APPENDIX F

Angelina County Airport
Noise Analysis

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ACRONYMS

AEDT	Aviation Environmental Design Tool
AIP	Airport Improvement Program
ALP	Airport Layout Plan
AMP	Airport Master Plan
dBA	A-Weighted Decibel
DNL	Day Night Average Noise Level
DOT	Department of Transportation
EA	Environmental Assessment
EAA	Experimental Aircraft Association
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FBO	Fixed Base Operator
GPU	Ground Power Unit
LFK	Angelina County Airport identifier
MIRL	Medium Intensity Runway Light
MITL	Medium Intensity Taxiway Light
NEPA	National Environmental Policy Act
NPIAS	National Plan of Integrated Airport Systems
RPZ	Runway Protection Zone
RSA	Runway Safety Area
TFMSC	Traffic Flow Management System Counts
TxDOT	Texas Department of Transportation
USC	United States Code

1 NOISE ANALYSIS

1.1 Overview

As part of the 2026 Land Acquisition and Runway Extension Environmental Assessment (EA) for the Angelina County Airport (LFK), an aircraft noise analysis was prepared to assess potential changes in noise due to the proposed 600-foot extension to Runway 25. The FAA's Aviation Environmental Design Tool (AEDT) was used to model noise contours for existing conditions and two future scenarios. Results of this analysis were three distinct sets of noise contours, corresponding to baseline or future scenarios of aviation activity. This analysis did not include any field measurements.

1.2 Federal Regulations

FAA Order 1050.1 *Desk Reference* notes that *sound* is a physical phenomenon consisting of pressure fluctuations that travel through air and are sensed by the human ear. *Noise* is considered unwanted sound that can cause annoyance and disturb routine activities (e.g., talking on the telephone, sleep, or conversation). Standard operation of fixed and rotary-wing aircraft, such as take-off and landing, can cause aviation noise. Noise is often the predominant aviation environmental concern of the public. Significant levels of aircraft noise in communities around airports tend to generate the most issues.

The FAA evaluates noise impact through the Day Night Average Noise Level (DNL), to estimate a person's average exposure to sound over a 24-hour period. This is expressed as the noise level for the average day of the year on the basis of annual aircraft operations. DNL calculations utilize a number of variables, including aircraft models and engine types, approach and departure tracks, number of operations, and time of day. DNL uses the A-Weighted decibel (dBA) for aircraft sound estimates. A-Weighted measures account for how the human ear hears noise. A 10 dBA penalty (double the noise level) is added to noise occurring during the nighttime (between 10 p.m. to 7 a.m.) to account for peoples' higher sensitivity to noise and expectation for quieter noise levels during these hours.

The purpose of DNL noise contours generated by AEDT is to depict the generally expected average, annualized noise exposure at a relative location, not noise levels occurring in a specific location or for a single aircraft event. The FAA and Environmental Protection Agency (EPA) have set a guideline of 65 DNL to determine compatible land use around airports. Noise metrics, such as the DNL, estimate noise exposure and help predict community response to various noise levels. Noise complaints can and will occur in areas impacted by lesser noise levels because individual human perception of noise is subjective.

1.3 Computer Modeling

Future aircraft noise contours for LFK were modeled using the FAA's AEDT. "AEDT is a software system that models aircraft performance in space and time to estimate fuel consumption, emissions, noise, and air quality consequences. AEDT is a comprehensive tool that provides information to FAA stakeholders on each of these specific environmental impacts. AEDT facilitates

environmental review activities required under NEPA by consolidating the modeling of these environmental impacts in a single tool."

The first public release was AEDT 2a in 2012. The latest version, AEDT 4a, released for use on January 2026, was used for noise modeling at LFK. AEDT creates maps of an airport's noise environment expressed in DNL to assist in potential impact assessment. Accurate noise contours are dependent on the use of reliable and accurate aircraft operational data.

1.4 Data Sources

Input data falls into five general categories: aircraft operations, aircraft fleet mix, runway utilization, approach and departure profiles, and time. The applicable data for LFK was derived from three primary sources and then confirmed with the Airport Manager. The recent 2024 *Airport Layout Plan Update with Narrative* (2024 ALP Update) provided total annual operations split by aircraft category. Aircraft fleet, runway utilization, and time of day were derived from an on-site ADS-B receiver (Virtower) and the FAA's Traffic Flow Management System Counts (TFMSC).

1.5 Forecast Scenarios

Per FAA recommendation, three different scenarios were modeled, representing aircraft operations in 2026, 2027, and 2032. Operations in 2026 represent the baseline existing conditions at LFK, with current aviation traffic and runway configuration. Modeling in 2027 and 2032 included the proposed 600-foot runway extension as well as growth in the number of annual operations from the most recently approved Forecast of Aviation Activity (2024 ALP Update). These scenarios model the potential impacts in the first year and fifth year post runway extension. Results from these three scenarios are depicted below in **Table 1-1**, with the two future years compared to the baseline 2026 year.

Table 1-1: Annual Operations by Aircraft Category

	Scenario 1 (Baseline): 2026	Scenario 2 (Extension +1 Year): 2027	Scenario 3 (Extension +5 Years): 2032
Single Engine Piston	18,644	18,994	20,408
Multi Engine Piston	3,570	3,561	3,474
Turbo Prop	11,962	12,267	13,895
Business Jet	3,884	3,957	4,776
Helicopter	776	791	868
Total Annual Operations	*38,836*	*39,570*	*43,421*

Source: FAA approved Forecast of Aviation Activity in the 2024 LFK ALP Update with Narrative.

To perform the noise analyses for LFK, a representative fleet mix comprised of 37 aircraft was selected based on the ADS-B and TFMSC data. Across the three scenarios, 1,824 unique operations with distinct variables were entered into the model for analysis. Operations are calculated for a daily average and then annualized for DNL metric calculations. These aircraft are listed in **Table 1-2**. Arrivals and departures were assumed to be split evenly (50% and 50%) for each aircraft.

Table 1-2: Aircraft Fleet Mix

Category	Manufacturer	Model	% of Category Operations
Single Engine Piston	Cessna	172	41%
Single Engine Piston	Piper	PA-28	22%
Single Engine Piston	Cessna	182	8%
Single Engine Piston	Piper	PA-24	8%
Single Engine Piston	Cirrus	SR22	7%
Single Engine Piston	Diamond	DA20	7%
Single Engine Piston	Beech	33	3%
Single Engine Piston	Cessna	210	3%
Single Engine Piston	Grumman	A5	1%
Multi Engine Piston	Beech	58 Baron	30%
Multi Engine Piston	Cessna	310C	21%
Multi Engine Piston	Piper	PA-44	19%
Multi Engine Piston	Piper	PA-34	15%
Multi Engine Piston	Beech	76	7%
Multi Engine Piston	Piper	PA-30	5%
Multi Engine Piston	Beech	55 Baron	3%
Turbo Prop	Piper	PA46-500TP	37%
Turbo Prop	Air Tractor Inc	AT-802	23%
Turbo Prop	Socata	TBM 700	11%
Turbo Prop	Beech	King Air 300	14%
Turbo Prop	Cessna	T182T	7%
Turbo Prop	Beech	King Air 200	4%
Turbo Prop	Pilatus	PC-12	4%
Business Jet	Embraer	EMB-505	29%
Business Jet	Cessna	525	20%
Business Jet	Bombardier	Challenger 300	11%
Business Jet	Cessna	560	11%
Business Jet	Cessna	525C	10%
Business Jet	Cessna	680A	5%
Business Jet	Cessna	525B	4%
Business Jet	Embraer	EMB-545	3%
Business Jet	Gulfstream	G280	3%
Business Jet	Embraer	EMB-500	2%
Business Jet	Gulfstream	GVI	2%
Helicopter	Bell Helicopter	407	59%
Helicopter	American Eurocopter	AS350	24%
Helicopter	Eurocopter	MBB-BK 117 C-2	17%

Source: LFK On-Site ADS-B, FAA TFMSC.

Different aircraft categories were assigned different runway end usage percentages and day/night splits based on the available ADS-B data, as shown in **Table 1-3** and **Table 1-4**. The proposed runway extension is not anticipated to impact runway end usage, as such the usage percentages were the same for all three scenarios.

Table 1-3: Runway End Usage Splits

	Arrival				Departure			
	RWY 7	**RWY 16**	**RWY 25**	**RWY 34**	**RWY 7**	**RWY 16**	**RWY 25**	**RWY 34**
Single Engine Piston	25%	39%	15%	20%	28%	41%	12%	20%
Multi Engine Piston	25%	41%	15%	19%	34%	34%	13%	18%
Turbo Prop	36%	21%	26%	17%	47%	22%	14%	17%
Business Jet	52%	10%	34%	4%	61%	9%	24%	5%
Helicopter	24%	52%	15%	8%	11%	45%	8%	36%

Source: LFK On-Site ADS-B.

Table 1-4: Day/Night Usage Splits

	Day %	**Night %**
Single Engine Piston	99%	1%
Multi Engine Piston	99%	1%
Turbo Prop	96%	4%
Business Jet	99%	1%
Helicopter	87%	13%

Source: LFK On-Site ADS-B.

1.6 Results

The calculated size of the 65 DNL noise contour for each scenario is listed in **Table 1-5** and the contours are graphically depicted in **Figure 1-1**. As can be seen, the contours for the two future scenarios are slightly larger and shift east because of the proposed 600-foot extension to Runway 25. The overall increase in 65 DNL area, as compared to the baseline scenario, remains below the significance threshold. Per FAA Order 1050.1, the proposed action would constitute a significant impact if "the action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe." As depicted in **Figure 1-2**, nearly the entire 65 DNL remains on airport property in all scenarios. **No noise sensitive areas would experience a DNL 1.5 dB or greater increase** as a result of the proposed action. The increase in 65 DNL size from Scenario 1 (baseline) to Scenario 3 is 7.96%, as depicted in **Table 1-5**.

Table 1-5: Noise Analysis Results

	Scenario 1 (Baseline): 2026	Scenario 2 (Extension +1 Year): 2027	Scenario 3 (Extension +5 Years): 2032
65 DNL Size (Acres)	113.519	115.217	122.558
% Change Compared to Scenario 1	-	1.50%	7.96%

Source: Woolpert Inc.

1.6.1 65 DNL Off-Airport Property

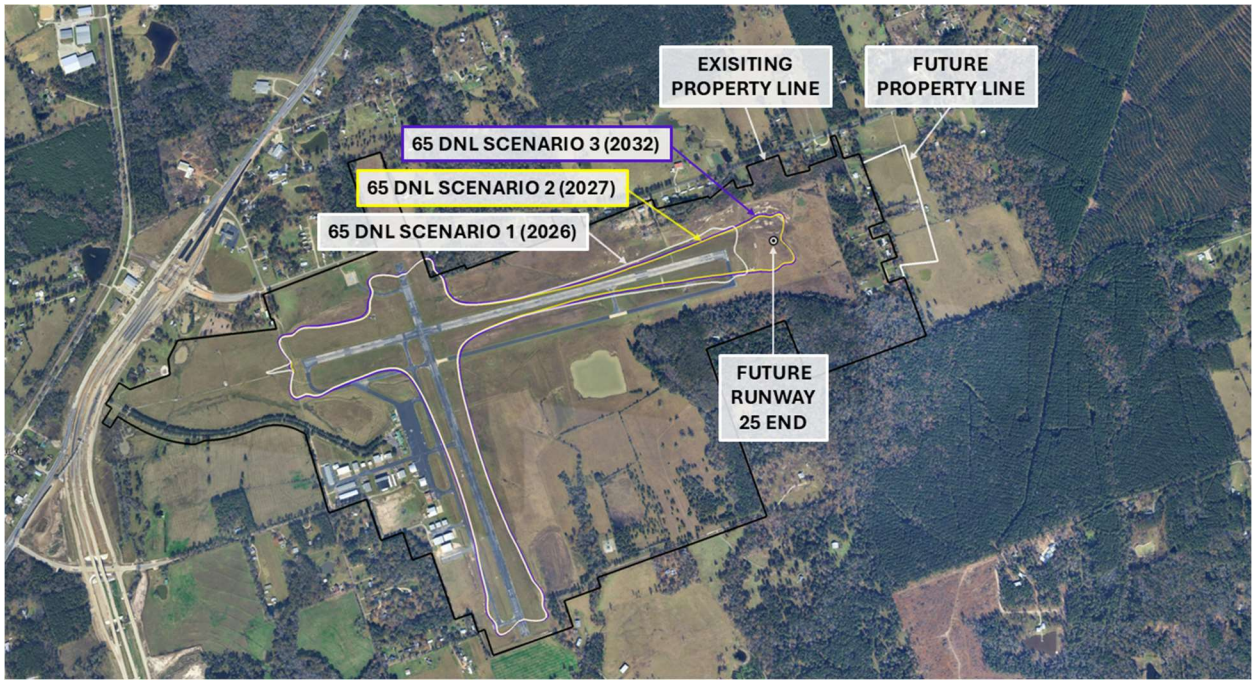
As depicted in **Figure 1-3**, based on 2026 (baseline) aircraft operations and existing noise conditions at LFK, the 65 DNL extends beyond the airport property line with an area of approximately 0.43 acres off-airport. Due to natural growth in airport operations, the size of the 65 DNL extending beyond the airport property line would grow to approximately 0.46 acres in 2027 and 0.55 acres in 2032 (see **Table 1-6)**. The change in the 65 DNL in this area is a result of the natural growth of operations associated with Runway 16/34 and not a result of the the 600' extension to Runway 25.

Table 1-6: Runway 16 End Off-Airport Property 65 DNL Size Comparison

	Scenario 1 (Baseline): 2026	Scenario 2 (Extension +1 Year): 2027	Scenario 3 (Extension +5 Years): 2032
65 DNL Size (Acres)	0.43	0.46	0.55

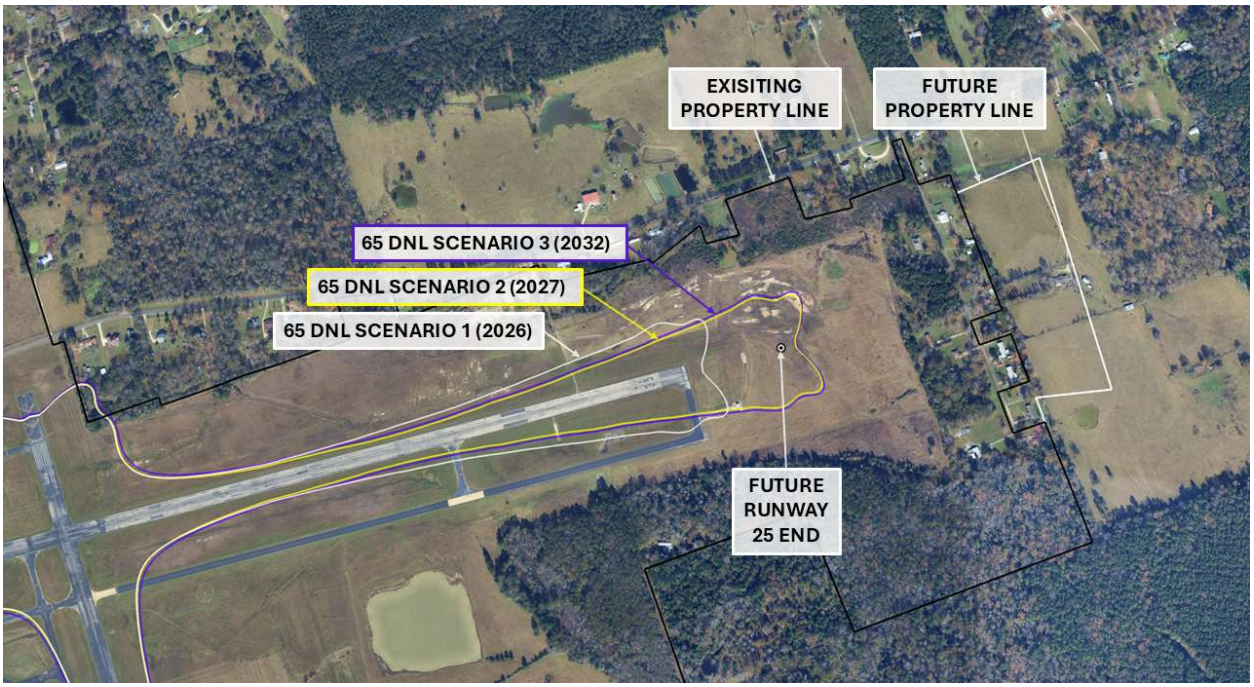
Source: Woolpert Inc.

Figure 1-1: 65 DNL Contours (Overall)



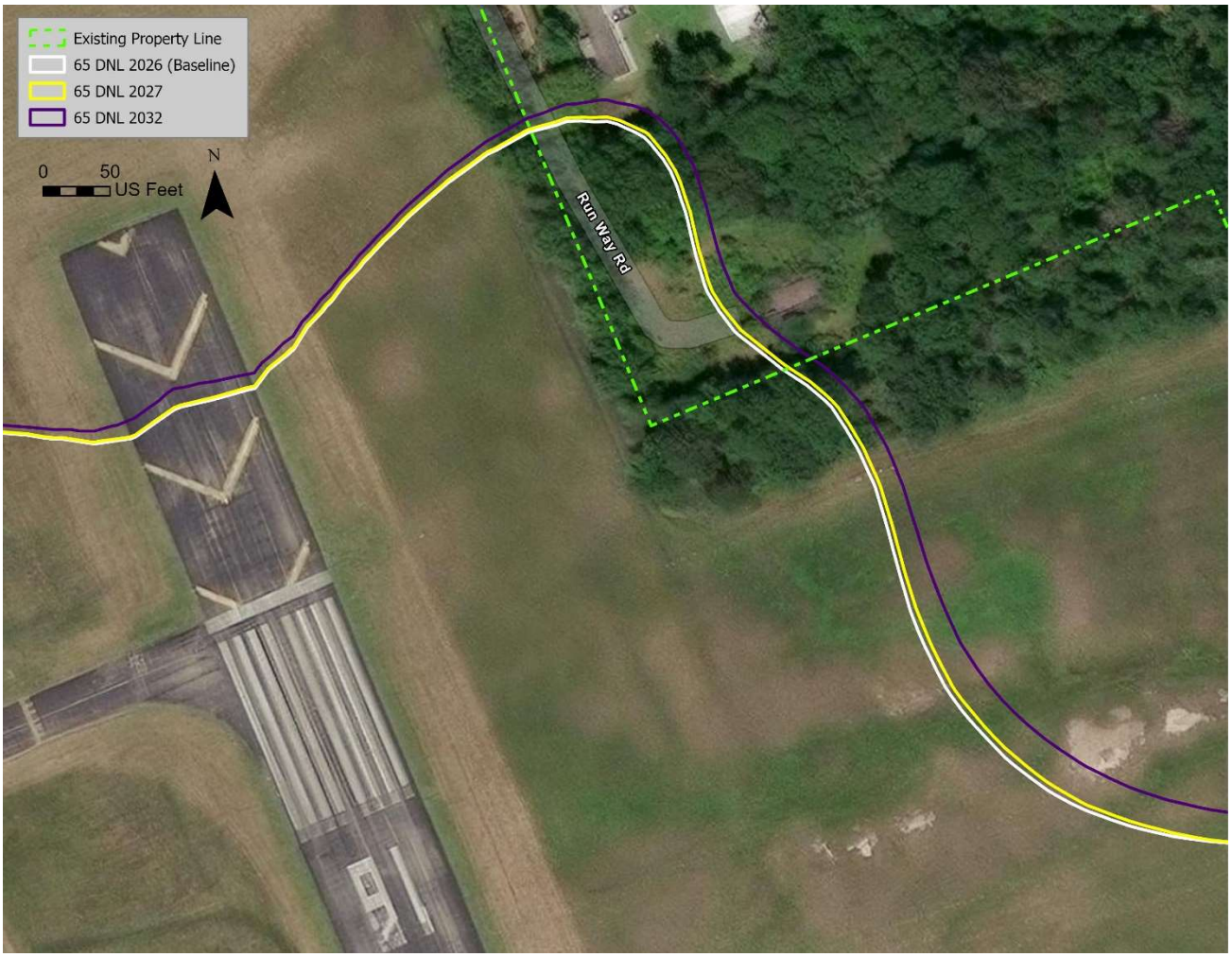
Source: Woolpert Inc.

Figure 1-2: 65 DNL Contours (Future Runway 25 End)



Source: Woolpert Inc.

Figure 1-3: Runway 16 End Off-Airport Property 65 DNL Contour Comparison



Source: Woolpert Inc.