DRAFT

Runway Use Program Environmental Assessment

Cincinnati / Northern Kentucky International Airport

Boone County, Kentucky

PREPARED FOR

Kenton County Airport Board

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
As lead Federal Agency pursuant to the National Environmental Policy Act of 1969

PREPARED BY

Landrum & Brown, Incorporated

August 2023

This environmental assessment becomes a Federal document when evaluated, signed, and dated by the Responsible FAA Official.

Responsible FAA Official Date

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1 Introduction and Background

This Environmental Assessment (EA), required by the National Environmental Policy Act of 1969 (NEPA), as amended (40 CFR 1500-1508)[1] and prepared in accordance with Federal Aviation Administration (FAA) Orders 1050.1F, *Environmental Impacts: Policies and Procedures* and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, analyzes the potential environmental effects of a Proposed Action involving adjustments to the nighttime runway use program at the Cincinnati/Northern Kentucky International Airport (CVG or Airport). The EA is required under NEPA because the project will require federal actions that include FAA's approval of an amendment to the Airport Traffic Control Tower (ATCT) Order for CVG.

1.1 Background

CVG is a publicly owned passenger and air cargo airport operated by the Kenton County Airport Board (KCAB). CVG is located in the northeast section of Boone County, Kentucky, approximately one mile south of the Ohio River and eight miles southwest of downtown Cincinnati. The Airport encompasses approximately 7,532 acres of land and is generally bounded on the north by Interstate 275, to the east by Interstate 71/75, to the west by State Route 237 (KY 237/North Bend Road), and to the south by State Route 18 (KY 18/Burlington Pike). Access to the Airport is provided via Interstate 275, State Route 212 (KY 212), and Donaldson Highway. **Exhibit 1-1, *Airport Location*** shows the general Airport location and surroundings.

The airfield system consists of four runways, of which include three parallel runways and a crosswind runway. The three parallel runways (18L/36R, 18C/36C, 18R/36L) are oriented in a north-south direction. Runway 9/27, the crosswind runway, is oriented in an east-west direction. The Main Terminal (formerly Terminal 3) is approximately 277,000 square feet and is the only terminal at the Airport. Terminals 1 and 2 were demolished in 2016. The Main Terminal serves the operations of all airlines out of two concourses, Concourse A and Concourse B. CVG also serves as the hub for DHL Worldwide Express Operations and a hub for Amazon Prime Air.

CVG has a long history of using a nighttime runway use program. The nighttime runway use program was originally developed out of the 1992 Part 150 Study which includes a step-down preference for nighttime turbojet departures and arrivals. Under this nighttime program, Runway 27 is the primary runway for departures and Runway 9 for arrivals. The contra-flow operation (departures from Runway 27 and arrivals to Runway 9) was the preferred nighttime runway use plan at CVG until the FAA eliminated the use of contra-flow or head-to-head operations in 2015. As a result of this change, both nighttime departures and arrivals, are typically assigned Runway 9/27. If Runway 9/27 is unavailable, the step-down procedure is implemented which calls for operations to use Runway 18C/36C based on wind, weather, and operational factors. The preference after Runway 27 for departures is Runway 36C, then Runway 9, then Runway 18C. For arrivals after Runway 9, it is Runway 27, 18C then Runway 36C.

The intent of the nighttime runway use program prioritizing arrivals and departures of turbojet aircraft to the west, on Runway 9/27, is to reduce noise impacts on surrounding residential areas. The KCAB

[1] P.L. 91-190, 42 U.S.C. 4321, et. seq., *National Environmental Policy Act*, 1969, Section 102(2)(c).

implemented voluntary mitigation programs (acquisition and residential sound insulation) to eligible residential properties west of CVG, further reducing residential noise impacts west of the Airport. Additionally, the secondary nighttime departure runway's (36C) standard instrument departure (SID) procedure overflies the Ohio River corridor thereby minimizing noise impacts over residential communities.

1.2 Description of the Proposed Action

The Proposed Action consists of updates to the nighttime runway use program at CVG. The Proposed Action includes three recommendations from the 2007 Part 150 Study[2], OP-17, OP-18, and OP-19, listed below.

- OP-17: Modify existing nighttime runway use program to include Runway 18L/36R;
- OP-18: Assign heavy (>255,000 lbs) aircraft departures to Runway 27 during the nighttime hours (10:00 pm to 7:00 am); and
- OP-19: Turbojet aircraft departing Runway 36R during the nighttime hours (10:00 pm to 7:00 am) turn left to 330-degree heading to follow the Ohio River corridor.

1.3 Document Content and Organization

This document is organized as follows:

- Chapter Two describes the purpose and need for the Proposed Action
- Chapter Three describes alternatives to the Proposed Action
- Chapter Four describes the affected environment
- Chapter Five describes the potential environmental impacts of the Proposed Action and of the No Action Alternative

An EA is a disclosure document prepared for the Federal agency (in this case the FAA) responsible for approving a proposed Federal or Federally-funded action, in compliance with the requirements set forth by the Council on Environmental Quality (CEQ) in its regulations implementing NEPA. The purpose of this EA is to investigate, analyze, and disclose the potential impacts of the Proposed Action and its reasonable alternatives. In this case, the FAA is responsible for reviewing and approving actions that pertain to airports and their operation. As such, this EA has been prepared in accordance with FAA Orders 1050.1F and 5050.4B, and consideration to guidance included in the FAA Environmental Desk Reference for Airport Actions. This EA was also prepared pursuant to other laws relating to the quality of the natural and human environments.

This EA was also prepared pursuant to other laws relating to the quality of the natural and human environments, including:

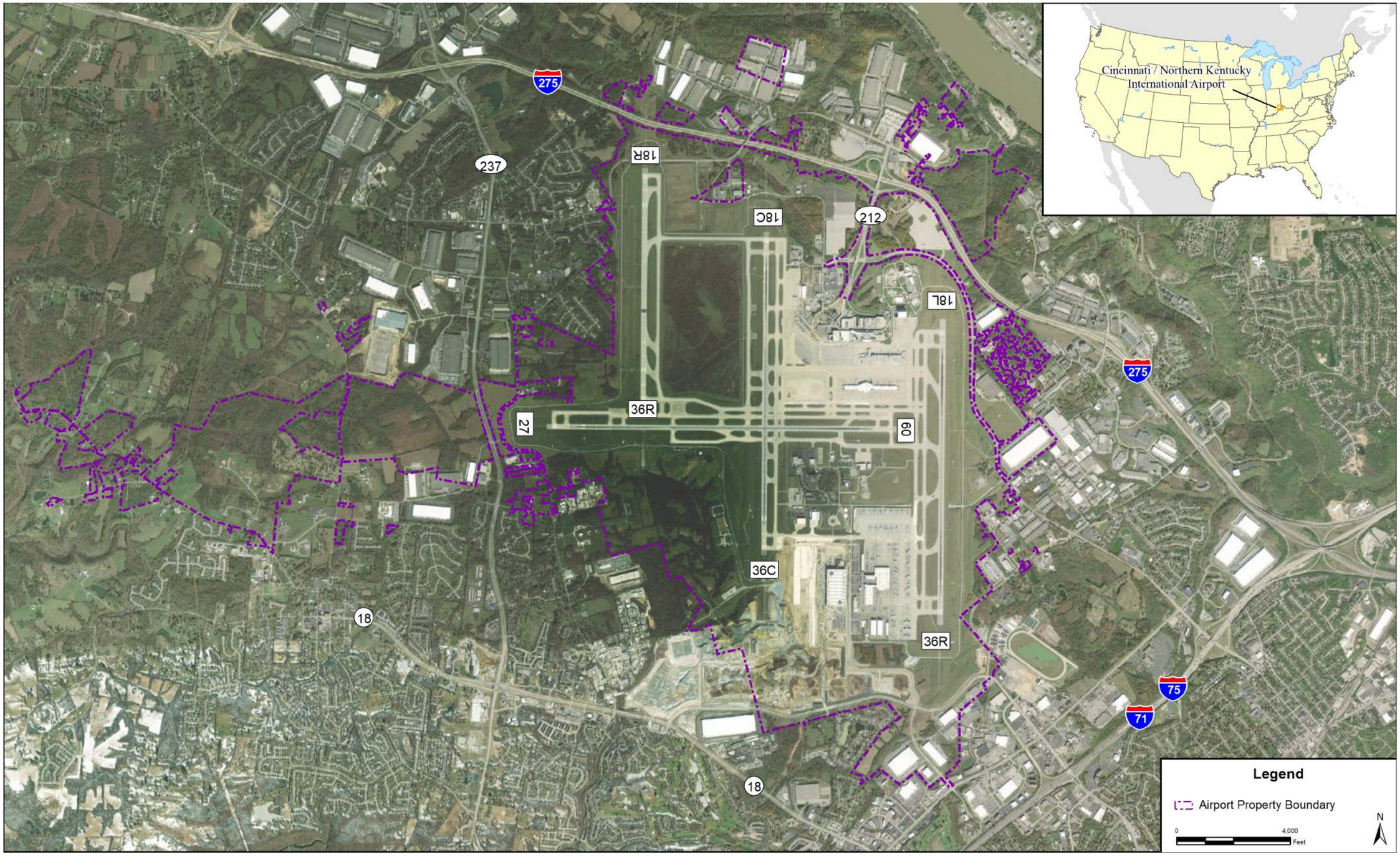
- Federal Aviation Act of 1958 recodified as 49 U.S.C. §§4010 et seq.
- Aviation Safety and Noise Abatement Act of 1979, 49 U.S.C. §§47501 et seq.
- The Airport and Airway Improvement Act of 1982, 49 U.S.C. §47108, as amended

[2] Landrum & Brown, *Cincinnati/Northern Kentucky International Airport FAR Part 150 Study,* February 2007.

- P.L. 91-190, 42 U.S.C. 4321, et. seq., National Environmental Policy Act, 1969, Section 102(2)(c)
- The Department of Transportation Act, 49 United States Code (U.S.C.), § 303 (formerly Section 4(f))
- Land and Water Conservation Fund Act of 1965, 16 U.S.C. §§4601 et seq.
- 49 U.S.C., §40114, as amended (codifying Public Law 103-272, Section 1(e), 1994) (Reports and Records)
- 49 U.S.C., §§47101 et seq. (codifying Public Law 103-272, Section 1(e), 1994) (Airport Improvement)
- Clean Air Act, 42 U.S.C. §§7401, et seq., and implementing regulations at 40 CFR. Parts 51 and 93
- Clean Water Act, 33 U.S.C. §§1251, et seq., and implementing regulations at 33 CFR §§325 and 33 CFR §336
- National Historic Preservation Act, 16 U.S.C. §470(f), as amended
- 36 CFR Part 800, Advisory Council on Historic Preservation
- Archaeological and Historic Preservation Act, 16 U.S.C. §469(a)
- Archaeological Resource Protection Act, 16 U.S.C. §470(aa)
- Farmland Protection Policy Act, 7 U.S.C. §73, and implementing regulations at 7 CFR §658
- Endangered Species Act, 16 U.S.C. §661, et seq., as amended
- Magnuson-Stevens Fishery Conservation and Management Act of 1976, 16 U.S.C. §§1801 et seq., as amended
- Migratory Bird Treaty Act, 16 U.S.C. §§703 et seq.
- Executive Order 11593, Protection and Enhancement of the Cultural Environment
- Executive Order 11988, Floodplain Management
- Executive Order 11990, Protection of Wetlands
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- Federal Aviation Act of 1958 recodified as 49 U.S.C. §§40101, et seq.
- The Airport and Airway Improvement Act of 1982, 49 U.S.C. §47108, as amended

- 33 CFR Parts 320-330, Regulatory Programs of the Corps of Engineers
- CEQ regulations codified at 40 CFR 1502.14
- Other laws, regulations, and policies as applicable

EXHIBIT 1–1, PROPOSED PROJECT SITE



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2 Purpose and Need

The Kenton County Airport Board (KCAB), which owns and operates the Cincinnati/Northern Kentucky International Airport (CVG or Airport), is requesting the FAA to modify the nighttime runway use program at the Airport. The following section discusses the purpose and need for the project. The KCAB has identified needs based on current and future number of aircraft arriving and departing during nighttime hours. This EA analyzes the proposed solutions (purpose) to meet the needs of the identified deficiencies.

2.1 Purpose and Need

The *need* for the Proposed Action is that the current nighttime operational demand exceeds the capacity of the existing nighttime runway use program. The elimination of contra-flow or opposite direction operations by the FAA further exacerbates the need by preventing nighttime arrival operations from utilizing the compatible use corridor to the west of CVG.[3]

Radar data from December 2019 shows that during the nighttime (10:00 pm to 7:00 am) and particularly during peak hours, between 6:00 am and 7:00 am, there is more demand than can be accommodated on a single runway, as preferred under the current nighttime runway use program. Therefore, during periods of high demand a second runway needs to be used to accommodate the demand without causing additional airfield and airspace delay. Radar data for nighttime arrivals and departures in December 2019 shows there are consistently more aircraft than can be accommodated by just Runway 9/27, and the use of additional runways is necessary. **Table 2-1** shows the number of departures for heavy aircraft during the peak hours of 6:00 am and 7:00 am for December 2019. Table 2-1 shows there were consistently more heavy aircraft departing than could be accommodated on Runway 27, so aircraft had to depart on another runway.

[3] Opposite Direction Operations consists of IFR/VFR Operations conducted to the same or parallel runway where an aircraft is operating in a reciprocal direction of another aircraft arriving, departing, or conducting an approach. CVG's NCP Measure NA-4 recommends use of Runway 27 for departure and Runway 9 for arrival during the nighttime period to direct aircraft to the west of CVG which has been designated as a compatible land use corridor. Effective August 8, 2012, FAA restricted opposite direction arrival operations which limited the ability to use Runway 9 for arrivals when Runway 27 was available for departure.

Table 2-1: Peak Hour Heavy (>255,000 lbs) Aircraft Departures – December 2021

Day	Runway					Total
	18C	18L	27	36C	36R	
12/1/2021		9	24			33
12/2/2021		8	20			28
12/3/2021		6	24			30
12/4/2021			8	1	5	14
12/5/2021			12		2	14
12/6/2021			14			14
12/7/2021			23		3	26
12/8/2021			19			19
12/9/2021		7	24			31
12/10/2021		3	32			35
12/11/2021	2	3	10			15
12/12/2021			13			13
12/13/2021			16			16
12/14/2021		7	22			29
12/15/2021		5	27			32
12/16/2021		6	26			32
12/17/2021		4	25			29
12/18/2021			14			14
12/19/2021			14			14
12/20/2021			13			13
12/21/2021		5	23			28
12/22/2021			26		6	32
12/23/2021		3	23			26
12/24/2021		5	19			24
12/25/2021			9			9
12/26/2021			14			14
12/27/2021		8	3			11
12/28/2021		5	25			30
12/29/2021		2	25		1	28
12/30/2021		3	19			22

Source: Landrum & Brown, 2020.

Table 2.2 shows the aircraft operations forecast for CVG for the implementation year of the Proposed Action (2021), and five years after implementation (2026). Based on the approved aviation forecast prepared for CVG's Master Plan Update, the number of aircraft operations are forecasted to increase by 23.7% from 2017 to 2021. The largest growth is for cargo operations, which have continued to increase as e-commerce has become more prevalent. Based on the approved forecast for CVG, growth is going to continue, especially for cargo operations. This will result in more aircraft departing during the nighttime, particularly in the peak period of 6:00 am to 7:00 am.

Table 2-2: CVG Aircraft Operations Forecast

Year	Number of Operations				
	Passenger	Cargo	Air Taxi / General	Military	Total
Historical					
2017	104,978	36,004	9,349	132	150,463
Forecast					
2023	122,890	72,970	9,600	243	193,953
2028	136,190	10,460	10,050	243	247,883

Sources: Approved CVG Master Plan Forecast. Landrum & Brown, 2019.

The *purpose* of the Proposed Action is to increase nighttime operational efficiency at CVG while minimizing noise impacts on surrounding land uses.

The KCAB and the FAA Airport Traffic Control Tower have determined that in order to meet the demand for nighttime arrivals and departures, as well as future cargo growth at the Airport, modifications to the nighttime runway use program are required. These modifications include adding Runway 18L/36R to the nighttime runway use program and providing an alternate plan that allows multiple runways to be used together versus a single runway. In addition, because the purpose of the nighttime runway use program is to reduce noise impacts on the community, a new departure procedure would be implemented to utilize the naturally compatible corridor of the Ohio River.

To meet the stated need, the following federal actions are required:

- Amend the FAA Airport Traffic Control Tower Order to implement Measures OP-17, OP-18, and OP-19
- Develop and publish a departure procedure for the Runway 36R Ohio River departure corridor
- Amend the Part 150 Noise Compatibility Program with modification to Measure OP-18

The purpose of the Proposed Action is to modify the Airport's runway use program by implementing measures, OP-17 and OP-19 from the Airport's existing Part 150 Noise Compatibility Program (NCP). These measures are necessary to reduce aircraft departure delays. CVG's current NCP is dated April 4, 2008. In addition, the proposed action will create a new departure procedure for Runway 36R.

Measures OP-10 and OP-11 from the 2008 NCP will be withdrawn. OP-17 will transition departures to Runway 18L/36R during nighttime hours when aircraft departure activity is experiencing increased delays. Rather than concentrating departures on Runway 27, ATC personnel may direct nighttime departures to 18L/36R, or 18C/36C, when the Traffic Flow Management System indicates that an increase in reportable delays would otherwise occur without the action. OP-19 will implement a 330-degree turn for Runway 36R departures during nighttime hours. The turn will direct turbojet aircraft to overfly the Ohio River and avoid noise-sensitive areas directly north of the Airport.

Measure OP-18 would be modified to reflect the implementation of the nighttime runway use program step-down preference. Currently, Measure OP-18 reads:

> "Assign heavy (>255,000 lbs) aircraft departures to Runway 27 during the nighttime hours (10:00 p.m. to 7:00 a.m.)."

This measure would be modified to read:

> "Assign heavy (>255,000 lbs) aircraft departures to Runway 27 during the nighttime hours (10:00 p.m. to 7:00 a.m.). This preference for Runway 27 is not intended to restrict the use of other runways, such as Runway 18L/36R or Runway 18C/36C, when wind, weather, and operating conditions require."

Table 2-3 shows the change in the number of average-annual day operations by runway end that would be expected to occur with implementation of the Proposed Action by 2023.

Table 2-3: Expected Difference in Average-Annual Day Operations by Runway End with Implementation of the Proposed Action

AIRCRAFT CATEGORY	RUNWAY END							
	18C	18L	18R	27	36C	36L	36R	9
Nighttime Arrivals								
Heavy Jets	+1.6	n/c	n/c	-8.0	+1.6	n/c	+4.8	n/c
Large Passenger Jets	+1.5	n/c	n/c	-7.3	+1.5	n/c	+4.3	n/c
Large Cargo Jets	+0.8	n/c	n/c	-3.8	+0.8	n/c	+2.2	n/c
Regional Jets	n/c	n/c	n/c	n/c	n/c	n/c	n/c	n/c
Propeller Aircraft	n/c	n/c	n/c	n/c	n/c	n/c	n/c	n/c
Nighttime Departures								
Heavy Jets	-0.2	+0.8	n/c	-1.5	-1.9	n/c	+2.8	n/c
Large Passenger Jets	n/c	+0.6	n/c	-1.6	-0.4	n/c	+1.4	n/c
Large Cargo Jets	n/c	+0.3	n/c	-0.8	-0.2	n/c	+0.7	n/c
Regional Jets	n/c	n/c	n/c	n/c	n/c	n/c	n/c	n/c
Propeller Aircraft	n/c	n/c	n/c	n/c	n/c	n/c	n/c	n/c

+X.X% = Increased use compared to No Action conditions

-X.X% = Decreased use compared to No Action conditions

n/c = No Change

Implementation of measures OP-17 and OP-19 would be consistent with FAA's statutory mission to ensure the safe and efficient use of navigable airspace in the U.S. as set forth under 49 United States code (U.S.C.) §47101(a)(1).Furthermore, implementation would be consistent with FAA policy under 49 U.S.C. §47101(a)(2) that aviation facilities be constructed and operated to minimize current and project noise impact on nearby communities. FAA approval of the Proposed Action, and the subsequent FAA decision related to approving an amendment to the ATCT order, would fulfill the agency's obligations and support United States national policy pursuant to 49 U.S.C. §47101(a)(4) and 49 U.S.C. §40101(b).

2.2 Implementation Phasing

The nighttime runway use program would be implemented after approval of this EA in which is anticipated to occur by the end of 2022.

2.3 Required Land Use/Environmental Permits and Approvals

Federal

- FAA approval of an amendment to the Airport Traffic Control Tower (ATCT) order
- Federal environmental approval pursuant to NEPA

State

There are no state approvals or permits required.

Local

There are no local approvals or permits required.

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3 Alternatives

The Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) require that the Federal decision-makers perform the following tasks when preparing an Environmental Assessment (EA):

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

This section describes the Proposed Action and alternatives to the Proposed Action, including the No Action Alternative, and evaluates the ability of each to meet the purpose and need described in Chapter Two, *Purpose and Need*. The Proposed Action, described in Section 1.2 of this EA, would fulfill the purpose and need for the project. The No Action Alternative would not meet the purpose and need; however, it is analyzed in the EA pursuant to the requirements of the CEQ, Federal Aviation Administration (FAA) Orders 1050.1F, 5050.4B, and NEPA.

Federal and state guidelines concerning the environmental review process require that all prudent, feasible, reasonable, and practicable alternatives that might accomplish the objectives of a project be identified and evaluated. Federal agencies may consider the applicant's purposes and needs and common sense realities of a given situation in the development of alternatives.[4] Federal agencies may also afford substantial weight to the alternative preferred by the applicant, provided there is no substantially superior alternative from an environmental standpoint.

3.1 Alternatives Considered for Further Environmental Review

Various alternatives for the nighttime runway use program were considered as part of the Part 150 Noise Compatibility planning process. However, none of those alternatives provided the additional runway capacity while also reducing noise impacts. Since the preparation of the Part 150 Noise Compatibility Study, no policies or air traffic technologies have been created that would result in new additional alternatives than those originally analyzed. A review of the alternatives analysis in the Part 150 Noise Compatibility Study found no change in the conclusion that none would meet the purpose and need. Therefore, the Proposed Action is the only alternative that meets the purpose and need, and as such will be carried forward for detailed environmental impact analysis. Pursuant to CEQ Regulation 40 CFR 1502.14(d), the No Action Alternative must be included in the evaluation of environmental impacts. The purpose of the No Action Alternative is to serve as a baseline against which impacts from the other alternatives are assessed for significance. Under the No Action Alternative, no change to the nighttime runway use program would occur and there would not be any changes to aircraft operations that would impact any environmental resources. Because there would be no changes to the nighttime runway use program or aircraft operations, this alternative would not address any of the purpose and need criteria. Therefore, this is not an alternative that meets the purpose and need. However, as stated above, the No Action Alternative is required by the CEQ to be evaluated in an EA. As such, this

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

alternative will be carried forward in the EA, assuming the Airport would operate under the current nighttime noise abatement program.

4 Affected Environment

Federal Aviation Administration (FAA) Order 5050.4B states the affected environment section of an Environmental Assessment (EA) should succinctly describe only those environmental resources the Proposed Action, and its reasonable alternatives, are likely to affect. The amount of information on potentially affected resources should be based on the expected impact and be commensurate with the impact's importance. FAA Order 1050.1F and the 1050.1F Desk Reference provide information on identifying resources for evaluation in the EA.

The following describes the area around Cincinnati/Northern Kentucky International Airport (CVG or Airport). This is followed by discussions of the resources that may be potentially impacted, which include: air quality; climate; Department of Transportation (DOT) Section 4(f) resources, historic, architectural, archeological, and cultural resources, land use; natural resources and energy supply; noise and noise compatible land uses; and socioeconomic conditions. In accordance with FAA Order 5050.4B, the other resource categories are not discussed in this chapter due to lack of presence of the resource in the project area or because the Proposed Action does not involve physical impacts that would impact those resource categories. These resource categories are biological resources; coastal resources; farmland; hazardous materials; visual effects; and water resources.

4.1 Proposed Action Setting

CVG is an international airport located on approximately 7,532 acres of land within Boone County, Kentucky that is owned by the Kenton County Airport Board (KCAB). The Proposed Action addresses nighttime departures on Runway 9/27, Runway 18C/36C, and Runway 18L/36R. The Proposed Action would not include any construction or physical development.

For the purposes of this EA, a study area has been defined. The Study Area is shown on **Exhibit 4-1, *Study Area***. The Study Area covers approximately 16,600 acres and is defined as the area where both direct and indirect impacts may result from implementation of the Proposed Action. The Study Area boundary was based on the Future (2021) Proposed Action Noise Exposure Contours from the 2019 Air Cargo Facility EA at CVG.

4.2 Resources Not Potentially Affected

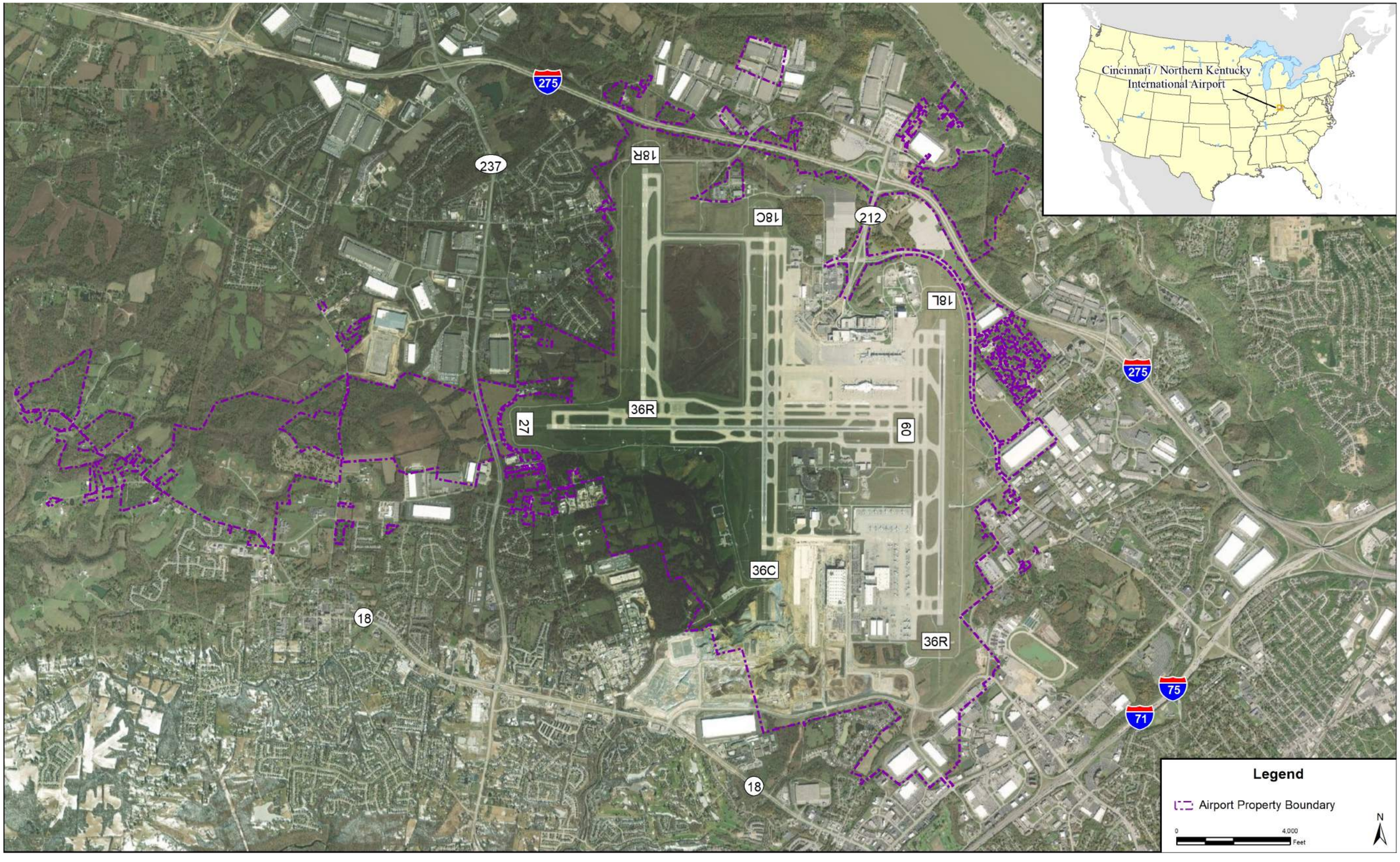
The No Action and Proposed Action would not include any construction or development that would cause physical changes. Therefore neither the Proposed Action nor the No Action do not have the potential to affect the following categories:

- Biological Resources
- Coastal Resources
- Farmland
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Visual Effects

- Water Resources (Wetlands, Floodplains, Surface Water, Groundwater, and Wild & Scenic Rivers)

Therefore, no discussion of the existing conditions or potential impacts related to these categories is included in this EA.

Exhibit 4-1: Study Area



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4.3 Resources Potentially Affected

4.3.1 Air Quality

Regulatory Setting

An airport air quality assessment requires consideration under both the Clean Air Act of 1970, as Amended (CAA), and the National Environmental Policy Act of 1969, as Amended (NEPA). These two federal laws require distinct analyses and may be separately applicable to an airport project.

The CAA establishes standards and programs to evaluate, achieve, and maintain acceptable air quality in the United States. In accordance with CAA requirements, the United States Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS), for six common air pollutants (known as "criteria air pollutants") that are potentially harmful to human health and welfare.[5]

The EPA considers the presence of the following six criteria pollutants to be indicators of air quality:

- Carbon monoxide (CO);
- Nitrogen dioxide (NO_2);
- Ground-level Ozone (O_3);
- Sulfur dioxide (SO_2);
- Particulate matter (PM_{10} and $PM_{2.5}$);[6] and
- Lead (Pb).[7]

Affected Environment

The Airport is located within Boone County, Kentucky, which is included in the Metropolitan Cincinnati Interstate Air Quality Region. The EPA previously determined that Boone County's levels of the eight-hour concentration of ozone exceeded the federal standards defining healthful air quality. On July 5, 2017, the EPA determined the area had attained the 2008 eight-hour standard for ozone. However, in 2018, the area was designated as marginal non-attainment for the 2015 eight-hour standard for ozone.

4.3.2 Climate

GHGs are gases that trap heat in the earth's atmosphere. Both naturally occurring and man-made GHGs primarily include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Sources that require fuel or power at an airport are the primary sources that would generate GHGs. Aircraft are probably the most often cited air pollutant source, but they produce the same types of emissions as ground access vehicles.

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the General Accounting Office (GAO) reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according to EPA data," compared with other industrial sources including the remainder of the transportation sector (20 percent) and

[5] EPA, 40 C.F.R. §50, National Primary and Secondary Ambient Air Quality Standards (NAAQS).
[6] PM_{10} and $PM_{2.5}$ are airborne inhalable particles that are less than ten micrometers (coarse particles) and less than 2.5 micrometers (fine particles) in diameter, respectively.
[7] Airborne lead in urban areas is primarily emitted by vehicles using leaded fuels.

power generation (41 percent).[8] The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly three percent of all anthropogenic GHG emissions globally.[9] Climate change due to GHG emissions is a global phenomenon, so the affected environment is the global climate.[10]

4.3.3 Department of Transportation Act, Section 4(f)

Regulatory Setting

Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966 (49 U.S.C. § 303) protects publicly owned parks, recreational areas, wildlife and waterfowl refuges of national, state, or local significance, and public and private historic sites of national, state, or local significance. Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance, only if there is no feasible and prudent alternative to using that land and the program or project includes all possible planning to minimize harm resulting from the use. Section 4(f) applies only to transportation modal agencies within the USDOT. If the FAA is engaged with a non-USDOT agency on the NEPA review of a proposed project involving Section 4(f), the FAA must take the lead on Section 4(f) compliance.

Section 6(f) of the Land and Water Conservation Fund Act of 1965 (LWCFA), 16 U.S.C. § 4601-8(f), prohibits the conversion of property acquired or developed with LWCFA grants for uses other than public outdoor recreation without the approval of the United States Department of Interior's (USDOI) National Park Service (NPS). The USDOI has delegated most review, consultation and assessment of Section 6(f) impacts and conversions to specified state recreation offices. When acquisition is required, Section 6(f) directs the USDOI to assure that replacement lands of at least equal fair market value and of reasonably equivalent usefulness and location are provided as a condition of such conversions. Consequently, where conversions of Section 6(f) lands are proposed for airport projects, replacement lands are required.

Affected Environment

A review of records maintained by the National Park Service (NPS), the Kentucky Heritage Council (KHC), Boone County, and the Northern Kentucky Area Planning Commission (NKAPC) was conducted to identify known Section 4(f) resources in the Study Area. Potential Section 4(f) properties within and around the Study Area are shown in **Exhibit 4-2**, ***Potential Section 4(f) Resources*** and listed in **Table 4-1**. Potential historic sites are discussed in Section 4.2.4. No LWCF lands are located within the Study Area. Therefore, LWCF Section 6(f) lands are not discussed further in this EA.

[8] *Aviation and Climate Change*. GAO Report to Congressional Committees (2009).
[9] Alan Melrose," European ATM and Climate Adaptation: A Scoping Study," in *ICAO Environmental Report.* (2010).
[10] As explained by the EPA, "greenhouse gases, once emitted, become well mixed in the atmosphere, meaning U.S. emissions can affect not only the U.S. population and environment but other regions of the world as well; likewise, emissions in other countries can affect the United States." Climate Change Division, Office of Atmospheric Programs, EPA, *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act 2-3* (2009).

Exhibit 4-2: Potential Section 4(f) Resources

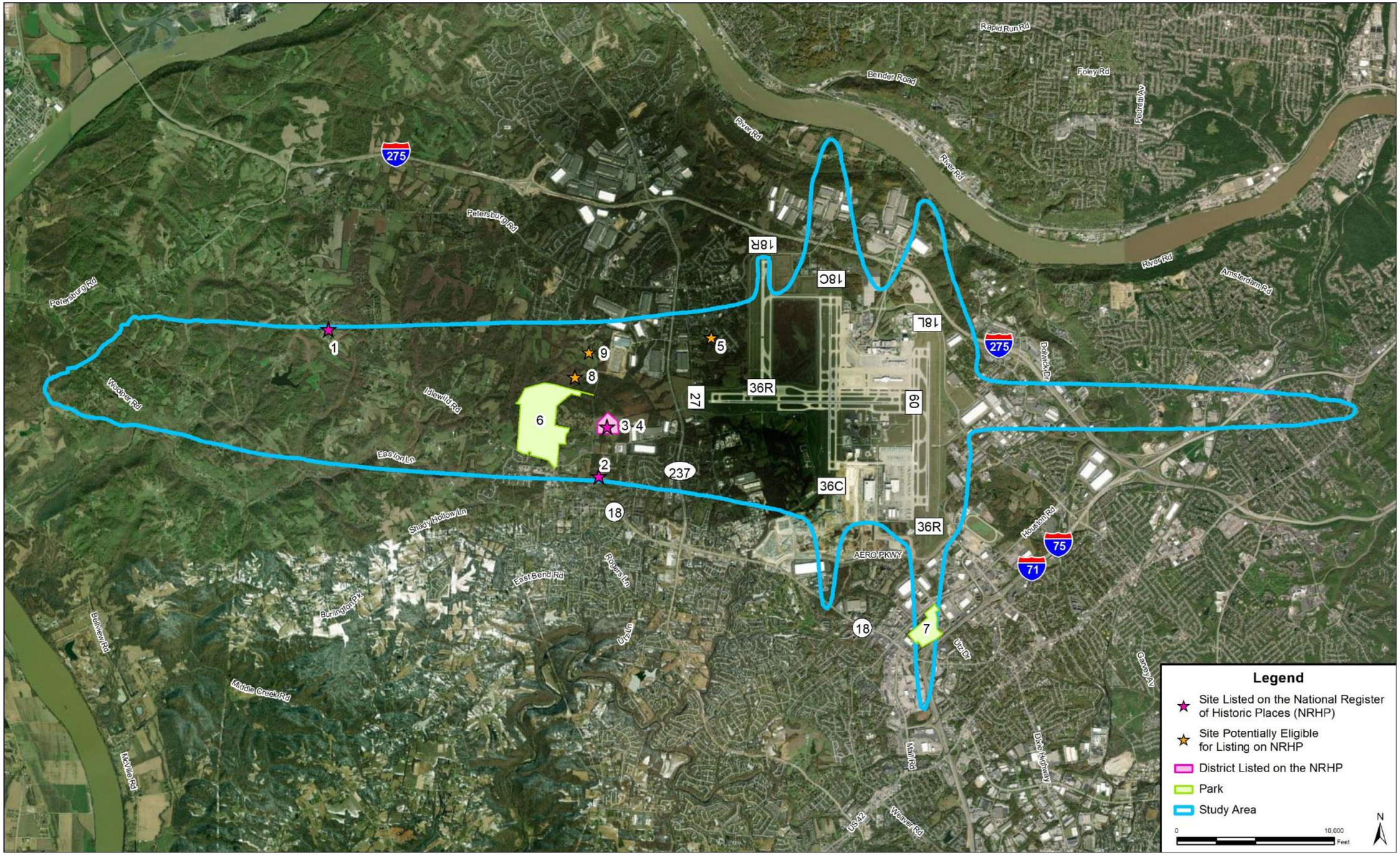

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Table 4-1: Potential Section 4(f) Resources

Map ID	Name	Resource Type
1	Benjamin R. Gaines Farm	Historic Structure
2	Frank S. Milburn Machine Shop	Historic Structure
3	Ephraim Uitz House	Historic Structure
4	Ephraim Uitz House Farmstead Property	Historic District
5	Joel Garnett House	Historic Structure
6	England Idlewild Park	Park / Recreation
7	World of Golf	Park / Recreation
8	Gallagher Farm	Historic Structure
9	Oscar Gaines Farm	Historic Structure

Source: U.S. National Park Service, National Register of Historic Places, Kentucky Heritage Council, Boone County, Environment & Archaeology, Landrum & Brown analysis, 2022.

4.3.4 Historic, Architectural, Archeological, and Cultural Resources

Regulatory Setting

The National Historic Preservation Act of 1966 (NHPA) (54 U.S.C. § 300101 et seq.) Section 106, Protection of Historic Properties requires federal agencies to take into account the effects of their undertakings on properties that are listed on or determined eligible for inclusion in the National Register of Historic Places (NRHP), and requires federal agencies to consult with the State Historic Preservation Office (SHPO), Tribal Historic Preservation Officers (THPO), and other parties to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties. The independent federal agency overseeing federal historic preservation and tribal programs, the Advisory Council on Historic Preservation (ACHP), is afforded a reasonable opportunity to comment on such undertakings subject to Section 106. The ACHP typically reserves its comments either for complex consultations in which it has had previous involvement or for consultations wherein a federal agency seeks ACHP comment on unresolved consultation issues. Section 106 of NHPA is the principal statute concerning such resources. It requires consideration of direct and indirect impacts from federal actions on historic, architectural, archeological, and other cultural resources.

This project also falls under the purview of the Kentucky Heritage Council (KHC),which serves as the SHPO and is responsible for the identification, protection and preservation of prehistoric resources and historic buildings, sites and cultural resources throughout Kentucky.

Affected Environment

The Area of Potential Effects (APE) is “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties” (36 C.F.R. § 800.16(d)). For purposes of Section 106, the term “historic properties” can include architectural,

archeological, or cultural resources. The determination of the APE considers the character of a project area and the potential for resources to be found.

The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 C.F.R. § 800.16(d)). The APE must include all direct and reasonably foreseeable indirect effects. Although the NHPA regulations do not define the term "indirect effect," the criteria of adverse effects cover reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative (36 C.F.R. § 800.5(a)(1)).

For this undertaking, impacts to historic resources would only come from an increase in noise. There would be no visual impacts or development impacts as there is no construction. Therefore, the APE for this project is the same as the Study Area. The historic properties within the Study Area are shown on Exhibit 4-2 and listed in Table 4-1.

4.3.5 Land Use

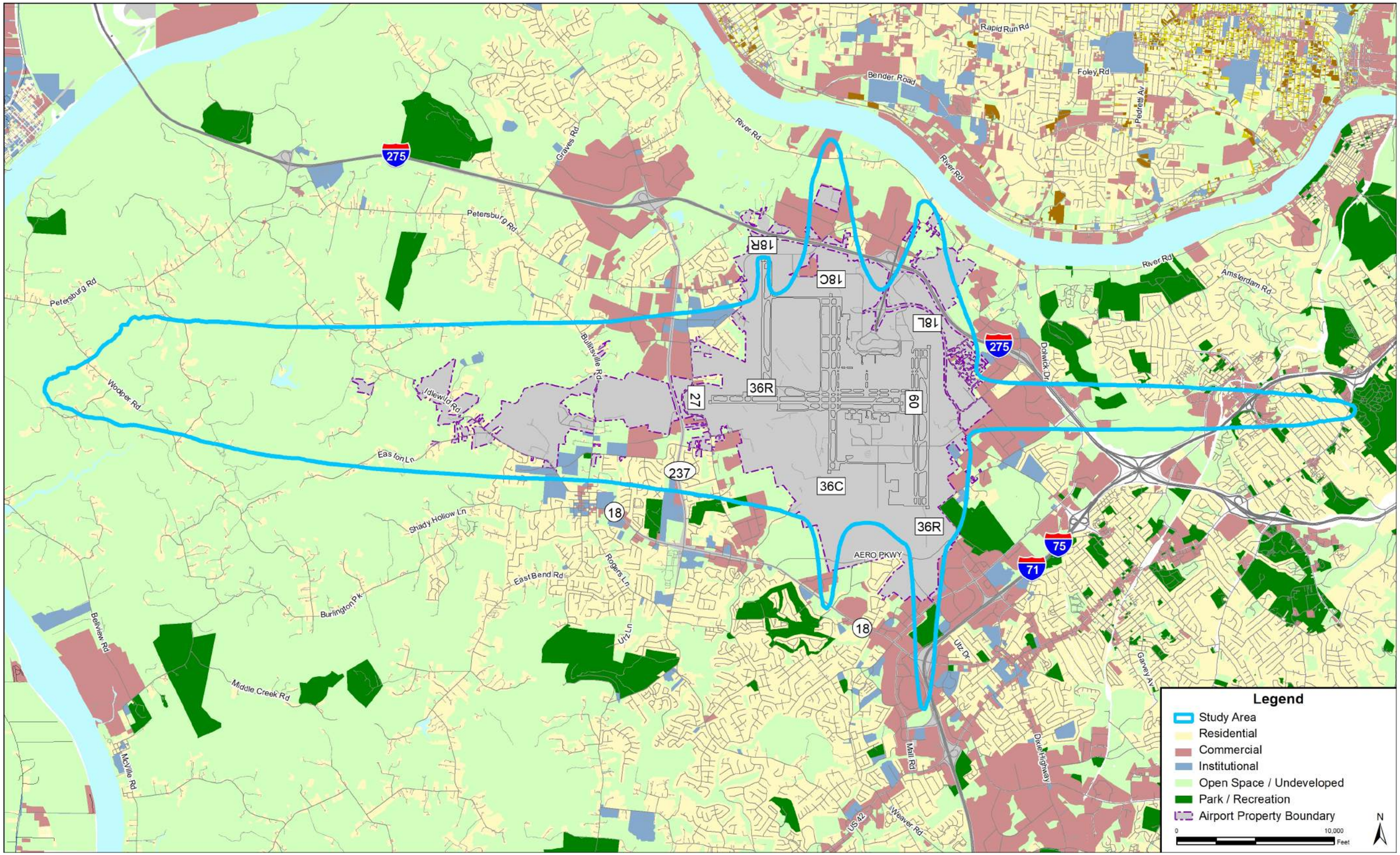
Regulatory Setting

Special guidance relevant to land use is given in the NEPA implementing regulations, which require consideration of "[p]ossible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned." The impacts on land use may include indirect impacts such as the disruption of communities, relocation, induced socioeconomic impacts, and impacts to land uses protected under DOT Action Section 4(f). The regulations recognize that certain inconsistencies may exist between the proposed Federal action and any approved State or local plan or law. Where an inconsistency exists, the NEPA document should describe the extent to which the agency would reconcile its action with the plan or law. (See 40 C.F.R. §1506.2(d).)

Affected Environment

The land uses surrounding Airport property include commercial, industrial, residential, park/recreation, public/institutional, and open space. The land uses closest to the Airport are commercial, industrial, and open space. **Exhibit 4-3, *Existing Land Use*** shows the location of the Airport and the surrounding land uses.

Exhibit 4-3: Existing Land Use



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4.3.6 Natural Resources and Energy Supply

Regulatory Setting

As set forth in 40 C.F.R. §§1502.14 and 1502.16(e)-(f), CEQ Regulations require that, when evaluating the environmental consequences of a proposed action and its alternatives, a Federal agency's environmental consequences analysis must include, among other things, energy requirements and the conservation potential of various alternatives and mitigation measures, and natural or depletable resource requirements and the conservation potential of various alternatives and mitigation measures.

Affected Environment

Duke Energy supplies the Airport's electricity and natural gas, Boone County Water District and the Northern Kentucky Water District supply the Airport's water utilities, Sanitation District 1 support the Airport's stormwater and sewage utilities, Cincinnati Bell provides the Airport's internet service, and Delta Fuel Storage Tanks supplies the Airport's aircraft fuel.[11] Based on information provided by KCAB, in 2019 the Airport's electric usage was approximately 72,600,00-kilowatt hours, water usage was approximately 18,800,000 cubic feet, and natural gas usage was approximately 369,000 million British thermal units.

4.3.7 Noise and Noise-Compatible Land Use

4.3.7.1 Noise

Regulatory Setting

For aviation noise analyses, the FAA has determined that the cumulative noise energy exposure of individuals resulting from aviation activities must be established in terms of Yearly Day-Night Average Sound Level (DNL), the FAA's primary noise metric. To evaluate aircraft noise, the FAA has a required computer model, the Aviation Environmental Design Tool (AEDT) that simulates aircraft activity at an airport.

The FAA uses the 14 C.F.R. Part 150, *Airport Noise Compatibility Planning,* land use compatibility guidelines to determine compatibility with most land uses. These guidelines are consistent with land use compatibility guidelines developed by other Federal agencies such as the EPA and the United States Department of Housing and Urban Development.[12,13] A DNL of 65 decibels (dB) is the noise level at which noise-sensitive land uses (residences, churches, schools, libraries, and nursing homes) become significantly impacted. Below 65 DNL, all land uses are determined to be compatible with airport noise. Special consideration is given to noise sensitive areas within Section 4(f) properties (including, noise sensitive areas within national parks, national wildlife and waterfowl refuges, and historic sites, including traditional cultural properties) where the land use compatibility guidelines in 14 C.F.R. Part 150 are not relevant to the value, significance, and enjoyment of the area in question.

[11] Cincinnati/Northern Kentucky International Airport – 2035 Master Plan Update, *Chapter 4 – Airport Inventory*.
[12] Federal Interagency Committee on Urban Noise (FICUN), 1980, *Guidelines for Considering Noise in Land Use Planning and Control.*
[13] Federal Interagency Committee on Noise (FICON), 1992, *Federal Agency Review of Selected Airport Noise Analysis Issues*.

Affected Environment

The 65 DNL, 70 DNL, and 75 DNL Existing Noise Exposure Contours are shown on **Exhibit 4-4, *Existing Noise Exposure Contours***. The Existing Noise Exposure Contours represent calendar year 2019 conditions for CVG.[14] **Table 4-2** summarizes the area within each noise contour level for the Existing Noise Exposure Contours. Noise contour patterns extend from an airport along each extended runway centerline, reflective of the flight tracks. The relative distance of a contour from an 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 assigned to it.

Table 4-2: Areas Within Existing Noise Exposure Contours (in Square Miles)

Contour Range	Existing
65-70 DNL	4.1
70-75 DNL	1.7
75 + DNL	1.0
65 + DNL	6.8

Source: Landrum & Brown, 2020.

The shape of the noise contours north and south of the Airport reflect the predominant runway use configurations. During the day, CVG predominantly operates in a south and west flow operation with arrivals on Runways 18L and 18C and departures to the south and west (18L, 18C and 27). To a lesser extent, CVG operates in a north and west flow configuration with arrivals on Runways 36R and 36C and departures to the north and west (36R, 36C, and 27). As a result, the noise contour is spiked to the north (indicating predominantly arrival operations) and more rounded and larger to the south (indicating predominantly departure operations). During the nighttime, Runway 27 is the preferred departure runway, creating the larger contour to the west of the Airport.

4.3.7.2 Noise-Compatible Land Use

Regulatory Setting

The FAA has created guidelines regarding the compatibility of land uses with various aircraft noise levels measured using the DNL metric. These guidelines are defined in Appendix A to 14 C.F.R. Part 150. The land use compatibility table is reproduced in **Table 4-3**. These guidelines show the compatibility parameters for residential, public (schools, churches, nursing homes, hospitals, and libraries), commercial, institutional, and recreational land uses. All land uses exposed to noise levels below the DNL 65 dB noise contour are generally considered compatible with airport operations.

[14] 2019 calendar year was identified as the best option for existing baseline year as it does not include the temporary reductions in aircraft operations related to the COVID-19 pandemic, nor does it include the effects of the temporary closure of Runway 9/27 which underwent pavement reconstruction from March 2021 to October 2021.

Table 4-3: Land Use Compatibility Guidelines – 14 C.F.R. Part 150

LAND USE	YEARLY DAY-NIGHT AVERAGE SOUND LEVEL (DNL) IN DECIBELS					
	BELOW 65	65-70	70-75	75-80	80-85	OVER 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

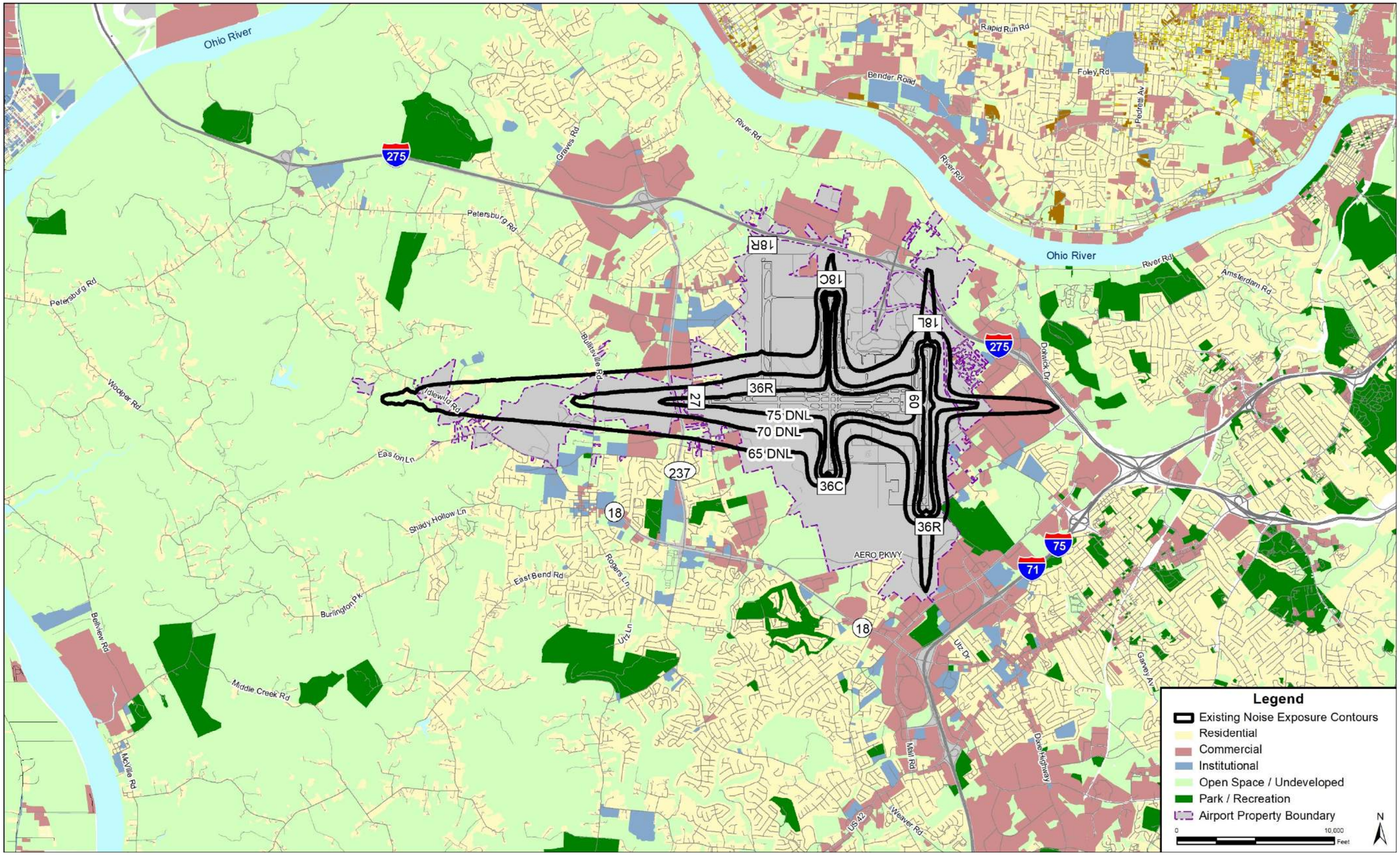
(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.
(5) Land use compatible provided special sound reinforcement systems are installed.
(6) Residential buildings require an NLR of 25.
(7) Residential buildings require an NLR of 30.
(8) Residential buildings not permitted.

Notes:

1. The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.
2. SLUCM=Standard Land Use Coding Manual.
3. Y (Yes)=Land Use and related structures compatible without restrictions.
4. N (No)=Land Use and related structures are not compatible and should be prohibited.
5. NLR=Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
6. 25, 30, or 35=Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Source: 14 C.F.R. § 150 *Airport Noise Compatibility Planning*, Appendix A, Table 1.

Exhibit 4-4: Existing Noise Exposure Contours



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Affected Environment

There are no public schools, churches, nursing homes, hospitals, or libraries within any of the contours. Summaries of the residential population and housing units affected by noise levels exceeding 65 DNL for the Existing Noise Exposure Contours are provided in **Table 4-4**. For more information on the noise exposure contours see **Appendix A, *Noise***.

Table 4-4: Existing Incompatibilities

Existing Conditions	65-70 DNL	70-75 DNL	75+ DNL	TOTAL
Residences				
Mitigated[1]	**11**	**0**	**0**	11
Unmitigated	**10**	**0**	**0**	10
Previously Offered but Refused	4	0	0	4
Never Offered Mitigation[2]	6	0	0	6
Total	**21**	**0**	**0**	21
Estimated Population				
Mitigated[1]	31	**0**	**0**	31
Unmitigated	29	**0**	**0**	29
Previously Offered but Refused	12	0	0	12
Never Offered Mitigation[2]	17	0	0	17
Total	60	**0**	**0**	60
Noise-Sensitive Facilities (NSF)				
Schools	0	0	0	0
Churches	0	0	0	0
Nursing Homes	0	0	0	0
Hospitals	0	0	0	0
Libraries	0	0	0	0

[1] Residences were mitigated through previous Part 150 Studies conducted by KCAB
[2] Residence was either built after Part 150 mitigation program, never in the 65 DNL of an official Noise Exposure Map, or an ineligible property.
Notes: Population numbers are estimates based on the 2010 U.S. Census average household size per number of housing units.
Source: Landrum & Brown, 2022.

4.3.8 Socioeconomics, Environmental Justice, and Children's Health and Safety Risks

4.3.8.1 Socioeconomics

Socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature. A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the Proposed Action and alternatives.

Regulatory Setting

Section 1508.14 of CEQ Regulations requires all Federal agencies to conduct a socioeconomic analysis in the event that economic or social and natural environmental effects are interrelated as a result of the proposed action and alternative(s). This would include an evaluation of how elements of the human environment such as population, employment, housing, and public services might be affected by the proposed action and alternative(s).

Affected Environment

Economic Activity and Income

CVG functions as the largest airport in the Greater Cincinnati and Northern Kentucky area and is the eighth largest cargo airport in the U.S. by tonnage. The economic activity that CVG generates is a major contributor to the region's economy, contributing nearly $4.4 billion in annual total economic impact to the region.[15]

Employment

In addition to serving the Metropolitan Statistical Area (MSA) as a hub for passenger air transportation and air cargo shipping, CVG contributes to the regional economy through its operations and the operations of supporting industries. Employers who maintain staff on-site have nearly 13,500 workers, including airlines, tenants, other businesses, and the KCAB.[16] Additionally, more than 31,100 jobs in the region are directly or indirectly related to the Airport and its services. Those workers earn $1.3 billion in wages and salaries. CVG's state and local tax contribution is approximately $25 million.

Population and Housing

The Study Area contains 27 census block groups that surround the Airport—17 in Boone County and 10 in Kenton County. Demographic data of the population within the Study Area is shown in **Table 4-5**.

[15] https://www.cvgairport.com/docs/default-source/stats/cvg-facts---january-2020.pdf, accessed June 1, 2022.
[16] Ibid.

Table 4-5: General Study Area Demographic Data

Category	Study Area	Boone County	Kenton County	State of Kentucky
Population & Housing				
Total Population	31,833	132,368	166,552	4,461,952
Total Housing Units	11,175	49,938	69,790	1,994,554
Age Groups				
4 years old and under	6.5%	6.6%	6.6%	6.1%
5 – 17 years old	19.1%	19.6%	17.2%	16.5%
18 – 64 years old	62.0%	60.2%	61.8%	61.1%
65 years old and older	12.4%	13.6%	14.4%	16.4%
Race				
White alone	91.6%	89.7%	89.7%	86.2%
Black or African American alone	2.0%	3.3%	4.5%	8.1%
American Indian and Alaska Native alone	0.3%	0.1%	0.1%	0.2%
Asian alone	1.2%	2.4%	1.2%	1.5%
Native Hawaiian and Other Pacific Islander alone	0.1%	0.0%	0.0%	0.1%
Some other race alone	1.2%	1.7%	1.4%	1.1%
Two or more races	3.5%	2.8%	3.0%	2.8%
Ethnicity				
Hispanic or Latino	4.9%	4.3%	3.4%	3.8%
Not Hispanic or Latino	95.1%	95.7%	96.6%	96.2%
Poverty*				
Individual living below poverty level	6.4%	6.5%	11.5%	16.6%
Families living below poverty level	4.4%	5.4%	8.1%	13.0%

* The poverty guidelines are issued each year by the Department of Health and Human Services (HHS). The HHS poverty guideline level in 2020 for a family/household of one was $12,760 and for a household/family of four was $26,200.[17]

Source: American Community Survey 2016-2020 5-Year Estimate[18]; Landrum & Brown analysis, 2022.

Public Services and Social Conditions

Residents of communities in the Study Area have a wide range of public services available. Public services include such facilities as educational institutions, medical services, and emergency response services.

[17] 2014 Poverty Guidelines, U.S. Department of Health and Human Services. Available online at: https://aspe.hhs.gov/2020-poverty-guidelines. Accessed on June 1, 2022.
[18] American Community Survey 2012-2016 5-Year Estimate, U.S. Census Bureau. Available online at: https://www.census.gov/programs-surveys/acs/technical-documentation/table-and-geography-changes/2016/5-year.html. Accessed April 1, 2020.

- Educational Institutions: Boone County is encompassed by two school districts, including the Boone County Unified School District and the Walton-Verona Independent School District. [19,20] Kenton County has one school district, the Kenton County School District, and has private schools run by the Diocese of Covington's Department of Schools.[21, 22] There are four schools within the Study Area.
- Medical Services: Boone County has one hospital, St. Elizabeth – Florence. Kenton County has two hospital, St. Elizabeth – Covington and St. Elizabeth – Edgewood. Neither hospital is located in the Study Area.
- Emergency Response Services: Boone County is comprised of nine fire protection districts, including the fire protection districts of Belleview-McVille, Burlington, Florence, Point Pleasant, Union, Hebron, Petersburg, Verona, and Walton. Between the seven fire protection districts, there are a total of 14 fire stations, including one located on Airport property.[23] Additionally, there are eight police departments within Boone County, including one located on Airport property. Furthermore, there are a total of 23 fire stations and 14 police departments within Kenton County.[24]

4.3.8.2 Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. *Fair treatment* means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies. *Meaningful involvement* means that:

- People have an opportunity to participate in decisions about activities that may affect their environment and/or health;
- The public's contribution can influence the regulatory agency's decision;
- Their concerns will be considered in the decision-making process; and
- The decision makers seek out and facilitate the involvement of those potentially affected.

Regulatory Setting

Title VI of the Civil Rights Act of 1964 as amended, 42 U.S.C. §§2000d – 2000d-7, states that, "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Title VI expressly prohibits any discrimination in federally funded programs and projects, including those sponsored by the FAA.

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, requires all federal agencies to address disproportionately high and adverse

[19] About Boone County Schools, Boone County Schools. Available online: https://www.boone.k12.ky.us/Administration/18. Accessed on June 3, 2022.
[20] Directory, Walton-Verona Independent Schools. Available online: http://www.wv.kyschools.us/directory. Accessed on September 3, 2020.
[21] Our Schools, Kenton County School District. Available online: https://www.kenton.k12.ky.us/schools. Accessed on June 3, 2022.
[22] Schools, Diocese of Covington. Available online: https://covdio.org/schools/. Accessed on June 3, 2022.
[23] Boone County GIS. Available online: http://www.boonecountygis.com/. Accessed on June 3, 2022.
[24] Kenton County GIS. Available online: https://linkgis.org/mapviewer/index.html?slayer= 0&exprnum=1&esearch=&submit=Open+the+Map. Accessed on June 3, 2022.

human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

USDOT Order 5610.2(a) defines a minority population as any readily identifiable group of minority persons living in geographic proximity to a proposed USDOT program, policy or activity including, if circumstances warrant, geographically dispersed or transient persons (such as migrant workers or Native Americans) who will be similarly affected by the proposed program, policy, or activity.

Affected Environment

Environmental justice populations include minority and/or low-income populations. Minority population refers to any readily identifiable group of minority persons (Black, Hispanic or Latino, Asian American, American Indian, Alaskan Native, Native Hawaiian, other Pacific Islander, or other non-White populations). Low-income is defined as a person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

The Census Bureau's American Community Survey (ACS) 2012-2016 5-Year Estimate was used to identify environmental justice populations within the project's Study Area. ACS data was used to identify census block groups composed of 50 percent or more minority populations (composed primarily of Hispanic or Latino population and American Indian populations) and/or 50 percent or more low-income populations within the Study Area.

None of the census block groups exceeded the 50 percent threshold for poverty level. Additionally, none of the census block groups exceeded the 50 percent threshold for minority populations. Therefore, this analysis did not identify environmental justice populations located within the Study Area.

4.3.8.3 Children's Environmental Health and Safety Risks

Regulatory Setting

Pursuant to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* Federal agencies are directed to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Environmental health risks and safety risks include risks to health or to safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.

Affected Environment

Schools and day care centers are locations where the potential for a child to be exposed to environmental health risks is increased because a higher concentration of children are located in one place during the day. Currently the following schools are located within the Study Area:

- Conner Middle School
- Goodridge Elementary School
- Boone County Area Vocational School
- Conner High School

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5 Environmental Consequences

This chapter presents the assessment of potential environmental impacts resulting from implementation of the Proposed Action and the No Action scenarios. The analysis presented in this chapter includes considerations of direct, indirect, and cumulative impacts and their significance and possible conflicts with the objectives of federal, regional, state, tribal, and local land use plans, policies, and controls for the area concerned. This chapter also presents a discussion of mitigation measures, where applicable, to avoid and minimize potential adverse environmental impacts of the Proposed Action.

5.1 Analysis Years

The following analysis discloses the impacts for the updated nighttime runway use program in 2023 because it is the first full year of operations following implementation of the Proposed Action. The year 2028 is included in the analysis because it represents five years from the year of implementation.

5.2 Environmental Resources Not Affected

As discussed in Chapter Four, the following environmental resources are not present within the project area or would not be affected by the Proposed Action or No Action:

- Biological resources: The Proposed Action does not include any construction or changes to the number of aircraft operations and would therefore not impact any biological resources.
- Coastal resources: There are no coastal zones in the State of Kentucky.
- Farmlands: The Proposed Action does not include the conversion of any important farmlands to non-agricultural use.
- Hazardous materials, solid waste, and pollution prevention: The Proposed Action does not include any construction or changes to number of aircraft operations and would therefore not create any hazardous materials or solid waste or affect any contaminated sites.
- Visual effects: The Proposed Action does not include any construction, changes to number of aircraft operations, or new flight routes that could case new areas to experience aircraft overflights and would therefore not have any visual effects.
- Water resources: The Proposed Action does not include any construction or changes to number of aircraft operations and would therefore not impact any water resources.

5.3 Environmental Resources Potentially Affected

The remaining portion of this chapter is focused on those environmental resources that may potentially be affected by the Proposed Action or No Action. These resources are evaluated in detail in this chapter of the EA. Operational impacts are analyzed within each environmental resource category. This chapter of the EA is organized to address the following topics:

- Section 5.4: Air Quality
- Section 5.5: Climate
- Section 5.6: Department of Transportation, Section 4(f) Resources
- Section 5.7: Historical, architectural, archeological, and cultural resources:
- Section 5.8: Land Use

- Section 5.9: Natural Resources and Energy Supply
- Section 5.10: Noise and Noise-Compatible Land Use
- Section 5.11: Socioeconomics, Environmental Justice, and Children's Health and Safety Risks

5.4 Air Quality

This section presents the analysis of potential for significant adverse air quality impacts resulting from the No Action and the Proposed Action.

As discussed in Section 4.2.1, Affected Environment, Boone County has been designated as marginal non-attainment for ozone.[25] Therefore, General Conformity regulations apply. The General Conformity Rule under the Clean Air Act of 1970 (CAA) establishes minimum values, referred to as the *de minimis* thresholds, for the criteria and precursor pollutants[26] for the purpose of:

- Identifying federal actions with project-related emissions that are clearly negligible (*de minimis*);
- Avoiding unreasonable administrative burdens on the sponsoring agency; and
- Focusing efforts on key actions that would have potential for significant air quality impacts.

More information on the *de minimis* thresholds and General Conformity regulations can be found in **Appendix A, *Air Quality***.

5.4.1 No Action

Under the No Action Alternative, physical conditions at CVG, including airfield configuration and runway use patterns, are assumed to be unchanged from the existing conditions. No changes in surface vehicles or ground service equipment would occur. Therefore, there would be no change in operational aircraft emissions or surface vehicle emissions.

5.4.2 Proposed Action

The Proposed Action would not cause unforecasted growth in aircraft activity, nor would it cause a change in fleet mix at CVG. Rather, operational efficiencies would be achieved with the Proposed Action because it would improve the flexibility by which air traffic controllers assign runways for aircraft to arrive and depart during the nighttime, which would reduce current airfield delay. As a result, no adverse impact on local or regional air quality is anticipated due to operation of the Proposed Action. No further analysis is required under the CAA or NEPA.

5.4.3 Mitigation, Avoidance, and Minimization Measures

The Proposed Action does not exceed the applicable thresholds of significance for any pollutants; therefore, no mitigation measures are required.

[25] U.S. Environmental Protection Agency, Kentucky Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants Data is current as of January 31, 2021, Online at https://www3.epa.gov/airquality/greenbook/anayo_ky.html.

[26] Precursor pollutants are pollutants that are involved in the chemical reactions that form the resultant pollutant. Ozone precursor pollutants are NO_x, VOC, SO_2, and ammonia (NH_3).

5.5 Climate

Although there are no federal standards for aviation-related greenhouse gas (GHG) emissions, it is well-established that GHG emissions can affect climate.[27] The Council on Environmental Quality (CEQ) has indicated that climate should be considered in NEPA analyses.

5.5.1 No Action

Under the No Action Alternative, physical conditions at CVG, including airfield configuration, are assumed to be unchanged from the existing conditions. Therefore, there would be no change in aircraft operations or GHG emissions.

5.5.2 Proposed Action

The Proposed Action would not cause unforecasted growth in aircraft activity, nor would it cause a change in fleet mix at CVG. Rather, operational efficiencies would be achieved with the Proposed Action because it would improve the flexibility by which air traffic controllers assign runways for aircraft to arrive and depart during the nighttime, which would reduce current airfield delay. As a result, the Proposed Action is not anticipated to have an adverse impact to climate, nor would the potential changes in climate have an impact on the Proposed Action.

5.5.3 Mitigation, Avoidance, and Minimization Measures

The FAA has not identified specific factors to consider in making a significance determination for GHG emissions. The Proposed Action would not have an adverse impact upon climate change; therefore, no mitigation measures are required.

5.6 Department of Transportation, Section 4(f) Resources

This section presents the analysis of potential impacts to the U.S. Department of Transportation (USDOT) Act, Section 4(f) resources as a result of the No Action and the Proposed Action. Section 4(f) of the USDOT Act of 1966 (49 United States Code (U.S.C.) § 303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) provides that the Secretary of Transportation (Secretary) may approve a transportation project requiring the use of publicly owned land of a public park, recreation area, or land of an historic site of national, state, or local significance, only if there is no feasible and prudent alternative to using that land and the project includes all possible planning to minimize harm resulting from the use.

Two types of impacts to a Section 4(f) resource, physical or constructive use, can occur from a Proposed Action.[28] As described in FAA Order 5050.4B, a determination is made by the FAA if the Proposed Action or a reasonable alternative would eliminate or severely degrade the intended use of the Section 4(f) resource. That is, would the Proposed Action or alternative physically or constructively use (i.e., substantially impair the use) that resource? The responsible FAA official should determine if

[27] See *Massachusetts v. EPA,* 549 U.S. 497, 508-10, 521-23 (2007).
[28] FAA, 2006, Order 5050.4B, National Environmental Policy Act Implementing Instructions for Airport Actions, Table 7-1, page 7.1-2.

mitigation is satisfactory to the agency having jurisdiction over the protected resource. If mitigation is unsatisfactory, more detailed, impact analysis is likely needed.

5.6.1 No Action

No development or change to runway use would occur under the No Action. Therefore, no impacts to Section 4(f) resources would occur.

5.6.2 Proposed Action

Physical Use

The Proposed Action does not involve development or land acquisition, and only involves a change in nighttime runway use on existing Airport property. Therefore, the Proposed Action would not cause a physical use of any 4(f) properties.

Constructive Use

The Proposed Action would not cause unforecasted growth in aircraft activity, nor would it cause a change in fleet mix at CVG. Rather, operational efficiencies would be achieved with the Proposed Action because it would improve the flexibility by which air traffic controllers assign runways for aircraft to arrive and depart during the nighttime, which would reduce current airfield delay. As a result, no adverse impact on local or regional air quality is anticipated due to operation of the Proposed Action.

As noted in Chapter 4, Section 4.3.3, several properties protected under DOT Section 4(f) are located in the vicinity of the Airport. Of those, one property, the World of Golf, would be located in an area that would be subject to an increase in noise levels as a result of the Proposed Action. World of Golf is located in Florence, KY and has an 18-hole golf course, miniature golf, practice range, indoor range, golf simulator and Divots Grill. It is owned by the City of Florence.

The World of Golf would shift from being entirely outside the 65 DNL under the Future (2023) No Action to partially within the 65-70 DNL under the Future (2023) Proposed Action. The World of Golf would be partially within the 65 DNL of the Future (2028) No Action and would be almost entirely within the 65 DNL under the Future (2028) Proposed Action. Noise levels would be expected to increase by approximately DNL 3.10 dB to DNL 3.49 dB under the Future (2028) Proposed Action compared to the Future (2028) No Action. These noise levels would not substantially impair the property because the activities, features, and attributes that qualify the property for protection under Section 4(f) would not be affected by the implementation of the Proposed Action. No other changes would occur that would cause a constructive use of a 4(f) property. Therefore, no constructive use of a 4(f) property would occur.

5.7 Historical, Architectural, Archeological, and Cultural Resources

This section presents the analysis of potential impacts to Historical, Architectural, Archeological, and Cultural Resources as a result of the No Action and the Proposed Action.

5.7.1 No Action

No physical development or change to runway use would occur under the No Action. Therefore, no impacts to historic, architectural, archeological, or cultural resources would occur.

5.7.2 Proposed Action

The Proposed Action does not involve development or land acquisition, and only involves a change in nighttime runway use. Therefore, potential impacts are limited to changes in aircraft overflights and noise. There are no historical, architectural, archeological, or cultural resources within the area of DNL 1.5 dB increase within the Future (2023) or Future (2028) Proposed Action Noise Contours. Therefore, the Proposed Action would not cause physical or constructive impacts to any historical, architectural, archeological, or cultural resources.

5.8 Land Use

This section presents the analysis of potential land use incompatibility of the No Action and the Proposed Action, including potential conflicts with surrounding land uses and zoning with the comprehensive plans of the surrounding communities.

The FAA has not established a significance threshold for land use. The determination that significant impacts exist in the land use impact category is normally dependent on the significance of other impacts. Potential impacts on noise compatible land use are discussed in Section 5.7, Noise and Noise-Compatible Land Use. Potential impacts related to potential for disruptions to communities or relocation of residences or businesses is discussed in Section 5.8, Socioeconomics, Environmental Justice, and Children's Health and Safety Risks. Regarding consistency with state and/or local plans, an inconsistency with surrounding land uses and zoning by itself does not automatically result in a significant impact.

5.8.1 No Action

No development or change to runway use would occur under the No Action. Therefore, no impacts to land use would occur.

5.8.2 Proposed Action

The Proposed Action does not involve development or land acquisition, and only involves a change in nighttime runway use. Therefore, the Proposed Action would not cause a change in land use or result in any development that would be incompatible with existing land use. In addition, the Proposed Action would not create a new wildlife attractant or create an obstruction to navigation airspace per 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. Therefore, no impacts to land use would occur with implementation of the Proposed Action.

5.8.3 Mitigation, Avoidance, and Minimization Measures

The Proposed Action would not result in significant land use impacts. Therefore, there is no mitigation required or proposed. Noise compatibility is discussed in Section 5.10.

5.9 Natural Resources and Energy Supply

This section presents the analysis of potential impacts to natural resources and energy supplies as a result of the No Action and the Proposed Action. The supply of natural resources may be impacted by a construction project because the use of dirt, rock, or gravel could diminish or deplete the supply of those and other natural resources. In addition, the operation of an airport requires energy in the form of electricity, natural gas, aviation fuel, diesel fuel, and gasoline. There are two primary sources of energy consumption at an airport – stationary facilities and aircraft operations. Stationary facilities use utility energy (electricity and natural gas) to provide lighting, cooling, heat, and hot water to buildings, the airfield, and parking areas. Aircraft operations and ground service equipment (GSE) consume fuel energy including jet fuel (Jet A), low-lead aviation gasoline (AvGas), unleaded gasoline, and diesel fuel to operate the aircraft and power GSE.

5.9.1 No Action

Natural Resources

Resources such as sand, gravel, stone, concrete, asphalt, water, wood, metals, plastic, and other resources are used for airport construction and maintenance. No new facilities would be constructed that would consume natural resources or other construction materials for the No Action. It is expected that small amounts of these materials would be used for general maintenance activities.

Electricity

There would be no increase in demand for electricity under the No Action scenario. No new facilities or lighting would be constructed in the No Action. Existing electricity resources would continue to power the existing facilities and accommodate the forecast demand for aircraft operations.

Natural Gas

There would be no increase in demand for natural gas under the No Action. No new facilities would be constructed that would require natural gas due to the No Action. Natural gas resources would continue to power the existing facilities and accommodate the forecast demand for aircraft operations.

Fuel Consumption

Aviation fuel demand at the Airport is a function of the number of operations at CVG and how they operate. This includes the length of time the aircraft are operating while on the ground and during takeoff and climb out, and the fuel required for the aircraft to reach the flight destination. Aircraft fuel, typically Jet-A or AvGas, is provided to airport users by various suppliers that obtain and sell fuel through existing contracts and on an as-needed basis. No new facilities would be constructed that would increase the demand for fuel for the No Action. Current forecast projects growth in aircraft operations at CVG and additional aircraft movements would likely increase fuel consumption. In addition to aircraft fuel, diesel fuel and gasoline are also used to power GSE and other service vehicles at CVG. The fuel requirement for GSE is roughly related to the number of aircraft operations that are serviced, which affects the number of GSE units and the amount of time in which they operate. Based on the forecast demand, aircraft operations are projected to increase, which would result in an increase in fuel usage for aircraft and GSE for the No Action.

5.9.2 Proposed Action

Natural Resources

Resources such as sand, gravel, stone, concrete, asphalt, water, wood, metals, plastic, and other resources are used for airport construction and maintenance. No new facilities would be constructed that would consume natural resources or other construction materials for the Proposed Action. It is expected that small amounts of these materials would be used for general maintenance activities at the same quantities as the No Action.

Electricity

There would be no increase in demand for electricity for the Proposed Action. The Proposed Action would change nighttime runway use patterns; however, the number of aircraft operations or the times of operations would not change. No new facilities or lighting would be constructed. Therefore, the Proposed Action would not increase demand for electricity. Existing electricity resources would continue to power the existing facilities and accommodate the forecast demand for aircraft operations.

Natural Gas

There would be no increase in demand for natural gas for the Proposed Action. The Proposed Action would only change the runways aircraft use but would not impact the number of operations, the times of operations, or number of support vehicles and equipment. Therefore, the Proposed Action would not increase demand for natural gas. Existing natural gas resources would continue to power the existing facilities and accommodate the forecast demand for aircraft operations.

Fuel Consumption

There would be no change in the number of aircraft operations due to the Proposed Action. Aircraft operations are projected to increase which would result in an increase in fuel usage for aircraft and GSE with or without implementation of the Proposed Action. Due to the increased operational efficiency, some reduction in fuel usage may occur due to reduced taxi time under the Proposed Action.

5.9.3 Mitigation, Avoidance, and Minimization Measures

Demand for energy and natural resources due to the Proposed Action would not exceed current or future supplies. The Proposed Action does not exceed the applicable thresholds of significance; therefore, no mitigation measures are required.

5.10 Noise and Noise-Compatible Land Use

This section presents the analysis of aircraft noise exposure to surrounding communities as a result of the No Action and the Proposed Action. Based on Federal Aviation Administration (FAA) standards, aircraft noise impacts are analyzed for areas located within the 65+ DNL noise contour compared to the No Action Alternative for the same time period. The No Action Alternative noise contour provides a baseline for noise impact analysis in this EA. Within the 65+ DNL noise contour, the analysis identifies residences and other noise-sensitive land uses such as churches, schools, libraries, hospitals, and nursing homes. An increase in the noise level of DNL 1.5 decibels (dB) or more for a noise-sensitive land use located within the 65+ DNL noise contour is the threshold FAA uses for determining significant noise impacts.

The analysis of noise exposure around CVG was prepared using the AEDT, Version 3e.[29] Inputs to the AEDT include number of aircraft operations during the time period evaluated, the types of aircraft flown, time of day aircraft operations occur, runway definition, how frequently each runway is used for arriving and departing aircraft, the routes of flight used when arriving to and departing from the runways, the proportional use of those flight routes, and the length of the trips. The AEDT calculates noise exposure for the area around the airport and outputs contours of equal noise exposure using the Day-Night-Average Sound Level (DNL) metric. For this EA, equal noise contours for the levels of DNL 65, 70, and 75 dB were calculated and represent average-annual day conditions based on a forecast of aviation activity. Appendix B, Noise contains all input data used for this analysis.

5.10.1 Future (2023) No Action

Exhibit 5-1 reflects the Future (2023) No Action Noise Exposure Contours at CVG. The 65+ DNL of the Future (2023) No Action Noise Exposure contour encompasses approximately 8.1 square miles. The Future (2023) No Action Noise Exposure Contour retains a similar shape and size as the Existing Noise Exposure Contour because runway use patterns and flight tracks are expected to remain similar. Summaries of the residential population and housing units affected by noise levels exceeding 65 DNL for the Future (2023) No Action Noise Exposure Contours are provided in **Table 5-1**.

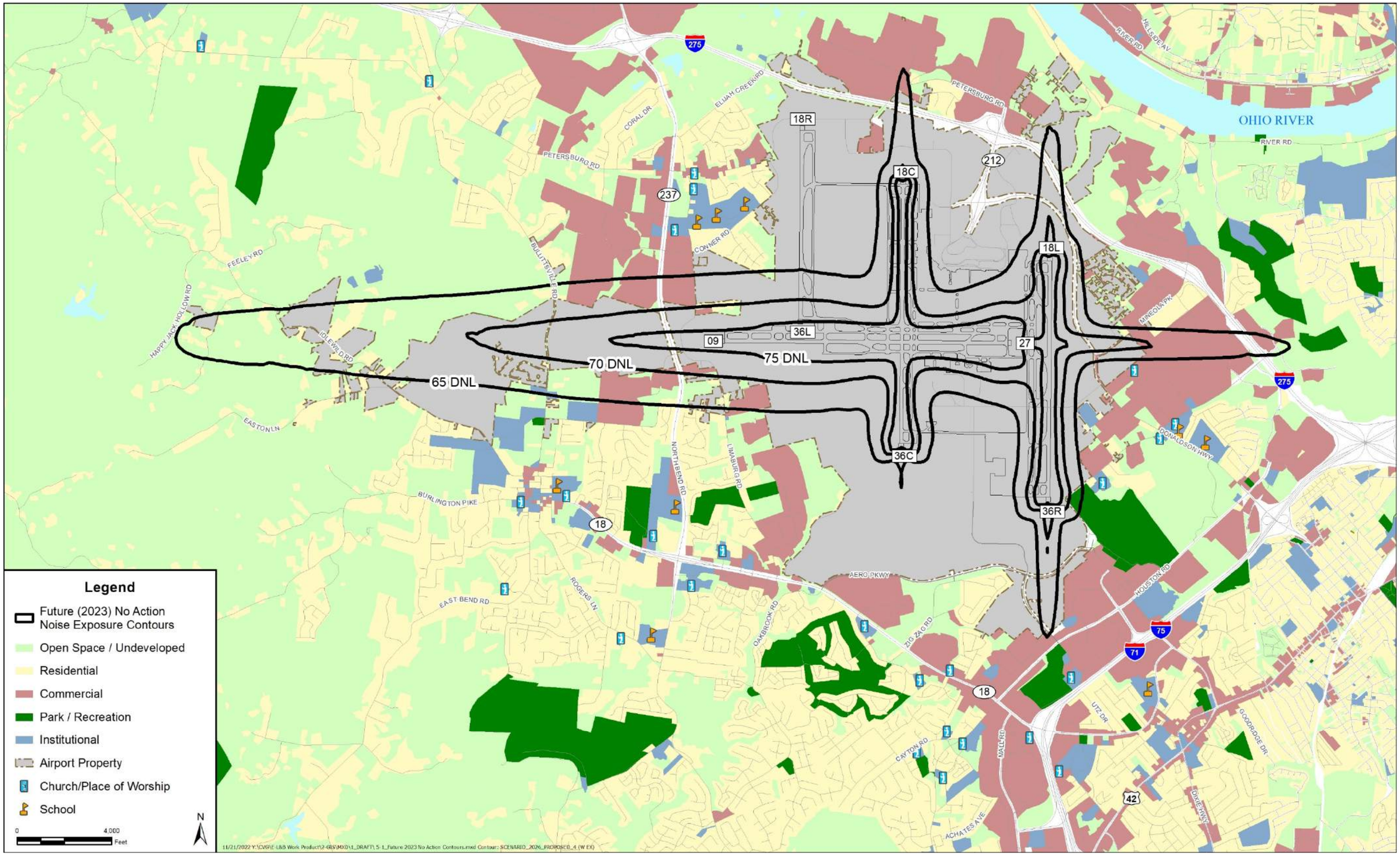
Table 5-1 – Future (2023) No Action Incompatibilities

Future (2023) No Action	65-70 DNL	70-75 DNL	75+ DNL	TOTAL
Residences				
Mitigated[1]	**17**	**1**	**0**	**18**
Unmitigated	**21**	**0**	**0**	**21**
Previously Offered but Refused	7	0	0	**7**
Never Offered Mitigation[2]	14	0	0	**14**
Total	**38**	**1**	**0**	**39**
Estimated Population				
Mitigated[1]	**57**	**3**	**0**	**61**
Unmitigated	**58**	**0**	**0**	**58**
Previously Offered but Refused	20	0	0	**20**
Never Offered Mitigation[2]	38	0	0	**35**
Total	**116**	**3**	**0**	**119**
Noise-Sensitive Facilities				
Schools	0	0	0	0
Churches	0	0	0	0
Nursing Homes	0	0	0	0
Hospitals	0	0	0	0
Libraries	0	0	0	0

Notes: Population numbers are estimates based on the 2020 U.S. Census average household size per number of housing units.
[1] Residences were mitigated through previous Part 150 Studies conducted by KCAB.
[2] Residence was either built after Part 150 mitigation program, never in the 65 DNL of an official Noise Exposure Map, or an ineligible property.

[29] AEDT Version 3e was the latest version available when noise modeling began for this EA.

Exhibit 5-1 – Future (2023) No Action Noise Exposure Contours



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5.10.2 Future (2028) No Action

Exhibit 5-2 reflects the Future (2028) No Action Noise Exposure Contours at CVG. The 65+ DNL of the Future (2028) No Action Noise Exposure contour encompasses approximately 10.8 square miles. The Future (2028) No Action Noise Exposure Contour retains a similar shape and size as the Existing Noise Exposure Contour because runway use patterns and flight tracks are expected to remain similar in 2028 under the No Action scenario. Summaries of the residential population and housing units affected by noise levels exceeding 65 DNL for the Future (2028) No Action Noise Exposure Contours are provided in **Table 5-2**.

Table 5-2 – Future (2028) No Action Incompatibilities

Future (2028) No Action	65-70 DNL	70-75 DNL	75+ DNL	TOTAL
Residences				
Mitigated[1]	**87**	**2**	**0**	**89**
Unmitigated	**46**	**4**	**0**	**50**
Previously Offered but Refused	16	2	0	**18**
Never Offered Mitigation[2]	30	2	0	**32**
Total	**133**	**6**	**0**	**139**
Estimated Population				
Mitigated[1]	**215**	**7**	**0**	**222**
Unmitigated	**91**	**13**	**0**	**104**
Previously Offered but Refused	35	6	0	**41**
Never Offered Mitigation[2]	56	7	0	**62**
Total	**306**	**19**	**0**	**325**
Noise-Sensitive Facilities				
Schools	0	0	0	0
Churches	0	0	0	0
Nursing Homes	0	0	0	0
Hospitals	0	0	0	0
Libraries	0	0	0	0

Notes: Population numbers are estimates based on the 2020 U.S. Census average household size per number of housing units.
[1] Residences were mitigated through previous Part 150 Studies conducted by KCAB.
[2] Residence was either built after Part 150 mitigation program, never in the 65 DNL of an official Noise Exposure Map, or an ineligible property.

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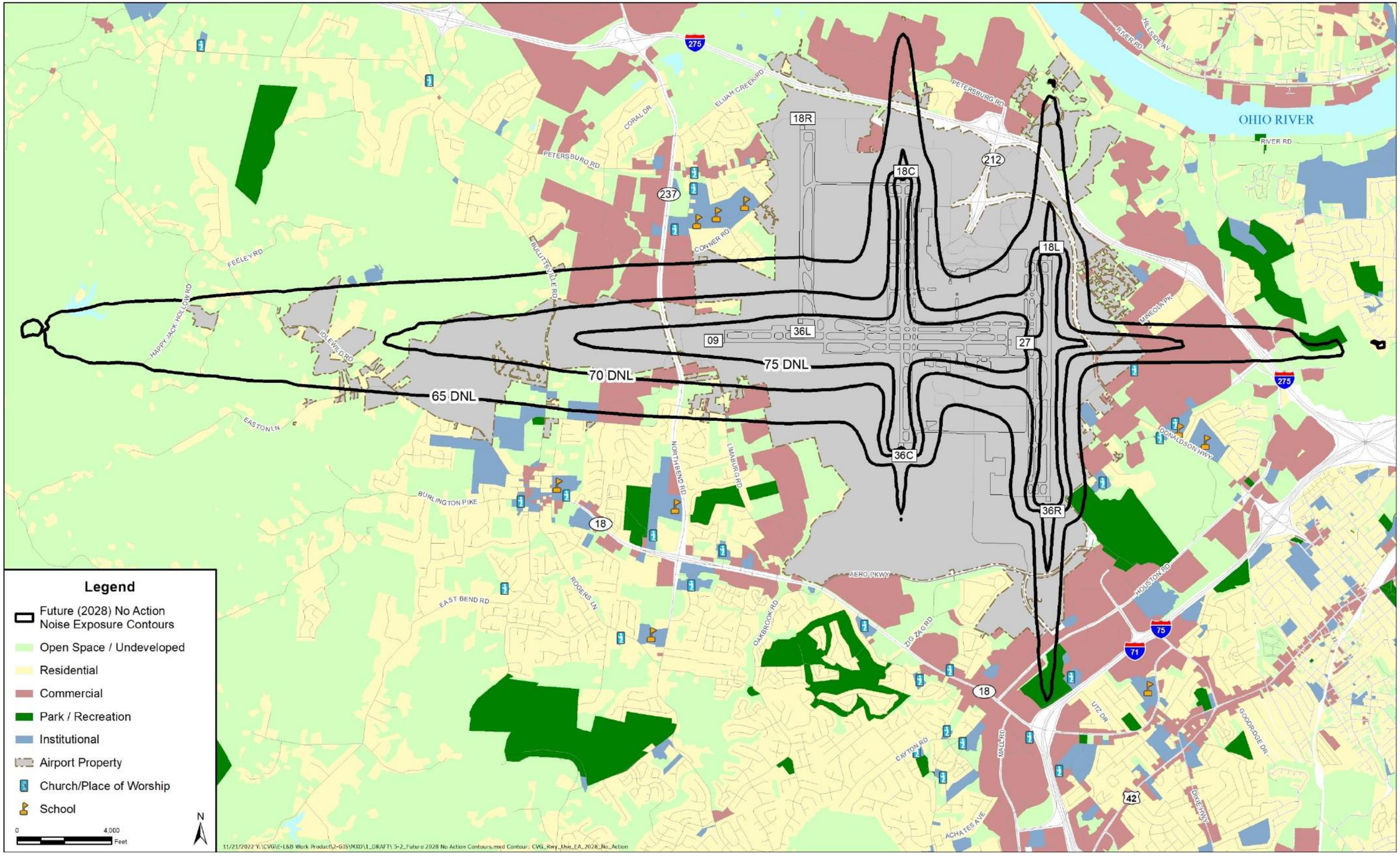
Exhibit 5-2 – Future (2028) No Action Noise Exposure Contours



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5.10.3 Future (2023) Proposed Action

The Future (2023) Proposed Action Noise Exposure Contour, showing 65, 70, and 75 DNL levels, is presented in **Exhibit 5-3**. The 65+ DNL of the Future (2023) Proposed Action Noise Exposure Contour encompasses approximately 8.2 square miles. Summaries of the residential population and housing units affected by noise levels exceeding 65 DNL for the Future (2023) Proposed Action Noise Exposure Contours are provided in **Table 5-3**.

Table 5-3 – Future (2023) Proposed Action Incompatibilities

Future (2023) Proposed Action	65-70 DNL	70-75 DNL	75+ DNL	TOTAL
Residences				
Mitigated[1]	**16**	**0**	**0**	**16**
Unmitigated	**22**	**0**	**0**	**22**
Previously Offered but Refused	7	0	0	7
Never Offered Mitigation[2]	15	0	0	15
Total	**38**	**0**	**0**	**38**
Estimated Population				
Mitigated[1]	**56**	**0**	**0**	**56**
Unmitigated	**61**	**0**	**0**	**61**
Previously Offered but Refused	20	0	0	**20**
Never Offered Mitigation[2]	41	0	0	**41**
Total	**117**	**0**	**0**	**117**
Noise-Sensitive Facilities				
Schools	0	0	0	0
Churches	0	0	0	0
Nursing Homes	0	0	0	0
Hospitals	0	0	0	0
Libraries	0	0	0	0

Notes: Population numbers are estimates based on the 2020 U.S. Census average household size per number of housing units.
[1] Residences were mitigated through previous Part 150 Studies conducted by KCAB.
[2] Residence was either built after Part 150 mitigation program, never in the 65 DNL of an official Noise Exposure Map, or an ineligible property.

Under the Proposed Action there would be no change to the number of arrivals and departures, or flight corridors at CVG; however, there would be a change to nighttime (10:00pm to 6:59 am) runway use. The change in runway use would not cause a change in established flight corridors. Aircraft would use the existing flight corridors. Overall, there would be an increase in nighttime arrivals to Runways 18C, 36C and 36R and an increase in nighttime departures from Runways 18L and 36R. There would be a

corresponding decrease in nighttime arrivals to Runway 27 and a decrease in nighttime departures from Runway 27 and Runway 36C.

To the west of the Airport, the 65+ DNL of the Future (2023) Proposed Action Noise Exposure Contour is similar in shape and slightly reduced in size due to the decrease in nighttime departures from Runway 27 compared to the 65+ DNL of the Future (2023) No Action Noise Contour. To the east of the Airport, the 65+ DNL of the Future (2023) Proposed Action Noise Exposure Contour is smaller than the 65+ DNL of the Future (2023) No Action Noise Contour due to the decrease in nighttime arrivals to Runway 27.

The 65+ DNL of the Future (2023) Proposed Action Noise Exposure Contour increases to the north and south of Runway 18L/36R compared to the 65+ DNL of the Future (2023) No Action Noise Contour due to an increase in nighttime departures on Runway 36R and an increase in nighttime arrivals on Runway 18L/36R under the Proposed Action.

The 65+ DNL of the Future (2023) Proposed Action Noise Exposure Contour increases in length both north and south of Runway 18C/36C due to the increased number of nighttime arrivals to Runways 18C and 36C under the Proposed Action. However, the Future (2023) Proposed Action Noise Exposure Contour is not as wide to the east and west of Runway 18C/36C due to the slight decrease in nighttime departures from Runway 36C under the Proposed Action as more departures would shift to Runway 36R.

Exhibit 5-4 provides a comparison of the Future (2023) Proposed Action and the Future (2023) No Action Noise Exposure Contours.

Exhibit 5-3 – Future (2023) Proposed Action Noise Exposure Contours

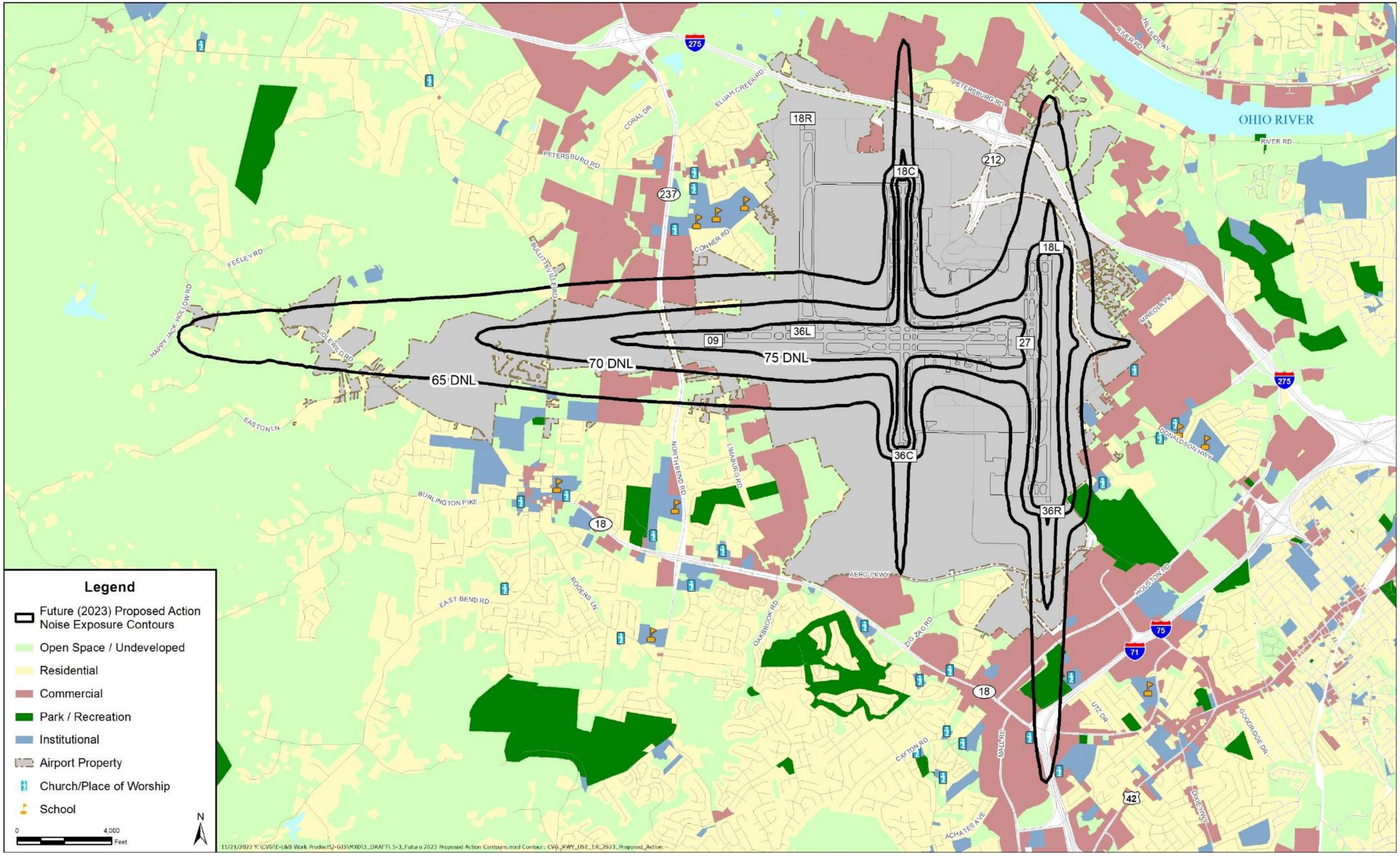

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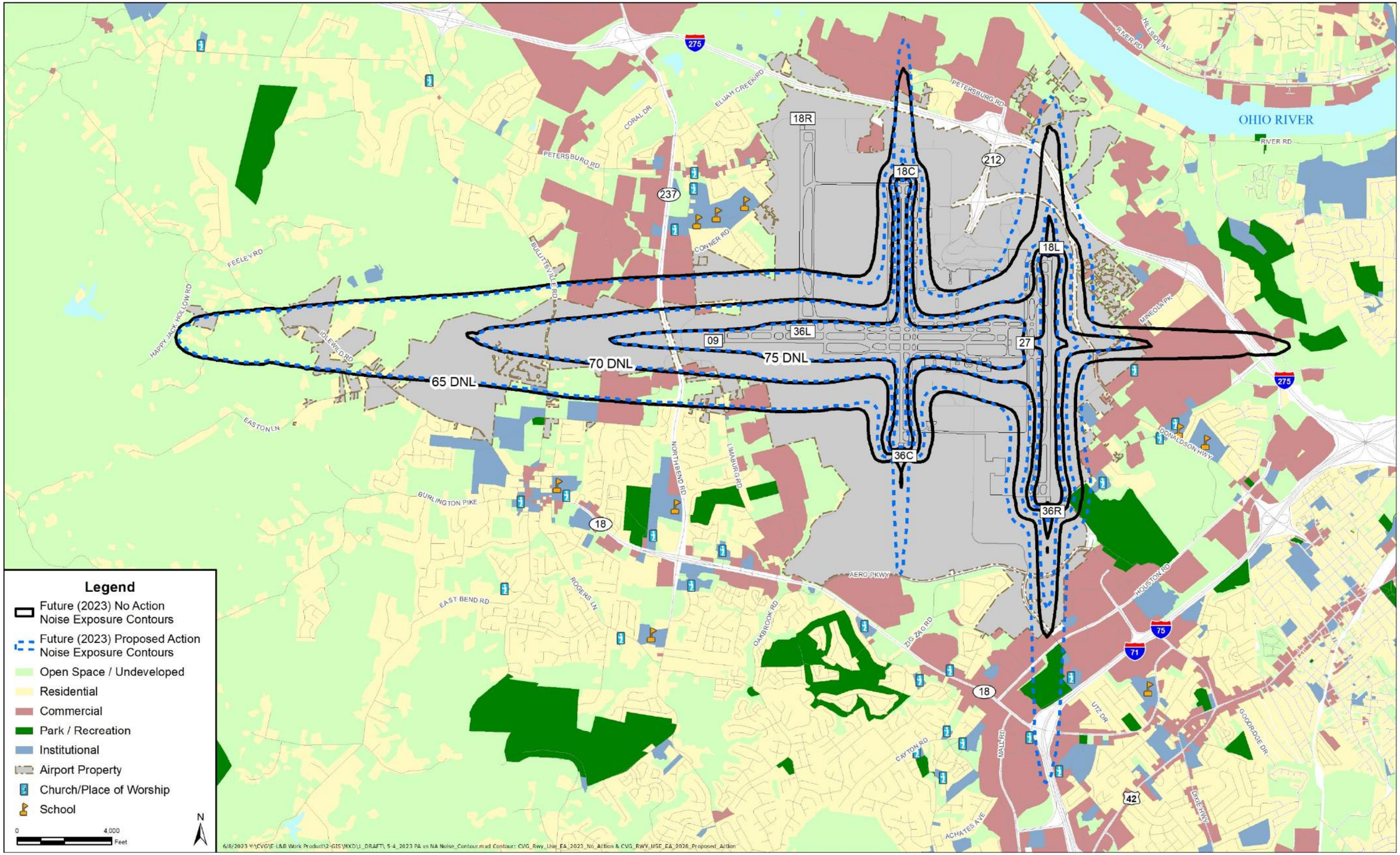
Exhibit 5-4 – Future (2023) No Action Compared to Future (2023) Proposed Action Noise Exposure Contours



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5.10.4 Future (2028) Proposed Action

The Future (2028) Proposed Action Noise Exposure Contours, showing 65, 70, and 75 DNL levels, is presented in **Exhibit 5-5**. The 65+ DNL of the Future (2028) Proposed Action Noise Exposure Contour encompasses approximately 11.0 square miles. Summaries of the residential population, housing units, and noise-sensitive facilities affected by noise levels exceeding 65 DNL for the Future (2028) Proposed Action Noise Exposure Contours are provided in **Table 5-4**.

Table 5-4 – Future (2028) Proposed Action Incompatibilities

Future (2028) Proposed Action	65-70 DNL	70-75 DNL	75+ DNL	TOTAL
Residences				
Mitigated[1]	**75**	**2**	**0**	**77**
Unmitigated	**34**	**4**	**0**	**38**
Previously Offered but Refused	13	2	0	**15**
Never Offered Mitigation[2]	21	2	0	**23**
Total	**109**	**6**	**0**	**115**
Estimated Population				
Mitigated[1]	**222**	**7**	**0**	**229**
Unmitigated	**91**	**13**	**0**	**104**
Previously Offered but Refused	35	6	0	**41**
Never Offered Mitigation[2]	56	7	0	**62**
Total	**313**	**19**	**0**	**333**
Noise-Sensitive Facilities (NSF)				
Schools	0	0	0	0
Churches	2	0	0	2
Nursing Homes	0	0	0	0
Hospitals	0	0	0	0
Libraries	0	0	0	0

Notes: Population numbers are estimates based on the 2020 U.S. Census average household size per number of housing units.
[1] Residences were mitigated through previous Part 150 Studies conducted by KCAB.
[2] Residence was either built after Part 150 mitigation program, never in the 65 DNL of an official Noise Exposure Map, or an ineligible property.

Similar to the Future (2023) Proposed Action condition, there would be no change to the number of arrivals and departures, or flight corridors at CVG in the Future (2028) Proposed Action condition; however, there would be a change to nighttime (10:00pm to 6:59 am) runway use.

Overall, there would be an increase in nighttime arrivals to Runways 18C, 36C and 36R and an increase in nighttime departures from Runways 18L and 36R. There would be a corresponding decrease in nighttime arrivals to Runway 27 and a decrease in nighttime departures from Runway 27 and Runway 36C.

To the west of the Airport, the 65+ DNL of the Future (2028) Proposed Action Noise Exposure Contour is similar in shape and slightly reduced in size due to the slight reduction in nighttime departures on Runway 27 compared to the 65+ DNL of the Future (2028) No Action Noise Contour.

To the east of the Airport, the Future (2028) Proposed Action Noise Exposure Contour is considerably smaller than the 65+ DNL of the Future (2023) No Action Noise Contour due to the decrease in nighttime arrivals to Runway 27.

The 65+ DNL of the Future (2028) Proposed Action Noise Exposure Contour increases to the north and south of Runway 18L/36R compared to the 65+ DNL of the Future (2028) No Action Noise Contour due to an increase in nighttime departures on Runway 36R and an increase in nighttime arrivals on Runway 18L/36R under the Proposed Action.

The 65+ DNL of the Future (2028) Proposed Action Noise Exposure Contour increases in length both north and south of Runway 18C/36C due to the increased number of nighttime arrivals to Runways 18C and 36C under the Proposed Action. However, the Future (2028) Proposed Action Noise Exposure Contour is not as wide to the east and west of Runway 18C/36C due to the slight decrease in nighttime departures from Runway 36C under the Proposed Action as more departures would shift to Runway 36R.

Exhibit 5-6 provides a comparison of the Future (2028) Proposed Action and the Future (2028) No Action Noise Exposure Contours.

Exhibit 5-5 – Future (2028) Proposed Action Noise Exposure Contours

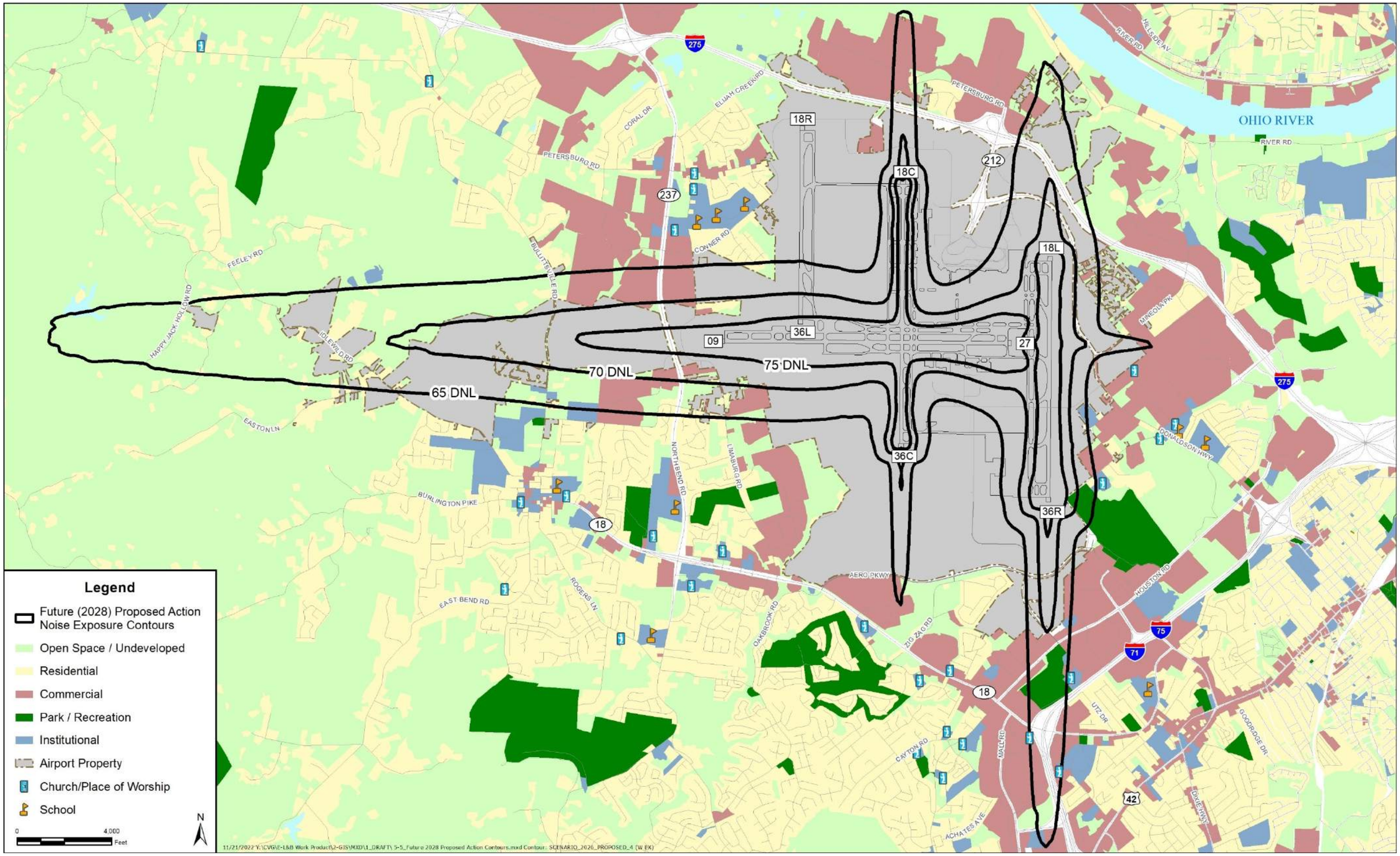

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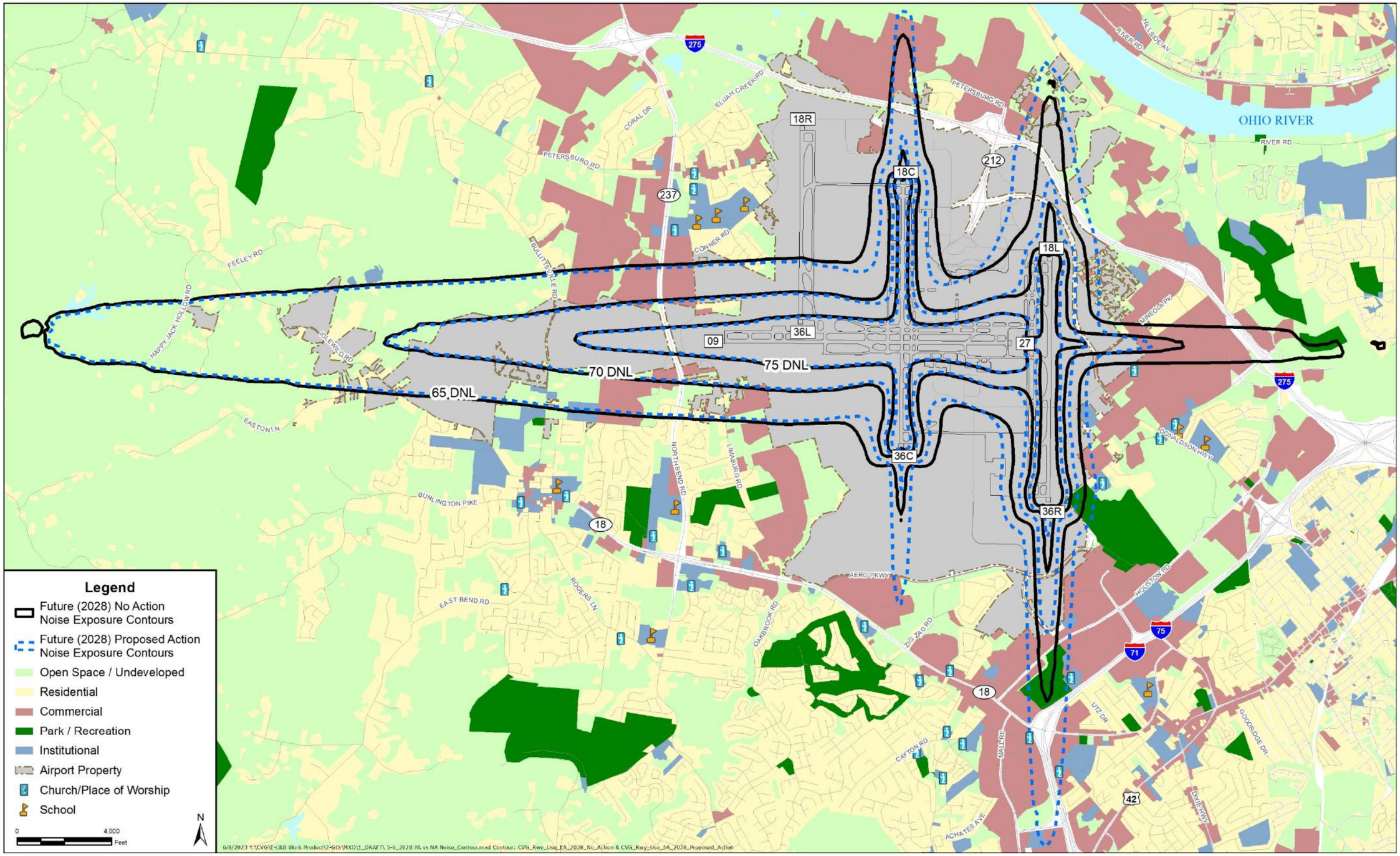
Exhibit 5-6 – Future (2028) No Action Compared to Future (2028) Proposed Action Noise Exposure Contours



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A noise impact would be considered to be significant if there were an increase of 1.5 decibels (dB) or more over noise-sensitive facilities within the 65 DNL contour when comparing the No Action and Proposed Action of the same corresponding year.[30] The Future (2023) Proposed Action, compared to the Future (2023) No Action, and the area of 1.5 dB increase within the 65 DNL is shown on **Exhibit 5-7**. The Future (2028) Proposed Action, compared to the Future (2028) No Action, and the area of 1.5 dB increase within the 65 DNL is shown on **Exhibit 5-8**. For both the Future (2023) and Future (2028) Proposed Action, the 1.5 dB increase area is predominantly over Runway 18L/36R, extending north, south, and east of Runway 18L/36R and south of Runway 18C/36C. The area of 1.5 dB increase extends further north and south for the Future (2028) Proposed Action, when compared to the Future (2023) Proposed Action. This is a result of the forecasted increase in aircraft operations at the Airport. To the east in both the Future (2023) Proposed Action and Future (2028) Proposed Action, it extends over residential areas, and three single-family homes are impacted. **Exhibits 5-9** and **5-10** show the location of the three homes impacted from the 1.5 dB increase within the 65 DNL for 2023 and 2028. The location and mitigation status of the three residential properties is shown in **Table 5-5**. Two of the impacted residential buildings were mitigated by the KCAB in a prior noise study, and the other was offered mitigation but refused.

Table 5-5 – Housing Units Within the Area of 1.5 dB Increase Within 65 DNL of the Future (2023) and Future (2028) Proposed Action Noise Exposure Contours

Map ID	Type	Address	Mitigation Status
1	Single-Family Residential	3845 Turfway Road	Mitigated
2	Single-Family Residential	3837 Turfway Road	Mitigated
3	Single-Family Residential	3660 Ohara Road	Unmitigated – Refused Previous Offer

Source: Landrum & Brown, 2023.

In addition to the three residences, there are two noise-sensitive public facilities within the area of 1.5 dB increase under the Future (2028) Proposed Action, the Islamic Center of Northern Kentucky and the Mission Church of God, which are located to the south of Runway 18L/36R. According to the FAA Order 1050.1F Desk Reference, in certain cases, FICON[31] recommended using a cumulative A-weighted metric that is limited to the affected time period. Due to the nature and times of use of these facilities, it is not expected that nighttime (10:00pm to 6:59am) noise levels would cause effects as the facilities would typically only be in use during the daytime. Therefore, a supplemental daytime equivalent sound level (daytime Leq) analysis was conducted. The results of the daytime Leq analysis are shown in **Table 5-6**.

[30] FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, Section 4-3.3 Significance Thresholds.

[31] Federal Interagency Committee on Noise (FICON), "Federal Agency Review of Selected Airport Noise Analysis Issues, August 1992.

Table 5-6 – Daytime Leq Analysis

Type	Daytime Leq			
	2023 No Action	2023 Proposed Action	2028 No Action	2028 Proposed Action
Islamic Center of Northern Kentucky	57.8	57.8	58.9	58.9
Mission Church of God	58.4	58.4	59.5	59.5

Source: AEDT, Landrum & Brown analysis, 2023.

As shown in Table 5-6, neither of these churches would exceed 65 Leq during the daytime and neither would experience 1.5 decibels (dB) of increased noise during the daytime as a result of the Proposed Action when compared to the No Action in 2023 or 2028. Based on FICON's recommendation to consider the affected time period, no significant noise impact would occur to these churches.

No other noise-sensitive land uses would be subject to an increase of 1.5 decibels (dB) or more as a result of the Proposed Action. Therefore, no significant noise impacts would occur as a result of the 2023 or 2028 Proposed Action.

Exhibit 5-7 – Future (2023) Proposed Action Noise Contour with Areas of Significant Increase

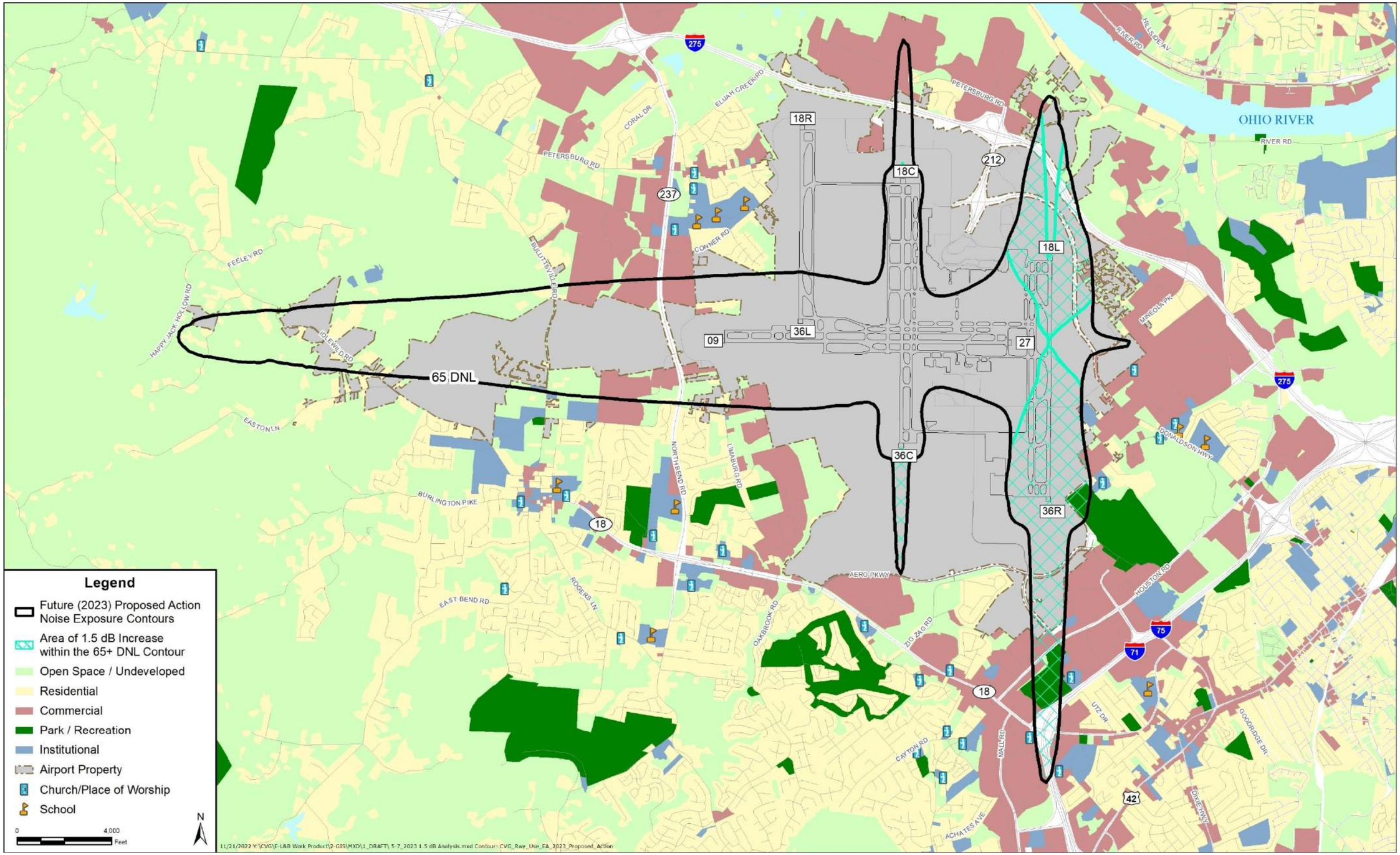

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Exhibit 5-8 – Future (2028) Proposed Action Noise Contour with Areas of Significant Increase

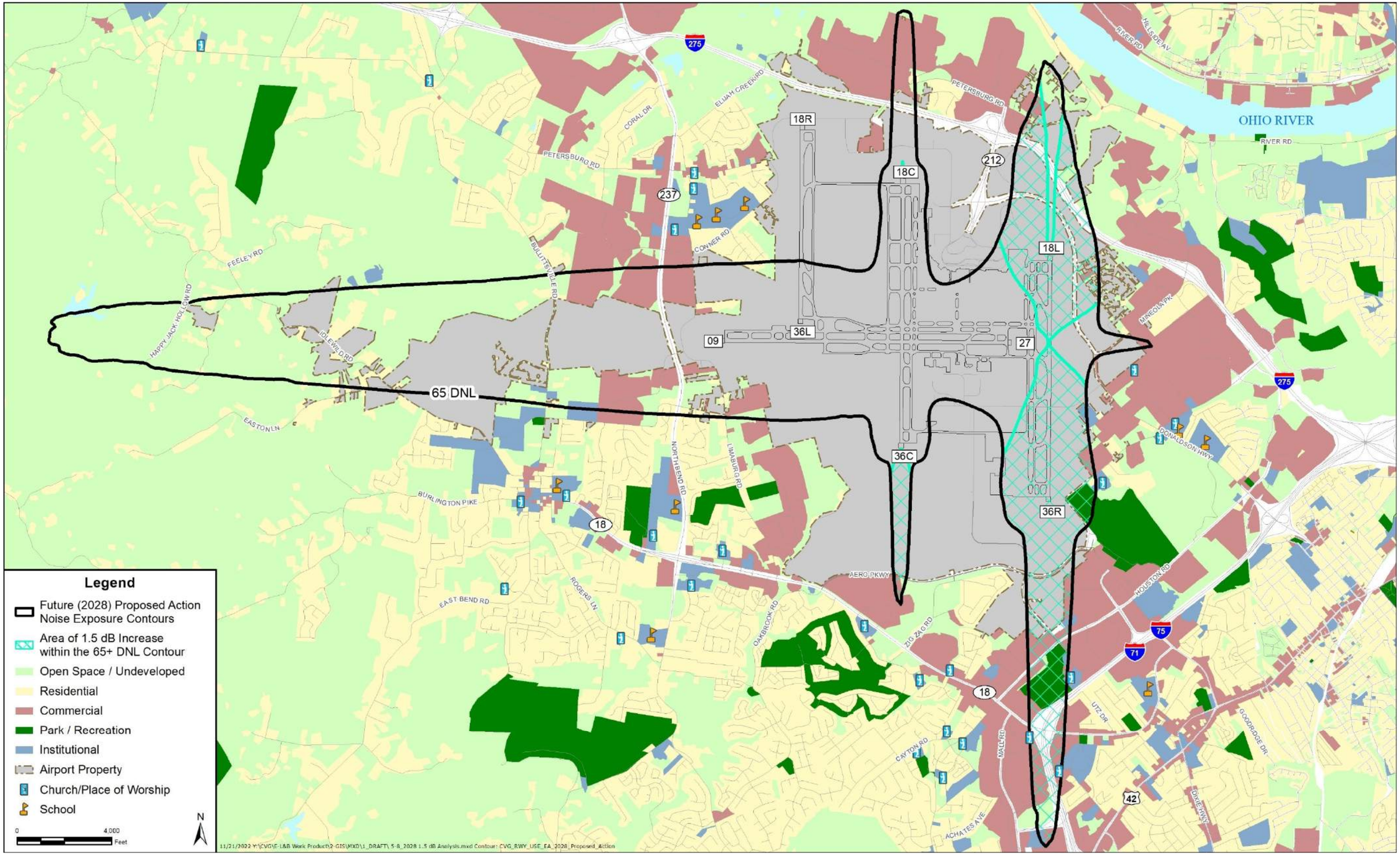

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Exhibit 5-9 – Impacted Homes in the Area of 1.5 dB Increase for the Future (2023) Proposed Action

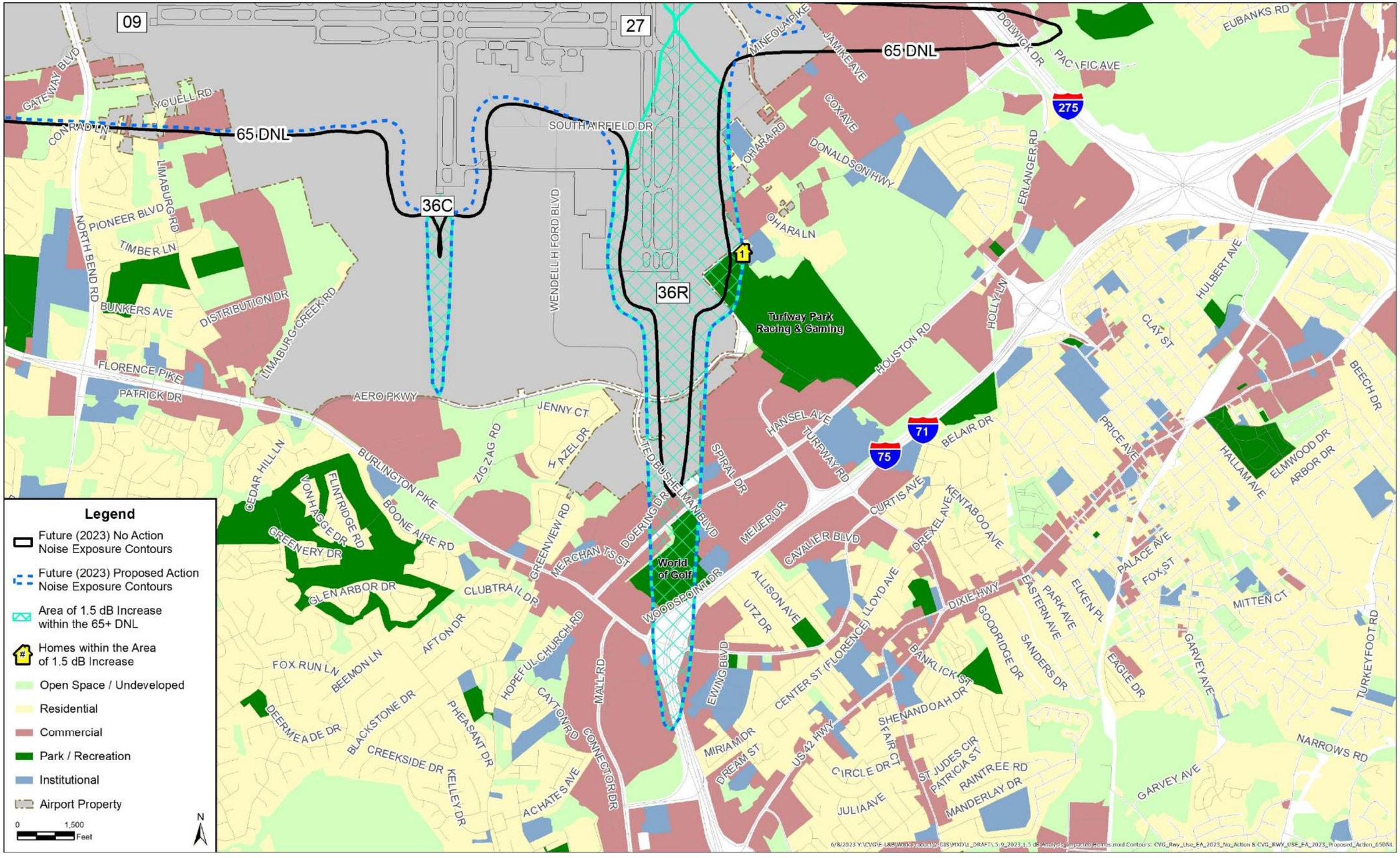

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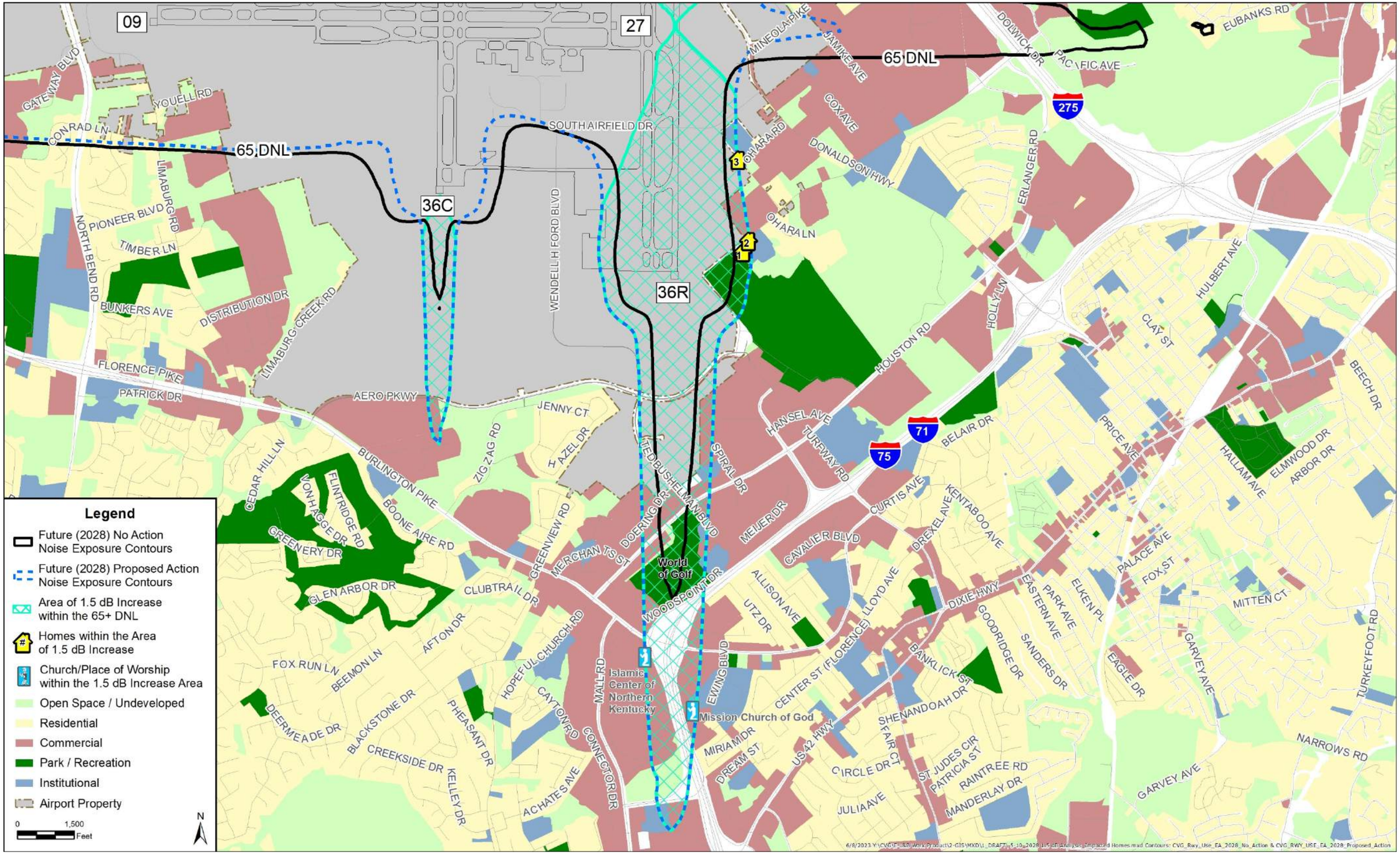
Exhibit 5-10 – Impacted Homes in the Area of 1.5 dB Increase for the Future (2028) Proposed Action



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5.10.5 Reportable Noise Changes

For air traffic airspace and procedure actions where the study area is larger than the immediate vicinity of an airport, the noise analysis focuses on a change in exposure analysis. This analysis examines the change in noise levels as compared to population and demographic information. Per FAA Order 1050.1F Section 11.3 Environmental Consequences, this analysis may be conducted using noise contours.

Analysis was conducted to assess the potential noise impacts to housing units and the population located between the 60 and 65 DNL noise contours due to changes in airspace and air traffic procedures. The analysis was conducted using the recommendations of the Federal Interagency Committee of Noise (FICON)[32], which the FAA has incorporated into FAA Order 1050.1F. The FICON was formed to review and make recommendations on Federal policies that govern the assessment of airport noise impacts. Under one of its policy recommendations, FICON concluded that it is prudent to provide for a systematic analysis of noise levels below DNL 65 dB in NEPA documents using the following screening procedures:

1. Determine if a 1.5 dB increase occurs at noise-sensitive sites within the 65 DNL or greater noise contour. If a 1.5 dB increase does not occur, then it is likely that a 3.0 dB increase would not be found within the 60 to 65 DNL noise contour, and no further screening would be necessary.

2. If a 1.5 dB increase does occur at noise-sensitive sites within the 65 DNL or greater noise contour, then determine the areas where a 3 dB increase occurs within the 60 to 65 DNL noise contour.

According to the policy recommendations of the FICON, when areas of a 3 dB increase in noise exposure within the 60 to 65 DNL noise contour and 5 dB increase in the 45 to 60 DNL noise contour are identified in a NEPA analysis, the consideration of appropriate mitigation should include the potential for mitigating noise in these areas.[33] The FAA refers to noise changes meeting these criteria as “reportable.” Although they are not significant (see Exhibit 4-1 of Order 1050.1F), they may cause a proposed action to be highly controversial on environmental grounds. The same range of currently approved mitigation options that are potentially available at 65 DNL or greater should be considered, including eligibility for federal funding. The FICON further acknowledges that there is no commitment by either the FAA or the airport sponsor for funding potential land use mitigation within a 60 to 65 DNL noise contour, because it is generally expected that federal priority would be given to mitigating noise at higher levels.

Exhibits 5-11 and **5-12** depict the reportable areas of noise increase associated with the Future (2023) Proposed Action and Future (2028) Proposed Action Noise Exposure Contours. There are residential areas within the area of 3 dB increase south of Runways 18C/36C and 18L/36R. There were no areas of 5 dB increase within the 45 to 60 DNL contours. The largest dB increase was 3.96 dB within the 45 to 60 DNL contours.

[32] FICON, August 1992, *Federal Agency Review of Selected Airport Noise Analysis Issues*.
[33] Per FAA Order 1050.1F, AEDT was used to identify where the 5 dB increase within the DNL 45 to 60 dB occurs. This was conducted to evaluate the potential noise impacts as a result of changes in runway use and determine whether there is the potential to increase noise levels over communities that would experience an increase in aircraft overflights.

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Exhibit 5-11 – Areas of Reportable Noise Increase in the Future (2023) Proposed Action Noise Contour

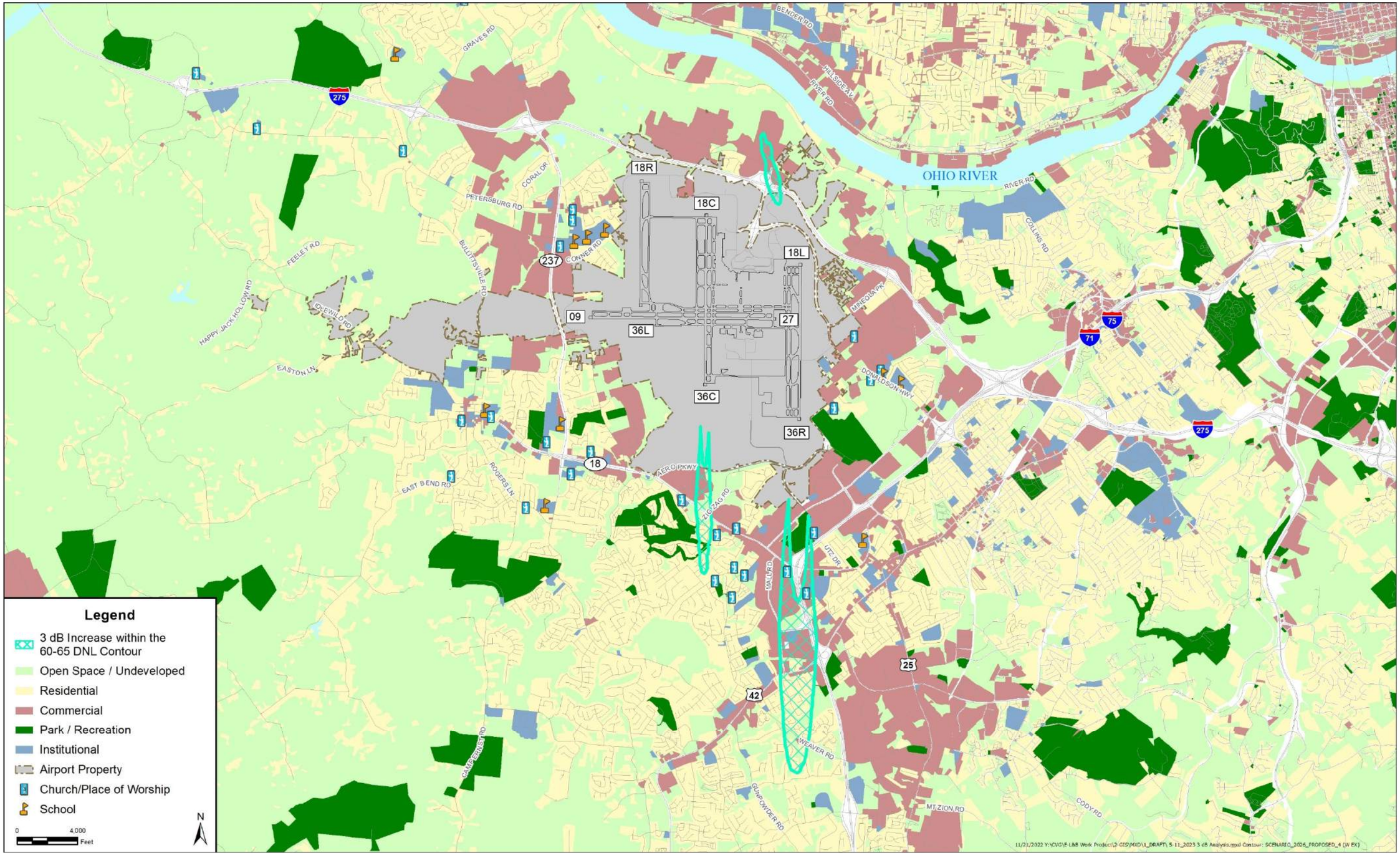

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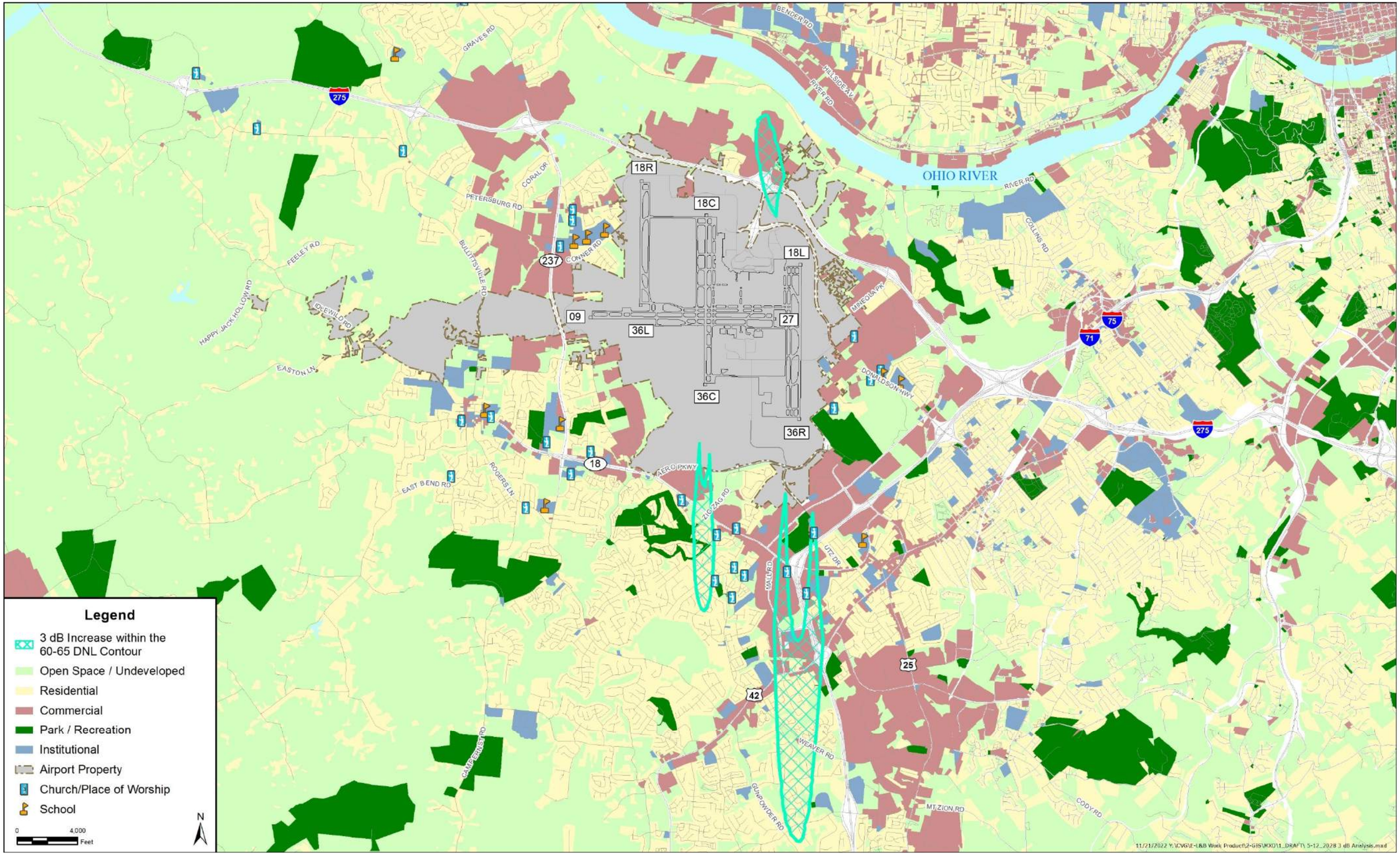
Exhibit 5-12 – Areas of Reportable Noise Increase in the Future (2028) Proposed Action Noise Contour



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5.10.6 Mitigation, Avoidance, and Minimization Measures

As indicated in Table 5-5, the Proposed Action would result in a significant impact to one housing unit within the 65+ DNL for 2023 and three housing units within the 65+ DNL for 2028. Two of the three housing units were previously sound insulated by the KCAB, and the third was offered mitigation but the owner declined. For the purposes of mitigating the significant noise increases, the KCAB would extend a new offer of voluntary acquisition of the single-family home for which the owner previously declined mitigation.

Consistent with Section 3.5 of the 1992 FICON Report, the FAA considers mitigation outside the DNL 65 dB on a case-by-case basis. Since the demand for Federal funding of airport noise mitigation is greater than the supply, FAA policy is to mitigate the areas affected by DNL 65 dB and greater first before considering areas impacted by the lower airport noise levels for mitigation. Generally, normal building construction provides a 20 dB noise level reduction to achieve an interior sound level of 45 dB or lower within the 60 to 65 DNL Noise Exposure Contour. Thus, mitigation of the residential areas within the 3 dB increase is not required.

5.11 Socioeconomics, Environmental Justice, and Children's Health and Safety Risks

This section presents the analysis of potential impacts to socioeconomic impacts, environmental justice impacts, and children's environmental health and safety risks that would occur as a result of the No Action and the Proposed Action.

5.11.1 No Action

Socioeconomic Impacts

Socioeconomic impacts are assessed to determine the effect that the proposed airport development would have on human environment such as population, employment, housing, and public services. The types of socioeconomic impacts that typically arise from airport development are:

- Inducing substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area);
- Disrupting or dividing the physical arrangement of an established community;
- Causing extensive relocation when sufficient replacement housing is unavailable;
- Causing extensive relocation of community businesses that would cause severe economic hardship for affected communities;
- Disrupting local traffic patterns and substantially reducing the levels of service of roads serving an airport and its surrounding communities; or
- Producing a substantial change in the community tax base.

Inducing Growth: The No Action would not induce substantial economic growth in the area. Therefore, no impacts to socioeconomic resources would occur as a result of induced economic growth.

Disrupting Communities: The No Action would not disrupt or divide an established community. Therefore, no impacts to socioeconomic resources would occur as a result of disruption to an established community.

Relocation of Residences: The No Action would not result in the acquisition of relocation of residential properties. Therefore, no impacts to socioeconomic resources would occur as a result of relocation of residences.

Relocation of Businesses: The No Action would not result in relocation of community businesses located on or off-Airport. Therefore, no impacts to socioeconomic resources would occur as a result of relocation of businesses.

Disruptions of Local Traffic Patterns: The No Action would not result in modifications to off-Airport roadways. Therefore, no impacts to socioeconomic resources would occur as a result of disruption to local traffic patterns.

Substantial Loss in Community Tax Base: The No Action would not result in a substantial loss in community tax base. Therefore, no impacts to socioeconomic resources would occur as a result.

Environmental Justice

FAA Order 1050.1F provides guidance for the preparation of environmental justice analysis in support of an EA. The action would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population, i.e., a low-income or minority population, due to:

- Significant impacts in other environmental impact categories; or
- Impacts on the physical or natural environment that affect an environmental justice population in a way that the FAA determines are unique to the environmental justice population and significant to that population.

Disproportionately high and adverse effect on minority and low-income populations means an adverse effect that:

1. Is predominately borne by a minority population and/or a low-income population; or
2. Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non-low-income population.

Under the No Action, no changes would occur that would cause significant or disproportionate impacts. Therefore, no environmental justice impacts would occur.

Children's Environmental Health and Safety Risks

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* requires all federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or

safety risks. No physical development or changes to Airport operations would occur for the No Action. Therefore, no impacts to children's environmental health and safety risks would occur.

5.11.2 Proposed Action

Socioeconomic Impacts

Induced Growth: The Proposed Action would not induce substantial economic growth in the area. Therefore, no impacts to socioeconomic resources would occur as a result of induced economic growth.

Disrupting Communities: The Proposed Action would not disrupt or divide an established community. Therefore, no impacts to socioeconomic resources would occur as a result of disruption to an established community.

Relocation of Residences: Implementation of the Proposed Action would not result in mandatory acquisition or the conversion of any residential properties to Airport property. As indicated in Table 5-5, there is one housing unit located within the area of DNL 1.5 dB increase within 65 DNL of the Future (2023) and Future (2028) Proposed Action Noise Exposure Contours that KCAB previously offered to mitigate; however, the owners refused. KCAB would make another offer for voluntary acquisition for this housing unit. Any acquisition and relocation would be voluntary on the part of the property owner. Therefore, no adverse impacts due to relocation of residences would occur.

Relocation of Businesses: The Proposed Action would not result in relocation of community businesses located on or off-Airport. Therefore, no impacts to socioeconomic resources would occur as a result of relocation of businesses.

Disruptions of Local Traffic Patterns: The Proposed Action would not result in modifications to off-Airport roadways. Therefore, no impacts to socioeconomic resources would occur as a result of disruption to local traffic patterns.

Substantial Loss in Community Tax Base: The Proposed Action would not result in a substantial loss in community tax base. Therefore, no impacts to socioeconomic resources would occur as a result.

Environmental Justice

As shown in **Table 5-7**, approximately 11.3 percent of the population within the Study Area is defined as minority and approximately 6.4 percent of the population is living below the poverty level. The Study area does not contain 50 percent or more minority or low-income individuals. Additionally, the percentage of minority and low-income populations is lower than the surrounding counties of Boone and Kenton.

Table 5-7 – Percent Minority and Low-Income Populations

	Percent Minority Population	Percent of Individuals Living Below the Poverty Level
Study Area	11.3%	6.4%
Boone County	12.9%	6.5%
Kenton County	11.9%	11.5%
Kentucky	15.9%	16.6%

Source: American Community Survey 2016-2020 5-Year Estimate; Landrum & Brown analysis, 2023.

As noted in Section 5.10, the Proposed Action would cause changes in runway use which would cause changes in noise levels within the Study Area. Some locations within the Study Area would experience an increase in aircraft noise levels, whereas other areas would experience a decrease in aircraft noise levels. The Future (2028) Proposed Action would result in a significant impact to three housing units. Two of the three housing units were previously sound insulated by the KCAB, and the third was offered sound insulation but declined. For the purposes of mitigating the significant noise increases, the KCAB would re-offer to sound insulate the single-family home that previously declined mitigation. No other significant impacts have been identified for other environmental categories. Therefore, the Proposed Action would not disproportionately affect any minority or low-income populations and no significant environmental justice impacts would occur.

Children's Environmental Health and Safety Risks

Implementation of the Proposed Action would not be expected to create environmental health risks or safety risks for any persons, regardless of age. Therefore, there would be no potential significant impact to children's environmental health and safety under the Proposed Action.

5.11.3 Mitigation, Avoidance, and Minimization Measures

The Proposed Action would not result in significant impacts to socioeconomics, environmental justice populations, or children's health and safety. Therefore, there is no mitigation required or proposed.

6 Public Involvement

To satisfy requirements for public involvement, an advertisement announcing the availability of the Draft Environmental Assessment (EA) was published in the *Cincinnati Enquirer.* The advertisement provided the public meeting date, time, and location, informed the public on how to obtain a copy of the Draft EIS, and initiated the public comment period. The Draft EA is available at the following location during normal business hours.

CVG Centre
77 Comair Boulevard
Erlanger, KY 41018

The Draft EA will be available online at https://www.airportprojects.net/CVG-Runway-EA.

In addition, the following agencies listed were sent a notice of the Draft EA availability for review via email or letter.

Mr. Lee Andrews
Kentucky Ecological Services Field Office
U.S. Fish and Wildlife Service
JC Watts Federal Building – Room 265
330 West Broadway
Frankfort, KY 40601

Mr. Craig Potts
Director and State Historic Preservation Officer
Kentucky Heritage Council
300 Washington Street
Frankfort, KY 40601-1824

Ms. Louanna Aldridge
Kentucky Department for Environmental Protection
Office of the Commissioner
300 Sower Boulevard
Frankfort, KY 40601

Ntale Kajumba
Chief, NEPA Program Office
U.S. Environmental Protection Agency
Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

If you have important information that has not been considered in this document or comments on the Draft EA, please send your written/email comments to the following:

Chris Sandfoss
Managing Consultant
Landrum & Brown, Suite 700
4445 Lake Forest Drive
Cincinnati, OH 45242

Comments are due no later than 5:00 p.m. Eastern Time on Thursday, October 12, 2023. If submitting via the U.S. Postal Service, please allow enough time for mailing. Your comment must be postmarked by that date.

Before including your name, address and telephone number, email or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information - may be made publicly available at any time. While you can ask us in your comment to withhold from public review, your personal identifying information, we cannot guarantee that we will be able to do so.

7 List of Preparers

7.1 Kenton County Airport Board (KCAB)

Debbie Conrad, Senior Project Manager, provided input and Airport information throughout the preparation of the Environmental Assessment.

7.2 Landrum & Brown, Incorporated (L&B)

Chris Sandfoss, AICP, Managing Consultant, responsible for project management, technical input, and principal author of the Environmental Assessment.

Rob Adams, President, provided strategic direction for the Environmental Assessment documentation and process.

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