# CHAPTER THREE
# ALTERNATIVES

## 3.1 BACKGROUND

The Federal Aviation Administration (FAA), in accordance with FAA Order 5200.8 (Runway Safety Area Program), informed the City of Cleveland, Department of Port Control (DPC) owner and operator of Burke Lakefront Airport (BKL or Airport) that the Runway Safety Area (RSA) for Runway 6L/24R at BKL does not meet the standards contained in FAA Advisory Circular (AC) 150/5300-13, *Airport Design*. FAA Order 5200.8 established the FAA RSA Program and the procedures that FAA employees follow in implementing the program. The objective of the RSA Program is to ensure that all RSAs at federally obligated airports and all RSAs at airports certificated under 14 Code of Federal Regulations (CFR) Part 139 conform to the standards contained in AC 150/5300-13, *Airport Design*, to the extent practicable. In response, the DPC conducted a Runway Safety Area Study[1] for Runway 6L/24R (2011 RSA Study) to determine the best way to provide standard RSAs to the extent practicable (based on Federal Regulations) while maintaining current operational capability at BKL.[2]

BKL is designated a general aviation reliever airport for Cleveland Hopkins International Airport (CLE) and has the longest runway of all CLE reliever airports. Traffic at BKL includes extensive corporate/business related travel, fixed wing emergency medical service (EMS) flights, professional sports team charters, flight training, business charters, as well as traffic observations, news reporting, police patrol, and recreational flights.

An operational fleet mix was prepared as part of the Draft Master Plan Update[3]. The forecast was reviewed by the FAA and conditionally approved in September of 2007. There have been no significant changes to fleet mix or number of operations at BKL since 2007. (See Chapter Two, *Purpose and Need* Section 2.2 *Forecast Sensitivity Analysis*.)

The itinerant fleet mix information was collected from airport records and FAA data, as well as, fixed-based operators (FBO) and flight school operators. The Airport's operational fleet mix was projected using national FAA forecasts for general aviation (GA) operations plus local trends and considerations. Itinerant jet operations are expected to grow the fastest reflecting the business nature of the Airport. Non-jet itinerant operations will grow more slowly than the jet operations.

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1 City of Cleveland Department of Port Control. *Runway Safety Area Study for Runway 6L/24R*. Prepared by Landrum & Brown and McGuiness Unlimited, Inc., 2011. Errata Summary February 2012.

2 March 16, 2012 Letter from Stephanie R. Swann, FAA to Ricky D. Smith, Department of Port Control concurring with the recommendation in the RSA Study. (See Appendix A)

3 City of Cleveland Department of Port Control, Cleveland Burke Lakefront Airport Draft Master Plan Update, February 2008.

Local operations are generally a mix of single engine piston aircraft and a small number of jet aircraft, principally involved in pilot training, and traffic and business helicopters serving the downtown area. Jet and helicopter operations are projected to continue their growth trend and piston aircraft will continue to represent an ever smaller percentage of the fleet.

Based on the Airport's current fleet mix at BKL, the Airport Reference Code (ARC) is C-II. Therefore, in order to comply with AC 150/5300-13, *Airport Design,* the RSA at BKL must extend 1,000 feet beyond the runway end with a width of 500 feet.[4]

## 3.2 INITIAL ALTERNATIVE SCREENING

The Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) requires that the FAA, as Federal decision-maker for this project, perform the following tasks when preparing an Environmental Assessment (EA):

- Evaluate all reasonable alternatives, including alternatives not within the jurisdiction of the Federal agency, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- Devote substantial treatment to each alternative considered in detail, including the No-Build/No-Action Alternative and the Proposed Action, so that reviewers may evaluate their comparative merits.

Federal and state guidelines concerning the environmental review process require that all prudent, feasible, reasonable, and practicable alternatives that might accomplish the objectives of a project be identified and evaluated. Federal agencies may consider the applicant's purposes and needs and common sense realities of a given situation in the development of alternatives[5]. Federal agencies may also afford substantial weight to the alternative preferred by the applicant, provided there is no substantially superior alternative from an environmental standpoint.

This EA was prepared to identify and evaluate all potential adverse impacts on the natural and human environments that are expected to result from implementation of the Proposed Action and the No Action Alternative. Numerous other alternatives were considered during the planning phases of the project, but were eliminated from further detailed environmental review if it reduced existing runway capability for the current and projected aircraft fleet or resulted in extreme economic or environmental impacts as discussed in detail later in this Chapter. Based on the results of the runway length analysis provided in Appendix B, *Runway Length*

[4] Per FAA AC 150/5300-13 the RSA length may be reduced from 1,000 feet to 600 feet prior to the landing threshold with the installation of a standard Engineered Materials Arresting System (EMAS) and declared distances are provided. Also for a runway designated Airport Reference Code C-I and C-II, an RSA width of 400 feet instead of 500 feet is permissible.

[5] Guidance Regarding NEPA Regulations, CEQ, 48 *Federal Register* 34263 (July 28, 1983).

*Requirements*, a runway length of no less than 6,198 feet for takeoff distance is recommended for BKL. The alternatives are categorized as either airfield alternatives or roadway alternatives. Both categories of alternatives are described in the following sections. **Table 3-1**, located at the end of this chapter, provides a summary of the airfield alternatives screening analysis.

### 3.2.1 AIRFIELD ALTERNATIVES

As part of the 2011 RSA Study at BKL a range of alternatives to address RSA deficiencies were developed based on FAA Order 5200.8 and evaluated based on a wide range of criteria including potential cost, environmental issues, and projected impact on current and proposed aircraft operations.

FAA Order 5200.8 – *RSA Program, Appendix 2 (Supporting Documentation for RSA Determinations)*, establishes various alternative concepts to be considered for obtaining or correcting RSAs. The alternatives vary depending on the unique factors and location of a specific airport. The first alternative is always constructing the traditional graded area surrounding the runway. However when this is not practical the other alternatives include:

a) Relocation, shifting, or realignment of the runway;

b) Reduction in runway length where the existing runway length exceeds that which is required for the existing or projected design aircraft;

c) A combination of runway relocation, shifting, grading, realignment, or reduction;

d) Declared distances; and

e) Engineered Materials Arresting Systems (EMAS).

In evaluating these various alternative concepts BKL's constrained location had to be taken into account. The Airport is located in downtown Cleveland and is bordered by Lake Erie, the U.S. Army Corps of Engineers (USACE) Confined Disposal Facilities (CDFs), and by North Marginal Road and the Cleveland Memorial Shoreway. There is not enough existing land area to simply add additional runway pavement to meet the RSA standard and maintain sufficient runway length. There are also operational constraints that have to be considered. There are large smoke stacks located to the north and east of the Airport, generally aligned with the approach to Runway 24R. The location and height of these stacks makes it impossible to shift the approach end of Runway 24R to the northeast and maintain the only instrument approach into the Airport. Additional runway pavement can be constructed northeast of Runway 24R for departures to use, but the landing point for Runway 24R would have to remain at its current location.

BKL is served by a wide variety of aircraft. If BKL's runway length was reduced and became unavailable for use by presently-based aircraft and itinerant operators that routinely fly into BKL, then these tenants and users would have to find an alternative facility that would meet certain minimum facility capabilities--most importantly of which is runway length. A runway length analysis[6] was conducted to determine the takeoff runway length needed for the different types of aircraft that operate at BKL. The Runway Length Analysis is provided in Appendix B, *Runway Length Requirements*.

While the typical turboprop aircraft that operate at BKL generally require between 2,000- to 3,000-feet of runway for takeoff and the single-engine piston aircraft generally requires 1,500- to 3,000-feet of takeoff runway length,[7] the majority of the BKL jet aircraft fleet require greater runway lengths. Virtually all jet aircraft weighing more than 20,000 pounds require runway lengths of 5,000 feet or more. The aircraft fleet mix at BKL is a combination of business jets such as the Global Express, Boeing Business Jet, Challengers, Lears, and Gulfstreams, and charter aircraft for the local sports team which include the B757, B737, and DC-9. Based on extensive review and analysis of the take-off and landing requirements for the family of aircraft that use BKL, it was determined the Airport needs to maintain landing length of at least 6,000 feet using the Runway 24R approach and a take-off length of at least 6,198 feet to maintain the existing operational capability. This will allow BKL to continue to serve the existing fleet mix as well as the sports teams and special charters that use the Airport today.[8,9]

### Alternative Screening

The DPC undertook an extensive planning effort to determine the best alternative to meet the RSA standards and meet the purpose and need of the project as described in Chapter 2, *Purpose and Need*. A multi-step evaluation process took place to evaluate the various alternative concepts.

The airfield alternatives were evaluated against the following criteria:

- Does the alternative comply with FAA RSA requirements and other airport design standards?
- Does the alternative maintain existing runway length, most importantly takeoff distance to the extent practicable for the existing and forecast aircraft fleet at BKL?

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6 City of Cleveland Department of Port Control. *Burke Lakefront Airport Runway Safety Area Study for Runway 6L/24R* prepared by Landrum & Brown and McGuiness Unlimited, 2011.

7 Runway length requirements obtained from Jane's *All the World's Aircraft*, based on standard day temperatures at maximum takeoff weight.

8 City of Cleveland Department of Port Control. *Burke Lakefront Airport Runway Safety Area Study for Runway 6L/24R* prepared by Landrum & Brown and McGuiness Unlimited, 2011.

9 City of Cleveland, Interim Airport Layout Plan (September 2012) recommends the implementation of declared distances. Based on planning information, the Landing Distance Available for Runway 24R will be 5,987 feet, however, the Runway 6L EMAS design is currently being developed. While changes to specific EMAS and LDA dimensions are anticipated with finalization of the Proposed Action design, the changed lengths are expected to be within the footprint analyzed in the environmental assessment.

- Does the alternative maintain existing capability for providing instrument landing capabilities?
- Is the alternative reasonable/feasible from an economic and environmental perspective?

The following documents the various options that were analyzed in the 2011 RSA Study and the recommendation of the alternative for further detailed environmental study in this EA. This EA evaluates 11 development alternatives to enhance the RSA for Runway 6L/24R.

### Alternative 1

Alternative 1 would construct a full 1,000-foot long RSA to the south of Runway 6L, which results in a fully compliant RSA to existing Runway 6L. However, in order to accomplish this, approximately 485,800 cubic yards of land reclamation (fill in Lake Erie) would be required.

Pros

- Provides full length standard RSA for aircraft operations in both directions
- Maintains existing runway length in both directions
- Maintains existing capability to provide instrument landing capabilities with some modifications to the Runway 24R localizer

Cons

- Extensive land reclamation is required off the end of Runway 6L (high cost associated with reclamation)
- Reclamation potentially impacts lake and harbor currents, which could impact sensitive wildlife and their habitat

Conclusion

Alternative 1 would comply with FAA RSA requirements and other airport design standards, would maintain existing runway length, most importantly takeoff distance, and would maintain existing capability for providing instrument landing capabilities. Alternative 1 was not carried forward for detailed environmental study because of the extensive economic and environmental issues as compared to the other alternatives.

### Alternative 2

Alternative 2 would comply with the RSA requirements by declaring the southern 400 feet of runway as RSA for aircraft departing on Runway 24R. This would reduce the available length of Runway 24R departures by 665 feet. Operations on Runway 6L would not be affected by this alternative. Approximately 103,600 cubic yards of land reclamation (fill in Lake Erie) would be required off the southern end of Runway 6L/24R.

Pros

- Provides full length standard RSA for aircraft operations in both directions
- Maintains existing capability to provide instrument landing capabilities with some modifications to the Runway 24R localizer

Cons

- Degrades the level of service provided by the airport by reducing available runway length in the primary direction of operation; reduces Runway 24R Accelerate-stop distance available (ASDA) from 6,198 feet to 5,533 feet.
- Extensive land reclamation is required off the end of Runway 6L (high cost associated with reclamation)

Conclusion

Alternative 2 would comply with FAA RSA requirements and other airport design standards and would maintain existing capability for providing instrument landing capabilities. Alternative 2 was not carried forward for detailed environmental study because of the extensive economic and environmental issues as compared to the other alternatives and because it would not maintain existing runway length, most importantly takeoff distance (ASDA was reduced) for the existing and forecast aircraft fleet.

### Alternative 3

Alternative 3 would displace the Runway 6L landing threshold 335 feet north of its current location and declare that portion of the runway as RSA for operations in both directions. This alternative would result in a reduction in ASDA and Landing Distance Available (LDA) for Runway 24R operations and a reduction in LDA for Runway 6L operations. The LDA in the Runway 24R direction (the primary direction of flow at BKL) would be reduced by 600 feet to 5,598 feet. A non-standard 600-foot RSA would remain for Runway 24R departures when calculating ASDA.

Pros

- No land reclamation required

Cons

- Would not meet standard RSA requirements (non-standard 600-foot RSA length for Runway 24R)
- Degrades the level of service provided by the airport by reducing available runway length in both directions of operation; reduces Runway 24R ASDA from 6,198 feet to 5,598 feet; reduces Runway 6L LDA from 6,198 feet to 5,598 feet.

Conclusion

Alternative 3 would maintain existing capability for providing instrument landing capabilities and would not result in extensive economic and environmental issues as compared to the other alternatives. Alternative 3 was not carried forward for detailed environmental study because it would not comply with FAA RSA requirements and other airport design standards and would not maintain existing runway length, most importantly takeoff distance (ASDA was reduced) for the existing and forecast aircraft fleet.

### Alternative 4

Alternative 4 would displace the Runway 6L landing threshold 335 feet north of its current location and declare that portion of the runway as RSA for operations in both directions. Through the use of declared distance, a full 1,000-foot RSA on each runway end would be obtained. However, to accomplish this, this alternative would result in a reduction in ASDA and LDA for Runway 24R operations and a reduction in LDA for Runway 6L operations. The LDA in the Runway 24R direction of operation would be reduced by 1,000 feet in this alternative down to 5,198 feet.

Pros

- Provides full length standard RSA for aircraft operations in both directions,
- No land reclamation required

Cons

- Degrades the level of service provided by the airport by reducing available runway length in both directions of operation; reduces Runway 24R ASDA from 6,198 feet to 5,198 feet; reduces Runway 6L LDA from 6,198 feet to 5,598 feet. The 6,198-foot ASDA indicated is based upon the fact that no declared distances are in place at the time of this RSA study.

Conclusion

Alternative 4 would comply with FAA RSA requirements and other airport design standards, would maintain existing capability for providing instrument landing capabilities, and would not result in extensive economic and environmental issues as compared to the other alternatives. Alternative 4 was not carried forward for detailed environmental study because it would not maintain existing runway length, most importantly takeoff distance (ASDA was reduced) for the existing and forecast aircraft fleet.

### Alternative 5

Alternative 5 would include the same actions as Alternative 4, but would also include shifting Runway 6L/24R to the east by 40 feet. The runway shift would allow for a standard 500-foot wide RSA. Because BKL is designated a C-II airport, the standard RSA may be reduced to 400 feet wide. FAA has accepted this reduction and will consider a 400-foot wide RSA as standard. As a result, this alternative does not provide any additional benefits over Alternative 4.

Conclusion

Alternative 5 would comply with FAA RSA requirements and other airport design standards and would maintain existing capability for providing instrument landing capabilities. Alternative 5 was not carried forward for detailed environmental study because it would result in extensive economic issues as compared to the other alternatives it would not maintain existing runway length, most importantly takeoff distance (ASDA was reduced) for the existing and forecast aircraft fleet.

### Alternative 6a

Alternative 6a would displace the Runway 6L landing threshold 365 feet north of its current location and declare that portion of the runway as RSA for operations in both directions. This would result in a non-standard 835-foot RSA south of Runway 6L. In addition, a 600-foot long by 150-foot wide runway extension would be constructed on the end of Runway 24R. This alternative would result in an 835-foot reduction in LDA for Runway 24R operations, as well as a reduction in LDA for Runway 6L by 365 feet.

Conclusion

Alternative 6a would maintain existing capability for providing instrument landing capabilities and would not result in extensive economic and environmental issues as compared to the other alternatives. While it would maintain existing runway length, most importantly takeoff distance for the existing and forecast aircraft fleet, Alternative 6a was not carried forward for detailed environmental study because it would not comply with FAA RSA requirements and other airport design standards.

### Alternative 6b

Alternative 6b would include the same actions as Alternative 6a, but would add a 200-foot EMAS bed on Runway 6L. Because a 200-foot EMAS bed would not provide the stopping capability for the EMAS design aircraft (Boeing BBJ with a 70kt runway exit speed), it would be considered a non-standard RSA. Therefore, this alternative would not provide any additional benefits over Alternative 6a, but would include additional costs for the EMAS.

Conclusion

Similar to Alternative 6a, Alternative 6b would maintain existing capability for providing instrument landing capabilities and would not result in extensive economic and environmental issues as compared to the other alternatives. While it would maintain existing runway length, most importantly takeoff distance for the existing and forecast aircraft fleet, Alternative 6b was not carried forward for detailed environmental study because it would not comply with FAA RSA requirements and other airport design standards.

### Alternative 7

Alternative 7 would displace the Runway 6L landing threshold 335 feet north of its current location and declare that portion of the runway as RSA for operations in both directions. In addition, an 800-foot long by 150-foot wide runway extension would be constructed on the end of Runway 24R. This alternative would result in a 200-foot reduction in ASDA and a 1,000-foot reduction in LDA for Runway 24R operations, an increase in take-off distances in both directions, an increase in the ASDA for Runway 6L operations, and maintain the LDA for Runway 6L operations. To accomplish this alternative, there would be impacts to former Aviation High School, as well as additional costs for paving.

Pros

- Provides full length standard RSA for aircraft operations in both directions
- Additional runway length gained in Runway 6R departure flow
- No land reclamation would be required

Cons

- Degrades the level of service provided by the airport by reducing available runway length in the primary direction of operation; reduces Runway 24R ASDA from 6,198 feet to 5,998 feet and LDA from 6,198 to 5,198.
- Compared to other alternatives, this alternative includes additional costs for pavement and impacts to former Aviation High School.

Conclusion

Alternative 7 would comply with FAA RSA requirements and other airport design standards, would maintain existing runway length, most importantly takeoff distance, and would maintain existing capability for providing instrument landing capabilities. Alternative 7 was not carried forward for detailed environmental study because of the extensive economic and environmental issues including impacts to former Aviation High School as compared to the other alternatives.

### Alternative 8

Alternative 8 would displace the Runway 6L landing threshold 335 feet north of its current location and declare that portion of the runway as RSA for operations in both directions. In addition, a 1,000-foot long by 150-foot wide runway extension would be constructed on the end of Runway 24R. This alternative would result in a 1,000-foot reduction in LDA for Runway 24R operations, an increase to the takeoff distance in both directions, an increase in the ASDA for Runway 6L operations, and maintain the LDA for Runway 6L operations. To accomplish this alternative, there would be impacts to former Aviation High School, as well as additional costs for paving.

Pros

- Provides full length standard RSA for aircraft operations in both directions
- Additional runway length gained in Runway 6R departure flow
- No land reclamation would be required

Cons

- Degrades the level of service provided by the airport by reducing available runway length in the primary direction of operation; reduces Runway 24R LDA from 6,198 to 5,198.
- Compared to other alternatives, this alternative includes additional costs for pavement and impacts to former Aviation High School. The Sponsor does not want to impact former Aviation High School in order to preserve that area for potential future development and revenue generation.

Conclusion

Alternative 8 would comply with FAA RSA requirements and other airport design standards, would maintain existing runway length, most importantly takeoff distance, and would maintain existing capability for providing instrument landing capabilities. Alternative 8 was not carried forward for detailed environmental study because of the extensive economic and environmental issues including impacts to former Aviation High School as compared to the other alternatives.

### Alternative 9 (Proposed Action)

Alternative 9 would employ EMAS as a means to comply with RSA requirements. The elements would include a 400-foot EMAS bed on Runway 6L, a 35-foot setback from the EMAS bed, and a shift in the Runway 6L threshold by 165 feet to the north. Taken together, this 600-foot area that includes EMAS would provide the equivalent of 1,000 feet of RSA and thereby satisfy FAA RSA requirements. Alternative 9 also includes a 600-foot extension to Runway 24R. This alternative provides full RSA coverage on both ends of the runway. However, there would be a 211-foot reduction in LDA for Runway 24R arrivals. While not preferred, this reduction in Landing Distance Available would be marginally acceptable for the aircraft design group that utilizes BKL. While this alternative reduces LDA, this

alternative provides for full RSA coverage on both ends of the runway and maintains the existing level of service provided by BKL for departures in the primary direction of operation. This alternative initially included a small area of reclamation (fill in Lake Erie) to complete the RSA. After evaluating the benefits versus the cost of filling this portion of Lake Erie, FAA determined that an analysis could include unique geographical constraints to the RSA. The FAA has determined alternatives that require land reclamation or fill in Lake Erie is not environmentally feasible, when other alternatives are available to provide for an equivalent level of safety. Therefore, while additional costs would occur for paving, it would be less than the other alternatives that include a runway extension. This alternative would have no impacts to former Aviation High School.

Pros

- Provides full RSA coverage on both ends of runway (600-foot RSA with 400-foot EMAS on Runway end 6L and 1,000-foot RSA on Runway end 24R)
- Runway length preserved in both directions for departures
- No land reclamation would be required with the acceptance of a 400-wide RSA for ARC C-II

Cons

- Degrades the level of service provided by the airport by reducing available runway length for arrivals in primary direction of operation; reduces Runway 24R LDA from 6,198 feet to 5,987 feet.

Conclusion

Alternative 9 would comply with FAA RSA requirements and other airport design standards, would maintain existing runway length, most importantly takeoff distance to the extent practicable for the existing and forecast aircraft fleet at BKL, would maintain existing capability for providing instrument landing capabilities, and is reasonable and feasible from an economic and environmental perspective. It would minimize cost and impact to former Aviation High School as compared to other runway extension alternatives.

### Alternative 10

Alternative 10 would have the same elements as Alternative 9 on the Runway 6L end, but includes a 1,000-foot extension on Runway 24R. As compared to Alternative 9, the additional 400 feet of runway on 24R would not improve the loss of LDA on Runway 24R. However, this alternative would result in additional cost for paving and impacts to former Aviation High School. The Sponsor does not want to impact former Aviation High School in order to preserve that area for potential future development and revenue generation.

Conclusion

Alternative 10 would comply with FAA RSA requirements and other airport design standards, would maintain existing runway length, most importantly takeoff distance, and would maintain existing capability for providing instrument landing capabilities. Alternative 10 was not carried forward for detailed environmental study because of the extensive economic and environmental issues including impacts to former Aviation High School as compared to the other alternatives.

### 3.2.2 ROADWAY ALTERNATIVES

Chapter Two, *Purpose and Need*, also identifies the need to maintain to the extent practicable the vehicle service road that circles the Airport perimeter and provides access for airport operations, U.S. Department of Agriculture (USDA) wildlife management and mitigation, and the USACE. The road is used for a variety of purposes by multiple users to complete their mission. Airport operations use the road to perform perimeter checks, maintenance operations, and wildlife management activities in accordance with their Part 139 certificate. The USDA uses the road as a part of their agreement with the City of Cleveland and the USACE to perform wildlife management and mitigation related to the activities associated with both the Combined Disposal Facilities and the proximity to Lake Erie. Lastly, the USACE uses portions of the vehicle service road to access the Combined Disposal Facility operation. This is the only land access to the operation.

All of the airfield alternatives described above would require portions of the vehicle service road to be closed or relocated. However, roadway alternatives will only be evaluated for Alternative 9 because that was the only alternative carried forward from the airfield alternatives screening process described above.

Three portions of the road would require relocation. Various options were reviewed in order to find the best roadway alternative that meets the need to maintain roadway access to the extent practicable in order to maintain Airport, USDA, and USACE maintenance and operational activities. For each of the areas a no action alternative (leaving the roadways where there are today) was developed. In some cases this option was not feasible because there are alternatives that would meet the purpose and need. Another option was to remove the roadways with no replacement. However this was considered not reasonable. The City of Cleveland, along with the users (USACE, USDA Wildlife Services, and the DPC) provided documentation regarding the use and necessity of the road to provide access to all areas of the airfield. Alternatives presented that recommend maintaining a perimeter road in the RSA must be carefully evaluated by the FAA to ensure the RSA is improved to the greatest extent practicable. The DPC, USACE, and USDA Wildlife Services have stated their objections to removing the roadways without any replacement. A copy of their coordination is included in Appendix A, *Coordination and Comments.*

### South End

Approximately 530 feet of the vehicle service road on the southwest end of the Airport would need to be relocated. This roadway is located adjacent to the Aircraft Rescue and Firefighting (ARFF) station. Due to the location of this roadway it was able to be relocated out of the FAA safety areas and would maintain existing access. This is the preferred roadway alternative to be incorporated into the Proposed Action.

### West Side Service Road

Currently, the vehicle service road runs the full length of Runway 6L/24R. Two areas of this road would be affected by the Proposed Action.

Southern portion

The existing southern portion of the perimeter road is proposed to remain as it is today. Approximately 1,700 square feet of the road is located within the existing runway safety area. As this portion of the road is being maintained for airport operations, safety, emergency response, and wildlife management, then additional requirements and approvals regarding the use and operation of the road will be required by the FAA, including but not limited to airfield marking and signage; drivers training; operational procedures; and ATCT coordination.

Middle portion

Approximately 3,480 feet of the vehicle service road adjacent to the CDF Dike 10B would be located within the RSA. Two options were evaluated for the relocation of this road.
The first was to place the road on the berm of the USACE's CDF 10B. Discussions with USACE found that this was not feasible because the berm could not in its current state support a road, and construction of a permanent road on top of the berm would result in loss of operational area for the dredging operation. As a result, placing the vehicle service road on the berm was eliminated from further evaluation.

The second option was to place the vehicle service road into the current storm water drainage area that is located along the south perimeter of CDF Dike 10B. The storm water functions of the drainage ditch would be reconstructed as part of the road relocation. Coordination with USACE found that this would not conflict with their operation and would be an acceptable approach. This option is the preferred roadway alternative to be incorporated into the Proposed Action. A portion of this roadway would still be located in the object free area and would require a modification to standards from the FAA.

### North End

Approximately 2,200 feet of the vehicle service road on east side of the Airport by the former Aviation High School and CDF Dike 12 would be directly impacted by the project or it would be located within the RSA. As a result, the service road in this area would be relocated and would be placed outside of the RSA. A portion of this roadway would still be located in the object free area and would require a modification to standards from the FAA. This is the preferred roadway alternative to be incorporated into the Proposed Action.

## 3.3 ALTERNATIVES CARRIED FORWARD FOR DETAILED EVALUATION

### Alternative 1: No Action

To satisfy the intent of NEPA, FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*; FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures;* and other special purpose environmental laws, a No Action Alternative is carried forward in the analysis of environmental consequences provided in Chapter Five, *Environmental Consequences*. With the No Action Alternative, the existing conditions would remain in place. The No Action does not meet the stated purpose and need for this project. Although not always reasonable, feasible, prudent, nor practicable, the No Action Alternative is a potential alternative under NEPA and serves as the baseline for the assessment of impacts associated with the Proposed Action.

### Alternative 2: Proposed Action (Previously identified as Alternative 9)

As a result of the alternative screening described above, the only development alternative that meets the purpose and need and is reasonable, feasible, prudent, and practicable is the Proposed Action. Alternative 2 previously identified as Alternative 9 will be identified as the Preferred Alternative from this point forward. Therefore, the Proposed Action is carried forward for detailed environmental evaluation. The Proposed Action is the Preferred Alternative. The Proposed Action, as discussed in Chapter One, *Proposed Action* includes the following:

- Construction of a 400-foot EMAS bed on Runway End 6L
- Displace landing threshold of Runway 6L 165 feet to the east
- An approximate 600-foot eastern extension to Runway End 24R
- Modifications to existing vehicle service road
- Construction/extension of taxiways
- Relocation of existing FAA navigational aids (NAVAIDS) (including Runway End 6L Runway End Identifier Lights (REILS), Automated Weather Observing System (AWOS), and the addition of in-ground runway lights in the extension)
- New runway marking/striping

## Table 3-1
## SUMMARY OF AIRFIELD ALTERNATIVES SCREENING
## Burke Lakefront Airport

| Alternative | Description | Provides Standard RSA | Maintains Runway Length and Capability[1] | Economically and Environmentally Reasonable |
|---|---|---|---|---|
| Alternative 1 | Full RSA through Lake Erie land reclamation | **Yes** | **Yes** | **No** |
| Alternative 2 | Full RSA through shortening runway and Lake Erie land reclamation | **Yes** | **No** | **No** |
| Alternative 3 | 600-foot non-standard RSA length on Runway 6L | **No** | **No** | **Yes** |
| Alternative 4 | Full RSA through shortening runway | **Yes** | **No** | **Yes** |
| Alternative 5 | Full RSA through shortening runway and shifting runway centerline 40-foot south | **Yes** | **No** | **No** |
| Alternative 6a | 835-foot non-standard RSA length on Runway 6L and 600-foot runway extension on Runway 24R | **No** | **Yes** | **Yes** |
| Alternative 6b | 600-foot non-standard RSA length on Runway 6L with EMAS and 600-foot runway extension on Runway 24R | **No** | **Yes** | **Yes** |
| Alternative 7 | Full RSA through shortening runway and 800-foot runway extension on Runway 24R | **Yes** | **Yes** | **No** |
| Alternative 8 | Full RSA through shortening runway and 1,000-foot runway extension on Runway 24R | **Yes** | **Yes** | **No** |
| **Alternative 9 (Proposed Action – Alt. 2)** | **Full RSA through EMAS on Runway 6L and 600-foot extension on Runway 24R** | **Yes** | **Yes** | **Yes** |
| Alternative 10 | Full RSA through EMAS on Runway 6L and 1,000-foot extension on Runway 24R | **Yes** | **Yes** | **No** |

[1] Runway Length refers to takeoff distance and capabilities refers to ILS capabilities.

Source: City of Cleveland Department of Port Control. Runway Safety Area Study for Runway 6L/24R. Prepared by Landrum & Brown and McGuiness Unlimited, Inc., 2011. Errata Summary February 2012.

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