



Introduction

This Chapter of the Compatible Use Study provides an analysis of the known military training and operational factors that create potential areas of compatibility concern in the communities that host Little Rock Air Force Base and its associated training facilities. This analysis focuses on a range of operational and training impacts, including aircraft accident potential, aviation noise, obstructions to aerial navigation and related issues that can impair military readiness, endanger aviators or civilians in their communities, or impact the quality of life of residents.

In order to gauge the degree of compatibility (or incompatibility) that exists, the analysis provides insight into current land use and development patterns; the current regulatory environment, including compatible use regulations; and the plans of the local governments for future growth and development. These factors are analyzed in the context of the current operational environment based upon the most reliable information available. Taken as a whole, this analysis will help to inform the recommendations of the Compatible Use Study and provide background information to support the decisions of local governments as they seek to promote ongoing compatible growth and development in the region.

Overall, the results of the analysis contained in this chapter found an environment that remains mostly compatible with the current operational and training missions conducted by Little Rock Air Force Base. Where compatibility issues were identified, they tended to be regulatory in nature, which have solutions that are typically more easily implementable than the major existing land use compatibility conflicts that impact other installations that have not had the success that the Little Rock AFB has had in maintaining a generally compatible environment.

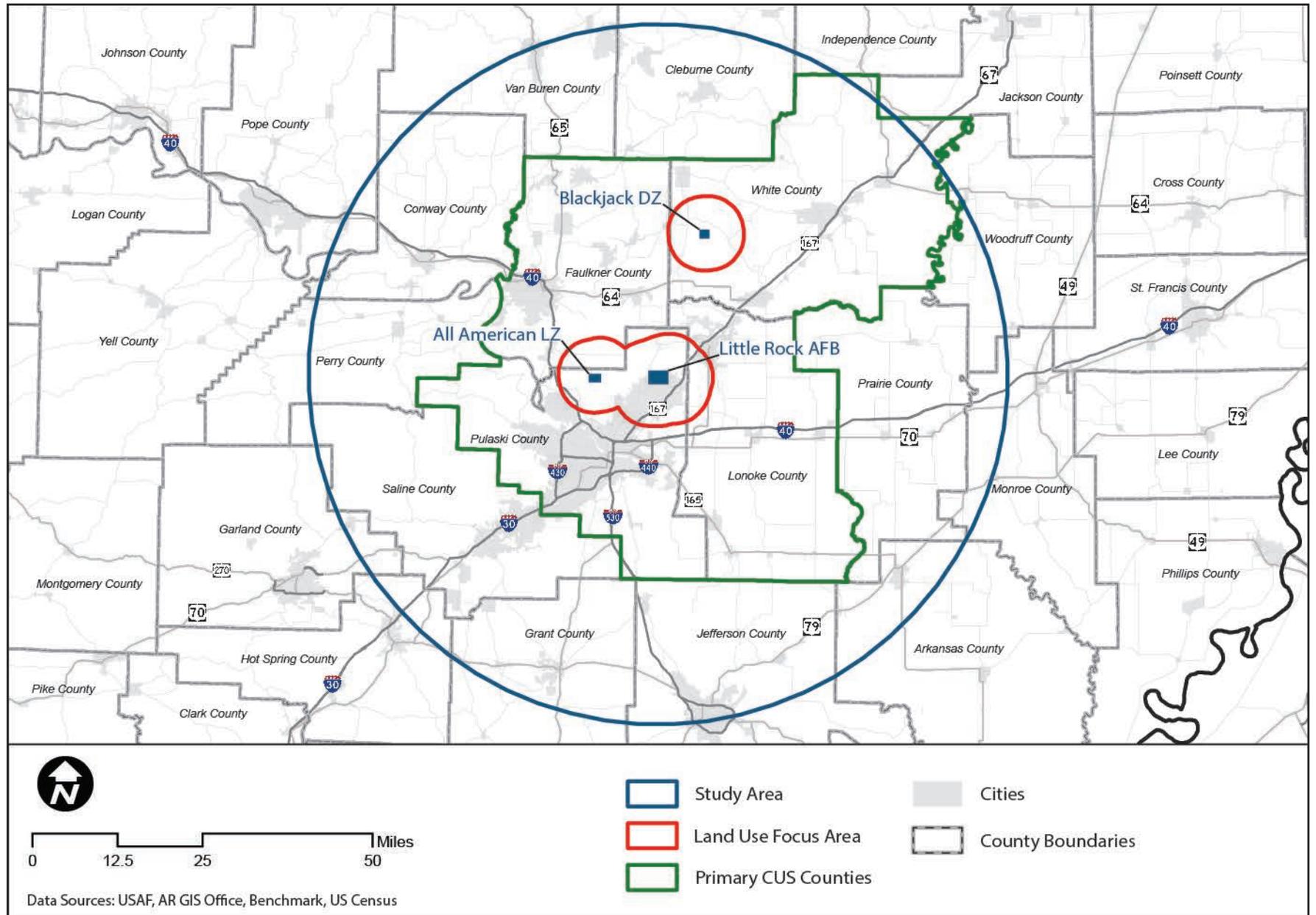
A map detailing the geographic scope of the Study Area and Land Use Focus Areas for the CUS is shown on the following page. The study area as a whole extends in a 50 mile radius from Little Rock AFB, while the land use focus areas extend 5 miles from the boundaries of the base, as well as its associated training facilities: All American Landing Zone (located on Camp Robinson) and Blackjack Dropzone in White County.



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Map 3.1: Little Rock Air Force Base Compatible Use Study Area





Aircraft Accident Potential

The Air Force has developed a set of land use compatibility recommendations to guide civilian communities in the planning and regulation of development in areas of increased aircraft accident potential that extend from each end of military runways. These areas, known as “accident potential zones” (APZs) have a defined length and width based on the type of runway they are associated with. The APZs are divided into three categories of decreasing potential for aviation incidents: the Clear Zone, which occupies the area closest to the end of the runway, APZ 1, which extends outward from the Clear Zone, and finally, APZ 2, which extends out from APZ 1. Once established, accident potential zones tend to remain in place, unaltered, with the exception to changes in the official specifications for their dimensions or the extension of a runway.

Given the inherent risk of loss of life and damage to property within APZs, the compatible use recommendations published by the Air Force for accident potential zones are intended to minimize the exposure of civilian populations to the inherent dangers present on the ground in close proximity to a military runway. In the Clear Zone, which has the highest risk potential, virtually no active uses of land are recommended, with the exception of agricultural activities (excluding livestock) and, under certain circumstances, similar “open” uses of land that do not include structures and limit the number of people present within the area. While there are a larger number of potentially compatible land uses recommended in APZ 1, the guidance continues to promote restrictions on both the intensity of allowed land uses and limits on the concentrations of people within the zone. Examples of potential compatible uses in APZ 1 include parks, certain manufacturing uses, and limited commercial activities, such as wholesaling, that tend to have few employees compared to the area of the structure and appurtenant features. In APZ 2, the compatible use recommendations expand to allow more dense and intensive uses, but still recommends against permitting uses where large concentrations of people are gathered, such as churches, schools, hospitals, and multi-family dwellings. Permitted use recommendations in APZ 2 include single family dwellings at a density of 2 dwelling units per acre or less, most retail trade uses, business and personal services, and a larger number of manufacturing uses. A simplified version of this compatible use guidance is shown in Table 3.2.



Little Rock Air Force Base Accident Potential Zones

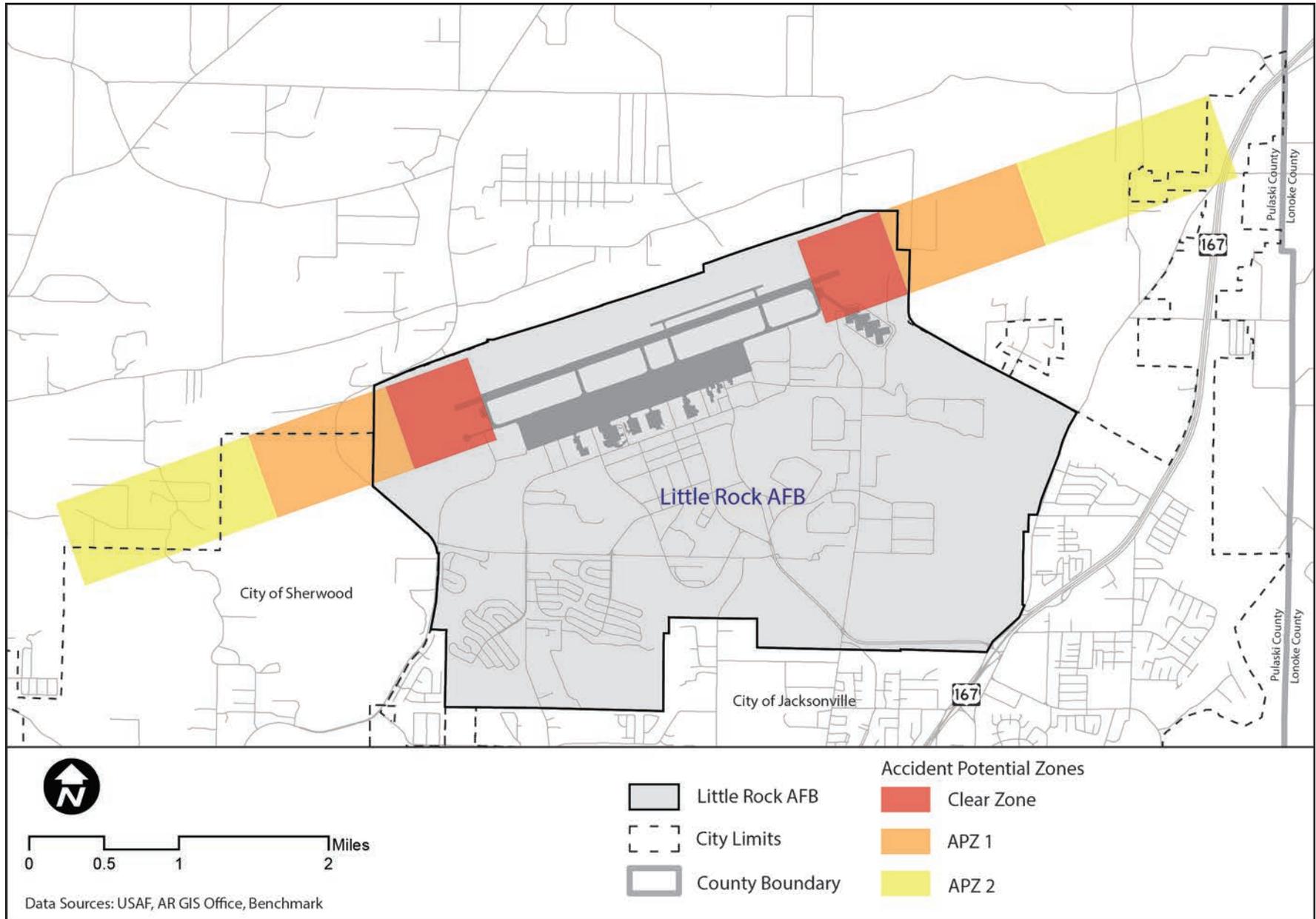
The aircraft accident potential zones associated with the runways at Little Rock Air Force Base are shown in Map 3.2 on the following page. As the map indicates, the Clear Zones at each end of the runway are located entirely within the installation boundary. Portions of APZ 1 are also located on the installation, although a majority of the area covered by these zones extend outside of the base, and the entirety of APZ 2 associated with each end of the runway are located off of the installation. From their point of departure from the installation, the APZs extend a total of around 2.25 miles into the community at each end of the runway and have a width of 3,000 feet (1,500 feet to each side of the runway centerline). In total, the accident potential zones cover a combined area of 2,066 acres of land, with around 25% located on Little Rock AFB and 75% falling outside of the installation boundary. The total off-base area covered by the accident potential zones is approximately 1,565 acres, or around 2.4 square miles. A breakdown of the acreage by zone and the on/off-base distribution of the APZs is shown in Table 3.1 below.

Table 3.1: Aircraft Accident Potential Zone On / Off Base Distribution

Zone	On Base (acres)	Percent	Off Base (acres)	Percent	Total (acres)
Clear Zone	413.2	100%	0	0.0%	413.2
APZ 1	88.5	9.2%	875.6	90.8%	964.1
APZ 2	0	0%	688.7	100.0%	688.7
Total	501.7	24.3%	1564.3	75.7%	2,066



Map 3.2: Little Rock Air Force Base Aircraft Accident Potential Zones





Existing Land Use Compatibility

Assessing the compatibility of the existing land use pattern within the accident potential zones takes into account both the type of use present on each parcel, as well as the density of development - particularly with regard to residential uses. To accomplish this, a parcel level land use map was developed using tax data and visual observations. The resulting existing land use pattern with the APZs overlaid is shown in Map 3.3. The map reveals that the area within APZ 1 at either end of the runway is generally comprised of rural / agricultural / undeveloped land. The APZ 2 extent located southwest of the base (Sherwood) is primarily developed with residential uses, with some remaining rural land uses and undeveloped land. On the northeastern side of the base (Jacksonville), the majority of APZ 2 is still comprised of rural and undeveloped lands, although there are some concentrations of residential and commercial development, as well as a mixture of commercial and industrial development along the US 167 corridor.

As noted above, the density of residential development, in particular, is a key determining factor when assessing land use compatibility within accident potential zones. The land subdivision pattern, shown in Map 3.4, reveals that parcels within the APZ 1 area at either end of the runway are generally larger than 10 acres in size, which further reinforces the

Table 3.2: Generalized APZ Land Use Recommendations

LAND USE	CLEAR ZONE	APZ I	APZ II
Single Family Unit	N	N	Yx
Multifamily Dwellings	N	N	N
Manufacturing	N	N	Y
Trans, Comm and Utilities	Yx	Y	Y
General Retail	N	N	Y
Restaurants	N	N	Y
Personal Services	N	N	Y
Other Services	N	N	Y
Government Services	N	N	Yx
Educational Services	N	N	N
Cultural Activities	N	N	N
Medical Services	N	N	N
Churches	N	N	N
Playgrounds	N	N	Y
Regional Parks	N	Yx	Yx
Assembly Areas	N	N	N
Other Outdoor Recreation	N	Yx	Yx
Agriculture	Y	Y	Y
Livestock Farming	N	Y	Y
Forestry Activities	N	Y	Y
Permanent Open Space	Y	Y	Y

Y = Recommended Yx = Recommended with Conditions N=Discouraged



observation of the rural / undeveloped nature of APZ 1. Looking at the residentially developed portion of APZ 2 southwest of the base, the parcel size data shows lot sizes are nearly evenly distributed between parcels between 1 and 3 acres in size and parcels between 3 and 10 acres in size. The APZ 2 area on the northeastern side of the base has a more varied land subdivision pattern - retaining a fairly significant amount of rural / undeveloped land in parcels greater than 10 acres in size, while also having a good number of residential parcels in the 1 to 3 and 3 to 10 acre size ranges.

Based on the observations noted above, and a parcel-by-parcel analysis of the existing land use pattern, the combined acreage of the APZs were determined to be 93% compatible with Air Force planning guidance. Table 3.2, shown on the previous page, provides a generalized overview of the compatible use guidance used to perform the assessment. Only 10 of the 201 parcels were determined to contain an incompatible use, and these were exclusively due to the presence of a residential dwelling (including residences on large rural / agricultural tracts) within the APZ 1 zone, while the entirety of the combined APZ 2 zones were determined to be currently compatible.

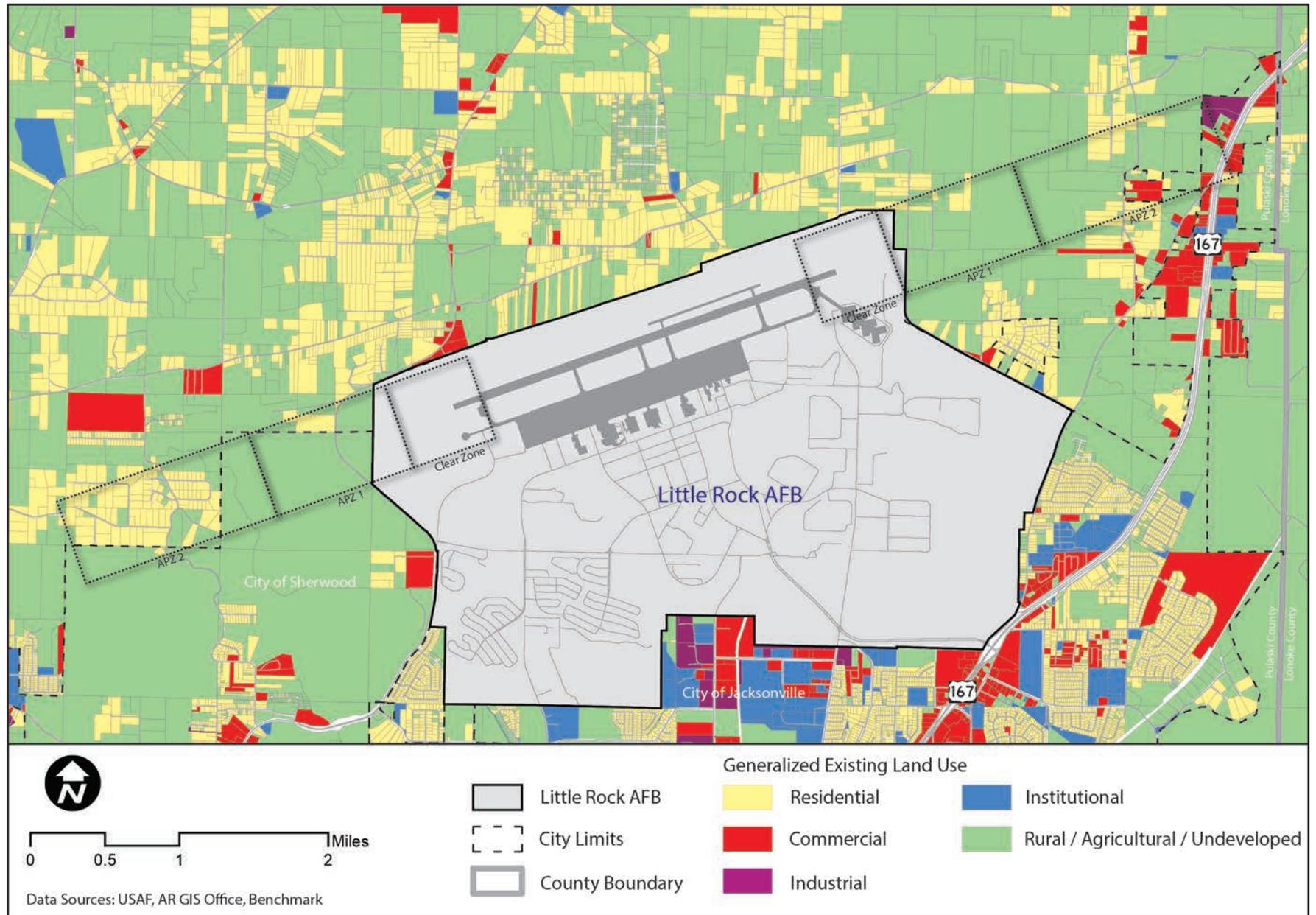
Zoning Compatibility

The cities of Jacksonville and Sherwood have both applied compatible use zoning regulations that cover the entirety of the accident potential zones that fall within their respective jurisdictions, including extraterritorial areas, as applicable. The current zoning districts are shown in Map 3.6 on the following page, with the "AICUZ" compatible use overlay districts defined with horizontal orange stripes on the map. As the map indicates, the majority of the area covered by Jacksonville's AICUZ overlay does not have a base zoning district applied, and so the AICUZ district is the only controlling use regulation applied to regulate development, Sherwood has a similar situation, though a good bit more of the overlay falls over areas that have an underlying base zoning district within the city.

The AICUZ districts adopted by each jurisdiction are similar in content and how they regulate compatibility within the APZ areas. They are also fairly consistent with current Air Force compatible use guidance for APZs, with one significant exception. While the Air Force guidance recommends that residential dwellings be prohibited within the APZ 1 areas, each city's ordinance permits one single family

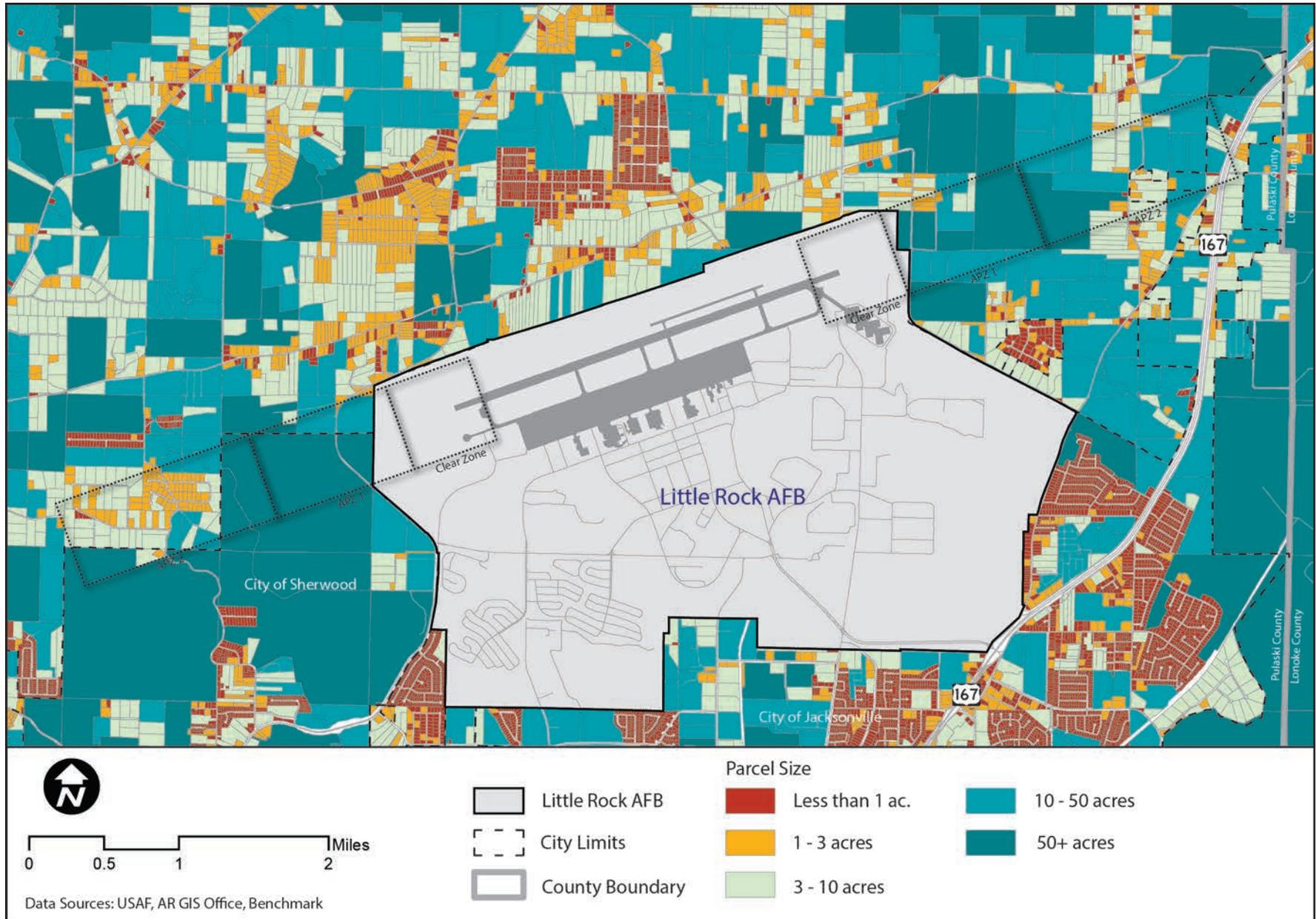


Map 3.3: Little Rock Air Force Base Aircraft Accident Potential Zones: Generalized Existing Land Use





Map 3.4: Little Rock Air Force Base Aircraft Accident Potential Zones: Land Subdivision Pattern

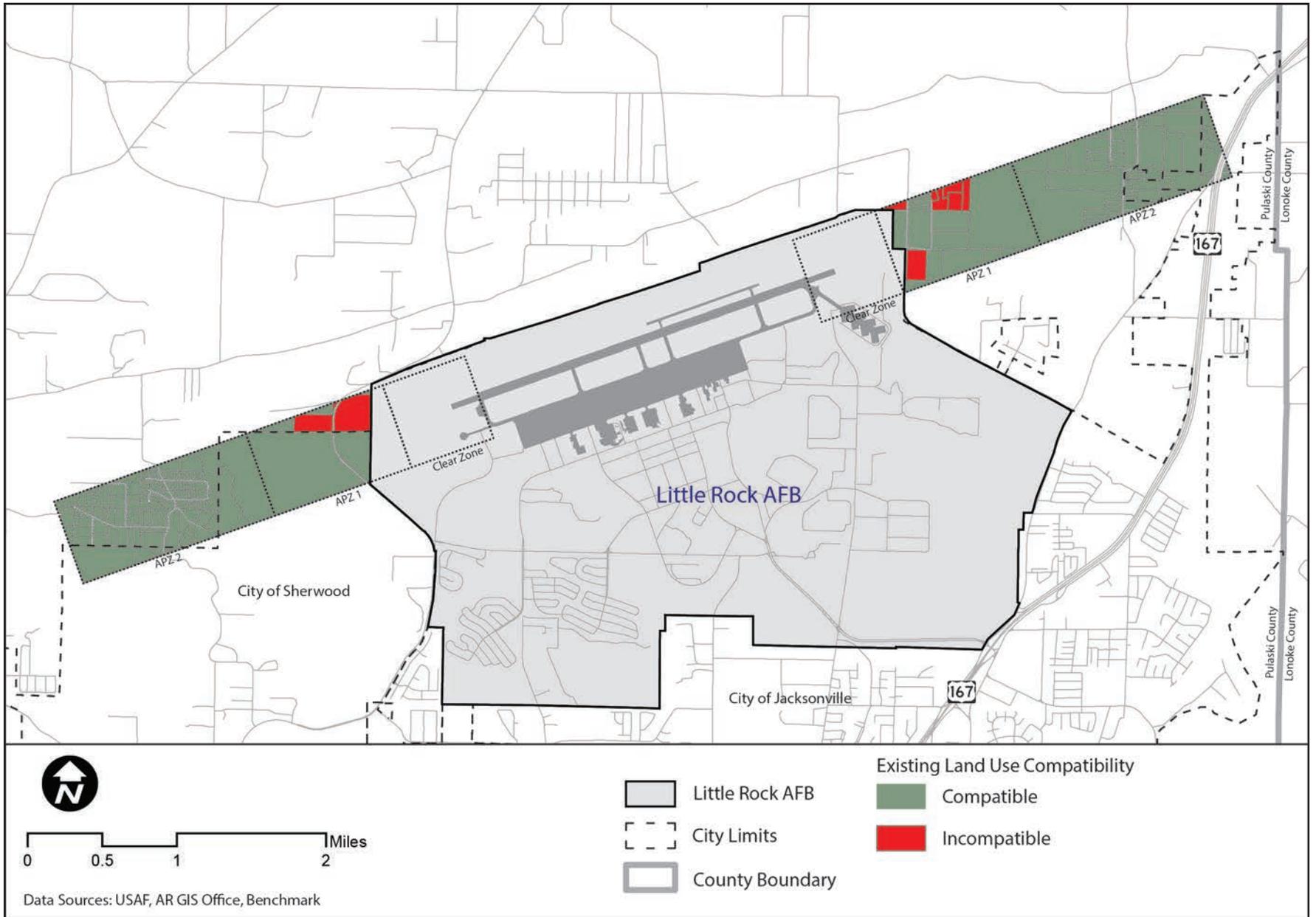




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Map 3.5: Little Rock Air Force Base Aircraft Accident Potential Zones: Existing Land Use Compatibility





dwelling to be constructed on a parcel greater than 1 acre in size. This diversion from the Air Force guidance is required by the statute that mandated the adoption of the compatible use districts.

The assessment of the compatibility of the current zoning regulations with the Air Force guidance takes into account both the underlying base zoning districts, where applied, in addition to the AICUZ district standards. For instance, if an area is zoned industrial or commercial and prohibits residential development in the permitted use table for that district, while the AICUZ permits it, the underlying zoning district regulation would prevail and enhance compatibility if the area in question fell within APZ 1.

The result of the assessment, shown in Map 3.7, found that the current zoning regulations, as applied to the APZs, created a regulatory environment in which approximately 70% of the combined APZ areas were regulated in a compatible manner. In Sherwood's jurisdiction, approximately 80% of the combined APZ area is regulated in a compatible manner, while in Jacksonville approximately 60% of the combined APZs have regulations in place that would create compatible land use outcomes. The entirety of the APZ 2 area in each of the cities is currently regulated in a compatible manner. The entirety of the APZ 1 area in Jacksonville's jurisdiction is currently not regulated to achieve full compatibility, due to the statutory requirement to permit limited residential development in APZ 1. While the same is generally true in Sherwood, the presence of industrial zoning in a portion of the APZ 1 area precludes some residential development, which in turn makes the APZ 1 area in its jurisdiction compatible over approximately 45% of the 275 acres in the city's jurisdiction.

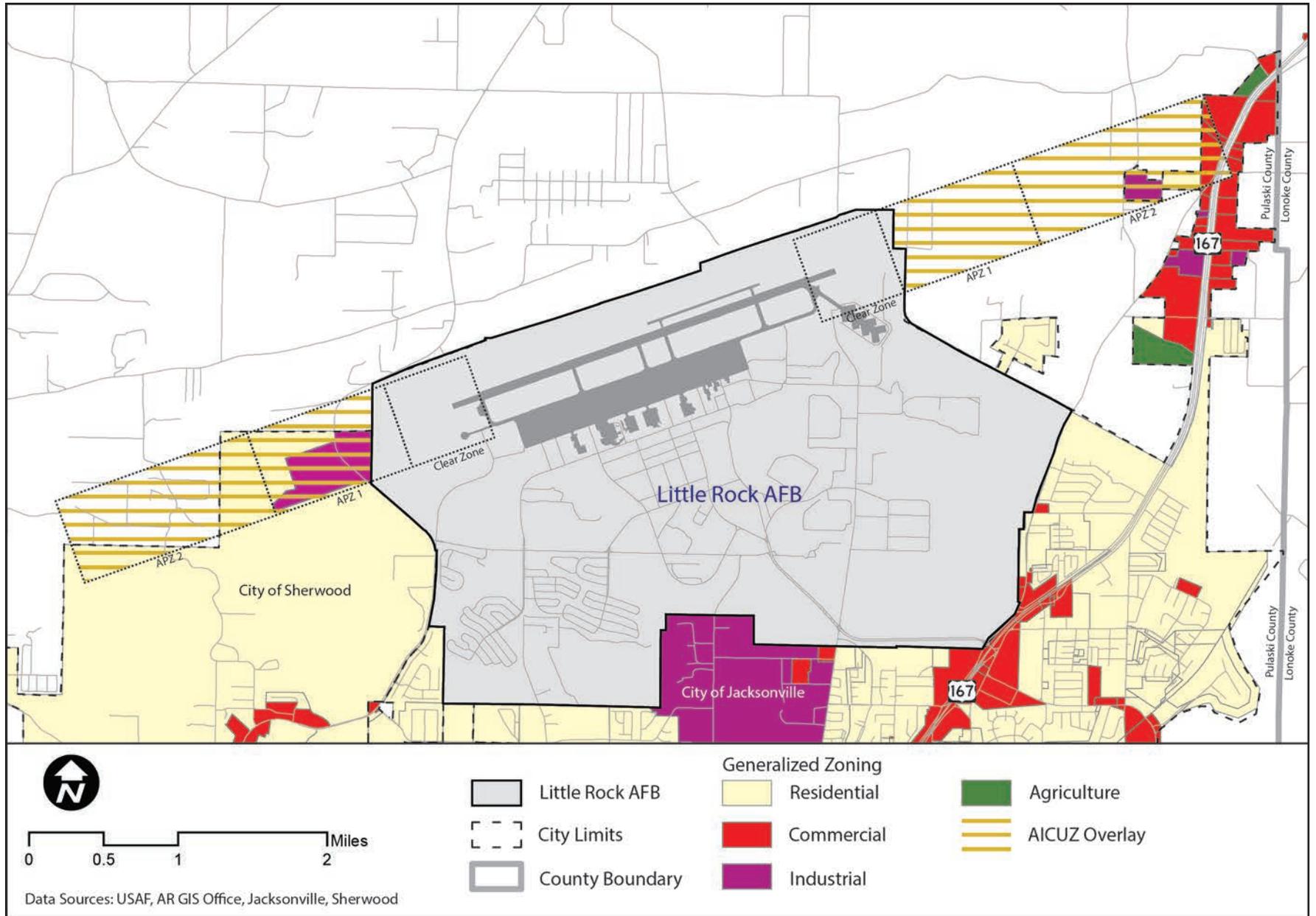
Future Land Use Compatibility

Although Jacksonville and Sherwood both have adopted future land use plans, neither cover the entirety of the APZ areas that have been zoned by their respective jurisdictions. Map 3.8 on the following page shows the adopted future land use classifications that each city has applied to their territorial jurisdictions. Overall, only slightly less than 50% of the combined APZ area is covered by either of the cities' future land use plans, with the majority of the covered area falling within the jurisdiction of Sherwood's plan.



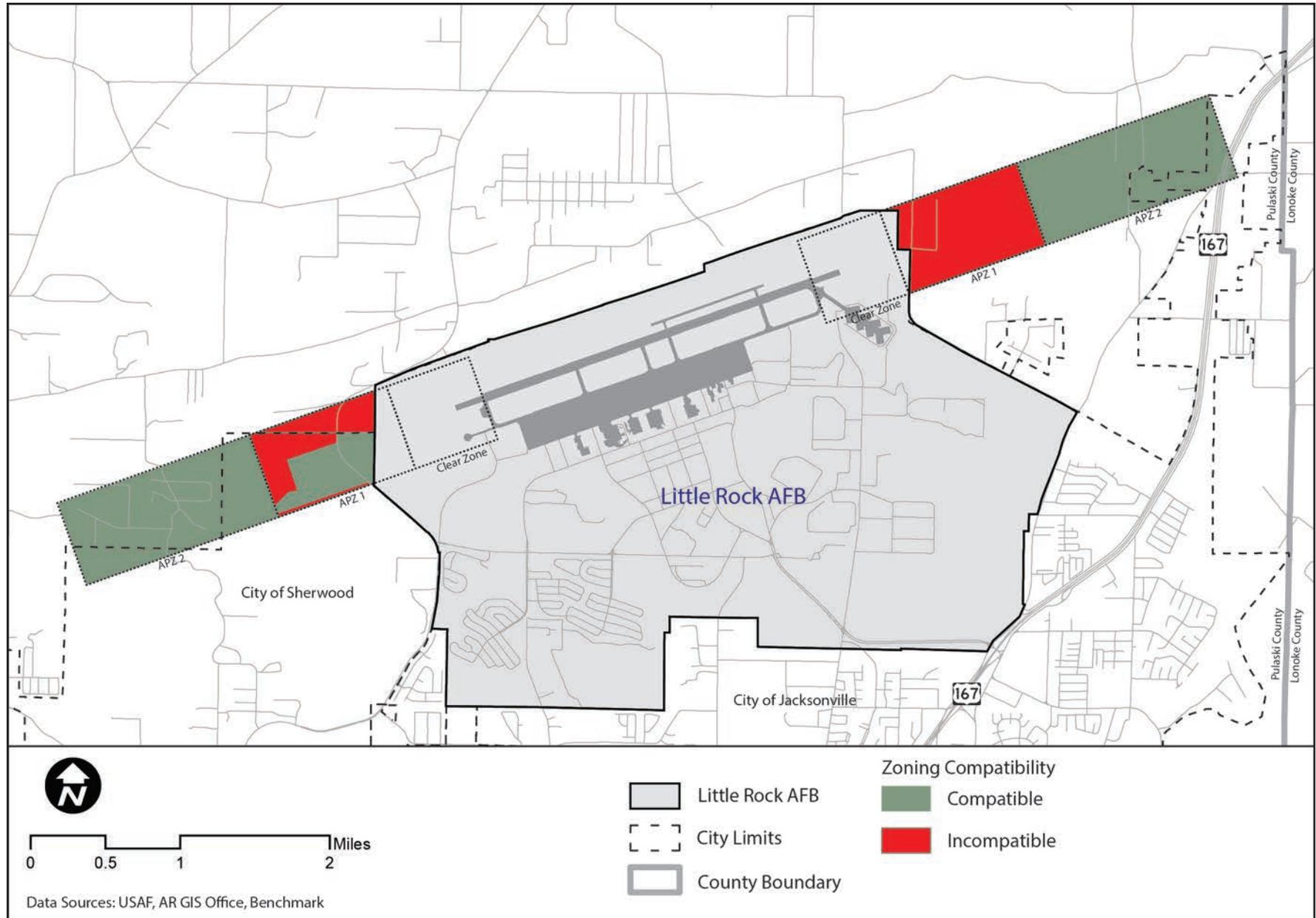
Little Rock AFB Compatible Use Study Chapter 3 - Compatibility Analysis

Map 3.6: Little Rock Air Force Base Aircraft Accident Potential Zones: Generalized Zoning



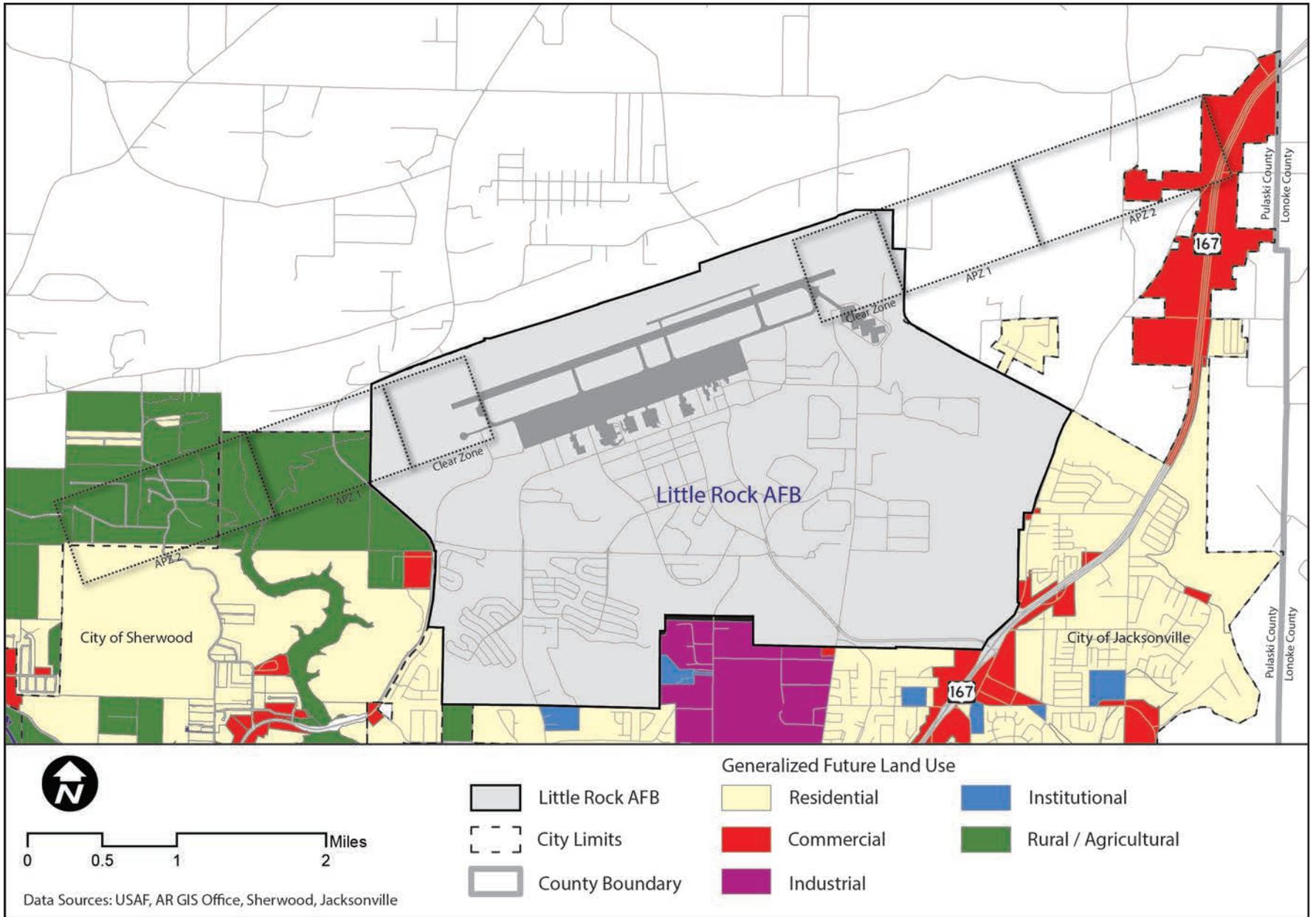


Map 3.7: Little Rock Air Force Base Aircraft Accident Potential Zones: Zoning Compatibility



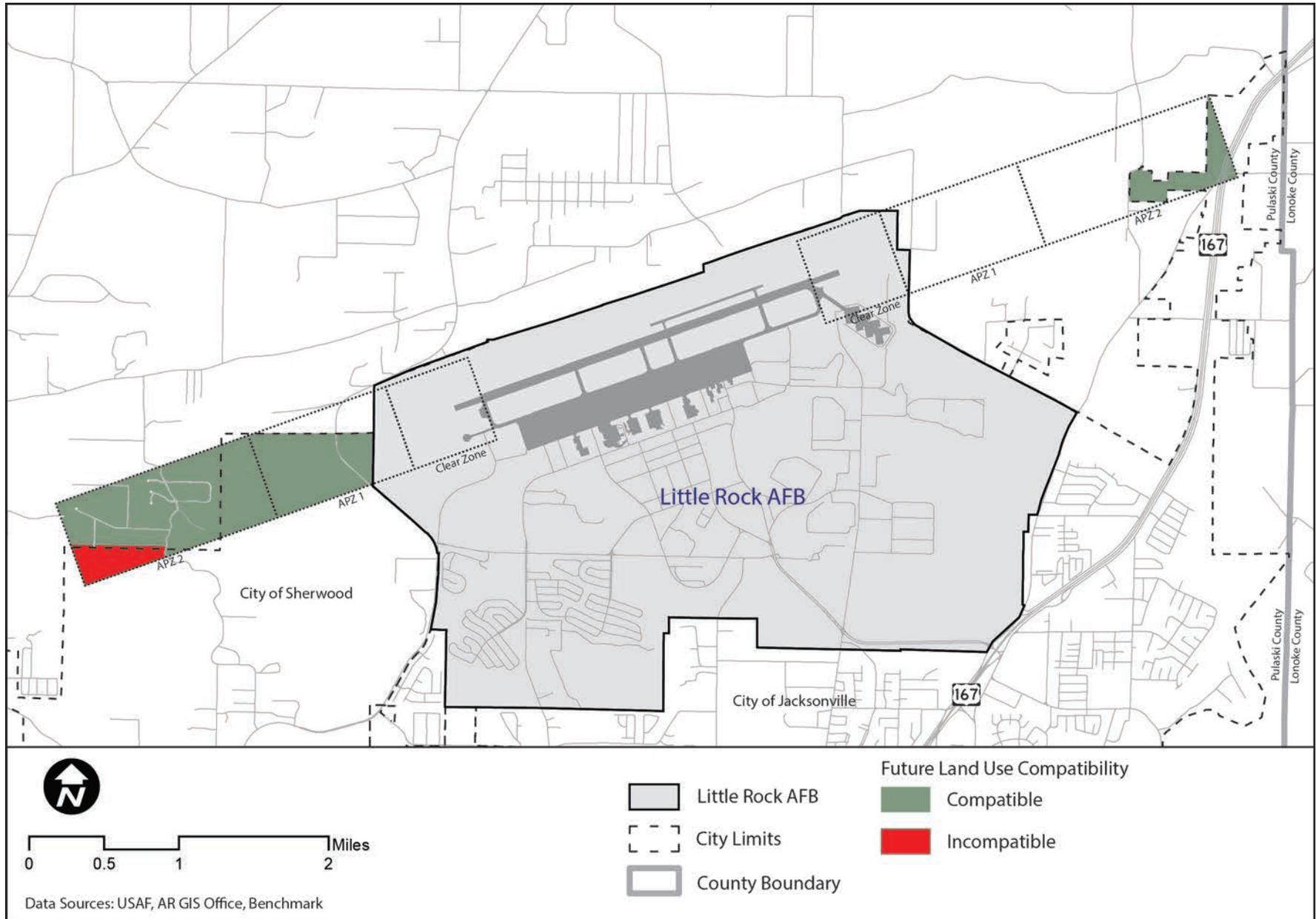


Map 3.8: Little Rock Air Force Base Aircraft Accident Potential Zones: Generalized Future Land Use





Map 3.9: Little Rock Air Force Base Aircraft Accident Potential Zones: Future Land Use Compatibility





The assessment of future land use compatibility was performed in a similar manner to the assessment of zoning compatibility, using the generalized future land use classifications to determine consistency with Air Force land use guidance, and the results are shown in Map 3.9. Although only around 90 acres of Jacksonville’s plan coincides with the APZs, the commercial land use classification is generally compatible with Air Force guidance. In Sherwood, the majority of the APZ areas are covered, with approximately 90% of the combined area found to be compatible and only 10% (all within a “suburban” density residential land use classification in APZ 2) found to be incompatible. The absence of land use guidance in the majority of the area currently within Jacksonville’s zoning jurisdiction is tempered to a degree by the presence of the AICUZ zoning. The same is true for the APZ area not currently covered by Sherwood’s land use plan.

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Aviation Noise

Land use compatibility with activities that generate high noise levels is generally measured along a continuum of intensity of the land use and noise, with inversely proportional impacts and susceptibility to high noise levels based on the intensity of the use. For instance, a single family home, among the lowest intensity “developed” land uses, is also one of the most susceptible to high noise levels when located in an area subject to high noise levels. Conversely, an industrial use situated in a similar high noise area would likely be much more compatible given the greater intensity of the use.

In addition to the specific type of land use, the density of development plays a major role in determining noise compatibility. Permitting dense concentrations of residential dwellings (such as smaller lots or multi-family developments) to encroach into high noise areas exposes a larger population to the potential noise impact. In areas where it is feasible, restricting certain types of noise sensitive uses, such as churches, schools, and daycares, from encroaching into a high noise area can help to mitigate noise impacts on an affected community.

While high noise levels can pose a safety issue with prolonged exposure to extreme noise, the most common issue with noise compatibility is the degree of annoyance experienced by people who reside, work or recreate in areas that encroach into areas subject to these impacts. To aide in assessing the degree of potential concern from civilian land uses encroaching into high noise areas, the Air Force has developed a standardized set of tools that make recommendations on the appropriate types of land use for certain noise environments.

For informational purposes, a table showing the comparison of certain A-weighted decibel levels (a standard of measurement used for aviation noise) to common noise generation sources and the effect that exposure to such noise levels has on humans is shown in Table 3.3 on the following page. These, along with a range of other factors have gone



into the development of compatible use recommendations for high noise environments. A simplified example of the Air Force’s noise compatibility guidance, derived from AFH 32-7084, is shown in Table 3.5. This demonstrates the inverse correlation between noise compatibility and the general intensity of use. In this case, “intensity” means both the relative intensity of the specific use and the potential for the use or development pattern to concentrate large numbers of people in a manner that encroaches into an area with high noise potential.

Table 3.3: Comparison of Common Noise Sources to A-Weighted Aviation Noise Levels (dBA)

NOISE SOURCE	dBA	EFFECT
Jet Engines (Near)	140	
Jet Takeoff (100-200 Feet)	130	Threshold of pain (125 dBA)
Thunderclap (Near)	120	Threshold of sensation (120 dBA)
Chain Saw	110	
Jet Fly-over (1000 Feet)	103	
Garbage Truck/Cement Mixer/ Farm Tractor	100	Regular exposure for 1 minute or more risks permanent hearing loss
Lawnmower, Food Blender	85-90	Level at which hearing loss begins (8 hour exposure)
TV	70-90	
Diesel Truck (40 Mph, 50 Feet)	84	
Garbage Disposal	80	Annoyance; constant exposure may cause hearing loss
Vacuum Cleaner, Hair Dryer	70	Intrusive, interference with conversation
Normal Conversation	50-65	Comfortable
Refrigerator	40	
Whisper	30	Very quiet
Rustling Leaves	20	Just audible
Normal Breathing	10	
	0	Threshold of normal hearing



Little Rock Air Force Base Noise Environment

The current extent of the operational noise environment that exceeds levels associated with land use compatibility concern is shown in Map 3.10 on the following page. These noise zones, which begin at 65 dBA and go to 80+ dBA are associated primarily with Little Rock AFB’s primary C-130 training mission. As the map shows, the noise contours primarily lie along the NE-SW axis of the runway, and extend to a greater distance to the northeast (nearly 4.5 miles) of the base than they do to the southwest (less than 1 mile). The 65+ dBA noise zones also extend in an elongated rounded rectangle along the north side of the base, which corresponds to a more heavily used flight track associated with pilot training.

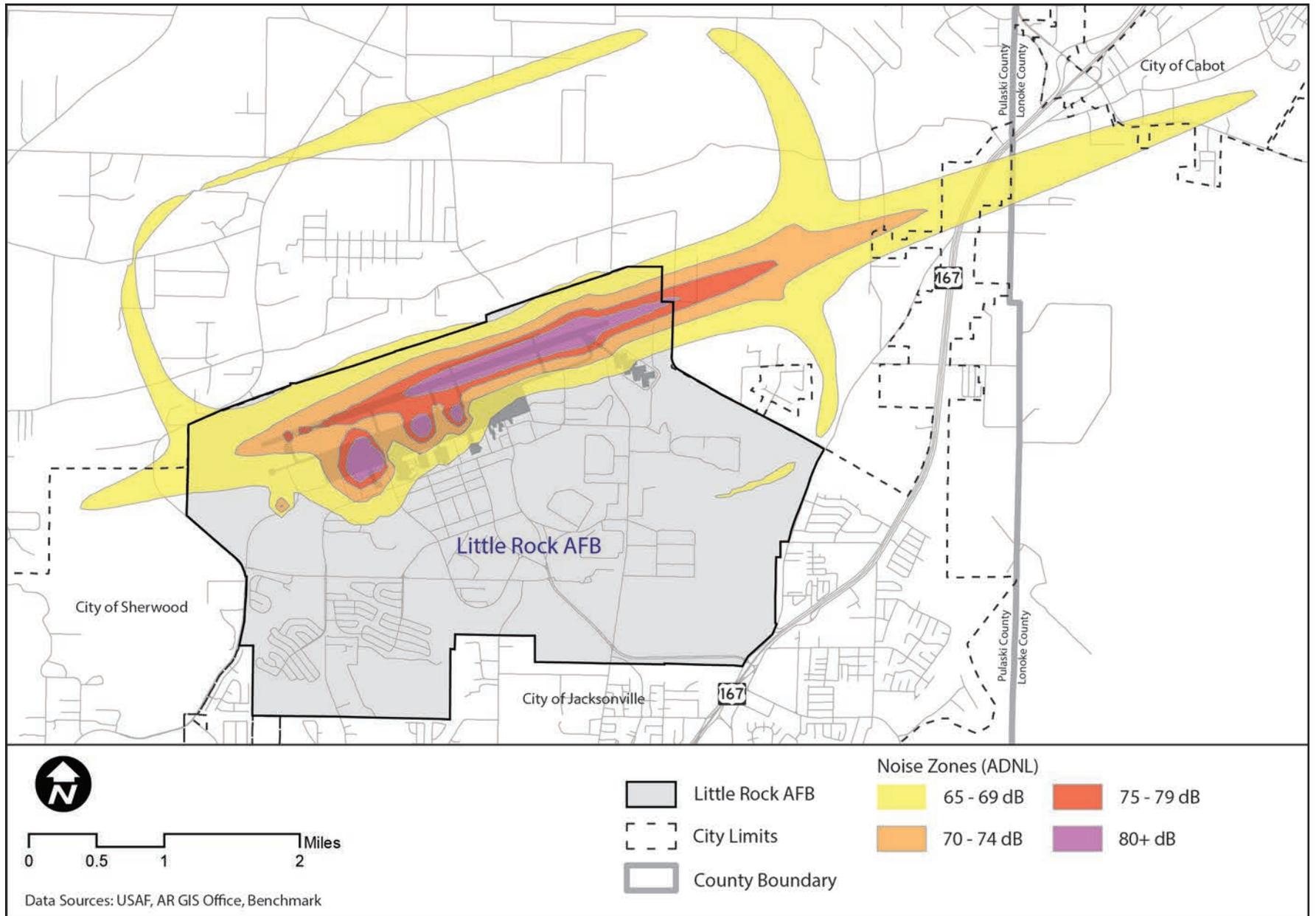
Overall, the noise zones associated with aviation operations at Little Rock AFB cover nearly 4,000 acres of land (6.25 square miles), with nearly 55% of that located outside of the installation boundary. As Map 3.10 and Table 3.4 below show, the majority of the highest noise levels are concentrated on the base, with over 99% of the 211 acres of 80+ dB noise zone and almost 80% of the approximately 350 acres of 75-79 dBA noise zone located on the installation. Although the majority of the highest noise areas are located on the base, the neighboring communities are impacted by nearly 2,150 acres of noise zone area that exceed the threshold for causing land use compatibility concerns. Although the vast majority of that is within the lowest defined noise zone (65-69 dBA), there are over 70 acres of land covered by 75+ dBA noise zones, which have significant compatibility concerns for noise sensitive land uses.

Table 3.4: Aviation Noise Zone On / Off Base Distribution

Zone	On Base (acres)	Percent	Off Base (acres)	Percent	Total (acres)
65 - 69 dBA	828.6	31.4%	1,811.1	68.6%	2,639.7
70 - 74 dBA	471	64.1%	263.4	35.9%	734.4
75 - 79 dBA	277.3	79.5%	71.6	20.5%	348.9
80+ dBA	209.7	99.2%	1.7	0.8%	211.4
Total	1,786.6	45.4%	2,147.8	54.6%	3,934.4



Map 3.10: Little Rock Air Force Base Aviation Noise Zones





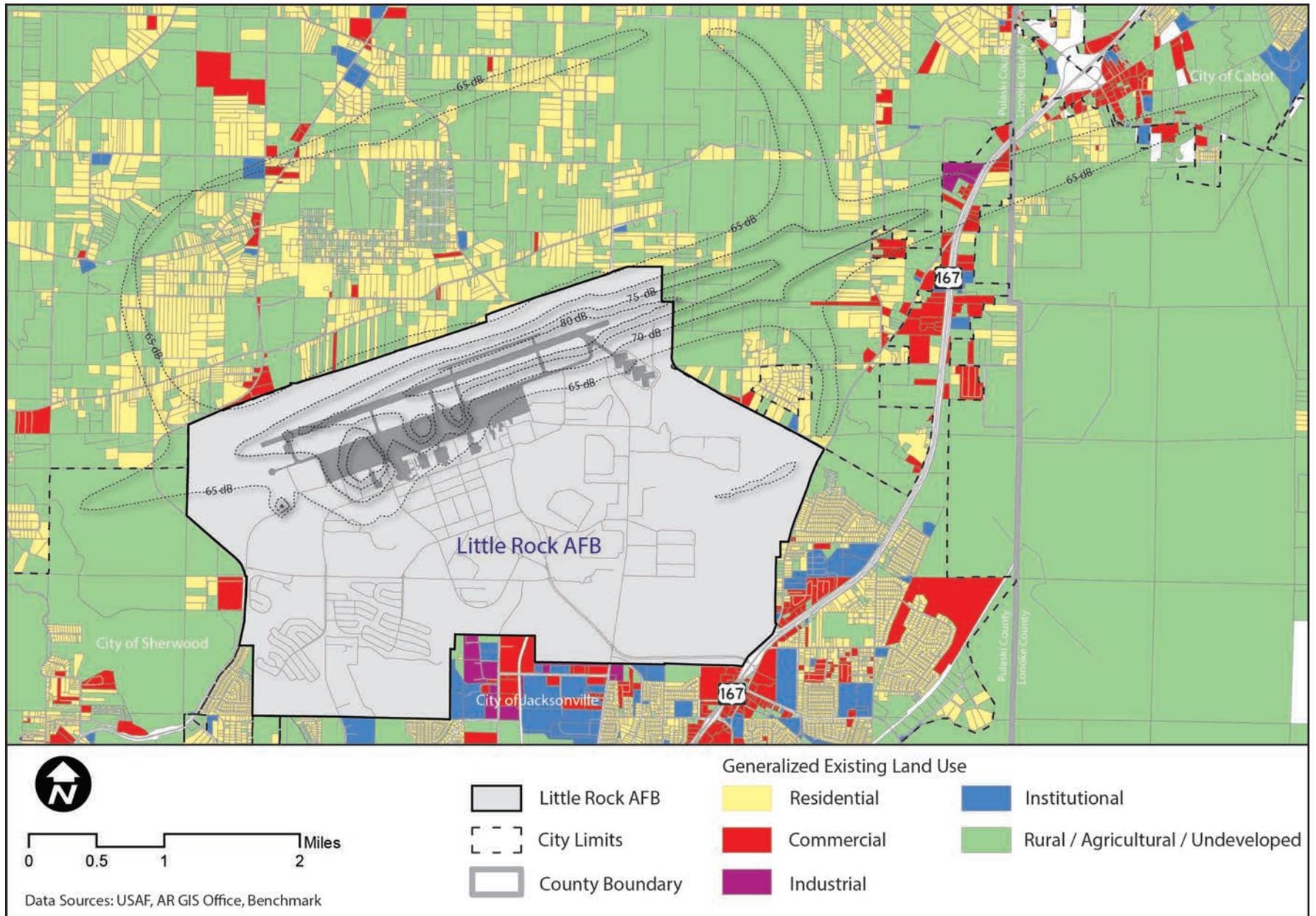
Existing Land Use Compatibility

To assess the compatibility of the aviation noise environment with the existing land use pattern in the affected area, we look at both the general use of land, as well as the density of development. The generalized land use of the area surrounding the base was coded from tax parcel data and visual observation. The resulting existing land use pattern is shown in Map 3.11 on the following page. As the map shows, the areas covered by the 65+ dBA noise zones are typically a mixture of residential and rural / agricultural undeveloped land, with the latter being the predominant type of land use in the areas aligning directly with the axis of the runway. On the north side of the base, there is a greater concentration of residential development on a mixture of both large and small lots, although the areas of more densely subdivided residential development are located in the area between the base and the northern loop of the 65 dBA noise contour (see Map 3.12). At the northeastern extent of the 65 dBA noise zone, there is commercial development along the US 167 corridor in Jacksonville and a mixture of residential and nonresidential development around the area where the noise zone crosses into the City of Cabot.

The overall level of urbanization, as demonstrated by the degree to which land has been subdivided, is demonstrated in Map 3.12. As the map shows, the highest decibel noise zones generally fall over off-base areas that contain parcels in excess of 10 acres in size. While this is a partial indication of a positive land use environment, it also shows that, in the absence of regulation to the contrary, opportunities exist for the subdivision and development of land in these areas. As noted previously, there are some areas of more densely subdivided land, with parcels smaller than 1 acre in size, in close proximity to the defined noise zones. These areas of higher concentrations of population, however, fall outside of the directly impacted areas. They do indicate that there has been demand for higher density development in areas close to the noise impacts, and so in the absence of regulation to the contrary, the market demand could lead to greater levels of urbanization in noise affected areas - provided that the utilities, infrastructure and environmental conditions necessary to support it are present.

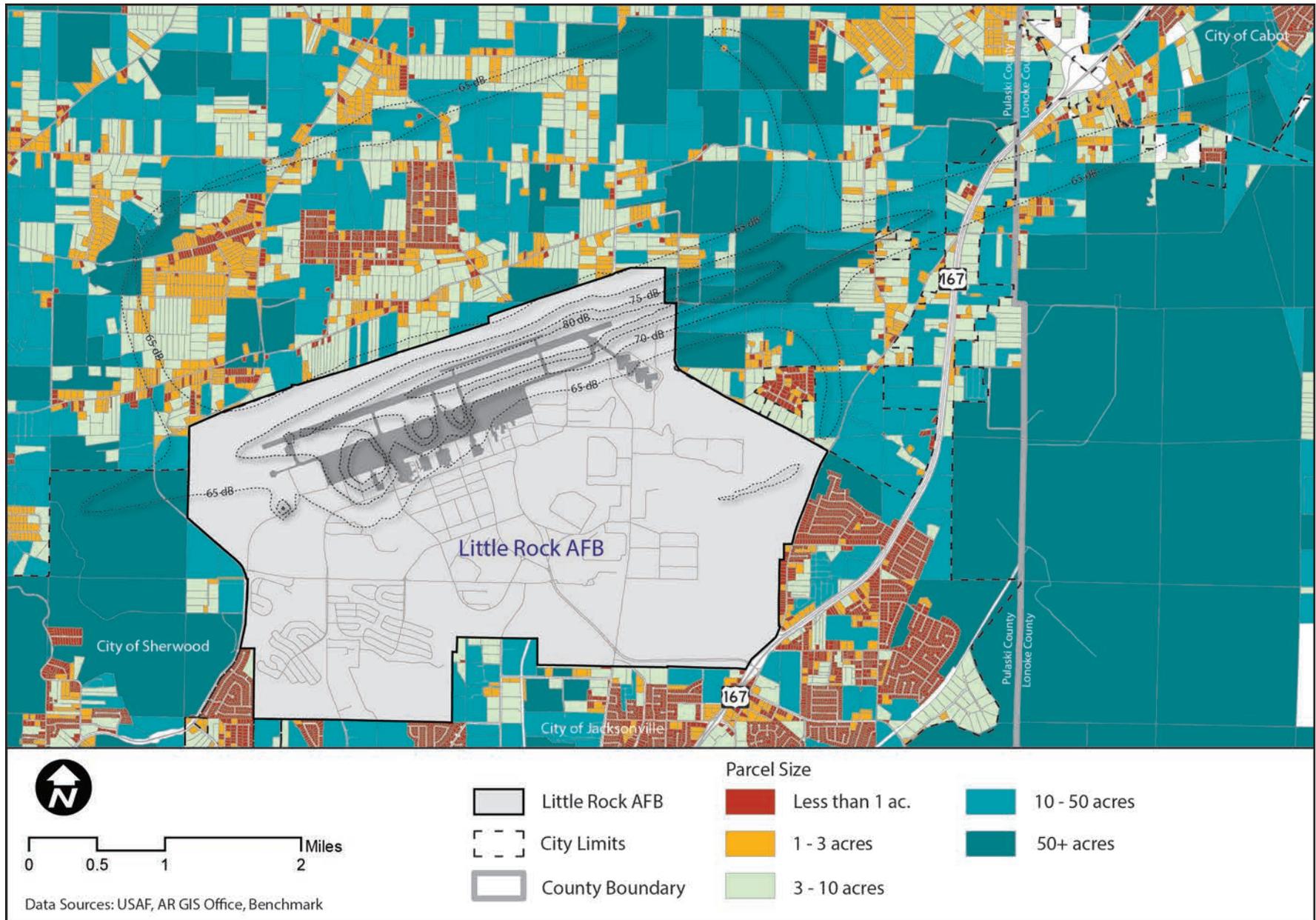


Map 3.11: Little Rock Air Force Base Aviation Noise Zones: Generalized Existing Land Use





Map 3.12: Little Rock Air Force Base Aviation Noise Zones: Land Subdivision Pattern





Based on Air Force noise compatibility guidance and the currently observed land use and parcel density conditions in and around the areas of high noise impact, the study has found a generally compatible noise environment. The overall degree of compatibility is shown in Map 3.13 on the following page. While there were number of incompatible uses identified within the noise impacted area, the overall amount of acreage found to be compatible equated to 73% of the land within the noise zones. Although 27% of the impacted acreage being identified as incompatible may seem like a substantial amount of land, fewer than 1/3 of the parcels that fall within the noise zones were determined to be incompatible. Of the 114 parcels that were determined incompatible, the vast majority were identified as residential dwellings within the 65 - 69 dBA noise zone (including dwellings on large tracts of rural / agricultural land). It should also be noted that until 2015, Air Force compatibility guidance would have determined residences within the 65-69 dBA and 70-74 dBA noise zones to be conditionally compatible, and so their observation as incompatible is a relatively recent change in assessment. A simplified version of the general noise compatibility guidance is shown in the table below.

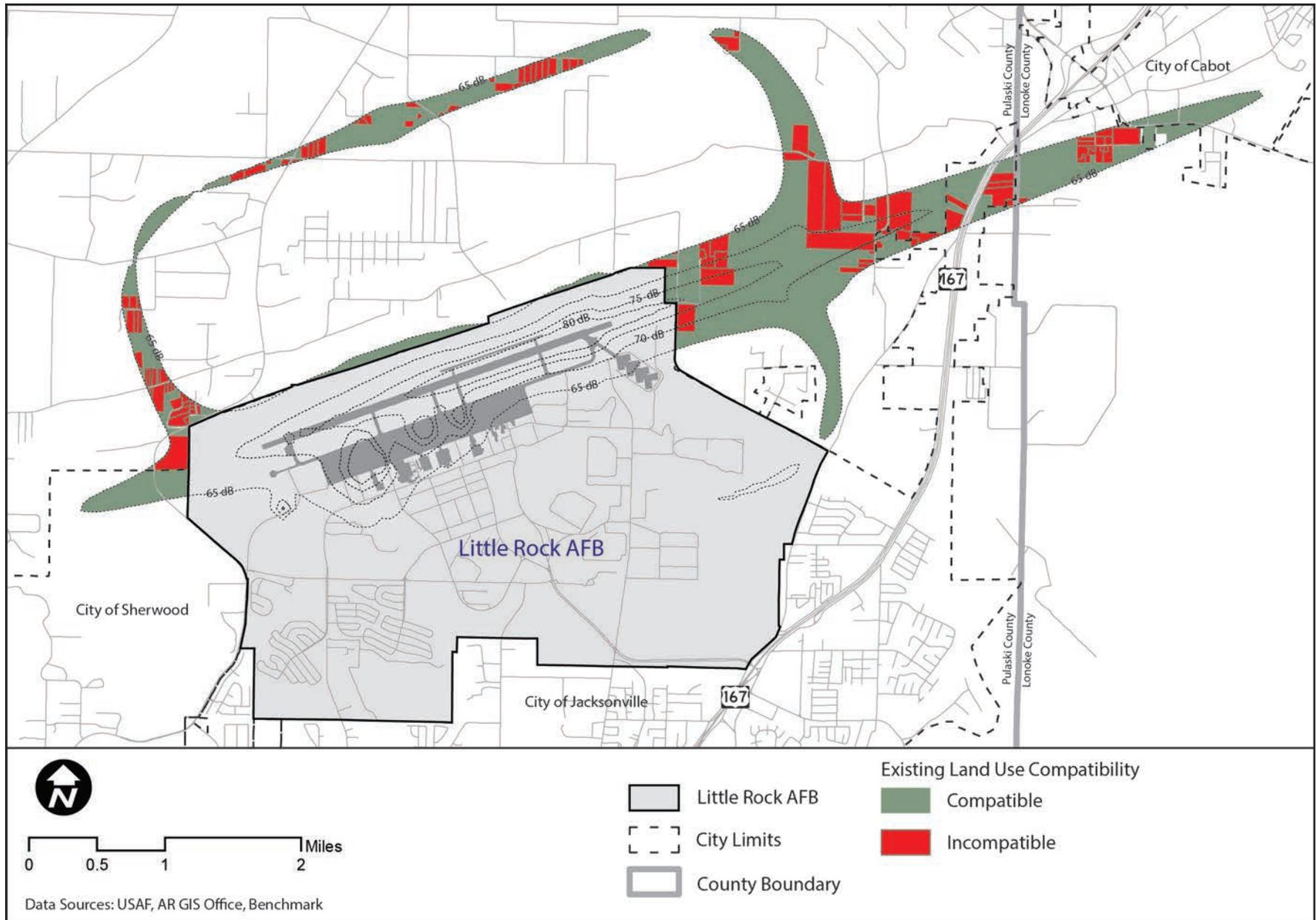
Table 3.5: Simplified Aviation Noise Land Use Compatibility Chart

LAND USE	NOISE LEVEL			
	65 to 70 DB	70 to 75 DB	75 to 80 DB	80 to 85 DB
Residential	N	N	N	N
Manufacturing	Y	Yx	Yx	Yx
Retail – General	Y	Yx	Yx	N
Restaurants	Y	Yx	Yx	N
Personal Services	Y	Yx	Yx	N
Hospitals	Yx	Yx	N	N
Government	Yx	Yx	Yx	N
Education	Yx	Yx	N	N
Public Assembly	Y	N	N	N
Parks	Y	Yx	N	N
Agriculture	Y	Y	Y	Y

Y = Recommended Yx = Recommended with Conditions N=Discouraged



Map 3.13: Little Rock Air Force Base Aviation Noise Zones: Existing Land Use Compatibility





Zoning Compatibility

The cities of Jacksonville, Sherwood, and Cabot each have zoning regulations that apply to a portion, but not all, of the areas that fall within the aviation noise contours generated by flight operations at Little Rock Air Force Base (see Map 3.14). In addition to their general zoning regulations, both Jacksonville and Sherwood have implemented an AICUZ overlay district that includes specific regulations to enhance the compatibility of land use within the affected areas. The extent of the cities' AICUZ overlay districts are defined with horizontal orange stripes in Map 3.14. Combined, the municipal compatible use regulations cover around 835 of the nearly 2,150 acres of land (or just under 40%) impacted by the noise contours that fall outside of the installation boundary at Little Rock AFB.

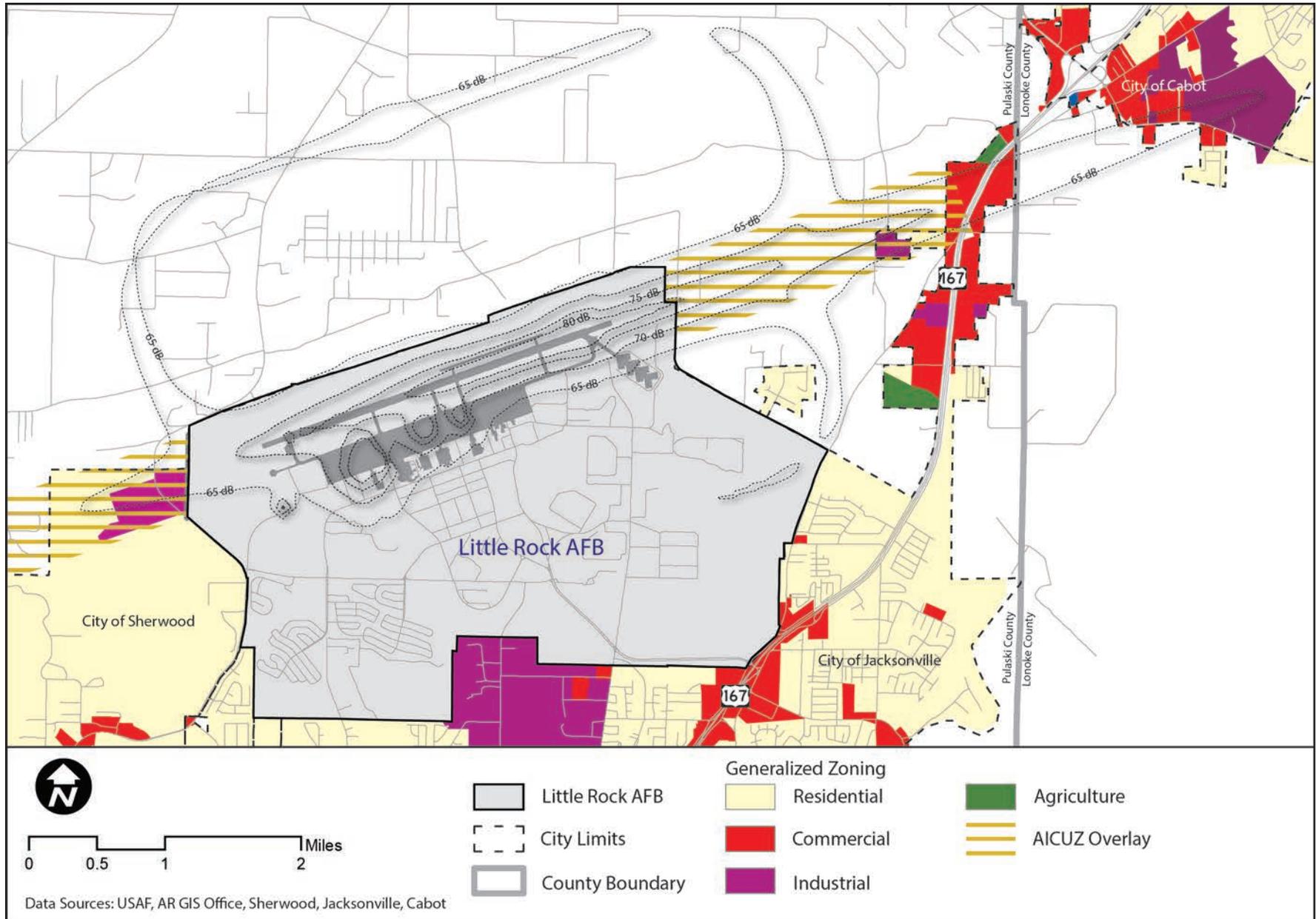
While the compatible use regulations afford a degree of enhanced protection for the affected areas, the general zoning district regulations (residential, commercial, industrial, etc.) applied by each of the three cities, where applicable, also influence the degree of compatibility for both current and potential land uses within the noise contours, including zoned areas that are outside of an AICUZ overlay. The areas that fall outside of the corporate limits and extraterritorial areas where zoning has been applied are within the jurisdiction of Pulaski County and Lonoke County, and are not currently subject to zoning regulations.

Although similar in regulatory composition, the two municipal AICUZ overlay districts differ in one significant way from a compatible use standpoint. Sherwood's ordinance prohibits the establishment of residential dwellings within areas subject to 65+ dBA noise levels, while Jacksonville's ordinance permits them within areas subject to noise levels between 65 and 74 dBA. This, in turn, affects the overall degree of compatible use protection within the zoned areas since Jacksonville's jurisdiction covers a larger share of the portion of the noise contours that are subject to compatible use regulations.

The result of the assessment of compatible use protection provided by zoning regulation, including both general zoning district standards and the AICUZ overlays, is shown in Map 3.15. The assessment compared the permitted uses, as well as other factors, applied by each jurisdiction with the Air Force compatible use guidance in a similar manner to the existing land use compatibility

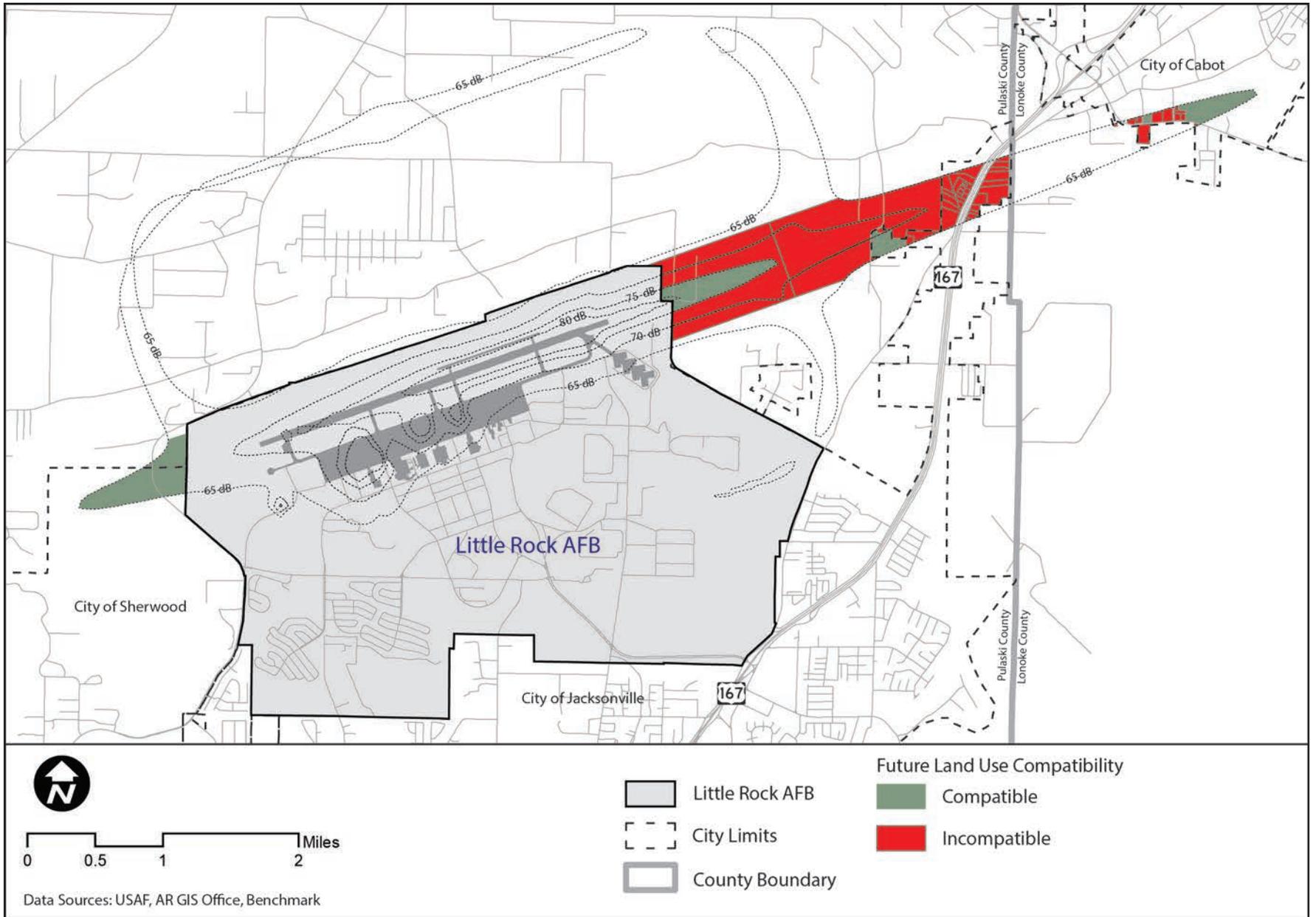


Map 3.14: Little Rock Air Force Base Aviation Noise Zones: Generalized Zoning





Map 3.15: Little Rock Air Force Base Aviation Noise Zones: Zoning Compatibility





assessment. Overall, the assessment found that, combined, approximately 280 acres (or 27%) of the 1,030 acres of the off-base land within the noise contours that is currently subject to municipal zoning regulation was compatible with Air Force land use compatibility guidance. While all of the high noise area currently zoned by the City of Sherwood was determined to have compatible use protection through zoning regulations and 66% of the area within Cabot is compatible, based on the city's general zoning regulations, only 14% of the area covered by Jacksonville's zoning regulations have sufficient compatible use protection, despite the application of the city's AICUZ overlay. As noted previously, this is due primarily to the permitting of residential dwellings in areas that fall within the 65 - 74 dBA noise contour. The remainder of the area impacted by the noise contours that is outside of the current zoning jurisdiction of the three cities is not assessed on this metric since zoning regulations have not been applied.

Future Land Use Compatibility

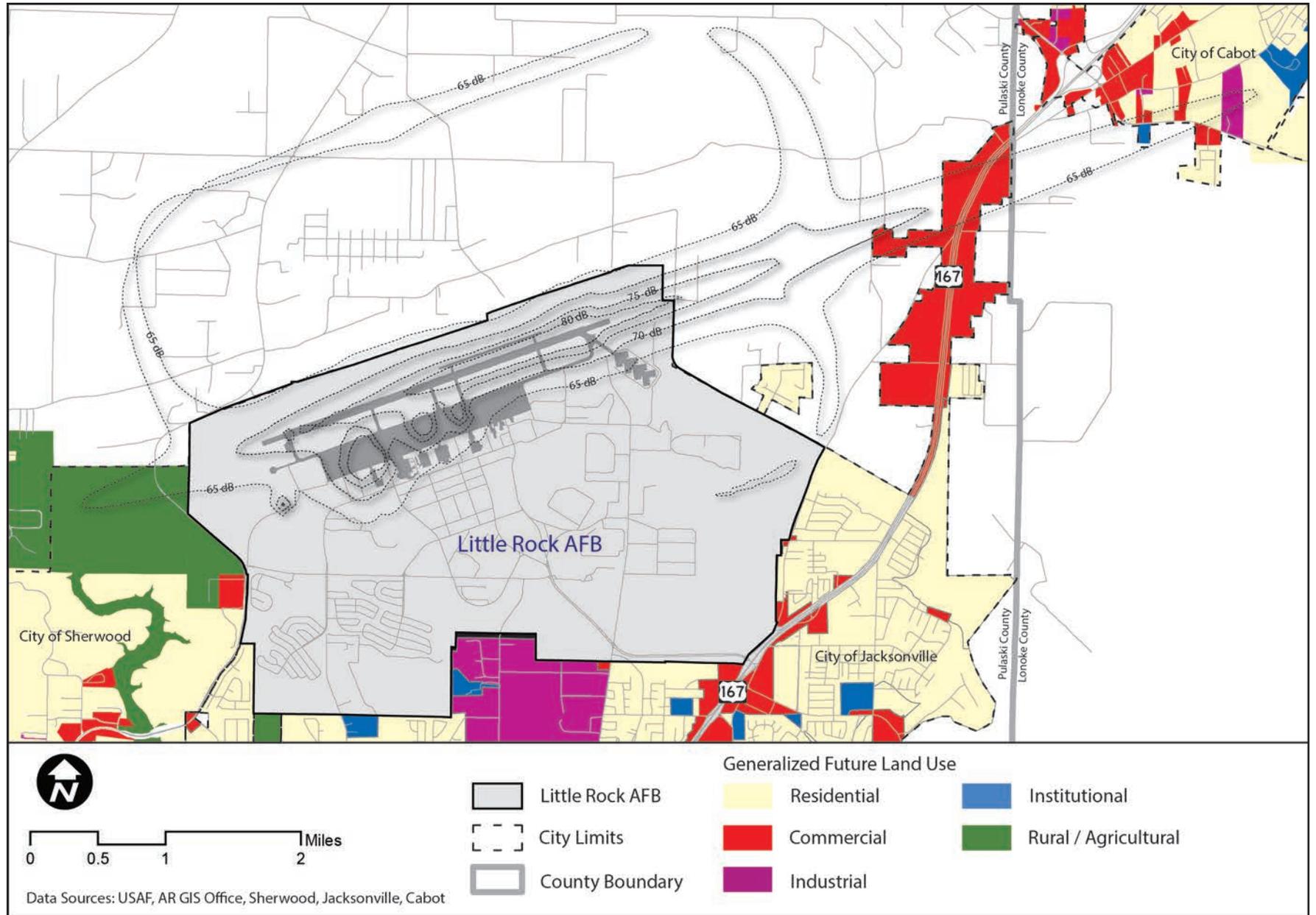
The cities of Jacksonville, Sherwood, and Cabot each have adopted future land use plans that cover portions, but not all, of the area impacted by aviation noise zones associated with Little Rock Air Force Base. Combined, just over 300 acres (or 14%) of the 2,150 acres of land impacted by aviation noise are covered by an adopted land use plan. The designated future land use classifications, are shown on the following page in Map 3.16. Sherwood's future land use map assigns rural / agricultural land use classifications to the portion of the noise contours covered by its plan, while Jacksonville's plan has commercial future land use designated along the US 167 corridor where the noise contours intersect with the extent of its adopted plan, and the City of Cabot's plan includes a mixture of residential, institutional, commercial and industrial future land use classifications where the noise contours fall within the boundaries of its future land use map.

Like the existing land use and zoning assessments, the future land use classifications were compared to the Air Force compatible use guidance to determine the degree of compatibility that the adopted future land use plans provided for the areas that fall within the aviation noise contours. The result of the assessment, shown in Map 3.17, found that overall, approximately 70% of the land included in the cities' future land use maps within the noise contours had been designated with a future land use type that was compatible with the Air Force Compatibility guidance. This included 100% of the land designated by Jacksonville, 55% of the land area within Sherwood's



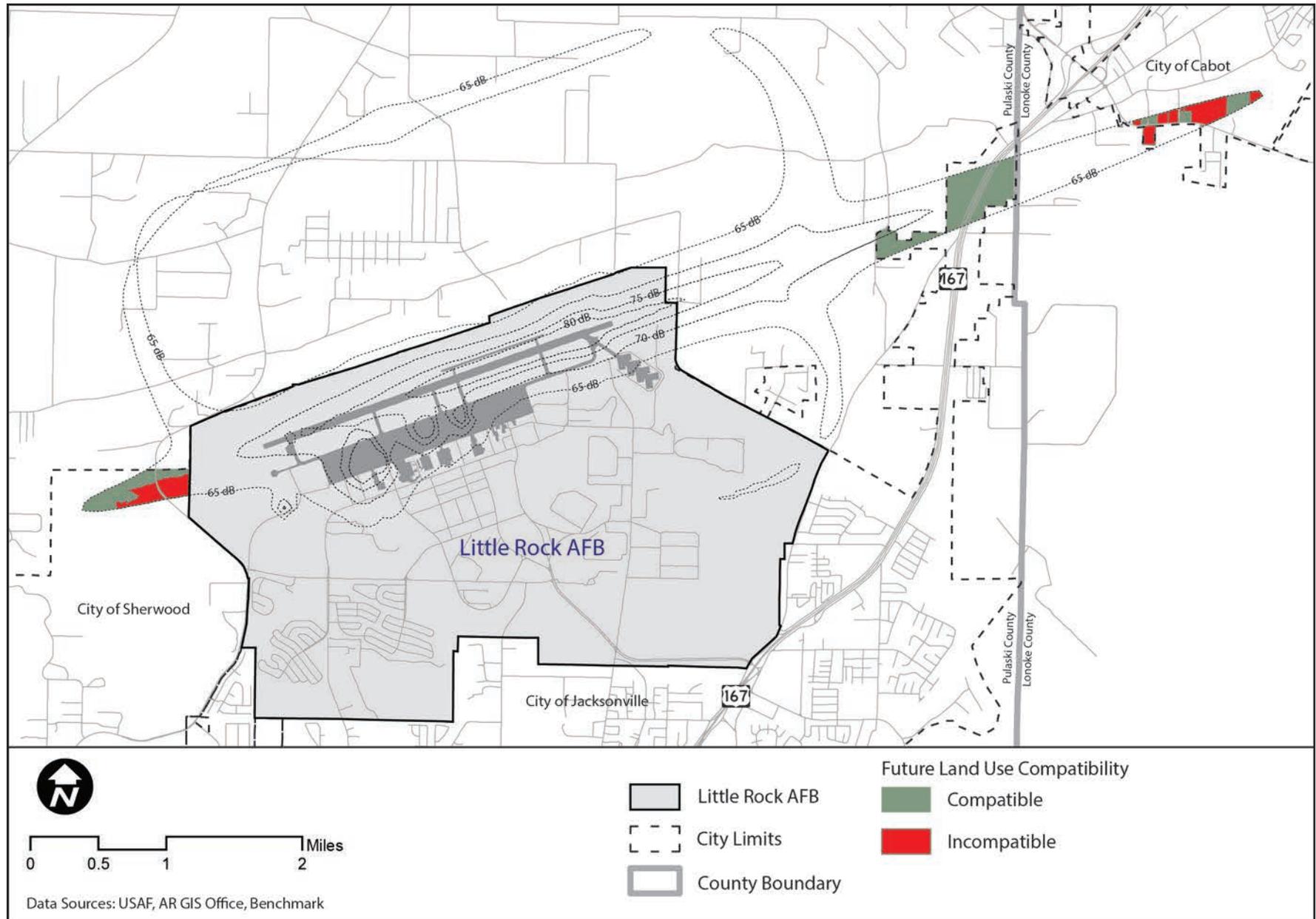
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Map 3.16: Little Rock Air Force Base Aviation Noise Zones: Generalized Future Land Use





Map 3.17: Little Rock Air Force Base Aviation Noise Zones: Future Land Use Compatibility





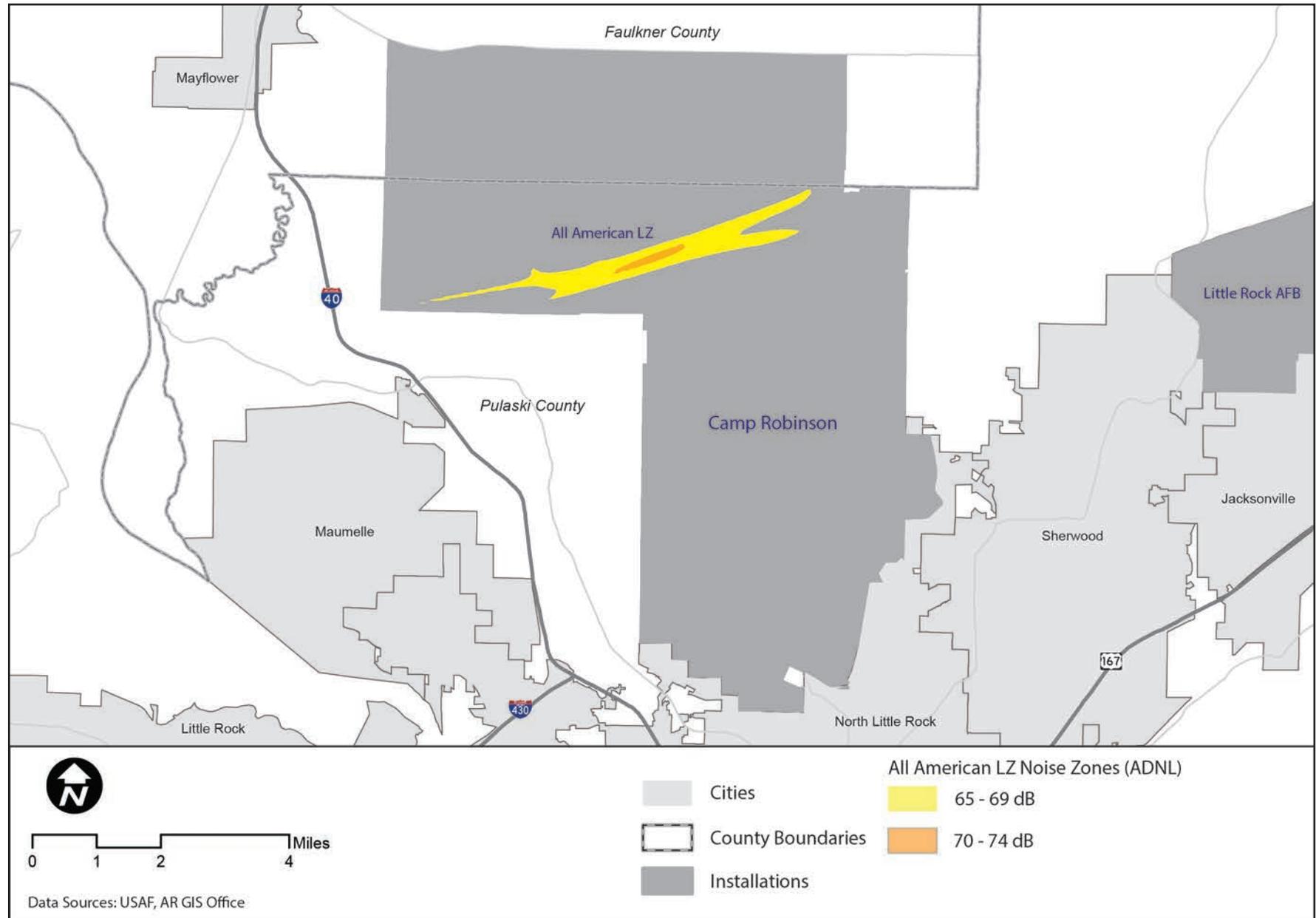
future land use plan and 29% of the land within Cabot's future land use plan. Like the zoning assessment, the absence of future land use guidance for the majority of the area that falls within the noise contours means that an assessment of the entirety of the impacted area is not possible. However, it can be assumed that the absence of planning guidance could lead to outcomes throughout the remainder of the area that are incompatible with Air Force compatible use guidance, particularly where there are not other constraining factors, such as zoning regulations, in place to guide land use and development decisions.

All American Landing Zone Noise Environment

In addition to the noise contours that have been established for aviation operations at Little Rock Air Force Base, similar noise zones have been identified that are associated with flight training operations that take place at the All American Landing Zone. This sub-installation is used for flight operations by pilots training at Little Rock AFB, but it is located on Camp Robinson, an Arkansas Army National Guard installation located west of the base in Pulaski and Faulkner counties. These noise zones, shown in Map 3.18 on the following page, include 65 - 69 dBA and 70 - 74 dBA noise contours. As the map indicates, the area covered by these noise contours does not extend off of Camp Robinson, and so there is not currently a compatible use concern related to noise generated by operations at All American Landing Zone.



Map 3.18: All American Landing Zone (Camp Robinson): Aviation Noise Zones





Obstructions to Aerial Navigation

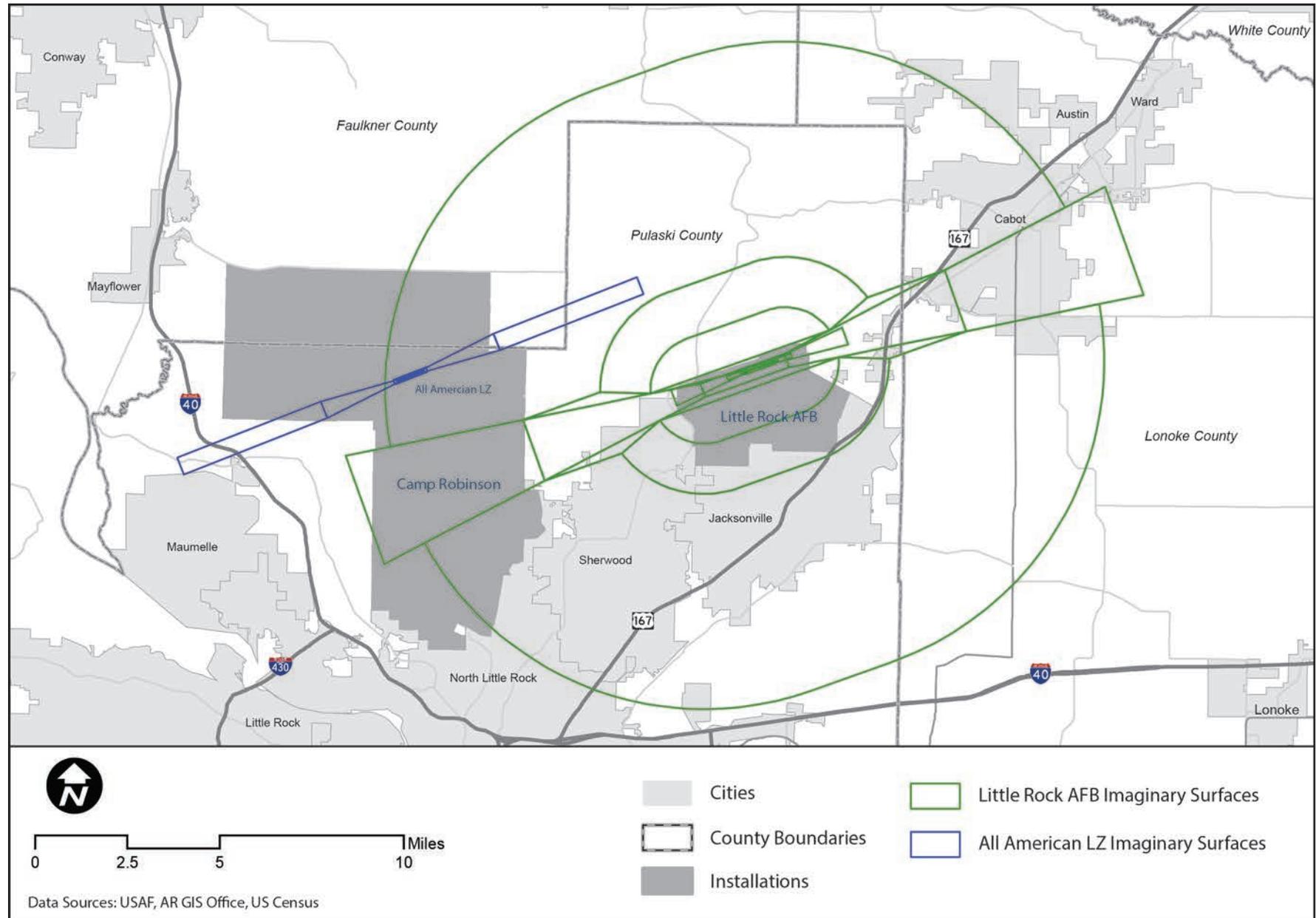
The ability of pilots training at Little Rock Air Force Base to navigate in an environment free of vertical obstructions that can pose a safety hazard is a critical compatibility factor that affects both the Air Force and civilian communities within low level flight area. Typical obstructions include tall structures, such as telecommunications towers, water towers, wind turbines, and similar man made features, which, if not properly reviewed before siting, can pose a danger to low flying aircraft. The FAA has primary responsibility for coordinating the siting of such structures with aviation facilities, including those operated by the military. This is accomplished through the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) and the Department of Defense Siting Clearinghouse.

While the OE/AAA has review authority for potential obstructions, as a Federal agency, it does not have land use regulatory authority, which is a power reserved by the states and generally delegated to local governments. The reviews performed by OE/AAA are technical and advisory in nature, with a focus on determining whether a tall structure poses a hazard to safe aerial navigation. If a review determines that a hazard exists, that is communicated to the applicant and the affected aviation facility, but the final approval or denial of such a structure is left for a final decision by the applicable state or local agency.

The areas of greatest concern for potential vertical obstructions fall within areas known as "imaginary surfaces" that are associated with runways. The extent of the imaginary surfaces associated with Little Rock Air Force Base and All American Landing Zone are shown in Map 3.19. The surfaces associated with Little Rock Air Force Base are established in 14 CFR Part 77, Subpart C. The elevation of the surfaces are tied to the reference elevation of the runway at the base, and thus changes in topography can affect the height at which a structure can pose a hazard. Generally speaking, the surfaces closest to the runway have the lowest elevation, and extend upward to an altitude of 500 feet above the runway surface and outward to a distance of just under 10 miles at their greatest extent. As a non-standard runway, the All American Landing Zone has imaginary surfaces that are similar to those at LRAFB, but are established in the DOD Unified Facilities Criteria Airport and Heliport Planning and Design manual (UFC 3-260-01). Since this particular type of imaginary surface is not established in the CFR, it is important for the base to ensure that its location and extent are known to the FAA to ensure coordination, notice and review of potential obstructions.



Map 3.19: Airfield Imaginary Surfaces: Little Rock Air Force Base and All American Landing Zone





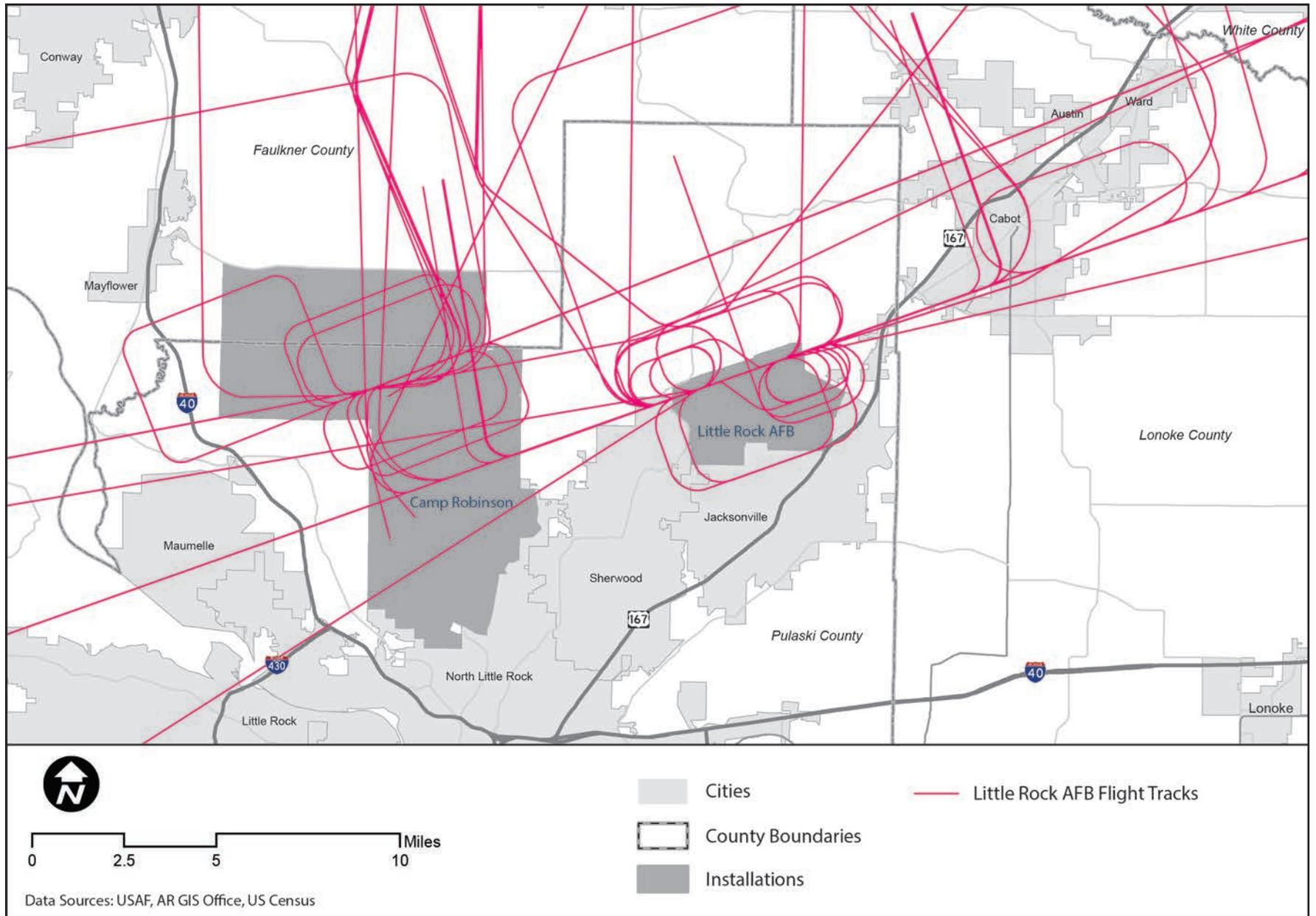
Map 3.20 on the following page shows the location and density of the flight tracks that are utilized by pilots training at Little Rock Air Force Base to approach and depart from the base and the All American Landing Zone. As the map shows, the flight tracks, have significant correlation to the imaginary surfaces associated with each of the facilities. By protecting airspace within the imaginary surfaces from encroachment by vertical obstructions to navigation, the communities can help to preserve the viability of the base's aviation mission.

As part of the compatibility analysis, the location of known tall structures was analyzed in the context of the imaginary surfaces for both Little Rock Air Force Base and All American Landing Zone. An obstruction study prepared by the base was also reviewed to identify any known off-base structures that penetrated the imaginary surfaces. While not exhaustive, the analysis observed only two instances where tall structures exceeded the elevation at which they might interfere with safe aerial navigation. The first, a cellular tower located off of Highway 107 west of the base that penetrates the inner horizontal surface, was previously identified by the base in its obstruction study. The second is a telecommunications tower located on a ridge along Highway 107 north of the base near the Pulaski / Faulkner County line that likely penetrates the outer horizontal surface. The locations of known telecommunications towers and the two identified obstructions are shown in Map 3.21.

In taking a comprehensive look at potential obstructions within the overall study area, a review of FAA wind turbine mapping data was completed as part of the Compatible Use Study. At the time of the review, no wind farms were identified in the study area. Wind power planning data was also reviewed as part of the study, and no defined areas of high wind energy generation potential were identified in the study area either. Despite the low likelihood of wind energy development in the study area at the present time, advances in wind turbine technology could make the immediate region more viable for the establishment of wind power projects in areas that could cause compatibility concern in the study area, and therefore ongoing vigilance is warranted on the part of the study partners.

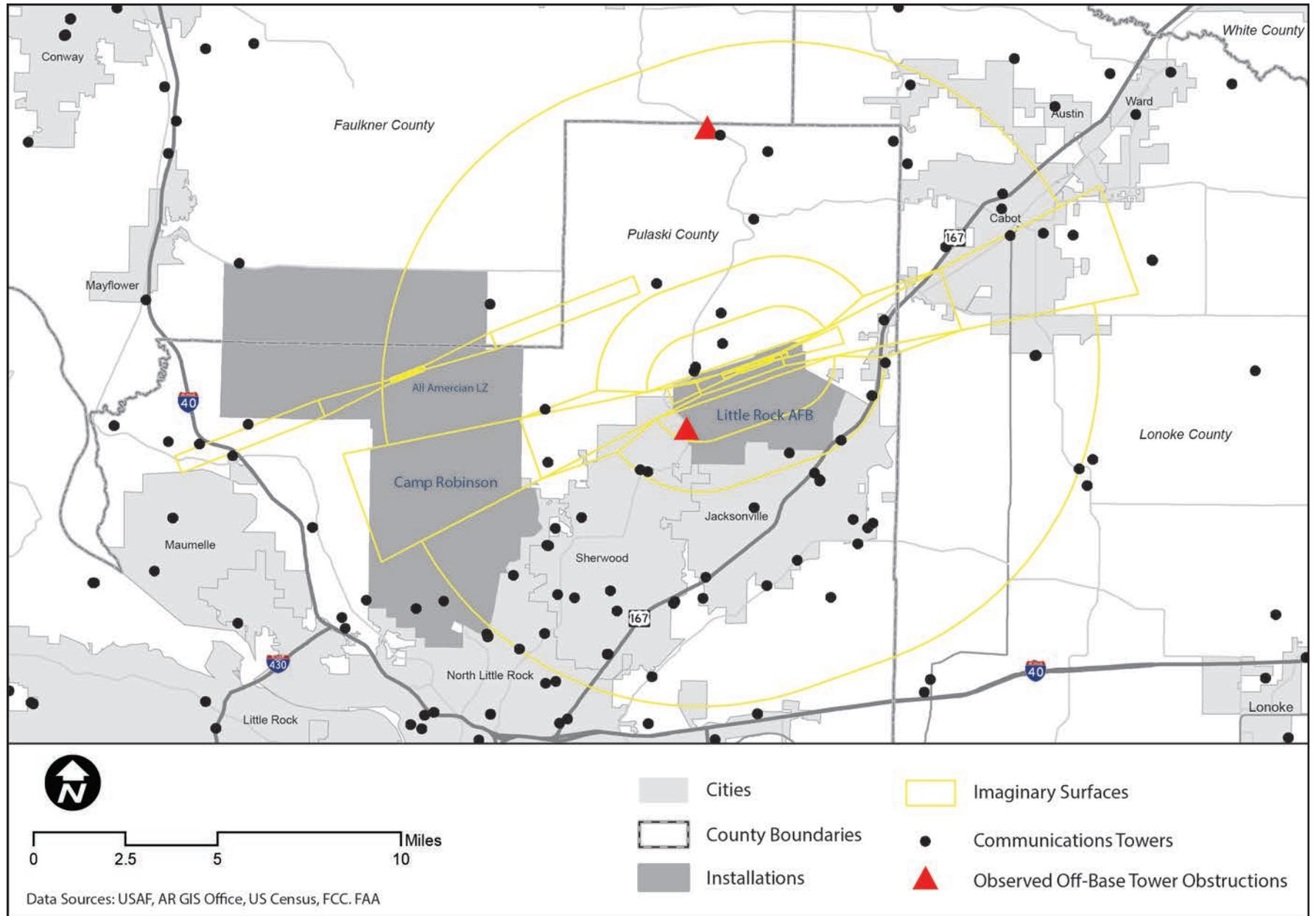


Map 3.20: Military Aviation Flight Tracks: Little Rock Air Force Base and All American Landing Zone





Map 3.21: Telecommunication Tower Locations and Airfield Imaginary Surfaces





Blackjack Dropzone

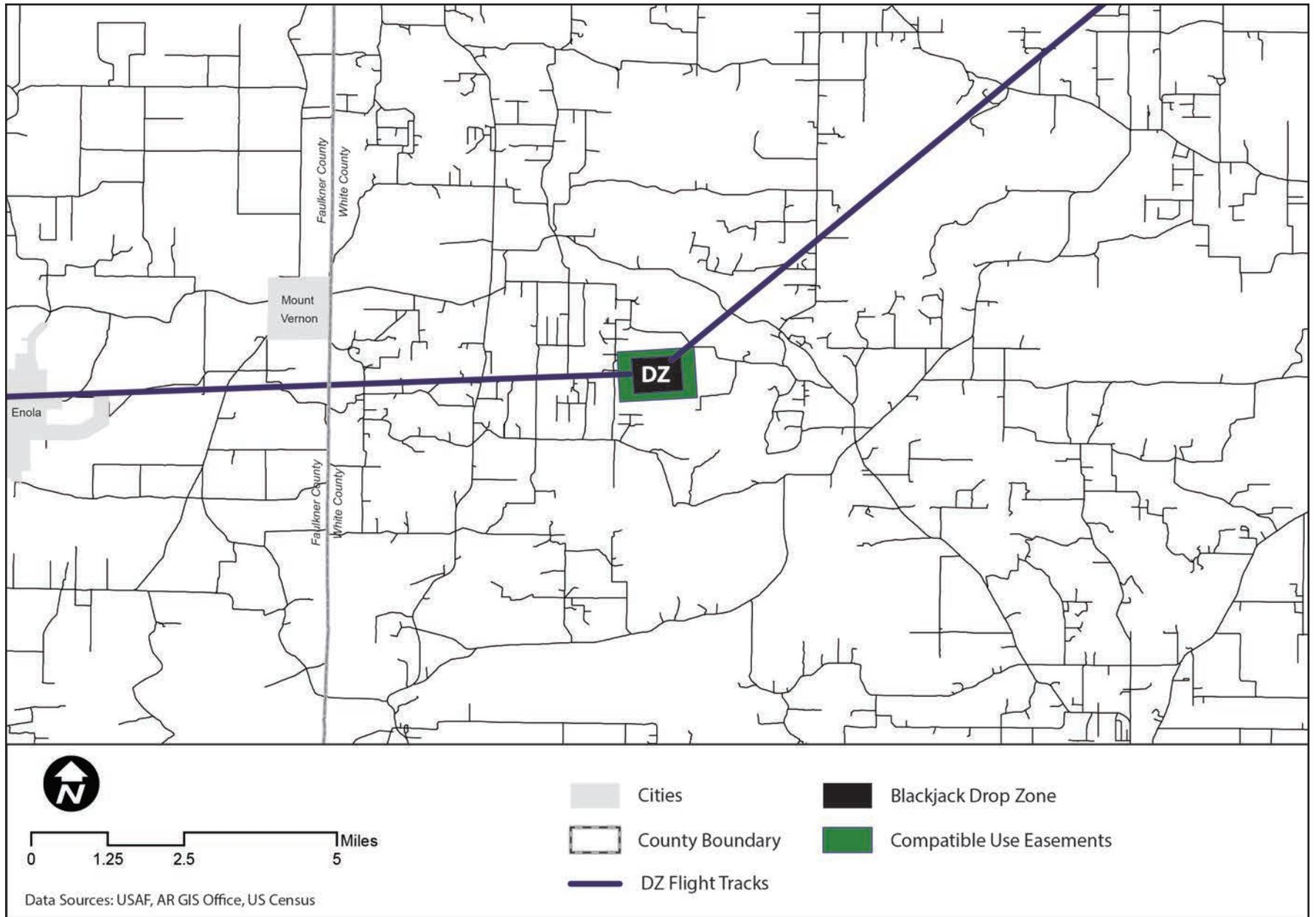
Blackjack Dropzone is a geographically separate training facility owned by Little Rock Air Force Base located east of Highway 5 in western White County. The dropzone consists of approximately 295 acres of land, and is surrounded by a compatible use easement consisting of an additional 100 acres that the Air Force purchased to prevent incompatible land uses from encroaching on the dropzone. The dropzone, its compatible use buffer and the primary flight tracks for airdrops are shown on Map 3.22 on the following page. Blackjack's rural location affords a degree of inherent protection from encroachment as well, but White County does not currently regulate land use through zoning, nor does it have subdivision regulations or building permitting requirements, which means that any potential encroachments around the dropzone would most likely be discovered after the fact.

As its name implies, Blackjack Dropzone is the base's primary facility for airdrop training, which is a critical component of its overall pilot and aircrew training mission. According to the 2011 AICUZ study, airdrops are generally performed with aircraft flying at altitudes between 600 and 1,200 feet above ground level, with some airdrops occurring as low as 500 feet above ground level. With flights occurring at this level, the primary compatibility concerns would tend to be tall structures that could interfere with safe navigation and dense development patterns that could expose residents and noise sensitive land uses to the hazards from missed airdrops and the potential for annoyance (and thus complaints) due to the noise from low flying aircraft.

As noted, Blackjack Dropzone is located in a fairly rural portion of western White County. The existing land use pattern, shown in Map 3.23, reveals a landscape primarily comprised of tracts of agricultural and undeveloped land, including those parcels that immediately border the dropzone that comprise the majority of the compatible use buffer area. Despite the overall rural nature of this part of White County, there are several pockets of residential development located in fairly close proximity to the dropzone, with small subdivisions identified on the map to the northwest, west and southwest within 1 mile or less of the dropzone property and its compatible use buffer. These developed areas are further identified by the relatively small size of the lots that have been subdivided, as shown in Map 3.24, when compared to the much larger tracts of rural and agricultural land that surround them.

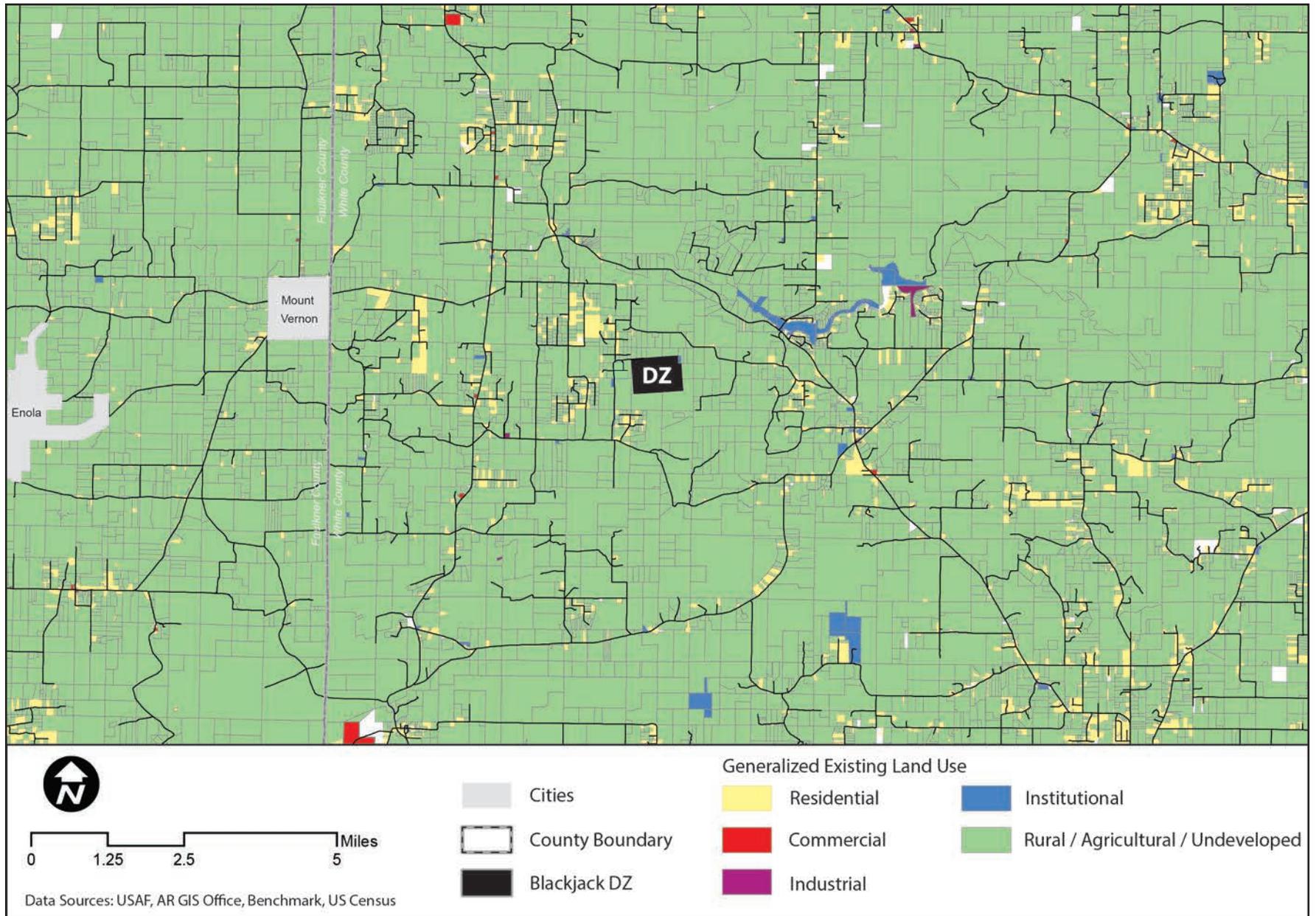


Map 3.22: Blackjack Dropzone: Overview and Dropzone Run-in Flight Tracks



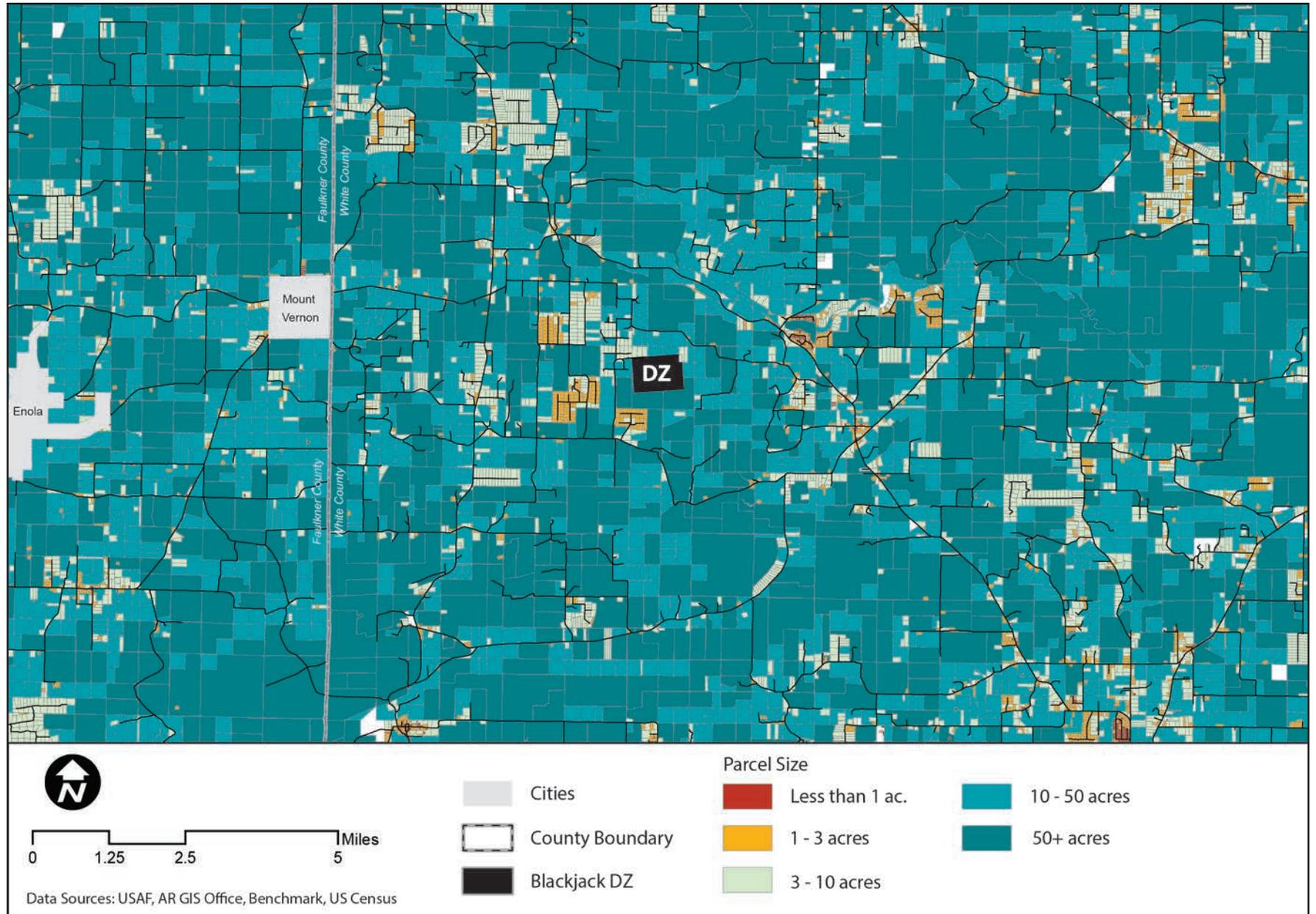


Map 3.23: Blackjack Dropzone: Generalized Existing Land Use





Map 3.24: Blackjack Dropzone: Land Subdivision Pattern





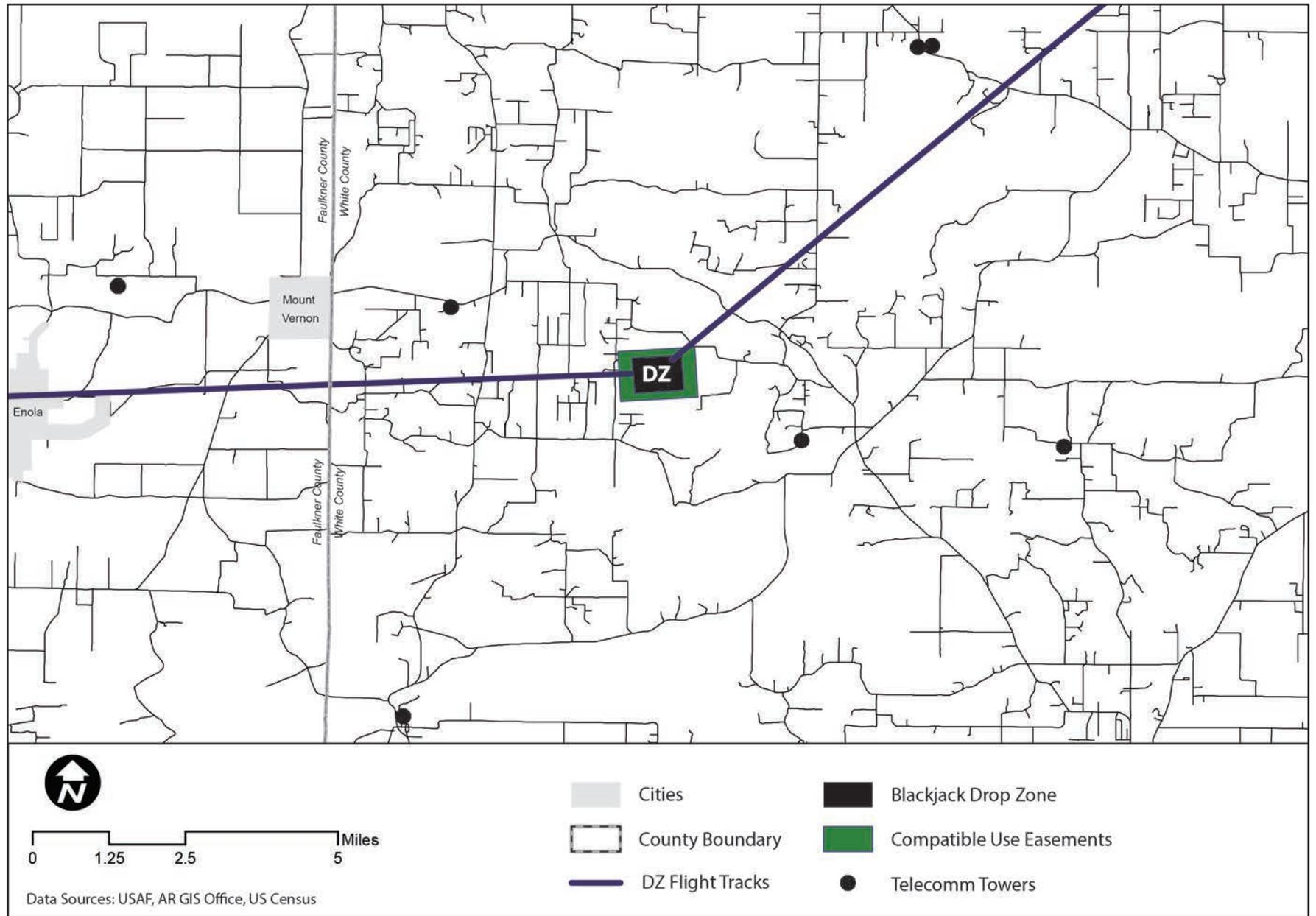
While there is no standard in this instance for determining whether the area around the dropzone is strictly compatible with the training mission and its potential impacts, the further subdivision of land into small parcels and development of the area with additional residential uses could pose future compatibility issues if a larger population is exposed to the potential for annoyance from low level aircraft overflight and hazards associated with airdrop training.

With regard to the issue of potential obstructions to safe navigation, the study reviewed the location of known telecommunications towers in the area surrounding the dropzone (see Map 3.23). As the map shows, despite the rural location of the dropzone, the immediate area does contain a number of existing telecommunications towers, and though none are known to be hazards, several are located within 2-3 miles, or less, from the primary flight tracks. The presence of this number of towers in such a rural area indicates a likely future demand for additional wireless telecom infrastructure, which, in turn, could lead to a higher potential for an obstruction to be created.

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Map 3.25: Blackjack Dropzone: Telecommunication Tower Locations and Dropzone Run-in Flight Tracks





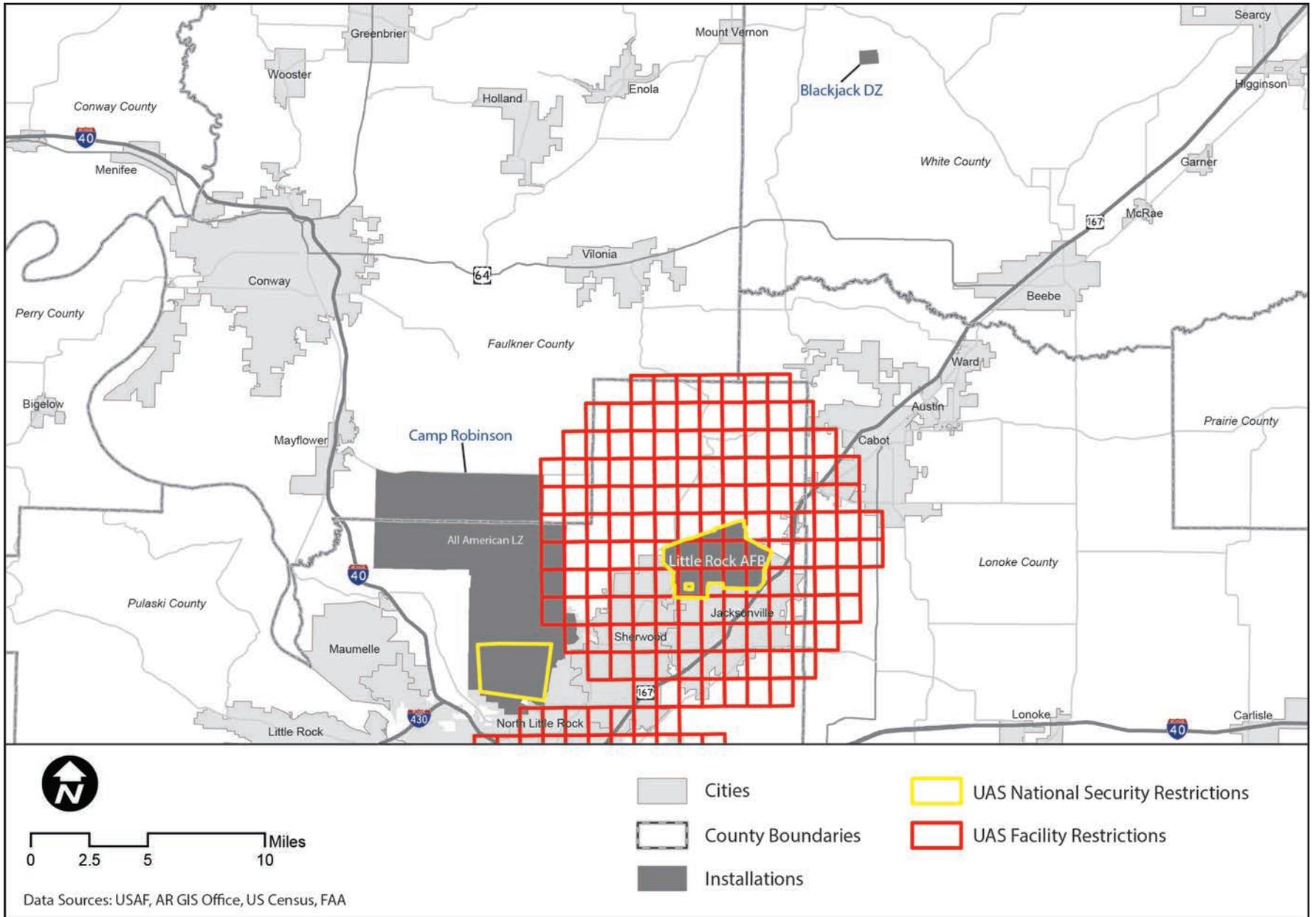
Civilian Unmanned Aerial Systems Operations

The rapid growth in both the commercial and recreational use of unmanned aerial systems (UAS) or “drones” has necessitated a heightened awareness of their potential to interfere with military aviation, particularly in the vicinity of military airports and low level training areas. While the FAA regulates the operation of UAS by civilians, and has imposed altitude restrictions and defined certain areas as off limits for their use, a review of the current UAS restrictions in the study are revealed the potential for conflict, and thus hazard, in areas that are critical for military aviation, but are not yet subject to FAA regulation. As Map 3.26 on the following page shows, the current extent of federal UAS flight restrictions only covers the base proper and its Class C airspace, in addition to the cantonment area at Camp Robinson and KLIT airport’s Class D airspace. Absent from explicit FAA restriction or regulation at the present time are the airspace above All American Landing Zone on Camp Robinson and Blackjack Dropzone. Without the inclusion of these facilities in the FAA regulations, hobbyists and commercial operators could inadvertently fly into areas that could disrupt training and cause hazards to low flying military aircraft.



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Map 3.26: Unmanned Aerial Systems Flight Restrictions





Explosives Safety Zones

The Department of Defense Explosives Safety Board promulgates regulations (Defense Explosive Safety Regulation) for the safe handling and storage of explosive materials by DOD agencies and licenses locations on military bases that house explosives. Little Rock Air Force Base has a number of licensed explosives storage areas, and each area has a minimum required separation distance (quantity-distance arcs) from other explosives storage sites and unrelated uses, such as inhabited buildings. The required distances for separation of these sites on the base from inhabited buildings is shown in Map 3.27 on the following page.

In the majority of circumstances, these licensed storage sites and their explosives safety quantity-distance are situated in such a manner where the entire safety zone is contained within the boundary of the installation. A careful review of the map reveals that the explosives safety zone associated with a pad in the alert area ("Christmas tree") extends slightly off of the installation, across an intervening road (West Maddox Rd.) and onto private property. Since the safety zone encroached onto private property, the license for that pad was required to have an accompanying compatible use easement, much like what surrounds Blackjack Dropzone. In this case, the Air Force purchased the perpetual development rights on the 4 acres of affected property, and now makes regular inspections to ensure that it remains compatible with the potential explosive safety hazard.



Map 3.27: Little Rock Air Force Base: Explosives Safety Quantity-Distance Arcs

