SECTION 3
AIRCRAFT OPERATIONS

3.1 INTRODUCTION

To describe the relationship between aircraft operations and land use at and around the airfield, it is necessary to fully evaluate the exact nature of flying activities. The January 2006 inventory of Tinker AFB aircraft operations included where aircraft fly, how high they fly, how many times they fly over a given area, and the time of day they operate.

Section 3.2 discusses aircraft operations at Tinker AFB. Section 3.3 discusses runway and flight track utilization for all operations by aircraft type. Section 3.4 describes aircraft maintenance activity, Section 3.5 discusses aircraft flight profiles, and Section 3.6 presents climatological data.

3.2 AIRCRAFT OPERATIONS

Over 46,000 annual aircraft operations occur at Tinker AFB based on aircraft operations data validated in January 2006. An aircraft operation is defined as one takeoff/departure, one approach/landing, or half a closed pattern. A closed pattern consists of two portions, a takeoff/departure and an approach/landing, *i.e.,* two operations. A sortie is a single military aircraft flight from the initial takeoff through the termination landing. The minimum number of aircraft operations for one sortie is two operations, one takeoff (departure) and one landing (approach).

Table 3.1 summarizes the projected average busy-day aircraft operations for Tinker AFB based on information provided by Base staff, flying organization, and air traffic control personnel. Aircraft types operating at the Base consist primarily of military aircraft. In addition to the Tinker AFB based and depot maintenance aircraft, numerous types of transient military and civil air carrier aircraft conduct operations at the Base. The table reflects a total of about 272 average busy-day aircraft operations based on collected operations data. About 7 percent of the total daily operations occur at night (10:00 p.m.-7:00 a.m.).

Although the number of military and civil aircraft operations at an installation usually varies from day to day, NOISEMAP requires input of the specific numbers of daily flight and aircraft maintenance engine runup operations. The Air Force does not follow the FAA's use of the "average annual day" in which annual operations are averaged over an entire 365-day year. Neither does the Air Force use the "worst-case day" since it typically does not represent the typical noise exposure. Instead, the Air Force uses the "average busy-day" concept in which annual operations for an aircraft type are averaged over the number of flying days per year by that aircraft type. Non-flying days (*e.g.*, weekends or holidays) are not used in computing the "average busy-day" operations. Flying activity at Tinker AFB for based and depot maintenance aircraft occurs 260 days per year. Transient aircraft operations are based on 365 days per year.

Table 3.1 Average Busy-Day Aircraft Operations for 2006

Category/ Aircraft Type	Daily Arrival/ Departure Operations	Daily Closed Pattern Operations	Total Daily Operations
Tinker AFB Aircraft			
E-3	14.80	49.17	63.97
KC-135	9.25	37.41	46.66
B-737	2.00	4.00	6.00
E-6	10.00	60.80	70.80
Subtotal	36.05	151.38	187.43
Depot Maintenance Aircraft			
C/KC-135	0.67	2.68	3.35
E-3	0.12	0.95	1.07
B-52	0.42	0.77	1.19
B-1	0.25	0.15	.040
Subtotal	1.46	4.55	6.01
Transient Aircraft			
22 types	27.92	50.92	78.84
Total	**65.43**	**206.85**	**272.28**

Note: An operation is one takeoff/departure or one arrival/landing. A closed pattern consists of two operations, one takeoff and one landing.

3.3 RUNWAY AND FLIGHT TRACK UTILIZATION

Runway 17/35 is oriented 174°–354°magnetic and Runway 12/30 is oriented 124°–304°magnetic. The north-south runway (Runway 17/35) is 200 feet wide and 11,100 feet long. The crosswind runway (Runway 12/30) is 200 feet wide and 10,000 feet long. The overruns at the ends of each runway are 1,000 feet long and 200 feet wide. The airfield elevation is 1,291 feet above mean sea level (MSL).

Other airports and military airfields within the area surrounding the base influence Tinker AFB aircraft arrival and departure flight tracks. The Expressway Airport is 9 miles north; Downtown Airport is 7 miles west-northwest; the University of Oklahoma/Westheimer Airport is 11 miles south-southwest; Will Rogers World Airport is 10 miles west-southwest; and Wiley Post Airport is 14 miles northwest.

Aircraft operating at Tinker AFB use the following flight patterns:

- Departures in all directions;
- Arrivals from all directions;
- Radar closed patterns to the east of the airfield; and
- Overhead and rectangular closed patterns for all aircraft are flown at 1,700 feet above ground level (AGL).

Flight patterns specific to Tinker AFB result from several considerations, including:

- Takeoff patterns routed to avoid noise-sensitive areas as much as possible;

- Arrivals and departures routed to avoid restricted airspace;
- Criteria governing the speed, rate of climb, and turning radius for each type of aircraft;
- Efforts to control and schedule missions to keep noise levels low, especially at night; and
- Coordination with the FAA to minimize conflict with civil aircraft operations.

Planning for the areas surrounding an airfield considers three primary aircraft operational/land-use determinants: (1) aircraft accident potential to land users; (2) aircraft noise; and (3) hazards to operations from land uses (*e.g.*, height of structures). Each of these concerns is addressed in conjunction with mission requirements and safe aircraft operations to determine the optimum flight track for each aircraft type. The flight tracks depicted in Figures 3.1 through 3.3 are the result of such planning and depict the representative flight tracks used for noise modeling. Runway use is: Runway 12—4 percent: Runway 17—54 percent; Runway 30—3 percent; and Runway 35—39 percent.

3.4 AIRCRAFT MAINTENANCE RUNUP OPERATIONS

To the maximum extent possible, aircraft maintenance engine runup locations have been established in areas to minimize noise for people in the surrounding communities, as well as for those on base. Aircraft maintenance engine runup operations are accomplished by based flying units and their associated maintenance functions.

Average busy-day aircraft maintenance runup operations were calculated similarly to flight operations described in Section 3.1. Weekly, monthly, or annual estimates of runups provided by Tinker AFB aircraft maintenance personnel were divided by the typical number of days runups were performed over the respective period. Approximately 9 percent of aircraft maintenance runup operations at Tinker AFB occur during nighttime (10:00 p.m. to 7:00 a.m.).

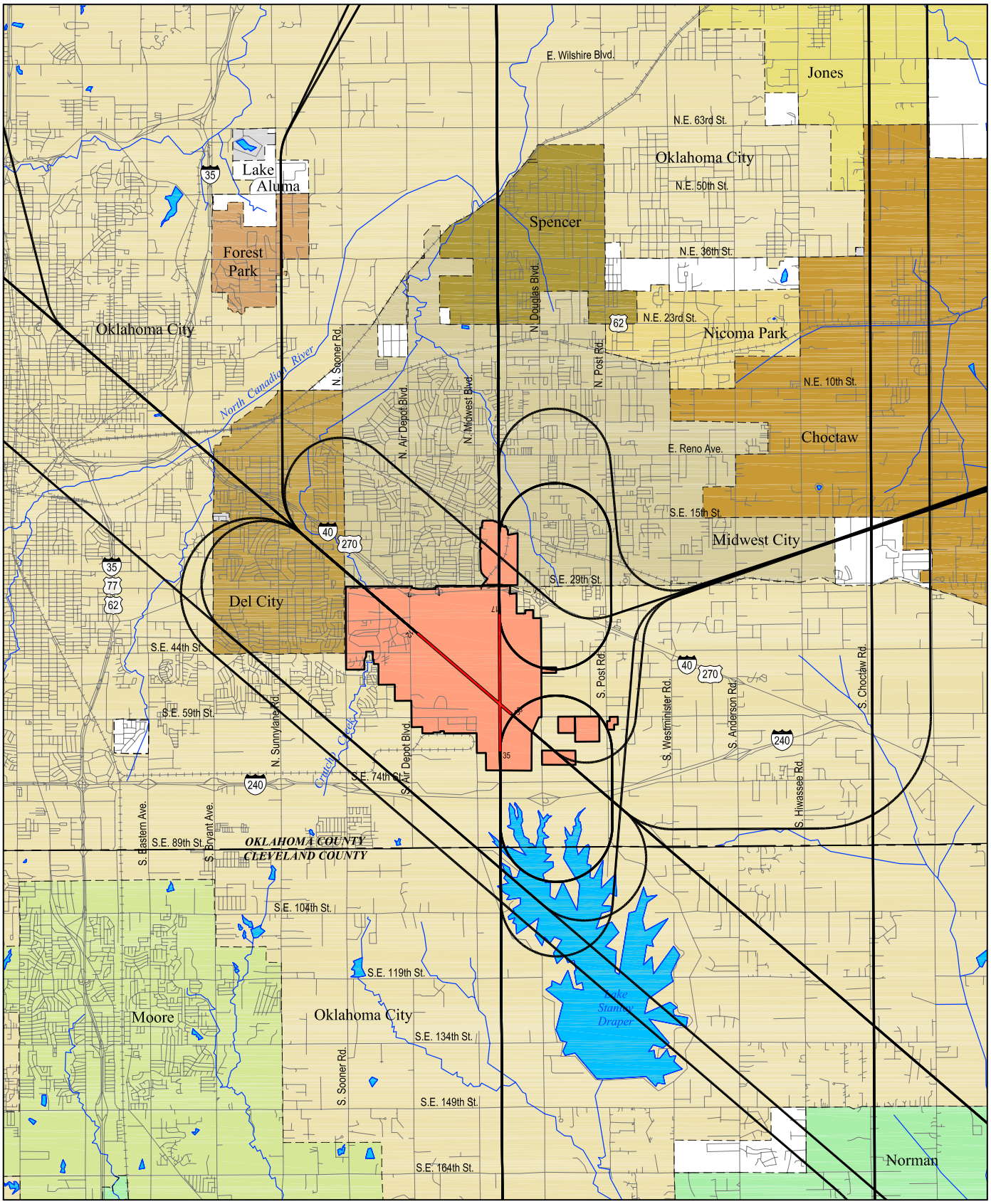
3.5 AIRCRAFT FLIGHT PROFILES

For purposes of this AICUZ Study, aircraft "flight profiles" denote the aircraft power settings, altitudes above runway level, and airspeeds along each flight track. Aircraft flight profiles for E-3, KC-135R, E-6, B-737, C/KC-135, B-52, and B-1 aircraft were obtained from Tinker AFB personnel. Generic flight profiles from the BASEOPS database were used to model operations for the other military aircraft types. Noise data from the NOISEFILE database were used to model operations for all aircraft types.

3.6 CLIMATOLOGICAL DATA

Weather conditions, measured by temperature and relative humidity, are an important factor in the propagation of noise. Temperature and relative humidity affect sound absorption. The average temperature and humidity for each month of the year are input into BASEOPS, which then calculates the sound absorption coefficient for each month. Ranking

the twelve monthly sound absorption coefficients from smallest to largest, BASEOPS chooses the sixth smallest sound absorption coefficient to represent the typical weather conditions at the installation. The month with the sixth smallest sound absorption coefficient for Tinker AFB is the month with the average monthly temperature of 63 degrees Fahrenheit and 61 percent relative humidity.



Tinker Air Force Base 2006 AICUZ

LEGEND

- Flight Track
- Runway
- Roadway
- City Limits
- Tinker AFB

Note: Unincorporated areas are not shaded.

N

0 11,000 Feet

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Arrival Flight Tracks

Figure 3.1

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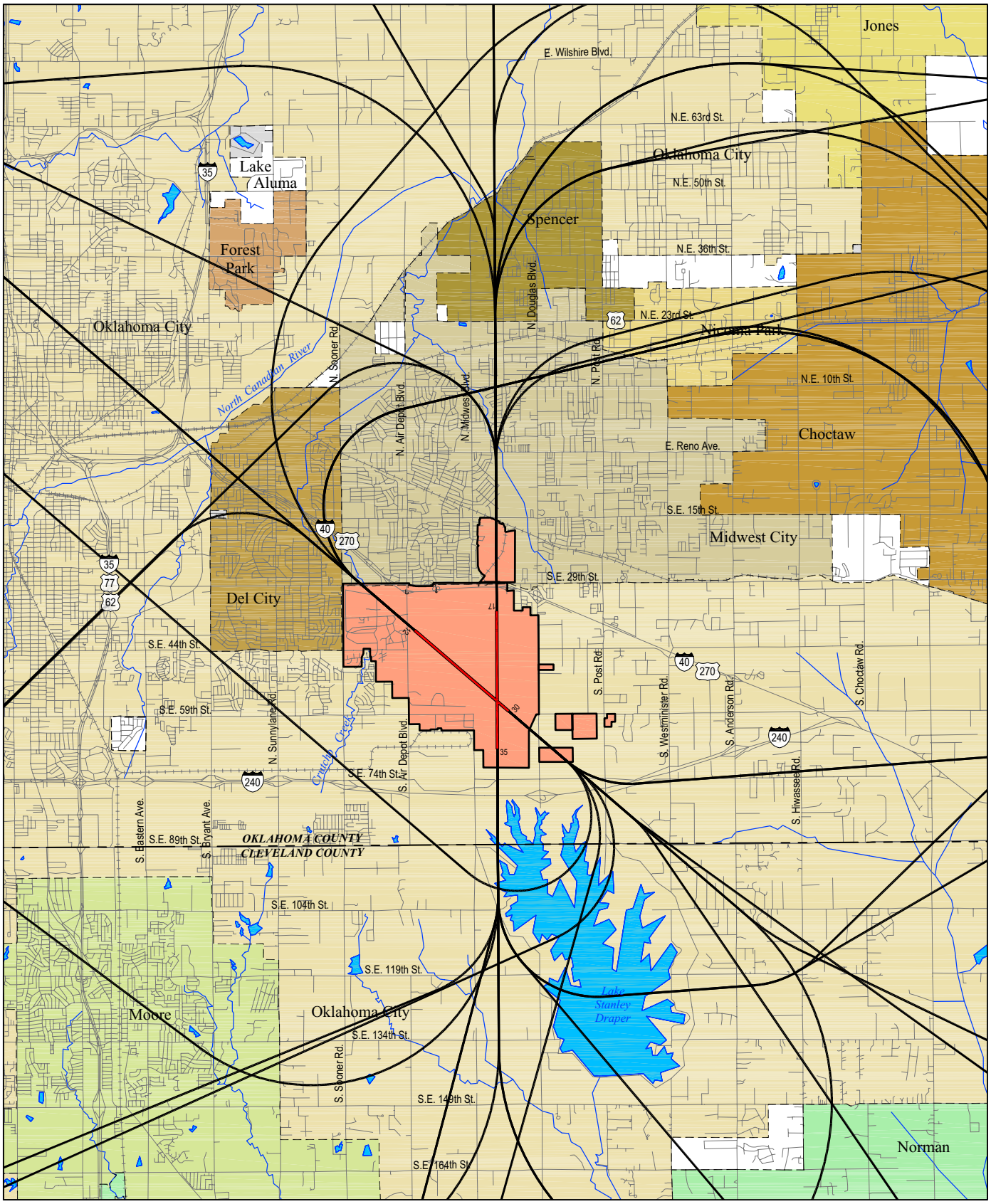

Tinker AFB - Oklahoma

LEGEND

- Flight Track
- Runway
- Roadway
- City Limits
- Tinker AFB

Note: Unincorporated areas are not shaded.

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0 11,000

Feet

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Departure Flight Tracks

Figure 3.2

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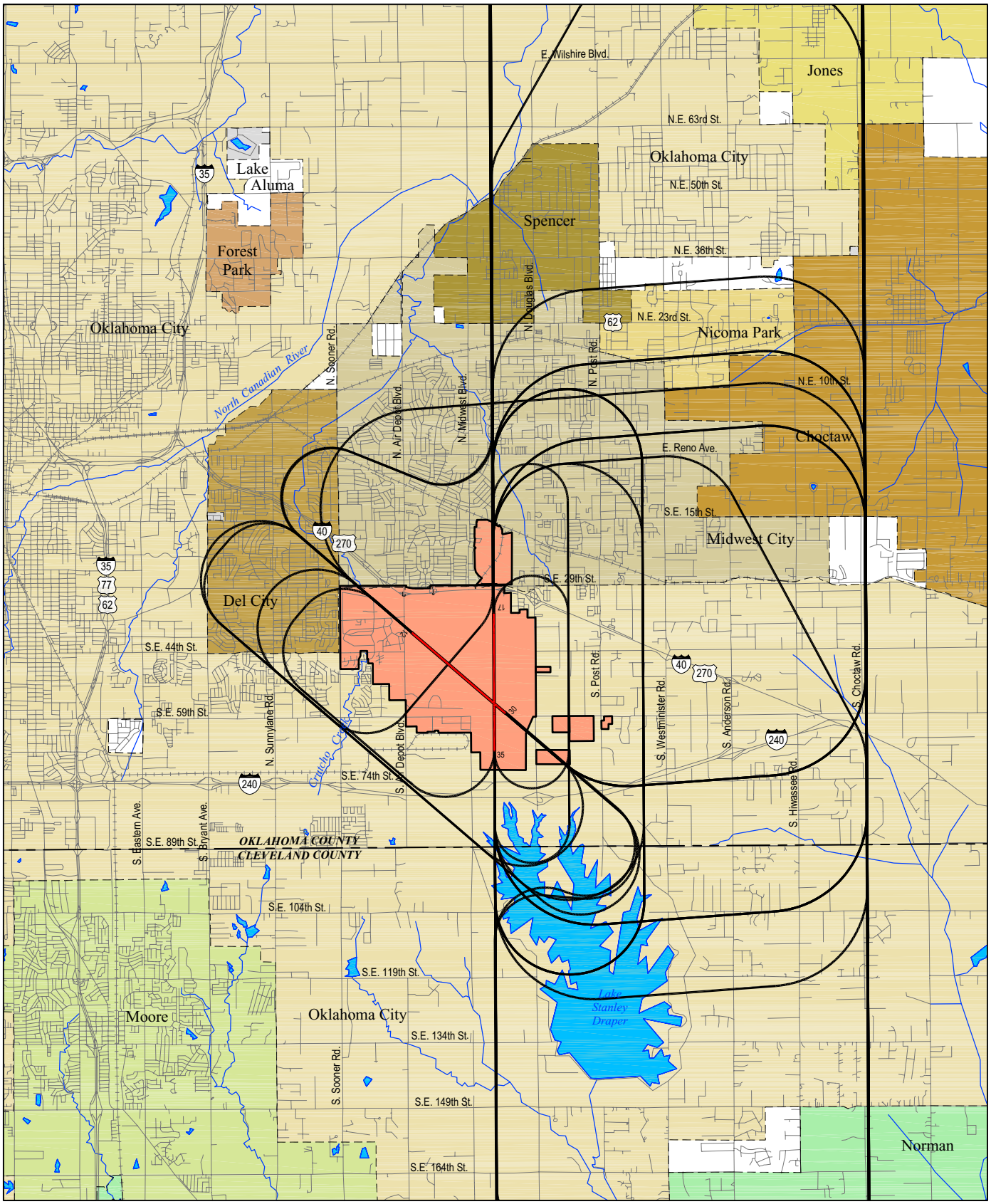

Tinker AFB - Oklahoma

LEGEND

- Flight Track
- Runway
- Roadway
- City Limits
- Tinker AFB

Note: Unincorporated areas are not shaded.

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Closed Pattern Flight Tracks

Figure 3.3

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