Appendix B - Noise Measurements and Complaints

This Part 150 Study included data collection related to measured aircraft noise levels and community complaints at the John Glenn Columbus International Airport (CMH or Airport). This appendix provides the results of a temporary field noise measurement program that was conducted to provide actual noise data for informational purposes useful for the development of noise contour modeling. Data collection also included analyzing long-term noise measurement data and reviewing complaints about aircraft noise documented by the Columbus Regional Airport Authority (CRAA) Noise Management Office.

B.1 Noise Measurement Program

A field noise measurement program was conducted the week of November 10, 2019 at CMH. The field noise measurement program was conducted in accordance with 14 C.F.R. Part 150 guidelines as provided in Section A150.5. Sound level meters were deployed at 30 locations around CMH, including residential areas and public locations, to measure noise from aircraft operations.

Measurements made for short periods of time are unique to that one period, and may not represent the average of the events that would occur at that location over a longer period of time. The relationship between field measurements and computer-modeled average noise levels is comparable to that between a book and its cover. While the cover (single-event measurements) may indicate something of the character of a book, and receive inordinate attention based on its color or graphics, the total story (average noise level) is in all the words that constitute the story. It is on the total story that the critic makes his assessment. In other words, the modeling process simulates overall average-annual conditions (the book) while field measurements (the cover) reflect only a small part of the whole story and should not be too heavily relied upon when conducting a noise analysis.

Aircraft noise measurements concentrated on the collection of a variety of single overflight noise information, with emphasis on the noise generated by air carrier aircraft during arrival and departure east and west of the Airport. Measurements occurred during all times that the Airport was operating.

B.1.1 Field Noise Measurement Equipment

State of the art equipment used in this program included the Larson Davis 824 and LxT sound level meters. These are Class I Precision Sound Level Meters (as defined by American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC)). The equipment was calibrated in compliance with manufacturer's procedures. Microphones and recording equipment were of the highest quality and capable of recording and calculating the various noise metrics. The equipment settings included the “A” frequency weighting, filter characteristics, and the “slow response” characteristics. The instrumentation that was used for collecting short-term and long-term measurements are listed in **Table B-1**.

Table B-1 Acoustical Measurement Instrumentation

Sound Level Meter	Microphone	Pre-amp
Larson Davis LxT1 Sound Level Meter with Windscreen	377B02	PRMLXT
Larson Davis 824 Sound Level Meter with Windscreen	377B02	PRM902

B.1.2 Field Noise Measurement Procedures

Aircraft noise levels were recorded using the equipment indicated in Table B-1 for each of the 30 short-term sites. Radar data was obtained from the Airport flight tracking system to correspond to the times of measurement. The noise-measurement program was designed to provide a sampling of single events throughout the study area. It was not designed to record cumulative noise levels. The sound level meters were attended while active to ensure that only aircraft noise events were recorded, or to note instances where a non-aircraft noise event was recorded simultaneously with an aircraft noise event. The field noise measurement procedure required the operator to enable the noise monitor when an aircraft noise event first became audible and continue monitoring that event until the noise level receded back to ambient levels, usually lasting a duration of 30-90 seconds. After the event, the operator recorded the average noise level (Leq), the sound exposure level (SEL), the event duration, and the maximum sound level (Lmax). Other event information, such as aircraft type and operational characteristics, was also annotated, as available. Ambient noise levels, without aircraft noise or intermittent community noise, were recorded at each site.

The short-term field noise measurement program provided for the collection of a large number of single-event measurements at a variety of locations throughout the community at distances ranging from several hundred feet to several miles between the aircraft and the monitoring site. This information, when correlated with the radar data and operating schedules, allowed for a comparison to the determination of applicable noise curves and performance characteristics within the Aviation Environmental Design Tool (AEDT) database for the most significant aircraft and operators. **Section B.1.5** discusses the analysis of short-term noise measurement data and comparison to AEDT aircraft profiles based on the results of the noise measurement data correlation and further investigation of average aircraft weights upon departure.

B.1.3 Field Noise Measurement Sites

Noise measurements were taken at 30 short-term sites. These short-term field noise measurement sites were chosen based on their proximity to the Airport and the existing permanent noise monitoring terminals (NMTs), the flow of aircraft operations during the measurement program, and areas of past noise concerns. Sites were also screened on the basis of ambient noise level (or more specifically, the absence of loud ambient noise such as vehicular traffic). Specific selection criteria included the following:

- Emphasis on areas of aircraft overflight based on radar data;
- Sampling of both arrivals and departures of typical aircraft operations;
- Screening of each site for local noise sources or unusual terrain characteristics, which could affect measurements;
- Location in or near areas from which complaints about aircraft noise were received; and
- Location where there are concentrations of residential development.

While there are numerous locations available for monitoring, the selected sites fulfill the above criteria and provide a representative sampling of the varying aircraft noise conditions in the vicinity of the Airport. In addition to the short-term measurement program, the CRAA maintains a permanent noise monitoring system which includes 16 permanent NMTs located at various sites around CMH. **Exhibit B-1** illustrates the locations of both the short-term field noise measurement sites and the NMT locations. **Table B-2** lists the 30 short-term field noise measurement sites. More information about the NMT data collection is included in **Section B.3**.

Exhibit B-1 Noise Measurement Sites

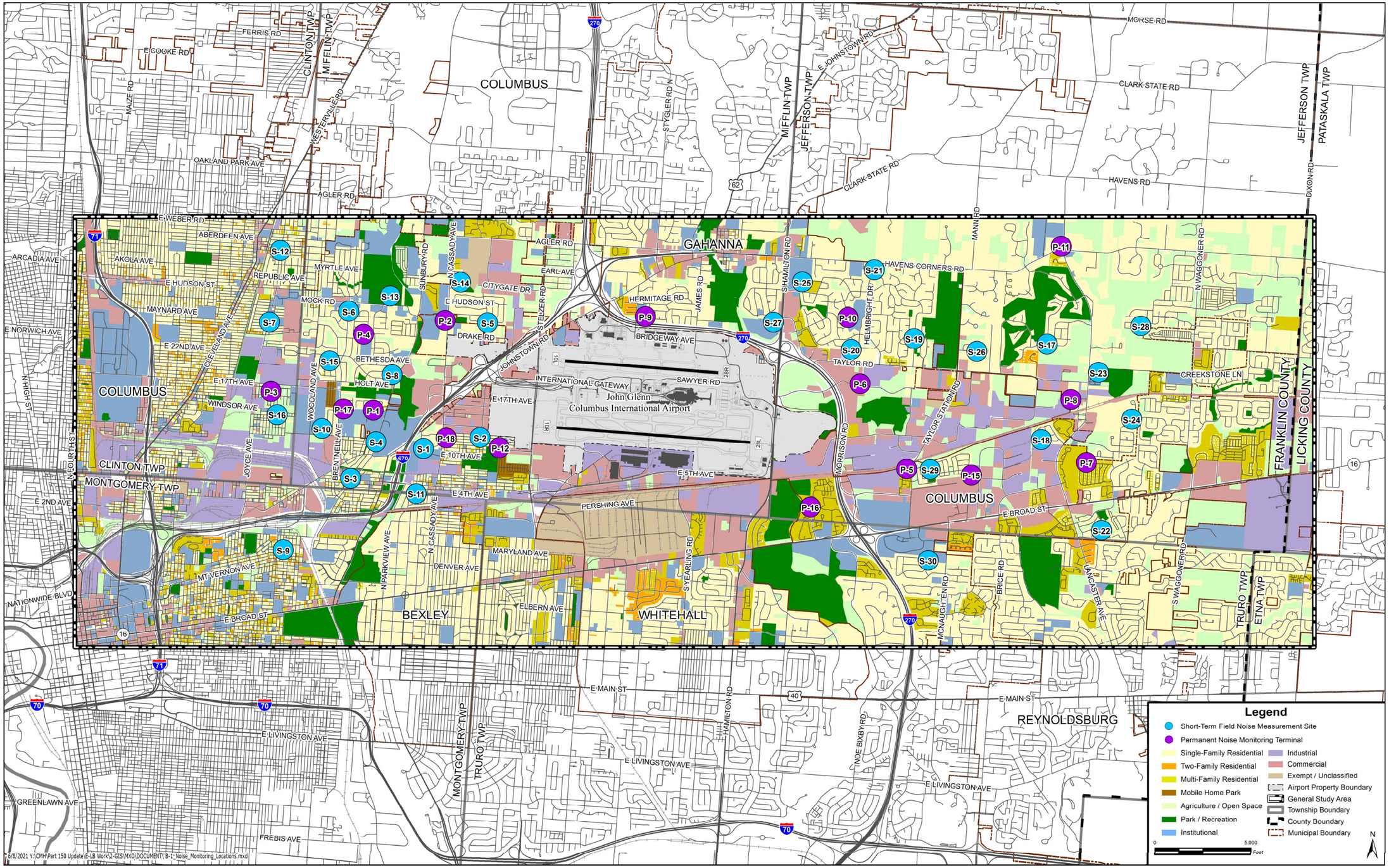

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Table B-2 Field Noise Measurement Sites

Site Number	Location
S-1	North Cassady Avenue near Summit Trace
S-2	E 13th Ave & Rarig Ave
S-3	E 5th Avenue & Sunbury Road
S-4	Sunbury Road near Woodward Avenue
S-5	Lone Spruce Road & Mountain Oak Road
S-6	Delavan Drive & Brentnell Avenue
S-7	Joyce Avenue & Maynard Avenue
S-8	Thames Drive north of Argyle Drive
S-9	Parkwood Ave & Pembroke Ave
S-10	Eastlawn Cemetery
S-11	Margaret Street & Drexel Avenue
S-12	Joyce Ave & Genessee Avenue
S-13	Mock Park - Mock Road & Bar Harbor Road
S-14	Baylor Avenue & Pepper Street
S-15	Marina Drive west of Toni Street
S-16	American Addition Park
S-17	Poppy Hills Drive & Keystone Ranch Court
S-18	Onyx Bluff Lane west of Stone Shadow Drive
S-19	Rice Avenue & Spruce Hill Drive
S-20	Hunters Run
S-21	Tamara Drive & Helmbright Drive
S-22	Serenoa Dr & Endora St
S-23	Olde Quarry Park
S-24	Sherridon Drive & Streamwater Drive
S-25	Meadow Green Circle
S-26	Estate View Drive east of Taylor Station Road
S-27	Shepherd Church of the Nazarene
S-28	Sand Bar Drive south of Headwater Drive
S-29	Lakes at Taylor Crossing Subdivision
S-30	Forestview Drive & Revere Road

B.1.4 Weather Information

The field noise measurement program was conducted for approximately one hour at each site during the week of November 10, 2019. The weather during the measurement period ranged from clear skies to rainy/overcast conditions. Field noise measurement collection was suspended during periods of heavy rain. Wind conditions dictated the use of west flow for the duration of the measurement period. When the Airport operates in west flow, aircraft arrive from the east heading west and depart to the west on Runways 28L and 28R.

B.1.5 Short-Term Noise Measurement Results Summary

The noise measurement process was designed to monitor the noise levels of a representative mix of aircraft operations at CMH. The noise measurement program recorded a wide range of noise exposure levels from aircraft activity within the airport environs. Some of the noise events collected at the measurement sites were produced by non-aircraft, e.g., cars, people, pets, wildlife, etc. However, at each site, the majority of noise events were produced by aircraft operations based on observations and aircraft radar data correlation. The measured noise levels from departing aircraft tended to produce SEL and peak decibel (dB) levels several dB higher than those of arriving aircraft. This difference is caused by two characteristics of the separate operations. First, exposure to noise above the background levels from arriving aircraft is typically shorter than from departing aircraft, resulting in less cumulative energy to be factored into the SEL exposure level. Second, the power settings used during approach are less than those necessary to climb during the takeoff, resulting in lower sound levels that are several dB lower than measured at similar locations during departure.

An evaluation of the SEL and peak (Lmax) levels measured at the various locations indicates that the SEL always measured several dB louder than the Lmax. The SEL values typically ranged between 5 to 15 dB higher than the Lmax level during each event. This is due to the calculation of the SEL metric which reports the total noise energy averaged over a one second period. Therefore, events that last more than one second will have a higher SEL because the acoustical energy is “compressed” into a one-second period.

Due to the wind conditions at the time of the noise measurement program, measurements taken to the west of the Airport primarily recorded departure operations; whereas measurements taken on the east side of the Airport primarily recorded arrivals. Measurements recorded to the west of the Airport in the City of Columbus, Clinton Township and Mifflin Township resulted in Lmax noise levels ranging from the middle 69.5 to 84.2 dB. To the east in Columbus, Gahanna, Jefferson Township and Truro Township, Lmax noise levels were recorded ranging from 54.0 to 80.7 dB.

The loudest aircraft event recorded was an Embraer E-170 departure. Other loud aircraft monitored included McDonnell-Douglas MD-90 series aircraft and Boeing 737-700 and 737-800 series aircraft. **Table B-3** provides a summary of the measurement data collection.

Table B-3 Short Term Field Noise Measurement Program Summary

Site Number	Location	Ambient Noise Level (dB)	Date Monitored	Time Monitored	Type of Events	Number of Events	Aircraft SEL Range	Lmax (loudest noise event)	Loudest aircraft
S-1	North Cassady near Summit Trace	47.4	11/12/2019	9:11am – 10:11am	Departures	21	69.0 - 87.2	78.1	Boeing 737-700
S-2	E 13th Ave & Rarig Avenue	47.9	11/12/2019	10:32am – 11:32am	Departures	8	76.0 - 91.2	83.0	Boeing 737-700
S-3	E 5th Avenue & Sunbury Road	57.1	11/11/2019	12:15pm – 1:15pm	Arrivals & Departures	11	71.9 - 86.1	84.2	Embraer E-175 LR
S-4	1095 Sunbury Road	47.2	11/12/2019	12:15pm – 1:15pm	Departures	10	69.3 - 88.4	79.1	Boeing 737-800
S-5	Lone Spruce Rd & Mountain Oak Road	44.1	11/12/2019	9:00am – 10:00am	Arrivals & Departures	21	63.9 - 90.4	80.0	Boeing 737-800
S-6	Delavan & Brentnell	61.6	11/12/2019	12:30pm – 1:30pm	Arrivals & Departures	10	73.0 - 87.7	82.2	Embraer E-175 LR
S-7	Joyce Avenue & Maynard Avenue	51.7	11/13/2019	11:45am – 12:45pm	Arrivals & Departures	10	71.1 - 86.6	77.2	Boeing 737-900
S-8	Thames Drive north of Argyle Drive	56.6	11/12/2019	10:30am – 11:30am	Arrivals & Departures	12	63.9 - 90.1	80.5	Boeing 737-900
S-9	Parkwood Ave & Pembroke Ave	48.8	11/11/2019	12:50pm – 1:50pm	Arrivals & Departures	7	54.5 - 79.1	75.7	Embraer E-175 LR
S-10	Eastlawn Cemetery	46.4	11/11/2019	10:58am – 11:58am	Departures	11	64.3 - 88.1	80.7	Boeing 737-800
S-11	Margaret Street & Drexel Ave	56.3	11/11/2019	3:25pm – 4:25pm	Departures	6	68.7 - 78.3	72.0	Cessna 525
S-12	Joyce Ave & Genessee Ave	49.3	11/11/2019	12:52pm – 1:52pm	Departures	12	64.5 - 85.9	77.3	Embraer E-175 LR
S-13	Mock Park - Mock Road & Bar Harbor Road	44.6	11/11/2019	2:02pm – 3:02pm	Departures	11	66.7 - 86.4	76.5	McDonnell-Douglas MD-90
S-14	Baylor Avenue & Pepper Street	50.3	11/11/2019	3:22pm – 4:22pm	Departures	5	68.4 - 85.9	69.5	Bombardier CRJ-900
S-15	Marina Drive west of Toni Street	45.5	11/12/2019	6:10am – 7:10am	Arrivals & Departures	14	45.6 - 86.8	79.1	Embraer E-175
S-16	American Addition Park	42.1	11/12/2019	6:20am – 7:20am	Departures	20	38.2 - 84.9	77.9	Boeing 737-800

Table B-3 Short Term Field Noise Measurement Program Summary *(continued)*

Site Number	Location	Ambient Noise Level (dB)	Date Monitored	Time Monitored	Type of Events	Number of Events	Aircraft SEL Range	Lmax (loudest noise event)	Loudest aircraft
S-17	Poppy Hills Drive & Keystone Ranch Court	45.4	11/11/2019	4:10pm – 5:10pm	Arrivals	6	64.5 - 73.5	63.9	Embraer E-170
S-18	Onyx Bluff Lane west of Stone Shadow Drive	45.8	11/12/2019	2:45pm – 3:45pm	Arrivals	12	62.8 – 83.3	74.7	Boeing 737-800
S-19	Rice Avenue & Spruce Hill Drive	42.1	11/12/2019	1:58pm – 2:58pm	Arrivals & Departures	12	61.5 – 86.5	80.0	Embraer E-175 LR
S-20	Hunters Run	45.6	11/12/2019	3:00pm – 4:00pm	Arrivals	7	62.5 – 75.6	74.9	Hawker 800
S-21	Tamara Drive & Helmbright Drive	43.8	11/13/2019	9:20am – 10:20am	Arrivals	8	52.0 – 62.8	54.0	Embraer E-175
S-22	Serenoa Dr & Endora St	54.0	11/13/2019	1:30pm – 2:30pm	Arrivals & Departures	12	47.6 – 79.4	74.6	Embraer E-175 LR
S-23	Olde Quarry Park	41.4	11/11/2019	12:50 PM – 1:59 PM	Arrivals	8	67.0 - 78.9	67.5	McDonnell Douglas MD90
S-24	Sherridon Drive & Streamwater Drive	38.7	11/13/2019	10:43am – 11:43am	Arrivals	14	57.6 – 78.9	73.3	Bombardier CRJ-701
S-25	Meadow Green Circle	38.4	11/13/2019	9:00am – 10:00am	Arrivals & Departures	16	42.1 – 77.7	71.5	Bombardier CRJ-200
S-26	Estate View Drive east of Taylor Station Road	48.8	11/12/2019	3:10pm – 4:10pm	Arrivals & Departures	13	52.5 – 80.9	75.7	Bombardier CRJ-701
S-27	Shepherd Church of the Nazarene	48.2	11/13/2019	12:02pm – 1:02pm	Arrivals	6	66.0 – 71.9	65.2	Boeing 737-700
S-28	Sand Bar Drive south of Headwater Drive	34.6	11/13/2019	1:10pm – 2:10pm	Arrivals	10	53.7 – 68.0	68.8	Cessna 560 Citation Excel
S-29	Lakes at Taylor Crossing Subdivision	42.8	11/12/2019	9:00pm – 10:00pm	Arrivals	11	59.0 – 86.9	80.7	Boeing 737-800
S-30	Forestview Drive & Revere Road	44.0	11/13/2019	10:16am – 11:16am	Arrivals & Departures	11	63.3 – 72.9	66.2	Airbus A319

Source: Landrum & Brown, 2019.

B.2 Permanent Noise Monitoring System

The CRAA maintains a permanent noise monitoring system at CMH which includes 16 permanent noise monitors (NMTs) located at various sites to the north, south, east, and west of the Airport. The locations of the NMTs are shown on Exhibit 1. The NMTs collect noise data 24 hours a day, seven days a week and that data is transmitted to the Airport Noise and Operations Monitoring System (ANOMS) which correlates noise data to aircraft operational data. This data is used to prepare monthly and annual noise reports for each of the NMT locations using the average day-night sound level (DNL) metric. The reports provide the number of noise events, the number of hourly summaries, airport DNL, community DNL, and total DNL for each NMT location.

Table B-4 shows the recorded aircraft DNL compared to the AEDT modeled DNL for the Existing (2020) Baseline period for each of the 16 monitoring sites.[19] The measured noise levels shows the average annual DNL for the Existing (2020) Baseline period. The Modeled DNL presents the DNL levels calculated by the AEDT for the Existing (2020) Baseline condition.

Table B-4 Noise Levels at Permanent Noise Monitor Sites

Monitor Number	Location	Measured DNL	Modeled DNL	Difference
P-1	Ohio Dominican University	61.7	62.4	0.7
P-2	Columbus School for Girls	60.6	59.8	-0.8
P-3	New Tabernacle Church	58.9	59.6	0.7
P-4	South Mifflin Elementary	60.4	60.3	-0.1
P-5	Oak Alley	58.5	61.1	2.6
P-6	AEP Business Park	62.5	63.0	0.5
P-7	McNeill Farms Apartment Complex	58.7	60.6	1.9
P-8	Blacklick Industrial Park	57.9	58.3	0.4
P-9	Goshen Lane Elementary	55.2	55.5	0.3
P-10	Gahanna Middle School South	49.9	51.5	1.6
P-11	Blacklick Elementary	42.7	44.3	1.6
P-12	Krumm Park	61.3	62.6	1.3
P-15	Lakes at Taylor Station Subdivision	58.4	60.2	1.8
P-16	Cardinal Park Apartments	50.6	54.2	3.6
P-17	Brentnell Recreation Center	60.9	61.6	0.7
P-18	13th Avenue	61.1	62.1	1.0
Average		59.3	60.1	0.8

Source: CMH Airport Noise and Operations Management System.
Note: Permanent Noise monitoring terminals 13 and 14 are located at Rickenbacker International Airport and are not listed in the above table.

[19] The Existing (2020) Baseline period for noise analysis is September 1, 2019 through August 31, 2019.

The comparison of measured to modeled noise in Table B-5 shows that at 14 of the 16 permanent noise monitor locations, the AEDT modeled noise levels were within 2.0 dB of the monitored noise levels at each of the locations.

The average noise level across all of the sites was modeled to be 60.1 DNL, while the average measured noise level was 59.3 DNL, for a difference of 0.8 dB. Because a difference of 1.5 dB is generally imperceptible to the human ear, it was determined that the modeled and monitored noise levels are within an acceptable tolerance.

The average noise level across all of the sites was modeled to be 60.1 DNL, while the average measured noise level was 59.3 DNL. The average difference between all the sites was +0.8 dB, meaning that overall the noise model was predicting higher levels than the measurement data. Because a difference of less than 3 dB is generally imperceptible to the human ear outside of laboratory settings, it was determined that the modeled and monitored noise levels are within an acceptable tolerance. It is not expected that the modeled DNL and the measured DNL levels will match exactly. The difference in measured and AEDT modeled noise levels can be attributed to various factors including the influence of non-aircraft (background) noise sources on the measurement data which can fluctuate from day to day and from site to site.

B.3 Comparison of Flight Profiles

The AEDT includes standard flight procedure data for each aircraft that represents each phase of flight to or from an airport. Information related to aircraft speed, altitude, thrust settings, flap settings, and distance are available and used by the AEDT to calculate noise levels on the ground. Standard aircraft departure profiles are supplied from the runway (field elevation) up to 10,000 feet above field elevation (AFE). Aircraft arrival profiles are supplied from 6,000 feet AFE down to the runway including the application of reverse thrust and rollout. The Federal Aviation Administration (FAA) requires that these standard arrival and departure profiles be used unless there is evidence that they are not applicable.

The AEDT uses the distance of flight as a surrogate for assigning departure profiles that determine aircraft weight, as well as speed, thrust, and altitude during different stages of flight. The AEDT groups trip lengths into eleven categories; these categories are:

Category	Stage Length
1	0-500 nautical miles
2	500-1000 nautical miles
3	1000-1500 nautical miles
4	1500-2500 nautical miles
5	2500-3500 nautical miles
6	3500-4500 nautical miles
7	4500-5500 nautical miles
8	5500-6500 nautical miles
9	6500-7500 nautical miles
10	7500-8500 nautical miles
11	8500+ nautical miles

A comparison of measured noise levels to AEDT modeled noise levels was conducted to verify the standard flight profile input data into the AEDT is consistent with actual conditions. For this analysis, measured noise events were collected from the NMTs closest to the departure corridors. Noise levels from single aircraft overflight events were correlated to radar data to determine the aircraft type that triggered the noise event. Average measured noise levels for the most common aircraft types at CMH were compared to modeled noise levels produced by AEDT at the same locations as the NMTs.

A comparison of measured to modeled noise levels was conducted for the most common aircraft at CMH. **Table B-5** presents comparison of the average measured and AEDT modeled noise levels from the noise measurement program. The modeled noise level represents the AEDT's predicted noise level for each representative aircraft type. As shown in Table B-4, the difference between the measured and modeled DNL levels ranged from -2.8 dB to +1.9 dB. The minimum change in the sound level of individual events that an average human ear can detect outside of controlled laboratory settings is about 3 dB.[20] A difference below that is generally imperceptible to the human ear in non-laboratory settings and is considered within the range of acceptable tolerance. Of the individual aircraft types that were compared, all had a difference between the measured and modeled noise levels of less than 3 dB. Analytical models (such as AEDT) often have a 95% confidence interval of ±3 dB to ±5 dB.[21] Therefore, a difference of less than 3.0 dB between an estimate from measurements and one from an analytical model is not considered significant.

Table B-5 Aircraft Noise Single Event Data

Aircraft Type	ANP ID	Engine ID	Operation Type	Measured Noise Levels	AEDT Modeled Noise Levels	Difference
Airbus A319-100	A319-131	3IA006	Arrivals	87.8	88.8	1.0
			Departures	86.6	85.7	-0.9
Airbus A320-200	A320-211	8CM055	Arrivals	88.9	89.1	0.2
			Departures	86.2	88.1	1.9
Airbus A320-200	A320-232	1IA003	Arrivals	88.0	88.1	0.1
			Departures	86.9	84.2	-2.7
Boeing 737-700	737700	3CM031	Arrivals	88.3	89.7	1.4
			Departures	87.4	87.5	0.1
Boeing 737-800	737800	11CM072	Arrivals	89.5	89.0	-0.5
			Departures	88.5	88.9	0.4
Bombardier CRJ-900	CRJ9-ER	6GE092	Arrivals	86.1	87.4	1.3
			Departures	85.6	82.8	-2.8
Embraer EMB175	EMB175	6GE094	Arrivals	87.0	88.2	1.2
			Departures	86.2	85.0	-1.2

Source: AEDT Version 3b, CMH ANOMS, Landrum & Brown analysis, 2020.

Because measured noise levels can be affected by other factors including non-aircraft (background) noise levels, it is expected that the measured and modeled noise levels will not match exactly. The comparison of measured and modeled single event noise levels are within an acceptable range of tolerance. The results of the temporary noise measurement program identified no significant inconsistencies between measured noise levels and AEDT modeled noise levels. Therefore, no adjustments were made to the existing aircraft noise profiles in the AEDT database for this Part 150 Noise Compatibility Study.

[20] The Pennsylvania State University, Noise Basics, Online at https://www.noisequest.psu.edu/noisebasics-basics.html, Accessed on May 5, 2020.
[21] Sec. 7.7.1, SAE ARP4721 – Part 1, *Monitoring Aircraft Noise and Operations in the Vicinity of Airports: System Description, Acquisition and Operation,* Issued 2006-08.

B.4 Noise Complaint History

Noise complaint records from 2007 to December 31, 2020 were gathered in a database format for analysis in this study. **Table B-6, *Summary of Noise Complaints*** provides a summary of the number of noise complaints received each year. The total annual number of noise complaints between 2007 and 2015 ranged from 14 to 64, with an average number of complaints per year of approximately 40. From 2016 thru 2018, complaint levels increased to over 200 per year. The increase in complaints since 2016 can be attributed to a high volume of calls from one resident in the Columbus area. As shown in Table B-6, the number of individuals making a complaint has ranged from 11 to 59 between 2007 and 2020.

Table B-6 Summary of Noise Complaints

Year	Number of Noise Complaints	Number of Individuals Submitting One or More Complaints
2007	46	36
2008	43	17
2009	43	11
2010	25	20
2011	14	42
2012	27	23
2013	59	36
2014	43	33
2015	64	55
2016	242	28
2017	246	14
2018	205	36
2019	156	37
2020	195	59

Source: Columbus Regional Airport Authority, 2021.

Exhibit B-2, *Location of Noise Complaints (2009 through 2020)*, illustrates the geographic locations of the noise complaints from January 2009 through December 2020. As the exhibit and tables illustrate, a majority of the complaints occur in the immediate vicinity of the Airport, distributed to the east and west in relation to the runways.

Exhibit B-2 Location of Noise Complaints (2009 – 2020)

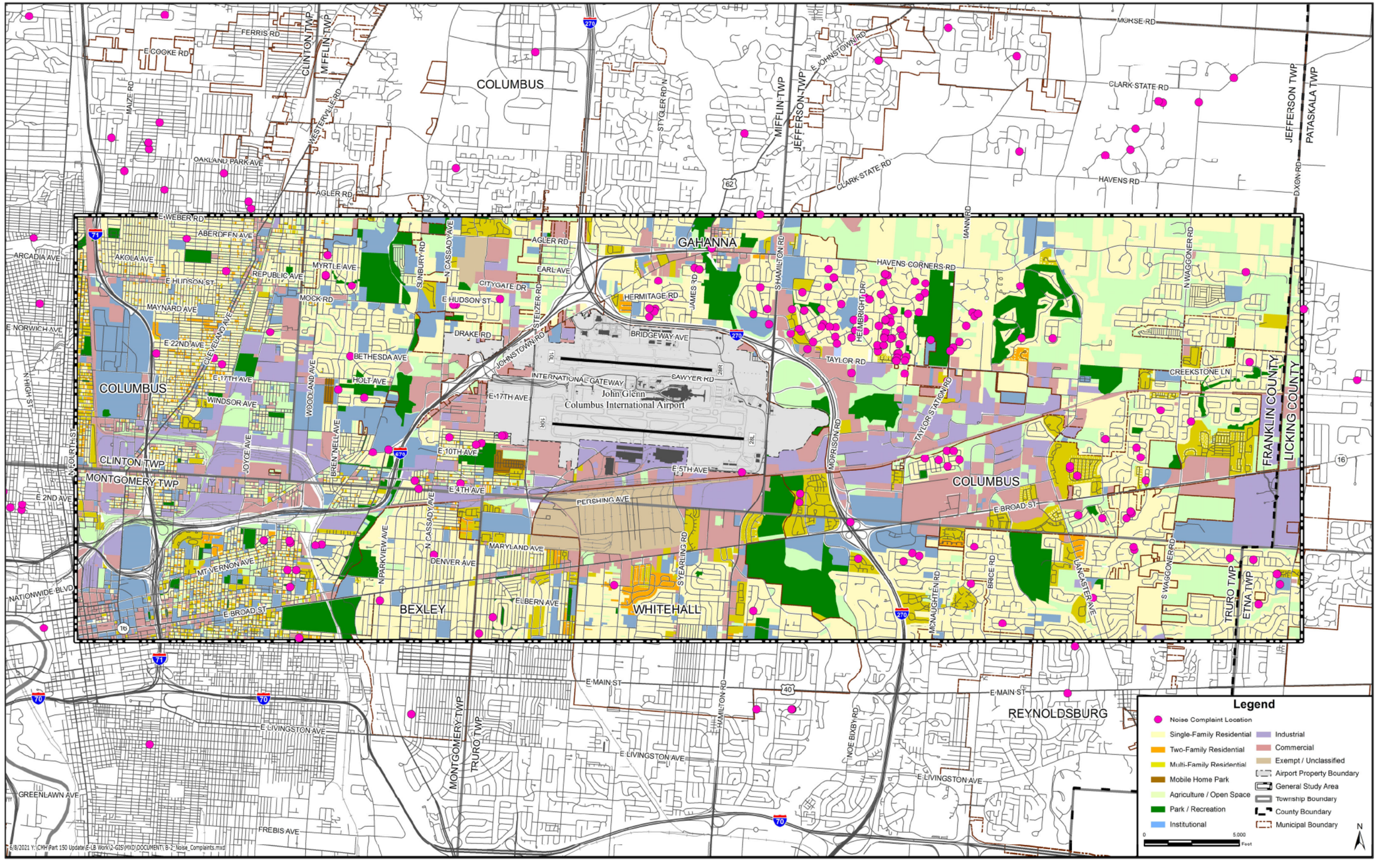

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Table B-7 summarizes the noise complaint data by time of day the noise event occurred that caused the complaint. As shown, a large number of complaints occur in the early morning hours of 5:00 a.m. to 7:00 a.m. This is likely due to the bank of scheduled commercial passenger departures that begins around 5:30 a.m. to meet the demand for air travel and customer preference to arrive at their destination early in the day.

Table B-7 Noise Complaints by Time of Day

Time of Day	Percent of Complaints
0:00 - 1:00	1.8%
1:00 - 2:00	1.2%
2:00 - 3:00	0.3%
3:00 - 4:00	0.9%
4:00 - 5:00	0.4%
5:00 - 6:00	11.9%
6:00 - 7:00	29.8%
7:00 - 8:00	10.5%
8:00 - 9:00	5.2%
9:00 - 10:00	2.2%
10:00 - 11:00	1.5%
11:00 - 12:00	3.3%
12:00 - 13:00	2.2%
13:00 - 14:00	2.5%
14:00 - 15:00	2.5%
15:00 - 16:00	2.3%
16:00 - 17:00	3.8%
17:00 - 18:00	3.0%
18:00 - 19:00	7.4%
19:00 - 20:00	3.5%
20:00 - 21:00	1.0%
21:00 - 22:00	1.3%
22:00 - 23:00	1.0%
23:00 - 0:00	0.7%
Total	100.0%

Source: CRAA Noise Complaint Logs, from January 1, 2016 through December 31, 2020

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