obstacle free zone, and relocate the runway protection zone off the approach end of Runway 9R;
- extend Taxiway E by 1,798 feet and add two runway connector taxiways, one at the Runway 9R threshold and the other approximately 800 feet from the approach end of Runway 9R;
- construct 550-foot long, 150 foot-wide extension at the approach end of Runway 27L;
- extend the non-paved runway safety area off the approach end of Runway 27L;
- construct one runway connector taxiway at the Runway 27L threshold;
- construct blast pads at both the approach end of Runway 9R and the approach end of Runway 27L that measure 200 feet in length by 140 feet in width;
- relocate the Medium Intensity Approach Lighting System (MALSR) 200 feet beyond the end of the blast pad at the approach end of Runway 9R;
- relocate the the glide slope indicator west of the existing glide slope site;



Aerial Photo Source: AirPhoto USA, January 2005

- Proposed Runway Extension
- Proposed Taxiway Extension
- Future Runway Protection Zone (RPZ)
- Future Runway Safety Area (RSA)
- Future Obstacle Free Zone (OFZ)
- Existing Airport Property Boundary
- Future Blast Pad
- Future PAPI
- Future Glide Slope
- Future MALSRS



Source: ESA Airports

Kendall-Tamiami Executive Airport Environmental Assessment
Figure 3-1
Alternative 2 - Runway 9R-27L Extension

- install precision approach path indicators (PAPIs) at both the approach end of Runway 9R and the approach end of Runway 27L; and
- construct infrastructure and drainage improvements associated with the runway extension and taxiways.

3.4.4.1 Purpose and Need

Alternative 2 meets the purpose and need criteria established as part of this EA. Implementation of Alternative 2 would provide a runway that is long enough to support non-stop medium- and long-haul trips by general aviation business jet aircraft. The proposed 7,350 feet of paved runway would allow jet aircraft operators to fly distances of 2,000 nautical miles or more without incurring substantial weight penalties or requiring an intermediate refueling stop. Because Alternative 2 meets the purpose and need criteria, this alternative was retained for additional screening analysis.

3.4.4.2 Cost and Constructability

Alternative 2 would require no additional acquisition of property to lengthen Runway 9R-27L and the runway safety areas, the obstacle free zone, and the runway protection zone would remain on Airport property. The only relocation of aviation-related facilities is the glide slope antenna, which would be moved about 2,000 feet to the west. This alternative would not disrupt operations to any of the other two runways during construction, as construction activities would be isolated at both ends of Runway 9R-27L. Therefore, implementation of Alternative 2 would have a low impact on airport operations. Alternative 2 would not require rerouting or relocation of any public roads. In addition, the runway safety area would be extended and the obstacle free zone and runway protection zones would be relocated to meet FAA design standards. The estimated cost to extend Runway 9R-27L is approximately \$10.0 million. Based on FAA design criteria being similar or the same for all alternatives, Alternative 2 was ranked low in terms of cost compared to the other alternatives.

The cost and constructability considerations associated with Alternative 2 were considered to be low compared to other alternatives that were evaluated. Alternative 2 was retained for additional screening analysis.

3.4.4.3 MDAD Goals

Alternative 2 would meet all of the objectives set forth by MDAD regarding a runway extension at TMB. The runway safety area, obstacle free zone, and runway protection zones would be on Airport property and under the control of MDAD. Additionally, no further realignments of Southwest 157th Avenue would be needed and the precision instrument runway capability would be maintained on the approach end of Runway 9R.

As a result, Alternative 2 was retained for detailed environmental analysis as part of this EA.

3.4.5 Alternative 3: Extend Runway 9R-27L at the West End

Alternative 3 would construct a 2,348-foot long extension at the approach end of Runway 9R, construct a 2,348-foot long extension to Taxiway E, and install the necessary navigational aids for the operation of this extended runway. The primary difference between Alternative 2 and Alternative 3 is that Alternative 3 does not consider an extension of Runway 9R-27L to the east. The runway, taxiway, runway safety area, and obstacle free zone, and runway protection zone layouts for Alternative 3 are presented on **Figure 3-2**.

3.4.5.1 Purpose and Need

Alternative 3 would provide a runway that is long enough to support general aviation business jet aircraft flying non-stop to medium- and long-haul destinations without imposing significant weight restrictions or penalties. Therefore, Alternative 3 meets the purpose and need criteria and was retained for additional screening analysis.

3.4.5.2 Cost and Constructability

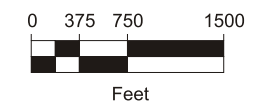
Alternative 3 would require the acquisition of about 3 acres to the north and west of the approach end of Runway 9R to allow MDAD to own and control all of the lands within the runway protection zone. The runway safety area associated with the approach end of Runway 9R extends beyond Canal C-1 by approximately 300 feet under Alternative 3. In order fully comply with the runway safety area requirements without the use of declared distances, this alternative would either require rerouting the canal, the construction of a culvert capable of supporting an aircraft in the event of an overrun or undershoot, or the use of an engineered material arresting system (EMAS). This is considered to be a high impact. The only other relocation of an aviation-related facility is the glide slope antenna, which would be moved about 2,375 feet to the west. This alternative would not disrupt operations to any of the other two runways during construction, as construction activities would be isolated at the approach end of Runway 9R. Therefore, implementation of Alternative 3 would have a low impact on airport operations. Alternative 3 would not require rerouting or relocation of any public roads. In addition, the runway safety area would be extended and the obstacle free zone and runway protection zones would be relocated to meet FAA design standards. The estimated cost to extend Runway 9R is over \$25.0 million.

The cost and constructability considerations of Alternative 3 were considered to be too high compared to Alternative 2. Therefore, Alternative 3 was not retained for additional screening analysis.



Aerial Photo Source: AirPhoto USA, January 2005

- Proposed Runway Extension
- Proposed Taxiway Extension
- Future Runway Protection Zone (RPZ)
- Future Runway Safety Area (RSA)
- Existing Airport Property Boundary
- Future Obstacle Free Zone (OFZ)



3.4.6 Alternative 4: Extend Runway 9L-27R at Both Ends

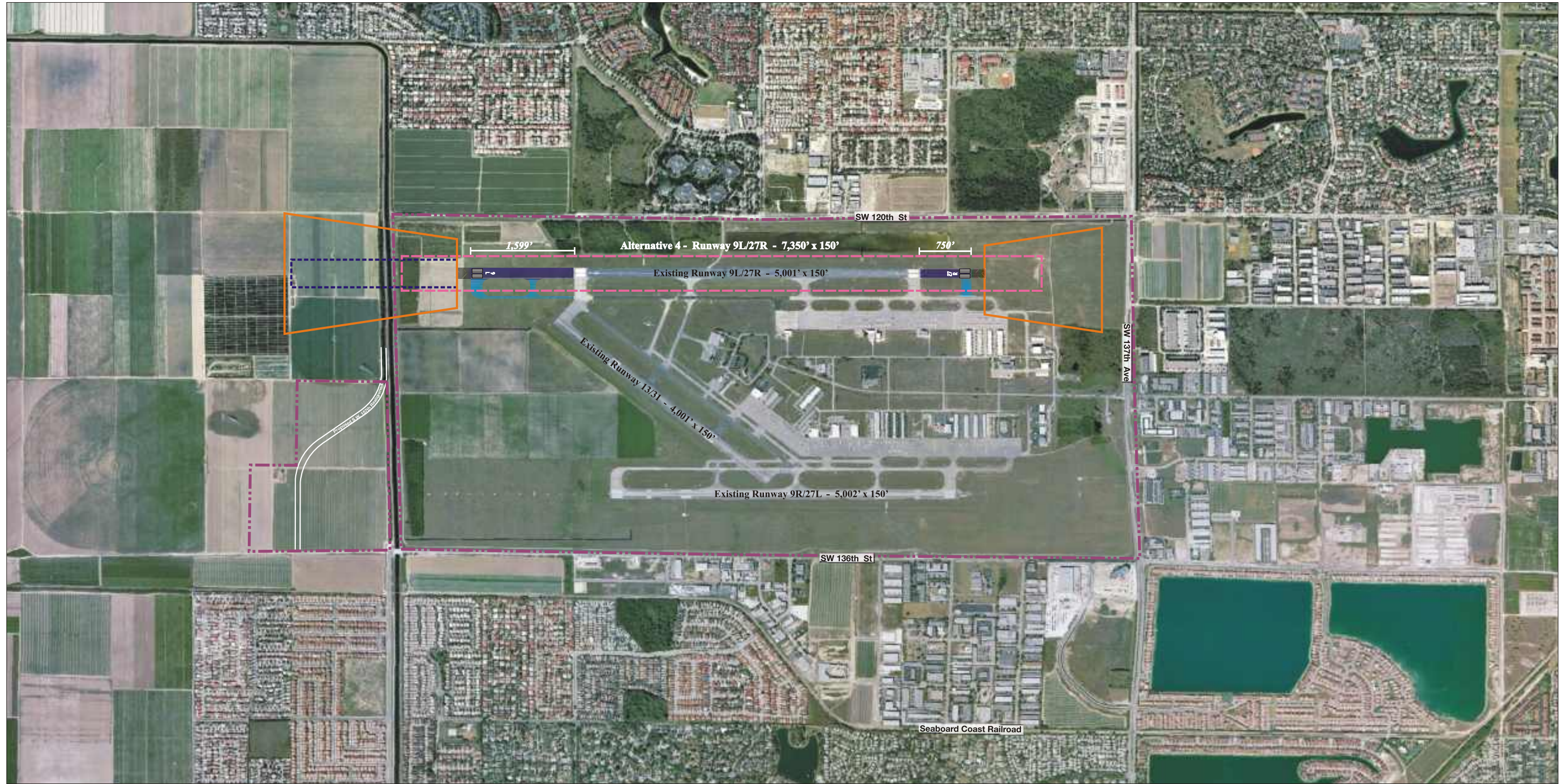
Alternative 4 would construct a 1,599-foot long extension at the Runway 9L end, construct a 1,599-foot long extension of Taxiway A, construct a 750-foot long extension at the Runway 27R end, construct a taxiway connector between the extended Runway 27R end and Taxiway A, and install the necessary navigational aids for the operation of this extended runway. The runway, taxiway, runway safety area, obstacle free zone, and runway protection zone layouts for Alternative 4 are presented on **Figure 3-3**.

3.4.6.1 Purpose and Need

Alternative 4 would provide a runway that is long enough to support general aviation business jet aircraft flying non-stop to medium- and long-haul destinations without imposing significant weight restrictions or penalties. Therefore, Alternative 4 meets the criteria defined in the purpose and need statement and was retained for additional screening analysis.

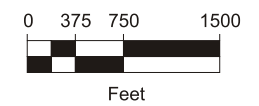
3.4.6.2 Cost and Constructability

Alternative 4 would require approximately 54 acres of land west of the approach end of Runway 9L to allow MDAD to own and control all of the property containing the runway safety area and the runway protection zone. Extending Runway 9L-27R would result in this runway becoming the primary runway for both arrivals and departures. A precision approach would need to be installed or the existing Runway 9R-27L instrument landing system would be relocated to Runway 9L-27R. Alternative 4 would result in a major shift in aircraft movement and a total change in how the Airport is operated because the majority of operations, including the majority of jet aircraft, would operate on the Runway 9L-27R instead of Runway 9R-27L. Shifting this traffic stream to Runway 9L-27R would result in the TMB traffic patterns being closer to the traffic patterns associated with MIA. This would result in the potential for airspace conflicts and additional traffic congestion and delays at both airports. With the majority of operations occurring on the Runway 9L-27R under Alternative 4, aircraft would be operating much closer to the adjacent densely populated residential developments and other incompatible land uses. This alternative may require some of the jet services and other facilities located at the south end of the Airport to move to the north Airport area due to the proximity to the primary and longer runway needed by these types of operations. If the jet facilities do not move, taxi times would be increased and aircraft could experience congestion and ground delays while taxiing at the Airport. Additionally, the existing drainage infrastructure would need a major upgrade with the extension of Runway 9L-27R due to flooding in the vicinity of the runway during significant rainfall events. Alternative 4 would have a moderate impact on operations due to the construction activities taking place in the approach path of the crosswind runway, Runway 13-31, in order to extend the approach end of Runway 9L. Construction activities could be phased or completed at night to somewhat minimize impacts to the Airport's operations on Runway 13-31. Construction costs for this alternative were estimated to be more than \$25 million and are based on the property acquisition, relocation of navigational aids, improvements to the drainage infrastructure, and construction complexities associated with the operational impacts. The cost and constructability considerations of Alternative 4 were considered to be too high compared to Alternative 2. Therefore, Alternative 4 was not retained for additional screening analysis.



Aerial Photo Source: AirPhoto USA, January 2005

- Proposed Runway Extension
- Future Runway Protection Zone (RPZ)
- Existing Airport Property Boundary
- Proposed Taxiway Extension
- Future Runway Safety Area (RSA)
- Future Obstacle Free Zone (OFZ)



3.4.7 Alternative 5: Extend Runway 13-31 at Both Ends

Alternative 5 would construct a 1,675-foot long extension at the approach end of Runway 31, construct a 1,674-foot long extension at the approach end of Runway 13, construct a 1,675-foot long extension to Taxiway D at the approach end of Runway 31, construct a 1,674-foot long extension to Taxiway D at the approach end of Runway 13, construct two taxiway connectors between the extended approach end of Runway 31 and Taxiway D, construct one taxiway connector between the extended approach end of Runway 13 and Taxiway D, and install the necessary navigational aids for the operation of this extended runway. The proposed runway, taxiway, runway safety area, obstacle free zone, and runway protection zone layout for Alternative 5 are presented on **Figure 3-4**.

3.4.7.1 Purpose and Need

Alternative 5 provides a runway that is long enough to support general aviation business jet aircraft flying non-stop to medium- and long-haul destinations without imposing significant weight restrictions or penalties. Therefore, Alternative 5 meets the criteria defined in the purpose and need statement and was retained for additional screening analysis.

3.4.7.2 Cost and Constructability

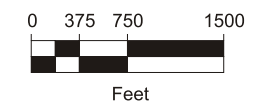
Alternative 5 would require a runway extension of 3,349 feet to provide a 7,350-foot runway. Currently, Runway 13-31 is the shortest runway at TMB with a total runway length of 4,001 feet. This alternative also would require a total of about 86 acres to be acquired to accommodate the precision approach, the runway protection zone, and the runway safety area. These 86 acres includes about 58 acres of land to the northwest of the approach end of Runway 13 as well as 28 acres of land to the southeast of the approach end of Runway 31. Acquiring this land would allow MDAD to own and control all of the property within the runway protection zone. Extending Runway 13-31 would result in this runway becoming the primary runway for both arrivals and departures. A precision approach would need to be installed or the existing 9R-27L ILS should be relocated to runway 13-31. Implementation of Alternative 5 would result in a major shift in aircraft movement and a total change in how the Airport is operated because the majority of operations including the majority of jet aircraft, would operate on Runway 13-31 instead of Runway 9R-27L. Shifting this traffic stream to Runway 13-31 would result in the TMB traffic patterns being closer to the traffic patterns associated with MIA. This would result in the potential for airspace conflicts and additional traffic congestion and delays at both airports. With the majority of operations occurring on Runway 13-31, aircraft would be operating much closer to the adjacent densely populated residential developments and other incompatible land uses.

Alternative 5 would have a major impact on operations due to the construction activities taking place in the approach path of both Runway 9R-27L and Runway 9L-27R. Construction activities could be phased or completed at night to somewhat minimize impacts to the airport's operations on the runways. Construction costs for this alternative were estimated to be more than \$75 million and are based on the property acquisition, relocation of businesses south of Southwest 136th Street, and construction complexities associated with the operational impacts.



Aerial Photo Source: AirPhoto USA, January 2005

- Proposed Runway Extension
- Future Runway Protection Zone (RPZ)
- Existing Airport Property Boundary
- Proposed Taxiway Extension
- Future Runway Safety Area (RSA)
- Future Obstacle Free Zone (OFZ)



The cost and constructability considerations of Alternative 5 were considered to be too high compared to Alternative 2. Therefore, Alternative 5 was not retained for additional screening analysis.

3.4.8 Alternatives Considered but Not Retained

A number of alternatives were considered that have a reasonable potential to meet the purpose and need of the Proposed Action. Out of the seven alternatives considered, two did not meet the purpose and need criteria and were not retained for further evaluation. Of the remaining five alternatives, three did not meet the cost and constructability considerations and were not retained for further evaluation. The following five alternatives did not meet the screening criteria and are not considered to be reasonable alternatives for detailed analysis in this EA:

1. Alternative Modes of Transportation
2. Alternate Airports
3. Alternative 3: Extend Runway 9R-27L at the West End
4. Alternative 4: Extend Runway 9L-27R at Both Ends
5. Alternative 5: Extend Runway 13-31 at Both Ends

3.4.9 Alternatives Considered and Retained for Further Analysis

Based on being able to meet all of the screening criteria of the purpose and need, the screening criteria associated with cost and constructability, and the screening criteria associated with MDAD objectives, only Alternative 2 was retained as a reasonable alternative. This alternative would fully meet the three objectives stated in the purpose and need as well as be the easiest to construct and be the least costly to implement. In addition, for compliance with NEPA, the No Action Alternative (Alternative 1) also was retained for detailed analysis.

3.5 Preferred Alternative

Based on the ability to meet all of the screening criteria, Alternative 2 has been selected as the preferred alternative for implementation of the Proposed Action.

**TABLE 3.1
ALTERNATIVES SCREENING**

Evaluation	Criteria	Other Modes of Transportation	Use of Alternate Airport	Alternative 1 No-Action Alternative	Alternative 2 Extend Runway 9R-27L at Both Ends	Alternative 3 Extend Runway 9R-27L at West End	Alternative 4 Extend Runway 9L-27R at Both Ends	Alternative 4 Extend Runway 13/31-at Both Ends
Purpose and Need	Accommodate business jet aircraft demand for long haul stage lengths	No	No	No	Yes	Yes	Yes	Yes
	Ability for the Airport to fully function as a true reliever airport to all GA aircraft	No	No	No	Yes	Yes	Yes	Yes
	Provide additional safety measures	No	No	No	Yes	Yes	Yes	Yes
Continue Screening		No	No	Yes	Yes	Yes	Yes	Yes
Cost and Constructability	Land acquisition			None	None (0 acres)	Low (3 acres)	High (54 acres)	High (86 acres)
	Relocation of aviation facilities			None	Low	Moderate	High	High
	Operational impacts during construction			None	Low	Low	Moderate	High
	Additional relocation of public roads			None	None	Low	Moderate	High
	Safety area & protection zone complexities			None	Low	High	Moderate	High
	Cost requirements			None	Low	High	Moderate	High
Continue Screening				Yes	Yes	No	No	No
MDAD Objectives	Meet MDAD's stated project objectives			No	Yes			
	Continue Screening				Yes	Yes		
DETAILED ENVIRONMENTAL ANALYSIS		No	No	Yes	Yes	No	No	No