

Appendix E - Noise Abatement Alternatives

This Appendix provides information on the alternative noise abatement measures that were reviewed for inclusion in the John Glenn Columbus International Airport (CMH) Noise Compatibility Program (NCP). Each measure was evaluated for the anticipated benefits and drawbacks associated with its implementation.

E.1 Potential Noise Abatement Alternatives

The following list includes examples of the types of alternatives that were considered for inclusion in the NCP.

Flight Track Changes

- Potential divergent turns
- Alternate Corridors

Operational Procedures

- Preferential Runway Use – Direction East versus West flow
- Preferential Runway Use – North versus South runway
- Continuous descent approach
- Steeper departure profiles
- Flight management procedures
- Curfews

Facility Modifications

- Noise barriers
- Runup Locations

A list of noise abatement alternatives was developed based on discussion with CRAA, FAA ATCT, and Technical Advisory Committee (TAC) representatives, as well as a review of alternatives that were previously considered in the 2007 Part 150 Study. Some alternatives that were rejected in the 2007 Part 150 Study were re-evaluated to determine if conditions had changed that would make the alternative feasible. This evaluation took into account situations in which an alternative may shift overflights and noise from one area to another. The effect of shifting noise and overflights from one area to another was considered to not be a favorable solution. Other factors that were considered in the evaluation of alternatives were effects on airfield and airspace safety and efficiency.

The following pages provide a description of each alternative evaluated, along with an assessment of the benefits, drawbacks, and a recommendation. The list includes Measures NA-1 through NA-9, which are the currently approved noise abatement measures from the 2007 NCP Update. Measure NA-5 was previously withdrawn. Seven additional alternatives from the 2007 Part 150 Study were evaluated. These alternatives are labeled NA-A through NA-G.

E.2 Currently-Approved Land Use Measures

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-1 (CURRENTLY APPROVED MEASURE)

Description: Amend the CMH Nighttime Aircraft Maintenance Run-Up Policy to designate an additional run-up location north of the airfield for the relocation of the NetJets' facility. This measure will provide attenuation of jet engine maintenance run-ups for adjacent residential areas located north of the Airport.

Status: This measure is currently implemented. Run-ups are performed at the NetJets facility.

Recommendation: Continue approved measure NA-1.

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-2 (CURRENTLY APPROVED MEASURE)

Description: Construct a new run-up barrier at the north airfield, if the NetJets building does not adequately attenuate jet engine maintenance run-up noise for adjacent residential areas located north of the Airport.

Status: This measure is currently implemented. Implemented – A run-up barrier is used at the NetJets facility..

Recommendation: Continue approved measure NA-2.

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-3 (CURRENTLY APPROVED MEASURE)

Description: Increase nighttime use of Runway 10L/28R and amend FAA Tower Order CMH ATCT 7110.1 to read as follows: Unless wind, weather, runway closure, or loss of NAVAIDS dictate otherwise, between the hours of 10:00 p.m. and 8:00 a.m. local time, Runways 28L or 10R are assigned jet aircraft; jet aircraft with Stage 3 engines may use Runway 10L/28R for arrival operations between the hours of 10:00 p.m. and 1:00 a.m., local time; and jet aircraft with Stage 3 engines may use Runway 10L or 28R after 6:00 a.m.

Status: This measure is partially implemented. The current Tower Order (CMH 7110.1L) includes a provision that unless wind, weather, runway closures, or loss of NAVAIDS dictate otherwise, Runway 10L/28R is a noise-sensitive runway. All arriving and departing aircraft must request Runway 10L/28R with an operational need between the hours of 10:00pm and 6:00am.

Recommendation: Continue approved measure NA-3.

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-4 (CURRENTLY APPROVED MEASURE)

Description: Maximize east flow and amend FAA Tower order CMH ATCT 7110.1b and the Airport Facilities Directory to reflect implementation of the “east flow” informal preferential runway use system.

Status: This measure is partially implemented. Complex conditions at the Airport such as winds, flow control policies at destination airports, and taxi times have limited the use of this measure.

Recommendation: Continue approved measure NA-4.

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-6 (CURRENTLY APPROVED MEASURE)

Description: Implement a 15-degree divergent turn off of Runway 28R, after crossing the runway end to a 295-degree heading, only during peak operating periods when traffic warrants.

Status: Implemented – This measure is used when traffic conditions warrant.

Recommendation: Continue measure with modification to include proposed Airport Land Use Management District (ALUMD). See Alternative LU-B for more information on the ALUMD.

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-7 (CURRENTLY APPROVED MEASURE)

Description: Create performance-based overlay procedures for all existing and proposed arrival/departure procedures. (RNAV/RNP/GPS/CDA)

Status: Currently being implemented – RNAV/RNP procedures are being developed independently by the FAA and are expected to be implemented in April 2021.

Recommendation: Continue approved measure NA-7.

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-8 (CURRENTLY APPROVED MEASURE)

Description: Construct a noise berm/wall on airport property along East 13th Avenue.

Status: In 2013 the CRAA completed construction of the relocated Runway 10R/28L, which was relocated 702 feet to the south of the old runway alignment runway. The FAA conducted an Environmental Impact Statement (EIS) to assess the impacts of the proposed project. As part of that EIS process, 35 homes on the north side of 13th Avenue in East Columbus were identified for removal to meet airport design standards. The homes were located within the relocated Runway Protection Zone (RPZ), which is an area around a runway that is required to be void of tall objects or places in which humans may congregate. The homes were purchased and the residents were relocated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act. During the EIS and 2007 Part 150 Study, the CRAA and FAA took into consideration effects of the removal of the 35 homes and relocation of the runway would have on the remaining homes in the area. In order to address this, the CRAA and FAA recommended a noise berm/wall be constructed to the north of 13th Avenue to help reduce noise and to minimize the visual impact of the removed homes. However, further investigation and surveys of property owners determined that a noise berm in the proposed location was not desirable. Therefore, this measure was not implemented.

Recommendation: Withdraw measure.

**NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-9
(CURRENTLY APPROVED MEASURE)**

Description: Replacement and potential relocation of Ground Run-up Barrier B (location/materials/size).

Status: This measure was not implemented. The Airport currently has three ground run-up barriers at CMH. Barrier A (located to the south of Concourse B), Barrier B (located north of the southeast end of Taxiway G), and Barrier C (located on the north airfield north of Runway 10L/28R). An assessment of these barriers was conducted which found that Barriers A and C are properly sized and located for the types of operations they serve. That study identified the potential need to relocate and/or expanded Barrier B to accommodate larger aircraft that would be associated with a potential maintenance hangar that was proposed for the southeast side of the airfield at CMH. Currently Barrier B can accommodate up to Design Group C-II aircraft. It was recommended to upgrade Barrier B to accommodate larger aircraft (i.e.: Airbus A-319, B-737), and relocate or construct a new barrier if the existing barrier could not be expanded beyond its existing capacity. However, the proposed new maintenance hangar was never constructed and aircraft larger than Design Group C-II can use Barrier A. Therefore, no changes were made to Barrier B.

Recommendation: Continue measure – Measure would be implemented in the event a larger run-up barrier is ever needed in the southeast airfield.

Table E-1 Future (2025) Baseline Housing, Population, and Noise-Sensitive Facility Incompatibilities

	60-65 DNL*	65-70 DNL	70-75 DNL	75+ DNL	65+ DNL
Housing Units					
Columbus	4,034	1	0	0	1
Mitigated	720	0	0	0	0
Sound Insulated	682	0	0	0	0
Easement	38	0	0	0	0
Unmitigated	3,314	1	0	0	1
Eligible for Sound Insulation but not Insulated	141	0	0	0	0
Not Previously Mitigated	3,173	1	0	0	1
Mifflin Township	57	0	0	0	0
Mitigated	35	0	0	0	0
Sound Insulated	35	0	0	0	0
Easement	0	0	0	0	0
Unmitigated	22	0	0	0	0
Eligible for Sound Insulation but not Insulated	11	0	0	0	0
Not Previously Mitigated	11	0	0	0	0
Gahanna	313	1	0	0	1
Mitigated	0	0	0	0	0
Sound Insulated	0	0	0	0	0
Easement	0	0	0	0	0
Unmitigated	313	1	0	0	1
Eligible for Sound Insulation but not Insulated	0	1	0	0	1
Not Previously Mitigated	313	0	0	0	0
Jefferson Township	146	0	0	0	0
Mitigated	12	0	0	0	0
Sound Insulated	0	0	0	0	0
Easement	12	0	0	0	0
Unmitigated	134	0	0	0	0
Eligible for Sound Insulation but not Insulated	0	0	0	0	0
Not Previously Mitigated	134	0	0	0	0
Total Housing Units	4,550	2	0	0	2
Population					
Total Population	9,920	5	0	0	5
Noise-Sensitive Facilities					
Churches / Places of Worship	20	0	0	0	0
Schools / Educational Facilities	8	1	0	0	1
Libraries	0	0	0	0	0
Hospitals	0	0	0	0	0
Nursing Homes	1	0	0	0	0

Notes:

* In accordance with 14 CFR Part 150 Land Use Compatibility Guidelines, all land uses are compatible with noise levels below 65 DNL. The counts of land uses within the 60-65 DNL noise contour are shown for informational purposes only.

Noise contours were generated using the FAA's AEDT, Version 3b computer model.

Housing counts are based on field verification.

Population numbers are estimated based on the housing counts multiplied by the average household size from the 2010 Census.

Source: Landrum & Brown, 2020.

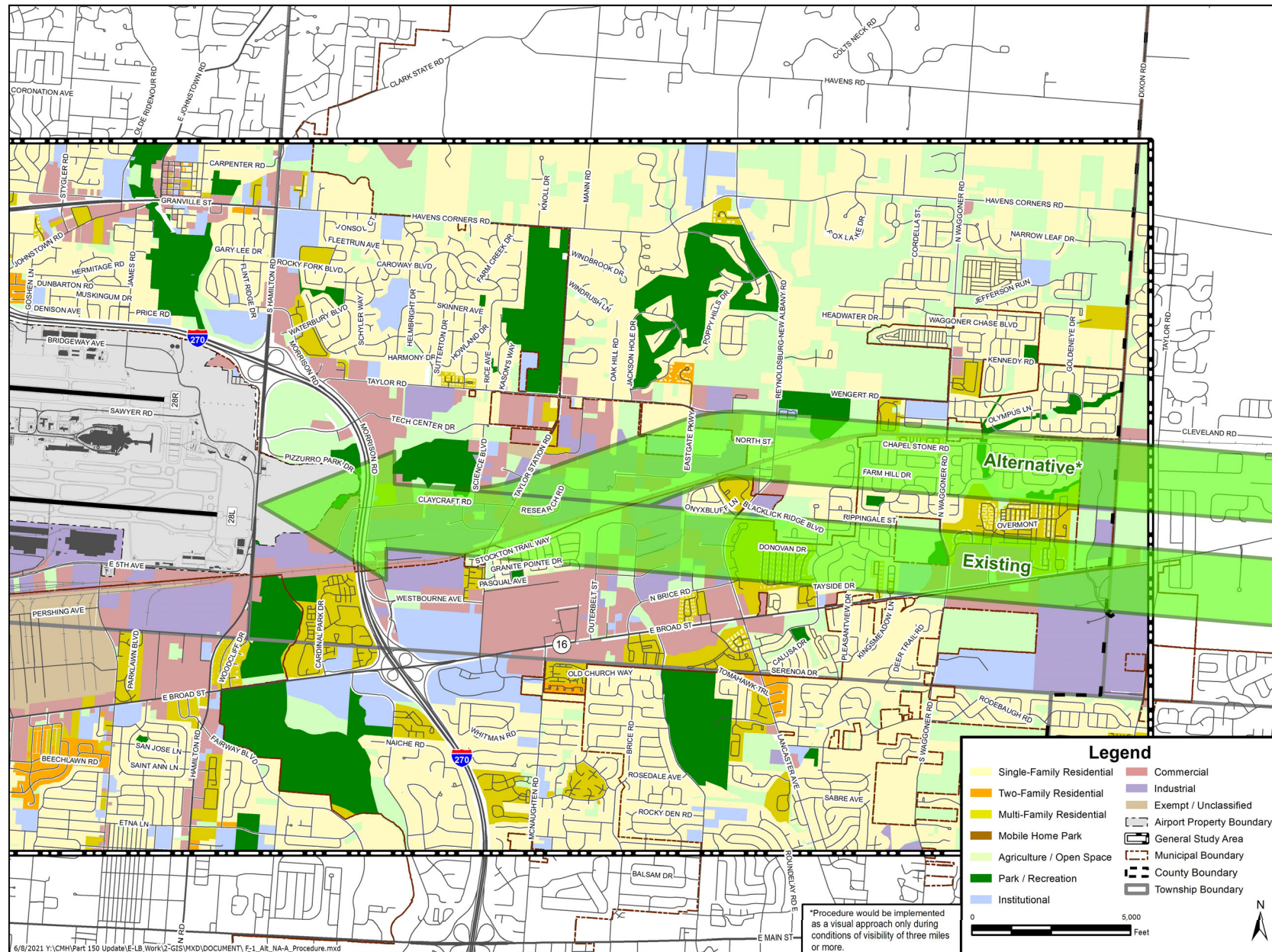
E.3 Consideration of Alternative Noise Abatement Measures

The following pages describe alternative noise abatement measures that were considered in this Part 150 Study. While not all alternatives may be practical or achievable, potential alternatives were considered in accordance with 14 CFR Part 150 §150.23(e) and §150.7.

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-A

TITLE:	When wind, weather, and operational conditions allow, nighttime (10:00 p.m. to 7:00 a.m.) arrivals use visual side step approach to Runway 28L.
BACKGROUND AND INTENT:	Current nighttime procedures recommend the use of Runway 10R/28L with the exception of pilot requests and during the morning hours. Standard approach procedures (straight-in from the outer marker) are used for nighttime jet arrivals. This alternative would modify the current nighttime procedures by implementing a side-step approach to Runway 28L. This would be implemented as a visual approach only during conditions where pilots could see both runways from three miles or more. The intent of this procedure is to direct aircraft over more compatible land uses during the nighttime. Review of the land uses east of the airport finds that the area aligned with the north runway is generally more compatible than the area aligned with the south runway.
BENEFITS:	This alternative would direct more overflights over a more compatible corridor (i.e. industrial uses and railroad alignment).
DRAWBACKS:	This alternative was reviewed in the 2007 Part 150 Study. Coordination with ATCT and pilots determined that the procedure was not desirable due to operational and safety factors.
COST TO IMPLEMENT:	The cost for additional training, development, and publication of new procedures, and changing approach plates at radar positions would be the responsibility of the FAA.
EVALUATION METHOD:	Qualitative assessment
FINDINGS AND RECOMMENDATIONS:	Due to the concerns of ATCT and pilots, the alternative is NOT RECOMMENDED for further evaluation.

Exhibit E-1 Alternative NA-A Flight Corridor



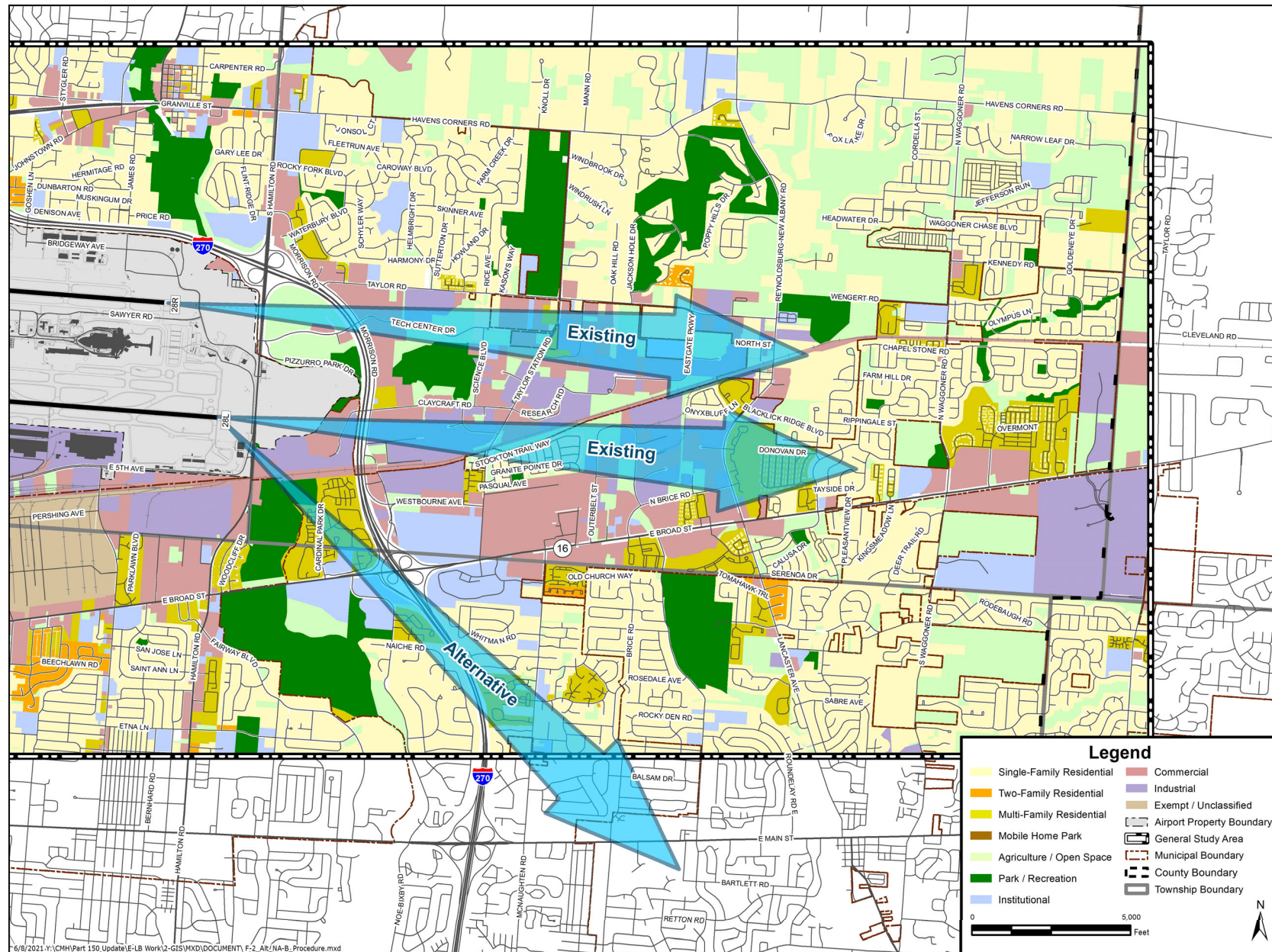
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NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-B

TITLE:	Implement a 40-degree divergent turn off of Runway 10R, after crossing the runway end to a 140-degree heading, only during peak operating periods when traffic warrants.
BACKGROUND AND INTENT:	Current procedures instruct jet aircraft to fly runway heading until reaching five miles or 3,500 feet MSL. This alternative proposes a 40-degree right turn off of Runway 10R. It was recognized that this turn would only be used when air traffic warrants the need for an additional heading.
BENEFITS:	This procedure would increase capacity and reduce delays, during peak operating periods, by giving ATCT an additional heading.
DRAWBACKS:	The alternative was reviewed during the 2007 Part 150 Study which determined that it would cause airspace conflicts with Rickenbacker International Airport (LCK).
COST TO IMPLEMENT:	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.
EVALUATION METHOD:	Qualitative assessment
FINDINGS AND RECOMMENDATIONS:	Due to the conflicts with Rickenbacker International Airport, the alternative is NOT RECOMMENDED for further evaluation.

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Exhibit E-2 Alternative NA-B Flight Corridor



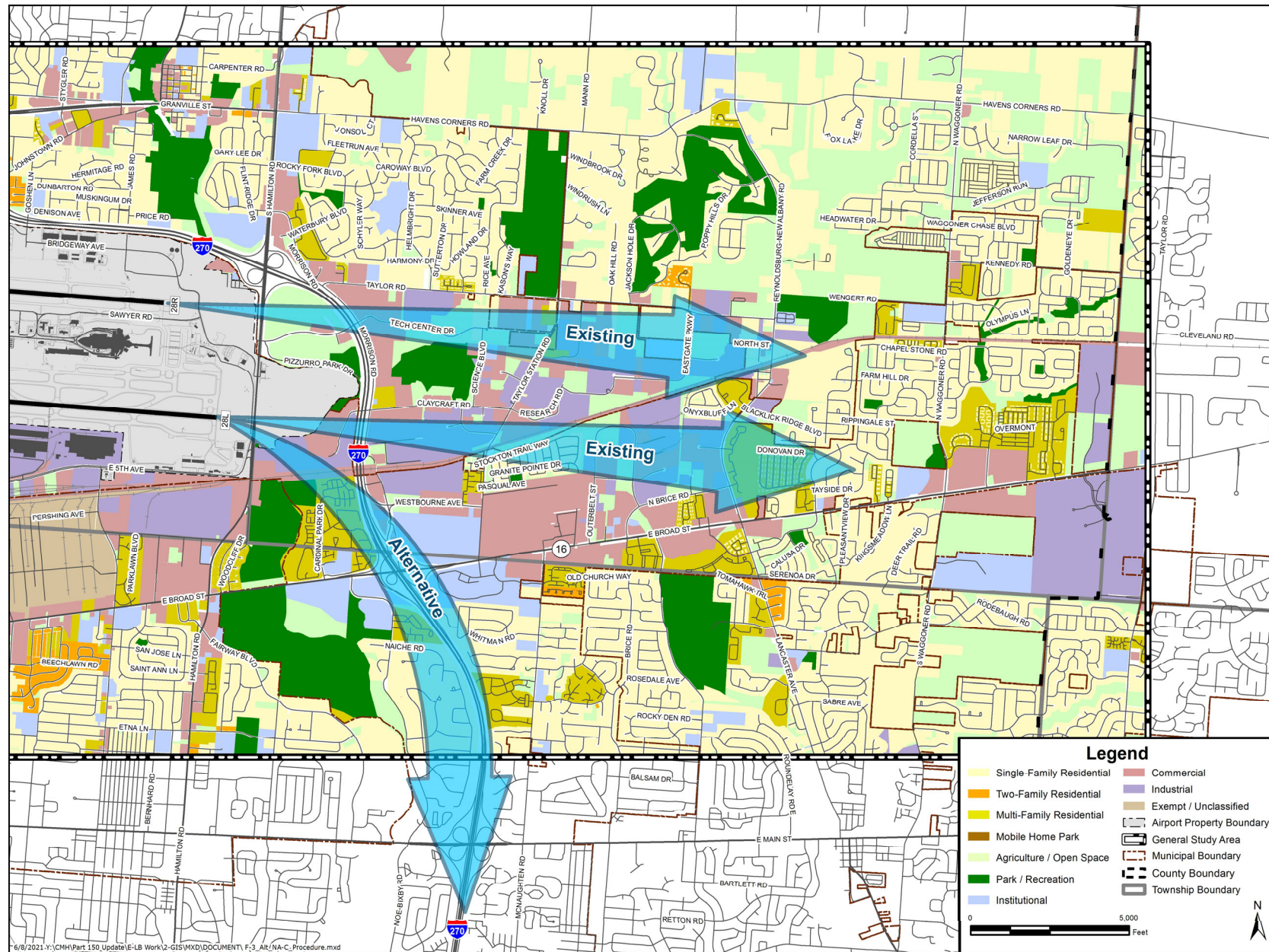
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NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-C

TITLE:	All southbound traffic departing Runway 10R turn right and follow the Interstate 270 corridor.
BACKGROUND AND INTENT:	Current procedures instruct aircraft to fly runway heading until reaching five miles or 3,500 feet AGL. This procedure would take advantage of a more compatible corridor southeast of the airport along I-270.
BENEFITS:	This procedure would reduce overflights for those areas located along the Runway 10R centerline.
DRAWBACKS:	The alternative would cause airspace conflicts with Rickenbacker International Airport (LCK).
COST TO IMPLEMENT:	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.
EVALUATION METHOD:	Qualitative assessment
FINDINGS AND RECOMMENDATIONS:	Due to the conflicts with LCK, the alternative is NOT RECOMMENDED for further evaluation.

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Exhibit E-3 Alternative NA-C Flight Corridor



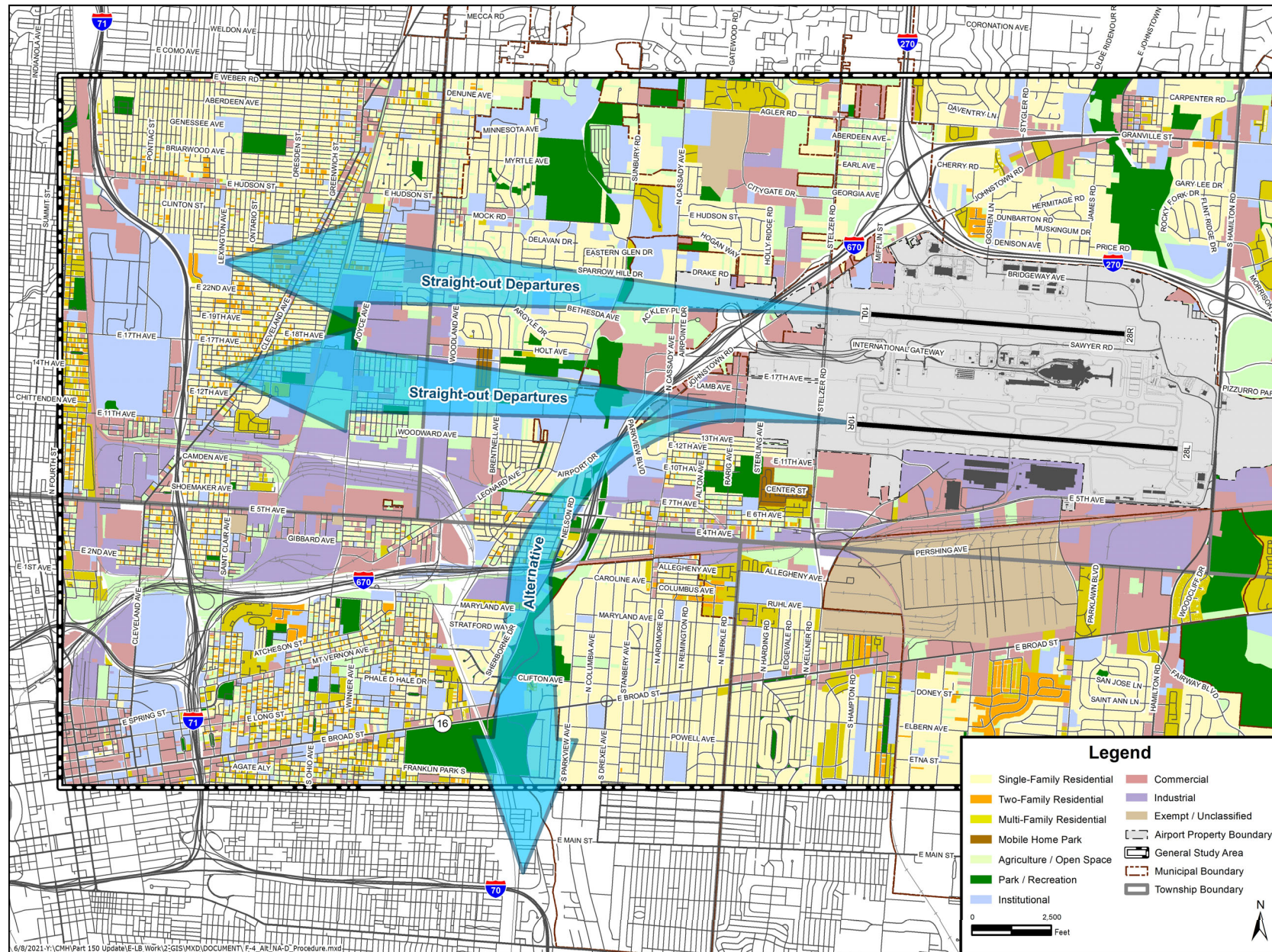
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NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-D

TITLE:	All southbound traffic departing Runway 28L turn left and follow the I-670 / I-70 corridor.
BACKGROUND AND INTENT:	Current procedures instruct aircraft to fly runway heading until reaching five miles or 3,500 feet AGL. This procedure would route aircraft over the I-670 and I-70 corridors to take advantage of the more compatible corridor.
BENEFITS:	This procedure would reduce overflights for those areas located along the Runway 28L centerline.
DRAWBACKS:	The alternative would shift overflights from one area to another.
COST TO IMPLEMENT:	The cost for additional training, development, and publication of new procedures would be the responsibility of the FAA.
EVALUATION METHOD:	Qualitative assessment
FINDINGS AND RECOMMENDATIONS:	Due to shifting of overflights from one area to another, this alternative is NOT RECOMMENDED for further evaluation.

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Exhibit E-4 Alternative NA-D Flight Corridor



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NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-E

TITLE:	Designate Runway 10L/28R as the preferential runway.
BACKGROUND AND INTENT:	<p>At CMH, the selection of runway is based in large part on the length of the runway, the gate parking location, and the origin or destination of the flight. In general, airlines that are located on the north side of the terminal prefer the north runway and likewise for the airlines on the south side of the terminal. Heavier aircraft and those with farther destinations will prefer the longer runway (10R/28L). Based on these factors, Runway 10R/28L is currently the most heavily used runway.</p> <p>This alternative would identify Runway 10L/28R as the preferential runway. However, due to the length of Runway 10L/28R and its location in proximity to the terminal, it is unlikely that implementation would result in runway use notably different than what is currently occurring.</p>
BENEFITS:	This alternative could reduce noise for the areas southeast and southwest of the airport if it was feasible to implement.
DRAWBACKS:	As mentioned above, it is unlikely that this alternative would result in any notable change in runway use. If it did however, the change would be a direct shift of noise from the communities in line with the south runway to the communities in line with the north runway.
COST TO IMPLEMENT:	None
EVALUATION METHOD:	Qualitative assessment
FINDINGS AND RECOMMENDATIONS:	Due to the effect of shifting noise from one area to another, this alternative is NOT RECOMMENDED for further evaluation.

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-F

TITLE:	Designate Runway 10R/28L as the preferential runway.
BACKGROUND AND INTENT:	<p>At CMH, the selection of runway is based in large part on the length of the runway, the gate parking location, and the origin or destination of the flight. In general, airlines that are located on the north side of the terminal prefer the north runway and likewise for the airlines on the south side of the terminal. Heavier aircraft and those with farther destinations will prefer the longer runway (10R/28L). Based on these factors, Runway 10R/28L is currently the most heavily used runway.</p> <p>This alternative would identify Runway 10R/28L as the preferential runway. However, due to the large number of airlines located on the north side of the terminal, it is unlikely that implementation would result in runway use notably different than what is currently occurring.</p>
BENEFITS:	This alternative could reduce noise for the areas northeast and northwest of the airport if it was feasible to implement.
DRAWBACKS:	As mentioned above, it is unlikely that this alternative would result in any notable change in runway use. If it did however, the change would be a direct shift of noise from the communities in line with the south runway to the communities in line with the north runway.
COST TO IMPLEMENT:	None
EVALUATION METHOD:	Qualitative assessment
FINDINGS AND RECOMMENDATIONS:	Due to the effect of shifting noise from one area to another, this alternative is NOT RECOMMENDED for further evaluation.

NOISE COMPATIBILITY PROGRAM ALTERNATIVE NA-G

TITLE:	Implement Airport Operational Restrictions (Part 161).
BACKGROUND AND INTENT:	This alternative considers the potential for implementing airport access restrictions for noise abatement. These may include curfews or restrictions on aircraft types or groups. Any such action is subject to the provisions of Part 161, which requires extensive proof of benefits relative to costs prior to approval by the FAA. Typically, these types of studies have resulted in lawsuits and to date, none have been officially approved by the FAA.
BENEFITS:	These restrictions can resolve noise annoyance problems during the most sensitive periods or of the most annoying events.
DRAWBACKS:	Part 161 requires extensive additional evaluation, with little hope of approval, given the FAA's current stance on Part 161 actions.
COST TO IMPLEMENT:	A comprehensive Part 161 study would cost \$3 to \$5 million. Litigation could cost a similar amount.
EVALUATION METHOD:	Qualitative assessment
FINDINGS AND RECOMMENDATIONS:	Due to the high costs associated with conducting a Part 161 and the fact that the FAA has never officially approved a Part 161, the alternative is NOT RECOMMENDED for further evaluation.

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