Chapter Eight

Land Use Compatibility Plan

8.0 Introduction

Effective land use planning at an airport encourages land uses considered "compatible" with aeronautical activities to be located around an airport and strives to guide "incompatible" land uses away from an airport. Land use planning aims to minimize noise exposure and safety hazards while safeguarding the airport's operations. There are two types of land use planning: on-airport and off-airport. It is the goal of both types of land use planning to promote land use compatibility between the land surrounding an airport and the aeronautical activities of an airport.

Commercial service airports have a vital role in the economic development of the community they serve, which is why their continuous development and growth are necessary to ensure the efficient economic growth of the local community. A proper Land Use Compatibility Plan will be critical for the continuous development and growth of SGF. It will allow the Airport to minimize the development of incompatible land uses, which may interrupt its ability to serve the community in the future.

This chapter of the Master Plan will review prior land use planning initiatives, documents, and zoning control mechanisms and evaluate whether existing land use controls currently provide sufficient compatible land use protection for SGF. The goals of this chapter are as follows:

- Provide an overview of a land use compatibility plan.
- Review existing land use initiatives and regulatory controls.
- Identify surrounding municipal limits.
- Identify the Airport Influence Area (AIA).
- Conduct high-level land use compatibility assessment.
- Develop Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis.
- Provide land use compatibility planning recommendations.

8.1 Overview of a Land Use Compatibility Plan

Airport sponsors should strive to promote compatible land uses around airports while encouraging incompatible land uses to be located away from airports. Identifying the types of land uses around an airport helps address potential airport compatibility impacts related to noise, safety, airspace protection, and aircraft overflight.

ECONOMIC CONTRIBUTION

Commercial service airports such as SGF provide a vital link to regional, state, and national transportation systems. This transportation link contributes to local and regional economies that, in turn, promote and sustain the airport. SGF provides connections through commercial service and supports

the regional and state economy as a cargo center with a large Foreign Trade Zone (FTZ) that regularly sees several large cargo aircraft operations daily. SGF also has a thriving General Aviation (GA) facility that supports and services many Springfield-headquartered businesses and local aviators. The National Guard also calls the airfield home as it houses one of the only Aviation Classification Repair Activity Depots (AVCRAD) to service military helicopters that, in turn, supply many jobs to the surrounding community.

As seen in the inventory chapter, Springfield and Greene County are on a growth trend in population and economic sectors. As the number of people and jobs continues to climb, so does the demand for air travel and land for residential development. While the increased demand for the airport is desired, the need for residential development is also growing- which is not expected near the airfield.

INCOMPATIBLE LAND USES

Incompatible land uses around airports can jeopardize the safety and efficiency of flying activities and the quality of life of the community's residents. Incompatible land uses can include wildlife attractants such as wetlands and landfills, cell towers and antennae transmitting signals that interfere with radio transmissions and navigational aids, lights that may be disorienting to a pilot, and tall structures including buildings and construction cranes that may impact an airport's airspace or instrument approach.

Common incompatible airport land uses comprise:

- Residential development
- Schools
- Community centers and libraries
- Hospitals
- Buildings used for religious services
- Tall structures
- Smoke and electrical signal generators
- Landfills and other bird/wildlife attractants

Residential development, particularly high-density development, is generally incompatible with airport operations due to aircraft noise impacts and safety reasons. Within an airport's noise impact areas, residential and public facilities such as schools, churches, public health facilities, and concert halls can be sensitive to high noise levels. They can affect the development of the airport.

Sometimes, the airport sponsor must purchase or protect sufficient land around the airport to prohibit infringing on incompatible land uses. Conversely, incompatibility may occur because an airport project has expanded near an existing residential neighborhood.

Land use decisions that conflict with aeronautical activity and airport facilities can result in undue constraints on an airport. To enable this sector of the economy to continue to expand, provide a wide variety of job opportunities for local citizens, and meet the needs of the traveling public, it is vitally essential that airports operate in an environment that maximizes the compatibility of the airport with off-airport development.

For SGF to meet its current and future needs and thereby continue contributing to the local and regional economies, the airport sponsor must develop appropriately and be as compatible as reasonably feasible with its neighbors and community.

COMPATIBLE LAND USES

Compatible land use planning encourages land uses more consistent with an airport environment, such as **industrial and commercial uses**, to be located around airports.

Most commercial and industrial uses, especially those associated with the airport, are good neighbors to airports and the community. These developments are often staffed by citizens of the community they work in. Land uses where the airport creates the demand are also compatible with land uses for SGF. These include:

- Motels/Hotels
- Restaurants
- Warehouses
- Shipping Agencies
- Aircraft-related industries
- Aeronautical-related companies
- Industries that benefit from access to the airport

Other uses that may be compatible with airports are:

- Large parks
- Conservatory areas and other open spaces
- Forestry services
- Landscape services
- Golf courses

These land uses are created for public purposes and are opportunities for local government bodies to provide facilities that serve another purpose to protect airport operations.

Large parks, conservation areas, and golf courses may be compatible, provided they do not impede the airport's mission and future expansion plans. National Environmental Policy Act (NEPA) considerations regarding Sections 4(f) and 6(f) should be considered when assessing locations of any compatible uses.

Section 4(f) properties include significant publicly owned public parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately owned historic site listed or eligible for listing on the National Register of Historic Places.

Section 6(f) of the Land and Water Conservation Act requires that the conversion of lands or facilities acquired with Land and Water Conservation Act funds under the State Assistance program be coordinated with the National Park Service.

Agriculture is another land use compatible with airport operations so long as the service is not a wildlife attractant. Agricultural land use near an airport permits the property owner to efficiently use the land while providing an additional benefit to the community for airport protection.

AIRPORT MASTER PLAN AND LAND USE COMPATIBILITY PLAN

The SGF Airport Master Plan recognizes that state and local governments are responsible for land use planning, zoning, and regulation. For this reason, this document should be coordinated with local jurisdictions surrounding the airport to ensure that future airport development plans are considered in each jurisdiction's local comprehensive land use plan.

SPONSOR COMMITMENT

The airport sponsor is responsible to the extent reasonable for ensuring that land uses around the airport are compatible with existing and future airport operations. When the airport sponsor is a city and or county government, the government is also responsible for promoting its citizens' general welfare, including the health and safety of all residents.

An airport sponsor should initiate coordination efforts with surrounding communities to ensure that existing and future airport development is compatible with the land use plan for the area. This approach is in the airport's best interest as it will protect the development rights and growth of SGF well into the future.

8.2 SGF Land Use Compatibility Plan

A typical Land Use Compatibility Plan identifies four critical issues for evaluating the types of land uses to be considered compatible around airports:

- The impact of aircraft noise and noise compatibility planning.
- The potential for airspace conflicts from tall structures near an airport.
- The possibility of electronic interference with aviation navigation aids (NAVAIDS).
- The potential for interaction between aircraft and wildlife attractants.

As part of this Master Plan effort, this Land Use Compatibility Plan describes land use associated with Springfield-Branson National Airport and its surroundings.

The Land Use Compatibility chapter of this Master Plan has the following goals:

1. Review existing land use and regulatory controls (i.e., local municipal land use maps).
2. Complete a Land Use Compatibility Assessment by defining the Airport Influence Area (AIA).
3. Prepare land use recommendations.

8.2.1 Local Municipal Limits

This section aims to identify the municipalities and city limits of all the cities and counties surrounding Springfield-Branson National Airport. Four local municipal jurisdictions surround SGF:

- Springfield, Missouri
- Republic, Missouri
- Willard, Missouri
- Greene County, Missouri

Land use planning must identify the existing municipal zoning landscape surrounding SGF. Exhibit 8.2-1 shows the location of the four municipalities in relation to SGF.

The exhibit below shows the location of all four municipalities surrounding SGF. However, some land use considerations evaluated in this chapter will affect only a few.

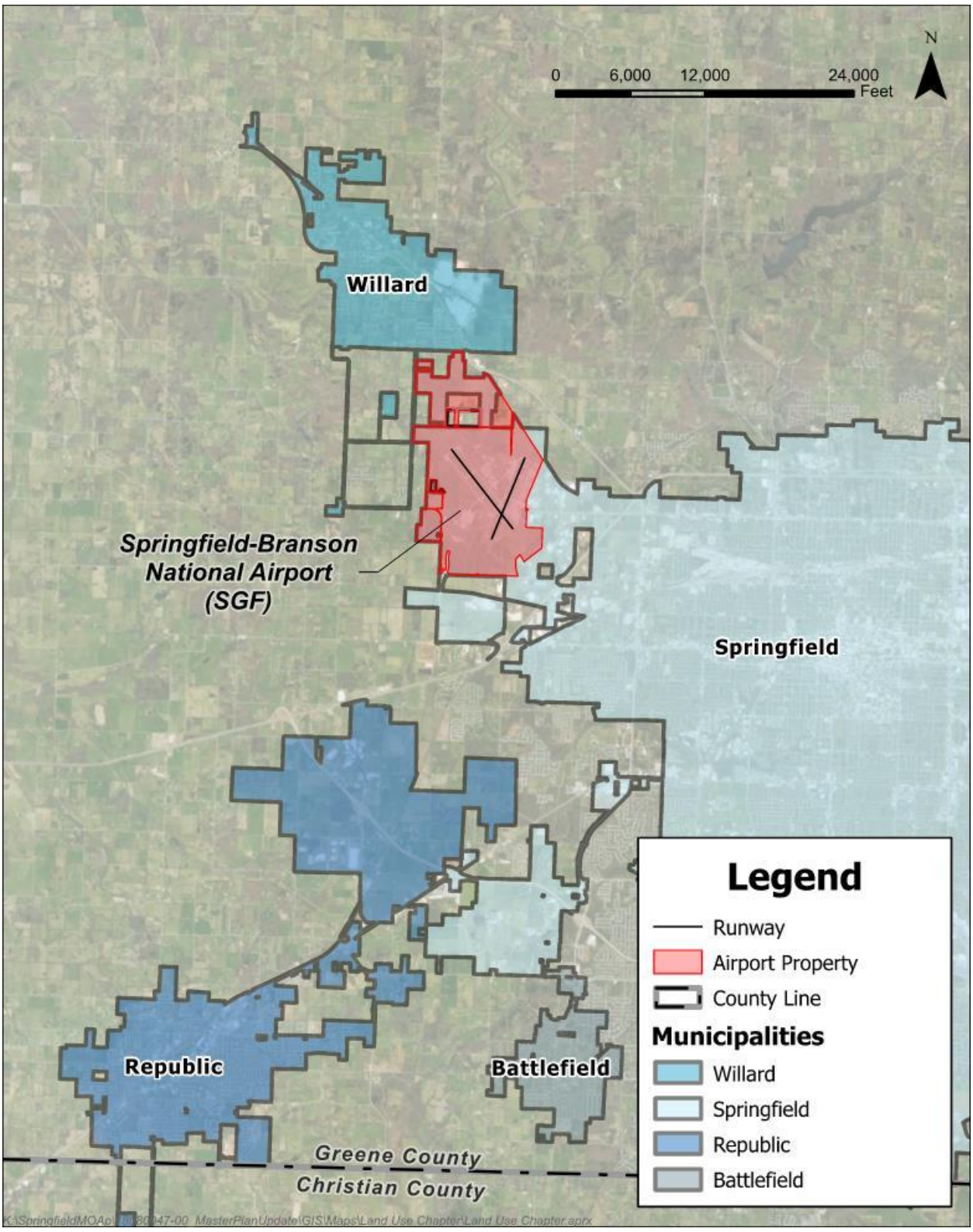
The City of Springfield completed a new Comprehensive Plan in early 2023, which is focused on placemaking- a form of planning focused on the design through city-beautification projects that blend the structure and function of the built environment. This new plan identifies areas around the airport as industrious and commercially focused.

The city of Willard, north of SGF and Springfield, has acknowledged the airport and zoning protection associated with the airfield in its 2019 Comprehensive Plan.

Greene County has acknowledged the impact of the airport on the county as well and included specific language recognizing the airport's need for protected zoning, and compatible land uses adjacent in their 2018 Land Use Plan.

The next step of this Land Use Compatibility Plan is to define the Airport Influence Area (AIA) to identify which of the municipalities shown in the exhibit below will be affected by the activities generated by SGF.

Exhibit 8.2-1: Local Municipal Limits



Source: CMT

8.2.2 Municipal Zoning

AIRPORT OVERLAY ZONE

Two airport overlay (AO) districts, AO-1 and AO-3, serve as an additional layer to regulate the development of noise-sensitive land uses, promoting compatibility between the Airport and the surrounding land uses and promoting the health, safety, and general welfare of property users.

The City of Springfield regulates the AO-1 district and includes all areas within 2,000 feet of any airport runway centerline extending 10,000 feet from both ends.

The AO-3 district includes all areas encompassing the airport zones defined in the Airport Zoning Law, Chapter 305 Revised Statutes of Missouri (RSMo), which is specific to Greene County. This law states that the areas encompassing the airport are designed to protect the existing and potential runways. Exhibit 8.2-5 displays the AOs in relation to SGF.

The AO-1 district prohibits residential, public, and recreational uses, except as modified by the AO-3 district. While AO-1 prohibits the uses above, the AO-3 district allows for constructing single-family dwellings, including manufactured homes, on a lot or parcel of land of 10 acres or more. These uses may be permitted on a lot of fewer than 10 acres if they lawfully existed at the effective date of the zoning code, provided an avigation easement is granted to the city and noise level reduction (NLR) practices are installed during construction.

Structures and the accompanying landscaping in the AO districts must be at most 50 feet tall. This height restriction and allowable uses steer the area toward industrial use, with low-density and low buildings compatible with airport operations.

Any development within 1.5 miles of the ultimate end of any existing or planned runway shown on the most current ALP must obtain a Conditional Use Permit. In 2021, playfields were added as the only allowable conditional use in the AO districts. The Springfield-Branson National Airport Board shall review any Conditional Use Permit applications in the AO districts for potential impacts on the Airport and make its recommendation to the City's Planning and Zoning Commission. The Planning and Zoning Commission will recommend the matter to the City Council for final action. [1]

The overlay districts protect the planned but unbuilt runway parallel to Runway 02-20 to ensure that further airport development is possible without outside influences.

The AO district is the most controlling factor for development near SGF as it statutorily allows for the airport to review and permit considering the impact on the airport and the interactions with protected airspace surfaces.

[1] City of Springfield, Missouri zoning regulations

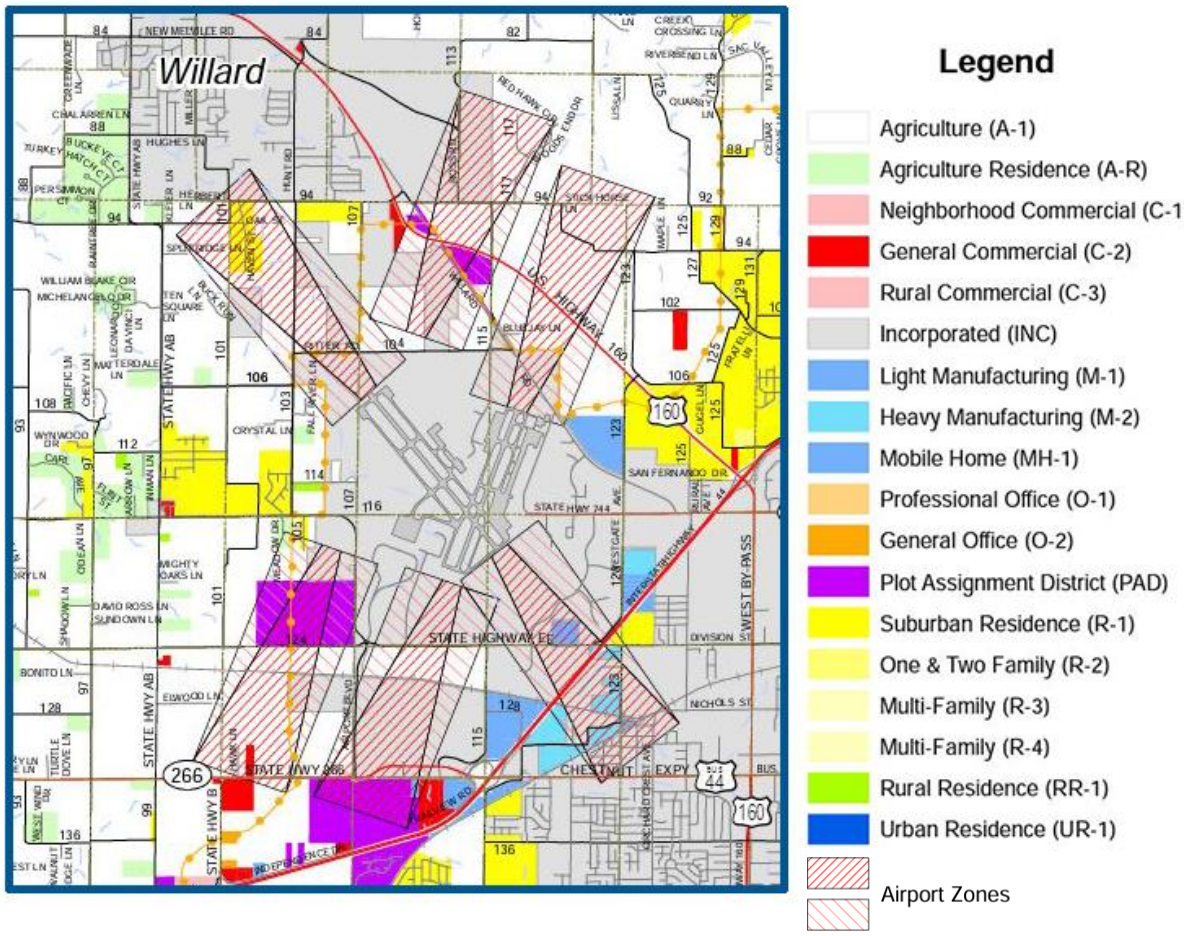
MUNICIPAL ZONING AND EXISTING LAND USES

To better visualize the relationship between the land's uses and the airport's interests, the Airport Overlay Zones have been compared to the zoning of the surrounding zoned entities.

While zoning does not always constitute land use- if regulated as intended, the land uses will match the desired zoning.

Exhibit 8.2-2 below shows the Airport Overlay Zones compared to the existing Greene County Zoning.

Exhibit 8.2-2: Greene County Zoning with Existing A-O Zones

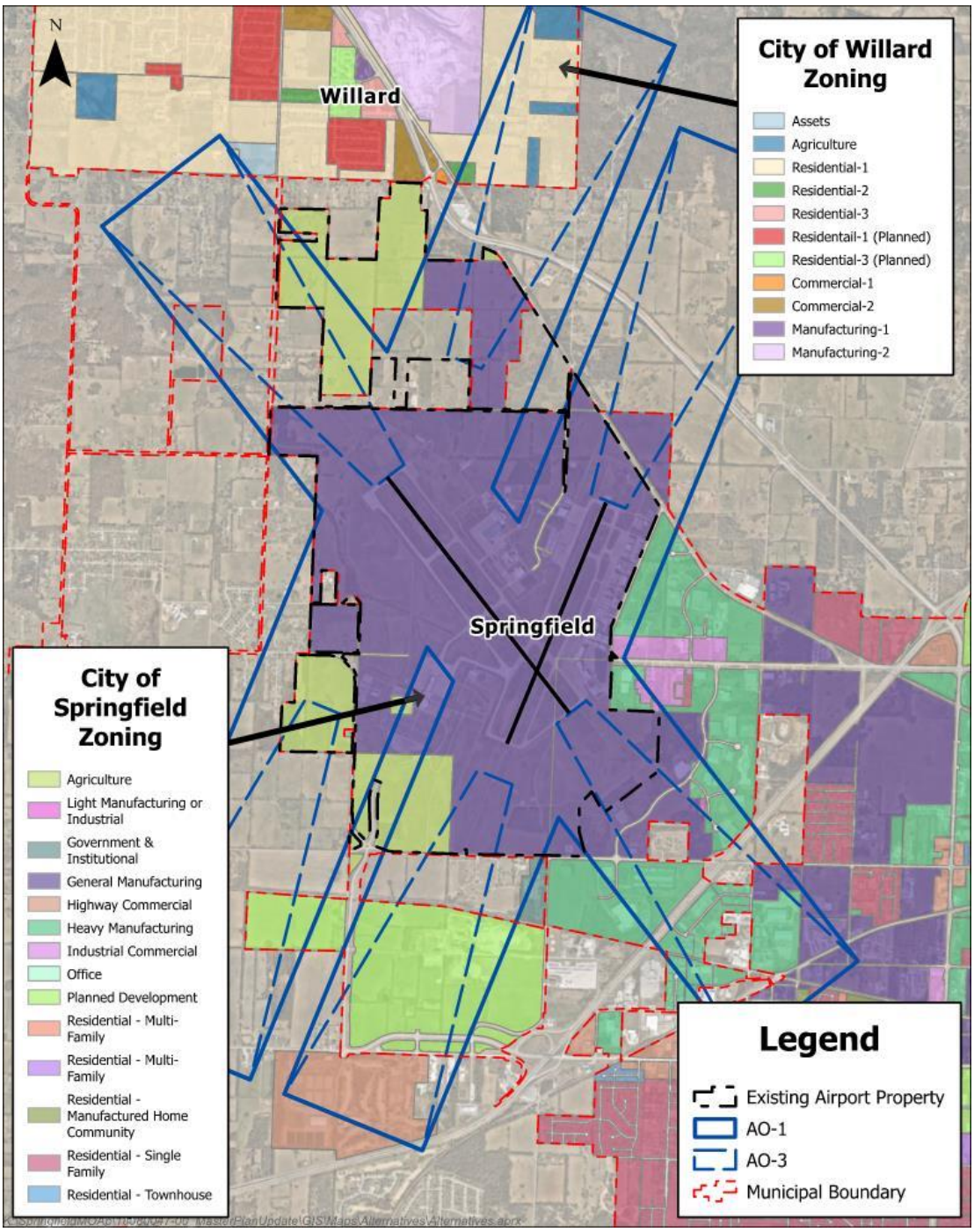


Source: https://greenecountymo.gov/files/file.php?id=1530

As seen in the Greene County Zoning Map, the surrounding zoning is depicted as agricultural, with some tracts of Suburban Residential, Manufacturing, and Plot Assignment Districts (a flexible-use zoning district) scattered around the airport- and intersecting the Overlay Zones. The City of Springfield Zoning is shown in gray as "Incorporated" in this exhibit.

Exhibit 8.2-3 shows zoning with the A-O zones. The municipal zoning shows that various zones interact with the airport, primarily industrious near the airfield and phasing to commercial and residential towards the outskirts of the impact and overlay zones.

Exhibit 8.2-3: Springfield and Willard Zoning Compared to Existing A-O Zones

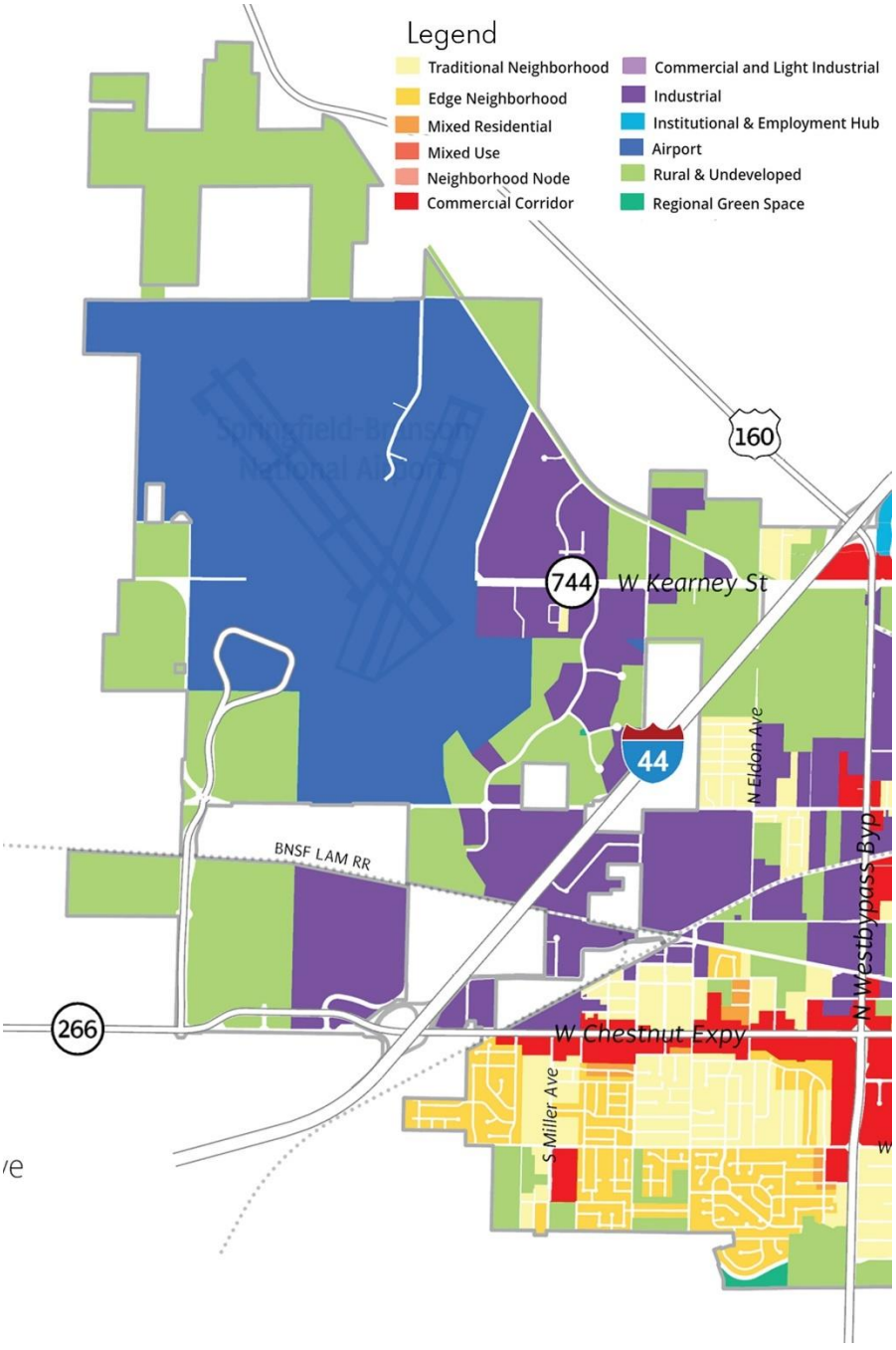


Source: https://gisdata-cosmo.opendata.arcgis.com/, https://www.cityofwillard.org/maps.html, CMT

Land use maps are often created in tandem with comprehensive plans, such as the map included within "Forward SGF," the comprehensive plan completed by the city of Springfield in 2022. This offers a snapshot of the current land use throughout the city. **Exhibit 8.2-4** is an excerpt of the entire land use

map to show the land use near the airport. The primary land uses are rural, undeveloped, and industrial, which are generally compatible with airport uses.

Exhibit 8.2-4: Existing Land Use Near SGF

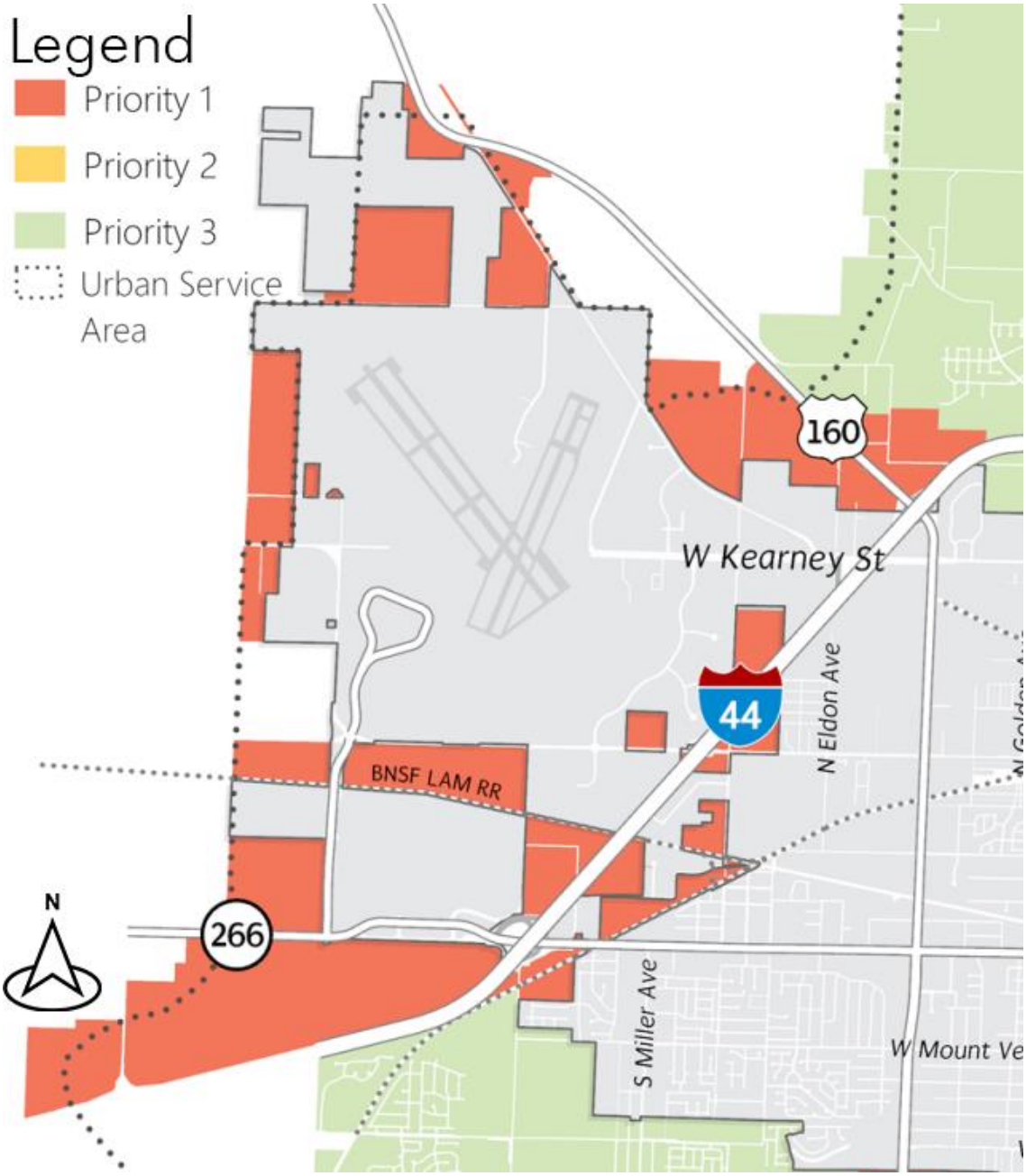


Source: Forward SGF Comprehensive Plan, 2023

The comprehensive plan also addresses an annexation plan for the city. Much of the land surrounding the airport has been identified in the plan as "priority one" land, meaning that it is easily developable

and relatively accessible to incorporate infrastructure connections. Exhibit 8.2-5 below shows the "Forward SGF" annexation plan near the airport. Much of the land identified in this exhibit already receives urban city services, and some of the parcels are already publicly owned properties.

Exhibit 8.2-5: Forward SGF Annexation Plan



Source: Forward SGF Comprehensive Plan, 2023

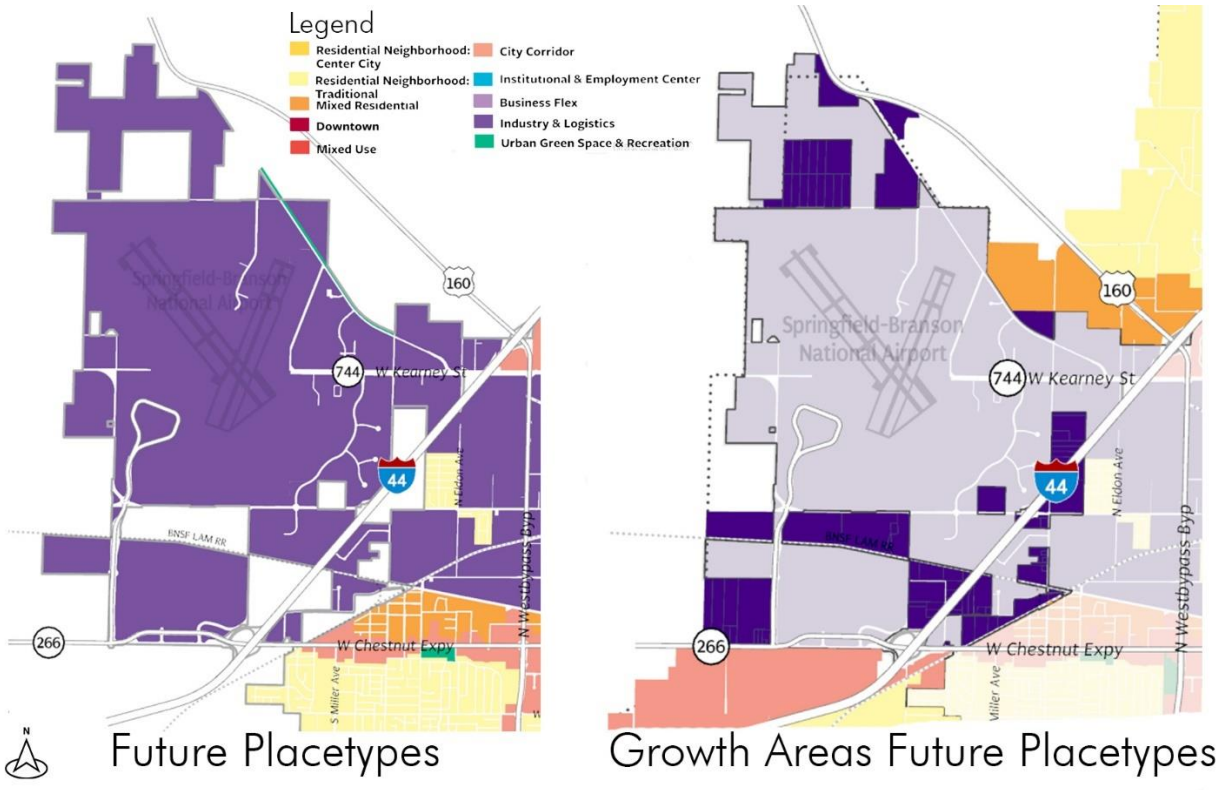
The Forward SGF Comprehensive Plan revolves around the idea of placemaking, where a sense of identity is created through intentional design based on various complementary land uses. These place types are a guiding principle as to how the community expects to develop moving forward. These place

types will have an impact on zoning practices and the determination of the compatibility of certain developments within the respective areas. The Airport and surrounding land uses within the city boundaries currently exist and are projected as the Industry and Logistics place type, which consists of light and heavy industrial uses such as manufacturing, packaging, warehousing, storage, transportation, commerce, and distribution.

The future growth area place types (the areas included in the annexation plan) have a complementary plan to the place types already outlined within the city boundaries. The place types are predominantly Industry and Logistics, with one bordering area to the east of runway 20 end identified as Mixed Residential. Any development proposals with residential land use near the airport must be carefully assessed before they are accepted to avoid and mitigate any conflicts with public health and safety.

Exhibit 8.2-6 below outlines the future place types and the Growth Area Future Place Types identified in the Forward SGF comprehensive plan. The Industry and Logistics place type is identified with the dark purple shade in both map excerpts; The Growth Areas Future Place Types map has muted colors over the existing city boundaries.

Exhibit 8.2-6: Forward SGF Future Place Types and Growth Area Future Place Types



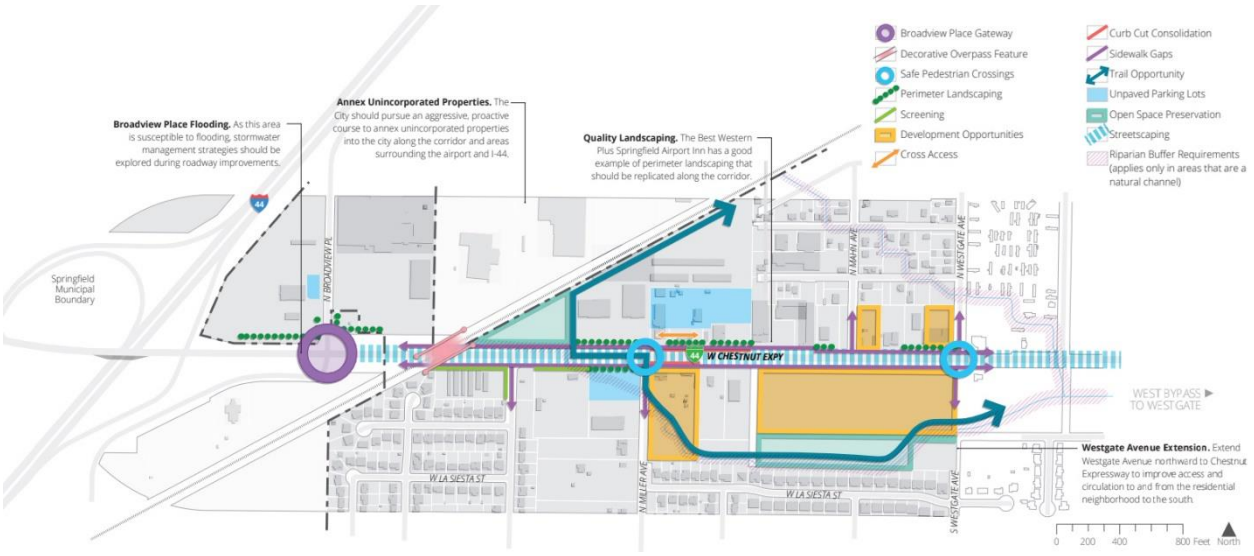
Source: Forward SGF Comprehensive Plan, 2023

Transitions between these place types are intended to be natural, intentional, and inviting. The comprehensive plan highlights the Airport in several instances as the first and last place that many visitors to the area see. It is regularly stated that the corridors the visitors and residents frequently travel,

particularly in the vicinity of the airport, should complement the community with elements such as improved landscaping, gateway signage, and public art to leave a lasting, positive image of the community. A sub-area plan within the comprehensive plan examines the Chestnut Expressway I-44 to Westgate, a heavily used route for air travelers driving into Springfield. The sub-plan calls for many streetscape improvements, including decorative overpass features, improved pedestrian and bicycle infrastructure, as well as landscaping opportunities. This sub-plan can support the connective efforts of unifying the pathway to the Airport as an organic blend from the commercial and suburban places to the industrious and logistical places.

Exhibit 8.2-7 below displays the Chestnut Expressway subarea plan.

Exhibit 8.2-7: Forward SGF Chestnut Expressway Subarea Plan



Source: Forward SGF Comprehensive Plan, 2023

8.2.3 Airport Noise Contours

Commercial service airports have a vital role in the economic development of the community they serve. However, along with these essential economic benefits, transporting people and products may also disturb those living or working near airports by exposing them to noise.

Over the last 40 years, the U.S. Federal Aviation Administration (FAA) has been working to reduce the number of Americans exposed to aviation noise around airport communities. By one measure, it has been a success: over the last four decades, the number of people in the U.S. exposed to aviation noise has dropped substantially, even as the number of flights has soared.

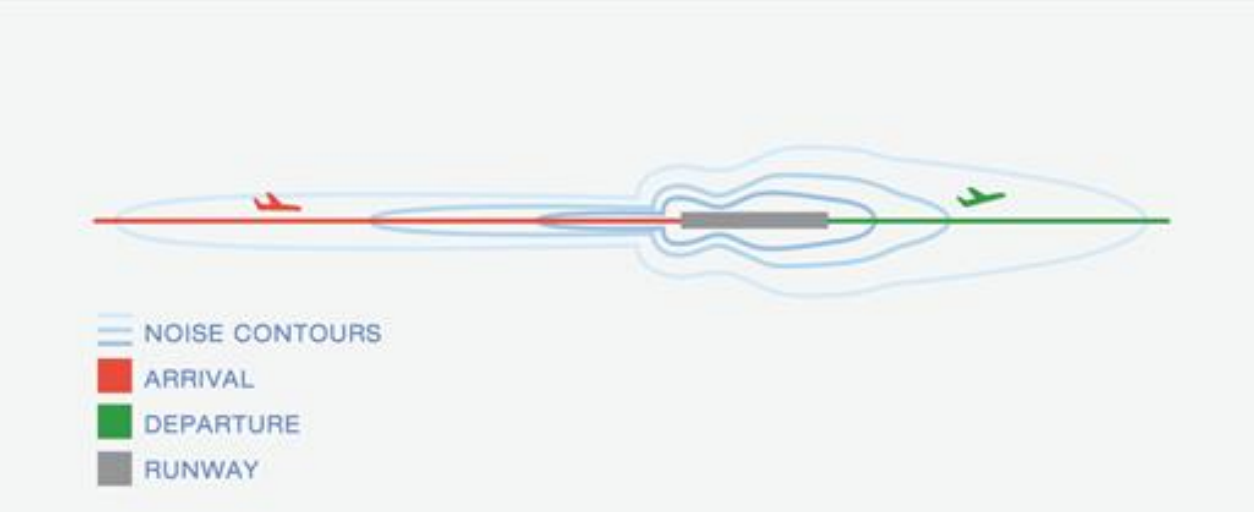
However, even with this success, aviation noise still concerns many communities. To promote ways to balance the benefits and adverse effects of aviation on airport communities, it is vital to identify the areas where noise generated by aeronautical activity is more prominent and work with local planners to avoid the development of residential communities in these areas. The FAA provides specific guidance that helps define exposure to individuals living or working on surrounding incompatible land uses.

Noise levels can be computed at individual locations of interest. To show how noise can vary over extended areas, metrics like day-night average sound level (DNL) are often drawn on maps regarding lines connecting points of the same decibel (dBA). The DNL noise metric is used to reflect a person's cumulative exposure to sound over 24 hours, expressed as the noise level for the average day of the year based on annual aircraft operations[2] [3].

Noise compatibility or non-compatibility of land use is determined by comparing the aircraft DNL values at a site to those in the land use compatibility guidelines provided by the FAA. Special consideration must be given to noise-sensitive areas, including, but not limited to, noise-sensitive areas within national parks, national wildlife and waterfowl refuges, and historic sites, including traditional cultural properties. For proposed airport development and other actions near an airport, the FAA recommends providing noise exposure contours at the DNL 65-, 70-, and 75-dB levels (additional contours may be provided on a case-by-case basis)[4].

Similar to topographical maps showing terrain elevation in an area, these noise "contours" help compare aircraft noise exposure throughout an airport community. The shape of noise contours depends on many factors but is influenced by whether more arriving or departing aircraft fly over an area. **Exhibit 8.2-8** shows an example of what a noise contour map looks like. Springfield-Branson National Airport has noise contours depicted on its Airport Layout Plan, which is discussed later in this chapter.

Exhibit 8.2-8: Noise Contour Map Example



Source: FAA Fundamentals of Noise and Sound

Aircraft noise contours were created using the FAA's Aviation Environmental Design Tool (AEDT) version 3E and existing aeronautical activity.

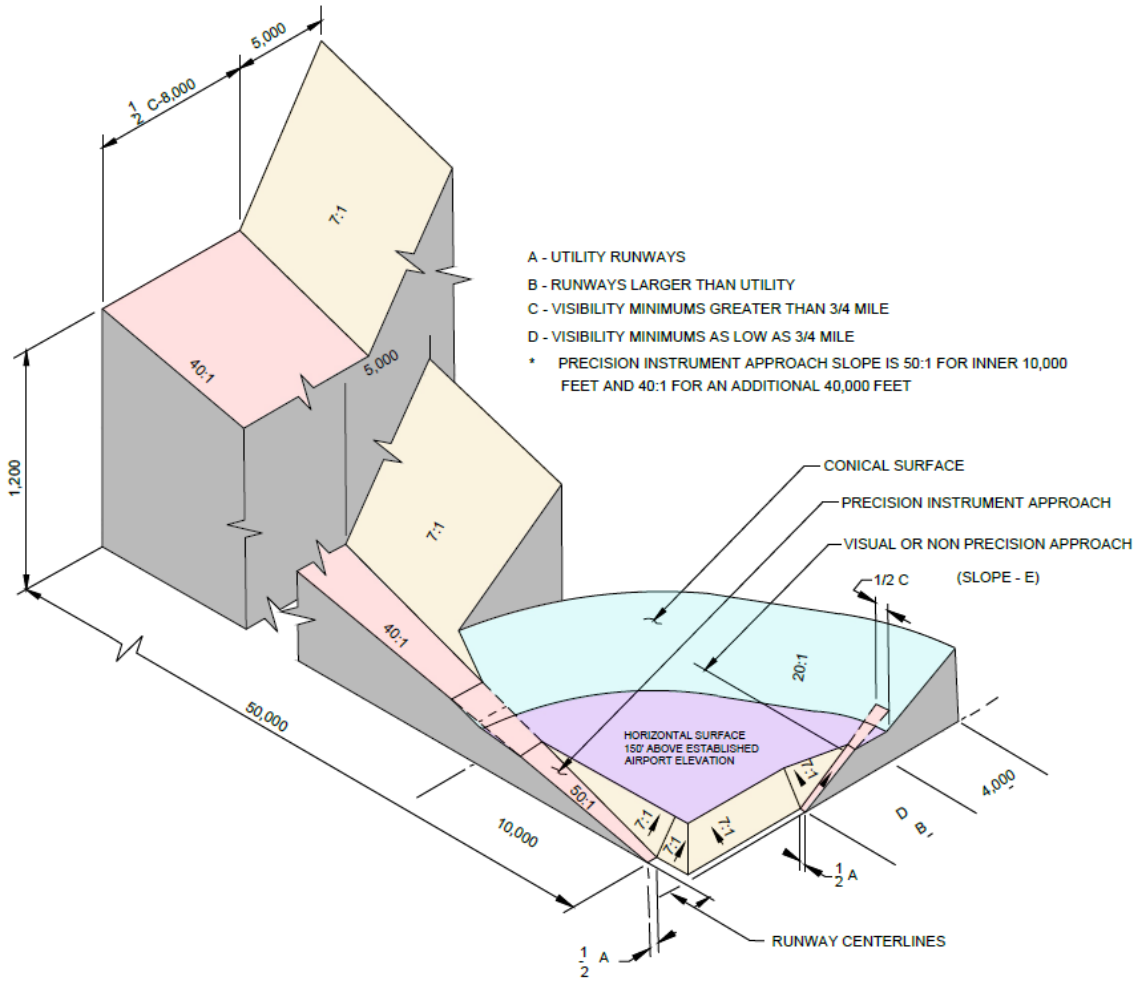
[2] https://www.faa.gov/regulations_policies/policy_guidance/noise/basics/
[3] FAA AC 150/5020-1, Noise Control and Compatibility Planning for Airports
[4] https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/11-noise.pdf

Projected noise contours were developed by applying forecasted aircraft and assumed runway utilization statistics to the preferred alternative of a 9,000' parallel runway, along with the 1,000' addition to runway 2/20.

8.2.4 Airspace Protection – (FAR) Part 77 Surfaces

Regulations for airspace protection around a public-use civilian or military airport are specified in 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77). The FAA uses these defined surfaces to identify obstructions to airspace around an airport facility. Part 77 surfaces are comprised of primary, approach, transitional, horizontal, and conical three-dimensional imaginary surfaces. Exhibit 8.2-9 illustrates these surfaces in a general nature; their exact configuration varies based on the category and type of approach to the runway. Obstructions are defined as objects that penetrate these surfaces. Mitigation measures such as obstruction marking/lighting may be required for obstructions that are studied and not determined to be a hazard to air navigation.

Exhibit 8.2-9: Part 77 Surfaces



Source: FAA Part 77 Surfaces

FAR Part 77 regulations require project sponsors to notify the FAA of proposed structures within the airport airspace area. The requirements for filing an aeronautical study with the Federal Aviation Administration (FAA) for proposed structures vary based on a number of factors: site elevation, structure height, proximity to an airport, and frequencies emitted from the structure. The FAA will evaluate each proposed structure and determine "hazard" or "no hazard," depending on the impacts on airport airspace.

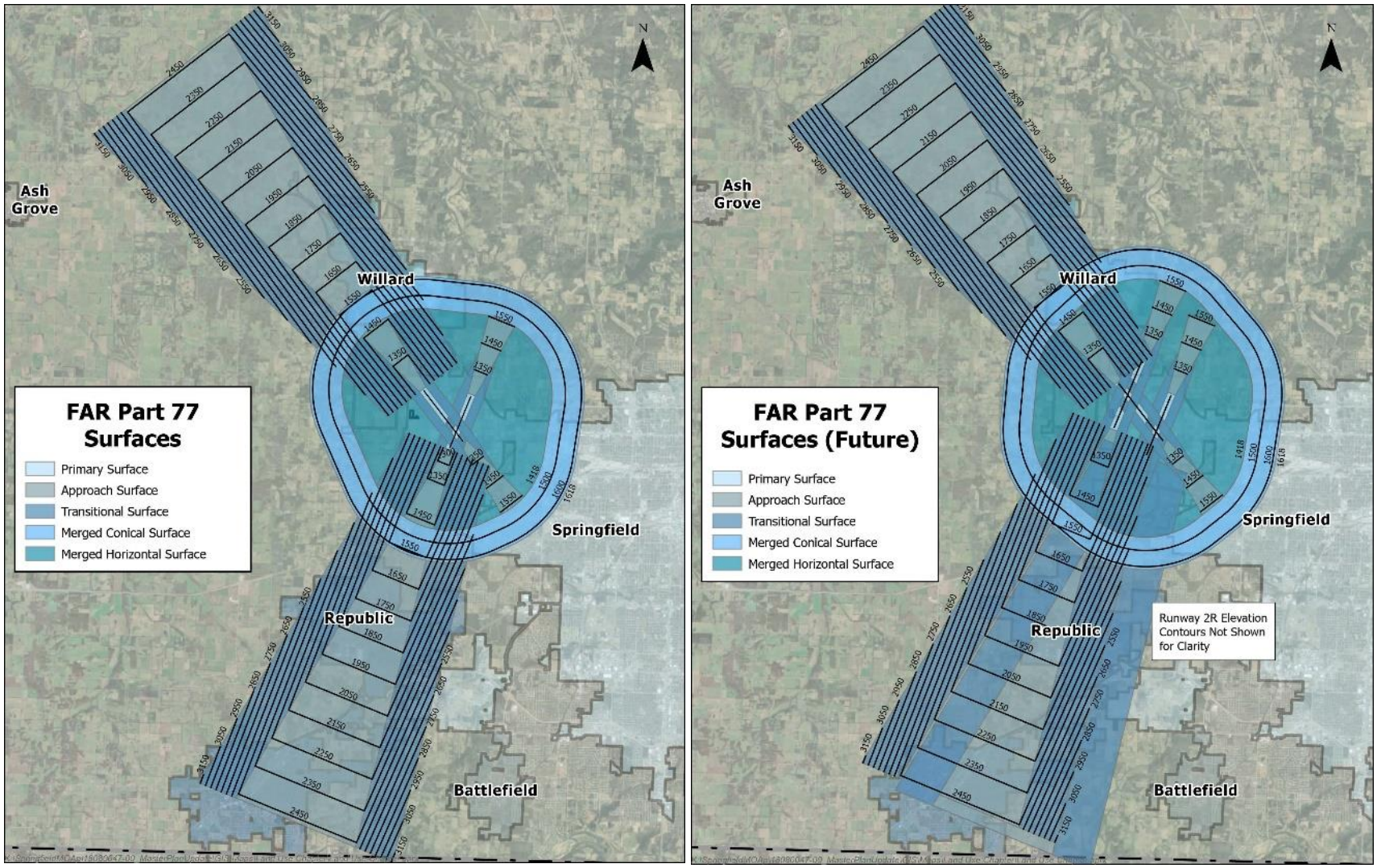
The height limitations imposed by Part 77 Surfaces should be considered by local planners from the different municipalities that surround SGF to be capable of restricting the development of any tall structure that may violate any Part 77 height restriction.

The Airport sponsor is responsible for coordinating compatible land development with the authorities from the municipalities in the immediate vicinity of SGF.

The future part 77 airspace has a larger footprint with the projected improvements. Obstructions can be assessed upon development activity, where mitigative actions can be determined on a case-by-case basis.

Exhibit 8.2-10 shows the existing and future Part 77's outermost surface in relation to municipal boundaries. The exhibit shows that the municipalities affected by the outermost surface of Part 77 are Springfield, Republic, Willard, and Greene County.

Exhibit 8.2-10: Existing and Future Part 77 Surfaces at SGF



Source: CMT, 2023

8.2.5 Runway Protection Zones

The Runway Protection Zone's (RPZ) function enhances the protection of property and people on the ground. The FAA defines the RPZ as "an area at ground level before the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground." This is best achieved through airport owner control of the land area(s) within the RPZ. Power is preferably exercised through acquiring sufficient property interest in the RPZ and includes clearing the RPZ areas (and maintaining them clear) of incompatible objects and activities.[5]

RPZ land use compatibility is also often complicated by ownership considerations. Airport owner control over the RPZ land is emphasized to protect people and property. Although the FAA recognizes that the airport sponsor may not fully control land within the RPZ in certain situations, the FAA expects airport sponsors to take all possible measures to protect against and remove or mitigate incompatible land uses.

Compatible Land Use

Compatible land use within the RPZ is generally restricted to such land uses as agricultural and similar uses that do not involve congregations of people, construction of buildings, or other improvements that may be obstructions. Allowable activities in an RPZ include[6]:

- Farming activities meeting airport design clearance standards.
- Irrigation channels meeting the standards of AC 150/5200-33 and FAA/USDA manual, Wildlife Hazard Management at Airports.
- Airport service roads, as long as they are not public roads and are under the direct control of the airport operator.
- Underground facilities, as long as they meet other design criteria, such as RSA standards, as applicable.
- NAVAIDs and aviation facilities, such as equipment for airport facilities, are considered fixed by-function regarding the RPZ.
- Above-ground fuel tanks associated with backup generators for unstaffed NAVAIDS.

[5] AC 150/5300-13B
[6] FAA Central Region Airports Division – AIP Sponsor Guide – Airport Planning

8.2.6 Airport Influence Area (AIA)

EXISTING AIRPORT INFLUENCE AREA

The area in which the extent of the Airport's aeronautical operations impact the surrounding area is defined as the Airport Influence Area (AIA). The AIA comprises various sub-areas and zones, each with a unique purpose of land use control (i.e., height restriction zone, no residential development zones, etc.).

The SGF AIA will be comprised of the following elements:

- Airport Noise Contours
- Runway Protection Zones (RPZ)
- Airport Overlay Zone (A-O)

These elements have been put together into one exhibit to visualize their extent.

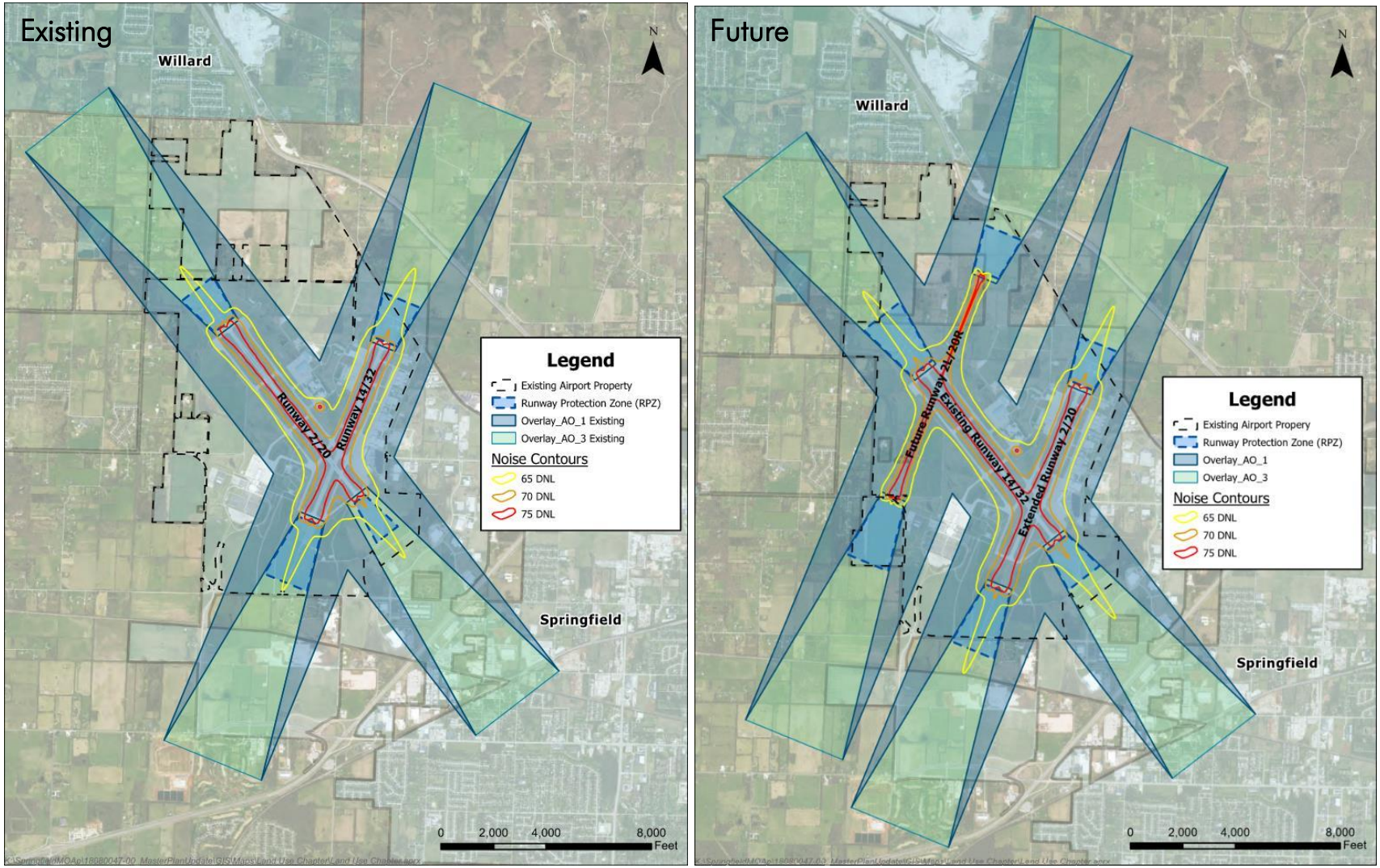
The Part 77 surfaces have been excluded from the influence area as the local zoning integrated with the Airport Overlay zoning provides an equal and or greater influence to development in the airspace.

FUTURE AIRPORT INFLUENCE AREA

The potential development of a parallel runway, as indicated in the Parallel Runway Appendix, and any other expanding development will leave a larger footprint influence than that which currently exists. A future analysis was conducted utilizing the same impacting factors as compared to the existing conditions.

Exhibit 8.2-11 show the existing and future noise contours, RPZs, and AO for SGF.

Exhibit 8.2-11: Existing and Future SGF Noise Contours, RPZs, and AO



Source: CMT

8.3 SGF Land Use Assessment

Section 5.3 identified the Airport's AIA. The AIA assessed the overall land use compatibility between SGF and the surrounding municipalities. The land use assessment included placing the AIA on top of the existing local zoning maps to determine if incompatible land is present. Table 8.3-1 below shows compatible land uses in each influence area. As previously mentioned, while zoning does not always correlate to actual land use, it is a helpful tool for understanding the desired intentions of the municipalities. It can prove valuable compared to AIA to identify compatibilities and incompatibilities.

Tables 8.3-2 through 8.3-5 show the land use assessment per runway end completed using Table 8.3-1, which shows the recommended land uses for each Airport Influence Area.

Table 8.3-1: Compatible Land Uses in Each AIA

AIRPORT INFLUENCE AREAS	COMPATIBLE LAND USES
Runway Protection Zone	Agricultural land, parks, open spaces, low-density residential areas, commercial areas with limited height and intensity, recreational facilities, certain types of industrial uses with height restrictions
>= 65 DNL	Agricultural, Low-density residential areas, commercial areas, recreational facilities, industrial areas, open spaces, parks
AO-1	Prohibited uses include various residential uses, general public uses such as schools and gathering spaces, and recreational uses such as outdoor carnivals, stadiums, and drive-in theaters. Open space, industrious, and commercial uses would be the most compatible.
AO-3	Prohibited uses include hotels and motels or enclosed off-street parking facilities in a building or structure. Accessory off-street parking lots or facilities open to the sky are allowed. Allowed uses are single-family dwellings on 10 acres or more (or if they existed before the zone was established). Open space, industrious, and commercial uses would be the most compatible.

Source: https://www.faa.gov , CMT

RUNWAY 14 CORRIDOR

Table 8.3-2: Runway 14 Land Use Compatibility Assessment

AIRPORT INFLUENCE AREAS	EXISTING LAND USE	IS IT COMPATIBLE?
Runway Protection Zone	Airport Zone	Yes
	Agricultural	Yes
65 DNL	Agricultural	Yes
AO-1	Agricultural	Yes
	Airport Zone	Yes
AO-3	Single Family Residential	Yes
	Agricultural	Yes

Source: CMT

Table 8.3-2 shows that all uses within the Runway 14 corridor are compatible with the existing influence areas. While there are areas of low-density residential homes, they were built before the establishment of the AO zones and mostly appear to be generally on lots greater than 10 acres, meaning that as they currently sit, they are compatible.

RUNWAY 32 CORRIDOR

Table 8.3-3: Runway 32 Land Use Compatibility Assessment

AIRPORT INFLUENCE AREAS	EXISTING LAND USE	IS IT COMPATIBLE?
Runway Protection Zone	Airport Zone	Yes
65 DNL	Agricultural/Cemetery	Yes
	Industrial	Yes
AO-1	Airport Zone	Yes
	Agricultural/Cemetery	Yes
	Industrial	Yes
AO-3	Industrial	Yes
	Single Family Residential	Yes
	Commercial	Yes

Source: CMT

Table 8.3-3 shows that all uses within the Runway 32 corridor are compatible with the existing impact zones. If lots of less than 10 acres existed before the establishment of the AO, single-family dwellings could be built after granting an avigation easement to the city, and proper outdoor to indoor noise reduction practices are taken during construction.

RUNWAY 2 CORRIDOR

Table 8.3-4: Runway 2 Land Use Compatibility Assessment

AIRPORT INFLUENCE AREAS	EXISTING LAND USE	IS IT COMPATIBLE?
Runway Protection Zone	Airport Zone	Yes
	Agricultural	Yes
65 DNL	Airport Zone	Yes
	Agricultural/Cemetery	Yes
	Industrial	Yes
AO-1	Airport Zone	Yes
	Agricultural/Cemetery	Yes
	Industrial	Yes
AO-3	Agricultural	Yes
	Golf Course	Yes

Source: CMT

Table 8.3-4 shows that all uses within the Runway 2 corridor are compatible with the existing impact zones.

RUNWAY 20 CORRIDOR

Table 8.3-5: Runway 20 Land Use Compatibility Assessment

AIRPORT INFLUENCE AREAS	EXISTING LAND USE	IS IT COMPATIBLE?
Runway Protection Zone	Airport Zone	Yes
	Agricultural	Yes
65 DNL	Agricultural/Green Space	Yes
AO-1	Airport Zone	Yes
	Agricultural	Yes
AO-3	Agricultural	Yes

Source: CMT

Table 8.3-5 shows that all uses within the Runway 20 corridor are compatible with the existing impact zones.

FUTURE RUNWAY 2L/20R CORRIDOR

While the development of the future runway is outside the 20-year planning period, those at SGF have been preparing for the development since establishing the AO zones, thus protecting the land for the unbuilt runway with conditional uses allowed in the overlay zones.

Table 8.3-6: Runway 2L/20R Land Use Compatibility Assessment

RUNWAY	AIRPORT INFLUENCE AREAS	EXISTING LAND USE	IS IT COMPATIBLE?
2L	Runway Protection Zone	Agricultural	Yes
	65 DNL	Agricultural/Green Space	Yes
	AO-1	Agricultural	Yes
	AO-3	Industrial	Yes
		Agricultural	Yes
20R	Runway Protection Zone	Agricultural	Yes
	65 DNL	Agricultural	Yes
		Industrial	Yes
	AO-1	Agricultural	Yes
		Single-Family	Yes
	AO-3	Agricultural	Yes
		Industrial	Yes
		Single Family Residential	Yes

Source: CMT

Table 8.3-6 shows that all uses within the future Runway 2/20 corridor are compatible with the existing impact zones. Although the land uses are currently compatible, there are several residential lots that will need to be acquired to construct the runway. It is recommended to acquire these properties when the opportunities to do so arise.

8.4 SWOT Analysis

This section will conduct and evaluate a SWOT analysis to better identify and understand the Airport's operating environment from a land use perspective. The SWOT analysis shown in Table 8.4-1 is intended to provide the Airport with a review of the strengths, weaknesses, opportunities, and threats that can be used to frame land use potential and to ensure the aeronautical activities of SGF are safeguarded against incompatible land uses.

A SWOT analysis is an effective way to plan for a more successful future. To create a sustainable and prosperous airport or any system, it is imperative to continue to perform S.W.O.T analysis regularly. Every element in the evaluation above is fluid; as opportunities turn into strengths, it is equally possible for one of the strengths to become a threat.

Table 8.4-1: SWOT Analysis

	HELPFUL	HARMFUL
INTERNAL	**STRENGTHS** • Location/Access • Existing land uses around the Airport • Sectored uses of the airfield • Airport Overlay Zones	**WEAKNESSES** • Unowned parcels surrounded by Airport property • Lack of land use diversity
EXTERNAL	**OPPORTUNITIES** • Municipal operation with communicative planning efforts • Developable Airport owned land • Temporary land uses • Surrounding Land Potential	**THREATS** • Urban sprawl • Environmental conditions

Source: CMT

STRENGTHS

Location/Access

The **strengths** identified in the analysis were based on the regional location of the airfield. As Springfield grows, it increasingly becomes one of the most prominent locations in the four corners of Missouri, Kansas, Oklahoma, and Arkansas. The airfield's location, in comparison to the city of Springfield, protects the airport from dense neighborhoods and competing land uses.

Existing Land Uses Around the Airport

Industrious and agricultural uses primarily surround the area. With both land uses comes low-density development as well as low roof heights. This could be an opportunity as the farmland is often easily developable, and industrious uses are rarely concerned with airport-generated noise.

Sectored Uses of the Airfield

Many of the current uses of the airfield are grouped in general locations. This allows for better air traffic control and more condensed and focused improvements to specific divisions that utilize the airport.

Airport Overlay Zones

Possibly, SGF's greatest strength is the statutorily protected airport overlay zones. These zones have given the airport land use control over the surrounding areas by conditionally allowing certain land uses near the existing development as seen fit.

Actions

To uphold the current land use strengths of the Airport, it is advantageous to continue supporting zoning regulations that protect the airport's future development.

Preserve the sectionalism of the airfield by encouraging development adjacent to similar facilities.

WEAKNESSES

Unowned Parcels Surrounded by Airport Property

Several parcels on the north side of the airfield are currently utilized as residential homes. While supporting current airport operations, they must be purchased to develop a parallel runway. These properties should be monitored for acquisition opportunities, and utilizing an eminent domain approach should be the last option for attaining the property.

Limited Land Use Variety Surrounding the Airfield

The **weaknesses** identified in this assessment are primarily based on the environment near the airport. Although similar land uses are desired, it is advantageous to have some assortment of land uses that are still compatible. This minor weakness can quickly become a strength at SGF by capitalizing on key development opportunities.

Actions

Acquire the encapsulated properties in a way that is non-displacing of existing residences if possible.

Seek out unique and compatible development opportunities to incorporate at SGF.

OPPORTUNITIES

Integrated Community and Airport Planning Efforts

The **opportunities** identified in the analysis are based mainly on the land use immediately adjacent to the Airport. Since SGF is a city department, planning communication with the surroundings has benefited the airfield. With the most recent city comprehensive plan, the airport's needs were significantly addressed by considering compatible land use.

Developable Airport Owned Land

Large tracts of land surrounding the Airport are primarily open space. Whether the land is used agriculturally or unbuilt land, this land is potentially developable. It could support SGF through immediate airfield use or businesses that strengthen the economic network of the Airport.

Potential for Interim Land Uses

As the overlay district conditionally permits uses outside the airport property, this could also be used within the airport property. Temporary buildings or easily constructed and deconstructed structures could be placed with a defined timeline of existence, adding value to the land before permanent development occurs. As the parallel runway is not expected to be built within the planning period specified by this masterplan, that land could be used profitably for the airfield.

Surrounding Land Potential

The land around SGF is primarily green space and or agricultural lands, particularly on the north side of the airport property.

Actions

As mentioned, communicating with the surrounding municipalities to discuss potential interactions and coordinate development opportunities will continue to benefit SGF. Utilizing the open spaces seen on

airport property is an opportunity to increase the airport's land values and overall profitability and develop the community in tandem with the ideas outlined in the most recent comprehensive plan. Temporary uses should be explored to add value to the land while still leaving room for flexible airport growth in the future.

THREATS

Urban Sprawl

The **threats** identified in the analysis are based mainly on the operating environment around the Airport. As the population around SGF continues to grow, the threat of residential development conflicting with airport operations increases. This threat is often mitigated through the AO zones but could still pose concerns for the airport and homeowners alike if development pushes closer.

Environmental Conditions

Aside from all man-made threats to the airport, some environmental constraints threaten the airport's future. SGF has a stretch of protected wetlands and floodplains scattered amongst the airfield. Stormwater redirection and other best management practices are in place to help mitigate water issues, but porous soil conditions pose another concern: sinkholes. Sinkholes are common in the Ozark region and could harm development plans.

Nearby Contamination

Land just east of the GA facilities at 4811 West Kearney Street is the site of an active Brownfield cleanup from Litton Systems Inc.'s operations, which produced circuit boards from the 1960s up to 2008, when the structure was demolished. The site had been a concern for the U.S. Environmental Protection Agency since 1979, when an environmental impact investigation showed the operation was leaching copper and trichloroethylene in the soils and groundwater, contaminating the Springfield-Plateau aquifer and Ozark Aquifer. Mitigation has been in place to attempt to remediate the pollutant since 1994. It is currently owned by Northrop Grumman, which has been monitoring and trying to clean up the site since the 2000s. A sampling of the surrounding groundwaters was conducted in 2022 and showed some trends toward effective remediation. Testing every two years will continue until the site is deemed safe. While the site location is convenient for future airport development, it is incompatible until the pollution has been remediated.

Actions

Continued support of land use practices set in place will protect SGF from encroaching on sprawling neighborhoods.

Consider wetlands, floodplains, and soil conditions before any development activity near the airfield and avoid areas of known issues if possible.

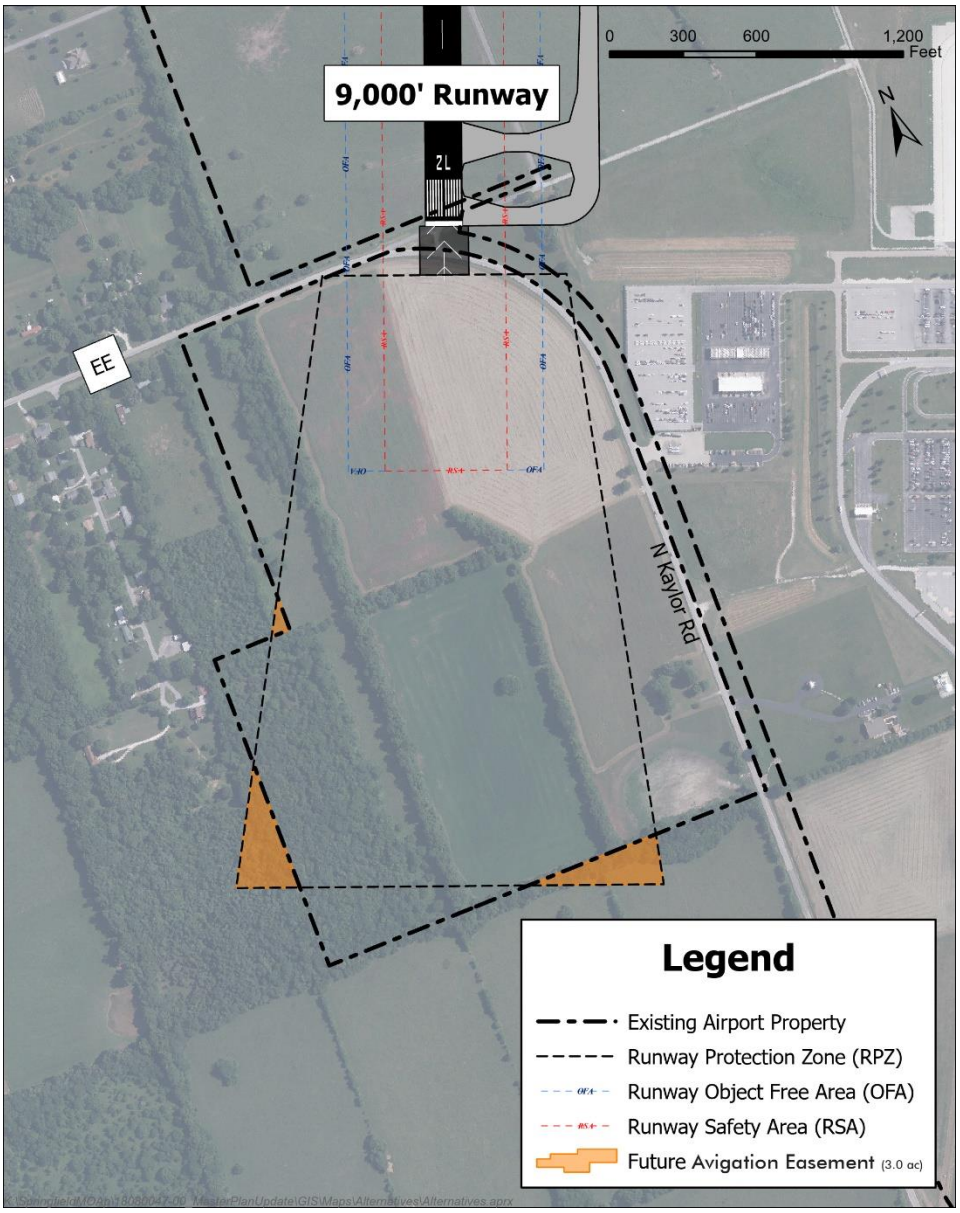
Monitor the status of the cleanup site and continue to embrace best practices when the airport interacts with polluted resources.

8.5 Additional Land Acquisition

The Parallel Runway Appendix presents and discusses the preservation or construction of a Parallel runway at various lengths. The preferred scenario includes the construction of a parallel runway at 9,000 feet, requiring additional land acquisition. This scenario would need approximately 3 acres of land to be acquired by the airport for the RPZ of the future runway to be fully protected by the Airport through an avigation easement.

Exhibits 8.5-1 show the required land acquisition.

Exhibit 8.5-1: Land Purchases Needed for a 9,000' Parallel Runway

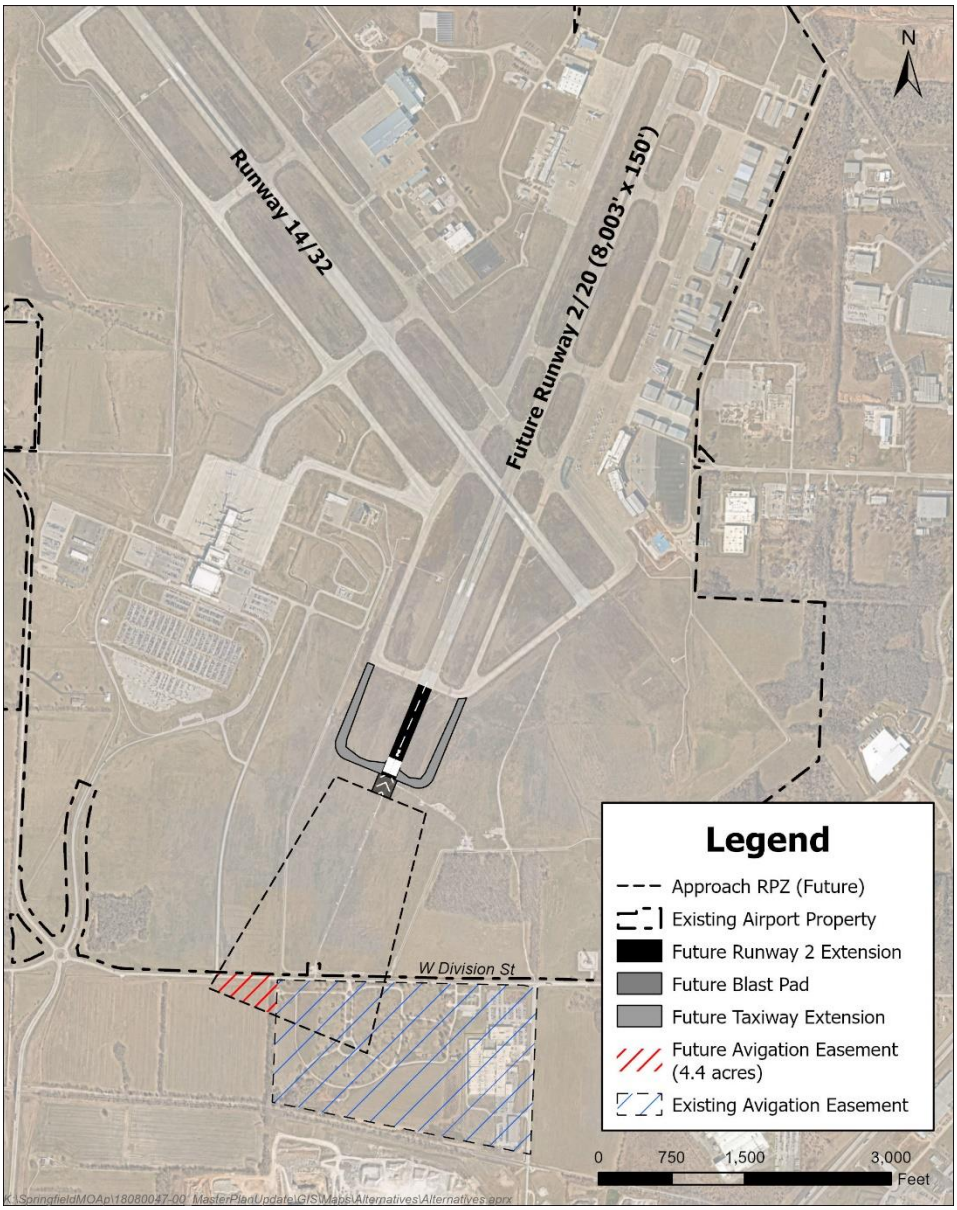


Source: CMT

As determined in the Alternatives Chapter, it is viable to add 1,000 feet of runway to the end of Runway 2 to give the runway a length of 8,003'. This extension will require 4.4 acres of land acquisition (through an avigation easement) to protect the RPZ, in conjunction with an existing easement over the cemetery.

Exhibit 8.5-2 below shows the runway 2 extension and the land acquisition needed.

Exhibit 8.5-2: Runway 2 – 1,000' Extension and Land Acquisition

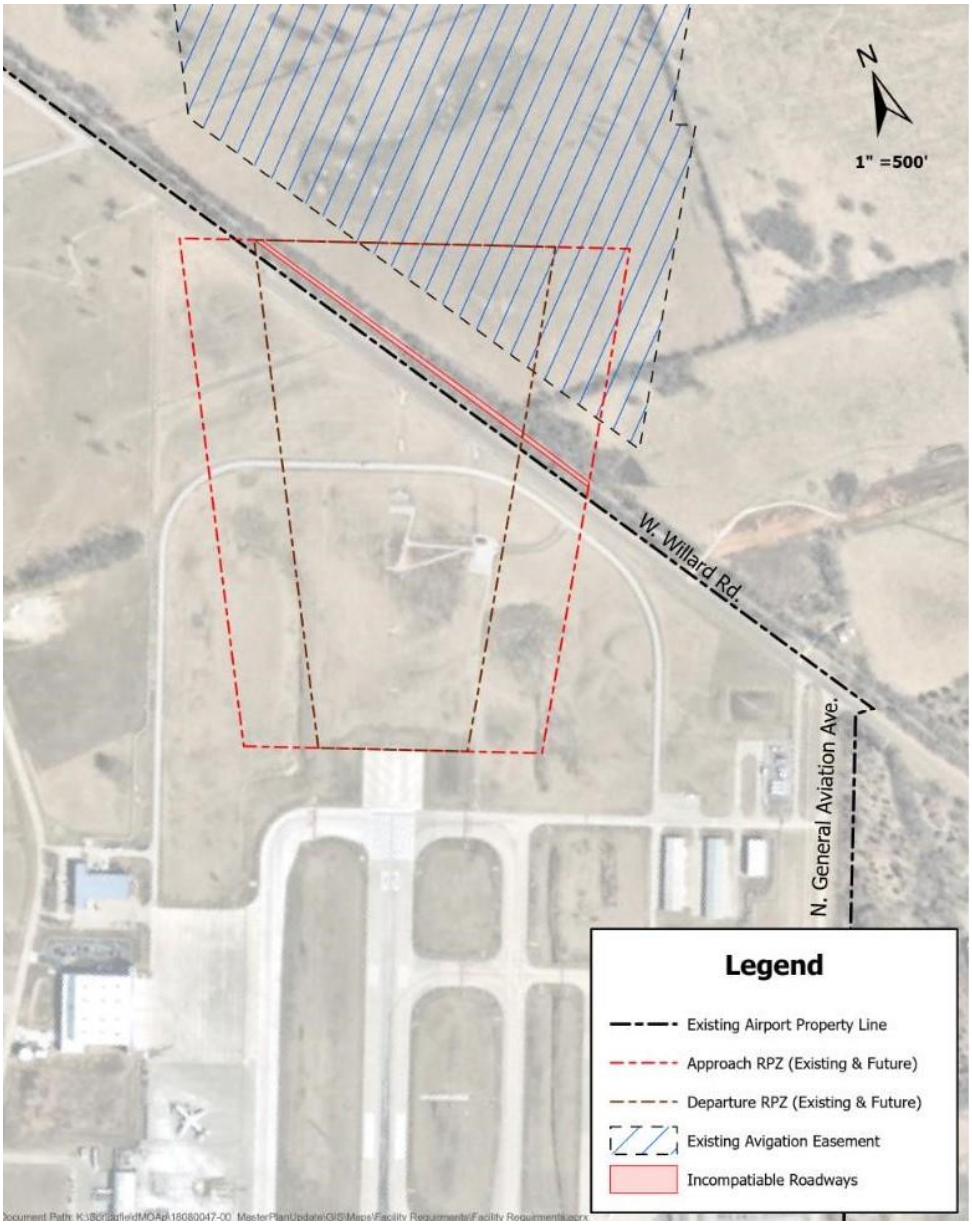


Source: CMT

Approximately 6 acres of the existing Runway 20 Protection Zone sits outside of Airport boundaries. Currently, the RPZ property is protected against incompatible development with existing easements.

Exhibit 8.5-3 shows the current extent of easements over RPZ property. While the acquisition of this property would be ideal in the long-term, the existing easements provide adequate protection.

Exhibit 8.5-3: Runway 20 end RPZ Land Acquisitions

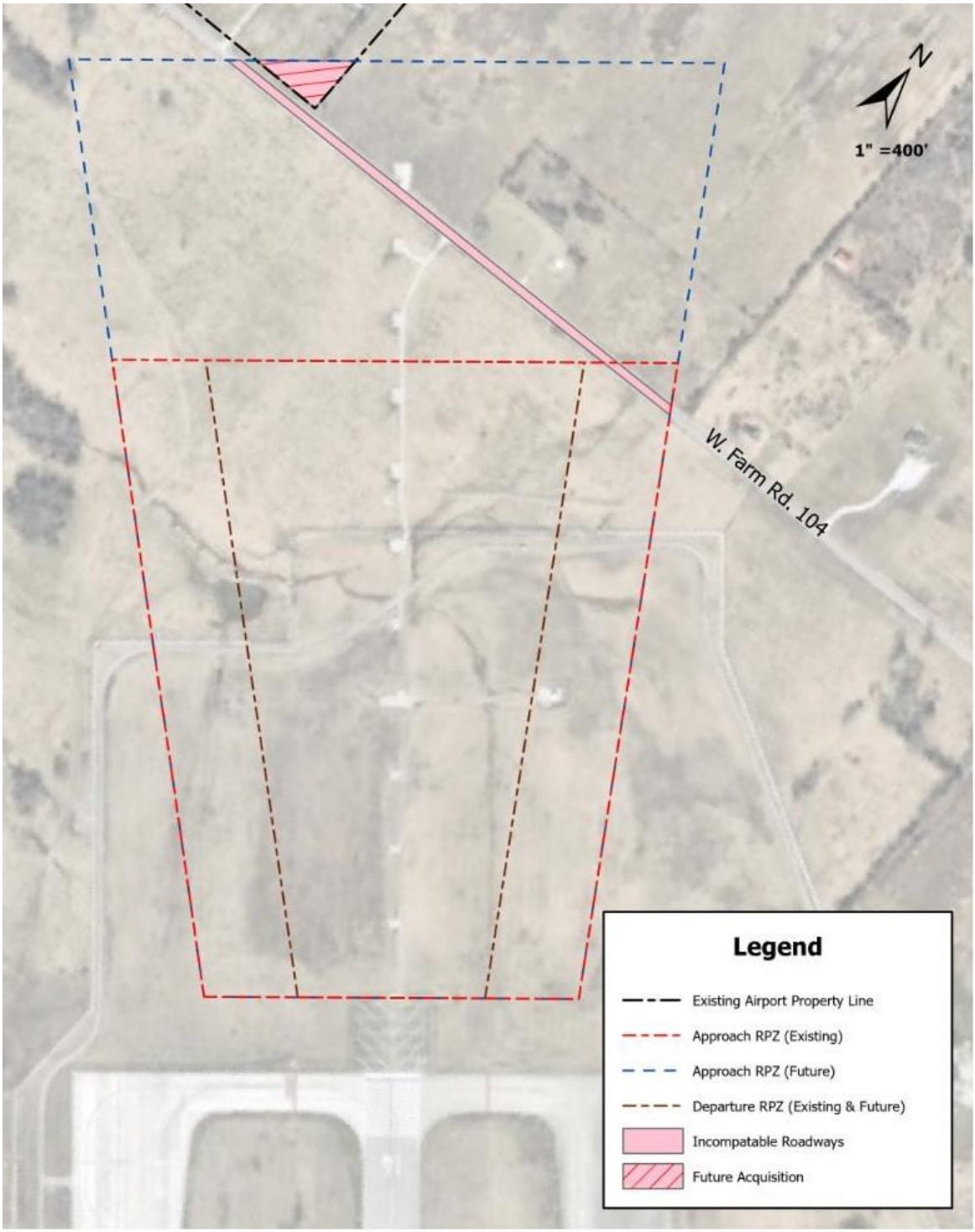


Source: CMT

With the visibility minimums of runway 14 changing from a ¾ mile approach to a ½ mile approach, the RPZ will extend out an additional 800 feet. This will push the furthest edge of the RPZ just outside of the existing airport property boundary, requiring a .36-acre land acquisition. Fee simple acquisition may be a possible approach to acquiring the land, but rights by easement may be a more neighborly approach to the small section of land.

Exhibit 8.5-4 shows the land acquisition needed for the runway 14 RPZ once updated to a ½ mile approach.

Exhibit 8.5-4: Runway 14 end RPZ Land Acquisitions



Source: CMT

POTENTIAL NON-AERONAUTICAL LAND USE

As expected with most airports, the primary internal land use is aeronautical, but non-aeronautical uses can supply value to an airport. SGF currently hosts many non-aeronautical land uses that support the ever-growing aeronautical land uses. Current property extents and regulatory safety areas leading to unbuildable spaces comprise approximately four and a half square miles of SGF. Some areas are better suited for non-aeronautical land use due to their distances or connectivity to the runways. However, it is still important to incorporate appropriate land uses compatible with aeronautical uses.

Areas for potential non-aeronautical development can be seen in Exhibit 8.5-5.

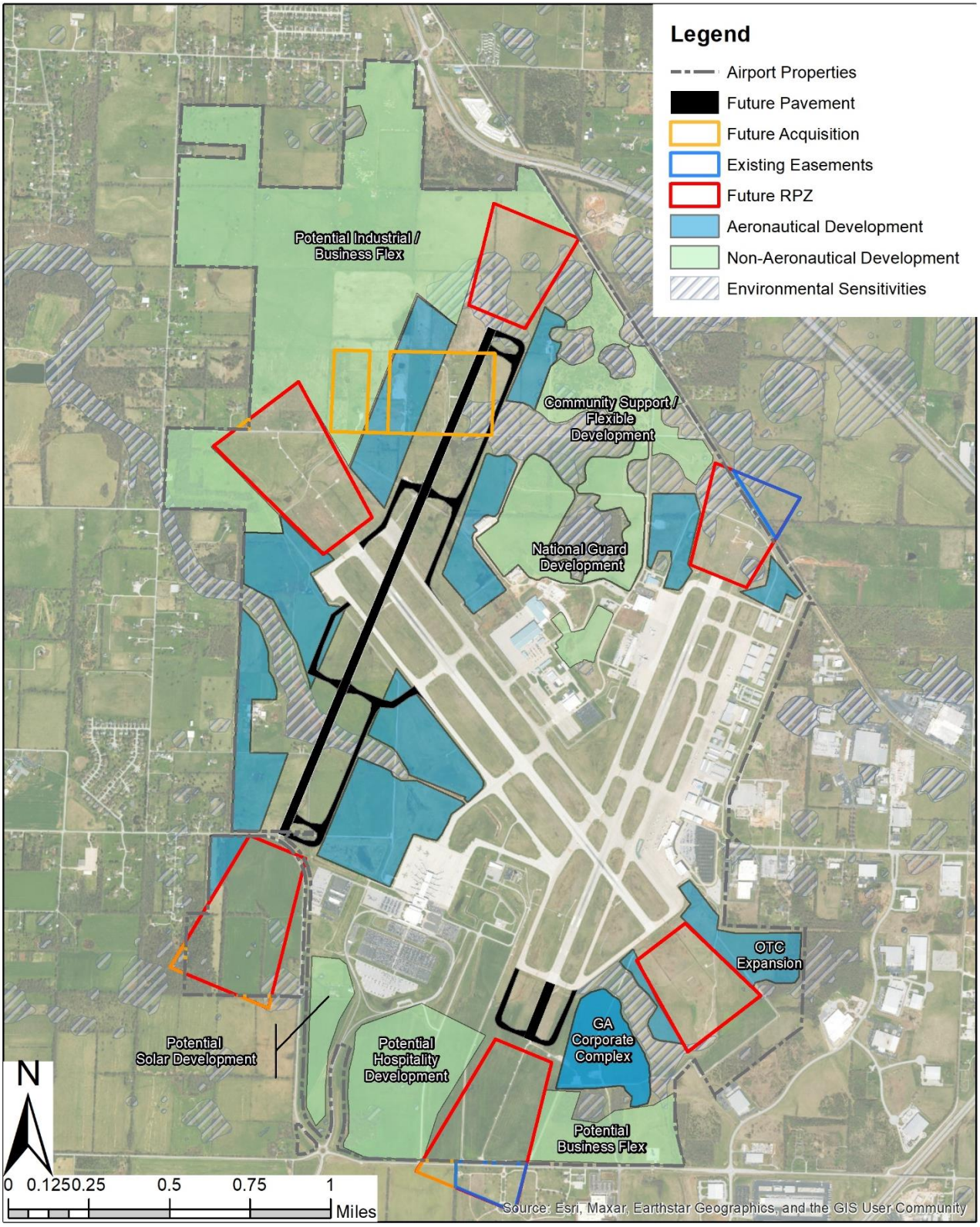
As identified in the most recent comprehensive plan, Forward SGF 2040, the place type around the airport is recognized as Industry and Logistics- which welcomes industrial, warehouse, and airport use as well as supporting uses such as parks and open space, agricultural, hospitality uses, maker spaces, schools, and personal storage and outdoor sale facilities. Many of these uses currently exist around the airport and support the airfield.

Specific uses, such as a targeted industrial manufacturer or warehouser, could support the airfield indirectly, or uses such as a hotel on airport property could give airport users a convenient option for lodging.

The areas closest to the runways are the most logical space for aeronautical development and can be extended away from the runways as demand drives growth. Areas on the periphery of the airfield and areas where aircraft taxiing and movement are cumbersome or inefficient should be reserved for non-aeronautical land uses. Areas within the Runway Protection Zones should be left as open spaces or for low-impact agricultural use.

As discussed in the Facility Requirements chapter, the National Guard is in preparation for an expansion of their facilities. A similar exercise with similar land use principles was conducted with the lens of their needs and has been incorporated in this land use assessment.

Exhibit 8.5-5: SGF Aeronautical and Non-Aeronautical Land for Possible Development



Source: CMT

Several tracts across Airport property have been identified as potential non-aeronautical developable land. These swatches of land would have difficult access to the airfield and be more valuable for non-aviation purposes. It can be assumed that aviation purposes will front the runways and the future runways. As discussed in previous chapters, sinkholes and flooding areas are recommended to avoid when developing as mitigation could have significant ecological impacts and be cost-prohibitive.

REASONS FOR DEVELOPING NON-AERONAUTICAL PROPERTY

There are several reasons for developing this property at SGF, including:

- Property that does not have access to the airfield and would otherwise be unproductive can be used to produce non-aeronautical revenue.
- With compatible development, non-aviation properties can buffer residential or otherwise incompatible land uses near the Airport.
- Increased level of customer service with restaurants, car rental locations, hotels, etc.
- Continued pursuit of financial sustainability in accordance with grant assurance

RECOMMENDED NON-AERONAUTICAL DEVELOPMENT OPTIONS

The Updated Business Plan for SGF has analyzed the vacant land on the North Side Parcel and South Side Parcel and recommended two primary options for developing non-aeronautical property: commercial real estate and solar energy. These are not mutually exclusive. That is, both types of development can occur at SGF.

- Industrial Development - Industrial zones near airports can foster the growth of aviation-related industries, such as aircraft manufacturing, component production, and logistics. This proximity can lead to efficient supply chains, reduced transportation costs, and enhanced collaboration between airport authorities and industrial businesses. Moreover, industrial developments often generate job opportunities, contributing to the local economy and providing a skilled workforce for the airport.
    - Supply Chain Efficiency: Proximity to industrial developments allows for streamlined supply chain operations. Airports heavily rely on efficient cargo handling and logistics services to handle freight and goods. Industrial developments near airports can facilitate seamless transportation and distribution of products, reducing delivery time and costs. This efficiency benefits the airport's cargo operations and the industrial businesses utilizing it for import and export activities.
    - Collaborative Innovation: Industrial developments near airports can foster cooperative innovation and knowledge sharing between airport authorities and industrial companies. The proximity enables more accessible communication and collaboration on research, development, and implementation of new technologies, processes, and practices. This collaboration can lead to advancements in aviation-related industries, improved operational efficiency, and adoption of sustainable practices.

- Infrastructure Sharing: Industrial developments can share infrastructure with airports, resulting in cost savings for both parties. For example, industrial facilities can utilize airport runways or taxiways for testing purposes or aircraft movements, reducing the need for separate dedicated facilities. Shared infrastructure can lead to increased efficiency, optimized resource utilization, and reduced capital expenditures for both airport and industrial businesses.
- Skilled Workforce: Industrial developments near airports can provide a pool of skilled workers already familiar with aviation-related activities. These developments can attract and retain a workforce with expertise in aircraft manufacturing, maintenance, logistics, and other aviation-related fields.

- Hospitality Development - Hospitality developments near airports are crucial in enhancing the travel experience and fostering economic growth. These establishments provide convenient accommodations for travelers, generate revenue for the airport, create employment opportunities, and contribute to the overall appeal of the airport as a travel hub.
  - Convenience: These developments provide convenient accommodations for passengers, airline crew members, and visitors who require overnight stays or extended layovers. The proximity of hotels and other hospitality establishments to the airport allows for easy access, reducing travel time and enhancing the overall passenger experience.
  - Revenue Builder: Hospitality developments can boost the airport's revenue through hotel occupancy taxes and lease agreements. They create employment opportunities for the local community, contributing to economic growth and job creation.
  - Destination Creation: Hotels near airports often offer conference and meeting facilities, catering to business travelers attending conventions or corporate events. This collaboration between the airport and hospitality sectors promotes teamwork, enhances the airport's attractiveness as a travel hub, and contributes to a positive first impression for visitors to the region.
- Green Space and Agricultural Retention - Retaining open green space and agricultural uses near an airport is crucial for environmental sustainability and enhancing quality of life. Preserving open space can be seen as a savings account for the airport as sprawl pushes towards SGF; the value of the land will increase for future development.
  - Noise and Pollution Mitigation: Open green spaces act as buffers, reducing the impact of aircraft noise on nearby communities and absorbing air pollutants generated by airport operations.
  - Carbon Sink and Air Quality: Green spaces serve as carbon sinks, helping to mitigate the environmental footprint of airports and improving overall air quality in the vicinity.
  - Sustainable Land Management: Preserving agricultural uses near airports promotes sustainable land management practices and contributes to local food production.

- Aesthetic Appeal: Agricultural lands and green spaces provide a visual contrast to the built environment of airports, enhancing the landscape and creating a sense of tranquility.
- Recreational Opportunities: Open green spaces near airports offer opportunities for recreational activities, allowing airport personnel and nearby communities to connect with nature.
- Sense of Place: Preserving agricultural heritage and open green spaces near airports fosters a sense of place and identity, contributing to the cultural fabric of the surrounding area.
- Harmonious Coexistence: Retaining green spaces and agricultural uses ensures a harmonious coexistence between aviation infrastructure and the natural environment, promoting a sustainable balance.
- Solar farms: Developing land with solar farms could bring increased land value to areas where known sinkholes exist and may not support the weight of a building, as well as preserve natural grasslands that could be harvested for hay.

8.6 Land Use Recommendations

As discussed in this chapter, small hub airports have a vital role in the economic development of the community they serve, which is why their continuous development and growth are necessary to support the efficient economic growth of the local community. An essential step that SGF needs to take to stay on the path of continuous growth is to continue coordinating the development of compatible land in its vicinity with local municipalities. In addition, the Airport is encouraged to preserve the current overlay zones that protect the parallel runway's future development and seek opportunities to develop critical sections of land for non-aeronautical uses.

The recommendations of this Land Use Plan are the following:

- Leverage the established Airport Overlay Zones, noise contours, and Runway Protection Zones to maintain control of noise generated by aeronautical activities and evaluate if the aeronautical activity may affect newly sprawling communities near the Airport.
- It is recommended that the Airport purchase the parcels that intervene with the proposed parallel runway and associated runway protection zones when the opportunity to do so arises.
- Embrace and support the placemaking ideas outlined in the "Forward SGF Comprehensive Plan."
- It is recommended that the Airport examines options for undeveloped areas for the airport and considers both aeronautical and non-aeronautical development that would work harmoniously with the airfield.
- Consider temporary land uses that can be easily constructed and removed for flexible airport growth.

To organize the actions that should be taken to pursue enhanced land use compatibility both on and off the airport, **Table 8.6-1** was created. This assessment places the topics discussed in the chapter through prioritization levels of low, medium, and high levels.

- Red represents a high-level priority
- Yellow represents a middle-level priority
- Green represents a low-level priority

These Actions were assessed based on stakeholder input and the necessity for airport growth; similarly to any planning approaches, these priorities are subject to change based on airport needs.

Table 8.6-1: Land Use Action Priorities.

Land Use Actions	Priority Levels
Airport Overlay Zone Protection and Municipal planning coordination	
Parallel Runway Land Acquisitions	
General Aeronautical Development	
General Non-Aeronautical Development	
Temporary Use Non-Aeronautical Development	
Greenspace/ Agricultural Retention	
Non-Aeronautical Development- Hospitality Development	
Non-Aeronautical Development- Industrial Development	

Source: CMT

Coordination with local municipalities is necessary to ensure that future airport development plans are considered in each jurisdiction's comprehensive land use plan. Local land use planners and airport planners should use it to evaluate new developments within an airport's surrounding area.

For operations to thrive in the future at SGF and for SGF to keep growing as an asset to the community, development must be responsibly implemented. Incompatible land uses around airports may jeopardize the safety and efficiency of flying activities and the quality of life of the community's residents.

Therefore, this Land Use Compatibility Plan provides the Airport with the tools to coordinate land development with local governments so that future land developments around the airport are compatible with aeronautical activity. Ultimately, the goal of the findings, recommendations, and coordination that stems from this plan is to allow the Airport to continue to benefit the community economically, provide a wide variety of job opportunities for local citizens, and meet the needs of the traveling public.