CHAPTER THREE
ALTERNATIVES

3.1 INTRODUCTION AND BACKGROUND

The Council on Environmental Quality (CEQ) regulations, implementing the National Environmental Policy Act (NEPA) of 1969, states that alternatives are the heart of the Environmental Impact Statement (EIS). Those regulations require that the Federal decision-maker perform the following tasks:

- Assess and objectively evaluate all ***reasonable*** alternatives, including alternatives not within the jurisdiction of the Federal agency; and for alternatives which were eliminated from the detailed study, briefly discuss the reasons for their having been eliminated; and
- Disclose the potential environmental consequences for each alternative, including a No Action alternative and the Airport sponsor's preferred alternative, so that reviewers may evaluate their comparative merits.

Federal guidelines, as set forth in NEPA concerning the environmental review process, require that all reasonable, feasible, prudent, and practicable alternatives that might accomplish the objectives of a proposed project be identified and evaluated. Therefore, in compliance with NEPA[1] and other special purpose environmental laws, the Federal Aviation Administration (FAA) independently reviews and analyzes those alternatives that could achieve the established purpose and need for the project.

Reasonable alternatives include those that are practicable or feasible from the technical and economic standpoint.[2] Therefore, according to CEQ, 40 Code of Federal Regulations (CFR) § 1502.14(c), the FAA, as the lead agency, has a responsibility to explore and objectively evaluate all prudent, feasible, reasonable, and practicable alternatives, including those beyond the agency's jurisdiction.

The examination of alternatives serves to establish the conclusion that an alternative that addresses the project purpose and need and might enhance environmental quality (or have a less detrimental effect), has not been inappropriately dismissed from consideration. This chapter describes the process of identifying and evaluating alternatives for meeting the established purpose and need for the proposed project.

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1 NEPA alternatives evaluation: National Environmental Policy Act of 1969 (NEPA) 40 CFR Part 150, *Environmental Impact Statement,* Section 1502.14.

2 46 Federal Register 18026, Memorandum: *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, March 16, 1981.

3.2 RANGE OF ALTERNATIVES

The analysis of EIS alternatives is an independent examination by the FAA of all alternatives that could reasonably meet the identified purpose and need for the Sponsor's Proposed Project as described in detail in Chapter Two, *Purpose and Need.* The alternatives that the FAA considered in this analysis are grouped into eight categories including two off-site, five on-site alternatives, and a No Action alternative.

Off-Site Alternatives

1. **Use of Other Airports/Regional Management Alternatives** – These alternatives would entail the transfer of the projected aircraft operations from Port Columbus International Airport (CMH or Airport) to other airports within the region. This would be used to reduce operational demand at CMH and reduce the need for additional terminal capacity.
2. **Other Modes of Transportation and/or Telecommunications** – These alternatives entail the use of other modes of transportation or communication technology (e.g., trucks, trains, rail, and telecommunications/video-conferencing), which could be used to reduce operational demand at CMH and reduce the need for additional passenger terminal capacity.

On-Site Alternatives

1. **Non-Runway/Terminal Development Alternatives** – These alternatives are designed to meet the need for additional capacity through physical airfield enhancements, other than runway and terminal development, that would satisfy all or a portion of the established purpose and need. Among the projects considered are the new construction, extension, and/or expansion of taxiways, runway exits, hold pads, and reconstruction / expansion of the existing passenger terminal.
2. **Other Technologies** – A number of technologies exist or are being developed that may ultimately reduce aircraft delay during poor weather. The goal of these technological opportunities is to increase capacity by aiding aircraft movement on approach, on the ground, and during departure. In addition, there are operational/air traffic procedural concepts that aim to make improvements through non-technological methods to postpone the need for physical improvements.
3. **Activity or Demand-Management Alternatives** – These alternatives consist of establishing guidelines and policies that attempt to balance aircraft operations with available airport capacity. This balance would be accomplished through measures such as pricing or regulatory actions, implemented by the airport sponsor, that discourage or prevent airlines from scheduling flights during periods of limited capacity.

4. **Runway Development Alternatives** – The range of proposed development alternatives to expand the existing airfield includes those identified on the CMH Airport Layout Plan (ALP) drawings;[3] those projects defined in a letter to the FAA from the Columbus Regional Airport Authority (CRAA), dated April 5, 2007;[4] and those development alternatives independently identified by FAA.
5. **Passenger Terminal Alternatives –** The range of proposed development alternatives to develop additional passenger terminal facilities include those identified on the CMH ALP and in CMH planning studies.

No Action Alternative

As a requirement of NEPA, a No Action alternative must be carried forward in the assessment of environmental impacts.[5] To satisfy the intent of NEPA, FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, and other special purpose environmental laws, the No Action Alternative is carried forward in the analysis of environmental consequences provided in Chapter Five, *Environmental Consequences*. With a No Action Alternative, the airfield would remain as it is today, without a replacement runway or improvements to any existing runways, no expansion of existing or development of new passenger terminal facilities, and no new air traffic actions. Although not always reasonable, feasible, prudent, or practicable, the No Action Alternative is a potential alternative under NEPA and serves as the baseline for the assessment of future conditions/impacts.

3.3 OFF-SITE ALTERNATIVES

This section evaluates the use of other means of transportation, including the use of other airports, highway, rail, and telecommunications technology to satisfy the purpose and need for this project. Each of the means of transportation or transportation replacement will be evaluated against the purpose and need of the proposed project to reconstruct Runway 10R/28L. A viable alternative will provide long-term airfield capacity, reduce delay during peak operating periods, improve airfield efficiency, and provide sufficient terminal capacity to accommodate projected passenger levels.

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3 *Port Columbus International Airport Revised Airport Layout Plan (ALP)*, conditionally approved by FAA in August 1999, including the partial revision approved on 2/23/06.

4 Letter from Elaine Roberts, CEO, Columbus Regional Airport Authority to Katherine Jones, FAA Detroit ADO, Subject: Port Columbus International Airport Environmental Impact Statement, dated April 5, 2007.

5 FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects*, April 28, 2006, Chapter 10, Section 1001. EIS PURPOSE. 40 CFR § 1502.1 states the primary purpose of an EIS is to be an "action-forcing tool" to ensure Federal government programs and actions meet NEPA's goals and policies. The EIS allows the agency to take a "hard look" at the environmental impacts of the No Action, the proposed action, and its reasonable alternatives.

3.3.1 USE OF OTHER AIRPORTS

The use of other airports in the region is examined to determine if the relocation of passengers and operations to another airport is feasible and if it would postpone/reduce the need for reconstructing Runway 10R/28L or the need for additional terminal capacity at CMH. However, Runway 10R/28L would still need to be reconstructed.

Airports across the country function as an inter-related system. To coordinate and fund this system, the FAA developed the National Plan of Integrated Airport Systems (NPIAS), a system of 3,344 of the nation's 5,280 aviation facilities that are open to the public. The aviation facilities included in the NPIAS are significant to the national aerospace system and eligible to receive Federal funding. Including CMH, there are seven primary service airports located within 180 miles of Columbus, Ohio. Six are in Ohio and another (Cincinnati/Northern Kentucky International Airport) is located in Northern Kentucky. **Table 3-1** lists the seven primary service airports in the region along with the distance in miles and the approximate drive time from CMH to each airport.

Table 3-1
PRIMARY SERVICE AIRPORTS SERVING OHIO
Port Columbus International Airport

AIRPORT	MILEAGE/DRIVING TIME FROM CMH
Port Columbus International Airport (CMH)	n/a
Dayton International Airport (DAY)	77.0 miles 1 hour, 8 min.
Cincinnati/Northern Kentucky International Airport (CVG)	127.3 miles 1 hour, 56 min.
Cleveland Hopkins International Airport (CLE)	132.4 miles 1 hour, 59 min.
Akron Canton Regional Airport (CAK)	133.7 miles 2 hours, 3 min.
Toledo Express Airport (TOL)	146.8 miles 2 hours, 29 min.
Youngstown-Warren Regional Airport (YNG)	179.6 miles 2 hours, 50 min.

Source: Online search at *www.mapblast.com* for mileage/driving directions from Columbus, OH. Retrieved September 13, 2006.; Preliminary CY 2005 Primary Airports, Federal Aviation Administration Website: www.faa.gov/airports_airtraffic/airports/planning_capacity/passenger_allcargo_stats/passenger/, Retrieved October 2, 2006. Bruce Beates, Western Reserve Port Authority, Youngstown-Warren Regional Airport 2005 Enplanements, October 3, 2006.

The Airport Service Area (ASA) is the area where the largest concentration of travelers come from and is considered the farthest distance people will drive to use the Airport. For CMH, the ASA extends approximately 90 miles from the Airport.[6] As shown on Table 3.1, only Dayton International Airport (DAY) is located within

[6] Telephone conversation between consultant and John Malabad, Columbus Regional Airport Authority staff. September 13, 2006.

90 miles of CMH. Therefore, it is the only primary service airport in the region that could feasibly accommodate some or all of the activity currently occurring at CMH. In addition to DAY, three airports in the Columbus metropolitan area are designated as reliever airports to CMH. These airports are Rickenbacker International Airport (LCK), Bolton Field Airport (TZR), and The Ohio State University Airport (OSU) and all are less than 20 nautical miles from CMH. The sections below discuss the potential for each of these four airports to meet the purpose and need by accommodating some or all of the activity at CMH.

Dayton International Airport (DAY)

DAY, located southwest of Columbus, serves air carrier, cargo, military, and general aviation operations. The airport has two parallel runways and a crosswind runway. Highways I-70 and I-75 provide access to DAY. **Table 3-2** provides a summary of selected airport information for DAY.

Table 3-2
AIRPORT DATA SHEET – DAYTON INTERNATIONAL AIRPORT
Port Columbus International Airport

AIRFIELD FACILITIES			
RUNWAY	**RUNWAY LENGTH (FT)**	**RUNWAY WIDTH (FT)**	**APPROACH**
6L	10,900	150	CAT-III
24R			CAT-I
6R	7,001	150	GPS
24L			CAT-I
18	8,502	150	CAT-I
36			n/a
TERMINAL FACILITIES		**AIRPORT STATISTICS**	
Total Gates	23	Annual Passengers (2006)	1,300,000
Number of Airlines	9	Annual Operations (2006)	108,867
Non-Stop Destinations	19		

Source: *Jeppesen Approach Plates,* September 2006.

Nine airlines provide non-stop service to 19 destinations from DAY.[7] Cargo operations make up a significant amount of the activity at DAY. Menlo Worldwide Forwarding, acquired by UPS in December 2004[8] had 38 daily flights until 2005 when UPS discontinued service at DAY. FedEx has two daily flights. Approximately 121,096 operations occurred at DAY in 2006, of which 27 percent are by commercial aircraft.[9]

[7] Dayton International Airport website. http://www.daytonairport.com/. Retrieved September 13, 2006.
[8] *Draft Runway Length Requirements Analysis*, February 9, 2005, prepared by Landrum & Brown, Inc. http://www.landrum-brown.com/masterplans/DAY/masterplan_status.htm. September 13, 2006.
[9] FAA Form 5010. www.gcr1.com/5010web. August 03, 2006. Retrieved on September 25, 2006.

Table 3-3 shows the top ten airports served from CMH[10] compared to the service available from DAY.[11] The top two airport destinations from CMH (Las Vegas and Chicago Midway) are not served non-stop from DAY. In addition, DAY does not provide non-stop service to the cities of Tampa, Phoenix, or Los Angeles, also in the top ten airports served by CMH. Therefore, without a shift in airline scheduling of destinations that more closely resembles CMH (i.e., non-stop service to popular destinations) DAY would not be an attractive option to people living in the Columbus area.

Table 3-3
COMPARISON OF CMH / DAY NON-STOP SERVICE
Port Columbus International Airport

Top 10 Airports served by CMH	Non- Stop Service from DAY
1. Las Vegas	No
2. Chicago (Midway)	No
3. Orlando International	Yes
4. Chicago (O'Hare)	Yes
5. New York (LaGuardia)	Yes
6. Tampa	No
7. Phoenix	No
8. Baltimore/Washington	Yes
9. Los Angeles	No
10. Atlanta	Yes

Source: Aerofinity Analysis, September 2006. AirTran. www.airtran.com. September 15, 2006. Expedia. www.expedia.com. September 18, 2006. Southwest Airlines. www.southwest.com. September 18, 2006.

As discussed in Chapter Two, *Purpose and Need*, Runway 10R/28L at CMH is in need of reconstruction. The ability to use another airport to address this need is largely based on the potential for that airport to accommodate most, if not all, of the aircraft operations that are currently using CMH. Given that, DAY would require a major expansion of passenger handling facilities to accommodate any significant increase in passengers. CMH currently serves nearly 3.5 million enplaned passengers annually at 38 aircraft gates. This is almost three times the number of passengers and over 1.5 times the number of aircraft gates that are available at DAY. Expansion of terminal facilities would include additional aircraft gates, security screening capabilities, baggage handling facilities, and automobile parking.

The use of DAY as an alternative does not meet the following purpose and need statements: the need to reconstruct Runway 10R/28L; the need to provide long-term capacity and delay reduction during peak periods; the need to provide sufficient terminal capacity to accommodate projected passenger levels; the need to provide sufficient ancillary facilities to support the projected increase in air transportation demand; and the need to enhance the human environment by

[10] E-mail from John Malabad, Port Columbus International Airport staff, September 13, 2006. Top ten based on O&D enplanements.
[11] www.expedia.com. Retrieved on September 15, 2006.

reducing noise impacts on the surrounding communities. Based on this information, using DAY to address the needs of CMH is not a reasonable, feasible, prudent, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

Rickenbacker International Airport (LCK)

LCK is located approximately ten miles southeast of downtown Columbus and 11 nautical miles south of CMH. LCK was opened during World War II (June 1942) as Lockbourne Army Air Base, a glider and B-17 training facility. In 1974, the base was renamed Rickenbacker Air Force Base in honor of World War I flying ace Eddie Rickenbacker, a Columbus native. As a result of military downsizing in 1978, the Air Force announced that Strategic Air Command functions at Rickenbacker were to be transferred elsewhere. Rickenbacker Air Force Base closed in 1980. The facility was turned over to the Ohio Air National Guard and renamed Rickenbacker Air National Guard Base.

The Franklin County Commissioners formed a steering committee in late 1978 to propose alternative ways of using the military property and later proposed the creation of a port authority to receive and redevelop the property released by the military. The Rickenbacker Port Authority was created in 1979 and entered into a joint-use agreement with the Air Force to maintain operation of the airfield. The Commissioners envisioned that the property would be a good site for an industrial park.

In late 2002, the City of Columbus, Franklin County, and the Columbus Municipal Airport Authority approved the merger of the Rickenbacker Port Authority and the Columbus Airport Authority, forming the new CRAA in January 2003.[12]

The 2005 CRAA Annual Report notes that:

> *...the consensus among community leaders, the business of logistics is critical to the growth of Central Ohio's economy... A key aspect to the continued development of this area is the Rickenbacker International Airport, a first-class cargo airport... While focused on cargo activity, the airport also offers a two-gate charter terminal to meet the needs of leisure travelers*.[13]

Existing runway facilities at LCK include two runways, located parallel to each other and separated by 1,000 feet. **Table 3-4** provides a summary of selected airport information for LCK. The LCK Charter Terminal is a 43,000-square foot, two-gate terminal developed to meet the air charter needs of central Ohio. Currently charter airlines provide seasonal passenger service to a variety of destinations (typically

[12] CRAA website, About Rickenbacker. http://www.rickenbacker.org. Retrieved September 18, 2006.
[13] *Columbus Regional Airport Authority, 2005 Annual Report*, Page 11, 2006, Columbus Regional Airport Authority.

Las Vegas and Florida) from LCK. Cargo operations by FedEx and AirNet Systems make up a significant amount of the activity at LCK. During 2006, approximately 67,160 annual operations occurred, of which 56 percent were cargo.[14]

Table 3-4
AIRPORT DATA SHEET – RICKENBACKER INTERNATIONAL AIRPORT
Port Columbus International Airport

AIRFIELD FACILITIES			
RUNWAY	**RUNWAY LENGTH (FT)**	**RUNWAY WIDTH (FT)**	**APPROACH**
5L	11,937	150	CAT-I
23R			n/a
5R	12,102	200	CAT-II
23L			CAT-I
TERMINAL FACILITIES		**AIRPORT STATISTICS**	
Total Gates	2	Annual Passengers (2006)	~5,000
Number of Airlines	Charter (Seasonal)	Annual Operations (2006)	67,160
Non-Stop Destinations	Charter (Seasonal)		

Source: *Jeppesen Approach Plates,* September 2006.

As discussed in Chapter Two, *Purpose and Need*, Runway 10R/28L at CMH is in need of reconstruction. Given the proximity of LCK to CMH and the existence of the Charter Terminal at LCK, it is feasible that a small number of passenger operations could shift from CMH to LCK. However, the ability to use another airport to address the need is largely based on the potential for that airport to accommodate most, if not all of the aircraft operations that are currently using CMH. The current terminal and parking facilities at LCK are not capable of handling a major increase in passengers and would require significant investment to do so. Furthermore, based on the CRAA's position regarding the role of LCK, it is not reasonable to assume that the necessary investments in LCK would be made to replace CMH as the passenger airport for the Columbus area.

The use of LCK as an alternative does not meet the following purpose and need statements: the need to reconstruct Runway 10R/28L; the need to provide long-term capacity and delay reduction during peak periods; the need to provide sufficient terminal capacity to accommodate projected passenger levels; the need to provide sufficient ancillary facilities to support the projected increase in air transportation demand; and the need to enhance the human environment by reducing noise impacts on the surrounding communities. Based on this information using LCK to address the needs of CMH is not a reasonable, feasible, prudent, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

[14] Airport FAA Form 5010. www.gcr1.com/5010web., August 3, 2006. Retrieved on September 25, 2006.

Bolton Field Airport (TZR)

TZR is located approximately eight miles west of downtown Columbus and 13 nautical miles southwest of CMH. Existing runway facilities at TZR include one 5,500-foot runway. **Table 3-5** provides a summary of selected airport information for TZR. There is a 1,028-square foot terminal, roughly 90 general aviation hangars, and various other general aviation support facilities at the airport.[15] Due to the limited runway length and terminal facilities, the CRAA's stated mission for TZR is as a corporate and general aviation airport.[16] As a reliever airport, TZR serves to preserve capacity at CMH and to offer general aviation and corporate flight services to the western portion of the Columbus area.

Table 3-5
AIRPORT DATA SHEET – BOLTON FIELD AIRPORT
Port Columbus International Airport

AIRFIELD FACILITIES			
RUNWAY	**RUNWAY LENGTH (FT)**	**RUNWAY WIDTH (FT)**	**APPROACH**
4	5,500	100	ILS
22			n/a
TERMINAL FACILITIES		**AIRPORT STATISTICS**	
Total Gates	none	Annual Passengers (2006)	none
Number of Airlines	none	Annual Operations (2006)	51,135
Non-Stop Destinations	none		

Source: *Jeppesen Approach Plates,* September 2006.

As discussed in Chapter Two, *Purpose and Need*, Runway 10R/28L at CMH is in need of reconstruction. The runway at TZR is not long enough to accommodate regional jet and large jet passenger operations. Further, there is a lack of proper terminal facilities (secure terminal, baggage services, and parking) to support passenger service. The ability to use another airport to address the need is largely based on the potential for that airport to accommodate most, if not all of the aircraft operations that are currently using CMH. The lack of terminal and runway facilities at TZR would restrict the airport from being considered a reasonable or feasible option unless significant investments were to occur. Based on the CRAA's position regarding the role of TZR, it is not reasonable to assume that the necessary investments in TZR would be made to replace CMH as the passenger airport for the Columbus area.

The use of TZR as an alternative does not meet the following purpose and need statements: the need to reconstruct Runway 10R/28L; the need to provide long-term capacity and delay reduction during peak periods; the need to provide sufficient terminal capacity to accommodate projected passenger levels; the need to provide sufficient ancillary facilities to support the projected increase in air

[15] *Bolton Field Airport Master Plan Update*, 2002, prepared by Aerofinity, Inc.
[16] Columbus Regional Airport Authority website. http://www.columbusairports.com. Retrieved September 18, 2006.

transportation demand; and the need to enhance the human environment by reducing noise impacts on the surrounding communities. Based on this information using TZR to address the needs of CMH is not a reasonable, feasible, prudent, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

The Ohio State University Airport (OSU)

OSU, also known as Don Scott Field, is located approximately ten miles northwest of downtown Columbus and ten nautical miles northwest of CMH. It is owned and operated by The Ohio State University and serves as an active flight training and corporate aviation facility. Its primary users include local residents, businesses, and university students. **Table 3-6** provides a summary of selected airport information for OSU.

The longest runway at OSU is 5,004 feet. Based on the runway length analysis prepared for CMH and described in Chapter Two, *Purpose and Need*, a major runway extension would have to be undertaken at OSU in order to accommodate the regional jet and large jet aircraft service that currently uses CMH. In addition, OSU does not have passenger handling facilities such as security screening, baggage services, and ticketing services.[17]

As discussed in Chapter Two, *Purpose and Need*, Runway 10R/28L at CMH is in need of reconstruction. The runways at OSU are not long enough to accommodate regional jet and large jet passenger operations. Further, there is a lack of proper terminal facilities (secure terminal, baggage services, and parking) to support passenger service. The ability to use another airport to address the need is largely based on the potential for that airport to accommodate most, if not all of the aircraft operations that are currently using CMH. The lack of terminal and runway facilities at OSU would restrict the airport from being considered a reasonable or feasible option unless significant investments were to occur.

The use of OSU as an alternative does not meet the following purpose and need statements: the need to reconstruct Runway 10R/28L; the need to provide long-term capacity and delay reduction during peak periods; the need to provide sufficient terminal capacity to accommodate projected passenger levels; the need to provide sufficient ancillary facilities to support the projected increase in air transportation demand; and the need to enhance the human environment by reducing noise impacts on the surrounding communities. Based on this information using OSU to address the needs of CMH is not a reasonable, feasible, prudent, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

[17] The Ohio State University Airport. www.osuairport.org/. Retrieved on September 15, 2006.

Table 3-6
AIRPORT DATA SHEET – OHIO STATE UNIVERSITY AIRPORT
Port Columbus International Airport

AIRFIELD FACILITIES			
RUNWAY	**RUNWAY LENGTH (FT)**	**RUNWAY WIDTH (FT)**	**APPROACH**
9R	5,004	100	ILS
27L			GPS
9L	2,994	100	n/a
27R			n/a
14	2,994	100	n/a
32			n/a
5	3,555	100	n/a
23			n/a
TERMINAL FACILITIES		**AIRPORT STATISTICS**	
Total Gates	none	Annual Passengers (2006)	none
Number of Airlines	none	Annual Operations (2006)	104,594
Non-Stop Destinations	none		

Source: *Jeppesen Approach Plates,* September 2006.

3.3.2 OTHER MODES OF TRANSPORTATION AND/OR TELECOMMUNICATIONS

Other modes of transportation or communication that were considered include: highway, conventional and high-speed rail, and telecommunications. These modes or alternatives to transportation were considered for their potential to meet the purpose and need of the proposed development at CMH.

3.3.2.1 Highway

The Columbus area is served by a very well developed interstate system making highway travel a potential alternative to air travel. A review of the top ten market destinations from CMH shows that passengers traveling to seven out of the top ten markets begin or end their trips more than 250 air miles, or 500 road miles, from the Airport. **Table 3-7** shows a comparison of the air and road miles for the top ten CMH markets.

Table 3-7
COMPARISON OF AIR AND ROAD MILES – TOP 10 CMH MARKETS
Port Columbus International Airport

RANK	CITY NAME	AIR MILES	ROAD MILES
1	Las Vegas	1,534.0	2,093
2	Chicago (Midway)	**245.1**	**361**
3	Orlando (Int'l)	698.5	951
4	Chicago (O'Hare)	256.2	**378**
5	New York (LGA)	414.6	557
6	Tampa	721.6	1,029
7	Phoenix (Sky Harbor)	1,447.6	1,927
8	Baltimore/Washington	291.9	**420**
9	Los Angeles	1,728.9	2,266
10	Atlanta (Hartsfield)	388.7	571

Source: Online search at www.AirNav.com. Air miles retrieved September 2006. Online search at www.mapblast.com for driving directions from Columbus, OH. Road miles retrieved September 13, 2006.

The exceptions to this are: Chicago Midway (#2 market) air and road miles; Chicago O'Hare (#4 market) road miles only; and Baltimore/Washington International Airport (#8 market) road miles only. Although Chicago Midway, Chicago O'Hare, and Baltimore/Washington airports are located fewer than 500 miles from CMH, it is likely that many passengers are flying to these destinations to take advantage of multiple options for connecting service available from these cities. Therefore, although these passengers might have an initial destination of less than 500 miles, their final destination may be beyond 500 miles.

Beyond 500 miles (approximately ten hours, or a one-day drive time – estimated by traveling 60 miles per hour with a one-hour stop), highway travel becomes less desirable, especially for business travelers who are typically more time-sensitive. The same 500 miles by air would take approximately one and one-half hours flying time plus approximately two hours for check-in, security screening, and baggage claim, for a total of approximately three and one-half hours, not including driving time to and from the Airport.

Driving may be a viable alternative to flying for passengers whose destination is actually Chicago, IL or Baltimore, MD. However, there are no indications that a significant increase in the use of highways for these destinations is occurring or is even likely. In fact, being in the top ten destinations of CMH indicates that flying to these destinations is a valid and preferable option.

This alternative does not meet the following purpose and need statements: the need to reconstruct Runway 10R/28L; the need to provide long-term capacity and delay reduction during peak periods; the need to provide sufficient terminal capacity to accommodate projected passenger levels; the need to provide sufficient ancillary facilities to support the projected increase in air transportation demand; and the need to enhance the human environment by reducing noise impacts on the surrounding communities. Therefore, the use of highways as a means to address

the needs at CMH is not a reasonable, feasible, prudent, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

3.3.2.2 Conventional and High-Speed Rail

The use of rail as an alternative to air travel is examined below.

Conventional Rail

Amtrak primarily serves conventional rail travel in the U.S. A review of Amtrak service finds that Amtrak does not provide service to/from Columbus, OH.[18] The closest Amtrak stations are located in Cincinnati and Elyria, OH. The Cincinnati and Elyria stations are 101 and 127 miles from Columbus, respectively. Given that the typical traveler who uses CMH lives within 90 miles of the Airport, the lack of passenger rail service in close proximity makes it an unacceptable alternative to air travel.

High-Speed Rail

The Ohio Rail Development Commission (ORDC) is studying the potential for developing passenger rail service in the State of Ohio. *The Ohio & Lake Erie Regional Rail Ohio Hub Study* (Ohio Hub Study), prepared in October 2004,[19] notes that the ORDC and the Ohio Department of Transportation have recognized the potential for intercity passenger rail service, and as a result have completed a feasibility study of a regional rail system. The study goal was to determine the financial and economic feasibility of developing a system serving four intercity travel corridors with a central hub in Cleveland. The four corridors included:

- Cleveland – Columbus – Dayton – Cincinnati
- Cleveland – Toledo – Detroit
- Cleveland – Pittsburgh
- Cleveland – Buffalo – Niagara Falls – Toronto.

Three additional routes currently under study include:

- Columbus – Lima - Chicago
- Columbus – Pittsburgh
- Columbus – Toledo - Detroit.

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[18] Amtrak. http:www.amtrak.com/html/stations_OH.html. Retrieved August 30, 2006.

[19] Executive Summary. *The Ohio & Lake Erie Regional Rail Ohio Hub Study*, October 2004, prepared by Transportation Economics & Managements Systems, Inc. and HNTB, Inc.. http://www.miprc.org/portal/entry_category.asp?TYP=2&CatID=16, Retrieved September 20, 2006.

The system would connect with the proposed Midwest Regional Rail and existing service in New York's Empire Corridor, Pennsylvania's Keystone Corridor, the Northeast Corridor, and Canada's VIA Rail. The rail system would involve constructing and operating an 860-mile intercity passenger service with 32 passenger stations. It would serve 22 million people in four states and southern Ontario, Canada. The four corridors would connect nine major metropolitan areas with smaller cities and towns. Feeder bus service to smaller communities and college and university towns would be used to enhance the rail system.

Of the routes evaluated, the Cleveland – Columbus – Cincinnati route (3-C corridor) is anticipated to have the highest potential revenue, but would also have the highest cost for route development and ongoing operations. The average trip length along this corridor is 130 miles, much shorter than the total corridor length, indicating that there would be high passenger turnover in Columbus. The rail service is anticipated to serve a high percentage of business travelers, eliminating a significant number of automobiles from local highways. The study noted a lack of competitive air service between the cities along the route. The Ohio Hub Study concluded that the 3-C Corridor should be implemented first.

The Ohio Rail Development Commission[20] indicates that development of rail service is not seen as a competing mode of transportation with Ohio airports. Rather, it is thought to be a complementary service to the airports because it has the potential to enhance the airport catchment areas, as there is little short-haul air service between the city pairs to be served by the rail.

Mr. Don Damron, Passenger Rail Planning Manager for the Ohio Rail Development Commission, indicates that riders are anticipated to use the rail service for trips to connecting cities within 200 to 400 miles of their originating city. As shown in **Table 3-8**, only one CMH top ten-city market (Chicago-360 miles) falls within this mileage range.

Table 3-8
COMPARISON OF TOP 10 CMH MARKETS SERVED BY AIR VERSUS RAIL
Port Columbus International Airport

RANK	CITY NAME	AIR	RAIL
1	Las Vegas	YES	NO
2	Chicago (Midway)	YES	YES
3	Orlando (Int'l)	YES	NO
4	Chicago (O'Hare)	YES	YES
5	New York (LGA)	YES	NO
6	Tampa	YES	NO
7	Phoenix (Sky Harbor)	YES	NO
8	Baltimore/Washington	YES	NO
9	Los Angeles	YES	NO
10	Atlanta (Hartsfield)	YES	NO

Source: Online search at *www.AirNav.com*, *Ohio Rail Development Commission,* accessed February 21, 2008.

[20] Telephone conversation with consultant and Stuart Nicholson. Public Information Officer. Ohio Rail Development Commission. September 19, 2006.

The next steps in the project development include completing a Tier One Programmatic EIS and continue to support the need to create a Federal funding program for passenger and freight railroad investments. A Federal funding program and a Federal/State partnership will be required to make the Ohio Hub rail investment program possible. However, once approved and funding is secured, the detailed planning, design, and construction of the Ohio Hub will be completed in phases over a six to nine-year period. No date for the development of the first leg of the rail corridor will be set until after the two-year environmental and project development review is complete. Initial service is anticipated to be two trains per day in each direction, and is said to potentially be operational within two to three years of initial construction. Service levels at full build-out would be at speeds up to 110 miles per hour with six to eight trains per day in each corridor.[21]

Based upon the information above, if the Ohio Hub is constructed, it is not likely to significantly reduce the number of passengers using CMH. In fact, the presence of the rail could create the opportunity for CMH to increase the number of travelers originating from other cities served by the Ohio Hub.

This alternative does not meet the following purpose and need statements: the need to reconstruct Runway 10R/28L; the need to provide long-term capacity and delay reduction during peak periods; the need to provide sufficient terminal capacity to accommodate projected passenger levels; the need to provide sufficient ancillary facilities to support the projected increase in air transportation demand; and the need to enhance the human environment by reducing noise impacts on the surrounding communities. While high-speed rail is planned for this section of Ohio at some point in the future, a high-speed rail system is still a distant prospect with no secure financing. Therefore, it is not a prudent, reasonable, feasible, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis. In addition, the high-speed rail is not anticipated to directly serve any of the Top 10 markets. While high-speed rail may reduce the demand for air travel by a small amount, it would not replace the need for air travel.

3.3.2.3 Telecommunications

The potential for telecommunications to affect the need for business travel has been studied since the two-way video-conferencing technology became available on the commercial market in the 1980s. Constantly emerging technology continues to improve the availability, affordability, reliability, and speed of voice and data communication. Continued technological advances and the widespread installation of fiber optics and other communications technology will continue to make telecommunication alternatives more widely available.

A survey completed in 2003 by American Express polled 800 business travelers from eight countries including the U.S. Findings of this survey indicate:

[21] *The Ohio Hub Moving the Economy.* Received from the Ohio Rail Development Commission via e-mail. September 20, 2006, prepared by Ohio Rail Development Commission.

> *…travelers value business travel as a tool to maintain and develop customer relationships: asked if business travel is essential to growing a business, more the 89% of the respondents agreed, either strongly or slightly. A majority of respondents from each country agreed on some level…*
>
> *The American Express survey also shows that some business travelers use Web meetings and teleconferencing in place of travel, but the majority clearly considers in-person meetings with clients or business associates superior. More than 35% say that this year (2003), they have used such technology (virtual meeting) – either frequently or occasionally – instead of traveling. However, a combined 65% say they do not do virtual meetings very much or at all.*
>
> *Asked if teleconferencing or web facilities offer an adequate substitute to face-to-face meetings, nearly two thirds-(65%) said no, while 35% differed. …Even among those who gave equal consideration to virtual meetings and in-person meetings, 75% said that telecommunication is only appropriate for conferring for an hour or less.*[22]

Evidence indicates that the use of telecommunications and video-conferencing may be increasing to satisfy business needs, but there is no indication that it will satisfy all business needs and thereby reduce the need for travel. It may complement or supplement travel, but is not seen as a substitute by a majority of the public for business travel. In addition, the impact of improvements in the communication field will have little or no effect on the leisure travel market.

This alternative does not meet the following purpose and need statements: the need to reconstruct Runway 10R/28L; the need to provide long-term capacity and delay reduction during peak periods; the need to provide sufficient terminal capacity to accommodate projected passenger levels; the need to provide sufficient ancillary facilities to support the projected increase in air transportation demand; and the need to enhance the human environment by reducing noise impacts on the surrounding communities. While communication technology may reduce the demand for air travel by a small amount, it would not replace the need for air travel. Therefore, telecommunication technology is not a prudent, reasonable, feasible, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

[22] http://home3.americanexpress.com/corp/pc/2003/sacrificing_comfort.asp. *International Business Travelers Sacrificing Comfort For Low Prices, American Express Survey Shows,* August 2003, Conducted by The Practice. Retrieved September 20, 2006.

3.4 ON-SITE ALTERNATIVES

3.4.1 NON-RUNWAY DEVELOPMENT ALTERNATIVES

Additional airfield improvement alternatives to improve airfield geometry were reviewed to determine their potential to reduce the need for reconstructing Runway 10R/28L and for providing long-term airfield and terminal capacity at CMH. These types of improvements include taxiways, runway exits, aircraft hold pads, and revised taxiway flow directions. Airfield improvements that have the potential to reduce the stated purpose and need are listed below:

- Construct High-Speed Exits On Runway 10R/28L;
- Construct High-Speed Exits On Runway 10L/28R; and
- Construct Dual Crossover Taxiways.

Construct High-Speed Exits on Runway 10R/28L

The development of two new high-speed exits on the north side of Runway 10R/28L would help reduce runway occupancy time during arrival operations. These two exits would be used by most of the aircraft at the Airport and would provide a negligible increase in runway capacity. By reducing the runway occupancy time, the physical impact on the runway would also be reduced by a small amount. The construction of high-speed exits would not, however, eliminate the need for additional terminal capacity. Therefore, while high-speed runway exits would reduce runway occupancy time and provide a minimal reduction in delay, it would not meet the need to reconstruct Runway 10R/28L.

Construct High-Speed Exits on Runway 10L/28R

The development of two new high-speed exits on the south side of Runway 10L/28R would help reduce runway occupancy time during arrival operations. These two exits would be used by most of the aircraft at the Airport and would provide a minimal increase in runway capacity. The construction of high-speed exits on Runway 10L/28R would not, however, eliminate the needs for reconstructing Runway 10R/28L or for additional terminal capacity. Therefore, while high-speed runway exits would reduce runway occupancy time and provide a minimal reduction in delay, it would not meet the need to reconstruct Runway 10R/28L.

Construct Dual Crossover Taxiways

Independent of the Runway 10R/28L project, the CRAA has constructed a single crossover taxiway on the west side of the Airport between Runways 10R/28L and 10L/28R. The ultimate plan for this project is to create dual crossover taxiways that will allow aircraft to cross the airfield in both directions at the same time. This project will increase efficiency of ground movement and reduce overall delays by providing better circulation on the airfield. However, this project will not reduce the need to reconstruct Runway 10R/28L or for additional terminal capacity.

The non-runway development projects, while adding flexibility, reducing runway occupancy time, and offering some minimal delay reduction, would not eliminate the need for reconstructing Runway 10R/28L because these projects do not reduce the operational need for Runway 10R/28L. These development projects would also not provide for an expanded terminal envelope. Therefore, it is not a prudent, reasonable, feasible, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

3.4.2 OTHER TECHNOLOGIES

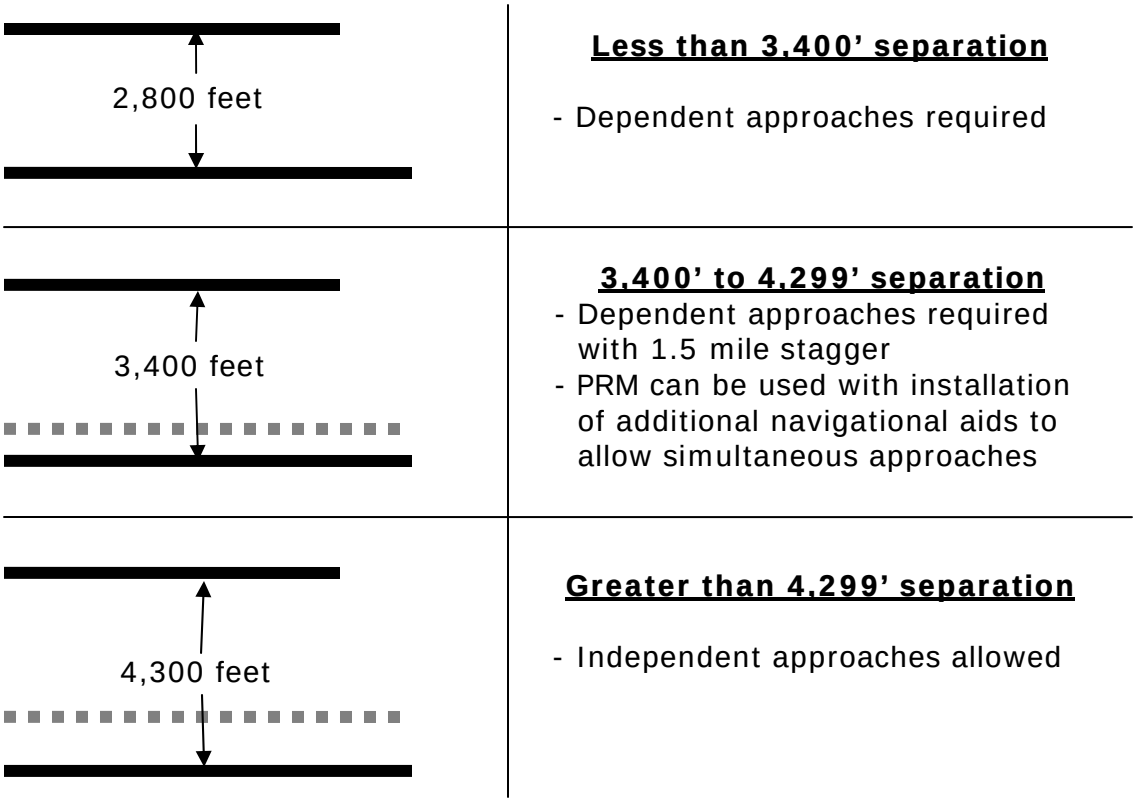
Technological opportunities and resources were reviewed to determine their potential to reduce the need for reconstructing Runway 10R/28L and for providing long-term airfield and terminal capacity at CMH. The *FAA 2003 Aviation Capacity Enhancement Plan* provided detailed summaries of technologies currently being evaluated by the FAA to reduce delay.[23] These procedures result in more efficient operations in the enroute, arrival, and departure phases of flight, and ultimately give pilots more flexibility in determining their route, altitude, speed, departure, and landing times. Although less expensive and time-consuming than other capacity-enhancing solutions such as building new runways, the development and implementation of new flight procedures is a complex process. Of the various options listed in the *FAA 2003 Aviation Capacity Enhancement Plan*, only the use of Precision Runway Monitoring (PRM) technology had the potential to address the needs for this project.

Precision Runway Monitoring System (PRM)

During periods of low visibility, simultaneous approaches to parallel runways separated by less than 4,300 feet are not permitted with conventional airport surveillance radar. For parallel runways separated by a minimum of 3,400 feet to 4,300 feet, two arrival streams can be maintained, but operations are limited to parallel, dependent, instrument approaches using 1.5 mile staggered separation.

The two existing east/west parallel runways at CMH, Runways 10R/28L and 10L/28R, have a lateral separation of 2,800 feet. To help reduce the negative effect of weather on arrival capacity, the FAA has developed the PRM.[24] Currently, PRM technology is not being used at CMH.

[23] *2003 Aviation Capacity Enhancement Plan,* 2003, prepared by FAA.
[24] *Precision Runway Monitor (PRM) Training*. Internet web site: http://www.faa.gov/education_research/training/prm/. Accessed March 17, 2008.



Although PRM can be installed with a minimum runway separation of 3,400 feet, other airport design and airfield/terminal requirements must be evaluated. At CMH, the proposed runway separation alternatives are also tied to the purpose and need of a sufficient terminal development envelope to accommodate the projected passenger activity levels by 2018. Based on airport design and terminal requirements, the proposed runway separations at CMH should be a minimum of 3,502 feet.

The other technology initiatives, while adding flexibility, reducing runway occupancy time, and offering some minimal delay reduction, would not reduce the need for reconstructing Runway 10R/28L because it does not reduce the operational need for Runway 10R/28L. These development projects would also not provide for an expanded terminal envelope. Therefore, it is not a prudent, reasonable, feasible, or practicable alternative on its own to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

3.4.3 ACTIVITY OR DEMAND-MANAGEMENT ALTERNATIVES

The primary objective of demand-management alternatives is to manage the efficient use of existing airport facilities through measures such as runway use priorities, peak-pricing, or regulatory actions implemented by the airport sponsor. Demand-management measures do not necessarily increase airport capacity or reduce delay. For purposes of this EIS, only a runway use priority would have the potential to address the need for reconstructing Runway 10R/28L.

Runway Use Priorities

The need to reconstruct Runway 10R/28L is in large part a function of the number of arrivals and departures that use the runway. At this time, the runway's useful life is expected to extend to 2009/2010. Therefore, a policy to significantly reduce flights on Runway 10R/28L would extend the life of the runway surface. For example, if the runway were to receive half of the current arrivals and departures, the remaining life of the runway pavement would be extended by some amount of time. It is difficult to determine the precise relationship between number of operations and life span of the surface, because the surface erodes due to a combination of use by aircraft and exposure to the elements. At some point, even with few or no flights, the runway pavement material will begin to erode due to weather exposure. The drawbacks of this alternative are listed below.

The first drawback is that Runway 10R/28L is currently the preferred runway by a majority of the flights. The main reason for this is that Runway 10R/28L is the longest runway at CMH, and as such, is the preferred runway by pilots of large jet aircraft. Large jet aircraft are the heavier aircraft and consequently result in the greatest impact to the surface of the runway. In addition, airlines with gates located on the south side of the passenger terminal (representing approximately 63 percent of the large jet operations at the Airport) prefer the south runway as well, due to reduced taxi times.

The second drawback to limiting the use of Runway 10R/28L is that it does not remove the need to completely reconstruct the runway. The only way to address the need completely would be to either reconstruct or close the runway. The latter would have negative consequences on the ability of the Airport to accommodate aircraft activity with a much shorter runway and would ultimately accelerate the need to undertake repairs to the north runway.

The final drawback to implementing a runway use priority alternative is that it does not address the need for additional long-term airfield and terminal capacity. In fact, by limiting the Airport to a single runway or limiting the operations on Runway 10R/28L, an increase in delay is likely to occur.

The demand management initiatives cannot be implemented in a timely manner to be effective, because the EIS is anticipated to be completed in 2009. These initiatives would also not provide for an expanded terminal development envelope.

Therefore, it is not a prudent, reasonable, feasible, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

3.4.4 RUNWAY DEVELOPMENT ALTERNATIVES

A total of five runway development alternatives were initially identified for evaluation (plus the No Action Alternative). These alternatives were further screened to determine if they could substantially meet the stated purpose and need to reconstruct Runway 10R/28L in a way that preserves the Airport's current and

future flexibility to accommodate capacity needs both on the airfield and in the terminal and landside areas. Additional considerations included significant operational and environmental drawbacks, and significant costs. Alternatives were eliminated from further evaluation if they failed to meet the purpose and need or if additional considerations made the alternative unreasonable.

In an effort to maximize and maintain airfield and terminal and landside flexibility, the Airport while undertaking terminal planning studies, also evaluated the limitations within the existing narrow runway envelope and analyzed the existing runway locations and runway relocation options that would provide terminal and landside development flexibility. For the purposes of evaluating the range of runway development alternatives, they were grouped into categories by "like" design attributes. The following presents the initial runway development alternatives.

Alternative A: No Action

Alternative A is identified as the No Action Alternative in this EIS. This alternative assumes that Runway 10R/28L is maintained in place without the full reconstruction recommended by the CRAA's pavement management report.[25] Instead of full reconstruction, the runway would continue to undergo smaller overlays and localized reconstruction on portions of the runway. This approach, while feasible for some amount of time, results in increased cost in terms of conducting frequent maintenance activities and the frequent closure of Runway 10R/28L to perform the maintenance. The increased closures for maintenance repairs will increase delay and reduce the capacity of the airfield.

No other actions, such as the development of a new passenger terminal envelope, are included in the No Action. **Exhibit 3-1*, Alternative A: No Action,*** shows the Airport layout for Alternative A.

3.4.4.1 Alternatives B1 and B2: Reconstruct Runway 10R/28L in Current Location

Two alternatives were identified for the reconstruction of Runway 10R/28L in its current location and maintaining its current length of 10,125 feet.

Alternative B1: Reconstruct Runway 10R/28L in Current Location

Alternative B1 includes full reconstruction of Runway 10R/28L in its current location. **Exhibit 3-2, *Alternative B1 Layout***, illustrates the runway layout for Alternative B1. The following summarizes the elements of Alternative B1:

[25] *Preliminary Engineering Report, Runway 10R/28L & Taxiway C Rehabilitation and Reconstruction Analysis*, April 2001, Columbus Regional Airport Authority.

Runway Development

Alternative B1 includes a 10,125-foot replacement runway in the same location as existing Runway 10R/28L. The Airport would maintain Runway 10L/28R (north runway) in its present location and length.

Taxiway Development

This alternative would include the addition of high-speed taxiways to reduce runway occupancy time.

Ancillary Development

This alternative would include the addition of runway centerline lights and touchdown zone lights (on Runway 10R end)[26] to enhance safety and efficiency.

Impacts to Existing Facilities

No existing structures would need to be acquired or demolished under this alternative.

Alternative B2: Reconstruct Runway 10R/28L in Current Location and Relocate Runway 10L/28R 700 Feet to the North

Alternative B2 includes the full reconstruction of Runway 10R/28L in its current location, as well as a relocation of Runway 10L/28R 700 feet to the north to allow for an expanded terminal development envelope. **Exhibit 3-3, *Alternative B2 Layout***, illustrates the location of the runways for Alternative B2. The following summarizes the elements of Alternative B2:

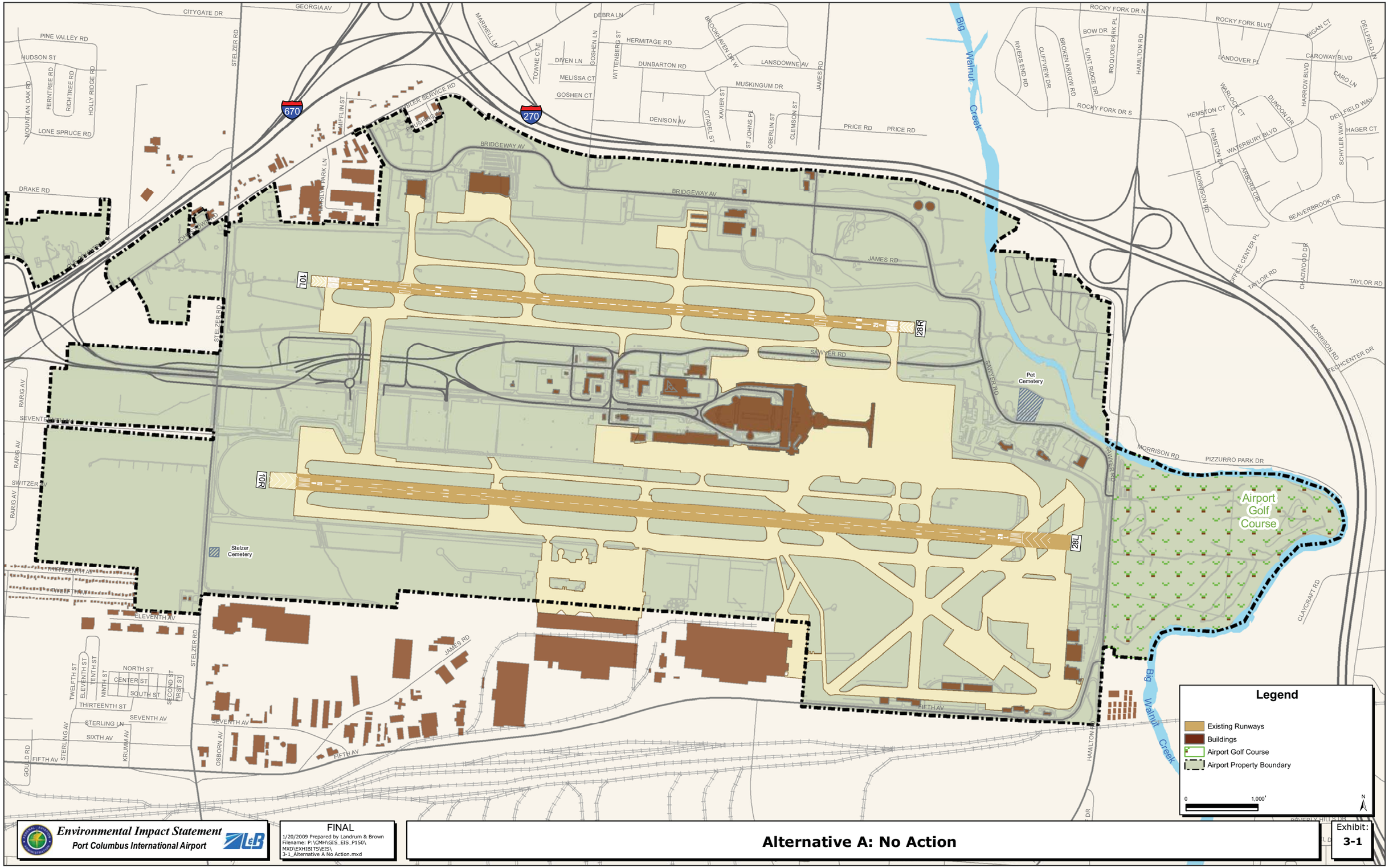
Runway Development

Alternative B2 includes a 10,125-foot replacement runway in the same location as existing Runway 10R/28L. Because the CRAA would be reconstructing the runway in place, the length would be maintained at 10,125 feet to avoid impacting NAVAIDs. Runway 10L/28R (north runway) would be relocated 700 feet to the north and maintained at its present length of 8,000 feet.

Taxiway Development

Two new taxiways would be constructed on either side of the relocated Runway 10L/28R to support aircraft movement to and from the runway. The current north/south taxiways and the crossover taxiway currently under construction would be extended to the north to connect to the relocated runway. In addition, high-speed exits would be constructed to serve aircraft landing on relocated Runway 10L/28R.

[26] *Airfield Planning Report Associated with Replacement of Runway 10R/28L at the Port Columbus International Airport,* dated February 2006, prepared by URS.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PINE VALLEY RD
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MOUNTAIN OAK RD
FERNTREE RD
RICHTREE RD
HOLLY RIDGE RD
LONE SPRUCE RD
STELZER RD
670
270
MIFFLIN ST
MARILYN PARK LN
FISHER SERVICE RD
BRUSHING
MARINELL LN
TOWNE CT E
DEBRA LN
DIVEN LN
GOSHEN LN
WITTENBERG ST
HERMITAGE RD
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DUNBARTON RD
GOSHEN CT
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LANSDOWNE AV
JAMES RD
MUSKINGUM DR
DENISON AV
CITADEL ST
XAVIER ST
ST JOHNS PL
OBERLIN ST
CLEMSON ST
PRICE RD
PRICE RD
Big Walnut Creek
ROCKY FORK DR N
ROCKY FORK BLVD
RIVERS END RD
CLIFFVIEW DR
BROKEN ARROW RD
BOW DR
FLINT RIDGE DR
IROQUOIS PARK PL
HAMILTON RD
LANDOVER PL
WIGAN CT
DELLFIELD LN
CAROWAY BLVD
CARO LN
ROCKY FORK DR S
WARLOCK CT
HEMSTON CT
DUNOON DR
HARROW BLVD
DELLFIELD WAY
HAGER CT
SCHYLER WAY
HEMSTON DR
WATERBURY BLVD
MORRISON RD
ARBORS CIR
BEAVERBROOK DR
OFFICE CENTER PL
CHADWOOD DR
TAYLOR RD
TAYLOR RD
MORRISON RD
TECHCENTER DR
DRAKE RD
JOHN GLENN FWY
STELZER RD
BRIDGEWAY AV
BRIDGEWAY AV
JAMES RD
10L
28R
SAWYER RD
SAWYER RD
Pet Cemetery
MORRISON RD
PIZZURRO PARK DR
10R
28L
Airport Golf Course
CLAYCRAFT RD
RARIG AV
SEVENTH AV
RARIG AV
SWITZER AV
Stelzer Cemetery
THIRTEENTH AV
TWELFTH AV
ELEVENTH AV
STELZER RD
TWELFTH ST
ELEVENTH ST
TENTH ST
NINTH ST
NORTH ST
CENTER ST
SOUTH ST
SECOND ST
FIRST ST
THIRTEENTH ST
SEVENTH AV
STERLING LN
SIXTH AV
STERLING AV
KRUMM AV
GOULD RD
FIFTH AV
SEVENTH AV
OSBORN AV
JAMES RD
FIFTH AV
FIFTH AV
HAMILTON RD
Big Walnut Creek
Legend
Existing Runways
Buildings
Airport Golf Course
Airport Property Boundary
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Environmental Impact Statement
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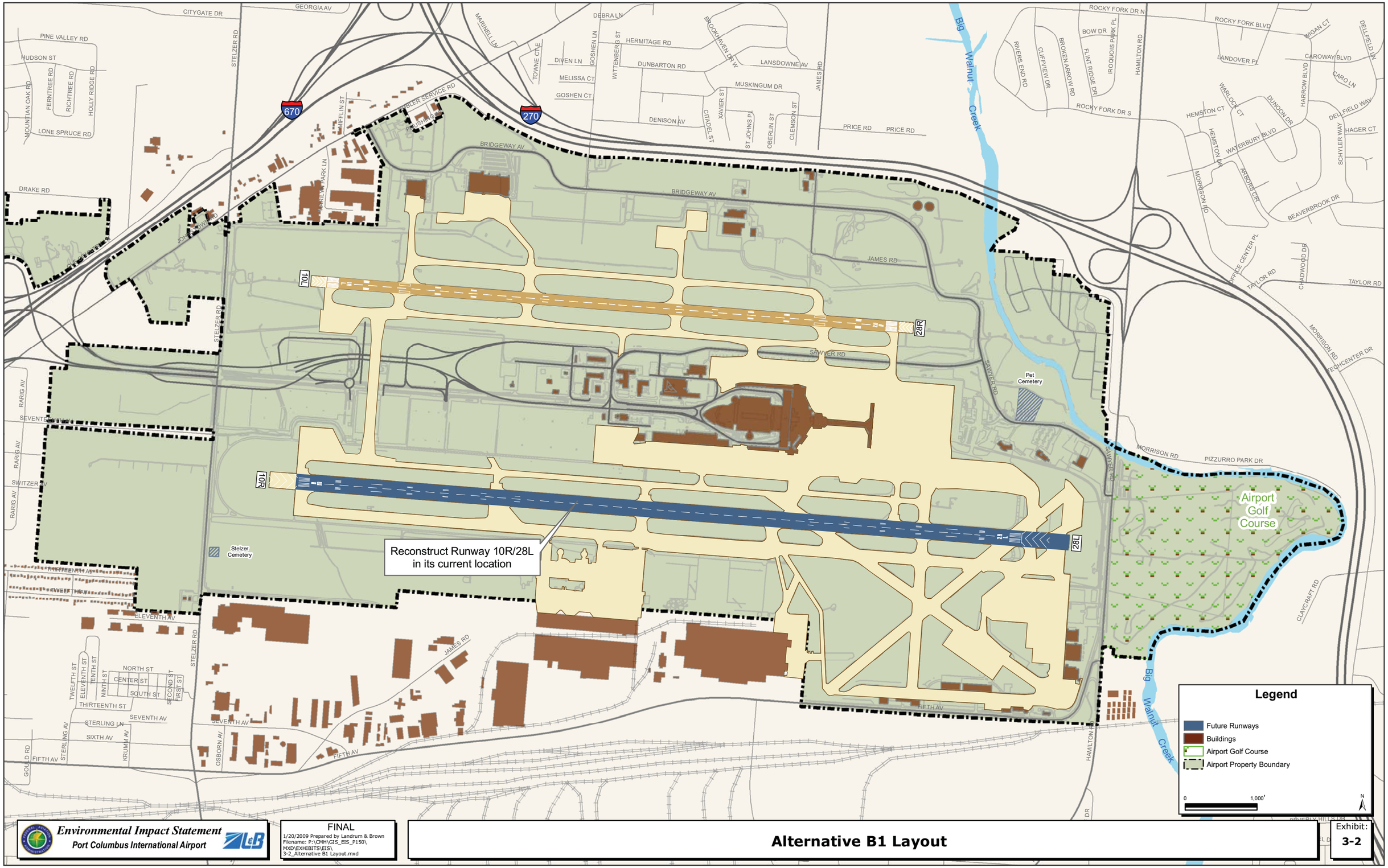

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Alternative B1 Layout

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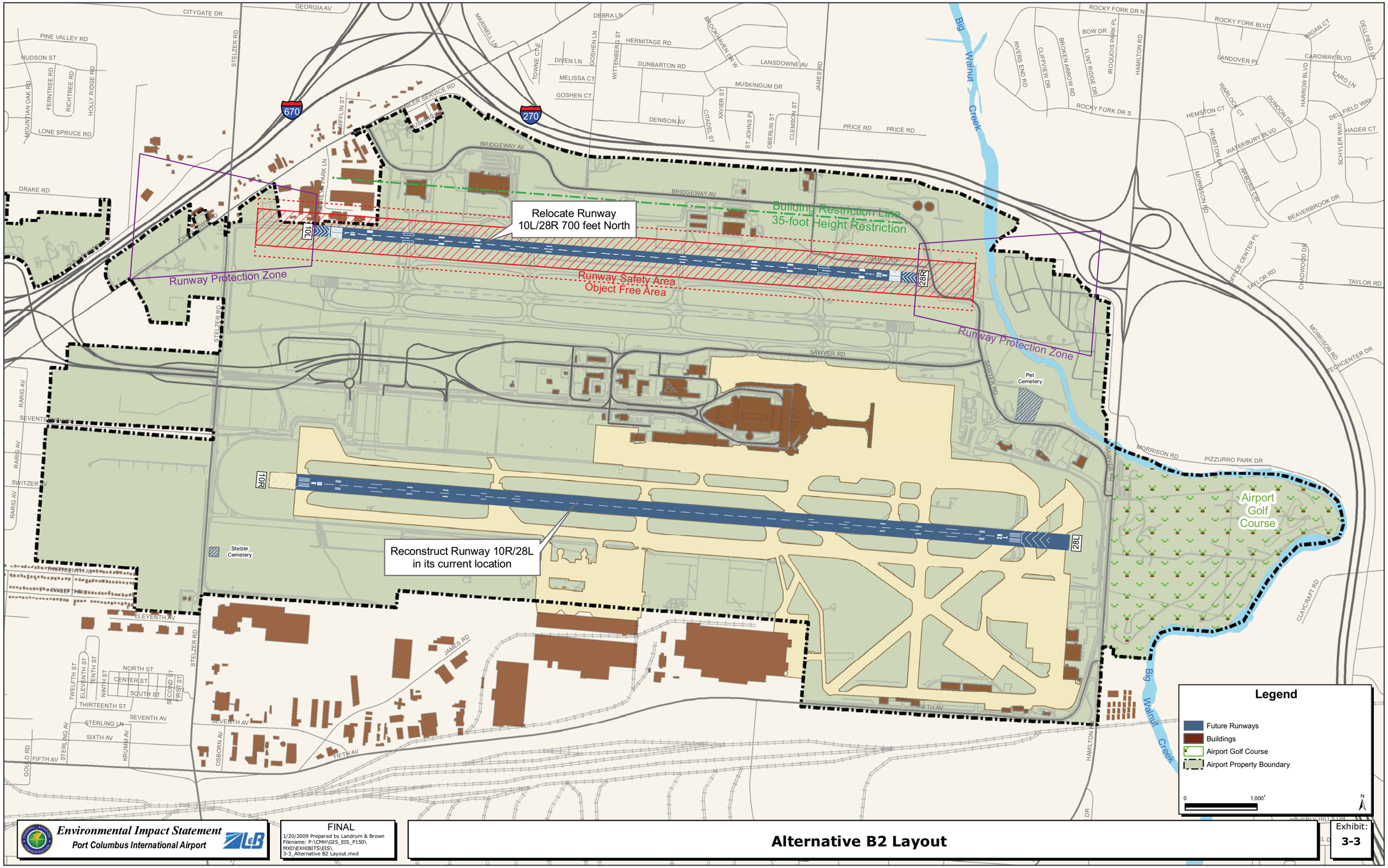

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Alternative B2 Layout

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3-3

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Ancillary Development

Other infrastructure would have to be constructed to support the relocated runway. This would include the siting and installation of NAVAIDs to allow for operations under Instrument Flight Rule (IFR) conditions, such as landing lights, centerline lights, and touchdown zone lights on Runway 10R end.[27]

Impacts to Existing Facilities

Alternative B2 would result in a number of impacts to existing facilities. These impacts are listed below and are shown on **Exhibit 3-4, *Alternative B2: Impacts to Existing Facilities*.**

Bridgeway Avenue: Relocating Runway 10L/28R 700 feet to the north would require that Bridgeway Avenue either be terminated or rerouted across Big Walnut Creek near the east end of the runway. This is due to the lack of space between the Runway Safety Area (RSA) and Big Walnut Creek on the east end of the runway. If Bridgeway Avenue is relocated, it would need to be constructed outside the floodplain. This may require either fill material or constructing an elevated roadway. Termination or relocation of Bridgeway Avenue would cost between $1 Million if terminating Bridgeway Avenue and $40 Million for construction of two bridges over Big Walnut Creek to relocate Bridgeway Avenue.

North Airfield Development: The relocation of Runway 10L/28R would require the removal of a number of existing facilities on the north side of the Airport. The remaining land in the north airfield would allow a relatively small development to replace existing facilities due to height limitations. There would be sites located on the southeast and southwest corners of the Airport where it would be possible to relocate the north airfield tenants. However, these are the last relatively large development areas with airfield access on the Airport, reducing the ability of the CRAA to accommodate future hangar demand. The existing facilities that would be impacted and their estimated costs[28] to purchase include:

- Remove/relocate Nationwide Insurance hangar (estimated cost: $4 million);
- Remove/relocate NetJets hangar (estimated cost: $10 million);
- Relocate existing 85,000-square foot Airport maintenance facilities adjacent to Bridgeway Avenue (estimated cost: $5 million);
- Remove two T-hangars and 13,275 square yards of general aviation apron adjacent to the hangars (estimated cost: $4 million);

[27] *Airfield Planning Report Associated with Replacement of Runway 10R/28L at the Port Columbus International Airport, dated* February 2006, prepared by URS.

[28] Estimated cost of structures is based on the Franklin County Auditor tax assessment data as of February 12, 2007. The fair market value of these structures, which is what it would cost to purchase the structures, is typically higher than the value provided for tax purposes. This cost does not include costs for relocating businesses or for demolition of the structures.

- Remove North Airfield Run-up Barrier (estimated demolition cost: $25,000);[29]
- Remove North Airfield Fuel Farm (estimated demolition cost: $25,000); and
- Remove President and CEO's Residence (estimated demolition cost: $25,000).

Businesses near Intersection of Stelzer and Johnstown Roads: The relocation of Runway 10L/28R would require the removal and/or relocation of 18 existing commercial/industrial businesses near the intersection of Stelzer and Johnstown Roads. Together, the value of the land and the structures is estimated to be approximately $18 million according to the Franklin County Assessor's office.[30] This does not include the cost of relocation or the demolition of the structures.

Land Acquisition for Runway Protection Zone (RPZ): The relocation of Runway 10L/28R to the north would require the purchase of two businesses northwest of I-670 for clearing the RPZ. The estimated cost to purchase these properties is $350,000,[31] not including relocation and demolition costs.

3.4.4.2 Alternatives C1 through C3: Relocation of Runway 10R/28L

Three alternatives were identified for the redevelopment of existing Runway 10R/28L. Alternatives C1 through C3 include the relocation of Runway 10R/28L at various offset distances from its current location.

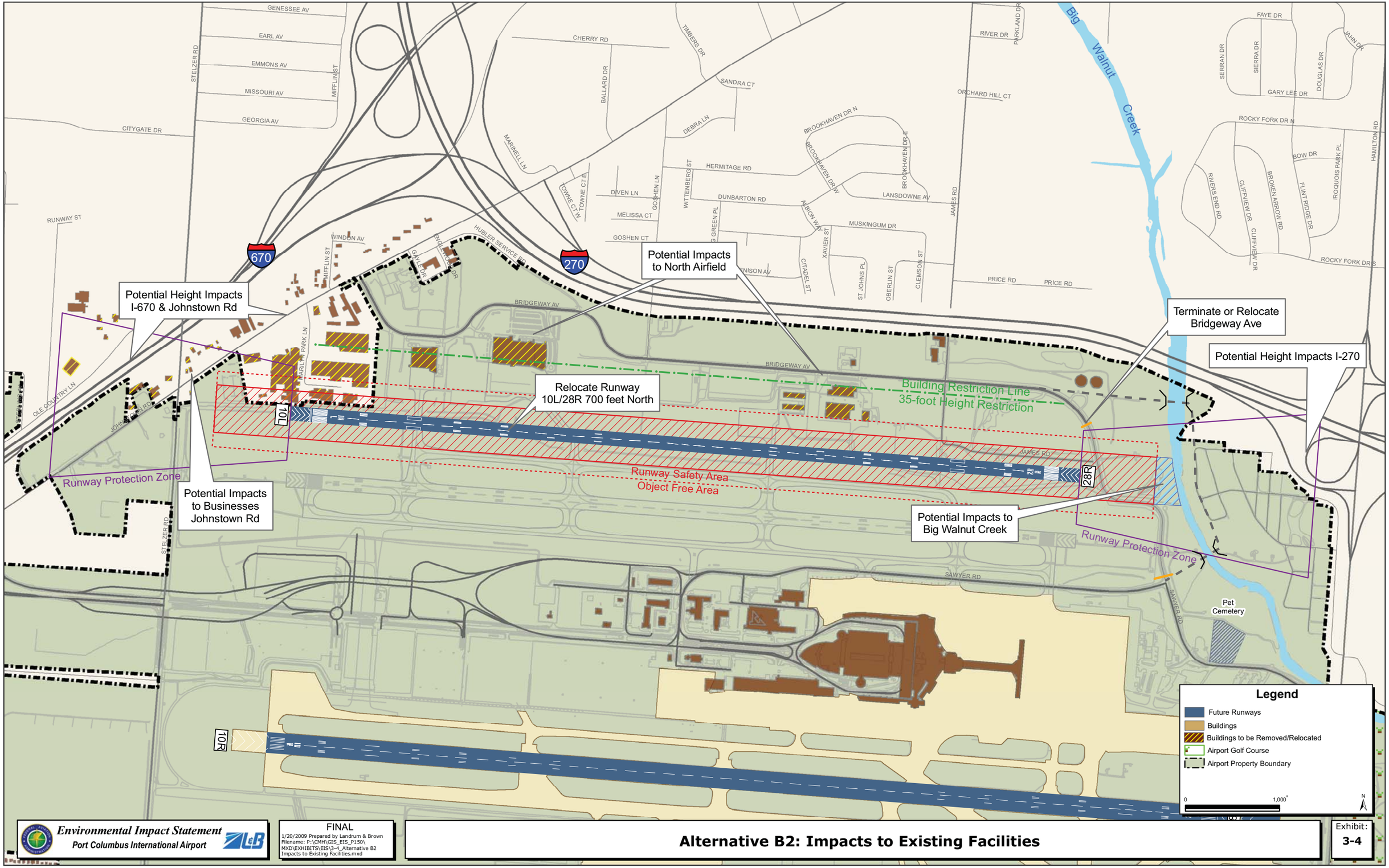
Alternative C1: Relocate Runway 10R/28L 1,500 Feet to the South

Alternative C1 includes the relocation of Runway 10R/28L 1,500 feet to the south of its current location. **Exhibit 3-5, *Alternative C1 Layout*,** illustrates the location of the runways for Alternative C1. The following paragraphs summarize the elements of Alternative C1. This alternative was selected for review because a 1,500–foot runway relocation achieves 4,300 feet of separation between the two runways, which allows for dual simultaneous operations during Instrument Flight Rules (IFR) conditions without additional Air Traffic Control (ATC) equipment.

[29] Estimated costs provided by CRAA, April 18, 2007.

[30] Estimated cost of structures is based on the Franklin County Auditor tax assessment data as of February 12, 2007. The fair market value of these structures, which is what it would cost to purchase the structures, is typically higher than the value provided for tax purposes. This cost does not include costs for relocating businesses or for demolition of the structures.

[31] Estimated cost of structures/land is based on the Franklin County Auditor tax assessment data as of February 12, 2007. The fair market value of these structures, which is what it would cost to purchase the structures, is typically higher than the value provided for tax purposes. This cost does not include costs for relocating businesses or for demolition of the structures.



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Alternative B2: Impacts to Existing Facilities

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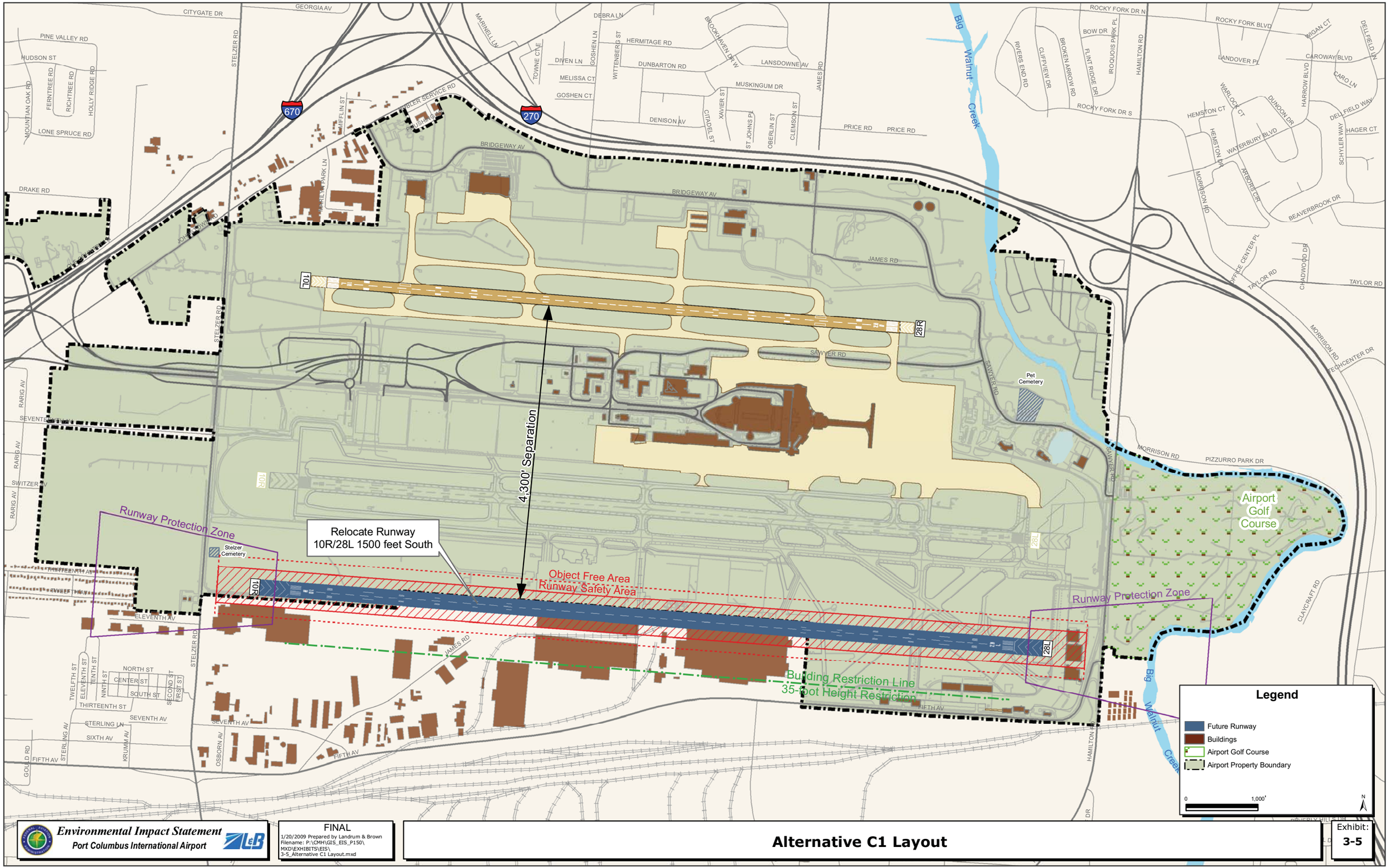

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Alternative C1 Layout

Exhibit: **3-5**

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Runway Development

Alternative C1 includes a 10,113-foot replacement runway, located 1,500 feet south and parallel to existing Runway 10R/28L. The Airport would maintain Runway 10L/28R (north runway) in its present location and length.

Runway length requirements for the replacement runway were determined through a combination of methodologies including FAA's "Airport Design" Computer Program – version 4.2, Aircraft Manufacturers' Airport Compatibility Manuals, and Aircraft Takeoff Performance Tables. The analysis resulted in a recommended runway length of approximately 10,125 feet, which is the same length as existing Runway 10R/28L.

Additional analysis was conducted to determine the most appropriate location for each runway end threshold and in turn, the necessary length. Based on the results of this analysis, the most appropriate location for the runway thresholds were identified. This resulted in an overall length of 10,113 feet for the replacement runway, which is 12 feet shorter than the existing Runway 10R/28L.

Taxiway Development

Two new parallel taxiways, located on the north side of the proposed runway would be constructed to support and provide aircraft access to and from the proposed runway. Existing taxiways and the crossover taxiway (currently being constructed) would be extended south to meet the new parallel taxiways and proposed runway. In addition, high-speed exits would be constructed to serve aircraft landing on relocated Runway 10R/28L.

Ancillary Development

Other infrastructure would have to be constructed to support the relocated runway. This would include the relocation of the Airport perimeter road on the south side of the Airport, and the siting and installation of NAVAIDs, such as landing lights, centerline lights, and touchdown zone lights (on Runway 10R end).[32]

Impacts to Existing Facilities

Alternative C1 would result in a number of impacts to existing facilities. These impacts are listed below and shown on **Exhibit 3-6, *Alternative C-1: Impacts to Existing Facilities*.**

Columbus International Aircenter (CIAC): The development south of the Airport known as Columbus International Aircenter (CIAC, formerly Air Force Plant 85) would have to be acquired and demolished for this alternative. The acquisition of the CIAC would cost in excess of $100 million based on recent estimates. Without additional property acquisition, it would be impossible to replace the entire facility on the Airport.

[32] *Airfield Planning Report Associated with Replacement of Runway 10R/28L at the Port Columbus International Airport,* dated February 2006, prepared by URS.

Seven-Up Bottling Group of Columbus: The Seven-Up Bottling Group of Columbus facility, located to the south of the Airport along Stelzer Road, would have to be acquired and demolished for this alternative. The acquisition of the Seven-Up Bottling Group of Columbus facility would cost in excess of $50 million based on recent estimates.

Airway Industrial Park: The relocated RPZ on the west end of Runway 10R/28L would require the purchase and removal of the Airway Industrial Park located at Eleventh Avenue and Stelzer Road. The cost of these structures and land is estimated to be $3 million.[33]

South Airfield Facilities: Three aircraft hangars and potentially the original Airport passenger terminal, which is listed on the National Register of Historic Places (NRHP), would have to be removed for the construction of this alternative. The cost of removing the hangars is estimated to be $1 million. Additional cost would be anticipated for the collection and curation of artifacts from the historic terminal if it were necessary to remove it.

Residential Land Acquisition: At a minimum, 48 homes located in the relocated RPZ would need to be acquired and removed for Alternative C1. The cost of acquiring these homes and relocating the residents is estimated to be $6 to $7 million. It is possible, that in an effort to maintain neighborhood continuity, additional homes could be included in the relocation. If this alternative is selected and additional acquisition is offered, the cost for residential land acquisition would increase proportionate to the number of homes acquired.

Businesses along Hamilton Road on the Southeast Corner of the Airport: Three commercial/industrial businesses located east of Hamilton Road near the southeast corner of the Airport would be acquired, relocated, and structures demolished due to the relocated RPZ for Runway 28L. The estimated cost of acquiring the property is $2.3 million,[34] which does not include relocation or demolition costs.

Alternative C2: Relocate Runway 10R/28L 800 Feet to the South

Alternative C2 includes the relocation of Runway 10R/28L 800 feet to the south of its current location. **Exhibit 3-7, *Alternative C2 Layout,*** illustrates the location of the runways for Alternative C2. The following summarizes the elements of Alternative C2. This alternative was selected for review because the 1999 Master Plan included a third parallel runway, located 800 feet south of the existing Runway 10R/28L, and the Terminal Study used this separation as a starting point for developing the terminal program criteria.

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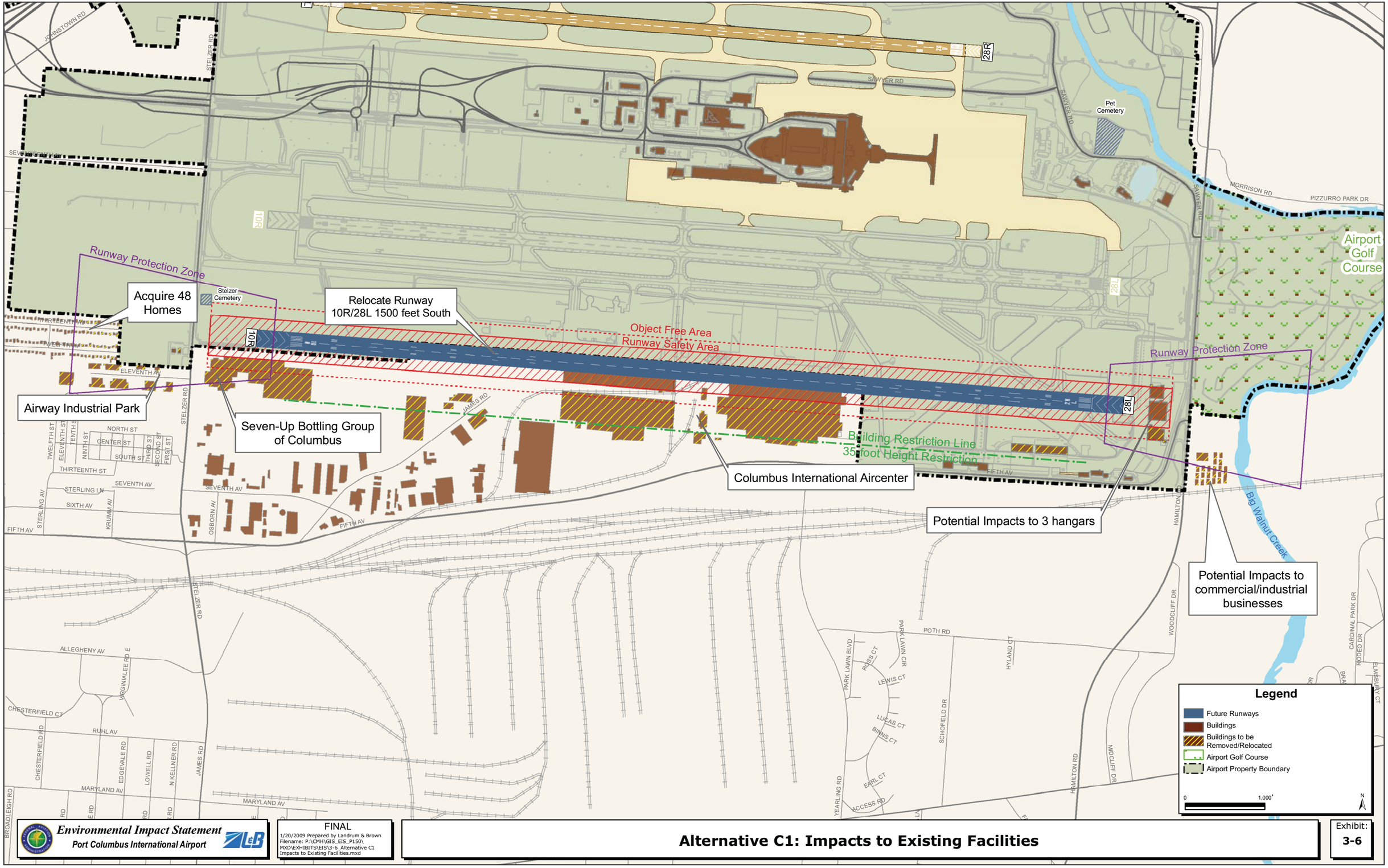
[33] Estimated cost of structures is based on the Franklin County Auditor tax assessment data as of February 12, 2007. The fair market value of these structures, which is what it would cost to purchase the structures, is typically higher than the value provided for tax purposes. This cost does not include costs for relocating businesses or for demolition of the structures.

[34] Estimated cost of structures is based on the Franklin County Auditor tax assessment data as of February 12, 2007. The fair market value of these structures, which is what it would cost to purchase the structures, is typically higher than the value provided for tax purposes. This cost does not include costs for relocating businesses or for demolition of the structures.



Legend

- Future Runways
- Buildings
- Buildings to be Removed/Relocated
- Airport Golf Course
- Airport Property Boundary

0 1,000' N

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Port Columbus International Airport

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Alternative C1: Impacts to Existing Facilities

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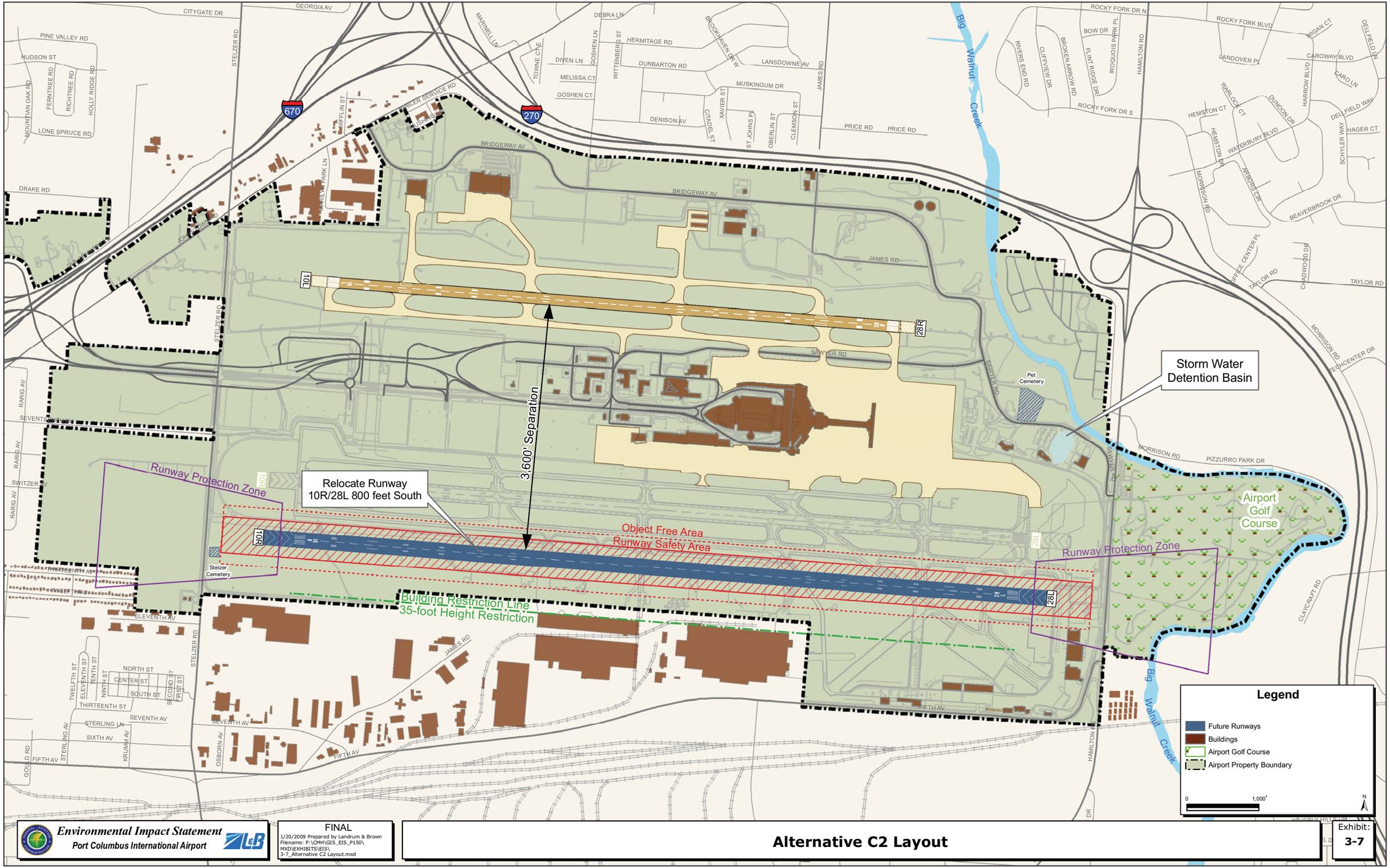

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Port Columbus International Airport

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Alternative C2 Layout

Exhibit: **3-7**

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Runway Development

Alternative C2 includes a 10,113-foot replacement runway, located 800 feet south and parallel to existing Runway 10R/28L. Dual simultaneous arrivals would require the installation of PRM technology. The Airport would maintain Runway 10L/28R, the north runway in its present location and length.

Taxiway Development

Three new parallel taxiways, two located on the north side and one on the south side of the proposed runway, would be constructed to support and provide aircraft access to and from the proposed runway.[35] Existing taxiways and the crossover taxiway (currently being constructed) would be extended south to meet the new parallel taxiways and proposed runway. In addition, high-speed exits would be constructed to serve aircraft landing on relocated Runway 10R/28L.

Ancillary Development

Other infrastructure would have to be constructed to support the relocated runway. This would include the relocation of the Airport perimeter road on the south side of the Airport, and the siting and installation of NAVAIDs, such as landing lights, centerline lights, and touchdown zone lights (on Runway 10R end).[36]

Impacts to Existing Facilities

Alternative C2 would result in a number of impacts to existing facilities. These impacts are listed below and shown on **Exhibit 3-8, *Alternative C2: Impacts to Existing Facilities***. Unlike Alternative C1, there would be no land acquisition associated with the relocated RPZ for Runway 28L on the east side of the Airport.

Columbus International Aircenter (CIAC): Portions of the CIAC would have to be removed for height restrictions. Removal of these portions of the CIAC would also allow the installation of a CAT II/III Instrument Landing System (ILS) on the east end of the runway. The removal of portions of the CIAC would cost in excess of $25 million. The tenants of the portion of the CIAC that would be removed could potentially be relocated to the area at the southeast corner of the Airport. In addition, there are remnants of small structures that were associated with the Air Force Plant 85, which is the original name for the CIAC, that would have to be removed.

South Airfield Facilities: Two aircraft hangars would have to be removed for the construction of this alternative. The cost of removing these facilities is estimated to be $500,000.

[35] The existing Runway 10R/28L pavement would be converted to become the northernmost parallel taxiway, north of the relocated runway.

[36] *Airfield Planning Report Associated with Replacement of Runway 10R/28L at the Port Columbus International Airport,* February 2006, prepared by URS.

Residential Land Acquisition: 36 parcels (with 35 homes) located in the relocated RPZ would need to be acquired and removed for Alternative C2. The cost of acquiring these homes and relocating the residents is estimated to be $6 million to $7 million.

Airport Golf Course: The Airport Golf Course, located east of the Airport, would be reconfigured as a result of relocating the runway 800 feet to the south. The approach lighting system, which currently is located on the golf course, would be shifted 800 feet to the south and cause at least nine holes to be reconfigured. It is estimated that it will cost $2 million to reconfigure the golf course. Because the Airport Golf Course is a public recreation facility, a Department of Transportation Section 4(f)[37] evaluation would need to be completed.

Alternative C3: Relocate Runway 10R/28L 702 Feet to the South (Sponsor's Proposed Project)

Alternative C3 includes the relocation of Runway 10R/28L 702 feet to the south of its current location. **Exhibit 3-9, *Alternative C3 Layout***, illustrates the location of the runways for Alternative C3. The following summarizes the elements of Alternative C3.

Runway Development

Alternative C3 includes a 10,113-foot replacement runway, located 702 feet south and parallel to existing Runway 10R/28L. The distance of 702 feet was chosen because it provided enough distance between the runways to offer a sufficiently large terminal development envelope, and at the same time allowed for a CAT II/III approach to be obtained on the Runway 10R end. Additional considerations included the reduction of impacts to existing facilities as compared to Alternative C1 and C2. Dual simultaneous arrivals would require the installation of PRM technology. The Airport would maintain Runway 10L/28R (north runway) in its present location and length.[38]

Taxiway Development

Three new parallel taxiways, two located on the north side of the runway and another located south of the proposed runway, would be constructed to support and provide aircraft access to and from the proposed runway.[39] Existing taxiways and the crossover taxiway (currently being constructed) would be extended south to meet the new parallel taxiways and proposed runway. In addition, high-speed exits would be constructed to serve aircraft landing on relocated Runway 10R/28L.

[37] Section 4(f) of the Department of Transportation Act of 1966 is currently codified at 49 U.S.C. Section 303(c). Consistent with FAA Order 1050.1E, Appendix 1, paragraph 6.1a, Section 303(c) will be referred to as Section 4(f).

[38] CRAA, *Airfield Planning Report Associated with Replacement of Runway 10R/28L at the Port Columbus International Airport*, February 14, 2006.

[39] The existing Runway 10R/28L pavement would be converted to become the northernmost parallel taxiway, north of the relocated runway.

Storm Water Detention Basin

Runway Protection Zone

Relocate Runway 10R/28L 800 feet South

Object Free Area
Runway Safety Area

Runway Protection Zone

Airport Golf Course

Acquire 36 Parcels

Building Restriction Line
35-foot Height Restriction

Remove Portions of Columbus International Aircenter

Potential Impacts to 2 hangars

Reconfigure Airport Golf Course

10L
28R
10R
28L
JAMES RD
SAWYER RD
Pet Cemetery
MORRISON RD
PIZZURRO PARK DR
Stelzer Cemetery
ELEVENTH AV
STELZER RD
NORTH ST
CENTER ST
SOUTH ST
THIRTEENTH ST
SEVENTH AV
STERLING LN
SIXTH AV
FIFTH AV
OSBORN AV
KRUMM AV
STERLING AV
GOULD RD
ALLEGHENY AV
CHESTERFIELD CT
RUHL AV
POTH RD
HYLAND CT
PARK LAWN BLVD
PARK LAWN CIR
ROSS CT
LEWIS CT
LUCAS CT
BINNS CT
SCHOFIELD DR
HAMILTON RD
Big Walnut Creek

Legend

- Future Runways
- Buildings
- Buildings to be Removed/Relocated
- Airport Golf Course
- Airport Property Boundary

0 1,000' N

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Alternative C2: Impacts to Existing Facilities

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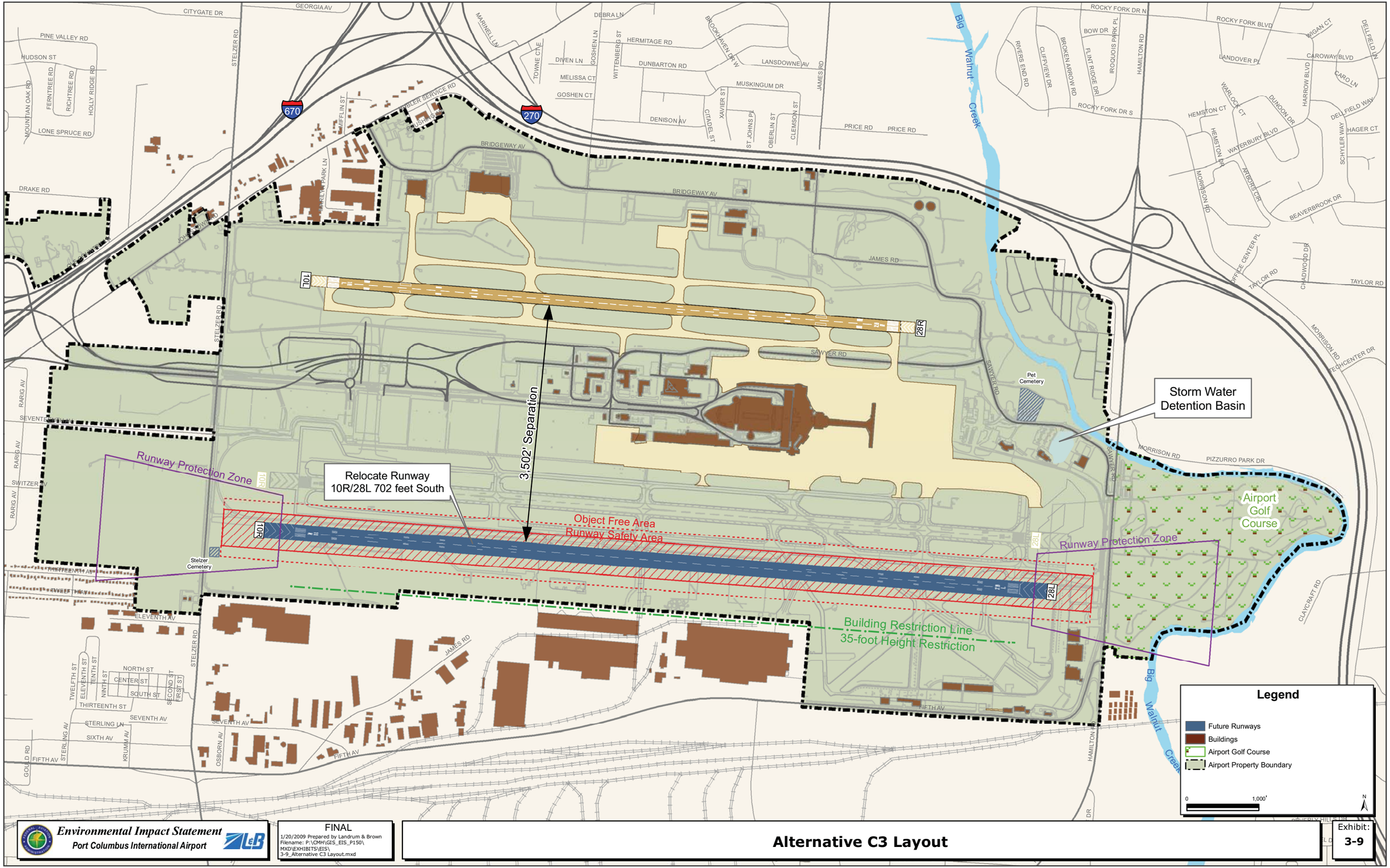

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Alternative C3 Layout

Exhibit: **3-9**

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Ancillary Development

Other infrastructure would have to be constructed to support the relocated runway. This would include the relocation of the Airport perimeter road on the south side of the Airport, and the siting and installation of NAVAIDs, such as landing lights, centerline lights, and touchdown zone lights (on Runway 10R end).[40]

Impacts to Existing Facilities

Alternative C3 would result in a number of impacts to existing facilities. These impacts are listed below and shown on **Exhibit 3-10, A*lternative C3: Impacts to Existing Facilities.*** Unlike Alternative C1, there would be no land acquisition associated with the relocated RPZ for Runway 28L on the east side of the Airport.

Columbus International Aircenter (CIAC): A small portion of the CIAC would have to be modified to allow the installation of a CAT II/III ILS on the east end of the relocated runway. This portion of the CIAC is a non-functioning ramp control tower on the top of Building 7. The removal of portions of the CIAC would cost approximately $63,000. However, if a CAT II/III ILS was not installed, the structure would not need to be removed. In addition, there are remnants of small structures that were associated with the Air Force Plant 85, which is the original name for the CIAC, that would have to be removed.

South Airfield Facilities: One aircraft hangar would have to be demolished for the construction of this alternative. The cost of demolishing this facility is estimated to be $382,000. The tenants of this hangar could be relocated to other areas of the Airport.

Residential Land Acquisition: 36 parcels (with 35 homes) located in the relocated RPZ would be acquired and removed for Alternative C3. The cost of acquiring these homes and relocating the residents is estimated to be $6 million to $7 million.

Airport Golf Course: The Airport Golf Course located east of the Airport would be reconfigured as a result of relocating the Runway 10R/28L 702 feet to the south. The approach lighting system, which currently is located in the golf course would be shifted 702 feet to the south and cause at least nine holes to be reconfigured. It is estimated that it will cost $2 million to reconfigure the golf course. Because the Airport Golf Course is a public recreation facility, a Department of Transportation Section 4(f) evaluation would need to be completed.

[40] *Airfield Planning Report Associated with Replacement of Runway 10R/28L at the Port Columbus International Airport,* dated February 2006, prepared by URS.

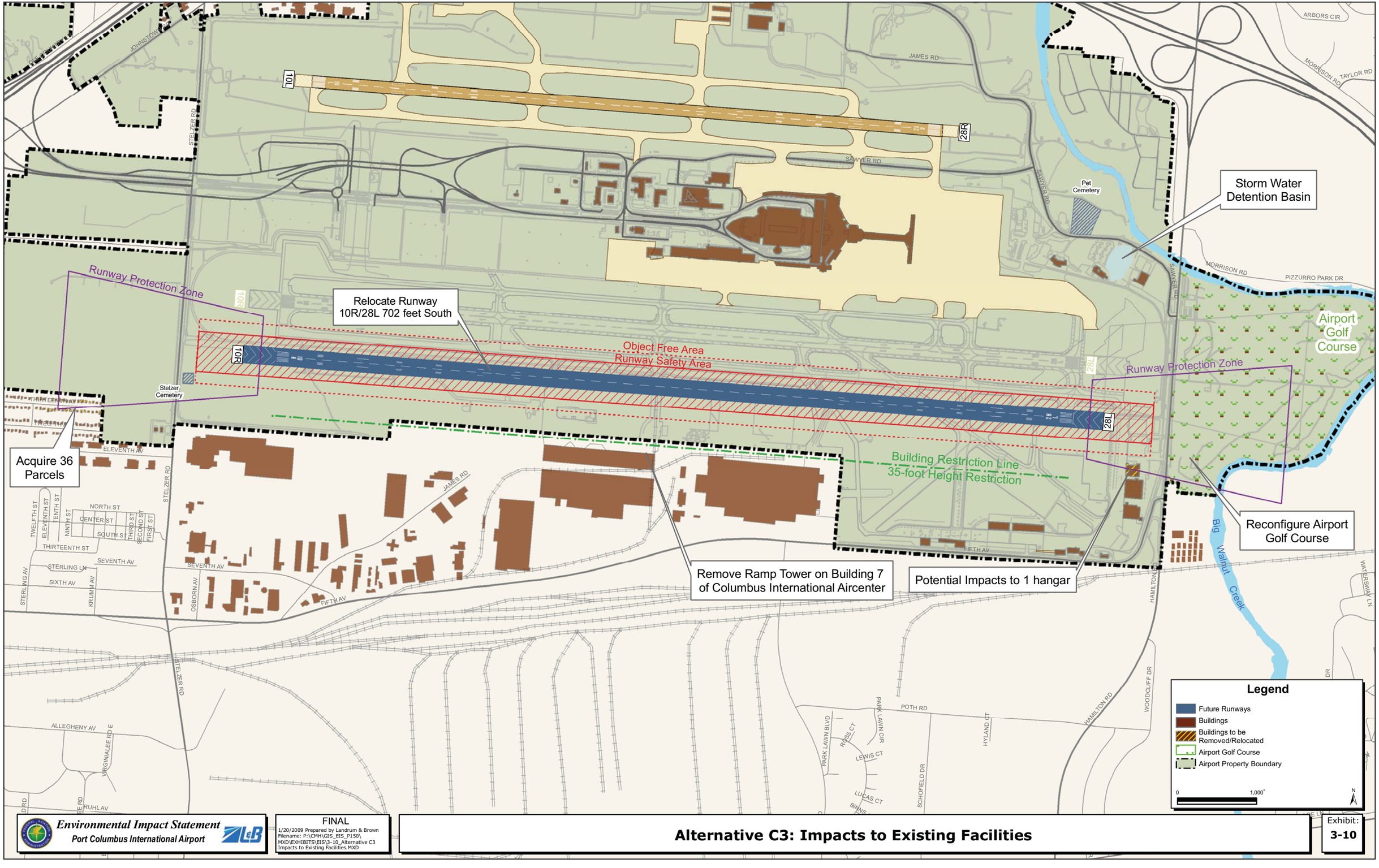
3.4.5 RUNWAY DEVELOPMENT ALTERNATIVES SCREENING RESULTS

The runway development alternatives described above were evaluated for their ability to meet the stated purpose and need and for a number of additional considerations. The need statements are discussed in detail in Chapter Two, *Purpose and Need*, and summarized below:

The primary need for the project is the ***reconstruction of Runway 10R/28L***. A study of the runway pavement condition found that large portions of the runway are in a state of deterioration that will require full reconstruction. The CRAA overlaid the runway in 2004, which will last through 2009/2010 depending on the use of the runway. Because the EIS will extend into 2009, the alternatives that suggest reducing operations as a means of reducing the need for reconstructing Runway 10R/28L could not be implemented in time to be effective. Beyond 2010, additional patching and paving work would be required to maintain the runway in a useable state. A minimum runway length of 10,113 feet was identified to adequately serve the aircraft fleet mix projection for both 2012 and 2018. A runway exceeding this length would allow aircraft operators to increase departure stage lengths (distance to destination) without restricting payload. However, based on the most recent forecasts and discussions with the airlines operating at CMH, a longer runway is not necessary to meet expected operational demand.

Reduction of long-term airfield delay is based on the need to minimize delay at CMH in the future. The most recent forecasts and analysis of delay at the Airport indicate that aircraft delay is not a major problem at this time. However, as the Airport approaches operating levels currently forecast for 2023, an increase in delay is anticipated. Given that activity can occur sooner than forecast, it is appropriate to plan for ways to reduce delay, particularly if other projects with long-term implications to the layout of the airfield are being considered. One of the primary factors that limits the capacity of parallel runway systems is the spacing between the runways. Other ways to enhance capacity include airfield geometry improvements and various types of NAVAIDs, as appropriate.

Providing additional terminal capacity through an expanded development envelope considers the ability of an alternative to offer a terminal development envelope that is adequately sized and geographically positioned in a way that meets the need for an appropriate terminal development envelope. The analysis of the current passenger terminal indicates that a new or additional terminal will be required to meet passenger demand at or above 5 million annual enplaned passengers (5 MAEP). Forecasts of passenger activity indicate that the Airport will reach that level by 2018 or sooner if activity levels increase more quickly than expected. The ability for the CRAA to develop a replacement or additional terminal with the capability to handle more than 5 MAEP is critical to the long-term viability and growth of the Airport and the region. Considerations in this criteria include overall size of development envelope, shape of development envelope, location of envelope, and integration with other long-term plans for the Airport. An assessment of terminal development options and the required runway separations found that a separation between 3,400 and 3,600 feet was necessary to meet the design criteria.



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Alternative C3: Impacts to Existing Facilities

Exhibit: **3-10**

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Additional considerations were identified that would, if of a significant nature, automatically eliminate an alternative from further consideration. These considerations are associated with direct impacts on existing facilities that would result in substantial redevelopment, or inhibit development or maintenance of existing transportation infrastructure.

- **Operational Considerations:** Any alternative that limits the ability of the Airport to function now or in the future will be automatically rejected.
- **Environmental Considerations:** Any alternative with significant impacts beyond those of the Sponsor's Proposed Project will be automatically rejected. Environmental impacts equal to, but impacting different resources, will be considered on a case-by-case basis to determine the feasibility of implementation.
- **Cost Considerations:** Any alternative that includes costs significantly greater than the Sponsor's Proposed Project will be automatically rejected. This will particularly apply to alternatives that suggest facilities beyond the stated purpose and need. However, if a quantifiable benefit that offsets the additional cost is identified, then the alternative may be considered.

The screening results for each of the alternatives is provided below:

3.4.5.1 Alternative A: No Action

Alternative A is identified as the No Action Alternative in this EIS. This alternative assumes that Runway 10R/28L is maintained in place without the full reconstruction recommended by the CRAA's pavement management report. Instead of the full reconstruction, the runway would continue to undergo smaller overlays and localized reconstruction of portions of the runway.

Ability to Meet Purpose and Need

Because Alternative A includes no actions, it would not address the stated purpose and need for the Airport.

Additional Considerations

Operational Considerations: As discussed above, Alternative A requires that Runway 10R/28L undergo smaller overlays and localized reconstruction of portions of the runway beginning in 2009. This will result in frequent maintenance activities and the frequent closure of the runway to perform maintenance. From an operational perspective, runway closures reduce the overall efficiency and consistency of airport operations. Lastly, a terminal area that would maximize the airside and terminal and landside flexibility for the current and future conditions at the Airport would not be created.

Environmental Considerations: This alternative would result in the fewest environmental impacts of all of the alternatives due to no significant or major construction activities occurring. However, it does not mean that there are no

negative environmental impacts. There would be some construction impacts due to routine maintenance of the runway. Additionally, with the runway requiring more closures for maintenance reasons, there would be increased use of Runway 10L/28R, resulting in increased noise due to overflights of the communities located near the north runway. These additional noise impacts would be a direct result of not reconstructing Runway 10R/28L. In addition, having only one runway would increase delay and departure queue times, which would result in an increase in air pollutant emissions.

Cost Considerations: This alternative would result in the lowest cost of all the alternatives due to no major construction activities. However, over time, the cost of performing smaller maintenance activities would begin to approach the cost of fully reconstructing the runway.

Conclusion

Alternative A does not meet the stated purpose and need for the project. However, because NEPA guidelines require that a No Action alternative be included in the evaluation of environmental consequences, this alternative will be carried forward for more detailed analysis and as a baseline comparison.

3.4.5.2 Alternative B1: Reconstruct Runway 10R/28L in its Current Location

Alternative B1 includes the full reconstruction of Runway 10R/28L in its current location.

Ability to Meet Purpose and Need

Alternative B1 would meet the need of reconstructing Runway 10R/28L. However, it does not preserve the Airport's current and future flexibility to accommodate capacity needs both on the airside and in the terminal and landside areas. It would not address the additional benefits of long-term delay reduction and an expanded terminal development envelope due to the runway separation remaining at 2,800 feet.

Additional Considerations

Operational Considerations: There are two operational drawbacks to this alternative. The first operational drawback is that this alternative does not allow for CAT II/III instrumentation to address the long-term need for additional capacity/delay reduction due to the height of the Airport Traffic Control Tower (ATCT) in proximity to the existing Runway 10R/28L. It is also not possible to obtain a CAT II/III approach to Runway 10L due to obstructions in the approach (I-670). The latest forecast of operations at CMH indicates that as operating levels reach those projected for 2023, delay reduction will be necessary. The second drawback is that the proposed terminal would remain within the current terminal envelope and not provide the Airport flexibility to accommodate their current and future capacity needs. Also, aircraft would access gates at the existing terminal

from the north airfield. Given that the south runway is the longest runway and preferred by most commercial airline pilots, aircraft would experience additional taxi-time going from the south runway to the gates. This results in an inefficient airfield operation that costs time and increases fuel burn and air emissions.

Environmental Considerations: This alternative would result in few environmental impacts due to the construction activities occurring primarily where the existing runway is located. There would be some temporary negative environmental impacts that would occur during construction. With Runway 10R/28L being closed during reconstruction, there would be increased noise and overflights for the communities located near the north runway. In addition, having only one runway would increase delay and departure queue times, which would result in an increase in air pollutant emissions.

Positive environmental considerations, as compared to the Sponsor's Proposed Project, include fewer residential acquisitions and the Airport Golf Course would not be impacted.

Cost Considerations: The runway development portion of the Sponsor's Proposed Project is estimated to cost $162 million. Alternative B1 is estimated to cost approximately $25 million, a reduction of $137 million due to reconstructing the runway in the same location. This alternative would result in lower costs than the Sponsor's Proposed Project.

Conclusion

Alternative B1 does not allow the Airport to reconstruct Runway 10R/28L in a manner that preserves the Airport's current and future flexibility to accommodate capacity needs both on the airfield and in the terminal and landside areas. Therefore, it is not a prudent, reasonable, feasible, or practicable alternative to the Sponsor's Proposed Project and will not be carried forward for more detailed environmental analysis.

3.4.5.3 Alternative B2: Reconstruct Runway 10R/28L in its Current Location and Relocate Runway 10L/28R 700 Feet to the North

Alternative B2 includes full reconstruction of Runway 10R/28L in its current location and relocation of Runway 10L/28R 700 feet to the north to allow for an expanded terminal development envelope.

Ability to Meet Purpose and Need

Alternative B2 would meet the need of reconstructing Runway 10R/28L and preserving the Airport's current and future flexibility to accommodate capacity needs both on the airfield and in the terminal and landside areas. It also would address the additional benefits of long-term delay reduction and an expanded terminal development envelope due to the runway separation increasing to 3,500 feet.

Additional Considerations

Operational Considerations: An operational drawback to this alternative is that it would not be possible to obtain a CAT II/III approach due to the height of the ATCT in proximity to the existing Runway 10R/28L. It is also not possible to obtain a CAT II/III approach to Runway 10L due to obstructions in the approach (I-670).

Environmental Considerations: As discussed above, this alternative would require the acquisition and demolition of a number of commercial/industrial facilities north of the Airport. This would be considered a significant socioeconomic impact as there would be no guarantee that the businesses would or could relocate in the same general area, therefore resulting in a possible loss of jobs for the area. There are also a limited number of areas where on-Airport facilities impacted by this alternative could be relocated.

In addition, it is likely that this alternative would require the construction of a retaining wall on the east end of the Runway 28R RSA. The retaining wall would be constructed near Big Walnut Creek resulting in potential impacts to the floodplain and increasing water quality impacts to Big Walnut Creek due to increased impervious surface. There are 1.33 acres of wetlands located in the north airfield that would be impacted by the relocation of Runway 10L/28R. Increased noise levels and overflights would occur along the relocated centerline both east and west of the relocated north runway.

Bridgeway Avenue would either be terminated or relocated across Big Walnut Creek with two crossings. Termination of Bridgeway Avenue would result in the loss of an important east/west traffic route through the Airport, including automobile access to the north airfield, and eliminate a segment of the Airport's perimeter road system. If Bridgeway Avenue was relocated, it would require two bridge crossings over Big Walnut Creek. This would result in potential adverse impacts to Big Walnut Creek and the adjacent floodplain.

There would also be temporary negative environmental impacts during construction. With Runway 10R/28L being closed during the reconstruction, there would be increased noise and overflights for the communities located near the north runway. In addition, having only one runway would increase delay and departure queue times, which would result in increased air pollutant emissions. Long-term negative impacts would include the likelihood that there would be additional homes requiring sound insulation north of the Airport due to the relocation of Runway 10L/28R.

Positive environmental considerations, as compared to the Sponsor's Proposed Project, include fewer residential acquisitions and the Airport Golf Course would not be impacted.

Cost Considerations: This alternative would result in costs significantly higher than the Sponsor's Proposed Project due to the additional expense of relocating Runway 10L/28R, as well as reconstructing Runway 10R/28L (additional $25 million in construction costs). In addition, the impacts to existing facilities would increase

the cost of the project by a minimum of $32 million, taking into account the cost savings gained by not acquiring the 36 residences ($6 - $7 million) and reconfiguring the Airport Golf Course ($2 million). All together, Alternative B2 would increase the project costs by $53 million to $72 million,[41] which is a 29 to 41 percent increase over the cost of the runway project in the Sponsor's Proposed Project ($162 million).

Conclusion

Alternative B2 meets the majority of the stated needs for the project. However, the necessary actions to meet the stated needs result in additional environmental impacts and costs as compared to the Sponsor's Proposed Alternative. Therefore, it is not reasonable to carry this alternative forward for further evaluation.

3.4.5.4 Alternative C1: Relocate Runway 10R/28L 1,500 Feet to the South

Alternative C1 includes the relocation of Runway 10R/28L 1,500 feet to the south of, and parallel to the current location of Runway 10R/28L.

Ability to Meet Purpose and Need

Alternative C1 would meet the need of reconstructing Runway 10R/28L and preserving the Airport's current and future flexibility to accommodate capacity needs both on the airfield and in the terminal and landside areas. It would address and in many instances exceed the additional benefits for long-term delay reduction and an expanded terminal development envelope. The resulting runway separation of 4,300 feet meets the distance requirement for simultaneous operations even under IFR conditions and allow for CAT II/III operations. However, 4,300 feet of separation is larger than necessary to provide delay reduction and an expanded terminal development envelope, when coupled with additional NAVAIDs or ATC equipment.

Additional Considerations

Operational Considerations: The primary operational drawback to this alternative is that taxi times from the terminal area and the north airfield would be the greatest of all the alternatives. The resulting runway separation of 4,300 feet would offer the ability to conduct simultaneous arrivals without the installation of additional ATC equipment.

[41] Estimated cost of structures is based on the Franklin County Auditor tax assessment data as of February 12, 2007. The fair market value of these structures, which is what it would cost to purchase the structures, is typically higher than the value provided for tax purposes. This cost does not include costs for relocating businesses or for demolition of the structures.

Environmental Considerations: This alternative would result in significant environmental impacts due to the relocation of the Runway 10R/28L 1,500 feet to the south of the existing runway. As discussed above, this alternative would require the acquisition and demolition of major industrial developments south of the Airport (CIAC, Seven-Up Bottling Group of Columbus, and Airway Industrial Park). This would be considered a significant socioeconomic impact as there would be no guarantee that the businesses would or could relocate in the same general area. In addition, the CIAC, which is eligible for listing on the NRHP as Air Force Plant 85, would be removed. Additional study would be required to determine if the original terminal building, which is listed on the NRHP, would be impacted by this alternative. At a minimum, 48 homes and the associated residents would need to be relocated for clearing the RPZ.

Cost Considerations: This alternative would result in the highest costs of all the alternatives due to the off-Airport facility impacts discussed above. An estimate of the costs above the Sponsor's Proposed Project for removing these facilities is in excess of $167 million or a total of $322 million, which is a 108 percent increase over the runway project included with the Sponsor's Proposed Project.

Conclusion

Alternative C1 meets all of the purpose and need statements for the project. However, this alternative results in additional environmental impacts and associated costs as compared to the Sponsor's Proposed Alternative. Therefore, it is not reasonable to carry this alternative forward for further evaluation.

3.4.5.5 Alternative C2: Relocate Runway 10R/28L 800 Feet to the South

Alternative C2 includes the relocation of Runway 10R/28L 800 feet to the south of, and parallel to the current location of Runway 10R/28L.

Ability to Meet Purpose and Need

Alternative C2 would meet the need of reconstructing Runway 10R/28L and preserving the Airport's current and future flexibility to accommodate capacity needs both on the airfield and in the terminal and landside areas. It also would address the additional benefits for long-term delay reduction with additional NAVAIDs or ATC equipment and an expanded terminal development envelope.

Additional Considerations

Operational Considerations: In addition to meeting the purpose and need, this alternative would offer operational benefits due to the resulting alignment and runway separation. The relocation of Runway 10R/28L 800 feet to the south would maintain the basic airfield layout of two parallel runways. Parallel runways can be used more efficiently than runways that are converging or intersecting due to FAA standards. The resulting runway separation of 3,600 feet would offer the ability to conduct simultaneous arrivals with the installation of additional ATC equipment.

Environmental Considerations: This alternative would result in environmental impacts due to the relocation of the Runway 10R/28L 800 feet to the south of the existing runway. As discussed above, this alternative would require the demolition of the northern portion of the CIAC. This would be considered a major impact to the current tenants of the buildings because they would need to be relocated. In addition, potential historic impacts include removal of portions of the CIAC, which is eligible for listing on the NRHP as Air Force Plant 85. At a minimum, 24 homes and the associated residents would need to be relocated for clearing the RPZ. The Airport Golf Course, located east of the Airport would require reconfiguration of at least nine holes due to the relocation of the approach lighting system for Runway 10R/28L. Because the Airport Golf Course is a public recreation facility, Section 4(f) evaluation would need to be completed.

A tributary stream (ravine) of the Big Walnut Creek would be expanded into a stormwater detention basin to reroute stormwater drainage from the proposed development areas to Big Walnut Creek. Development of the detention basin would reduce the tributary area draining to Mason Run.

Cost Considerations: Alternative C2 is estimated to cost $185 million, which is $23 million more than the Sponsor's Proposed Project ($162 million).

Conclusion

Alternative C2 meets all of the stated needs for the project. However, there are increased environmental impacts and costs associated with the project as compared to the Sponsor's Proposed Project. These impacts and costs are in a range that may or may not be considered unreasonable. In an effort to conduct a review of all alternatives that may be reasonable, this alternative is carried forward for further evaluation.

3.4.5.6 Alternative C3: Relocate Runway 10R/28L 702 Feet to the South (Sponsor's Proposed Project)

Alternative C3 (Sponsor's Proposed Project) includes the relocation of Runway 10R/28L 702 feet to the south of, and parallel to the current location of Runway 10R/28L.

Ability to Meet Purpose and Need

Alternative C3 would meet the need of reconstructing Runway 10R/28L and preserving the Airport's current and future flexibility to accommodate the capacity needs both on the airfield and in the terminal and landside areas. It also would meet the secondary needs for long-term delay reduction with additional NAVAIDs or ATC equipment and an expanded terminal development envelope.

Additional Considerations

Operational Considerations: In addition to meeting the purpose and need, this alternative would offer operational benefits due to the resulting alignment and runway separation. The relocation of Runway 10R/28L 702 feet to the south would maintain the basic airfield layout of two parallel runways. Parallel runways can be used more efficiently than runways that are converging or intersecting due to FAA standards. The runway alignment also improves the capacity of the airport, because the resulting runway separation of 3,502 feet would offer the ability to conduct simultaneous arrivals during IFR conditions with the installation of additional ATC equipment.

Environmental Considerations: This alternative would result in environmental impacts due to the relocation of the runway 702 feet to the south of the existing runway. As discussed above, this alternative would require the demolition of a non-functioning ramp control tower on the top of the CIAC Building 7. Because the CIAC is eligible for listing on the NRHP as Air Force Plant 85, coordination with the State Historic Preservation Office would be necessary. At a minimum, 15 homes and the associated residents would need to be relocated to clear the RPZ. The Airport Golf Course, located east of the Airport would require reconfiguration of at least nine holes, due to the relocation of the approach lighting system for Runway 10R/28L. Because the Airport Golf Course is a public recreation facility, Department of Transportation Section 4(f) evaluation would need to be completed.

A tributary stream (ravine) of the Big Walnut Creek would be expanded into a stormwater detention basin to reroute stormwater drainage from the proposed development areas to Big Walnut Creek. Development of the detention basin would reduce the tributary area draining to Mason Run.

Cost Considerations: This alternative has the lowest cost of the runway relocation alternatives, at $162 million.

Conclusion

Alternative C3 is the Sponsor's Proposed Project and meets all of the stated needs for the project. Therefore, this alternative is carried forward for further evaluation.

3.4.5.7 Runway Alternative Screening Summary

Based on the analysis presented above and summarized in **Table 3-9**, the following alternatives are carried forward for further evaluation:

1. Alternative A: No Action;
2. Alternative C2: Relocate Runway 10R/28L 800 feet to the south; and
3. Alternative C3: Relocate Runway 10R/28L 702 feet to the south (Sponsor's Proposed Project).

Table 3-9
Runway Alternatives Evaluation Matrix
Port Columbus International Airport

Alternative Description	Does it Meet the Airport's Needs?			Impacts E: Environmental O: Operational C: Cost		Recommendation
	Reconstruction of Runway 10R/28L	*Additional Long Term Capacity and Delay Reduction*	*Sufficient Terminal Envelope*			
A No-Action	no	no	no	***E:***	• Results in no physical environmental impacts • Increased use of north runway resulting in more noise and overflights for communities north of airport • There would be some construction impacts due to routine maintenance of the runway • Having only one runway would increase delay and departure queue times, which would result in an increase in air pollutant emissions.	Alternative does not meet the Purpose and Need for the project. NEPA guidelines require a No-Action alternative be included in the evaluation of environmental consequences, therefore this alternative will be carried forward.
				O:	• Would require frequent closure of Runway 10R/28L, reducing overall efficiency of airport • Does not address long term need for current and future airfield and landside capacity	
				C:	• No costs associated with relocating the runway • Costs of performing small maintenance would over time approach the cost of fully reconstructing the south runway	
B1 Reconstruct Runway 10R/28L in its current location	yes	no	no	***E:***	• Results in fewer environmental impacts than the Sponsor's Proposed Project • Temporary increased use of north runway resulting in more noise and overflights for communities north of airport • Having only one runway would increase delay and departure queue times, which would result in an increase in air pollutant emissions.	Alternative does not meet the all of the stated needs of the project. While, it does meet the primary need for the project, this alternative will not be carried forward.
				O:	• During construction, Runway 10R/28L would be closed, leaving the airport with one 8,000 foot runway • Does not address long term need for current and future airfield and landside capacity	
				C:	• No costs associated with relocating the runway	

Table 3-9, *Continued*
Runway Alternatives Evaluation Matrix
Port Columbus International Airport

Alternative Description	Does it Meet the Airport's Needs?			Impacts E: Environmental O: Operational C: Cost		Recommendation
	Reconstruction of Runway 10R/28L	*Additional Long Term Capacity and Delay Reduction*	*Sufficient Terminal Envelope*			
B2 Reconstruct Runway 10R/28L in current location and relocate Runway 10L/28R 700 feet to the north	yes	yes	yes	***E:***	• Fewer residential acquisitions than the Sponsor's Proposed Project • Airport Golf Course would not be impacted • Acquisition and demolition of 18 commercial/industrial facilities north of the airport, resulting in a significant socio-economic impact • Potential impacts to wetlands, floodplain, and water quality of Big Walnut Creek • Increased noise levels would occur along the relocated centerline both east and west of the relocated runway • Bridgeway Avenue would be relocated or terminated • Temporary impacts during reconstruction of Runway 10R/28L would increase noise and air pollutants • Long-term negative impacts would include the likelihood that there would be additional homes requiring sound insulation north of the Airport due to the relocation of Runway 10L/28R.	Alternative meets all of the needs of the project. However, the necessary actions to meet the stated needs results in unnecessary environmental impacts and associated costs. Therefore, this alternative will not be carried forward.
				O:	• Does not address long term need for current and future airfield and landside capacity • During reconstruction, Runway 10R/28L would be closed, leaving the airport with one 8,000 foot runway	
				C:	• Would result in significantly higher costs than the Sponsor's Proposed Project (increase projects costs by $53 to $72 million)	

Table 3-9, *Continued*
Runway Alternatives Evaluation Matrix
Port Columbus International Airport

Description	Does it Meet the Airport's Needs?			Impacts E: Environmental O: Operational C: Cost		Recommendation
	Reconstruction of Runway 10R/28L	*Additional Long Term Capacity and Delay Reduction*	*Sufficient Terminal Envelope*			
C1 Relocate Runway 10R/28L 1,500 feet to the South	yes	yes	yes	***E:***	• Acquisition and demolition of major industrial developments south of the airport, resulting in a significant socio-economic impacts • Potential historic impacts of a significant nature • At a minimum 48 homes and associated residents would be relocated for clearing the Runway Protection Zone (RPZ)	Alternative meets all of the needs of the project. However, the necessary actions to meet the stated needs results in unnecessary environmental impacts and associated costs. Therefore, this alternative will not be carried forward.
				O:	• Conduct simultaneous arrivals without additional ATC equipment • Increased taxi times from the terminal	
				C:	• Would result in the highest cost of all the alternatives due to the off-airport facility impacts (increase of project costs in excess of $167 million)	
C2 Relocate Runway 10R/28L 800 feet to the South	yes	yes	yes	***E:***	• The northern portion of the CIAC (Eligible for listing on the NRHP) would be impacted • Potential historic impacts of a significant nature • At a minimum 24 homes and associated residents would be relocated for clearing the Runway Protection Zone (RPZ) • Airport Golf Course would require reconstruction • A tributary stream (ravine) of the Big Walnut Creek would be expanded into a stormwater detention basin to reroute stormwater drainage to Big Walnut Creek	Alternative meets all of the needs of the project. The environmental impacts and associated costs may or may not be considered unreasonable. Therefore, this alternative will be carried forward.
				O:	• Conduct simultaneous arrivals with additional ATC equipment	
				C:	• Would result in an increase of project costs of $30 million	

Table 3-9, *Continued*
Runway Alternatives Evaluation Matrix
Port Columbus International Airport

Description	Does it Meet the Airport's Needs?			Impacts E: Environmental O: Operational C: Cost		Recommendation
	Reconstruction of Runway 10R/28L	***Additional Long Term Capacity and Delay Reduction***	***Sufficient Terminal Envelope***			
C3 Relocate Runway 10R/28L 702 feet to the South (Sponsor's Proposed Project)	yes	yes	yes	***E:***	• Acquisition and demolition of a non-functioning ramp control tower on the top of CIAC Building 7 • At a minimum 15 homes and associated residents would be relocated for clearing the Runway Protection Zone (RPZ) • Potential historic impacts of a significant nature • A tributary stream (ravine) of the Big Walnut Creek would be expanded into a stormwater detention basin to reroute stormwater drainage to Big Walnut Creek. • Airport Golf Course would require reconstruction	Alternative meets all of the needs of the project. The environmental impacts and associated costs may or may not be considered unreasonable. Therefore, this alternative will be carried forward.
				O:	• Conduct simultaneous arrivals with additional ATC equipment	
				C:	• Lowest costs of the relocated runway alternatives	

3.4.6 TERMINAL DEVELOPMENT ALTERNATIVES

The existing passenger terminal facilities were analyzed to estimate when the terminal would exceed its current capacity.[42, 43] The results of the modeling determined the capacity of the existing terminal by increasing the number of passengers within the peak hour until demand exceeded the available capacity of the various terminal elements. This peak hour passenger volume was converted into an annual passenger volume using the peak hour/average day/peak month mathematical relationship. The annual passenger volume was then compared to the projection of annual enplanements in order to associate this level of activity to a specific year in the forecast. The major terminal components that were examined included the following:

- Ticketing Lobby;
- Security Screening Checkpoints;
- Baggage Claim Hall;
- Inbound/Outbound Baggage;
- Passenger Holdrooms;
- Gates and Aircraft Parking Apron;
- Major Vertical Circulation elements;
- Restrooms;
- Arrival and Departure Curbs; and
- Meeter/Greeter Areas.

The capacity analysis determined that the existing terminal, as presently configured, is beginning to experience losses in Level of Service (LOS) at some key passenger-processing functions. The capacity of each of these processing components was identified and a timeframe established for when each of these functions would reach that capacity. Some of the individual terminal components can accommodate activity levels beyond 5 MAEP with modification; however, others cannot. The primary limiting components in the existing terminal are the Outbound Baggage Systems, followed by the Baggage Claim Hall and the Security Screening Checkpoints. For these functions, the ability to expand much beyond their current capacity is extremely limited. The existing terminal cannot efficiently accommodate activity levels beyond 5 MAEP and the ability to modify the existing terminal is extremely limited, or impossible in some cases, given the existence of other Airport facilities.

[42] *Port Columbus International Airport – Capital Improvement Program*, June 2005, prepared by The Program Management Team.
[43] *Port Columbus International Airport – Existing Terminal Capacity Enhancements*, September 2006, NBBJ + Leigh Fisher Associates.

After the events of September 11, 2001, terminal design criteria was modified to reflect updated security requirements. At the same time, increased use of regional jet aircraft and the merging of various airlines were redefining changes in the aviation industry. As a response to these events, in November 2001, the CRAA initiated a terminal program definition study (Program Management Airport Development Plan or PMADP) to define the requirements for a terminal to serve the needs of the Airport for the next 30 years. In addition, the PMADP was tasked with confirming the assumptions in the 1999 Master Plan Update.[44] Among other tasks, this study updated the forecasts of aircraft and passenger activity, developed terminal design criteria, evaluated the existing terminal, reviewed the potential terminal development envelopes, and explored alternative terminal development options. The analysis and findings of alternative terminal development options included in the PMADP are hereby incorporated into this EIS.

Terminal design criteria was developed to estimate overall space requirements for the anticipated activity levels, typical passenger characteristics, and industry planning and design standards. For CMH, the following criteria were identified:

- The ultimate terminal program should be a single terminal. The first phases may require a two terminal operation, but the goal of the program will be to consolidate all operations at the new terminal in later phases.
- Enhance passenger convenience by minimizing walking distances, offering state of the art concession areas, and providing other necessary functions, such as restrooms, security halls, and baggage systems.
- Develop a terminal program that will not require an Automated People Mover (APM).
- The ultimate terminal will be designed to accommodate 9 MAEP. First phases will be designed to provide capacity beyond 5 MAEP, which is the functional limit of the existing terminal.
- The ultimate terminal will include 75 gates. The first phase, which is being assessed in this EIS, will include ten gates with more gates added as passenger levels increase.
- Parking garages, adjacent to the new terminal, that will accommodate approximately 8,000 cars, will be constructed in three sections, as necessary. The first phase of the terminal development will require construction of one of the three sections of the parking garage with approximately 2,700 spaces.

The PMADP identified a number of terminal layout options to address the future needs of the Airport. Dozens of concepts were distilled down to concept "families," which were further refined into alternatives that were subjected to a comparative evaluation by a Peer Review Team. It was concluded that due to the narrow nature of the terminal site, no alternative was without issues concerning programmatic requirements, phasing and constructability, or cost.

[44] *Port Columbus International Airport – Capital Improvement Program*, June 2005, prepared by The Program Management Team.

The major advantages of the wider terminal platform layout versus the narrow terminal concept include:

- Passenger conveniences;
- Airline and airport operations;
- Access and parking;
- Financial aspects; and
- Balance of facilities.

The wider terminal envelope permits a more compact, yet efficient, concept resulting in shorter passenger walking distances and the elimination of the need for an APM system. The wider envelope also enhances passenger wayfinding and landside access decisions. The wider envelope concept has fewer initial and ultimate impacts to existing facilities and infrastructure, and the advantage of enhanced maintenance of ongoing operations at existing facilities during adjacent construction. With the wider envelope concept, the long-term parking program can be accommodated on-site, without property acquisition and remote shuttling. It also results in a roadway system with more comfortable and efficient design features.

For the evaluation of environmental impacts in this EIS, the specific layout of the terminal is not as important as the terminal development envelope, the number of gates, the approximate square footage of the building, and the anticipated number of passengers. Therefore, this EIS will assess the ground disturbance impacts (archaeological, wetlands, etc.) for the development envelope of the ultimate 75-gate terminal. Operational impacts assessed in this EIS will be limited to the first phase of the terminal development, which includes a total of 48 gates at the Airport (ten new plus 38 existing). Additional environmental analysis for the non-ground disturbance impacts (air quality, noise, etc) would be necessary when the total number of gates at the Airport exceeds 48.

Based on the PMADP and an independent review by the FAA, four alternative terminal development envelopes were identified for evaluation in this EIS (including the No Action Alternative). These alternatives were evaluated for their ability to meet forecasted passenger demand and function within the runway alternatives that were identified for further evaluation.

3.4.6.1 Alternative A: No Action

Alternative A is identified as the No Action Alternative in this EIS. This alternative assumes that no efforts are made to increase terminal capacity either at the existing terminal or at a different location. Alternative A does not meet the stated purpose and need for the project. However, because NEPA guidelines require that a No Action alternative be included in the evaluation of environmental consequences, this alternative will be carried forward for more detailed analysis.

3.4.6.2 Alternative T1: Expand Existing Terminal

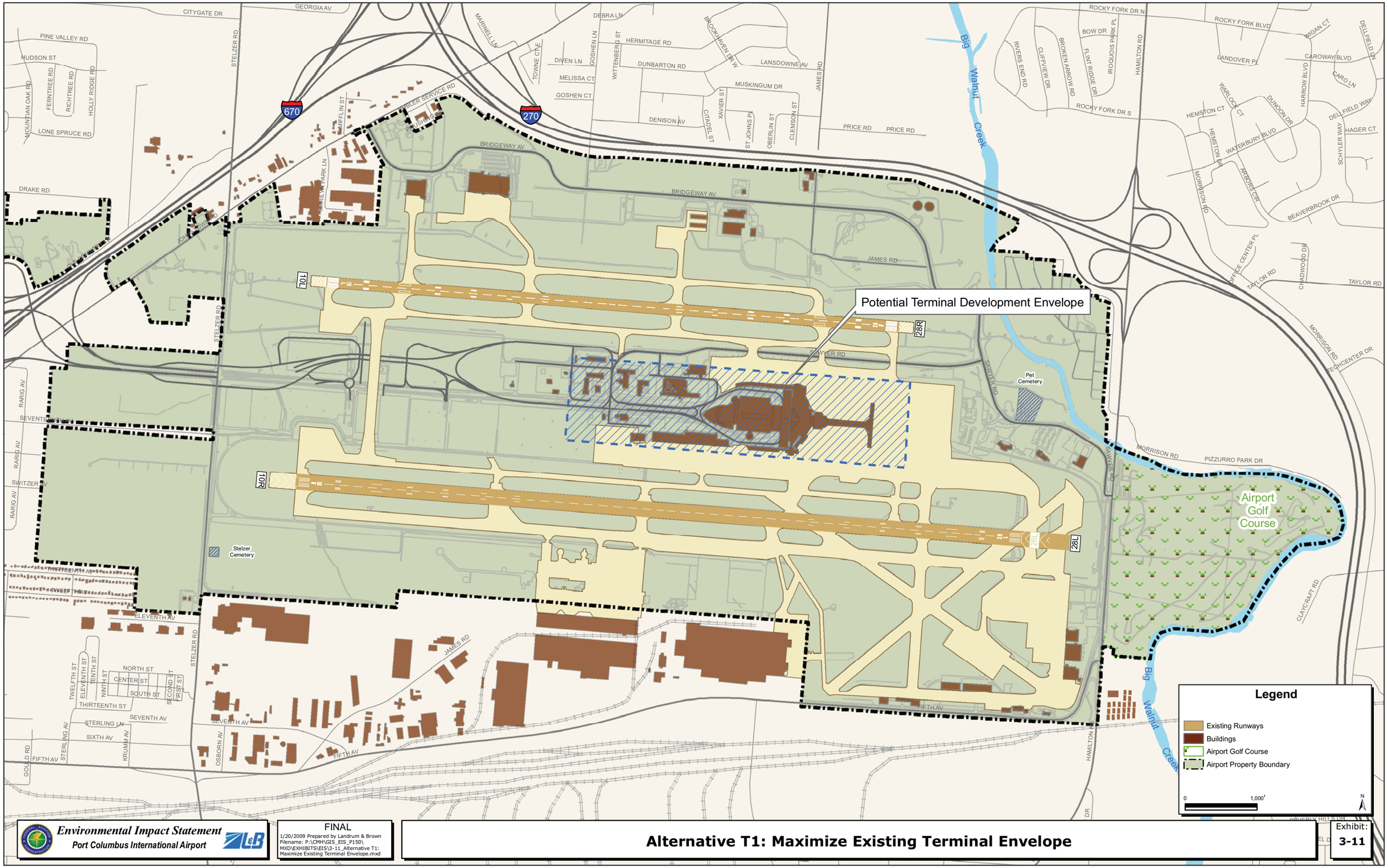
Alternative T1 includes the expansion of the existing passenger terminal to accommodate forecasted demand. **Exhibit 3-11, *Alternative T1: Maximize Existing Terminal Envelope,*** illustrates the area available for expanding the existing terminal within the existing confines of the airfield layout. The PMADP analyzed the feasibility of the existing terminal meeting future demand.

The analysis concluded that the existing terminal, in its current configuration is currently experiencing a reduced LOS and cannot efficiently accommodate activity associated with 5 MAEP. However, with some modifications, the existing terminal could accommodate 5 MAEP. The design criteria established for the CMH terminal program included the ability to accommodate passenger levels of 9 MAEP with approximately 75 aircraft gates in a single terminal and the desire to not use an APM due to construction and maintenance costs, as well as the impact to existing facilities to accommodate the system.

With the current runway separation (2,800 feet), it is technically feasible to expand the existing terminal or construct a new terminal. However, the considerable limitations to developing a terminal large enough to meet the long-term demand; meet the current security requirements; and accommodate the necessary roadways, parking, and other support functions makes it neither practical or reasonable.

Both the 1999 Master Plan Update and the PMADP assessed potential alternatives for expanding the existing terminal to meet future demand. The 1999 Master Plan Update evaluated a concept that extended Concourses A and C, which are located north and south of the terminal core, toward the west. The PMADP evaluated another alternative that would construct an additional terminal that would be linked to the existing terminal with an APM.

Both of these options fail to meet all of the design criteria identified above. The first option, developed in the 1999 Master Plan Update, would require excessively long walking distances or the use of an APM. The second option would require the use of an APM to link the two terminals. Airfield efficiency and flexibility would suffer as facilities encroach upon or replace the airfield apron and other aircraft movement areas. Therefore, while these options are technically feasible, because they do not allow the Airport to preserve future flexibility for the airfield and terminal and landside areas and include the use of an APM and they do not ultimately result in the ability to develop a long-term single terminal, Alternative T1 will not be carried forward for further evaluation.



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Alternative T1: Maximize Existing Terminal Envelope

Exhibit: **3-11**

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3.4.6.3 Alternative T2: Midfield Terminal Development Envelope – South Airfield (Sponsor's Proposed Project)

Alternative T2 includes the development of new terminal facilities in the midfield area, with aircraft access from the south airfield. **Exhibit 3-12, *Alternative T2: Sponsor's Proposed Project,*** illustrates the terminal development envelope for Alternative T2. This terminal development alternative is compatible with runway development Alternatives C1, C2, and C3 due to their inclusion of the relocation of Runway 10R/28L to the south. This alternative meets the terminal design criteria developed for the evaluation of overall space requirements, anticipated activity levels, typical passenger characteristics, and industry planning and design standards. In addition, Alternative T2 allows the Airport to preserve their current and future flexibility to accommodate the capacity needs both on the airfield and in the terminal and landside areas. As such, this alternative would allow for future expansion of the terminal to accommodate growth. Therefore, Alternative T2 will be carried forward for further evaluation.

3.4.6.4 Alternative T3: Midfield Terminal Development Envelope – North Airfield

Alternative T3 includes the development of new terminal facilities in the midfield area, with aircraft access from the north airfield. **Exhibit 3-13, A*lternative T3: Midfield Terminal Envelope – North Airfield,*** illustrates the terminal development envelope for Alternative T3. As shown on the exhibit, the apron area required for the terminal would extend north of Taxiway E and would restrict future expansion of the terminal. In order to avoid this restriction, this terminal development alternative would require the relocation of Runway 10L/28R to the north by at least 700 feet. This runway layout is included in Runway Alternative B2, but due to the operational, environmental, and cost factors, Runway Alternative B2 is not being carried forward for further evaluation. As such, terminal development Alternative T3 is not a feasible or reasonable option. Therefore, Alternative T3 will not be carried forward for further evaluation.

3.4.6.5 Terminal Alternative Screening Summary

Based on the analysis presented above, the following terminal alternatives are carried forward for further evaluation:

1. Alternative A: No Action, and
2. Alternative T2: Midfield Terminal Development Envelope – South Airfield (Sponsor's Proposed Project).

3.5 NOISE ABATEMENT ALTERNATIVES

Concurrently with the EIS, the CRAA prepared an update to the CMH Part 150 Noise Compatibility Study (2007 Part 150 Study) in accordance with 14 CFR Part 150.[45] Several procedural alternatives were developed as part of the alternatives analysis in the study. These alternatives were evaluated for their ability to reduce noise exposure around the Airport. The most promising alternatives were compiled into four Noise Compatibility Program (NCP) operating scenarios for further evaluation. Each of the NCP operating scenarios are briefly described below, along with a discussion of the reason for selecting NCP 4 as the preferred scenario. For a complete description of each alternative and NCP scenario, see the 2007 Part 150 Study.

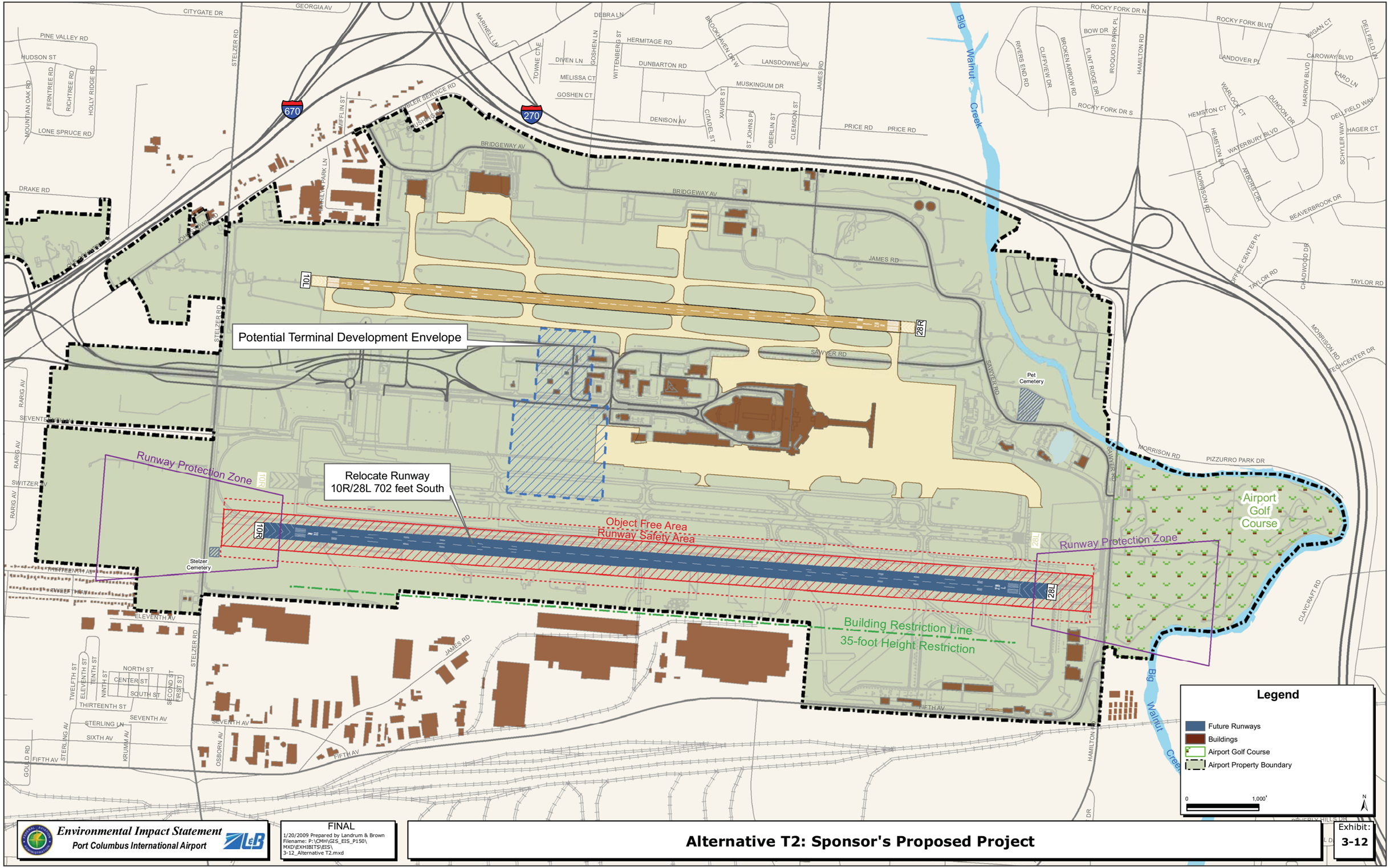
3.5.1 NOISE COMPATIBILITY PROGRAM SCENARIO 1 (NCP 1)

Noise Compatibility Program Scenario 1 (NCP 1) includes five noise abatement alternatives.

- NA-D: When wind, weather, and operational considerations allow arrivals landing during the nighttime (10:00 p.m. to 7:00 a.m.) to use a visual side step approach to Runway 28L.
- NA-E: Implement a 15-degree divergent turn off of Runway 28R, after crossing the runway end to a 295-degree heading, only during peak operating periods when traffic warrants.
- NA-I: Nighttime (10:00 p.m. to 7:00 a.m.) departures off Runway 10R turn immediately left 10 degrees before turning on course.
- NA-R: Renew efforts to maximize east flow (arrive and depart Runways 10L/10R).
- NA-W: Construct a noise berm/wall.

NCP 1 decreased the number of homes in the 65+ Day Night Average Sound Level (DNL) noise exposure contour from the Future (2012) Baseline noise exposure contour by 228 homes. In addition, NCP 1 decreased the number of homes in the 60-65 DNL noise exposure contour by 447 homes. Although there were decreases in the number of homes in the 65+ DNL and 60-65 DNL noise exposure contours, NCP 1 was not selected as the preferred scenario due to NCP 4 having the fewest impacts overall. (See **Table 3-10**)

[45] The Final Part 150 Study Update for Port Columbus International Airport was submitted to the FAA for approval in November 2007. The FAA accepted the NEMs on December 5, 2007. The FAA issued a Record of Approval on the NCP on May 28, 2008.



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Alternative T2: Sponsor's Proposed Project

Exhibit: 3-12

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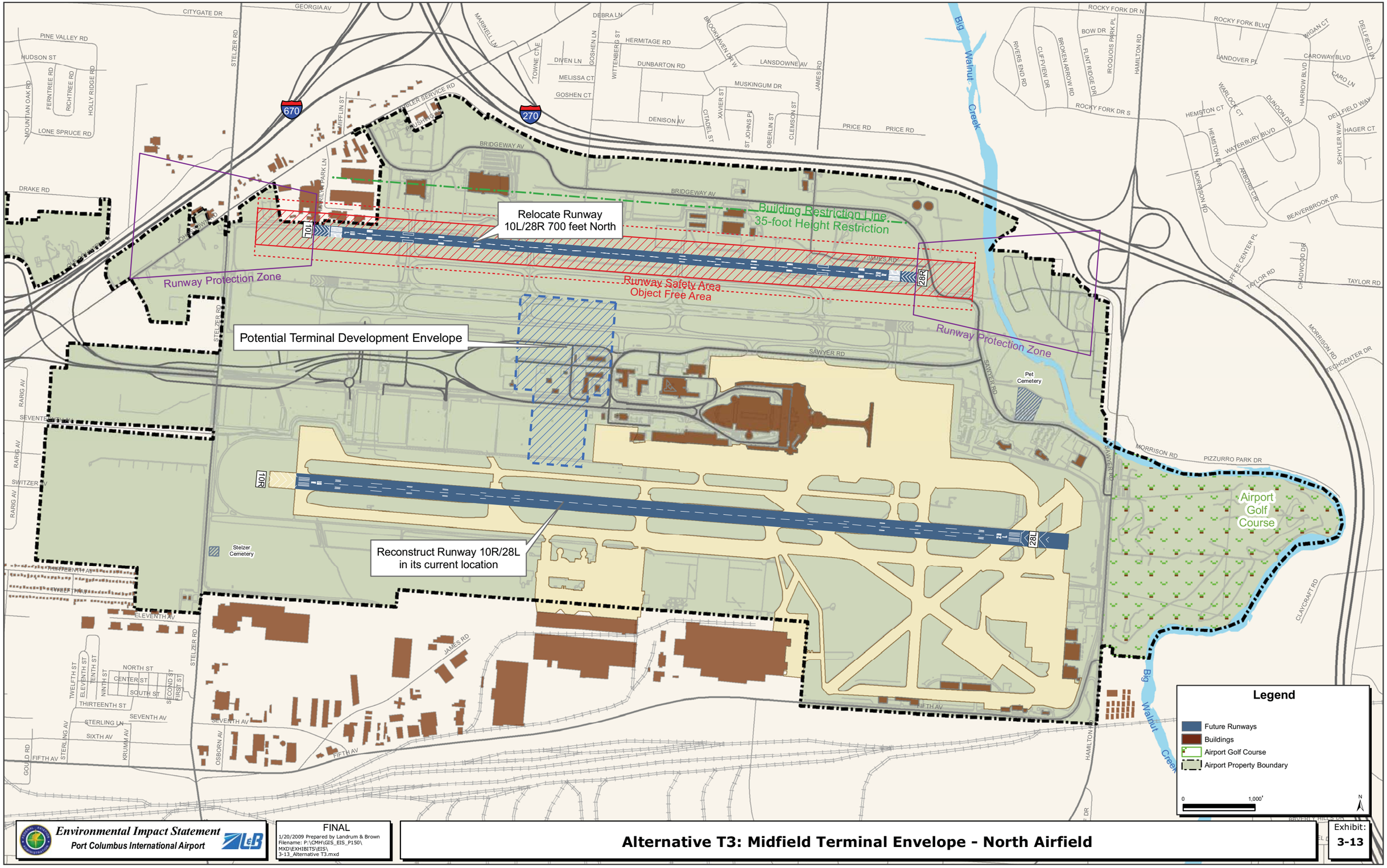

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Alternative T3: Midfield Terminal Envelope - North Airfield

Exhibit:
3-13

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Table 3-10
SCENARIO 1 VERSUS FUTURE (2012) BASELINE HOUSING
Port Columbus International Airport

CATEGORY	FUTURE (2012) BASELINE	SCENARIO 1	DIFFERENCE
Housing Units			
60-65 DNL	**5,584**	**5,137**	**-447**
Mitigated	697	702	+5
Unmitigated	4,887	4,435	-452
65-70 DNL	**700**	**472**	**-228**
Mitigated	337	248	-89
Unmitigated	363	224	-139
70-75 DNL	**0**	**0**	**0**
75+ DNL	**0**	**0**	**0**

Notes: Homes within the 60-65 DNL have been previously mitigated because they were located within the 65 DNL of a previously approved NEM contour.

Source: Landrum & Brown, 2007.

3.5.2 NOISE COMPATIBILITY PROGRAM SCENARIO 2 (NCP 2)

Noise Compatibility Program Scenario 2 (NCP 2) includes four noise abatement alternatives.

- NA-D: When wind, weather, and operational considerations allow arrivals landing during the nighttime (10:00 p.m. to 7:00 a.m.) to use a visual side step approach to Runway 28L.
- NA-E: Implement a 15-degree divergent turn off of Runway 28R, after crossing the runway end to a 295-degree heading, only during peak operating periods when traffic warrants.
- NA-R: Renew efforts to maximize east flow (arrive and depart Runways 10L/10R).
- NA-W: Construct a noise berm/wall.

NCP 2 decreased the number of homes in the 65+ DNL noise exposure contour from the Future (2012) Baseline noise exposure contour by 228 homes. In addition, NCP 2 decreased the number of homes in the 60-65 DNL noise exposure contour by 469 homes. This scenario reported the greatest reduction in impacts (including below the 65 DNL). However, Measure NA-D was eliminated from the 2007 Part 150 Study. Due to safety concerns, the FAA will not approve a side step approach for noise abatement purposes. This scenario was not selected in favor of NCP 4. (See **Table 3-11**)

Table 3-11
SCENARIO 2 VERSUS FUTURE (2012) BASELINE HOUSING

Port Columbus International Airport

CATEGORY	FUTURE (2012) BASELINE	SCENARIO 2	DIFFERENCE
Housing Units			
60-65 DNL	**5,584**	**5,115**	**-469**
Mitigated	697	627	-70
Unmitigated	4,887	4,488	-399
65-70 DNL	**700**	**472**	**-228**
Mitigated	337	248	-89
Unmitigated	363	224	-139
70-75 DNL	**0**	**0**	**0**
75+ DNL	**0**	**0**	**0**

Notes: Homes within the 60-65 DNL have been previously mitigated because they were located within the 65 DNL of a previously approved NEM contour.

Source: Landrum & Brown, 2007.

3.5.3 NOISE COMPATIBILITY PROGRAM SCENARIO 3 (NCP 3)

Noise Compatibility Program Scenario 3 (NCP 3) includes four noise abatement alternatives.

- NA-E: Implement a 15-degree divergent turn off of Runway 28R, after crossing the runway end to a 295-degree heading, only during peak operating periods when traffic warrants.
- NA-R: Renew efforts to maximize east flow (arrive and depart Runways 10L/10R).
- NA-V: Implement head to head operations during calm winds at nighttime for all aircraft (includes a left 15-degree departure turn off of Runway 10R).
- NA-W: Construct a noise berm/wall.

NCP 3 decreased the number of homes in the 65+ DNL noise exposure contour from the Future (2012) Baseline noise exposure contour by 84 homes. In addition, NCP 3 decreased the number of homes in the 60-65 DNL noise exposure contour by 123 homes. Although there were decreases in the number of homes in the 65+ DNL and 60-65 DNL noise exposure contours, NCP 3 was not selected as the preferred scenario due to NCP 4 having the fewest impacts. (See **Table 3-12**)

Table 3-12
SCENARIO 3 VERSUS FUTURE (2012) BASELINE HOUSING
Port Columbus International Airport

CATEGORY	FUTURE (2012) BASELINE	SCENARIO 3	DIFFERENCE
Housing Units			
60-65 DNL	**5,584**	**5,461**	**-123**
Mitigated	697	644	-53
Unmitigated	4,887	4,817	-70
65-70 DNL	**700**	**616**	**-84**
Mitigated	337	290	-47
Unmitigated	363	326	-37
70-75 DNL	**0**	**0**	**0**
75+ DNL	**0**	**0**	**0**

Notes: Homes within the 60-65 DNL have been previously mitigated because they were located within the 65 DNL of a previously approved NEM contour.

Source: Landrum & Brown, 2007.

3.5.4 NOISE COMPATIBILITY PROGRAM SCENARIO 4 (NCP 4)

Noise Compatibility Program Scenario 4 (NCP 4) includes three noise abatement alternatives.

- NA-E: Implement a 15-degree divergent turn off of Runway 28R, after crossing the runway end to a 295-degree heading, only during peak operating periods when traffic warrants.
- NA-R: Renew efforts to maximize east flow (arrive and depart Runways 10L/10R).
- NA-W: Construct a noise berm/wall.

NCP 4 decreased the number of homes in the 65+ DNL noise exposure contour from the Future (2012) Baseline noise exposure contour by 227 homes. In addition, NCP 4 decreased the number of homes in the 60-65 DNL noise exposure contour by 164 homes. Although NCP 2 had fewer overall impacts, Scenario NCP 4 was selected as preferred due to the safety concerns expressed regarding of the visual side step measure in NCP 2. (See **Table 3-13**)

Table 3-13
SCENARIO 4 VERSUS FUTURE (2012) BASELINE HOUSING
Port Columbus International Airport

CATEGORY	FUTURE (2012) BASELINE	SCENARIO 4	DIFFERENCE
Housing Units			
60-65 DNL	**5,584**	**5,420**	**-164**
Mitigated	697	924	+227
Unmitigated	4,887	4,496	-391
65-70 DNL	**700**	**473**	**-227**
Mitigated	337	248	-89
Unmitigated	363	225	-138
70-75 DNL	**0**	**0**	**0**
75+ DNL	**0**	**0**	**0**

Notes: Homes within the 60-65 DNL have been previously mitigated because they were located within the 65 DNL of a previously approved NEM contour.

Source: Landrum & Brown, 2007.

3.6 ALTERNATIVES TO BE ENVIRONMENTALLY ASSESSED

This section describes the alternatives to be carried forward for detailed environmental analysis. From the previous sections, two development alternatives, each with two noise abatement scenarios were identified for further analysis including a no new noise abatement procedure scenario (NAS-A). In addition, the No Action alternative will be carried forward in accordance with NEPA guidelines. **Exhibit 3-14, *Alternative C2 Layout,*** and **Exhibit 3-15, *Alternative C3 Layout (Sponsor's Proposed Project),*** show the airfield layouts for Alternative C2 and C3, respectively. The alternatives being environmentally assessed are listed below:

Forecast Year 2012

Alternative A: No Action

Alternative C2: Relocate Runway 10R/28L to the south by 800 feet

Noise Abatement Scenario A: No new noise abatement procedures; and

Noise Abatement Scenario B: Implement recommended noise abatement procedures (NCP 4).

Alternative C3: Relocate Runway 10R/28L to the south by 702 feet (Sponsor's Proposed Project)

Noise Abatement Scenario A: No new noise abatement procedures; and

Noise Abatement Scenario B: Implement recommended noise abatement procedures (NCP 4).

Forecast Year 2018

Alternative A: No Action

Alternative C2: Relocate Runway 10R/28L to the south by 800 feet and construct midfield terminal (T2)

Noise Abatement Scenario A: No new noise abatement procedures; and

Noise Abatement Scenario B: Implement recommended noise abatement procedures (NCP 4).

Alternative C3: Relocate Runway 10R/28L to the south by 702 feet and construct midfield terminal (T2) (Sponsor's Proposed Project)

Noise Abatement Scenario A: No new noise abatement procedures; and

Noise Abatement Scenario B: Implement recommended noise abatement procedures (NCP 4).

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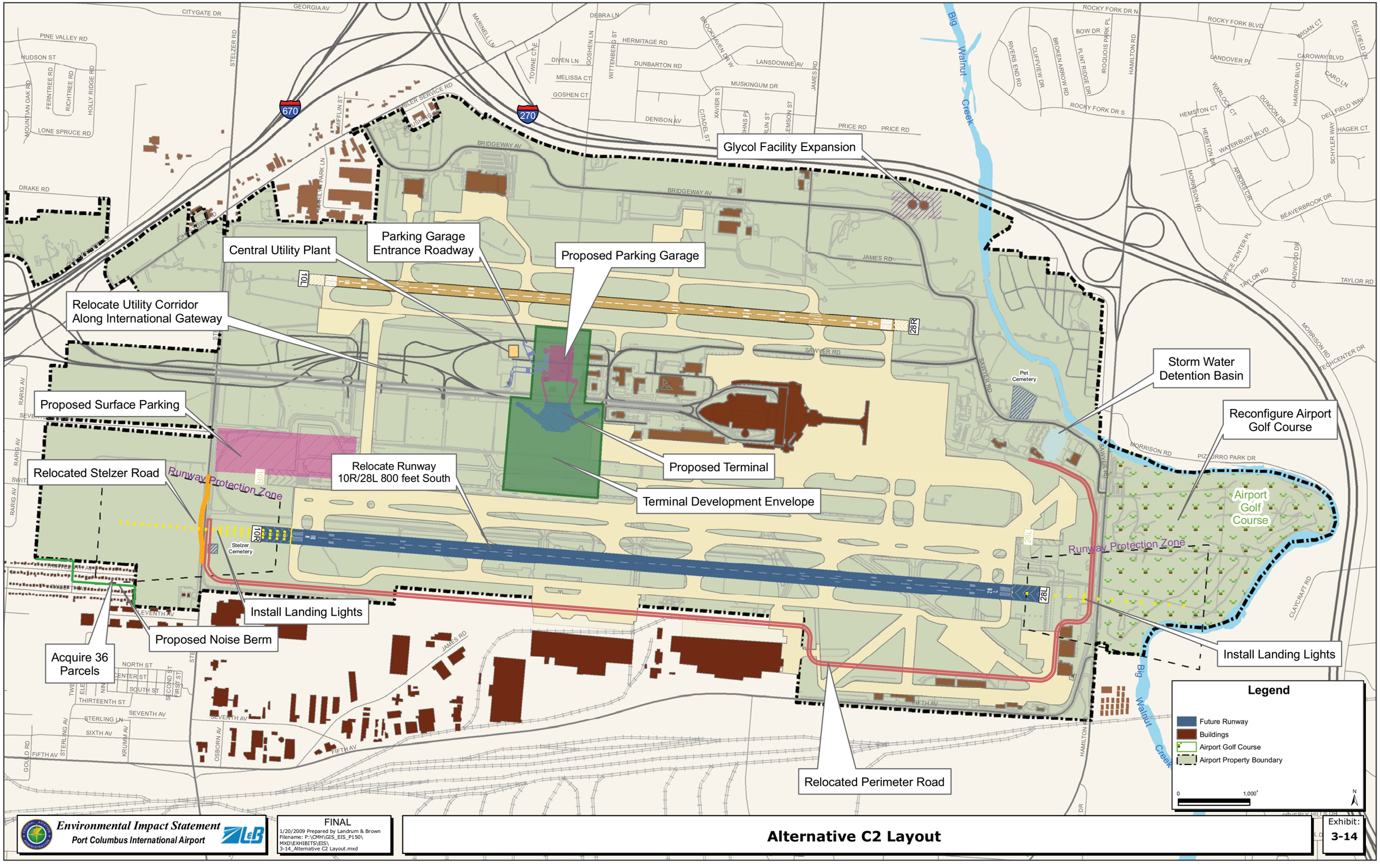

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FINAL
1/20/2009 Prepared by Landrum & Brown
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Alternative C2 Layout

Exhibit: 3-14

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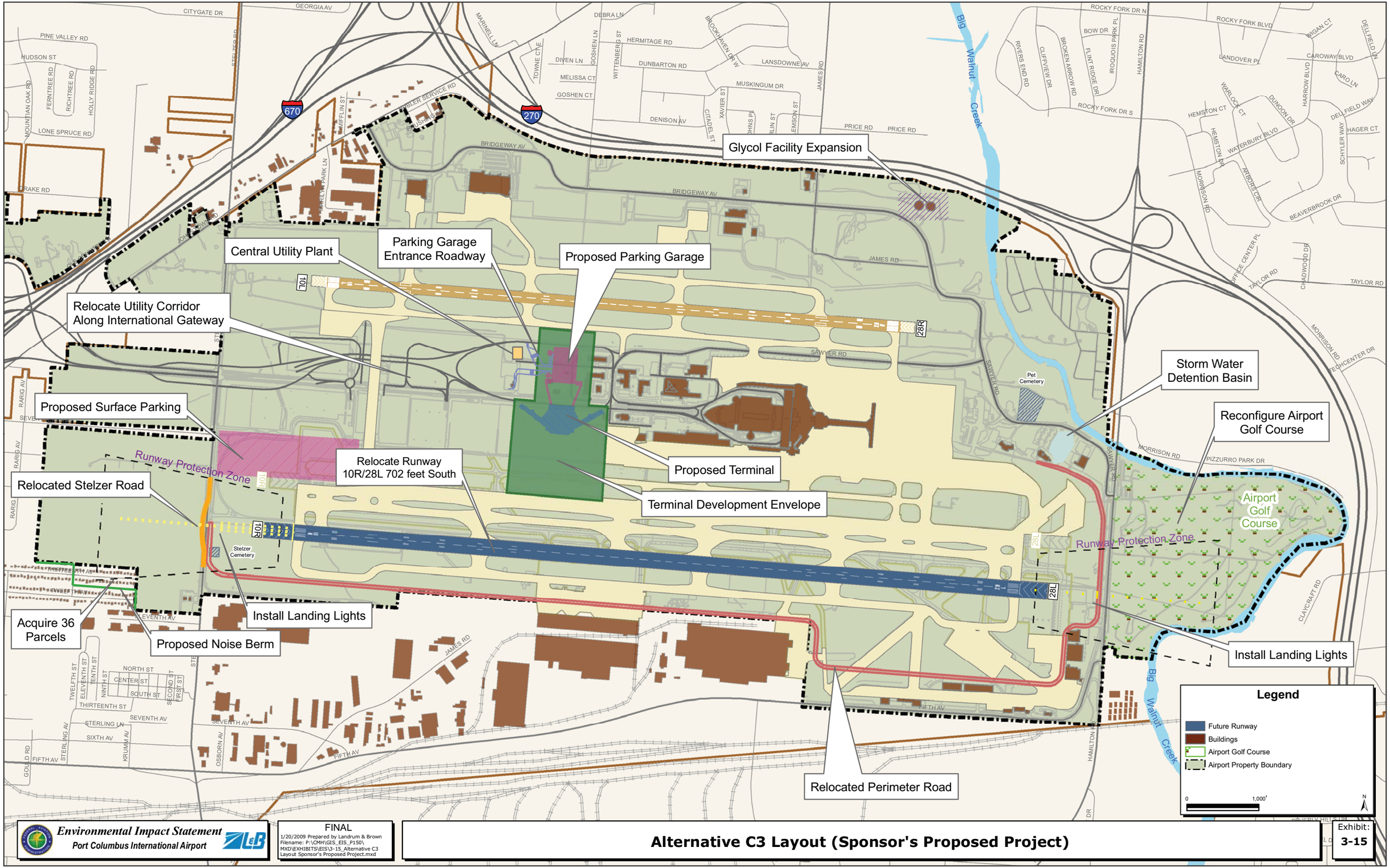

Environmental Impact Statement
Port Columbus International Airport

FINAL
1/20/2009 Prepared by Landrum & Brown
Filename: P:\CMH\GIS_EIS_P150\MXD\EXHIBITS\EIS\3-15_Alternative C3 Layout Sponsor's Proposed Project.mxd

Alternative C3 Layout (Sponsor's Proposed Project)

Exhibit: **3-15**

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