# APPENDIX P
# ANALYSIS OF ACCELERATED SPONSOR'S PROPOSED PROJECT ALTERNATIVE

## P.1 INTRODUCTION

The Columbus Regional Airport Authority (CRAA) has proposed the replacement of Runway 10R/28L, 702 feet to the south, and the construction of a new passenger terminal at Port Columbus International Airport (CMH or Airport). These two projects, along with a number of supporting projects, make up the Sponsor's Proposed Project for this Environmental Impact Statement (EIS). The Sponsor's Proposed Project is referred to as Alternative C3b and is fully defined in Chapter Three, *Alternatives*.

The Sponsor's Proposed Project includes two timeframes for development. The first, 2012, represents the opening year of the replacement Runway 10R/28L. The second, 2018, represents the opening year of the proposed passenger terminal and is based on the need to accommodate passenger levels in excess of 5 million annual enplaned passengers (5 MAEP). Based on the currently approved forecast, the Airport will reach 5 MAEP in 2018.[1] In addition to the base forecast, which was approved by the Federal Aviation Administration (FAA) in January 2007, a high-growth scenario was included in the forecast for informational purposes. The high-growth scenario was developed in response to the volatile airline conditions occurring at the Airport. One of the variables in activity at CMH is the Airport's attractiveness to low-cost carriers, which tends to be a volatile segment of the market, resulting in large increases and decreases in service and passengers in a relatively short amount of time. For example, in the time that it has taken to prepare this EIS, Jet Blue Airlines introduced service and then discontinued service, a new ultra low-cost carrier, Skybus Airlines, initiated service and then stopped service, and most recently AirTran Airlines began operation at CMH.

In response to this growth and growth by other airlines at the Airport, the CRAA has requested that the FAA prepare environmental analysis of a sub-alternative to the Sponsor's Proposed Project that assumes an acceleration of growth at the Airport.[2] As a result, both the replacement Runway 10R/28L and the proposed passenger terminal described in the Sponsor's Proposed Project would be built and become operational in 2012.

The increased passengers and aircraft operations that would create the need to accelerate the development of the proposed passenger terminal would result in different environmental impacts than those described for the Sponsor's Proposed Project (Alternative C3b) in Chapter Five, *Environmental Consequences*. The following sections describe the environmental consequences associated with a No Action and an Accelerated Sponsor's Proposed Project, both with the high-growth

1 *Port Columbus International Airport, Forecast of Activity*, February 2006, Landrum & Brown.
2 Letter from CRAA to FAA dated August 30, 2007.

scenario levels of passengers and aircraft operations that are included in Appendix C, *Aviation Activity Forecast*. The discussion of impacts includes both 2012 conditions as the year in which implementation of the actions would occur, as well as 2018, which represents an out year for purposes of understanding longer term impacts. Because no elements of the project would be implemented in 2018, the discussion of impacts for 2018 is limited to those categories where changes in operating conditions would potentially result in environmental impacts (Noise, Compatible Land Use, and Air Quality).

# P.2 NOISE

## P.2.1 NOISE ANALYSIS AND IMPACT ASSESSMENT – 2012 CONDITIONS

This section provides a summary of the noise analysis of the 2012 conditions for each of the accelerated forecast alternatives. The 2012 Accelerated Alternative A, which includes the high-growth scenario forecast, is compared to the 2012 Accelerated Sponsor's Proposed Project.

### P.2.1.1 2012 Alternative A: No Action (*Accelerated Forecast*)

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Accelerated Alternative A in 2012. The noise exposure and impact assessment prepared for the 2012 Accelerated Alternative A is the baseline against which the 2012 Accelerated Sponsor's Proposed Project alternative is evaluated.

***Runway Definition:*** CMH has two east/west parallel runways (10L/28R and 10R/28L) spaced 2,800 feet apart. Runway 10R/28L is the longest runway on the airfield at 10,125 feet in length and is 150 feet wide. Runway 10L/28R is 8,000 feet long and 150 feet wide. All existing runway ends are equipped with a CAT I Instrument Landing System (ILS). Exhibit 5.1-1 in Chapter Five, *Environmental* Consequences, shows the existing Airport layout.

***Activity Levels and Fleet Mix:*** **Table P.2-1** and **Table P.2-2** provide the operating levels and fleet mix for the 2012 Accelerated Alternative A. The 2012 aircraft operations are based on the high-growth scenario forecast prepared for the 2007 Part 150 Study Update[3] and this EIS. The 2012 Accelerated Alternative A includes 288,600 annual aircraft operations or 790 average-annual day operations, an increase of 46.3 percent from the Existing (2006) Baseline operating levels and an increase of 19.3 percent from the 2012 Alternative A with the base-growth forecast. The primary difference between the high-growth and base-growth forecast is the increase in large jet aircraft in the high-growth forecast to account for the hubbing activity of a low-cost carrier.

[3] 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.

**Table P.2-1**
**AVERAGE DAY OPERATIONS – 2012 ALTERNATIVE A (*Accelerated Forecast)***
**Port Columbus International Airport**

| Aircraft Category | Arrivals | | Departures | | Total | | Grand Total | Percent of Total |
|---|---|---|---|---|---|---|---|---|
| | Day | Night | Day | Night | Day | Night | | |
| Large Jet | 86 | 42 | 92 | 36 | 178 | 78 | 256 | 32% |
| Commuter Jet | 144 | 26 | 141 | 29 | 285 | 55 | 340 | 43% |
| Commuter Prop | 5 | 2 | 5 | 2 | 10 | 4 | 14 | 2% |
| General Aviation Jet | 39 | 6 | 39 | 6 | 78 | 12 | 90 | 11% |
| General Aviation Prop | 41 | 4 | 41 | 4 | 82 | 8 | 90 | 11% |
| **Total** | **315** | **80** | **318** | **77** | **633** | **157** | **790** | **100%** |

Day: 7:00 a.m. to 9:59 p.m.
Night: 10:00 p.m. to 6:59 a.m.
Source: ATCT records, Official Airline Guide (OAG), and Landing Fee Reports, Landrum & Brown, 2007.

**Table P.2-2**
**AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE –**
**2012 ALTERNATIVE A (*Accelerated Forecast)***
**Port Columbus International Airport**

| Aircraft Type | INM Code | Arrivals | | Departures | | Total | |
|---|---|---|---|---|---|---|---|
| | | Day | Night | Day | Night | Day | Night |
| **Large Jet** | | | | | | | |
| Boeing 737-300 | 737300 | 11 | 4 | 12 | 3 | 23 | 7 |
| Boeing 737-300 | 7373B2 | 3 | 0 | 3 | 0 | 6 | 0 |
| Boeing 737-400 | 737400 | 4 | 1 | 5 | 0 | 9 | 1 |
| Boeing 737-500 | 737500 | 3 | 1 | 3 | 1 | 6 | 2 |
| Boeing 737-700 | 737700 | 14 | 3 | 14 | 3 | 28 | 6 |
| Boeing 737-800 | 737800 | 5 | 1 | 6 | 0 | 11 | 1 |
| Boeing 757-300 | 757300 | 1 | 0 | 1 | 0 | 2 | 0 |
| Airbus A319 | A319 | 37 | 27 | 37 | 27 | 74 | 54 |
| Airbus 320 | A320 | 0 | 1 | 1 | 0 | 1 | 1 |
| Airbus 320 | A32023 | 0 | 1 | 1 | 0 | 1 | 1 |
| McDonnell-Douglas DC-9 | DC93LW | 5 | 1 | 5 | 1 | 10 | 2 |
| Military Tanker | KC135R | 1 | 0 | 1 | 0 | 2 | 0 |
| McDonnell-Douglas MD-83 | MD83 | 2 | 2 | 3 | 1 | 5 | 3 |
| ***Subtotal*** | | ***86*** | ***42*** | ***92*** | ***36*** | ***178*** | ***78*** |

**Table P.2-2, *Continued***
**AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE –**
**2012 ALTERNATIVE A (*Accelerated Forecast)***
**Port Columbus International Airport**

| Aircraft Type | INM Code | Arrivals | | Departures | | Total | |
|---|---|---|---|---|---|---|---|
| | | Day | Night | Day | Night | Day | Night |
| **Commuter Jet** | | | | | | | |
| BAe Avro RJ-85 | BAE146 | 1 | 0 | 1 | 0 | 2 | 0 |
| Dessault Falcon 2000 | CL600 | 3 | 0 | 3 | 0 | 6 | 0 |
| Canadair Regional Jet / Embraer ERJ-170 / 190 | CL601 | 43 | 4 | 42 | 5 | 85 | 9 |
| Embraer 135 / 145 | EMB145 | 6 | 0 | 4 | 2 | 10 | 2 |
| Embraer 145 | EMB14L | 62 | 17 | 62 | 17 | 124 | 34 |
| Commuter Jet | GIV | 3 | 0 | 2 | 1 | 5 | 1 |
| Commuter Jet | LEAR25 | 4 | 2 | 6 | 0 | 10 | 2 |
| Cessna Citation / BAE125 Hawker | LEAR35 | 10 | 1 | 10 | 1 | 20 | 2 |
| Cessna 560 | MU3005 | 12 | 2 | 11 | 3 | 23 | 5 |
| ***Subtotal*** | | ***144*** | ***26*** | ***141*** | ***29*** | ***285*** | ***55*** |
| **Commuter Prop** | | | | | | | |
| Beech 1900D | DHC6 | 2 | 1 | 2 | 1 | 4 | 2 |
| Bombardier Dash-8 Series | DHC8 | 1 | 1 | 1 | 1 | 2 | 2 |
| Commuter Turbo Prop | HS748A | 2 | 0 | 2 | 0 | 4 | 0 |
| ***Subtotal*** | | ***5*** | ***2*** | ***5*** | ***2*** | ***10*** | ***4*** |
| **General Aviation Jet** | | | | | | | |
| Business Jet | CIT3 | 3 | 0 | 3 | 0 | 6 | 0 |
| Business Jet | CL600 | 5 | 2 | 5 | 2 | 10 | 4 |
| Business Jet | CNA500 | 1 | 1 | 2 | 0 | 3 | 1 |
| Business Jet | FAL20 | 2 | 0 | 2 | 0 | 4 | 0 |
| Business Jet | GIIB | 2 | 0 | 2 | 0 | 4 | 0 |
| Business Jet | GIV | 3 | 0 | 2 | 1 | 5 | 1 |
| Business Jet | LEAR25 | 10 | 0 | 9 | 1 | 19 | 1 |
| Business Jet | LEAR35 | 6 | 3 | 7 | 2 | 13 | 5 |
| Business Jet | MU3001 | 7 | 0 | 7 | 0 | 14 | 0 |
| ***Subtotal*** | | ***39*** | ***6*** | ***39*** | ***6*** | ***78*** | ***12*** |
| **General Aviation Prop** | | | | | | | |
| Twin-Engine Prop | BEC58P | 11 | 2 | 11 | 2 | 22 | 4 |
| Twin-Engine Turbo Prop | CNA441 | 3 | 0 | 3 | 0 | 6 | 0 |
| Single-Engine Prop | GASEPF | 15 | 2 | 15 | 2 | 30 | 4 |
| Single-Engine Prop | GASEPV | 9 | 0 | 9 | 0 | 18 | 0 |
| Single-Engine Prop | PA28 | 2 | 0 | 2 | 0 | 4 | 0 |
| Twin-Engine Prop | PA31 | 1 | 0 | 1 | 0 | 2 | 0 |
| ***Subtotal*** | | ***41*** | ***4*** | ***41*** | ***4*** | 82 | 8 |
| **Grand Total** | | **315** | **80** | **318** | **77** | **633** | **157** |

Day: 7:00 a.m. to 9:59 p.m.

Night: 10:00 p.m. to 6:59 a.m.

Source: Landing Fee Reports, ATCT records, ANOMS data, Landrum & Brown, 2007.

***Runway End Utilization:*** Average-annual runway end utilization for the 2012 Accelerated Alternative A was derived from analysis of Aircraft Noise Operations Monitoring System (ANOMS) data from 2005 through 2007 with modifications to account for operational conditions expected in 2012.

It was observed that during the Day, the Airport is operated in one of two operating configurations — west flow (approximately 75 percent of the time) or east flow (approximately 25 percent of the time). West flow is the more dominant flow due to the prevailing southwest winds. This ratio of east-west flow would be expected to continue under the 2012 Accelerated Alternative A. However, by not reconstructing the south runway (Runway 10R/28L), it is expected that increasing periodic closure for maintenance would be required, thus necessitating more usage of the north runway than was seen in the Existing (2006) Baseline. In general, it was assumed that the north runway would experience six percent additional use due to the increased periodic closures. The runway use modeled for the 2012 Accelerated Alternative A is shown in **Table P.2-3**

***Flight Tracks:*** A flight track is the path over the ground as an aircraft flies to or from the Airport. ANOMS radar data was gathered for the period from May 2005 through April 2006 and analyzed to verify the location, density, and width of existing flight corridors. Consolidated flight tracks were developed from this radar data and used in the INM to model the flight corridors present around the Airport. The flight tracks developed for the 2012 Alternative A, described in Chapter Five, Section 5.1, *Noise*, and in Appendix D, *Noise*, would be the same for the 2012 Accelerated Alternative A.

*Noise Exposure Contour:* The 2012 Accelerated Alternative A noise exposure contour for 60, 65, 70, and 75 DNL levels are graphically depicted on **Exhibit P.2-1, *2012 Accelerated Alternative A Noise Exposure Contour.***

A DNL noise contour does not represent the noise levels present on any specific day, but rather represents the energy-average of all 365 days of operation during the year. Noise contour patterns extend from an airport along each extended runway centerline, reflective of the flight tracks used by all aircraft. The relative distance of a contour from the airport along each route is a function of the frequency of use of each runway end for total arrivals and departures, as well as its use at night, and the type of aircraft flying each route.

The size and shape of the noise contours for CMH are a function of the combination of flight tracks and runway use. As modeled for the 2012 Accelerated Alternative A, 75 percent of operations were in west flow (arriving to and departing from Runways 28L/28R) and 25 percent of the operations were in east flow (arriving to and departing from Runways 10L/10R). As a result, the 2012 Alternative A noise contour is longer and wider to the west of the Airport than to the east. **Table P.2-4** provides the total area within the 2012 Accelerated Alternative A noise contours.

**Table P.2-3**
**RUNWAY END UTILIZATION – 2012 ALTERNATIVE A (*Accelerated Forecast)***
**Port Columbus International Airport**

| **Day Arrivals** | | | | |
|---|---|---|---|---|
| **Aircraft Category** | **10L** | **10R** | **28L** | **28R** |
| Large Jet | 11.4 | 13.6 | 44.9 | 30.1 |
| Commuter Jet | 18.8 | 4.3 | 19.4 | 57.5 |
| Commuter Prop | 15.8 | 8.3 | 27.5 | 48.4 |
| General Aviation Jet | 8.0 | 14.5 | 53.8 | 23.7 |
| General Aviation Prop | 8.7 | 14.6 | 51.3 | 25.4 |
| **Night Arrivals** | | | | |
| **Aircraft Category** | **10L** | **10R** | **28L** | **28R** |
| Large Jet | 13.2 | 37.3 | 35.5 | 14.0 |
| Commuter Jet | 27.8 | 6.6 | 17.2 | 48.4 |
| Commuter Prop | 17.6 | 25.0 | 30.2 | 27.2 |
| General Aviation Jet | 9.2 | 22.6 | 46.2 | 22.0 |
| General Aviation Prop | 15.0 | 34.1 | 28.9 | 22.0 |
| **Day Departures** | | | | |
| **Aircraft Category** | **10L** | **10R** | **28L** | **28R** |
| Large Jet | 8.5 | 13.2 | 50.1 | 28.2 |
| Commuter Jet | 16.5 | 5.4 | 25.6 | 52.5 |
| Commuter Prop | 15.6 | 8.7 | 30.8 | 44.9 |
| General Aviation Jet | 7.4 | 13.8 | 56.1 | 22.7 |
| General Aviation Prop | 8.9 | 14.6 | 51.5 | 25.0 |
| **Night Departures** | | | | |
| **Aircraft Category** | **10L** | **10R** | **28L** | **28R** |
| Large Jet | 7.6 | 10.3 | 52.3 | 29.8 |
| Commuter Jet | 12.5 | 8.4 | 18.3 | 60.8 |
| Commuter Prop | 7.6 | 17.6 | 40.1 | 34.7 |
| General Aviation Jet | 7.3 | 16.8 | 54.7 | 21.2 |
| General Aviation Prop | 7.3 | 20.3 | 43.0 | 29.4 |

Day: 7:00 a.m. – 9:59 p.m.
Night: 10:00 p.m. – 6:59 a.m.
Source: 2005, 2006, 2007 ANOMS data, Landrum & Brown, 2007.

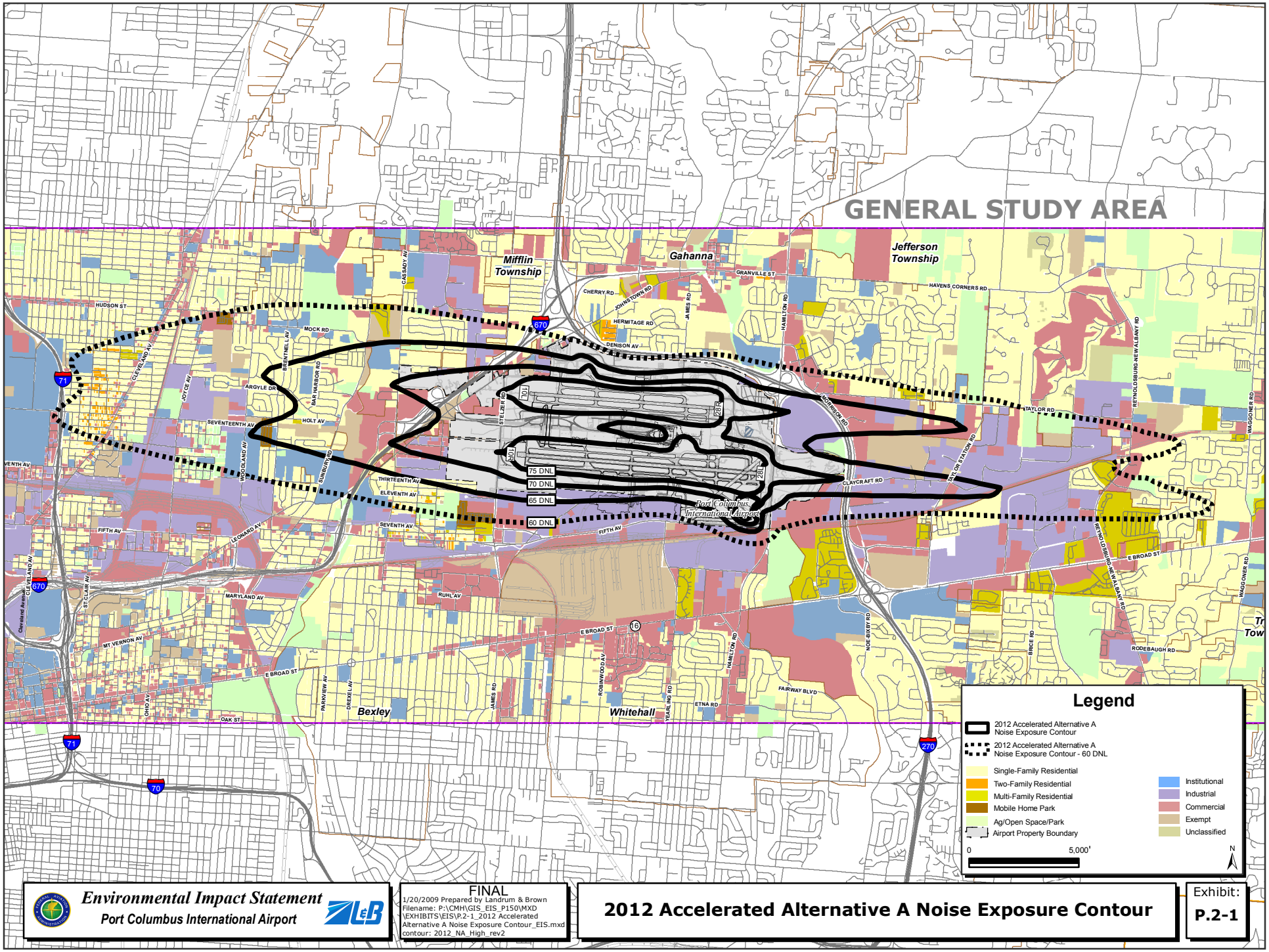
GENERAL STUDY AREA
Mifflin Township
Gahanna
Jefferson Township
Bexley
Whitehall
Port Columbus International Airport
75 DNL
70 DNL
65 DNL
60 DNL
Legend
2012 Accelerated Alternative A Noise Exposure Contour
2012 Accelerated Alternative A Noise Exposure Contour - 60 DNL
Single-Family Residential
Two-Family Residential
Multi-Family Residential
Mobile Home Park
Ag/Open Space/Park
Airport Property Boundary
Institutional
Industrial
Commercial
Exempt
Unclassified
0
5,000'
N
Environmental Impact Statement
Port Columbus International Airport
FINAL
1/20/2009 Prepared by Landrum & Brown
Filename: P:\CMH\GIS_EIS_P150\MXD\EXHIBITS\EIS\P.2-1_2012 Accelerated Alternative A Noise Exposure Contour_EIS.mxd
contour: 2012_NA_High_rev2
2012 Accelerated Alternative A Noise Exposure Contour
Exhibit:
P.2-1

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**Table P.2-4**
**COMPARISON OF AREAS WITHIN THE NOISE EXPOSURE CONTOUR (IN SQUARE MILES) 2012 ALTERNATIVE A (*Accelerated Forecast)***
**Port Columbus International Airport**

| CONTOUR RANGE | 2012 ACCELERATED ALTERNATIVE A |
|---|---|
| 60-65 DNL | 6.5 |
| 65-70 DNL | 3.1 |
| 70-75 DNL | 1.6 |
| 75 + DNL | 1.2 |
| 65 + DNL | 5.9 |

Contour: 2012_NA_High_rev2.
Source: Landrum & Brown, 2007.

***Land Use Impact Assessment:*** The 65 DNL noise contour for the 2012 Accelerated Alternative A, encompasses 5.9 square miles of land. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours are included in Section P.3, *Compatible Land Use,* of this appendix.

### P.2.1.2 2012 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under the 2012 Accelerated Sponsor's Proposed Project.

***Runway Definition:*** The Accelerated Sponsor's Proposed Project includes the relocation of Runway 10R/28L 702 feet to the south. The proposed relocated runway would be 10,113 feet and would be separated from the north runway by 3,502 feet. For discussion purposes in this document, the proposed relocated runway will be referred to as Runway 10X/28X. Exhibit 5.1-7 in Chapter Five, *Environmental Consequences*, graphically depicts the Airport layout proposed under the Accelerated Sponsor's Proposed Project. In addition to the runway relocation, the first phase of the proposed passenger terminal would be constructed.

***Activity Levels and Fleet Mix:*** The operating levels and fleet mix discussed for the 2012 Accelerated Alternative A and shown on Tables P.1-1 and P.1-2 would remain the same for the 2012 Accelerated Sponsor's Proposed Project.

***Runway End Utilization:*** It is anticipated that first phase of the proposed passenger terminal will be in operation by 2012 under the Accelerated Sponsor's Proposed Project. The location of this new terminal is expected to impact runway use. The new terminal will be more centrally located on the airfield, located farther south than the existing terminal. Therefore aircraft operating from the new

terminal would likely use the south runway more often than the north runway. **Table P.2-5,** summarizes runway use percentages modeled for the 2012 Accelerated Sponsor's Proposed Project.

**Table P.2-5**
**RUNWAY END UTILIZATION – 2012 ACCELERATED SPONSOR'S PROPOSED PROJECT**
**Port Columbus International Airport**

| **Day Arrivals** | | | | |
|---|---|---|---|---|
| **Aircraft Category** | **10L** | **10X** | **28R** | **28X** |
| Large Jet | 4.6 | 29.6 | 11.4 | 54.4 |
| Commuter Jet | 14.8 | 19.2 | 35.9 | 30.1 |
| Commuter Prop | 10.6 | 23.8 | 27.8 | 37.8 |
| General Aviation Jet | 6.7 | 23.3 | 18.7 | 51.3 |
| General Aviation Prop | 7.3 | 22.7 | 20.4 | 49.6 |
| **Night Arrivals** | | | | |
| **Aircraft Category** | **10L** | **10X** | **28R** | **28X** |
| Large Jet | 1.0 | 50.0 | 1.0 | 48.0 |
| Commuter Jet | 18.0 | 19.3 | 32.8 | 29.9 |
| Commuter Prop | 7.3 | 37.7 | 12.1 | 42.9 |
| General Aviation Jet | 6.2 | 25.6 | 19.0 | 49.2 |
| General Aviation Prop | 12.0 | 37.1 | 19.0 | 31.9 |
| **Day Departures** | | | | |
| **Aircraft Category** | **10L** | **10X** | **28R** | **28X** |
| Large Jet | 2.7 | 32.1 | 8.0 | 57.2 |
| Commuter Jet | 12.8 | 21.2 | 30.7 | 35.3 |
| Commuter Prop | 10.0 | 24.1 | 24.9 | 41.0 |
| General Aviation Jet | 6.2 | 23.8 | 17.5 | 52.5 |
| General Aviation Prop | 7.5 | 22.5 | 20.1 | 49.9 |
| **Night Departures** | | | | |
| **Aircraft Category** | **10L** | **10X** | **28R** | **28X** |
| Large Jet | 2.8 | 32.0 | 8.4 | 56.8 |
| Commuter Jet | 9.5 | 26.1 | 35.9 | 28.5 |
| Commuter Prop | 2.5 | 34.2 | 13.3 | 50.0 |
| General Aviation Jet | 5.4 | 24.6 | 16.8 | 53.2 |
| General Aviation Prop | 4.7 | 25.3 | 25.5 | 44.5 |

Day: 7:00 a.m. – 9:59 p.m.
Night: 10:00 p.m. – 6:59 a.m.
Note: 10X/28X denotes the proposed relocated Runway 10R/28L.
Source: 2005, 2006, 2007 ANOMS data, Landrum & Brown, 2007.

***Flight Tracks:*** The acceleration of the forecast would not modify the flight tracks described for 2012 Alternative C3a and C3b, which is described in Chapter Five, Section 5.1, *Noise*, and in Appendix D.

***Noise Exposure Contour:*** The 2012 Accelerated Sponsor's Proposed Project noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit P.2-2**, ***2012 Accelerated Sponsor's Proposed Project Noise Exposure Contour.***

The 2012 Accelerated Sponsor's Proposed Project noise contour is larger than the 2012 Accelerated Alternative A noise contour due to the proposed relocation of Runway 10R/28L. The proposed relocated runway would shift aircraft operations farther south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by approximately 702 feet. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contour. **Table P.2-6** provides a comparison of the areas within the 2012 Accelerated Alternative A and the 2012 Accelerated Sponsor's Proposed Project noise contours.

**Table P.2-6**
**COMPARISON OF AREAS WITHIN THE 2012 ACCELERATED SPONSOR'S PROPOSED PROJECT AND THE 2012 ACCELERATED ALTERNATIVE A NOISE EXPOSURE CONTOUR**
**(IN SQUARE MILES)**
**Port Columbus International Airport**

| CONTOUR RANGE | 2012 ACCELERATED ALTERNATIVE A | 2012 ACCELERATED SPONSOR'S PROPOSED PROJECT | DIFFERENCE |
|---|---|---|---|
| 60-65 DNL | 6.5 | 6.7 | 0.2 |
| 65-70 DNL | 3.1 | 3.5 | 0.5 |
| 70-75 DNL | 1.6 | 1.3 | -0.3 |
| 75 + DNL | 1.2 | 1.1 | -0.1 |
| 65 + DNL | 5.8 | 6.0 | 0.2 |

Note: difference between areas may not equal subtracted value due to rounding.
Contours: 2012_NA_High_rev2/ 2012_Accelerate_Terminal
Source: Landrum & Brown, 2007.

*Land Use Impact Assessment:* The 65 DNL noise contour for the 2012 Accelerated Sponsor's Proposed Project, encompasses 6.0 square miles of land, an increase of 0.2 square miles compared to the 65 DNL of the 2012 Accelerated Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours are included in Section P.3, *Compatible Land Use,* of this appendix.

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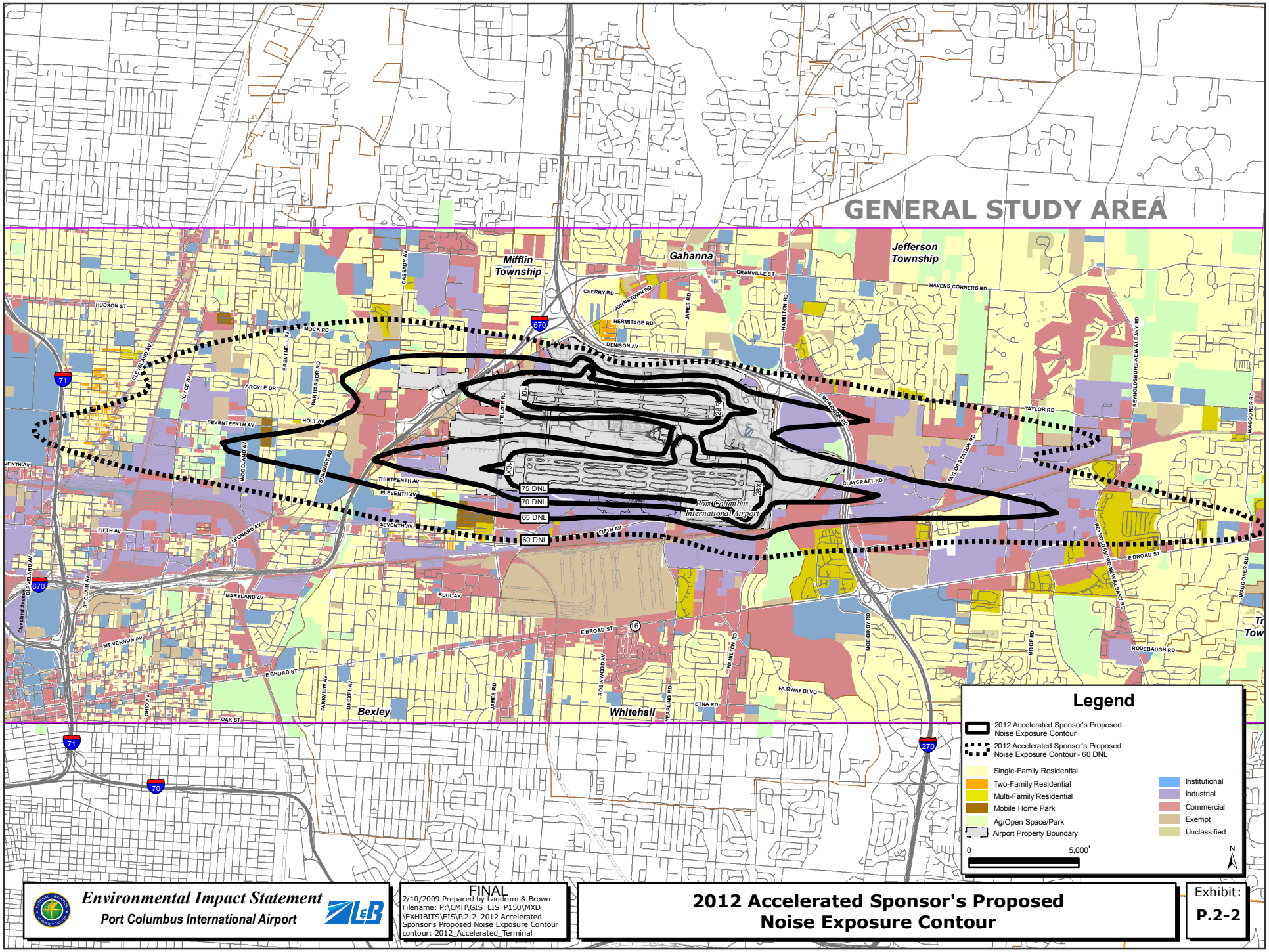


Environmental Impact Statement
Port Columbus International Airport

FINAL
2/10/2009 Prepared by Landrum & Brown
Filename: P:\CMH\GIS_EIS_P150\MXD\EXHIBITS\EIS\P.2-2_2012 Accelerated Sponsor's Proposed Noise Exposure Contour contour: 2012_Accelerated_Terminal

# 2012 Accelerated Sponsor's Proposed Noise Exposure Contour

Exhibit: P.2-2

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## P.2.2 NOISE ANALYSIS AND IMPACT ASSESSMENT – 2018 CONDITIONS

This section provides a summary of the noise analysis of the 2018 conditions for each of the accelerated forecast alternatives. The 2018 Accelerated Alternative A, which includes the high-growth scenario forecast, is compared to the 2018 Accelerated Sponsor's Proposed Project.

### P.2.2.1 2018 Alternative A: No Action (*Accelerated Forecast*)

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Accelerated Alternative A in 2018. The noise exposure and impact assessment prepared for the 2018 Accelerated Alternative A is the baseline against which the 2018 Accelerated Sponsor's Proposed Project alternative is evaluated.

***Runway Definition:*** The runway definition discussed for 2012 Accelerated Alternative A would remain the same for the 2018 Accelerated Alternative A.

***Activity Levels and Fleet Mix:*** **Table P.2-7** and **Table P.2-8** provide the operating levels and fleet mix for the 2018 Accelerated Alternative A. The 2018 aircraft operations are based on the high-growth scenario forecast prepared for the 2007 Part 150 Study Update and this EIS. The 2018 Accelerated Alternative A includes 318,250 annual aircraft operations or 872 average-annual day operations, an increase of 10.4 percent from the 2012 Accelerated Alternative A operating levels and an increase of 17.2 percent from the 2018 Alternative A with the base-growth forecast. The primary difference between the high-growth and base-growth forecast is the increase in large jet aircraft in the high-growth forecast to account for the hubbing activity of a low-cost carrier.

**Table P.2-7**
**AVERAGE DAY OPERATIONS – 2018 ALTERNATIVE A (*Accelerated Forecast*)**
**Port Columbus International Airport**

| Aircraft Category | Arrivals | | Departures | | Total | | Grand Total | Percent of Total |
|---|---|---|---|---|---|---|---|---|
| | Day | Night | Day | Night | Day | Night | | |
| Large Jet | 92 | 43 | 96 | 39 | 188 | 82 | 270 | 31% |
| Commuter Jet | 174 | 33 | 173 | 34 | 347 | 67 | 414 | 47% |
| Commuter Prop | 2 | 0 | 2 | 0 | 4 | 0 | 4 | less than 1% |
| General Aviation Jet | 39 | 8 | 40 | 7 | 79 | 15 | 94 | 11% |
| General Aviation Prop | 40 | 5 | 41 | 4 | 81 | 9 | 90 | 10% |
| **Total** | **347** | **89** | **352** | **84** | **699** | **173** | **872** | **100%** |

Day: 7:00 a.m. to 9:59 p.m.
Night: 10:00 p.m. to 6:59 a.m.
Source: ATCT records, Official Airline Guide (OAG), and Landing Fee Reports, Landrum & Brown, 2007.

**Table P.2-8**
**AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE –**
**2018 ALTERNATIVE A (*Accelerated Forecast)***
**Port Columbus International Airport**

| Aircraft Type | INM Code | Arrivals | | Departures | | Total | |
|---|---|---|---|---|---|---|---|
| | | Day | Night | Day | Night | Day | Night |
| **Large Jet** | | | | | | | |
| Boeing 737-300 | 737300 | 16 | 6 | 18 | 4 | 34 | 10 |
| Boeing 737-400 | 737400 | 2 | 0 | 2 | 0 | 4 | 0 |
| Boeing 737-500 | 737500 | 2 | 1 | 2 | 1 | 4 | 2 |
| Boeing 737-700 | 737700 | 21 | 3 | 18 | 6 | 39 | 9 |
| Boeing 737-800 | 737800 | 6 | 1 | 7 | 0 | 13 | 1 |
| Boeing 757-300 | 757300 | 1 | 0 | 1 | 0 | 2 | 0 |
| Boeing 737-300 | 7373B2 | 3 | 1 | 4 | 0 | 7 | 1 |
| Boeing 757-200 | 757PW | 1 | 1 | 2 | 0 | 3 | 1 |
| Airbus A319 | A319 | 37 | 27 | 37 | 27 | 74 | 54 |
| Airbus 320 | A320 | 0 | 1 | 1 | 0 | 1 | 1 |
| McDonnell-Douglas DC-9 | DC93LW | 1 | 1 | 2 | 0 | 3 | 1 |
| Military Tanker | KC135R | 1 | 0 | 1 | 0 | 2 | 0 |
| McDonnell-Douglas MD-83 | MD83 | 1 | 1 | 1 | 1 | 2 | 2 |
| ***Subtotal*** | | ***92*** | ***43*** | ***96*** | ***39*** | ***188*** | ***82*** |
| **Commuter Jet** | | | | | | | |
| Dessault Falcon 2000 | CL600 | 3 | 1 | 3 | 1 | 6 | 2 |
| Canadair Regional Jet / Embraer ERJ-170 / 190 | CL601 | 71 | 6 | 68 | 9 | 139 | 15 |
| Embraer 135 / 145 | EMB145 | 7 | 2 | 7 | 2 | 14 | 4 |
| Embraer 145 | EMB14L | 58 | 14 | 56 | 16 | 114 | 30 |
| Commuter Jet | GIV | 3 | 1 | 2 | 2 | 5 | 3 |
| Commuter Jet | LEAR25 | 5 | 2 | 7 | 0 | 12 | 2 |
| Business Jet | CIT3 | 3 | 1 | 4 | 0 | 7 | 1 |
| Cessna Citation / BAE125 Hawker | LEAR35 | 12 | 1 | 12 | 1 | 24 | 2 |
| Cessna 560 | MU3001 | 12 | 5 | 14 | 3 | 26 | 8 |
| ***Subtotal*** | | ***174*** | ***33*** | ***173*** | ***34*** | ***347*** | ***67*** |
| **Commuter Prop** | | | | | | | |
| Commuter Turbo Prop | HS748A | *2* | *0* | *2* | *0* | *4* | *0* |
| ***Subtotal*** | | ***2*** | ***0*** | ***2*** | ***0*** | ***4*** | ***0*** |
| **General Aviation Jet** | | | | | | | |
| Business Jet | CL600 | 5 | 3 | 5 | 3 | 10 | 6 |
| Business Jet | CNA500 | 1 | 1 | 2 | 0 | *3* | *1* |
| Business Jet | FAL20 | 2 | 0 | 2 | 0 | 4 | 0 |
| Business Jet | GIIB | 2 | 0 | 2 | 0 | 4 | 0 |
| Business Jet | GIV | 3 | 1 | 3 | 1 | 6 | 2 |
| Business Jet | LEAR25 | 11 | 0 | 10 | 1 | 21 | 1 |
| Business Jet | LEAR35 | 7 | 3 | 8 | 2 | 15 | 5 |
| Business Jet | MU3001 | 8 | 0 | 8 | 0 | 16 | 0 |
| ***Subtotal*** | | ***39*** | ***8*** | ***40*** | ***7*** | ***79*** | ***15*** |

**Table P.2-8, *Continued***
**AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE –**
**2018 ALTERNATIVE A (*Accelerated Forecast)***
**Port Columbus International Airport**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **General Aviation Prop** | | | | | | | |
| Twin-Engine Prop | BEC58P | 10 | 2 | 10 | 2 | 20 | 4 |
| Twin-Engine Turbo Prop | CNA441 | 3 | 0 | 3 | 0 | 6 | 0 |
| Twin-Engine Turbo Prop | DHC6 | 3 | 1 | 3 | 1 | 6 | 2 |
| Single-Engine Prop | GASEPF | 14 | 2 | 15 | 1 | 29 | 3 |
| Single-Engine Prop | GASEPV | 7 | 0 | 7 | 0 | 14 | 0 |
| Single-Engine Prop | PA28 | 2 | 0 | 2 | 0 | *4* | *0* |
| Twin-Engine Prop | PA31 | 1 | 0 | 1 | 0 | 2 | 0 |
| ***Subtotal*** | | ***40*** | ***5*** | ***41*** | ***4*** | ***81*** | ***9*** |
| **Grand Total** | | **347** | **89** | **352** | **84** | **99** | **173** |

Day: 7:00 a.m. to 9:59 p.m.
Night: 10:00 p.m. to 6:59 a.m.
Source: Landing Fee Reports, ATCT records, ANOMS data, Landrum & Brown, 2007.

***Runway End Utilization:*** Average-annual runway end utilization for the 2012 Accelerated Alternative A was derived from analysis of Aircraft Noise Operations Monitoring System (ANOMS) data from 2005 through 2007 with modifications to account for operational conditions expected in 2018. The runway use modeled for the 2018 Accelerated Alternative A is shown in **Table P.2-9**

***Flight Tracks:*** A flight track is the path over the ground as an aircraft flies to or from the Airport. ANOMS radar data was gathered for the period from May 2005 through April 2006 and analyzed to verify the location, density, and width of existing flight corridors. Consolidated flight tracks were developed from this radar data and used in the INM to model the flight corridors present around the Airport. The flight tracks developed for the 2012 Alternative A, described in Chapter Five, Section 5.1, *Noise*, and in Appendix D would be the same for the 2018 Accelerated Alternative A.

***Noise Exposure Contour:*** The 2018 Accelerated Alternative A noise exposure contour for 60, 65, 70, and 75 DNL levels are graphically depicted on **Exhibit P.2-3**, ***2018 Accelerated Alternative A Noise Exposure Contour.*** **Table P.2-10** provides the total area within the 2018 Accelerated Alternative A noise contours.

***Land Use Impact Assessment:*** The 65 DNL noise contour for the 2018 Accelerated Alternative A, encompasses 6.1 square miles of land. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours are included in Section P.3, *Compatible Land Use,* of this appendix.

**Table P.2-9**
**RUNWAY END UTILIZATION – 2018 ALTERNATIVE A (*Accelerated Forecast)***
**Port Columbus International Airport**

| Day Arrivals | | | | |
|---|---|---|---|---|
| **Aircraft Category** | **10L** | **10R** | **28L** | **28R** |
| Large Jet | 11.4 | 13.6 | 44.9 | 30.1 |
| Commuter Jet | 18.8 | 4.3 | 19.4 | 57.5 |
| Commuter Prop | 15.8 | 8.3 | 27.5 | 48.4 |
| General Aviation Jet | 8.0 | 14.5 | 53.8 | 23.7 |
| General Aviation Prop | 8.7 | 14.6 | 51.3 | 25.4 |
| **Night Arrivals** | | | | |
| **Aircraft Category** | **10L** | **10R** | **28L** | **28R** |
| Large Jet | 13.2 | 37.3 | 35.5 | 14.0 |
| Commuter Jet | 27.8 | 6.6 | 17.2 | 48.4 |
| Commuter Prop | 17.6 | 25.0 | 30.2 | 27.2 |
| General Aviation Jet | 9.2 | 22.6 | 46.2 | 22.0 |
| General Aviation Prop | 15.0 | 34.1 | 28.9 | 22.0 |
| **Day Departures** | | | | |
| **Aircraft Category** | **10L** | **10R** | **28L** | **28R** |
| Large Jet | 8.5 | 13.2 | 50.1 | 28.2 |
| Commuter Jet | 16.5 | 5.4 | 25.6 | 52.5 |
| Commuter Prop | 15.6 | 8.7 | 30.8 | 44.9 |
| General Aviation Jet | 7.4 | 13.8 | 56.1 | 22.7 |
| General Aviation Prop | 8.9 | 14.6 | 51.5 | 25.0 |
| **Night Departures** | | | | |
| **Aircraft Category** | **10L** | **10R** | **28L** | **28R** |
| Large Jet | 7.6 | 10.3 | 52.3 | 29.8 |
| Commuter Jet | 12.5 | 8.4 | 18.3 | 60.8 |
| Commuter Prop | 7.6 | 17.6 | 40.1 | 34.7 |
| General Aviation Jet | 7.3 | 16.8 | 54.7 | 21.2 |
| General Aviation Prop | 7.3 | 20.3 | 43.0 | 29.4 |

Day = 7:00 a.m. – 9:59 p.m.
Night = 10:00 p.m. – 6:59 a.m.

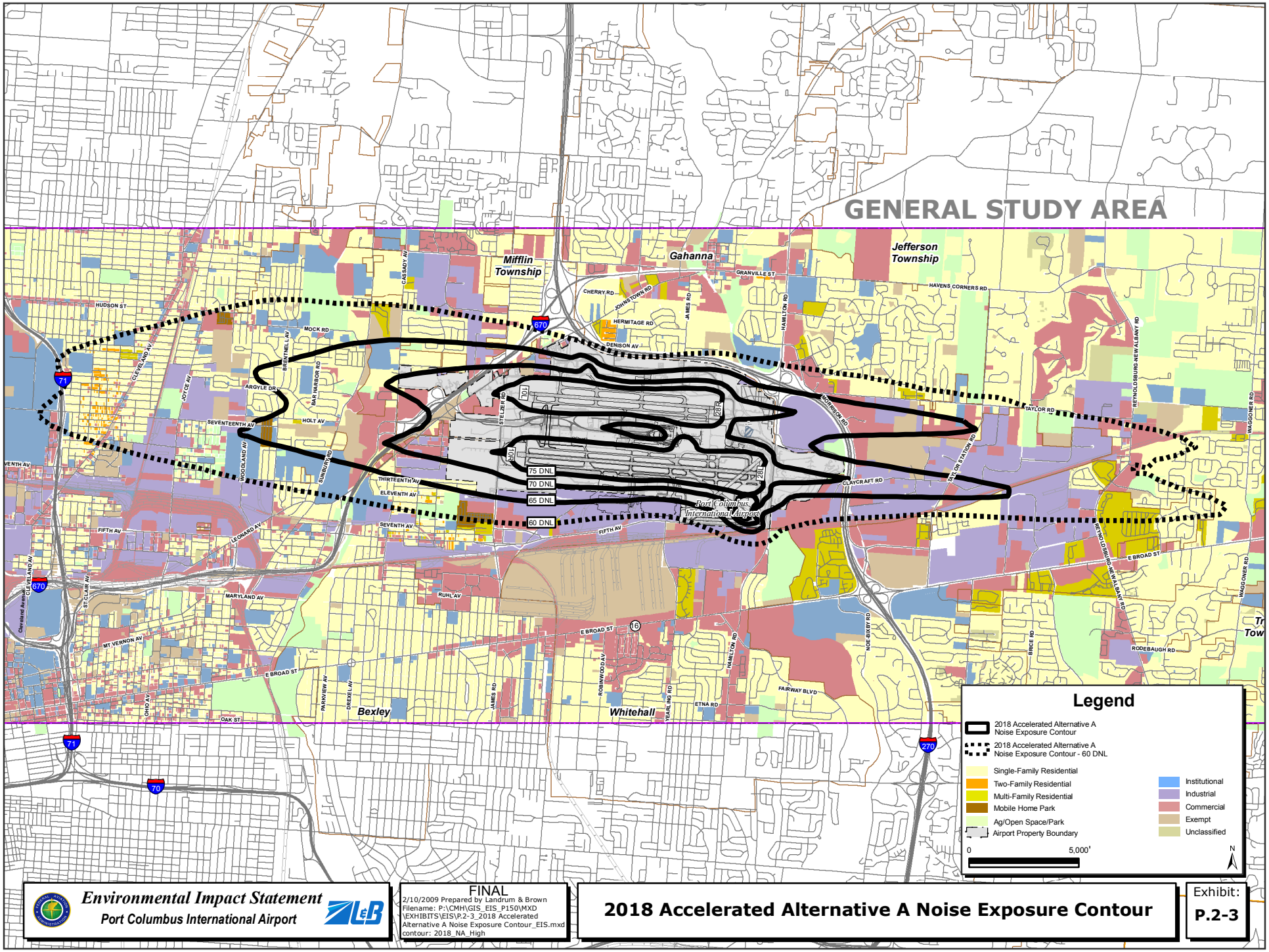
Source: 2005, 2006, 2007 ANOMS data, Landrum & Brown, 2007.

**Table P.2-10**
**COMPARISON OF AREAS WITHIN THE NOISE EXPOSURE CONTOUR (IN SQUARE MILES) 2018 ALTERNATIVE A (*Accelerated Forecast)***
**Port Columbus International Airport**

| CONTOUR RANGE | 2012 ACCELERATED ALTERNATIVE A |
|---|---|
| 60-65 DNL | 6.8 |
| 65-70 DNL | 3.2 |
| 70-75 DNL | 1.7 |
| 75 + DNL | 1.2 |
| 65 + DNL | 6.1 |

Contour: 2018_NA_High.

Source: Landrum & Brown, 2007.

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*Port Columbus International Airport*

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contour: 2018_NA_High

**2018 Accelerated Alternative A Noise Exposure Contour**

Exhibit: **P.2-3**

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### P.2.2.2 2018 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

This section provides a summary of the INM input data, the resulting noise exposure pattern, and the disclosure of the potential noise impacts resulting from the operation of the Airport under the 2018 Accelerated Sponsor's Proposed Project.

***Runway Definition:*** The 2018 Accelerated Sponsor's Proposed Project represents a condition that is six years beyond the implementation of the relocation of Runway 10R/28L 702 feet to the south and the opening of the first phase of the passenger terminal.

***Activity Levels and Fleet Mix:*** The operating levels and fleet mix discussed for the 2018 Accelerated Alternative A and shown on Tables P.2-7 and P.2-8 would remain the same for the 2018 Accelerated Sponsor's Proposed Project.

***Runway End Utilization:*** **Table P.2-11,** summarizes runway use percentages modeled for the 2018 Accelerated Sponsor's Proposed Project.

***Flight Tracks:*** The acceleration of the forecast would not modify the flight tracks described for 2012 Alternative C3a and C3b, which is described in Chapter Five, Section 5.1, *Noise*, and in Appendix D.

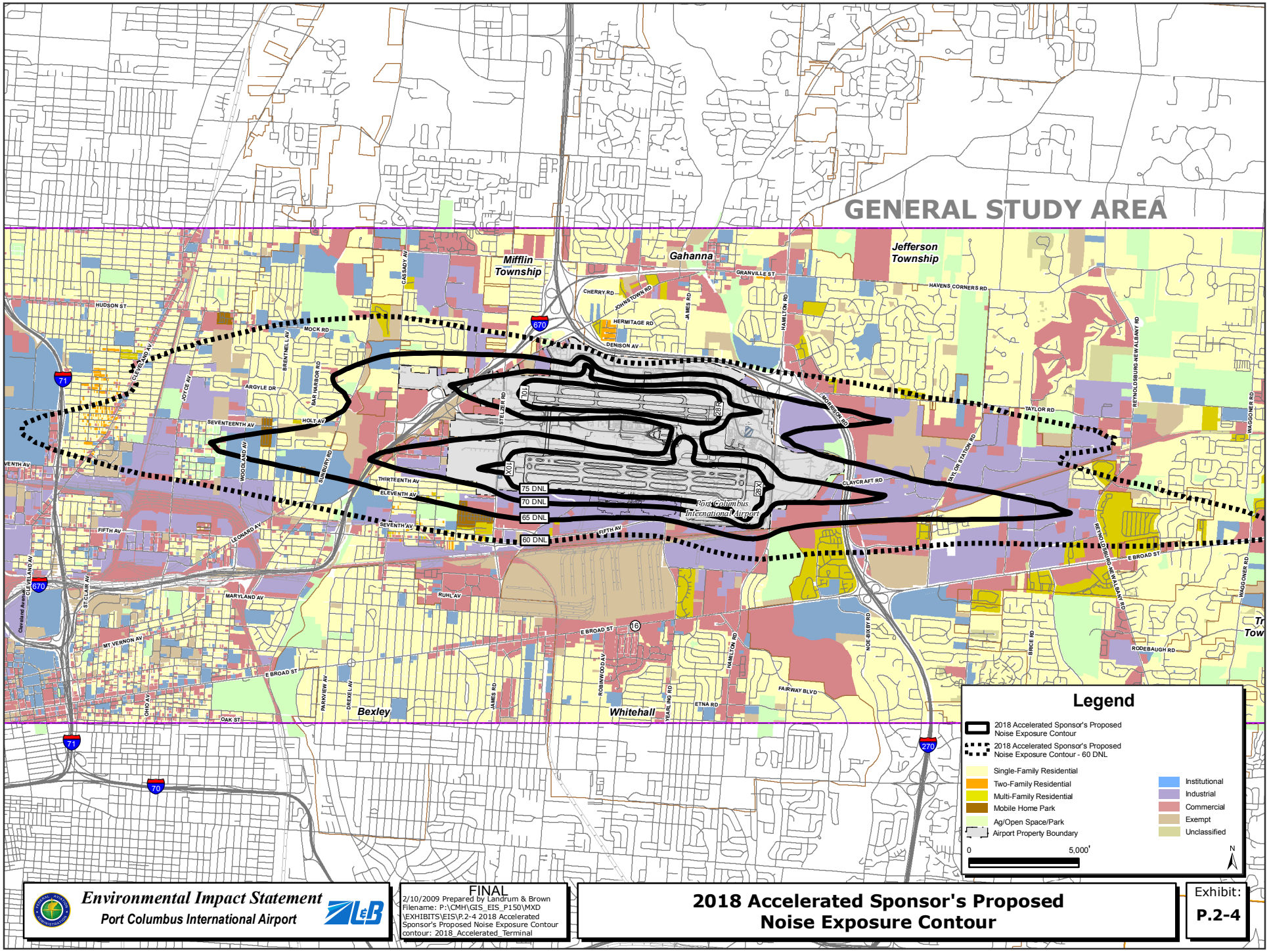
***Noise Exposure Contour:*** The 2018 Accelerated Sponsor's Proposed Project noise exposure contour for 60, 65, 70, and 75 DNL levels is graphically depicted on **Exhibit P.2-4**, ***2018 Accelerated Sponsor's Proposed Project Noise Exposure Contour.***

The 2018 Accelerated Sponsor's Proposed Project noise contour is larger than the 2018 Accelerated Alternative A noise contour due the proposed relocation of Runway 10R/28L that occurred in 2012. The proposed relocated runway would shift aircraft operations farther south. The flight paths that aircraft would use when arriving to and departing from the proposed relocated runway would shift south by approximately 702 feet. Current arrival and departure procedures would remain the same for the proposed relocated runway. However, because the location of the flight paths shift, new areas would be included in the 65+ DNL noise contour. **Table P.2-12** provides a comparison of the areas within the 2018 Accelerated Alternative A and the 2018 Accelerated Sponsor's Proposed Project noise contours.

**Table P.2-11**
**RUNWAY END UTILIZATION – 2018 ACCELERATED SPONSOR'S PROPOSED PROJECT**
**Port Columbus International Airport**

| Day Arrivals | | | | |
|---|---|---|---|---|
| **Aircraft Category** | **10L** | **10X** | **28R** | **28X** |
| Large Jet | 4.6 | 29.6 | 11.4 | 54.4 |
| Commuter Jet | 14.8 | 19.2 | 35.9 | 30.1 |
| Commuter Prop | 10.6 | 23.8 | 27.8 | 37.8 |
| General Aviation Jet | 6.7 | 23.3 | 18.7 | 51.3 |
| General Aviation Prop | 7.3 | 22.7 | 20.4 | 49.6 |
| **Night Arrivals** | | | | |
| **Aircraft Category** | **10L** | **10X** | **28R** | **28X** |
| Large Jet | 1.0 | 50.0 | 1.0 | 48.0 |
| Commuter Jet | 18.0 | 19.3 | 32.8 | 29.9 |
| Commuter Prop | 7.3 | 37.7 | 12.1 | 42.9 |
| General Aviation Jet | 6.2 | 25.6 | 19.0 | 49.2 |
| General Aviation Prop | 12.0 | 37.1 | 19.0 | 31.9 |
| **Day Departures** | | | | |
| **Aircraft Category** | **10L** | **10X** | **28R** | **28X** |
| Large Jet | 2.7 | 32.1 | 8.0 | 57.2 |
| Commuter Jet | 12.8 | 21.2 | 30.7 | 35.3 |
| Commuter Prop | 10.0 | 24.1 | 24.9 | 41.0 |
| General Aviation Jet | 6.2 | 23.8 | 17.5 | 52.5 |
| General Aviation Prop | 7.5 | 22.5 | 20.1 | 49.9 |
| **Night Departures** | | | | |
| **Aircraft Category** | **10L** | **10X** | **28R** | **28X** |
| Large Jet | 2.8 | 32.0 | 8.4 | 56.8 |
| Commuter Jet | 9.5 | 26.1 | 35.9 | 28.5 |
| Commuter Prop | 2.5 | 34.2 | 13.3 | 50.0 |
| General Aviation Jet | 5.4 | 24.6 | 16.8 | 53.2 |
| General Aviation Prop | 4.7 | 25.3 | 25.5 | 44.5 |

Day: 7:00 a.m. – 9:59 p.m.
Night: 10:00 p.m. – 6:59 a.m.
Note: 10X/28X denotes the proposed relocated Runway 10R/28L.
Source: 2005, 2006, 2007 ANOMS data, Landrum & Brown, 2007.

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*Port Columbus International Airport*

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2/10/2009 Prepared by Landrum & Brown
Filename: P:\CMH\GIS_EIS_P150\MXD\EXHIBITS\EIS\P.2-4 2018 Accelerated Sponsor's Proposed Noise Exposure Contour contour: 2018_Accelerated_Terminal

**2018 Accelerated Sponsor's Proposed Noise Exposure Contour**

Exhibit: **P.2-4**

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**Table P.2-12**
**COMPARISON OF AREAS WITHIN THE 2018 ACCELERATED SPONSOR'S PROPOSED PROJECT AND THE 2018 ACCELERATED ALTERNATIVE A NOISE EXPOSURE CONTOUR**
**(IN SQUARE MILES)**
**Port Columbus International Airport**

| CONTOUR RANGE | 2018 ACCELERATED ALTERNATIVE A | 2018 ACCELERATED SPONSOR'S PROPOSED PROJECT | DIFFERENCE |
|---|---|---|---|
| 60-65 DNL | 6.8 | 7.0 | 0.2 |
| 65-70 DNL | 3.2 | 3.7 | 0.5 |
| 70-75 DNL | 1.7 | 1.4 | -0.3 |
| 75 + DNL | 1.2 | 1.2 | 0.0 |
| 65 + DNL | 6.1 | 6.3 | 0.2 |

Note: difference between areas may not equal subtracted value due to rounding.
Contours: 2018_NA_High/ 2018_Accelerated_Terminal
Source: Landrum & Brown, 2007.

***Land Use Impact Assessment:*** The 65 DNL noise contour for the 2018 Accelerated Sponsor's Proposed Project, encompasses 6.3 square miles of land, an increase of 0.2 square miles compared to the 65 DNL of the 2018 Accelerated Alternative A noise contour. Additional discussion of land use impacts, including the number of housing units and noise-sensitive facilities within the noise contours are included in Section P.3, *Compatible Land Use,* of this appendix.

# P.3 COMPATIBLE LAND USE

## P.3.1 ANALYSIS OF COMPATIBLE LAND USE IMPACTS – 2012 CONDITIONS

The following section discusses the land use impacts of the Accelerated Sponsor's Proposed Project in 2012, which includes quantifying the number of residential and other noise-sensitive land uses that are impacted by aircraft noise. Impacts are determined according to the FAA land use compatibility guidelines relating types of land use to airport sound levels shown in Table 5.2-1 in Chapter Five, Section 5.2, *Compatible Land Use*.

### P.3.1.1 2012 Alternative A: No Action (*Accelerated Forecast*)

This section provides a summary of the residential population, housing units, and noise-sensitive facilities affected by noise levels for the 2012 Accelerated Alternative A.

***Land Use Incompatibilities:*** **Table P.3-1** shows the number of housing units, residents, and noise-sensitive facilities located within the 2012 Accelerated Alternative A noise contour. There are 1,364 housing units and an estimated 3,369 residents located within the 65+ Day-Night Average Sound Level (DNL) of the 2012 Accelerated Alternative A noise contour. Of those 1,364 housing units, 1,305 are within the City of Columbus and 59 are within Mifflin Township. A total of 586 of those housing units have received sound insulation or have an avigation easement and are therefore considered mitigated. There are five churches and one school located within the 65+ DNL of the 2012 Accelerated Alternative A noise contour, the Christian Outreach Ministries, the Eternal Life Church of Christ, the Mt. Judia Church, Temple of Faith Church of the Living God, the Wonderland Community Church (which has an avigation easement), and South Mifflin Elementary School (which has received sound insulation). There are two housing units and an estimated 5 residents located within the 70+ Day-Night Average Sound Level (DNL) of the 2012 Accelerated Alternative A noise contour. **Table P.3-2** summarizes the housing unit and population impacts for the 2012 Accelerated Alternative A.

## Table P.3-1
## 2012 ACCELERATED ALTERNATIVE A HOUSING, POPULATION, AND NOISE-SENSITIVE FACILITY INCOMPATIBILITIES
## Port Columbus International Airport

| | 60-65 DNL* | 65-70 DNL | 70-75 DNL | 75+ DNL | 65+ DNL |
|---|---|---|---|---|---|
| **Housing Units** | | | | | |
| **Columbus** | **6,324** | **1,305** | **0** | **0** | **1,305** |
| Mitigated | | | | | |
| Sound Insulated[1] | 113 | 535 | 0 | 0 | 535 |
| Easement[2] | 551 | 16 | 0 | 0 | 16 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated[3] | 39 | 128 | 0 | 0 | 128 |
| Not Previously Mitigated[4] | 5,621 | 626 | 0 | 0 | 626 |
| **Mifflin Township** | **15** | **57** | **2** | **0** | **59** |
| Mitigated | | | | | |
| Sound Insulated | 1 | 33 | 2 | 0 | 35 |
| Easement | 0 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 1 | 19 | 0 | 0 | 19 |
| Not Previously Mitigated | 13 | 5 | 0 | 0 | 5 |
| **Gahanna** | **278** | **0** | **0** | **0** | **0** |
| Mitigated | | | | | |
| Sound Insulated | 3 | 0 | 0 | 0 | 0 |
| Easement | 0 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 1 | 0 | 0 | 0 | 0 |
| Not Previously Mitigated | 274 | 0 | 0 | 0 | 0 |
| **Jefferson Township** | **166** | **0** | **0** | **0** | **0** |
| Mitigated | | | | | |
| Sound Insulated | 0 | 0 | 0 | 0 | 0 |
| Easement | 129 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 0 | 0 | 0 | 0 | 0 |
| Not Previously Mitigated | 37 | 0 | 0 | 0 | 0 |
| **Total Housing Units** | **6,783** | **1,362** | **2** | **0** | **1,364** |
| **Population** | | | | | |
| **Total Population** | **16,754** | **3,364** | **5** | **0** | **3,369** |
| **Noise-Sensitive Facilities** | | | | | |
| Churches | 46 | 5 | 0 | 0 | 5 |
| Schools | 10 | 1 | 0 | 0 | 1 |
| Libraries | 0 | 0 | 0 | 0 | 0 |
| Hospitals | 0 | 0 | 0 | 0 | 0 |
| Nursing Homes | 0 | 0 | 0 | 0 | 0 |

Notes:

* 14 CFR Part 150 Land Use Compatibility Guidelines indicate that residential land uses are compatible with noise levels below 65 DNL. Counts of housing units below 65 DNL are provided for informational purposes only.

1. Homes that have previously received sound insulation.
2. Homes that have an avigation easement.
3. Homes that were previously offered sound insulation but declined.
4. Homes that have not received and were never offered sound insulation or avigation easement by the CRAA.

Source: Landrum & Brown, 2007.

**Table P.3-2**
**COMPARISON OF HOUSING, POPULATION, AND NOISE-SENSITIVE FACILITY INCOMPATIBILITIES**
**Port Columbus International Airport**

| CATEGORY | 2012 ACCELERATED ALTERNATIVE A | 2012 ACCELERATED SPONSOR'S PROPOSED PROJECT |
|---|---|---|
| **Housing Units** | | |
| 65-70 DNL | 1,362 | 1,039 |
| 70-75 DNL | 2 | 9 |
| 75+ DNL | 0 | 0 |
| 65+ DNL | 1,364 | 1,048 |
| **Population** | | |
| 65-70 DNL | 3,364 | 2,566 |
| 70-75 DNL | 5 | 22 |
| 75+ DNL | 0 | 0 |
| 65+ DNL | 3,369 | 2,589 |
| **Noise Sensitive Facilities** | | |
| **(Churches, Schools, Libraries, Hospitals, and Nursing Homes)** | | |
| 65-70 DNL | 6 | 7 |
| 70-75 DNL | 0 | 0 |
| 75+ DNL | 0 | 0 |
| 65+ DNL | 6 | 7 |

Source: Landrum & Brown, 2007.

### P.3.1.2 2012 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

This section provides a summary of the residential population, housing units, and noise-sensitive facilities affected by noise levels for the 2012 Accelerated Sponsor's Proposed Project.

***Land Use Incompatibilities:*** **Table P.3-3** shows the number of housing units, residents, and noise-sensitive facilities located within the 2012 Accelerated Sponsor's Proposed Project noise contour. There are 1,048 housing units and an estimated 2,589 residents located within the 65+ Day-Night Average Sound Level (DNL) of the 2012 Accelerated Sponsor's Proposed Project noise contour. Of those 1,048 housing units, 991 are within the City of Columbus, 56 are within Mifflin Township, and one is within the City of Gahanna. A total of 337 of those housing units have received sound insulation or have an avigation easement and are therefore considered mitigated. There are six churches and one school located within the 65+ DNL of the 2012 Accelerated Sponsor's Proposed Project noise contour, the Aenon Missionary Baptist Church, East Mount Olivet Baptist Church, the Eternal Life Church of Christ, Greater Works Ministries, the Mt. Judia Church,

the Temple of Faith Church of the Living God, and Oakland Park at Brentnell Elementary School (which has received sound insulation). There are nine housing units and an estimated 22 residents located within the 70+ Day-Night Average Sound Level (DNL) of the 2012 Accelerated Sponsor's Proposed Project noise contour. Table P.3-2 compares the housing unit and population impacts for the 2012 Accelerated Sponsor's Proposed Project with the 2012 Accelerated Alternative A.

***Stormwater Detention Basin:*** One entrance driveway and 24 parking spaces associated with the 94th Aero Squadron restaurant would be removed to allow for expansion of the ravine located south of Sawyer Road. The ravine is a small tributary of Big Walnut Creek and the proposed expansion will allow stormwater drainage during construction and operation from the proposed airfield projects. The driveway off Sawyer Road will be relocated in-kind, west of the present location and replacement parking areas will be constructed west of the building resulting in no net loss in parking capacity or access to the restaurant. Because there are two entrance driveways to the restaurant and an abundance of parking, disruption of access and parking for the restaurant would be temporary and minimal.

***Consistency with Local Land Use Plan:*** The impacts described under 2012 Alternative C3a and C3b in Chapter Five, Section 5.2, *Compatible Land Use*, would be the same for the Accelerated Sponsor's Proposed Project.

## Table P.3-3
## 2012 ACCELERATED SPONSOR'S PROPOSED PROJECT HOUSING, POPULATION, AND NOISE-SENSITIVE FACILITY INCOMPATIBILITIES
## Port Columbus International Airport

| | 60-65 DNL* | 65-70 DNL | 70-75 DNL | 75+ DNL | 65+ DNL |
|---|---|---|---|---|---|
| **Housing Units** | | | | | |
| **Columbus** | **6,182** | **983** | **8** | **0** | **991** |
| Mitigated | | | | | |
| Sound Insulated[1] | 353 | 293 | 8 | 0 | 301 |
| Easement[2] | 779 | 33 | 0 | 0 | 33 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated[3] | 84 | 84 | 0 | 0 | 84 |
| Not Previously Mitigated[4] | 4,966 | 573 | 0 | 0 | 573 |
| **Mifflin Township** | **11** | **55** | **1** | **0** | **56** |
| Mitigated | | | | | |
| Sound Insulated | 0 | 35 | 1 | 0 | 36 |
| Easement | 0 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 1 | 19 | 0 | 0 | 19 |
| Not Previously Mitigated | 10 | 1 | 0 | 0 | 1 |
| **Gahanna** | **48** | **1** | **0** | **0** | **1** |
| Mitigated | | | | | |
| Sound Insulated | 2 | 0 | 0 | 0 | 0 |
| Easement | 0 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 0 | 1 | 0 | 0 | 1 |
| Not Previously Mitigated | 46 | 0 | 0 | 0 | 0 |
| **Jefferson Township** | **270** | **0** | **0** | **0** | **0** |
| Mitigated | | | | | |
| Sound Insulated | 0 | 0 | 0 | 0 | 0 |
| Easement | 104 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 0 | 0 | 0 | 0 | 0 |
| Not Previously Mitigated | 166 | 0 | 0 | 0 | 0 |
| **Total Housing Units** | **6,511** | **1,039** | **9** | **0** | **1,048** |
| **Population** | | | | | |
| **Total Population** | **16,082** | **2,566** | **22** | **0** | **2,589** |
| **Noise-Sensitive Facilities** | | | | | |
| Churches | 33 | 6 | 0 | 0 | 6 |
| Schools | 6 | 1 | 0 | 0 | 1 |
| Libraries | 0 | 0 | 0 | 0 | 0 |
| Hospitals | 0 | 0 | 0 | 0 | 0 |
| Nursing Homes | 0 | 0 | 0 | 0 | 0 |

Notes:

* 14 CFR Part 150 Land Use Compatibility Guidelines indicate that residential land uses are compatible with noise levels below 65 DNL. Counts of housing units below 65 DNL are provided for informational purposes only.

1. Homes that have previously received sound insulation.
2. Homes that have an avigation easement.
3. Homes that were previously offered sound insulation but declined.
4. Homes that have not received and were never offered sound insulation or avigation easement by the CRAA.

Source: Landrum & Brown, 2007.

## P.3.2 ANALYSIS OF COMPATIBLE LAND USE IMPACTS – 2018 CONDITIONS

The following section discusses the land use impacts of the Accelerated Sponsor's Proposed Project in 2018, which includes quantifying the number of residential and other noise-sensitive land uses that are impacted by aircraft noise. Impacts are determined according to the FAA land use compatibility guidelines relating types of land use to airport sound levels shown in Table 5.2-1 in Chapter Five, Section 5.2, *Compatible Land Use*.

### P.3.2.1 2018 Alternative A: No Action (*Accelerated Forecast*)

This section provides a summary of the residential population, housing units, and noise-sensitive facilities affected by noise levels for the 2018 Accelerated Alternative A.

***Land Use Incompatibilities:*** **Table P.3-4** shows the number of housing units, residents, and noise-sensitive facilities located within the 2018 Accelerated Alternative A noise contour. There are 1,592 housing units and an estimated 3,932 residents located within the 65+ Day-Night Average Sound Level (DNL) of the 2018 Accelerated Alternative A noise contour. Of those 1,592 housing units, 1,532 are within the City of Columbus and 60 are within Mifflin Township. A total of 621 of those housing units have received sound insulation or have an avigation easement and are therefore considered mitigated. There are seven churches and one school located within the 65+ DNL of the 2018 Accelerated Alternative A noise contour, the Christian Outreach Ministries, the Eternal Life Church of Christ, the Greater Works Ministries, the Jerusalem Deliverance Church of God in Christ, the Mt. Judia Church, the Temple of Faith Church of the Living God, the Wonderland Community Church (which has an avigation easement), and South Mifflin Elementary School (which has received sound insulation). There are six housing units and an estimated 15 residents located within the 70+ Day-Night Average Sound Level (DNL) of the 2012 Accelerated Alternative A noise contour. **Table P.3-5** summarizes the housing unit and population impacts for the 2018 Accelerated Alternative A.

## Table P.3-4
## 2018 ACCELERATED ALTERNATIVE A HOUSING, POPULATION, AND NOISE-SENSITIVE FACILITY INCOMPATIBILITIES
## Port Columbus International Airport

| | 60-65 DNL* | 65-70 DNL | 70-75 DNL | 75+ DNL | 65+ DNL |
|---|---|---|---|---|---|
| **Housing Units** | | | | | |
| **Columbus** | **6,472** | **1,532** | **0** | **0** | **1,532** |
| Mitigated | | | | | |
| Sound Insulated[1] | 78 | 570 | 0 | 0 | 570 |
| Easement[2] | 589 | 16 | 0 | 0 | 16 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated[3] | 26 | 141 | 0 | 0 | 141 |
| Not Previously Mitigated[4] | 5,779 | 805 | 0 | 0 | 805 |
| **Mifflin Township** | **15** | **54** | **6** | **0** | **60** |
| Mitigated | | | | | |
| Sound Insulated | 1 | 29 | 6 | 0 | 35 |
| Easement | 0 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 1 | 19 | 0 | 0 | 19 |
| Not Previously Mitigated | 13 | 6 | 0 | 0 | 6 |
| **Gahanna** | **355** | **0** | **0** | **0** | **0** |
| Mitigated | | | | | |
| Sound Insulated | 3 | 0 | 0 | 0 | 0 |
| Easement | 0 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 1 | 0 | 0 | 0 | 0 |
| Not Previously Mitigated | 351 | 0 | 0 | 0 | 0 |
| **Jefferson Township** | **218** | **0** | **0** | **0** | **0** |
| Mitigated | | | | | |
| Sound Insulated | 0 | 0 | 0 | 0 | 0 |
| Easement | 169 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 0 | 0 | 0 | 0 | 0 |
| Not Previously Mitigated | 49 | 0 | 0 | 0 | 0 |
| **Total Housing Units** | **7,060** | **1,586** | **6** | **0** | **1,592** |
| **Population** | | | | | |
| **Total Population** | **17,438** | **3,917** | **15** | **0** | **3,932** |
| **Noise-Sensitive Facilities** | | | | | |
| Churches | 44 | 7 | 0 | 0 | 7 |
| Schools | 10 | 1 | 0 | 0 | 1 |
| Libraries | 0 | 0 | 0 | 0 | 0 |
| Hospitals | 0 | 0 | 0 | 0 | 0 |
| Nursing Homes | 0 | 0 | 0 | 0 | 0 |

Notes:

* 14 CFR Part 150 Land Use Compatibility Guidelines indicate that residential land uses are compatible with noise levels below 65 DNL. Counts of housing units below 65 DNL are provided for informational purposes only.

1. Homes that have previously received sound insulation.
2. Homes that have an avigation easement.
3. Homes that were previously offered sound insulation but declined.
4. Homes that have not received and were never offered sound insulation or avigation easement by the CRAA.

Source: Landrum & Brown, 2007.

**Table P.3-5**
**COMPARISON OF HOUSING, POPULATION, AND NOISE-SENSITIVE FACILITY INCOMPATIBILITIES**
**Port Columbus International Airport**

| CATEGORY | 2018 ACCELERATED ALTERNATIVE A | 2018 ACCELERATED SPONSOR'S PROPOSED PROJECT |
|---|---|---|
| **Housing Units** | | |
| 65-70 DNL | 1,586 | 1,039 |
| 70-75 DNL | 6 | 9 |
| 75+ DNL | 0 | 0 |
| 65+ DNL | 1,592 | 1,048 |
| **Population** | | |
| 65-70 DNL | 3,917 | 2,566 |
| 70-75 DNL | 15 | 22 |
| 75+ DNL | 0 | 0 |
| 65+ DNL | 3,932 | 2,589 |
| **Noise Sensitive Facilities** | | |
| **(Churches, Schools, Libraries, Hospitals, and Nursing Homes)** | | |
| 65-70 DNL | 8 | 7 |
| 70-75 DNL | 0 | 0 |
| 75+ DNL | 0 | 0 |
| 65+ DNL | 8 | 7 |

Source: Landrum & Brown, 2007.

### P.3.2.2 2018 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

This section provides a summary of the residential population, housing units, and noise-sensitive facilities affected by noise levels for the 2018 Accelerated Sponsor's Proposed Project.

***Land Use Incompatibilities:*** **Table P.3-6** shows the number of housing units, residents, and noise-sensitive facilities located within the 2018 Accelerated Sponsor's Proposed Project noise contour. There are 1,169 housing units and an estimated 2,287 residents located within the 65+ Day-Night Average Sound Level (DNL) of the 2018 Accelerated Sponsor's Proposed Project noise contour. Of those 1,169 housing units, 1,112 are within the City of Columbus, 56 are within Mifflin Township, and one is within the City of Gahanna. A total of 357 of those housing units have received sound insulation or have an avigation easement and are therefore considered mitigated. There are seven churches and one school located within the 65+ DNL of the 2018 Accelerated Sponsor's Proposed Project noise contour, the Aenon Missionary Baptist Church, the Christian Outreach Ministries, the East Mount Olivet Baptist Church, the Eternal Life Church of Christ, the Greater

Works Ministries, the Mt. Judia Church, the Temple of Faith Church of the Living God, and Oakland Park at Brentnell Elementary School (which has received sound insulation). There are 15 housing units and an estimated 37 residents located within the 70+ Day-Night Average Sound Level (DNL) of the 2018 Accelerated Sponsor's Proposed Project noise contour. Table P.3-5 compares the housing unit and population impacts for the 2018 Accelerated Sponsor's Proposed Project with the 2018 Accelerated Alternative A.

***Stormwater Detention Basin:*** One entrance driveway and 24 parking spaces associated with the 94th Aero Squadron restaurant would be removed to allow for expansion of the ravine located south of Sawyer Road. The ravine is a small tributary of Big Walnut Creek and the proposed expansion will allow stormwater drainage during construction and operation from the proposed airfield projects. The driveway off Sawyer Road will be relocated in-kind, west of the present location and replacement parking areas will be constructed west of the building resulting in no net loss in parking capacity or access to the restaurant. Because there are two entrance driveways to the restaurant and an abundance of parking, disruption of access and parking for the restaurant would be temporary and minimal.

***Consistency with Local Land Use Plan:*** The impacts described under 2012 Alternative C3a and C3b in Chapter Five, Section 5.2, *Compatible Land Use*, would be the same for the Accelerated Sponsor's Proposed Project.

## Table P.3-6
## 2018 ACCELERATED SPONSOR'S PROPOSED PROJECT HOUSING, POPULATION, AND NOISE-SENSITIVE FACILITY INCOMPATIBILITIES
## Port Columbus International Airport

| | 60-65 DNL* | 65-70 DNL | 70-75 DNL | 75+ DNL | 65+ DNL |
|---|---|---|---|---|---|
| **Housing Units** | | | | | |
| **Columbus** | **6,627** | **1,098** | **14** | **0** | **1,112** |
| Mitigated | | | | | |
| Sound Insulated[1] | 333 | 308 | 13 | 0 | 321 |
| Easement[2] | 797 | 33 | 0 | 0 | 33 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated[3] | 78 | 89 | 1 | 0 | 90 |
| Not Previously Mitigated[4] | 5,419 | 668 | 0 | 0 | 668 |
| **Mifflin Township** | **13** | **55** | **1** | **0** | **56** |
| Mitigated | | | | | |
| Sound Insulated | 0 | 35 | 1 | 0 | 36 |
| Easement | 0 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 1 | 19 | 0 | 0 | 19 |
| Not Previously Mitigated | 12 | 1 | 0 | 0 | 1 |
| **Gahanna** | **86** | **1** | **0** | **0** | **1** |
| Mitigated | | | | | |
| Sound Insulated | 3 | 0 | 0 | 0 | 0 |
| Easement | 0 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 0 | 1 | 0 | 0 | 1 |
| Not Previously Mitigated | 83 | 0 | 0 | 0 | 0 |
| **Jefferson Township** | **315** | **0** | **0** | **0** | **0** |
| Mitigated | | | | | |
| Sound Insulated | 0 | 0 | 0 | 0 | 0 |
| Easement | 116 | 0 | 0 | 0 | 0 |
| Unmitigated | | | | | |
| Eligible for Sound Insulation but not Insulated | 0 | 0 | 0 | 0 | 0 |
| Not Previously Mitigated | 199 | 0 | 0 | 0 | 0 |
| **Total Housing Units** | **7,041** | **1,154** | **15** | **0** | **1,169** |
| **Population** | | | | | |
| **Total Population** | **17,391** | **2,850** | **37** | **0** | **2,887** |
| **Noise-Sensitive Facilities** | | | | | |
| Churches | 41 | 7 | 0 | 0 | 7 |
| Schools | 8 | 1 | 0 | 0 | 1 |
| Libraries | 0 | 0 | 0 | 0 | 0 |
| Hospitals | 0 | 0 | 0 | 0 | 0 |
| Nursing Homes | 0 | 0 | 0 | 0 | 0 |

Notes:

* 14 CFR Part 150 Land Use Compatibility Guidelines indicate that residential land uses are compatible with noise levels below 65 DNL. Counts of housing units below 65 DNL are provided for informational purposes only.

1. Homes that have previously received sound insulation.
2. Homes that have an avigation easement.
3. Homes that were previously offered sound insulation but declined.
4. Homes that have not received and were never offered sound insulation or avigation easement by the CRAA.

Source: Landrum & Brown, 2007.

## P.4 SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

This section assesses the potential socioeconomic impacts, environmental justice impacts, and children's environmental health and safety risks that would occur as a result of implementing the Accelerated Sponsor's Proposed Project.

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would result in the same socioeconomic impacts, environmental justice impacts, and children's environmental health and safety risks as described for Alternative C3b in Chapter Five, Section 5.3*, Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks.*

## P.5 SECONDARY (INDUCED) IMPACTS

Major development proposals often involve the potential for induced or secondary impacts on surrounding communities. Examples of these impacts include: shifts in patterns of population movement and growth; public service demands; and changes in business and economic activity to the extent influenced by airport development. Induced impacts will normally not be significant except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts.

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would result in the same secondary or induced impacts as described for Alternative C3b in Chapter Five, Section 5.4, *Secondary (Induced) Impacts*.

## P.6 AIR QUALITY

This section presents an assessment of the potential for significant adverse air quality impacts resulting from construction and implementation of the Accelerated Sponsor's Proposed Project (Alternative C3b) for CMH. Specifically, this section considers emissions under the 2012 Accelerated Alternative A and the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b). Also considered in this section is the 2018 Accelerated Sponsor's Proposed Project (Alternative C3b)[4] under the high-growth forecast scenario. The potential air quality impacts for the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) were assessed by

[4] The analysis for the 2018 Sponsor's Proposed Alternative is included for disclosure purposes only. No impact analysis for this alternative is included.

conducting a dispersion analysis based on the emission inventory. The assessment was prepared according to guidelines established under FAA Order 1050.1E and FAA *Air Quality Procedures for Civilian Airports & Air Force Bases*.[5]

The results of the emission inventory prepared for 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) were compared to the results of 2012 Accelerated Alternative A to disclose the potential increase in emissions when considering the high-growth forecast scenario. The results of the 2018 Accelerated Sponsor's Proposed Project (Alternative C3b) analysis are included for disclosure purposes only and are not compared to any baseline case. The comparison of the 2012 high-growth forecast scenario emission inventories, which includes an inventory of construction emissions, were used for the evaluation of General Conformity as required under the Clean Air Act (including the 1990 Amendments) (CAA).

The emission inventories for the 2012 and 2018[6] high-growth forecast scenarios were translated into pollutant concentrations by conducting dispersion analyses. The dispersion analysis for 2018 is included for disclosure only. The results of the 2012 cases were compared to the National Ambient Air Quality Standards (NAAQS),[7] an evaluation referred to as the National Environmental Policy Act (NEPA) analysis. The results of the NEPA analysis ascertained the potential for significant adverse air quality impacts in Franklin County due to proposed development at the Airport under the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b).

The procedures and methodologies used to develop the emission database, as well as computer modeling input data, are provided in Appendix E, *Air Quality*, which includes Attachment E.1 *Draft Technical Report: Air Quality Assessment Methodology* (Air Quality Technical Report). The Air Quality Technical Report summarizes the status of Ohio's State Implementation Plan (SIP), provides an overview of the requirements under NEPA and the CAA, and documents FAA's coordination with Federal, State, and local air quality agencies. The existing air quality conditions at CMH are described in Chapter Four, Section 4.8*, Air Quality*.

## P.6.1 AIR QUALITY IMPACTS – 2012 CONDITIONS

A summary of the analysis of the emission inventories prepared for the 2012 high-growth forecast scenarios are included in the following sections. The results of the dispersion analysis for the alternatives are summarized following the presentation of the results of the emission inventory for each alternative.

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5 *FAA Order 1050.1E Environmental Impacts: Policies and Procedures*, March 20, 2006, FAA; and *Air Quality Procedures for Civilian Airports & Air Force Bases*, April 1997 and including the Addendum dated September 2004, FAA.

6 The results of the dispersion analysis for the 2018 Accelerated Sponsor's Proposed Project (Alternative C3b) is for disclosure only and was not compared to the NAAQS for compliance under the state implementation plan.

7 Background concentrations were added to the modeled results (design concentrations) for the evaluation of future air quality conditions at the Airport and in the surrounding communities.

### P.6.1.1 2012 Accelerated Alternative A: No Action (*Accelerated Forecast*)

The following paragraphs provide a summary of the results of the computer modeling to estimate air emissions resulting from the operation of the Airport under 2012 Accelerated Alternative A and include the results of dispersion analysis. The emission inventory prepared for the 2012 Accelerated Alternative A is the baseline against which the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) is evaluated.

***Airfield Configuration:*** CMH has two east/west parallel runways (10L/28R and 10R/28L) spaced 2,800 feet apart. Chapter Three, *Alternatives*, Exhibit 3—1, *Alternative A: No Action*, shows the existing Airport layout.

***Aircraft Activity Levels and Fleet Mix Characteristics:*** The 2012 high-growth forecast operations and fleet mix are based on the aviation forecast prepared for the 2007 Part 150 Study Update[8] as presented in Appendix C.

***Other Mobile Sources and Stationary Sources:*** In addition to aircraft, the analysis of this alternative reflects other mobile and stationary sources that contribute to Airport emissions. These include the ground support equipment (GSE) and auxiliary power units (APUs) used at the gate areas, all types of motor vehicles, including, passenger and employee vehicles, taxi cabs, parking lot shuttles, rental car (RAC) shuttles, hotel and motel shuttle buses, and visitor vehicles accessing Airport roadways and parking lots. Refer to Appendix E, Air Quality Technical Report, Exhibit 6, P*arking Lots and Garages*, and Exhibit 9a, *Generalized Roadway Segments*. Refer also to Exhibit 12, *Stationary Sources*, in the Air Quality appendix.

The analysis includes emissions from stationary sources, including evaporative emissions from fuel storage tanks and painting operations, emissions from the use of deicing fluid, combustion emissions from boilers at the terminal and concourses, and emissions from the operation of emergency generators. The 2012 high-growth forecast scenarios include the proposed RAC facility that relocates rental cars from the first two floors of the existing six-level parking garage adjacent to the existing passenger terminal to a location west of Interstate 670. Also included are the use of the crossover taxiway under construction in 2007, and the planned realignment of International Gateway. The crossover taxiway and realignment of International Gateway have received prior NEPA approval. The environmental review of the proposed relocated RAC is expected to be complete in 2008.

***Computer Modeling:*** The emission inventories for the 2012 and 2018 high-growth forecast scenarios for the criteria and precursor pollutants were prepared using the FAA Emissions and Dispersion Modeling System (EDMS), Version 4.5. The construction emissions inventory was prepared using U.S. Environmental Protection Agency (USEPA)-approved methodology applied through a computer spreadsheet program. All input data, assumptions, procedures, and methodologies

[8] *Final 2007 Part 150 Noise Compatibility Study Update for the Port Columbus International Airport*, November 2007, CRAA. The FAA Record of Approval is anticipated in June 2008.

used for all computer and spreadsheet modeling are provided in the Air Quality Technical Report in Appendix E. EDMS provides emission inventory calculations for the following pollutants:

- Carbon monoxide (CO);
- Volatile organic compounds (VOCs), a precursor pollutant to ozone development[9] and particulate matter emissions;
- Nitrogen oxides ($NO_x$) a precursor pollutant to ozone development and particulate matter emissions;
- Sulfur oxides ($SO_x$), a precursor pollutant to the development of fine particulate matter ($PM_{2.5}$) emissions;
- Coarse particulate matter ($PM_{10}$); and,
- Fine particulate matter ($PM_{2.5}$).

Dispersion analyses of the 2012 and 2018 high-growth forecast scenarios were conducted using EDMS Version 4.5. EDMS provides calculations for pollutant concentrations for the following pollutants and averaging periods:

- CO – One-hour and eight-hour averages;
- $NO_x$ – Annual average;
- $SO_x$ – Three-hour, 24-hour, and annual averages;
- $PM_{10}$ – 24-hour average; and,
- $PM_{2.5}$ – 24-hour and annual averages.

For each of the 2012 and 2018 high-growth forecast scenarios, pollutant concentrations were calculated at a total of 67 receptor locations. Of the 67 receptors, 44 are located in the communities surrounding the Airport, around the perimeter of the Airport property line, and at the arrival curb adjacent to the existing passenger terminal, as shown in Appendix E, Air Quality Technical Report, Exhibit 21. The remaining 23 receptors are located within the terminal area in parking lots and garages, and along International Gateway, as shown in Appendix E, Air Quality Technical Report, Exhibit 19 and Exhibit 20.

Selection of the receptor locations for inclusion in the dispersion analysis was coordinated with USEPA, Ohio Environmental Protection Agency (OEPA) Division of Air Pollution Control (DAPC), and the Mid-Ohio Regional Planning Commission (MORPC). The receptor locations were selected based on the proximity of the receptors to sensitive public areas or facilities, as defined in Section 5.2 *Compatible Land Use*, Table 5.2-2 *Noise-Sensitive Public Facilities*. Further, selection was based on results of preliminary analysis indicating the possibility of impacts in public areas. The selected receptor locations are summarized below:

[9] Ozone cannot be calculated directly because ozone formation is a regional phenomenon resulting from the photochemical reaction of $NO_x$, VOC, and sunlight. Therefore, the USEPA has directed the evaluation of $NO_x$ and VOC to serve as a representation of the potential for ozone development on a project-level basis.

| | |
|---|---|
| Arrival Curb | Located at the existing terminal building on the east side of the roadway situated in front of the passenger-terminal pickup area from which arriving passengers are transported to parking areas, rental car facilities, or other destinations off-Airport. Pollutant concentrations would be expected to be highest at this receptor due to the close proximity to both motor vehicles and GSE at the terminal gate area. |
| Gahanna East | Located northeast of the Airport near Friendship Park, and near Wonderland Community Church, Shepherd Church of the Nazarene and Christian School, and Christian Center Church. |
| Gahanna North | Located north of the Airport near Denison Avenue and Goshen Lane; near Victory in Pentecost Church and Goshen Lane Elementary School. |
| Mifflin South | Located southwest of the Airport near Krumm Park; near Living Word Church, East Columbus Elementary School, Corinthian Baptist Church, and East Mount Olivet Baptist Church. |
| Whitehall | Located south of the Airport near Yearling Road; near Holy Spirit School and Whitehall Library. |
| Gahanna West | Also located north of the Airport, near Hermitage Road; near Victory in Pentecost Church and Goshen Lane Elementary School. |
| Airport South | Located south of the Airport; selected to capture potential impacts in public access areas south of the proposed replacement runway. |
| Airport Northwest | Located northwest of the Airport; selected to capture potential impacts in a public access area from pollutants evaluated as a three-hour average concentration. |
| Mifflin North | Located northwest of the Airport; selected to capture potential impacts in public access areas due to the one-hour average concentration of pollutants. |
| Golf Course | Located east of the Airport in the public golf course near Runway 28L. |

***2012 Accelerated Alternative A Emission Inventory*:** The emission inventory is summarized in **Table P.6-1**. The data shows the greatest overall emission contribution comes from aircraft operations, which represent 40.96 percent of total emissions under this alternative due to the relatively high aircraft departure queue delay time. Emissions from motor vehicles represent 28.54 percent. Emissions from GSE and APUs reflect 27.13 percent of emissions. The remaining 3.38 percent of total emissions come from the operation of stationary sources, such as fuel storage tanks, boilers, incinerators, emergency generators, and painting operations. The emission inventory summarized in Table P.6-1 represents the baseline against which 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) was compared. Emissions from GSE and APU sources would remain the same for the two 2012 high-growth forecast scenarios.

**Table P.6-1**
**2012 ACCELERATED ALTERNATIVE A EDMS EMISSION INVENTORY OF CRITERIA AND PRECURSOR POLLUTANTS**
**Port Columbus International Airport**

| EMISSION SOURCES | ANNUAL EMISSIONS (tons per year) | | | | | | |
|---|---|---|---|---|---|---|---|
| | CO | VOC | $NO_x$ | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ | TOTAL |
| Aircraft | 1,269.77 | 150.13 | 492.32 | 48.35 | 63.15 | 63.15 | **2,086.87** |
| GSE/APUs | 1,216.43 | 48.35 | 93.35 | 14.02 | 5.06 | 4.89 | **1,382.11** |
| Roadways | 1,021.88 | 72.04 | 100.67 | 0.78 | 3.29 | 1.91 | **1,200.57** |
| Parking Facilities | 210.31 | 22.20 | 19.94 | 0.13 | 0.54 | 0.32 | **253.44** |
| Stationary Sources | 43.64 | 16.31 | 68.73 | 34.49 | 4.76 | 4.16 | **172.10** |
| **TOTAL** | **3,762.04** | **309.03** | **775.01** | **97.78** | **76.80** | **74.43** | **5,095.09** |

Notes: GSE is ground support equipment. APUs are auxiliary power units. CO is carbon monoxide, VOC are volatile organic compounds, $NO_x$ is nitrogen oxides, $SO_x$ is sulfur oxides, $PM_{10}$ is coarse particulate matter, and $PM_{2.5}$ is fine particulate matter. Emissions values of $PM_{2.5}$ for aircraft were supplemented by using $PM_{2.5}$ emission data from the USEPA AP-42. Totals may not calculate exactly due to rounding.

Sources: *EDMS Version 4.5*, 2006, FAA.
*Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources (AP-42)*, Table II-1-9, January 1991, USEPA.
*Landrum & Brown analysis*, 2007.

The emission inventory for this alternative reflects the slight decrease in average aircraft taxi time as compared to the Existing (2006) Conditions resulting from use of the new crossover taxiway. This alternative analysis reflects the increase in average aircraft departure delay time resulting from the increase in aircraft operations that would be expected to occur under the 2012 high-growth forecast scenario.

***2012 Accelerated Alternative A Dispersion Analysis*:** The pollutant concentrations estimated through dispersion analysis are summarized in **Table P.6-2**. Refer to the Air Quality Technical Report, Exhibit 19 and Exhibit 21 for the dispersion receptor locations used for this alternative. For each pollutant-averaging period the receptor reporting the highest concentration was found to occur at the arrival curb. Under this alternative, the maximum values at the arrival curb are caused almost entirely by emissions of CO from GSE concentrated at the terminal gate area. All modeled concentration values summarized in Table P.6-2 are below the NAAQS.

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**Table P.6-2**
**2012 ACCELERATED ALTERNATIVE A EDMS POLLUTANT DISPERSION ANALYSIS OF CRITERIA POLLUTANTS**
**Port Columbus International Airport**

| AIR QUALITY STANDARDS AND RECEPTORS[1] | | MODELED POLLUTANT CONCENTRATIONS BY NAAQS AVERAGING PERIODS ($\mu g/m^3$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USEPA NAAQS ($\mu g/m^3$) | | CO | | $NO_x$ | $SO_x$ | | | $PM_{10}$ | $PM_{2.5}$ | |
| | | 1-HR | 8-HR | ANNUAL | 3-HR | 24-HR | ANNUAL | 24-HR | 24-HR | ANNUAL |
| | | 40,000 | 10,000 | 100 | 1,300 | 365 | 80 | 150 | 35 | 15 |
| Arrival Curb | Arr Curb | 15,451.25 | 3,419.03 | 65.32 | 231.67 | 92.84 | 11.24 | 15.27 | 14.09 | 2.89 |
| Gahanna East | 60 | 7,123.51 | 1,507.59 | 2.76 | 40.79 | 6.67 | 0.43 | 3.29 | 3.02 | 0.17 |
| Gahanna North | 120/G-1 | 4,959.89 | 1,427.09 | 6.02 | 46.34 | 10.40 | 0.86 | 3.52 | 3.29 | 0.32 |
| Mifflin South | 118/MIF-2 | 3,017.81 | 822.76 | 3.90 | 27.20 | 4.59 | 0.28 | 3.44 | 3.13 | 0.13 |
| Whitehall | 123/W-1 | 4,196.55 | 721.47 | 2.69 | 32.77 | 9.64 | 0.61 | 2.05 | 1.93 | 0.18 |
| Gahanna West | 53 | 4,451.46 | 1,020.29 | 4.92 | 45.66 | 8.99 | 0.70 | 3.90 | 3.61 | 0.26 |
| Airport South | 32 | 4,612.70 | 1,118.90 | 7.66 | 43.89 | 11.02 | 1.51 | 4.01 | 3.82 | 0.46 |
| Airport | 11 | 4,902.59 | 919.92 | 8.10 | 33.18 | 6.75 | 0.42 | 2.07 | 1.89 | 0.24 |
| Mifflin North | 119/MIF-1 | 5,463.73 | 745.66 | 4.49 | 18.24 | 5.21 | 0.20 | 1.75 | 1.54 | 0.12 |
| Golf Course | | 8,005.93 | 1,174.23 | 2.95 | 52.01 | 7.91 | 0.56 | 5.51 | 5.26 | 0.19 |

Note: Pollutant concentrations are given in micrograms per cubic meter, $\mu g/m^3$. USEPA is the U.S. Environmental Protection Agency. NAAQS are the National Ambient Air Quality Standards. CO is carbon monoxide, $NO_x$ is nitrogen oxides, $SO_x$ is sulfur oxides, $PM_{10}$ is coarse particulate matter, and $PM_{2.5}$ is fine particulate matter.

[1] Receptors are identified by descriptive locations indicating position in relation to Airport property, communities surrounding the Airport, and by the receptor identification code names as shown on Exhibit 5.5-1 and Exhibit 5.5-2. If the receptor name used in computer modeling is different, that identification name is also given.

Sources: *EDMS Version 4.5*, 2006, FAA.
*Landrum & Brown analysis*, 2007.

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### P.6.1.2 2012 Accelerated Sponsor's Proposed Project (Alternative C3b): Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

The following paragraphs provide a summary of the results of the computer modeling to estimate air emissions resulting from the operation of the Airport under the Accelerated Sponsor's Proposed Project (Alternative C3b) in 2012. The discussion includes the results of dispersion analysis for this alternative.

***Airfield Configuration:*** 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) includes a replacement runway located 702 feet south of existing Runway 10R/28L. The proposed airfield layout would be the same as described under the 2012 Alternative C3b discussed in Chapter, Five, Section 5.5 *Air Quality*. This alternative also includes the proposed midfield passenger terminal and associated parking garage.

***Aircraft Activity Levels and Fleet Mix Characteristics:*** The number of annual aircraft operations and the fleet mix characteristics would be the same for this alternative as that described for 2012 Accelerated Alternative A.

***Other Mobile Sources and Stationary Sources:*** Assessment of mobile and stationary sources for this alternative would be the same as described for 2012 Accelerated Alternative A, and in addition, includes emissions for heating the proposed midfield passenger terminal and considers the change in the alignment of International Gateway to allow for the proposed passenger terminal and proposed parking garage.

***Noise Abatement Scenario B:*** This alternative includes the noise abatement measures recommended in the 2007 Part 150 Study. These measures would increase aircraft taxi time because the recommendations result in an increase in the use of east flow (Runways 10R/10L).

***2012 Accelerated Sponsor's Proposed Project (Alternative C3b) Emission Inventory:*** The emission inventory is summarized in **Table P.6-3**. The data show the greatest overall emission contribution comes from aircraft operations, which represent 37.80 percent of total emissions under this alternative due to the relatively high aircraft departure queue delay time. The second-greatest source of overall emissions is motor vehicles contributing 31.65 percent. Emissions from GSE and APUs reflect 26.87 percent of emissions. The remaining 3.68 percent of total emissions come from the operation of stationary sources, such as fuel storage tanks, boilers for the terminal buildings and concourses, incinerators, emergency generators, and painting operations.

**Table P.6-3**
**2012 ACCELERATED SPONSOR'S PROPOSED PROJECT (ALTERNATIVE C3b)**
**EDMS EMISSION INVENTORY OF CRITERIA AND PRECURSOR POLLUTANTS**
**Port Columbus International Airport**

| EMISSION SOURCES | ANNUAL EMISSIONS (tons per year) | | | | | | |
|---|---|---|---|---|---|---|---|
| | CO | VOC | $NO_x$ | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ | TOTAL |
| Aircraft | 1,156.37 | 132.58 | 483.78 | 45.84 | 62.85 | 62.85 | **1,944.26** |
| GSE/APUs | 1,216.72 | 48.38 | 93.22 | 13.96 | 5.03 | 4.88 | **1,382.18** |
| Roadways | 1,078.77 | 77.68 | 105.25 | 0.83 | 3.49 | 2.03 | **1,268.05** |
| Parking Facilities | 298.75 | 30.91 | 28.63 | 0.19 | 0.79 | 0.46 | **359.71** |
| Stationary Sources | 50.52 | 16.78 | 77.20 | 34.55 | 5.39 | 4.80 | **189.24** |
| **TOTAL** | **3,801.12** | **306.33** | **788.07** | **95.36** | **77.55** | **75.01** | **5,143.44** |

Notes: GSE is ground support equipment. APUs are auxiliary power units. CO is carbon monoxide, VOC are volatile organic compounds, NOx is nitrogen oxides, SOx is sulfur oxides, PM10 is coarse particulate matter, and PM2.5 is fine particulate matter. Emissions values of PM2.5 for aircraft were supplemented by using PM2.5 emission data from the USEPA AP-42. Totals may not calculate exactly due to rounding.

Sources: EDMS Version 4.5, 2006, FAA.
Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources (AP-42), Table II-1-9, January 1991, USEPA.
Landrum & Brown analysis, 2007.

The emission inventory for this alternative reflects a net decrease in aircraft departure queue delay time as compared to 2012 Accelerated Alternative A. While emissions decrease from aircraft sources as compared to the 2012 Accelerated Alternative A, emissions from motor vehicles would increase as a result of the realignment of International Gateway and relocated parking arrangements that allow for the proposed midfield terminal and proposed parking garage. In addition, there is an increase in emissions from boilers that would be required to heat the proposed midfield terminal building. Overall, emissions under this alternative increase 0.95 percent over 2012 Accelerated Alternative A.

***2012 Accelerated Sponsor's Proposed Project (Alternative C3b) Construction Emissions:*** The inventory of construction emissions is summarized in **Table P.6-4**. The data show CO to be the most prominent pollutant caused by the operation of construction equipment. CO emissions reflect 39.77 percent of emissions from the total four-year project. Emissions of $NO_x$ would constitute 36.70 percent of total project emissions; 5.58 percent would be VOCs, and 1.94 percent would be $PM_{2.5}$ emissions. The remaining 15.52 percent would consist of $PM_{10}$ and $SO_x$ emissions. The inventory of construction equipment emissions include the development of the stormwater detention basin at the location of the Big Walnut Creek tributary on the east airfield south of Sawyer Road. Refer to **Appendix E**, *Air Quality*, for details relating to the construction equipment emission inventory.

**Table P.6-4**
**2012 ACCELERATED SPONSOR'S PROPOSED PROJECT (ALTERNATIVE C3b)**
**CONSTRUCTION EMISSIONS INVENTORY**
**Port Columbus International Airport**

| CONSTRUCTION YEARS | ANNUAL NET EMISSIONS (tons per year) | | | | | | |
|---|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ | TOTAL |
| 2009 | 15.54 | 2.31 | 15.33 | 5.31 | 0.79 | 0.79 | **40.07** |
| 2010 | 20.61 | 2.79 | 18.24 | 7.05 | 0.99 | 0.99 | **50.67** |
| 2011 | 38.58 | 5.41 | 35.60 | 13.20 | 1.89 | 1.89 | **96.58** |
| 2012 | 36.40 | 5.08 | 33.35 | 12.38 | 1.77 | 1.77 | **90.75** |
| **TOTAL** | **111.13** | **15.60** | **102.54** | **37.94** | **5.43** | **5.43** | **278.06** |

Notes: CO is carbon monoxide, VOC are volatile organic compounds, NOx is nitrogen oxides, SOx is sulfur oxides, PM10 is coarse particulate matter, and PM2.5 is fine particulate matter. Totals may not calculate exactly due to rounding.

Source: *Landrum & Brown analysis*, 2007.

***2012 Accelerated Sponsor's Proposed Project Dispersion Analysis*:** The maximum concentrations projected through dispersion analysis are summarized in **Table P.6-5**. Refer to the Air Quality Technical Report in Appendix E, Exhibit 20 and Exhibit 21 for the dispersion receptor locations used for this alternative. For each pollutant-averaging period, the receptor reporting the highest concentration was found to occur at the arrival curb at the existing passenger terminal. Although the arrival and departure curbs adjacent to the proposed midfield passenger terminal were included in the modeling, the concentrations at the existing passenger terminal remained the highest. All modeled concentration values summarized in Table P.6-5 are below the NAAQS.

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**Table P.6-5**
**2012 ACCELERATED SPONSOR'S PROPOSED PROJECT (ALTERNATIVE C3b) EDMS POLLUTANT DISPERSION ANALYSIS OF CRITERIA POLLUTANTS**
**Port Columbus International Airport**

| AIR QUALITY STANDARDS AND RECEPTORS[1] | | MODELED POLLUTANT CONCENTRATIONS BY NAAQS AVERAGING PERIODS ($\mu g/m^3$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USEPA NAAQS ($\mu g/m^3$) | | CO | | $NO_x$ | $SO_x$ | | | $PM_{10}$ | $PM_{2.5}$ | |
| | | 1-HR | 8-HR | ANNUAL | 3-HR | 24-HR | ANNUAL | 24-HR | 24-HR | ANNUAL |
| | | 40,000 | 10,000 | 100 | 1,300 | 365 | 80 | 150 | 35 | 15 |
| Arrival Curb | Arr Curb | 16,061.67 | 3439.71 | 53.46 | 217.90 | 85.84 | 9.48 | 11.85 | 10.71 | 2.38 |
| Gahanna East | 60 | 6,526.06 | 1367.17 | 2.53 | 34.76 | 5.68 | 0.36 | 2.65 | 2.38 | 0.14 |
| Gahanna North | 120/G-1 | 4,226.22 | 1248.21 | 5.57 | 39.48 | 8.56 | 0.77 | 2.91 | 2.70 | 0.30 |
| Mifflin South | 118/MIF-2 | 3,674.25 | 1010.07 | 4.73 | 27.07 | 5.41 | 0.31 | 3.77 | 3.45 | 0.15 |
| Whitehall | 123/W-1 | 3,674.82 | 625.14 | 2.76 | 27.22 | 8.43 | 0.58 | 1.78 | 1.63 | 0.17 |
| Gahanna West | 53 | 3839.80 | 945.83 | 4.74 | 38.76 | 7.90 | 0.65 | 3.37 | 3.10 | 0.25 |
| Airport South | 32 | 4000.06 | 992.02 | 8.98 | 36.22 | 10.17 | 1.56 | 3.49 | 3.28 | 0.49 |
| Airport | 11 | 4176.98 | 1063.98 | 8.41 | 25.99 | 6.10 | 0.42 | 1.63 | 1.40 | 0.24 |
| Mifflin North | 119/MIF-1 | 5451.23 | 836.64 | 5.88 | 13.11 | 4.49 | 0.22 | 1.57 | 1.34 | 0.14 |
| Golf Course | | 7279.51 | 1067.95 | 2.63 | 41.22 | 6.51 | 0.46 | 4.41 | 4.11 | 0.15 |

Note: Pollutant concentrations are given in micrograms per cubic meter, $\mu g/m^3$. USEPA is the U.S. Environmental Protection Agency. NAAQS are the National Ambient Air Quality Standards. CO is carbon monoxide, $NO_x$ is nitrogen oxides, $SO_x$ is sulfur oxides, $PM_{10}$ is coarse particulate matter, and $PM_{2.5}$ is fine particulate matter.

[1] Receptors are identified by descriptive locations indicating position in relation to Airport property, communities surrounding the Airport, and by the receptor identification code names as shown on Exhibit 5.5-1 and Exhibit 5.5-2. If the receptor name used in computer modeling is different, that identification name is also given.

Sources: *EDMS Version 4.5*, 2006, FAA.
*Landrum & Brown analysis*, 2007.

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## P.6.2 AIR QUALITY IMPACTS – 2018 CONDITIONS

A summary of the analysis of the emission inventories prepared for the 2018 Accelerated Sponsor's Proposed Project (Alternative C3b) is included in the following sections. The results of the dispersion analysis are summarized following the presentation of the results of the emissions inventory.

### P.6.2.1 2018 Accelerated Sponsor's Proposed Project (Alternative C3b): Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

The following paragraphs provide a summary of the results of computer modeling to estimate air emissions resulting from the operation of the Airport under 2018 Accelerated Sponsor's Proposed Project (Alternative C3b), and include the results of dispersion analysis for this alternative.

***Airfield Configuration:*** 2018 Accelerated Sponsor's Proposed Project (Alternative C3b) includes a replacement runway located 702 feet south of existing Runway 10R/28L. The airfield layout would be the same as that described under the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b).

***Aircraft Activity Levels and Fleet Mix Characteristics:*** The number of annual aircraft operations and fleet mix characteristics reflects the 2018 high-growth forecast scenario based on data given in the Appendix C.

***Other Mobile Sources and Stationary Sources:*** Assessment of mobile and stationary sources for this alternative would be the same as described for 2018 Alternative C3b given in Chapter Five, Section 5.5, *Air Quality*.

***Noise Abatement Scenario B:*** This alternative includes the noise abatement measures recommended in the 2007 Part 150 Study. These measures would increase aircraft taxi time because the recommendations result in an increase in the use of east flow (Runways 10R/10L).

***2018 Accelerated Sponsor's Proposed Project (Alternative C3b) Emission Inventory:*** The emission inventory is summarized in **Table P.6-6**. The data shows the greatest overall emission contribution comes from aircraft operations, which represent 39.48 percent of total emissions under this alternative. The second-greatest source of overall emissions is motor vehicles contributing 28.73 percent. Emissions from GSE and APUs reflect 27.97 percent of emissions. The remaining 3.82 percent of total emissions come from the operation of stationary sources, such as fuel storage tanks, boilers for the terminal buildings and concourses, incinerators, emergency generators, and painting operations.

**Table P.6-6**
**2018 ACCELERATED SPONSOR'S PROPOSED PROJECT (ALTERNATIVE C3b)**
**EDMS EMISSION INVENTORY OF CRITERIA AND PRECURSOR POLLUTANTS**
**Port Columbus International Airport**

| EMISSION SOURCES | ANNUAL EMISSIONS (tons per year) | | | | | | |
|---|---|---|---|---|---|---|---|
| | CO | VOC | $NO_x$ | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ | TOTAL |
| Aircraft | 1,243.22 | 143.39 | 583.11 | 53.99 | 64.39 | 64.39 | **2,152.48** |
| GSE/APUs | 1,347.57 | 52.55 | 96.49 | 15.72 | 6.39 | 6.19 | **1,524.91** |
| Roadways | 1,001.29 | 56.76 | 64.57 | 0.94 | 3.10 | 1.55 | **1,128.23** |
| Parking Facilities | 383.34 | 29.34 | 23.80 | 0.29 | 0.96 | 0.48 | **438.21** |
| Stationary Sources | 55.99 | 17.67 | 85.12 | 38.34 | 5.95 | 5.29 | **208.35** |
| **TOTAL** | **4,031.40** | **299.71** | **853.09** | **109.28** | **80.79** | **77.90** | **5,452.18** |

Notes: GSE is ground support equipment. APUs are auxiliary power units. CO is carbon monoxide, VOC are volatile organic compounds, NOx is nitrogen oxides, SOx is sulfur oxides, PM10 is coarse particulate matter, and PM2.5 is fine particulate matter. Emissions values of PM2.5 for aircraft were supplemented by using PM2.5 emission data from the USEPA AP-42. Totals may not calculate exactly due to rounding.

Sources: *EDMS Version 4.5*, 2006, FAA.
Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources (AP-42), Table II-1-9, January 1991, USEPA.
*Landrum & Brown analysis*, 2007.

***2018 Accelerated Sponsor's Proposed Project (Alternative C3b) Dispersion Analysis*:** The maximum concentrations projected through dispersion analysis are summarized in **Table P.6-7**. Refer to the Air Quality Technical Report, Appendix E, Exhibit 20 and Exhibit 21 for the dispersion receptor locations used for this alternative. For each pollutant-averaging period, the receptor reporting the highest concentration was found to occur at the arrival curb at the existing passenger terminal. Although the arrival and departure curbs adjacent to the proposed midfield passenger terminal were included in the modeling, the concentrations at the existing passenger terminal remained the highest. All modeled concentration values summarized in Table P.6-7 are below the NAAQS.

**Table P.6-7**
**2018 ACCELERATED SPONSOR'S PROPOSED PROJECT (ALTERNATIVE C3b) EDMS DISPERSION ANALYSIS OF CRITERIA POLLUTANTS**
**Port Columbus International Airport**

| AIR QUALITY STANDARDS AND RECEPTORS[1] | | MODELED POLLUTANT CONCENTRATIONS BY NAAQS AVERAGING PERIODS ($\mu g/m^3$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USEPA NAAQS ($\mu g/m^3$) | | CO | | $NO_x$ | $SO_x$ | | | $PM_{10}$ | $PM_{2.5}$ | |
| | | 1-HR | 8-HR | ANNUAL | 3-HR | 24-HR | ANNUAL | 24-HR | 24-HR | ANNUAL |
| | | 40,000 | 10,000 | 100 | 1,300 | 365 | 80 | 150 | 35 | 15 |
| Arrival Curb | Arr Curb | 19,274.36 | 1,179.14 | 57.79 | 250.25 | 99.65 | 11.71 | 16.79 | 15.42 | 3.18 |
| Gahanna East | 60 | 7,240.78 | 1,562.10 | 2.48 | 43.64 | 7.06 | 0.42 | 3.54 | 3.23 | 0.17 |
| Gahanna North | 120/G-1 | 5,266.61 | 1,538.69 | 5.51 | 48.67 | 10.58 | 0.89 | 3.96 | 3.70 | 0.37 |
| Mifflin South | 118/MIF-2 | 3,313.31 | 949.57 | 3.74 | 31.45 | 5.65 | 0.34 | 4.66 | 4.32 | 0.15 |
| Whitehall | 123/W-1 | 4,568.15 | 764.23 | 2.84 | 33.10 | 10.20 | 0.67 | 2.39 | 2.29 | 0.22 |
| Gahanna West | 53 | 4,764.94 | 1,126.87 | 4.60 | 47.74 | 9.54 | 0.74 | 4.52 | 4.19 | 0.30 |
| Airport South | 32 | 4,987.90 | 1,205.18 | 9.16 | 45.70 | 12.39 | 1.82 | 4.79 | 4.53 | 0.63 |
| Airport | 11 | 4,801.10 | 992.36 | 6.42 | 31.99 | 7.14 | 0.46 | 2.03 | 1.82 | 0.25 |
| Mifflin North | 119/MIF-1 | 5,662.44 | 792.88 | 4.26 | 16.74 | 5.23 | 0.25 | 1.83 | 1.57 | 0.14 |
| Golf Course | | 8,040.97 | 1,179.14 | 2.71 | 51.27 | 7.80 | 0.53 | 5.22 | 4.86 | 0.18 |

Notes: Pollutant concentrations are given in micrograms per cubic meter, $\mu g/m^3$. USEPA is the U.S. Environmental Protection Agency. NAAQS are the National Ambient Air Quality Standards. CO is carbon monoxide, $NO_x$ is nitrogen oxides, $SO_x$ is sulfur oxides, $PM_{10}$ is coarse particulate matter, and $PM_{2.5}$ is fine particulate matter.

[1] Receptors are identified by descriptive locations indicating position in relation to Airport property, communities surrounding the Airport, and by the receptor identification code names as shown on Exhibit 5.5-1 and Exhibit 5.5-3. If the receptor name used in computer modeling is different, that identification name is also given.

Sources: *EDMS Version 4.5*, 2006, FAA.
*Landrum & Brown analysis*, 2007.

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## P.6.3 CAA GENERAL CONFORMITY EVALUATION AND SIP COMPLIANCE EVALUATION

Two evaluations required under the CAA were performed with respect to the emission inventories prepared for the alternatives under the 2012 high-growth forecast scenario. These are the General Conformity Evaluation and the SIP Compliance Evaluation. An airport project is subject to the General Conformity regulations when the project is located within a nonattainment area such as in the case of Franklin County. An evaluation of the inventory comparison is performed to be certain the project's net emissions would not delay timely attainment of the NAAQS as planned in the SIP. The evaluation of the emission inventory as compared to the emission budgets in the SIP are intended to determine the project's regional significance, as defined under the General Conformity Rule.

### P.6.3.1 General Conformity Evaluation

According to the General Conformity regulations, when the total of direct and indirect emissions (net emissions, which includes construction emissions) due to the proposed action equal or exceed the applicable General Conformity *de minimis* thresholds, a General Conformity Determination is required to demonstrate compliance with the State SIP. Franklin County is included in an area designated by the USEPA as nonattainment for ozone and $PM_{2.5}$ emissions. As such, the pollutants of concern include $PM_{2.5}$, the precursor pollutants for ozone development, $NO_x$ and VOC, and the $PM_{2.5}$ precursor pollutant, $SO_x$. These four pollutants are the "pollutants of concern" for the CMH EIS and the associated *de minimis* threshold is 100 tons per year for each pollutant. As such, the net emissions increase caused by the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) would be limited to less than 100 tons per year for each of the four pollutants of concern to be compliant under General Conformity. When net emissions are less than *de minimis* the project is assumed to conform and there would be no potential for adverse air quality impacts.

The data in **Table P.6-8**, show the comparative analysis for purposes of General Conformity. The table includes the net emissions due to construction and the increase in emissions associated with the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b).

**Table P.6-8**
**2012 HIGH-GROWTH FORECAST SCENARIO GENERAL CONFORMITY COMPARATIVE ANALYSIS FOR PROJECT AND CONSTRUCTION EMISSIONS**
**Port Columbus International Airport**

| CONSTRUCTION YEARS AND PROJECT ALTERNATIVE YEARS | ANNUAL NET EMISSIONS (tons per year) | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| 2009 Construction Emissions | 14.43 | 2.06 | 13.60 | 4.90 | 0.72 | 0.72 |
| 2010 Construction Emissions | 20.61 | 2.79 | 18.24 | 7.05 | 0.99 | 0.99 |
| 2011 Construction Emissions | 38.58 | 5.41 | 35.60 | 13.20 | 1.89 | 1.89 |
| 2012 Construction & Project Emissions: | | | | | | |
| 2012 Accelerated Sponsor's Proposed Project Net Emissions | 75.49 | 2.39 | 46.41 | 9.96 | 2.52 | 2.34 |

Notes: Data is extracted from tables presented in Section 5.5.1 and 5.5.2.CO is carbon monoxide, VOC are volatile organic compounds, NOx is nitrogen oxides, SOx is sulfur oxides, PM10 is coarse particulate matter, and PM2.5 is fine particulate matter. Totals may not calculate exactly due to rounding.

Source: *Landrum & Brown analysis*, 2007.

The data in Table P.6-8 show that the CMH project alternative under the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) would not cause net emissions that would equal or exceed the 100-ton *de minimis* threshold for $NO_x$, VOC, $SO_x$, or $PM_{2.5}$. Therefore, the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) is assumed to conform to the Ohio SIP and the project would not have the potential to cause significant adverse air quality impacts in Franklin County. Consequently, a General Conformity Determination is not necessary to demonstrate conformity under the CAA, and the alternative is assumed to comply under the Ohio SIP, as long as net emissions are not regionally significant.[10]

Under General Conformity, net emissions due to a Federal action are regionally significant when the net emissions exceed 10 percent of the regional total emissions inventory for a particular criteria pollutant in the nonattainment or maintenance area.[11] The regional emissions inventory for the nonattainment area that includes Franklin County is given in **Table P.6-9**.

[10] *Air Quality Procedures for Civilian Airports & Air Force Bases*, Section 2.1.5, *NAAQS Assessment*, April 1997, FAA.

[11] *Air Quality Procedures for Civilian Airports & Air Force Bases*, p. xxii, *NAAQS Assessment*, April 1997, FAA.

**Table P.6-9**
**MORPC TRANSPORTATION IMPROVEMENT PROGRAM (TIP) AIR QUALITY ANALYSIS FOR THE COLUMBUS OZONE AND PM2.5 NONATTAINMENT AREAS**

| YEAR | ANNUAL BUDGETED EMISSIONS (tons per year) | | | |
|---|---|---|---|---|
| **DATA FROM THE MAY 2007 TIP REPORT TABLE 10 AND TABLE 15** | | | | |
| **YEAR** | **OZONE EMISSIONS** | | **$PM_{2.5}$ EMISSIONS** | |
| | **VOC** | **$NO_X$** | **$NO_X$** | **$PM_{2.5}$** |
| 2009 | 26,338 | 39,615 | 36,172 | 583 |
| 2018 | 15,148 | 17,808 | 16,298 | 347 |
| 2020 | 15,148 | 15,392 | 13,947 | 346 |
| 2030 | 15,148 | 12,094 | 10,884 | 367 |
| **10 PERCENT LIMIT FOR REGIONAL SIGNIFICANCE** | | | | |
| **YEAR** | **OZONE EMISSIONS** | | **PM2.5 EMISSIONS** | |
| | **VOC** | **$NO_X$** | **$NO_X$** | **$PM_{2.5}$** |
| 2009 | 2,634 | 3,961 | 3,617 | 58 |
| 2018 | 1,515 | 1,781 | 1,630 | 35 |
| 2020 | 1,515 | 1,539 | 1,395 | 35 |
| 2030 | 1,515 | 1,209 | 1,088 | 37 |

Note: MORPC is Mid-Ohio Regional Planning Commission.

10 Percent Limit for Regional Significance is calculated by taking 10 percent of the May 2007 TIP data.

Source: Mid-Ohio Regional Planning Commission (MORPC), *Central Ohio Air Quality Analysis: Air Quality Conformity Determination Documentation for the: Franklin, Delaware, Licking, Fairfield, Madison and Knox County Ozone Non-Attainment Area and the Franklin, Delaware, Licking, Fairfield, and Coshocton (Franklin Twp) County $PM_{2.5}$ Non-Attainment Area*, Table 10 and Table 15, VOC and $NO_x$ data for ozone converted to tons per year, May 10, 2007.

The table includes the calculation of the 10-percent limit defining regional significance under General Conformity. An evaluation of the data summarized in Table P.6-9 as compared to net emissions given in Table P.6-8 shows that net emissions from the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) would be far less than 10 percent of the emission budget given in the TIP. Therefore, the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) would not be considered regionally significant as given under General Conformity, and the project complies with the plan included in the Ohio SIP to reduce emissions in Franklin County.

### P.6.3.2 SIP Compliance Evaluation

The nonattainment status of Franklin County required the MORPC to prepare an air quality General Conformity Determination for ozone and $PM_{2.5}$ emissions. Data from that report, dated May 2007,[12] is referenced in this discussion. According to the MORPC document, the eight-hour ozone attainment year is 2009, and the one-

[12] *Central Ohio Air Quality Analysis: Air Quality Conformity Determination Documentation for the: Franklin, Delaware, Licking, Fairfield, Madison and Knox County Ozone Non-Attainment Area and the Franklin, Delaware, Licking, Fairfield, and Coshocton (Franklin Twp) County PM2.5 Non-Attainment Area*, Table 10 and Table 15, May 10, 2007, Mid-Ohio Regional Planning Commission (MORPC).

hour ozone budget (milestone) year is 2010. The 2009 budget for the ozone and $PM_{2.5}$ nonattainment areas presented in the document is included in Table P.6-9 and is converted to tons per year. There is no emission budget for the 2010 milestone year in the MORPC document.

During scoping coordination meetings, OEPA DAPC requested that an inventory for the 2009 attainment year and the 2010 budget year be included in the air quality assessment. This data is presented in **Table P.6-10**. OEPA DAPC also requested the identification of the year where emissions due to the Sponsor's Proposed Project (Alternative C3b) are expected to be the greatest on an annual basis.

Although construction is expected to begin in 2009, the first year of full operation of the CMH Accelerated Sponsor's Proposed Project (Alternative C3b) is 2012. The year of greatest emissions, calculated as the combination of construction emissions and net emissions from the action, is expected to be 2012, as shown previously in Table P.6-8.

## P.6.4 NEPA ANALYSIS

For a Federal action, an air quality NEPA analysis is needed to determine the proposed action's potential impact on air quality. Therefore, emission inventories were prepared for the two 2012 high-growth forecast scenarios, the 2012 Accelerated Alternative A and the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b). The two inventories were compared to discern the net emissions from the high-growth forecast scenario. The evaluation showed that the net emissions increase for the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) would be below the General Conformity thresholds.

## Table P.6-10
## 2009 & 2010 HIGH-GROWTH FORECAST SCENARIO AIRPORT EMISSIONS INVENTORY AND CONSTRUCTION EMISSIONS INVENTORY
## Port Columbus International Airport

| EMISSION SOURCES | 2009 ANNUAL EMISSIONS (tons per year) | | | | | | |
|---|---|---|---|---|---|---|---|
| | CO | VOC | $NO_x$ | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ | TOTAL |
| Aircraft | 1031.37 | 114.50 | 406.24 | 38.93 | 56.41 | 56.41 | 1703.88 |
| GSE/APUs | 1107.90 | 44.39 | 84.23 | 11.94 | 4.27 | 4.13 | 1256.86 |
| Roadways | 867.00 | 65.46 | 94.40 | 0.63 | 2.89 | 1.77 | 1032.15 |
| Parking Facilities | 170.97 | 20.30 | 17.63 | 0.10 | 0.45 | 0.28 | 209.73 |
| Stationary Sources | 34.77 | 15.09 | 55.54 | 27.35 | 3.85 | 3.38 | 139.98 |
| Construction Emissions[1] | 14.43 | 2.06 | 13.60 | 4.90 | 0.72 | 0.72 | 36.43 |
| **TOTAL** | **3226.44** | **231.80** | **671.64** | **83.86** | **68.60** | **66.69** | **4379.03** |

| EMISSION SOURCES | 2010 ANNUAL EMISSIONS (tons per year) | | | | | | |
|---|---|---|---|---|---|---|---|
| | CO | VOC | $NO_x$ | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ | TOTAL |
| Aircraft | 1150.57 | 132.31 | 449.28 | 43.64 | 59.78 | 59.78 | 1895.37 |
| GSE/APUs | 1162.16 | 46.37 | 88.79 | 12.98 | 4.67 | 4.51 | 1319.49 |
| Roadways | 944.44 | 68.75 | 97.53 | 0.71 | 3.09 | 1.84 | 1116.36 |
| Parking Facilities | 190.64 | 21.25 | 18.78 | 0.11 | 0.50 | 0.30 | 231.59 |
| Stationary Sources | 39.21 | 15.70 | 62.14 | 30.92 | 4.30 | 3.77 | 156.04 |
| Construction Emissions[1] | 20.61 | 2.79 | 18.24 | 7.05 | 0.99 | 0.99 | 50.67 |
| **TOTAL** | **3507.63** | **287.18** | **734.77** | **95.42** | **73.33** | **71.19** | **4769.51** |

Notes: GSE is ground support equipment. APUs are auxiliary power units. CO is carbon monoxide, VOC are volatile organic compounds, $NO_x$ is nitrogen oxides, $SO_x$ is sulfur oxides, $PM_{10}$ is coarse particulate matter, and $PM_{2.5}$ is fine particulate matter. Emissions values of $PM_{2.5}$ for aircraft were supplemented by using $PM_{2.5}$ emission data from the USEPA AP-42. Totals may not calculate exactly due to rounding.

[1] Construction emissions for Alternative C2 were used for the SIP year inventories. Construction emissions under Alternative 2 are greater than for Alternative C3 for either the 2012 or 2018 alternatives. Therefore construction emissions for Alternative C2 are the most conservative.

Sources: *EDMS Version 4.5*, 2006, FAA.
Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources (AP-42), Table II-1-9, January 1991, USEPA.
*Landrum & Brown analysis*, 2007.

Once the emissions due to an action have been shown to be *de minimis*, usually no further analysis is required as such an action would be unlikely to cause significant adverse air quality impacts or exceed the NAAQS.[13] However, when deemed appropriate due to the size of the airport and after consultation with regional, State, and local air quality agencies, a dispersion analysis may be conducted. When local-area dispersion modeling is conducted and the modeled concentrations do not result in projected exceedances of the NAAQS, then the analysis is complete and compliant under the NEPA regulations.[14]

A dispersion analysis was conducted for the 2012 high-growth forecast scenarios due to the size of the Airport and following consultation with air agencies including USEPA Region 5, OEPA DAPC, and MORPC. The results of the dispersion analysis were given previously in Section P.6.1.1 and Section P.6.1.2. Only the 2012 high-growth forecast scenarios were evaluated to determine whether any of the modeled concentrations would exceed the NAAQS. The highest modeled concentration for each pollutant averaging period under each 2012 high-growth forecast scenario was extracted from the tables presented in this section and summarized in **Table P.6-11**.[15] Pollutant concentrations for the two 2012 high-growth forecast scenarios were highest at the arrival curb adjacent to the existing passenger terminal. The NEPA analysis demonstrated that none of the modeled pollutant concentrations under the 2012 high-growth forecast scenarios would have the potential to exceed the NAAQS, as shown in Table P.6-11.

Regional background concentrations were added to the 2012 modeled concentrations to reflect the "design concentrations." These were compared to the NAAQS to discern the air quality conditions within public access areas in and around the Airport under the 2012 Accelerated Alternative A and as a result of the Accelerated Sponsor's Proposed Project (Alternative C3b). Results of the 2018 Accelerated Sponsor's Proposed Project (Alternative C3b) are included for disclosure purposes only. A discussion of the background concentrations used for the CMH EIS is given in the Air Quality Technical Report, Appendix E. The background concentrations are summarized in **Table P.6-12**.

The Airport is located in a county with background concentrations of $PM_{2.5}$ that already exceed the NAAQS. Therefore, regardless of the Accelerated Sponsor's Proposed Project (Alternative C3b), the area is in violation of the average 24-hour and average annual $PM_{2.5}$ standards. As such, the $PM_{2.5}$ NAAQS are also exceeded under the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b). The design concentrations are given in **Table P.6-13**.

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[13] *FAA Order 1050.1E Environmental Impacts: Policies and Procedures*, March 20, 2006, FAA; and *Air Quality Procedures for Civilian Airports & Air Force Bases*, Section 2.1.5, *NAAQS Assessment*, April 1997 and including the Addendum dated September 2004, FAA.

[14] *Order 1050.1E*, Appendix A, Paragraph 2.1c, March 20, 2006, FAA.

[15] Results of the 2018 High-Growth Scenario Alternative C3b are included in Table P.6-11 for disclosure purposes only.

**Table P.6-11**
**MAXIMUM MODELED POLLUTANT CONCENTRATIONS**
**Port Columbus International Airport**

| USEPA STANDARDS AND ALTERNATIVES<br>USEPA NAAQS ($\mu g/m^3$) | MODELED POLLUTANT CONCENTRATIONS BY NAAQS AVERAGING PERIODS ($\mu g/m^3$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CO | | $NO_x$ | $SO_x$ | | | $PM_{10}$ | $PM_{2.5}$ | |
| | 1-HR | 8-HR | ANNUAL | 3-HR | 24-HR | ANNUAL | 24-HR | 24-HR | ANNUAL |
| | 40,000 | 10,000 | 100 | 1,300 | 365 | 80 | 150 | 35 | 15 |
| **2012 HIGH-GROWTH SCENARIO ALTERNATIVES** | | | | | | | | | |
| 2012 Accelerated Alternative A | 15,451.26 | 3,419.03 | 65.32 | 231.67 | 92.84 | 11.24 | 15.27 | 14.09 | 2.89 |
| 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) | 16,061.68 | 3,439.71 | 53.46 | 217.90 | 85.84 | 9.48 | 11.85 | 10.71 | 2.38 |
| **2018 HIGH-GROWTH SCENARIO ALTERNATIVES** | | | | | | | | | |
| 2018 Accelerated Sponsor's Proposed Project (Alternative C3b) | 19,274.36 | 4,092.32 | 57.79 | 250.25 | 99.65 | 11.71 | 16.79 | 15.42 | 3.18 |

Notes: Pollutant concentrations are given in micrograms per cubic meter, $\mu g/m^3$. USEPA is the U.S. Environmental Protection Agency. NAAQS are the National Ambient Air Quality Standards. CO is carbon monoxide, $NO_x$ is nitrogen oxides, $SO_x$ is sulfur oxides, $PM_{10}$ is coarse particulate matter, and $PM_{2.5}$ is fine particulate matter.

Sources: *EDMS Version 4.5*, 2006, FAA.
*Landrum & Brown analysis*, 2007.

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**Table P.6-12**
**BACKGROUND CONCENTRATIONS FOR FRANKLIN COUNTY**

| CRITERIA POLLUTANT | AVERAGING PEROD | USEPA NAAQS STANDARDS ($\mu g/m^3$) | REGIONAL BACKGROUND CONCENTRATION ($\mu g/m^3$) |
|---|---|---|---|
| CO | 1-Hour | 40,000 | 4,796.40 |
| | 8-Hour | 10,000 | 2,284 |
| $NO_x$ | Annual | 100 | 39.0 |
| $SO_x$ | 3-Hour | 1,300 | 138.86 |
| | 24-Hour | 365 | 73.36 |
| | Annual | 80 | 10.74 |
| $PM_{10}$ | 24-Hour | 150 | 85 |
| $PM_{2.5}$ | 24-Hour | 35 | 52.1 |
| | Annual | 15 | 16.67 |

Notes: Pollutant concentrations are given in micrograms per cubic meter, $\mu g/m^3$. USEPA is the U.S. Environmental Protection Agency. NAAQS are the National Ambient Air Quality Standards. CO is carbon monoxide, $NO_x$ is nitrogen oxides, $SO_x$ is sulfur oxides, $PM_{10}$ is coarse particulate matter, and $PM_{2.5}$ is fine particulate matter.

Source: Background concentration data were provided to Landrum & Brown, via e-mail transmissions from Ohio EPA, September 28, 2006, May 21, 2007, and May 29, 2007. These values are valid for Existing (2006) Conditions and all the project alternative and no-action alternatives for 2012 and 2018, including the high-growth forecast scenarios.

Data in Table P.6-13 show that under the 2012 Accelerated Alternative A, the annual average concentration of $NO_x$ emissions would have the potential to exceed the NAAQS at the arrival curb[16] regardless of any proposed action at the Airport. The data also shows that the implementation of the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) would decrease the average annual concentrations of $NO_x$ at the arrival curb to a level below the NAAQS. Concentrations of $PM_{2.5}$ emissions are projected to increase slightly under the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) as compared to the 2012 Accelerated Alternative A, particularly for the 24-hour average concentration.[17]

[16] The receptor located at the existing arrival curb, adjacent to the existing passenger terminal building, is where average annual concentrations of $NO_x$ emissions would be the greatest.

[17] Results of the 2018 High-Growth Scenario Alternative C3b is given for disclosure only.

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**Table P.6-13**
**MAXIMUM DESIGN CONCENTRATIONS**
**Port Columbus International Airport**

| USEPA STANDARDS AND ALTERNATIVES<br>USEPA NAAQS ($\mu g/m^3$) | DESIGN CONCENTRATIONS ($\mu g/m^3$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CO | | $NO_x$ | $SO_x$ | | | $PM_{10}$ | $PM_{2.5}$ | |
| | 1-HR | 8-HR | ANNUAL | 3-HR | 24-HR | ANNUAL | 24-HR | 24-HR | ANNUAL |
| | 40,000 | 10,000 | 100 | 1,300 | 365 | 80 | 150 | 35 | 15 |
| **2012 ALTERNATIVES** | | | | | | | | | |
| 2012 Accelerated Alternative A | 20,247.66 | 5,703.03 | 104.32 | 370.53 | 166.20 | 21.98 | 100.27 | 66.19 | 19.56 |
| 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) | 20,858.08 | 5,723.71 | 92.46 | 356.76 | 159.20 | 20.22 | 96.85 | 62.81 | 19.05 |
| **2018 ALTERNATIVES** | | | | | | | | | |
| 2018 Accelerated Sponsor's Proposed Project (Alternative C3b) | 24,070.76 | 6,376.32 | 96.79 | 389.11 | 173.01 | 22.45 | 101.79 | 67.52 | 19.85 |

Notes: HS is high-growth scenario. Pollutant concentrations are given in micrograms per cubic meter, $\mu g/m^3$. USEPA is the U.S. Environmental Protection Agency. NAAQS are the National Ambient Air Quality Standards. CO is carbon monoxide, $NO_x$ is nitrogen oxides, $SO_x$ is sulfur oxides, $PM_{10}$ is coarse particulate matter, and $PM_{2.5}$ is fine particulate matter.

Sources: *EDMS Version 4.5*, 2006, FAA.
*Landrum & Brown analysis*, 2007.

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The relatively low increase in concentrations of $PM_{2.5}$ emissions caused by the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) would not constitute a new violation. Neither would the project make the projected baseline violation of the $PM_{2.5}$ standard or the $NO_x$ standard worse or impede the timely attainment of these emissions as required by the Ohio SIP. Therefore, the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) would not have the potential to cause significant adverse air quality impacts and the project complies under CAA Section 176(c)(1) and would not:

- Cause or contribute to any new violation of any standard; or,
- Increase the frequency or severity of any existing violation of any standard.[18]

While emissions from the Airport are not causing the exceedance of the $PM_{2.5}$ standards, the Airport contributes to the emissions of $PM_{2.5}$ in Franklin County due mainly to the operation of gasoline- and diesel-powered GSE in the gate area. The Airport may want to consider converting a portion of the GSE to electric units or alternative fuels, which would decrease the pollutant concentrations at the Airport and assist in the reductions of $PM_{2.5}$ emissions in Franklin County.

### P.6.5 MITIGATION MEASURES

The analysis conducted for the General Conformity regulations of the CAA and the NEPA analysis showed that the 2012 Accelerated Sponsor's Proposed Project (Alternative C3b) would comply with the requirements of the CAA and NEPA. Therefore, there would be no requirement for mitigation measures with respect to air quality impacts.

## P.7 WATER QUALITY

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would result in the same water quality impacts as described for 2018 Alternative C3b in Chapter Five, Section 5.6, *Water Quality*.

## P.8 DEPARTMENT OF TRANSPORTATION 4(f)

This Environmental Impact Statement (EIS) includes an investigation of impacts due to the proposed development (Federal action) upon areas such as parks, recreation areas, or wildlife and waterfowl refuges. Historic structures are also included if they are on, or are eligible for inclusion on, the National Register of Historic Places (NRHP). Areas such as these are considered significant and are

[18] 40 CFR Part 93.158(b).

protected under Section 303c of the Department of Transportation (DOT) Act, formerly referred to as Section 4(f) of the Department of Transportation (DOT) Act of 1966.[19] It will be referred to as Section 4(f) in this section.

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would result in the same direct impacts as described for Alternative C3b in Chapter Five, Section 5.7, *Department of Transportation 4(f).*

Indirect impacts, which primarily are related to increases in noise levels, have been prepared for the Accelerated Alternative A and the Accelerated Sponsor's Proposed Project. These are described below.

## P.8.1 ANALYSIS OF DOT 4(f) IMPACTS – 2012 CONDITIONS

### P.8.1.1 2012 Alternative A: No Action (*Accelerated Forecast*)

Three parks, including LWCA-funded Pizzurro Park, Amvet Village Park, and Brittany Hills Park, are located within the 65 – 70 DNL noise contour for 2012 Accelerated Alternative A. Seven historic structures that are listed, eligible for listing, or possibly eligible for listing in the NRHP would be located within the 65 DNL noise contour. Noise impacts to historic structures from 2012 Accelerated Alternative A are listed in **Table P.8-1** and shown on Exhibit 5.7.1 located in Chapter Five, Section 5.7, *Department of Transportation 4(f)*..

### P.8.1.2 2012 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

Five parks, including LWCA-funded Pizzurro Park, Krumm Park, Brittany Hills Park, Brentnell Park, and Whitehall Community Park, are located within the 65 – 70 DNL noise contour for 2012 Accelerated Sponsor's Proposed Project. Seven historic structures that are listed, eligible for listing, or possibly eligible for listing in the NRHP would be located within the 65 DNL noise contour. Noise impacts to historic structures from 2012 Accelerated Sponsor's Proposed Project are listed in Table P.8-1.

[19] There has been no Statement of Insignificance issued by any Federal, state, or local official with jurisdiction regarding the historic sites, per 49 U.S.C. § 303.

## P.8.2 ANALYSIS OF DOT 4(f) IMPACTS – 2018 CONDITIONS

### P.8.2.1 2018 Alternative A: No Action (*Accelerated Forecast*)

Three parks, including LWCA-funded Pizzurro Park, Amvet Village Park, and Brittany Hills Park, are located within the 65 – 70 DNL noise contour for 2012 Accelerated Alternative A. Eight historic structures that are listed, eligible for listing, or possibly eligible for listing in the NRHP would be located within the 65 DNL noise contour. Noise impacts to historic structures from 2012 Accelerated Alternative A are listed in Table P.8-1.

### P.8.2.2 2018 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

Five parks, including LWCA-funded Pizzurro Park, Krumm Park, Brittany Hills Park, Brentnell Park, and Whitehall Community Park, are located within the 65 – 70 DNL noise contour for 2012 Accelerated Sponsor's Proposed Project. Nine historic structures that are listed, eligible for listing, or possibly eligible for listing in the NRHP would be located within the 65 DNL noise contour. Noise impacts to historic structures from 2012 Accelerated Sponsor's Proposed Project are listed in Table P.8-1.

## Table P.8-1
## SUMMARY OF NOISE IMPACTS TO SECTION 4(F), 6(F), AND HISTORIC STRUCTURES
## Port Columbus International Airport

| Map Number | OHI Number | Description | 2012 Accelerated Alternative A | 2012 Accelerated Sponsor's Proposed Project | 2018 Accelerated Alternative A | 2018 Accelerated Sponsor's Proposed Project |
|---|---|---|---|---|---|---|
| 1 | n/a | Valley Dale Ballroom | 65-70 | - | 65-70 | 65-70 |
| 2 | FRA-1793-12 | Old Port Columbus Airport Control Tower | 65-70 | 70-75 | 65-70 | 70-75 |
| 3 | FRA-260512, FRA-2606-12 | Elam Drake House | 70-75 | 65-70 | 70-75 | 70-75 |
| 4 | FRA-260512, FRA-2606-12 | Elam Drake Barn | 70-75 | 65-70 | 70-75 | 70-75 |
| 5 | FRA-8366-12 | Air Force Plant 85, 4300 E. Fifth Ave. (multiple structures) | - | 70-75 | - | 70-75 |
| 6 | FRA-2063-14 | House at 1388 Sunbury Rd | 65-70 | 65-70 | 65-70 | 65-70 |
| 7 | FRA-2052-14 | 1891 Sunbury Rd | 65-70 | - | 65-70 | - |
| 8 | FRA-2068-14 | Wehrle Hall – Ohio Dominican University, Sunbury Rd | - | - | - | - |
| 9 | FRA-2069-14 | Erskine Hall – Ohio Dominican University, Sunbury Rd | - | - | - | 65-70 |
| 10 | n/a | Evergreen Cemetery | - | 65-70 | 65-70 | 65-70 |
| 11 | FRA-2054-12 | Shepard School | - | - | - | - |
| 12 | n/a | Hangar 1 (Transcontinental Air Transport Hangar), 575 N. Hamilton Road | 65-70 | 70-75 | 65-70 | 70-75 |

Note: "-" denotes sound levels less than 65 DNL.
Exhibit 5.7.1 in Chapter Five, Section 5.7, *Department of Transportation 4(f),* shows the locations of these sites.

Source: Landrum & Brown, 2007.

# P.9 HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

This Environmental Impact Statement (EIS) includes an investigation of impacts due to the proposed development (Federal action) upon historic, architectural, archaeological, and cultural resources in accordance with Section 106 of the National Historic Preservation Act (NHPA).

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would result in the same direct (physical) impacts as described for Alternative C3b in Chapter Five, Section 5.8, *Historic, Architectural, Archaeological, and Cultural Resources*.

Indirect impacts, which primarily are related to increases in noise levels, have been prepared for the Accelerated Alternative A and the Accelerated Sponsor's Proposed Project. These are described below.

## P.9.1 ANALYSIS OF HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES IMPACTS – 2012 CONDITIONS

### P.9.1.1 2012 Alternative A: No Action (*Accelerated Forecast*)

Seven historic structures that are listed, eligible for listing, or possibly eligible for listing in the NRHP would be located within the 65 DNL noise contour. Noise impacts to historic structures from 2012 Accelerated Alternative A are listed in Table P.8-1.

### P.9.1.2 2012 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

Seven historic structures that are listed, eligible for listing, or possibly eligible for listing in the NRHP would be located within the 65 DNL noise contour. Noise impacts to historic structures from 2012 Accelerated Sponsor's Proposed Project are listed in Table P.8-1.

## P.9.2 ANALYSIS OF HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES IMPACTS – 2018 CONDITIONS

### P.9.2.1 2018 Alternative A: No Action (*Accelerated Forecast*)

Eight historic structures that are listed, eligible for listing, or possibly eligible for listing in the NRHP would be located within the 65 DNL noise contour. Noise impacts to historic structures from 2012 Accelerated Alternative A are listed in Table P.8-1.

### P.9.2.2 2018 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

Nine historic structures that are listed, eligible for listing, or possibly eligible for listing in the NRHP would be located within the 65 DNL noise contour. Noise impacts to historic structures from 2012 Accelerated Sponsor's Proposed Project are listed in Table P.8-1.

## P.10 FISH, WILDLIFE, AND PLANTS

Major development proposals often involve the potential for impacting threatened and endangered species, as well as their habitat. None of the development alternatives assessed in this EIS would result in impacts to threatened and endangered species or their habitat.

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would not result in new impacts to threatened and endangered species or their habitat because there is no difference in the physical development being proposed. Therefore, the impacts as described for Alternative C3b in Chapter Five, Section 5.9, *Fish, Wildlife, and Plants,* would remain the same for the Accelerated Sponsor's Proposed Project.

## P.11 WETLANDS AND STREAMS

Major development proposals often involve the potential for impacting wetlands and streams. All of the development alternatives assessed in this EIS have the same wetland and stream impacts.

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at

approximately the same time as the replacement runway (2012) would result in the same amount of wetland and stream impacts as described for Alternative C3b in Chapter Five, Section 5.10, *Wetlands and Streams*.

## P.12 FLOODPLAINS

None of the development alternatives assessed in this EIS would result in impacts to delineated floodplains.

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would not result in new impacts to floodplains because there is no difference in the physical development being proposed. Therefore, the impacts as described for Alternative C3b in Chapter Five, Section 5.11, *Floodplains,* would remain the same for the Accelerated Sponsor's Proposed Project.

## P.13 COASTAL ZONE RESOURCES

None of the development alternatives assessed in this EIS would result in impacts to coastal zones or barriers.

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would not result in new impacts to coastal zones or barriers because there is no difference in the physical development being proposed. Therefore, the impacts as described for Alternative C3b in Chapter Five, Section 5.12, *Coastal Zone Resources,* would remain the same for the Accelerated Sponsor's Proposed Project.

## P.14 WILD AND SCENIC RIVERS

None of the development alternatives assessed in this EIS would result in impacts to rivers included within the National Park Service's Wild and Scenic Rivers System.

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would not result in new impacts to floodplains because there is no difference in the physical development being proposed. Therefore, the impacts as described for Alternative C3b in Chapter Five, Section 5.13, *Wild and Scenic Rivers,* would remain the same for the Accelerated Sponsor's Proposed Project.

# P.15 FARMLANDS

None of the development alternatives assessed in this EIS would result in impacts to prime farmland.

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would not result in new impacts to prime farmland because there is no difference in the physical development being proposed. Therefore, the impacts as described for Alternative C3b in Chapter Five, Section 5.14, *Farmlands,* would remain the same for the Accelerated Sponsor's Proposed Project.

# P.16 NATURAL RESOURCES AND ENERGY SUPPLY

## P.16.1 NATURAL RESOURCES AND ENERGY ASSESSMENT – 2012 CONDITIONS

This section discusses the analysis of natural resource and energy supply impacts for each of the 2012 accelerated forecast alternatives (2012 Accelerated Alternative A and 2012 Accelerated Sponsor's Proposed Project).

### P.16.1.1 2012 Alternative A: No Action (Accelerated Forecast)

This section provides a summary of the impacts to natural resources and the local energy supply resulting from the operation of the Airport under Accelerated Alternative A in 2012. The impact assessment prepared for the 2012 Accelerated Alternative A is the baseline against which the 2012 Accelerated Sponsor's Proposed Project alternative is evaluated.

***Electricity:*** The 2012 Accelerated Alternative A would not increase demand for electricity. No new terminal facilities or airfield lighting would be constructed under this alternative. However, the projected annual usage of electricity for the 2012 Alternative A, shown in **Table P.16-1**, increases from 145,326 MBTUs (under the 2012 Alternative A: No Action, Baseline Forecast) to 236,099 MBTUs due to the increase in passengers projected for the 2012 high-growth forecast scenario.

***Natural Gas:*** The 2012 Accelerated Alternative A would not increase demand for natural gas. No new terminal facilities would be constructed under this alternative; therefore there would be no additional need for heating. The projected annual usage of natural gas for the 2012 Accelerated Alternative A, shown in Table P.16-1, remains at 38,885 MBTUs, no change from the 2012 Alternative A: No Action discussed in Chapter Five, Section 5.15, *Natural Resources and Energy Supply*.

***Aircraft Operations:*** The high-growth forecast scenario projects growth in aircraft operations at CMH and additional aircraft movements will increase average taxi and delay times. Consequently there would be an increase in fuel consumption at CMH.

The projected fuel consumption at CMH is a function of the direct relationship between fuel demand and aircraft operations and taxi and delay time. The projected fuel demand at CMH under the 2012 Accelerated Alternative A is shown in Table P.16-1.

**Table P.16-1**
**PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND –**
**2012 Accelerated Alternative A**
**Port Columbus International Airport**

| | Energy Type | | | | | |
|---|---|---|---|---|---|---|
| | UTILITY energy | | FUEL energy | | | |
| | Electricity | Natural Gas | Jet A Fuel | AvGas | Diesel | Gasoline |
| Annual | 236,099 MMBTU | 38,885 MMBTU | 94,038,302 gallons | 1,272,176 gallons | 303,407 gallons | 2,515,841 gallons |
| Monthly Average | 19,675 MMBTU | 3,240 MMBTU | 7,836,525 gallons | 106,015 gallons | 25,284 gallons | 209,653 gallons |

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.

MBTU is million BTU (British thermal units). One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

The increase in electricity and natural gas consumption is estimated as a result of the reconfiguration of the terminal in April 2007 to accommodate SkyBus. Fuel consumption is projected to increase in proportion to the increase in operations at the Airport.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

### P.16.1.2 2012 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

This section provides a summary of the impacts to natural resources and the local energy supply resulting from the operation of the Airport under Accelerated Sponsor's Proposed Project in 2012.

***Electricity:*** The 2012 Accelerated Sponsor's Proposed Project would increase demand for electricity since a new terminal building and additional airfield lighting would be constructed under this alternative. The projected annual usage of electricity for the 2012 Accelerated Sponsor's Proposed Project, shown in **Table P.16-2**, increases from 236,099 MBTUs, under the 2012 Accelerated Alternative A, to 272,838 MBTUs due to the increase in terminal area and airfield lighting.

***Natural Gas:*** The 2012 Accelerated Sponsor's Proposed Project Alternative A would increase demand for natural gas since the new terminal facilities would be constructed under this alternative; therefore there would be a need for additional

heating. The projected annual usage of natural gas for the 2012 Accelerated Sponsor's Proposed Project, shown in Table P.16-2, increases from 38,885 MBTUs (under the 2012 Accelerated Alternative A) to 67,284 MBTUs due to additional heating requirements for the new terminal.

***Aircraft Operations:*** The high-growth forecast scenario projects growth in aircraft operations at CMH and additional aircraft movements will increase average taxi times. Consequently there would be an increase in fuel consumption at CMH as compared to the 2012 Alternative A: No Action (Baseline Forecast). However, the increase in Jet-A and AvGas consumption would not be as great compared to the 2012 Accelerated Alternative A due to a decrease in delay time seen as a result of the new airfield developments proposed under this alternative. The projected fuel consumption at CMH is a function of the direct relationship between fuel demand and aircraft operations and taxi and delay time. The projected fuel demand at CMH under the 2012 Accelerated Sponsor's Proposed Project is shown in Table P.16-2.

**Table P.16-2**
**PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND –**
**2012 ACCELERATED SPONSOR'S PROPOSED PROJECT**
**Port Columbus International Airport**

| | Energy Type | | | | | |
|---|---|---|---|---|---|---|
| | UTILITY energy | | FUEL energy | | | |
| | Electricity | Natural Gas | Jet A Fuel | AvGas | Diesel | Gasoline |
| Annual | 272,838 MMBTU | 67,284 MMBTU | 92,356,241 gallons | 1,266,522 gallons | 303,407 gallons | 2,515,841 gallons |
| Monthly Average | 22,736 MMBTU | 5,607 MMBTU | 7,696,353 gallons | 105,543 gallons | 25,284 gallons | 209,653 gallons |

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.

MBTU is million BTU (British thermal units). One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

The increase in electricity and natural gas consumption is estimated as a result of the reconfiguration of the terminal in April 2007 to accommodate SkyBus. Fuel consumption is projected to increase in proportion to the increase in operations at the Airport.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

## P.16.2 NATURAL RESOURCES AND ENERGY ASSESSMENT – 2018 CONDITIONS

This section discusses the analysis of natural resource and energy supply impacts for each of the 2018 accelerated forecast alternatives (2018 Accelerated Alternative A and 2018 Accelerated Sponsor's Proposed Project).

## P.16.2.1 2018 Alternative A: No Action (*Accelerated Forecast*)

This section provides a summary of the impacts to natural resources and the local energy supply resulting from the operation of the Airport under Accelerated Alternative A in 2018. The impact assessment prepared for the 2012 Accelerated Alternative A is the baseline against which the 2018 Accelerated Sponsor's Proposed Project alternative is evaluated.

***Electricity:*** The 2018 Accelerated Alternative A would not increase demand for electricity. No new terminal facilities or airfield lighting would be constructed under this alternative. However, the projected annual usage of electricity for the 2018 Alternative A, shown in **Table P.16-3**, increases from 236,099 MBTUs (under the 2012 Accelerated Alternative A) to 262,689 MBTUs due to the increase in passengers projected for the 2018 high-growth forecast scenario.

***Natural Gas:*** The 2018 Accelerated Alternative A would not increase demand for natural gas. No new terminal facilities would be constructed under this alternative; therefore there would be no additional need for heating. The projected annual usage of natural gas for the 2018 Accelerated Alternative A, shown in Table P.16-3, remains at 38,885 MBTUs, would not change from the 2018 Alternative A: No Action discussed in Chapter Five, Section 5.15, *Natural Resources and Energy Supply*.

***Aircraft Operations:*** The high-growth forecast scenario projects growth in aircraft operations at CMH and additional aircraft movements will likely increase average taxi and delay times. Consequently there would be an increase in fuel consumption at CMH. The projected fuel consumption at CMH is a function of the direct relationship between fuel demand and aircraft operations and taxi and delay time. The projected fuel demand at CMH under the 2018 Accelerated Alternative A is shown in Table P.16-3.

**Table P.16-3**
**PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND –**
**2018 Accelerated Alternative A**
**Port Columbus International Airport**

| | Energy Type | | | | | |
|---|---|---|---|---|---|---|
| | UTILITY energy | | FUEL energy | | | |
| | Electricity | Natural Gas | Jet A Fuel | AvGas | Diesel | Gasoline |
| Annual | 262,689 MMBTU | 38,885 MMBTU | 105,411,146 gallons | 1,404,513 gallons | 334,811 gallons | 2,776,236 gallons |
| Monthly Average | 21,891 MMBTU | 3,240 MMBTU | 8,784,262 gallons | 117,043 gallons | 27,901 gallons | 231,353 gallons |

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.

MBTU is million BTU (British thermal units). One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

The increase in electricity and natural gas consumption is estimated as a result of the reconfiguration of the terminal in April 2007 to accommodate SkyBus. Fuel consumption is projected to increase in proportion to the increase in operations at the Airport.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

## P.16.2.2 2018 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

This section provides a summary of the impacts to natural resources and the local energy supply resulting from the operation of the Airport under Accelerated Sponsor's Proposed Project in 2018.

***Electricity:*** The 2018 Accelerated Sponsor's Proposed Project would not increase demand for electricity beyond what is projected for the 2012 Accelerated Sponsor's Proposed Project, since the new terminal building and additional airfield lighting would be constructed by 2012 under this alternative. The projected annual usage of electricity for the 2018 Accelerated Sponsor's Proposed Project, shown in **Table P.16-4**.

***Natural Gas:*** The 2018 Alternative A would not increase demand for natural gas beyond what is projected for the 2012 Accelerated Sponsor's Proposed Project, since the new terminal building and additional airfield lighting would be constructed by 2012 under this alternative. The projected annual usage of natural gas for the 2018 Accelerated Sponsor's Proposed Project is shown in Table P.16-4.

***Aircraft Operations:*** The high-growth scenario forecast projects growth in aircraft operations at CMH and additional aircraft movements will likely increase average taxi times. Consequently there would be an increase in fuel consumption at CMH as

compared to the 2018 Alternative A: No Action (Baseline Forecast). However, the increase in Jet-A and AvGas consumption would not be as great compared to the 2018 Accelerated Alternative A due to a decrease in delay time seen as a result of the new airfield developments proposed under this alternative. The projected fuel consumption at CMH is a function of the direct relationship between fuel demand and aircraft operations and taxi and delay time. The projected fuel demand at CMH under the 2012 Accelerated Sponsor's Proposed Project is shown in Table P.16-4.

**Table P.16-4**
**PROJECTED ANNUAL UTILITY POWER AND FUEL DEMAND –**
**2018 ACCELERATED SPONSOR'S PROPOSED PROJECT**
**Port Columbus International Airport**

| | Energy Type | | | | | |
|---|---|---|---|---|---|---|
| | UTILITY energy | | FUEL energy | | | |
| | Electricity | Natural Gas | Jet A Fuel | AvGas | Diesel | Gasoline |
| Annual | 272,838 MMBTU | 67,284 MMBTU | 102,793,075 gallons | 1,397,739 gallons | 334,811 gallons | 2,776,236 gallons |
| Monthly Average | 22,736 MMBTU | 5,607 MMBTU | 8,566,090 gallons | 116,478 gallons | 27,901 gallons | 231,353 gallons |

Note: AvGas is low-lead aviation gasoline for general aviation aircraft.

MBTU is million BTU (British thermal units). One BTU of heat is equal to 1/180 of the heat required to raise the temperature of one pound of water from 32 degrees Fahrenheit to 212 degrees Fahrenheit at a constant pressure of one atmosphere.

The increase in electricity and natural gas consumption is estimated as a result of the reconfiguration of the terminal in April 2007 to accommodate SkyBus. Fuel consumption is projected to increase in proportion to the increase in operations at the Airport.

Source: Comprehensive Program Analysis, Burns & McDonald, 2005; CRAA, 2007, Landrum & Brown Analysis, 2007.

## P.17 LIGHT EMISSIONS

This section discusses the analysis of light emission impacts for each of the 2012 accelerated forecast alternatives (2012 Accelerated Alternative A and 2012 Accelerated Sponsor's Proposed Project).

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would not result in new impacts to light emissions because any new lighting associated with the proposed passenger terminal would be located in the middle of Airport property and

therefore, would not affect any residences. Therefore, the impacts as described for the 2018 Alternative C3b in Chapter Five, Section 5.16, *Light Emissions and Visual Impacts,* would remain the same for the 2012 Accelerated Sponsor's Proposed Project.

# P.18 HAZARDOUS WASTE AND SOLID WASTE

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would not result in new impacts to hazardous materials because there is no difference in the physical development being proposed. Therefore, the impacts as described for Alternative C3b in Chapter Five, Section 5.17, *Hazardous Waste and Solid Waste*, would remain the same for the Accelerated Sponsor's Proposed Project.

# P.19 CONSTRUCTION IMPACTS

## P.19.1 CONSTRUCTION IMPACTS – 2012 CONDITIONS

This section provides a summary of the construction impacts of the 2012 conditions for each of the accelerated forecast alternatives. The 2012 Accelerated Alternative A, which includes the high-growth scenario forecast, is compared to the 2012 Accelerated Sponsor's Proposed Project. Construction tasks expected under the 2012 runway development alternatives include:

- Expansion of the glycol storage facility;
- Development of a stormwater detention basin at the location of the small tributary to Big Walnut Creek south of Sawyer Road;
- Construction of the proposed replacement runway;
- Construction of taxiways;
- Realignment of Stelzer Road;
- Removal of portions of the Columbus International Aircenter, including Control Tower Building #7;
- Demolition of hangars;
- Realignment of Perimeter road;
- Demolition of acquired homes;
- Removal of various structures on the airfield;
- Installation of the Instrument Landing System (ILS); and,
- Reconfiguration of the golf course

### P.19.1.1 2012 Alternative A: No Action (*Accelerated Forecast*)

Under this alternative no construction activities would occur, therefore there would be no construction-related impacts.

### P.19.1.2 2012 Accelerated Sponsor's Proposed Project: Relocate Runway 10R/28L 702 Feet to the South, Construct New Passenger Terminal, and Implement Recommendations from the 2007 Part 150 Study

Accelerating the development schedule, as proposed under the Accelerated Sponsor's Proposed Project, would not change the individual projects proposed by the CRAA, but rather would change the timing of the development. Accelerating the development schedule to complete the proposed passenger terminal at approximately the same time as the replacement runway (2012) would not result in new construction impacts to soil erosion, water quality, noise, solid/hazardous waste, airport operations, or construction resources because there is no difference in the physical development being proposed. Therefore, the impacts as described for Alternative C3b in Chapter Five, Section 5.18, *Construction Impacts,* would remain the same for the Accelerated Sponsor's Proposed Project. Air quality impacts may be altered since the construction timeline would change, therefore the emissions from construction activity would change from year to year. These impacts are described in the following sections.

***Air Quality:*** Construction activities would have a short-term impact on local air quality. Air pollution during the construction period would be a consequence of one or more of the following activities:

- Vehicular activity in support of construction operations;
- Wind erosion of soils;
- The movement of construction vehicles along haul roads;
- Excavation; and
- Cement and aggregate handling.

Air pollutants from construction activities would be similar to those of automobiles and aircraft. The same National Ambient Air Quality Standards (NAAQS) set forth for vehicles and aircraft must also be met for construction activities. NAAQS has set specific limits for the following criteria air pollutants: carbon monoxide (CO), lead (Pb), ozone ($O_3$), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), and particulate matter 10 microns (one micron = $10^{-6}$ m) in diameter ($PM_{10}$). See Section 5.5, *Air Quality,* for a detailed discussion of the pollutants and air quality regulations.

Lead (Pb) and ozone ($O_3$) are two pollutants that are not normally assessed when considering construction activities. Lead is traditionally not a pollutant associated with construction vehicles or activities and, as such, the impact would be negligible. Ozone is not an emitted pollutant; therefore, it can not be assessed with respect to direct emissions from construction vehicles or activities.

Vehicle Emissions

Construction vehicles would emit $PM_{10}$, CO, $NO_2$, and $SO_2$ depending upon the total number of vehicles used for the project. A detailed air quality analysis of construction vehicle emissions is provided in Section P.6.1, *Air Quality Impacts – 2012 Conditions*. Emissions from construction vehicles would be temporary in nature and would be localized to the construction area and the immediate surrounding vicinity. Emissions would be mitigated through the use of construction BMPs and pollutant inventories and concentrations would be subject to all local, State of Ohio, and Federal regulations.

Fugitive Dust

Fugitive dust would be generated by two physical occurrences: pulverization and abrasion of surface materials by application of mechanical force and entrapment of dust particles by the action of turbulent air currents created by wind or construction vehicle activity. The air pollution impact potential of fugitive dust sources would depend on the quantity and drift potential of the dust injected into the atmosphere.

Control measures for fugitive dust on paved roads focus on either preventing material from being deposited on roads, or removal of any material from the lanes of travels. Methods commonly used to prevent the deposit of dust include: covering of loads in trucks or wetting of material being hauled; cleaning vehicles before they leave the construction site; using 'bump strips' or grates to shake dust from the vehicles; and paving the construction site access roads nearest to the paved roads. To minimize the stirring or entrapment of fugitive dust already on roads, mitigation measures would include frequent sweeping and/or flushing of the roads with water. In order to minimize fugitive dust transport, unpaved roads and inactive portions of the construction site would be either watered (achieving a 50 percent reduction in fugitive dust) or chemically stabilized (achieving an 80 percent reduction). The exact method or combination of methods for abatement of fugitive dust will be determined by the specific conditions at the construction site. Another measure frequently used in the suppression of dust is the placement of seeding and mulching as construction areas are completed.

## P.19.2 CONSTRUCTION IMPACTS – 2018 CONDITIONS

Under accelerated conditions, no construction activities would occur since construction of the new terminal facility and replacement runway would be complete by 2012, therefore there would be no construction-related impacts for the 2018 timeframe.