



Based on input from the JLUS committees, the public, and the JLUS consulting team, factors to be addressed in the Fairchild JLUS were identified under 19 of the 24 common compatibility factors evaluated.

Compatibility, in relation to military readiness, can be defined as the balance or compromise between community needs and interests and military needs and interests. The goal of compatibility planning is to promote an environment where both entities can coexist successfully.

A number of factors influence whether community and military plans, programs, and activities are

compatible or in conflict. For this Joint Land Use Study (JLUS), a list of 24 common compatibility factors was used to help characterize local factors (see the complete list in the text box provided on the following page). These common compatibility factors fall into three broad categories: man-made, natural resources, and competition for scarce resources.

This section provides an overview of the compatibility factors identified in the Fairchild JLUS Study Area. This assessment of current and future incompatibilities drives the development of the strategies presented in Section 5, which are designed to address the current and future factors.

3.1 METHODOLOGY AND EVALUATION

The purpose of this section is to detail the genesis of developing the compatibility factors associated with the Fairchild JLUS. The JLUS evaluation approach consisted of a comprehensive and inclusive discovery process identifying the key stakeholder factors which could directly or indirectly affect the compatibility strategies proposed in Section 5. During the preparation of the Fairchild JLUS, the public, the Joint Policy Committee (JPSC), and the Technical Working Group (TWG) assisted in working through all 24 factors to identify, describe and prioritize the extent of existing and potential future compatibility factors that could impact lands within or near the study area.

At the initial committee workshops and public meetings, these groups were asked to identify the location and type of compatibility factors they thought existed today or could occur in the future. Other factors were also added by the consulting team based on their evaluation of available information and relevant experience on similar projects.

When reviewing this information, it is important to note the following:

- This section provides a general technical background on the factors discussed based on available information. The intent is to provide an adequate context for awareness, education, and development of JLUS recommendations. As such, it is not designed or intended to be utilized as an exhaustive technical evaluation of existing or future conditions within the study area.
- Of the 24 standard compatibility factors, five were determined not to be a factor for this area: 6, Antiterrorism/Force Protection; 14, Public Trespassing; 16, Legislative Initiatives; 20, Marine Environments; and 23, Competition for Frequency Spectrum Capacity.

JLUS Compatibility Factors

Factors that were found to not apply to the Fairchild JLUS are crossed out on the chart to the right.

| Man-Made | | Natural Resources | |
|---|--|---|--|
| 1 Land Use | 10 Light and Glare | 18 Water Quality / Quantity | |
| 2 Safety Zones | 11 Alternative Energy Development | 19 Threatened and Endangered Species | |
| 3 Vertical Obstruction | 12 Air Quality | 20 Marine Environments | |
| 4 Local Housing Availability | 13 Frequency Spectrum Impedance and Interference | Competition for Scarce Resources | |
| 5 Infrastructure Extensions | 14 Public Trespassing | 21 Scarce Natural Resources | |
| 6 Antiterrorism / Force Protection | 15 Cultural Sites | 22 Land, Air, and Sea Spaces | |
| 7 Noise | 16 Legislative Initiatives | 23 Frequency Spectrum Capacity | |
| 8 Vibration | 17 Interagency Coordination | 24 Ground Transportation Capacity | |
| 9 Dust | | | |

- The compatibility factors identified were consolidated into groups of similar factors. For example, a number of development project locations were identified under Compatibility Factor 1, Land Use. These items were further grouped into a single factor called “Urban Growth Potential.” These grouped items (shown in Table 3-1) were then reviewed and evaluated by the JLUS committees.

Three criteria were utilized to evaluate the identified factors: current impact, factor location, and potential impact. Utilizing a scale ranging from “1” (most critical) to “3” (least critical), the JLUS committees scored each factor group.

The criteria utilized for this assessment included the following:

- **Current Impact.** Each factor was rated based on its current impact to compatibility of either the installation or a local jurisdiction. Factors posing the most extensive operational constraints or community concerns were identified as the highest priority (1). Factors resulting in a moderate operational impacts or community concerns were identified as important (2). Factors that present very little impact or do not currently impact the installation or local jurisdictions were identified as the lowest priority (3).
- **Location.** This criterion measures the proximity of each factor in relation to activities occurring on the installation. Factors occurring near the installation are often more critical than those occurring remotely or in areas more distant from operational activities. Factors that were located inside the JLUS study area and were presently occurring were considered significant (1). Factors located inside the JLUS study area with the potential to occur, or located outside the JLUS study area and presently occurring, were rated important (2). Factors located outside the

JLUS study area with minimal or no potential to occur were considered very low priority (3).

- **Potential Impact.** Although a factor may not present a current threat to the installation or the community, it may possess the ability to become a factor. Should conditions change, adjacent or proximate development increase, or other factors become apparent, new conflicts with existing or future missions and operational activities at Fairchild AFB could arise. Factors were rated based on their future potential using the same criteria as established for current impact.

The three criteria presented above were averaged to determine the overall threat level for each factor. Factors ranking “1” are considered the most critical (designated in red), “2” are moderately critical (designated in yellow), and “3” are least critical (designated in green). A critical factor was defined as one where there was potential for impacts on current missions and where existing tools are not adequate to address the factor identified. Additional compatibility factors identified by the consulting team were not scored and have an “N/R” (no rating) for each criterion.

Table 3-1 presents a summary of the factors discussed in this section. For this summary, the factors have been presented from most critical to those found to not have a high potential for impacting Fairchild AFB operations. Each factor is identified alpha-numerically in Table 3-1 and on the factors maps later in this section (i.e., 1A, 2C, etc.). The number corresponds to the compatibility factor as shown in the JLUS Compatibility Factors graphic on the previous page while the letters are used to differentiate individual factors. For example, for Factor #5, Infrastructure Extensions, there are seven items or locations noted. These are referred to as 5A, 5B, 5C, 5D, 5E, 5F and 5G.

Each factor (issue) is identified using a number (the factor number, such as 5 for Infrastructure Extensions) and a letter (A, B, C, etc.) to keep track of the individual issues identified.

Table 3-1. Compatibility Factors Summary

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------------------------------|----------------|----------|------------------|
| Urban Growth: existing development, expansion of non-conforming uses, new development, former military housing (Geiger Heights) | 1A, 1C, 1E, 1F, 1Q, 1R | ■ | ■ | ■ |
| Urban growth areas | 1K | ■ | ■ | ■ |
| Noise from aircraft operations impacting existing and proposed development | 7C, 7D, 7F, 7G, 7H, 7I, 1M, 4A | ■ | ■ | ■ |
| Coordination between entities (Fairchild AFB, communities, tribes, SIA) | 17A | ■ | ■ | ■ |
| Geiger Spur | 1B, 16A, 24B | ■ | ■ | ■ |
| Mining operations | 1P | ■ | ■ | ■ |
| Potential for incompatible uses with safety zones | 2A, 2B, 2D | ■ | ■ | ■ |
| Bird attraction hazards | 2C, 1D, 1O | ■ | ■ | ■ |
| FAFB / SIA noise contour overlay | 7A | ■ | ■ | ■ |
| Expanding / shrinking Fairchild AFB noise contours | 7B, 7E | ■ | ■ | ■ |
| Light and glare from proposed development | 10A, 10C | ■ | ■ | ■ |
| Spalding Catchfly Habitat | 19A | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Table 3-1. Compatibility Factors Summary (continued)

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|----------------|----------------|----------|------------------|
| Development of new Airway Heights Wastewater Treatment Facility | 5D | ■ | ■ | ■ |
| Dust from regional uses (Waste to Energy plant, agriculture, grading) | 9A | ■ | ■ | ■ |
| Ground transportation capacity throughout region (increasing demand from new development) | 24A | ■ | ■ | ■ |
| Existing and proposed land uses on Native American tribal land | 1I, 1J, 1L | ■ | ■ | ■ |
| Spokane International Airport (conflicts between existing/proposed land uses and runway expansions) | 1N | ■ | ■ | ■ |
| Area wide stormwater and groundwater factors | 5A, 5B, 5C | ■ | ■ | ■ |
| Urban light sources | 10B | ■ | ■ | ■ |
| Wind and solar energy development | 11A | ■ | ■ | ■ |
| Safety buffers for firing ranges, areas with explosive safety arcs | 2E, 1H | ■ | ■ | ■ |
| Height of current / future development creating obstructions or hazards to air navigation | 3A, 3B, 3C, 3D | ■ | ■ | ■ |
| Availability of affordable housing and general quality of life | 4B, 4C | ■ | ■ | ■ |
| Proposed water infrastructure extensions from City of Spokane into West Plains | 5E | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Table 3-1. Compatibility Factors Summary (continued)

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------|----------------|----------|------------------|
| Vibration impacts from Fairchild AFB operations (i.e., EOD, firing ranges, aircraft operations, etc.) | 8A, 8B | ■ | ■ | ■ |
| Waste to Energy Plant | 12A | ■ | ■ | ■ |
| Cultural significance of West Plains | 15A | ■ | ■ | ■ |
| Water supply in developing areas (water extensions needed to serve new development) | 18A | ■ | ■ | ■ |
| Recreational assets (local water bodies) | 21A | ■ | ■ | ■ |
| Fairchild AFB entry traffic | 24C | ■ | ■ | ■ |
| Geiger Spur | 5F | ■ | ■ | ■ |
| Spokane Raceway Park | 1S | N/R | N/R | N/R |
| Airspace (joint use and air traffic coordination) | 2F | N/R | N/R | N/R |
| US Highway 2 Enhancements | 5G | N/R | N/R | N/R |
| Vernal Pools | 19B | N/R | N/R | N/R |
| General habitat considerations | 19C | N/R | N/R | N/R |
| Frequency spectrum impedance and interference throughout the region. | 13A | N/R | N/R | N/R |
| Competition for airspace with Spokane International Airport | 22A | N/R | N/R | N/R |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

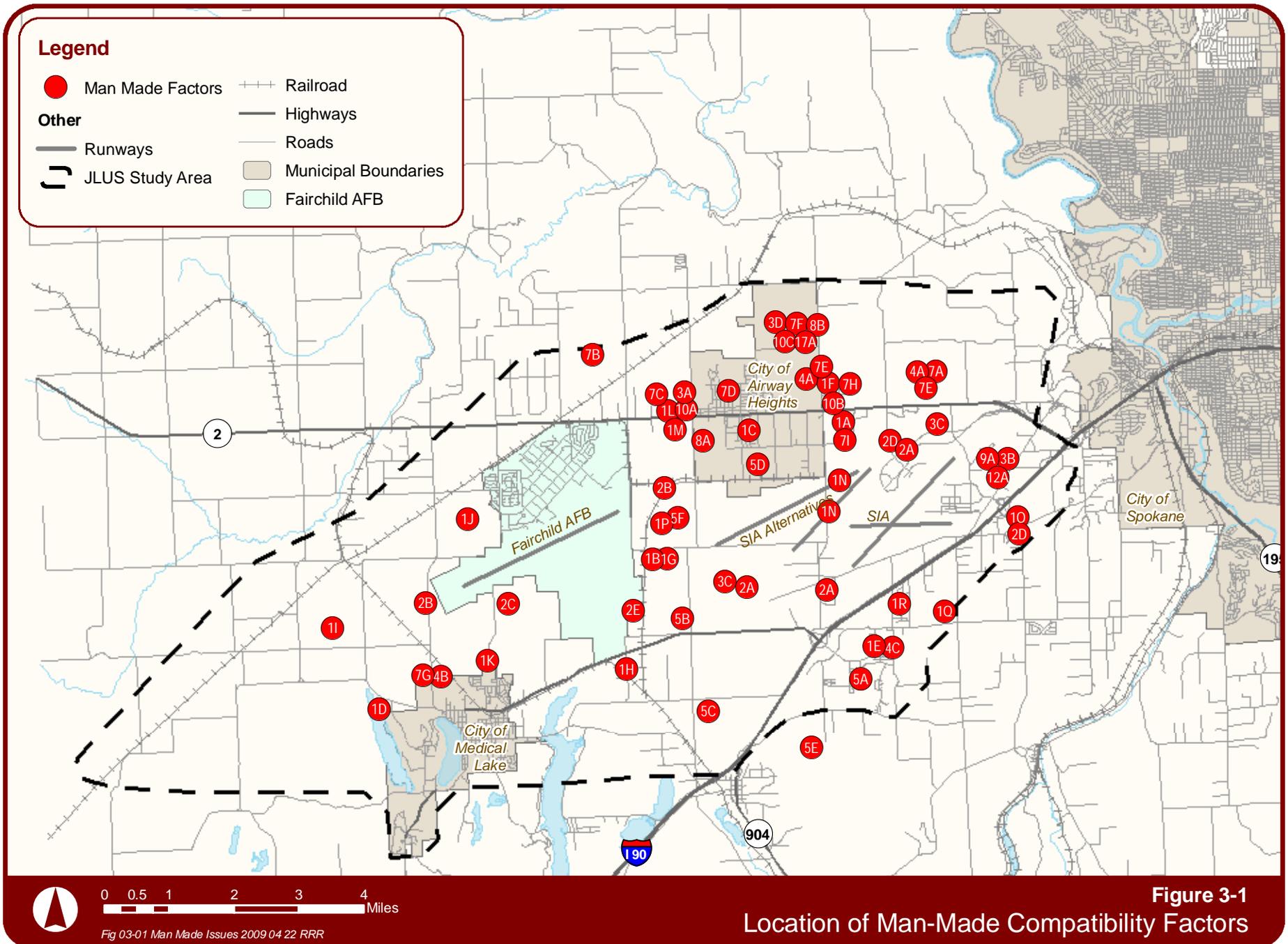
3.2 MAN-MADE COMPATIBILITY FACTORS

This section details the man-made compatibility factors and identified factors associated with operations at Fairchild AFB.

Man-made factors are those that are generated by community development that conflicts with military activities. These conditions may also be generated by the military and encroach upon nearby communities. In either case, these factors may not only impact military readiness, but also a community's quality of life. For Fairchild AFB, 14 of the 17 man-made compatibility factors were identified as producing factors to be addressed by the installation and surrounding community stakeholders.

Figure 3-1 illustrates the location of the man-made compatibility factors identified by the JLUS committees, the public, and the consulting team during preparation of this JLUS. Some factors identified apply to the entire study area, and therefore, do not have a specific location on the map. These are Factors 3A, 11A, 11B, 13A and 15A.

The locations shown on Figure 3-1 (and other similar figures in this section) indicate known or existing factor locations and are shown to indicate the general distribution of this factor today. However, it is important that the JLUS consider not only where current factors were identified, but evaluate the potential for existing factors to occur in other locations sometime in the future. The strategies presented in Section 5 were designed to address the significant compatibility factors identified in this section.



1 *Land Use Factors*

Definition of Land Use:

The basis of land use planning and regulation relates to the government's role in protecting the public's health, safety, and welfare. Local jurisdictions' general plans and zoning ordinances can be the most effective tools for avoiding or resolving land use compatibility issues. These tools ensure the separation of land uses that differ significantly in character. Land use separation also applies to properties where the use of one property may adversely impact the use of another. For instance, industrial uses are often separated from residential uses to avoid impacts related to noise, odors, lighting, and so forth.

Land use planning around military installations is similar to the process used to evaluate other types of land uses. For instance, local jurisdictions already consider compatibility factors such as noise when locating residential developments near commercial or industrial areas. As the land between local municipalities is sold or developed, many facets of both entities are affected. New residents, tenants, or building owners are typically not fully aware of the implications of locating in close proximity to an active military installation and training area.

The factors identified for the land use compatibility factor are listed in Table 3-2 and are further described in the following discussion.

Table 3-2. Land Use Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|------------------------|----------------|----------|------------------|
| Urban Growth: existing development, expansion of non-conforming uses and new development | 1A, 1C, 1E, 1F, 1Q, 1R | ■ | ■ | ■ |
| Geiger Spur: relocation and associated development potential | 1B, 16A, 24B | ■ | ■ | ■ |
| Development on Tribal Lands: existing and proposed land uses on Native American tribal land | 1I, 1J, 1L | ■ | ■ | ■ |
| Urban growth areas (promotes high density uses) | 1K | ■ | ■ | ■ |
| Spokane International Airport (conflicts between existing/proposed land uses and runway expansions) | 1N | ■ | ■ | ■ |
| Mining operations (dust, lighting, bird attraction) | 1P | ■ | ■ | ■ |
| Spokane Raceway Park | 1S | N/R | N/R | N/R |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating
 Factors 1D, 1O, and 1H are discussed within the Safety Compatibility Factor

Urban Growth (Existing and Proposed Development)

Many of the factors related to land use compatibility raised by the public, Joint Land Use Policy Steering Committee, and Technical Advisory Group were associated with existing or proposed development plans located near the installation (● Factors 1A, 1C, 1E, 1F, 1Q, 1R). The following is a list of developments specifically mentioned:

- **Blue Grouse Estates** – Southeast of the I-90 and Geiger Boulevard interchange, this single-family development is proposed to include 207 lots.
- **Aspen Park** – A 555-unit residential development located south of Spokane International Airport (SIA) and Interstate 90 and west of Spotted Road.
- **Maple Terrace** – Located east of S. Thomas Mallen Road and north of W. Hallet, this development will consist of 88 single-family residential units.
- **Deer Creek Apartments** – Apartment complex located one half mile south of SR 2 on Flight Drive.

As discussed in Section 2, a significant amount of land on the eastern side of Fairchild AFB remains undeveloped and the West Plains is seen by many as the next natural location for development due to the affordability of land and growing traffic congestion north of Spokane that makes new projects less desirable for residential development. The Liberty Lake area is becoming more expensive, and opposition to new developments occurs more frequently in the South Hill area.

The desirability and potential future development of the West Plains creates a substantial threat to compatibility if not carefully planned and coordinated.

Land uses may be considered incompatible with military installations and their operations based on many factors. Among the most common factors causing incompatibility with military airfields and operations areas are the high levels of noise created by aircraft, limits on the heights of structures near the installation, as well as off-installation light pollution that negatively impacts the use of night vision devices (NVD) for military air and ground training. The development of land uses incompatible with an installation's military mission threatens that installation's continued existence.

Complicating land use planning within the West Plains region is the number of entities responsible for land use management. Fairchild AFB is surrounded by lands administered by the City of Medical Lake, City of Airway Heights, Spokane County, and two Native American tribal groups. Additionally, the City of Spokane has co-management responsibility together with Spokane County for properties within the joint planning area (JPA) consisting of the eastern one-third of the JLUS study area. Figure 3-2 provides a generalized look at existing land uses in the area and Figure 3-3 presents the current zoning designations for land in and adjacent to the study area.

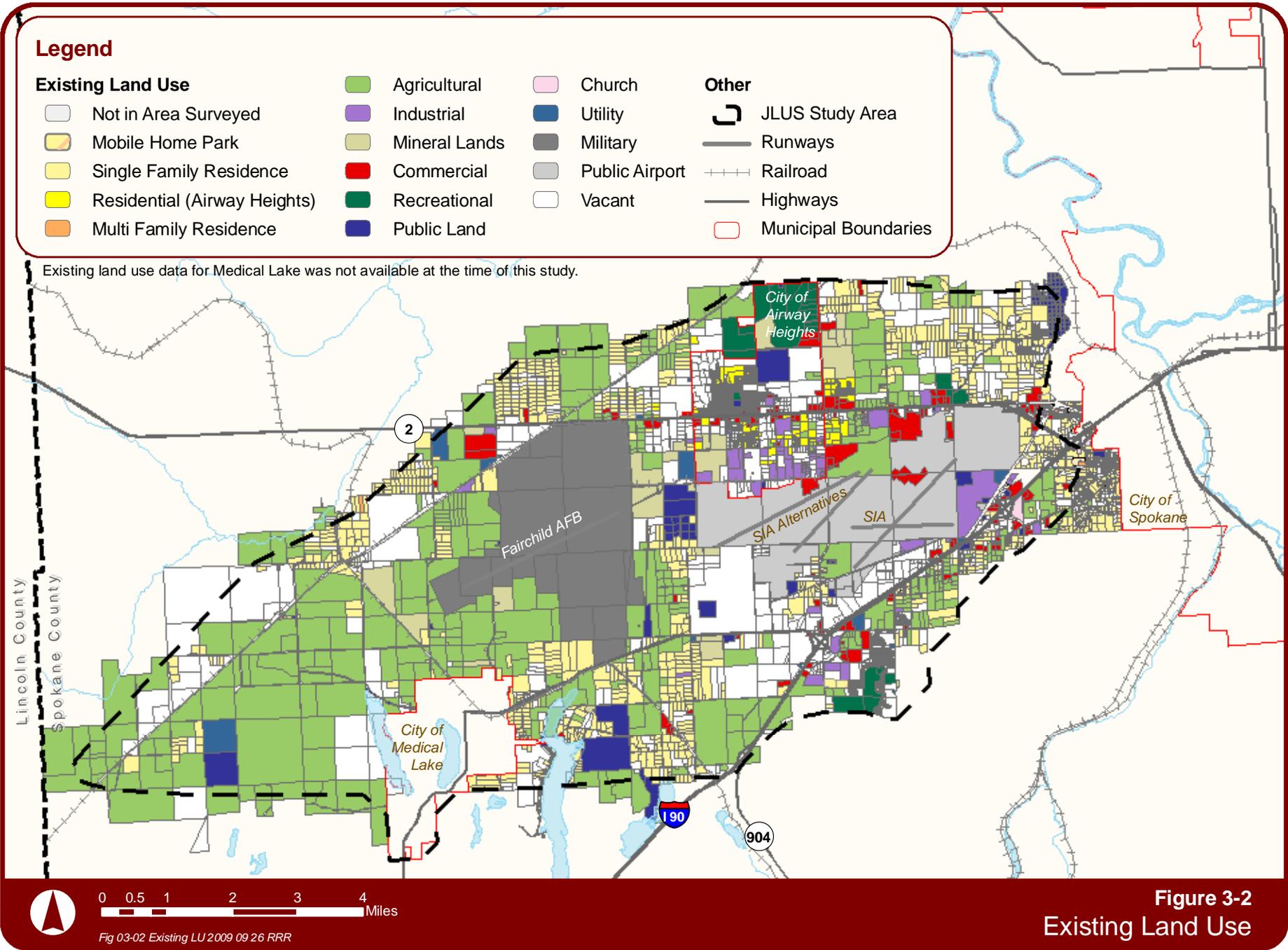
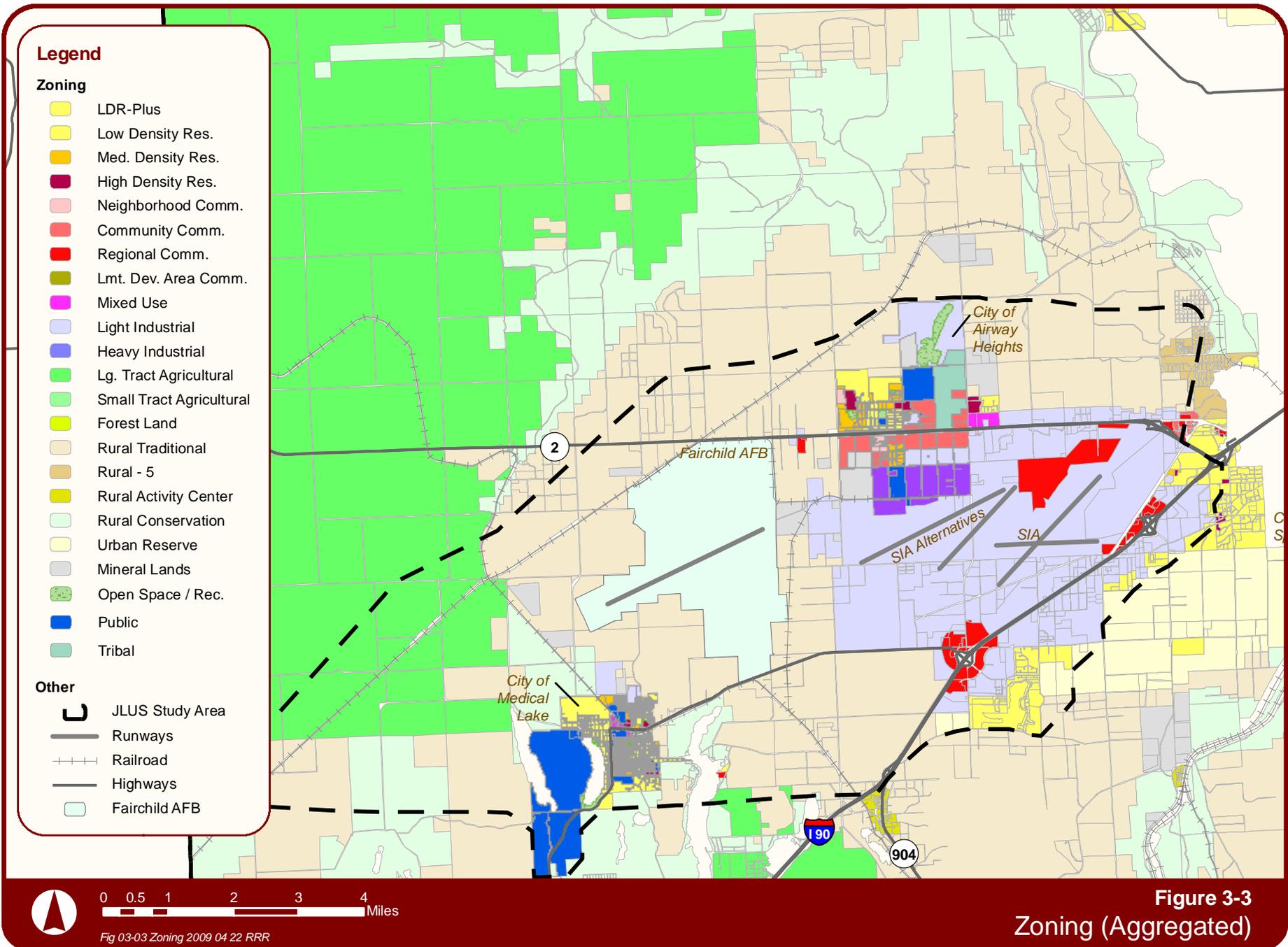


Figure 3-2
Existing Land Use



Policy Implications

One of the largest challenges to land use compatibility is the recent revision to the Spokane County Zoning Code expanding the uses permitted in the Light Industrial zone. Approved on May 25, 2005 (BoCC Resolution 2005-0579), the amendment allowed more commercial and residential development options within the light industrial zone in the West Plains geographical area. The amendment increased the number of permitted uses to include all of those uses that are currently allowed in the Regional Commercial zone, with the exception of adult retail and adult entertainment establishments. As a result, the amendment allowed a full range of commercial uses as well as single family, two-family, and multi-family residential uses.

The 2005 amendment dramatically encouraged increased residential development on land zoned Light Industrial within the West Plains area. One large subdivision (over 200 lots) was approved in a Spokane International Airport Accident Potential Zone (APZ). This generated substantial concern for the long-term protection of Fairchild AFB and SIA by the Federal Aviation Administration (FAA), the Aviation Division of the Washington State Department of Transportation (WSDOT), and numerous local persons and organizations. Although a moratorium was adopted in October 2, 2006 (BoCC Resolution 2006-0838) to limit development within these critical areas and an amendment increasing restrictions on residential uses within APZ 'B of the Airport Overlay Zone (AOZ) (Chapter 14.702) was adopted on January 22, 2008 (BoCC Resolution 2008-0065), this situation illustrates the impacts associated with zoning decisions when additional protections for the areas around Fairchild AFB are not in place.

One particular development of concern approved prior to the moratorium is the Deer Creek Apartment complex (● Factor 1A) located south of US Highway 2 to the east of Airway Heights. This high density residential development is, located in the 65-70 Ldn noise contour as identified in the 1995 Fairchild Air Installation Compatible Use Zone (AICUZ) study. Although presently located outside the 65 Ldn noise contour as identified in Fairchild's 2007 AICUZ, the changing nature of noise contours resulting from installation operations becomes apparent in the differences between the two studies. Noise contours expand and contract over time as missions and operations at the installation change. It is reasonable to expect that this property will be subjected to aircraft noise in the future. Development within Fairchild's critical operations area will limit the ability of the installation to adapt to new missions, to support new / different aircraft, and could jeopardize its long-term viability.

Although outside the current 65 Ldn noise contour, safety, noise, and light pollution considerations are still a concern for Fairchild AFB concerning this project and development of sensitive land uses in similar areas. The developer of the Deer Creek Apartments recently sought approval for the construction of a second phase of residential development as an expansion of the original approval. Occurring after the zoning code amendment limited residential uses within the Light Industrial zone, approval of the expansion of the original development would have meant expanding this use. Fairchild AFB, SIA, FAA, and WSDOT continued to cite concerns with the proposed second phase. These concerns included its location within the "area of influence" for Fairchild AFB and Spokane International Airport (an area defined in Spokane County's Comprehensive Plan as "properties near public airports which are subjected to aircraft noise of 65 decibels or higher day-night average

sound level”), cumulative noise impacts from multiple air facilities, incompatibilities with a proposed third runway at Spokane International Airport, and safety impacts including the proportionately higher percentage of accidents that occur in aircraft traffic patterns within the areas of influence. These entities advised that the permitting of high density residential uses, or concentrations of residential uses, within proximity to airports weakens the ability of the facility to protect public safety by allowing incompatible development and hazardous situations within critical phases of aircraft approach and departure operations.

Based on these considerations, the Spokane County Hearing Examiner denied the apartment expansion request. Although this additional development was denied, there continues to be considerable development interest within this portion of the study area. Other developments approved in this vicinity include a 10-screen, 33,000-square foot cinema to be located north of the Deer Creek Apartments. There is also a planned three-story, 79-unit La Quinta Inn and Suites, which would be located on the east side of Deer Creek Road south of US Highway 2. The growth occurring within the area will continue to create compatibility concerns for Fairchild AFB unless a coordinated planning approach is taken.

Recent annexation proposals for the West Plains will, if approved, increase land controlled by Airway Heights and the City of Spokane into the study area (see Figure 3-4). The City of Spokane will commence its annexation process for a 10-square mile portion of the West Plains area, including the Spokane International Airport, in 2009. The City of Airway Heights will seek to annex one square half mile, including the Wal-Mart on Hayford Road. Currently, this area is home to approximately 1,500 residents and has substantial interest among developers for commercial and residential development. Final decisions on annexation approval rest

with the Washington State Boundary Review Board of Spokane County. Annexation creates changing compatibility factors as currently, each jurisdiction has a slightly different set of regulatory tools for the treatment of compatibility factors.

Geiger Spur

As discussed previously in Section 2, Spokane County, in cooperation with the Spokane Economic Development Council (EDC), conducted a study in 2005 to determine the viability of relocating the portion of the Geiger Spur rail line (● Factor 1B) from within Fairchild AFB to a location outside the base. With the transfer of the rail spur ownership from Burlington Northern-Santa Fe (BNSF) to Spokane County, the Air Force required the County to relocate the spur line outside the base by September 30, 2009.

In addition to the construction of the new spur line, the planning of the Geiger Transload and Logistics Facility is also underway. The Transload Facility will use cranes and other equipment to transfer freight between rail cars and trucks. Although the Transload Facility will be an important economic development anchor increasing Spokane’s identity as a major international freight center, the presence of a facility of this nature directly to the east of Fairchild AFB presents potential compatibility factors, most notably with vertical obstructions and light pollution. Additionally, the existence of the newly constructed spur rail line running near the east boundary of Fairchild AFB will very likely attract further economic developments, specifically industrial and commercial uses.

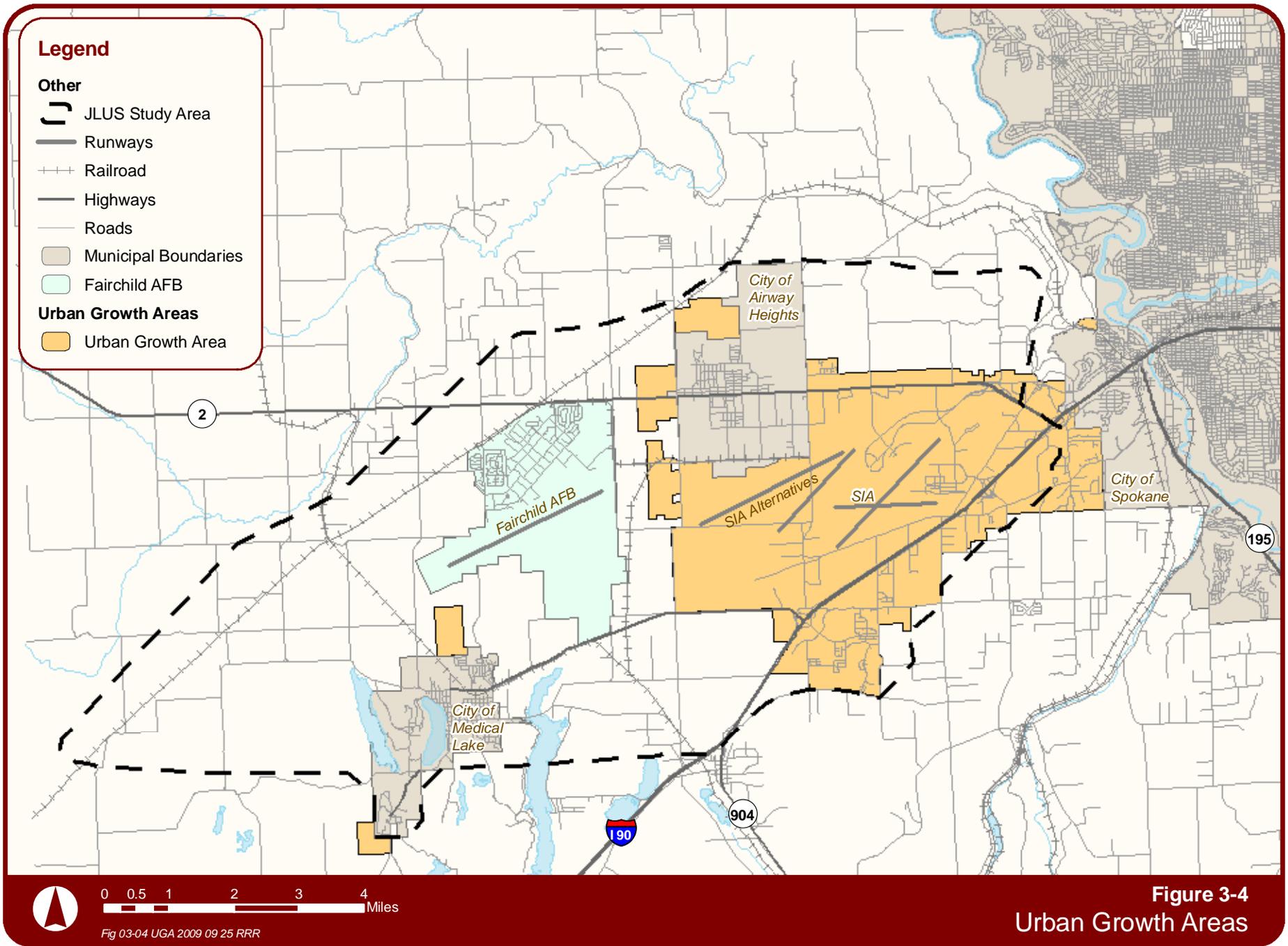


Figure 3-4
Urban Growth Areas

Development on Tribal Lands

Enterprising Native American communities are using their sovereignty to approve large development projects in the vicinity of Fairchild AFB (● Factors 1I, 1J, 1L). Indian trust lands fall under federal jurisdiction and, in most cases, are immune from state and municipal land development laws and regulations. Without cooperative land use planning, local planning boards and communities are often left with little control over what is built. In addition to existing lands, tribal governments can submit the purchase of additional holdings to the Department of the Interior to add to the nation's holdings. Once deemed part of a tribal government's holdings, land planning and development is under the jurisdiction of the tribal government.

Several large scale Native American developments exist or are proposed within the study area. These projects include the Kalispel Tribe's Northern Quest Casino situated along North Hayford Road in Airway Heights. The current resort and casino are being expanded to include a 250-room hotel, a 10,000-square foot spa, and a six-story parking garage. The ultimate plan includes a 2,300-seat special events venue and a 50,000-square foot nine-story glass atrium that connects two hotel towers. The Spokane Tribe has lands located to the west of Airway Heights. The Tribe has a 10-15 year master plan that includes a 145-acre hotel and casino resort site with supporting highway commercial uses just north of Fairchild AFB along US Highway 2. The first phase of this development, a convenience store, was completed in 2006.

Urban Growth Areas

As discussed in detail in Section 2, the State Growth Management Act (GMA) requires the designation of urban growth areas (UGA) and the development of policies for joint planning within the UGAs (● Factor 1K). Spokane County's adopted Countywide Planning Policies (CWPP) addresses the need for joint planning within the UGAs and defines joint planning areas. Most of the eastern portion of the JLUS study area is designated as being within the City of Spokane's UGA with a small portion of it designated for Airway Heights' future growth area. All of this area is identified as a JPA, which is an area within the UGA assigned to a municipality for future urban development; however, a JPA is located in unincorporated portion of the county. This situation necessitates that the county partner with a city to jointly plan that city's future UGA.

The CWPP document requires an evaluation of the UGAs at least once every 10 years to ensure adequacy of the urban land capacity based on urban growth projected within a 20-year planning horizon. In 2006, Spokane County conducted an initial assessment of 29 sub-areas for potential inclusion within the UGA. There is considerable area within the West Plains within the UGA, including SIA. Although Fairchild AFB is not included, the area of interest extends to within ½ mile of the installation's eastern boundary (see Figure 3-4).

Although regional guidance is developed, each city within the study area and the County has their own set of development regulations and design standards. As urban growth continues on the West Plains, consistency in land development regulations and standards will become more critical. For instance, using the same accident potential zone definitions and allowed land uses in these areas will help ensure appropriate protection of public safety in all jurisdictions.

The runway alignment study was recently accepted by the SIA Board and released for public review. The study is recommending the alternative runway that is parallel to SIA's main runway. A final decision on which alternative will be pursued is pending.

Spokane International Airport

Located east of Fairchild AFB, Spokane International Airport manages approximately 5,000 acres of public land dedicated to airport and airport related economic development. Jointly operated by Spokane County and the City of Spokane, through the Airport Board, the facility has an established airport layout plan and master plan that has served to provide a basis for land use and development decisions on airport lands. Although it has not determined the final layout for development of SIA's third runway, a study is underway to identify the best of two runway alternatives. Development incompatible with airport operations may conflict with the layout, length, orientation, and use of the third runway (● Factor 1N); however, the focus of this study is Fairchild AFB and its operations. It is simply noted here that land development having an impacts on Fairchild AFB could also affect SIA's current and future operations since the two facilities are in very close proximity.

Impacts to one air facility have the potential to impact the other due to their shared airspace. As "essential public facilities" under the GMA, incompatible development impacting the operation of these facilities should not be allowed. See also the discussion under Compatibility Factor 3, Vertical Obstructions.

Mining Operations

Spokane County's abundance of natural resources led to the development of numerous mining operations throughout the study area (● Factor 1P). Mining operations are primarily devoted to sand, gravel, rock, or clay production. Concerns related to these mining facilities include dust generation from mining activities, vertical obstruction potential and light impacts from any nighttime activities. Also, standing water sometimes occurs as a result of mining operations due to the high water table in the locations near Fairchild AFB. Standing water attracts birdlife, which is hazardous to aircraft operations.

The presence of a large commercial racetrack north of the City of Airway Heights was specifically mentioned as a recreational asset of concern (● Factor 1S). In 2008, Spokane County purchased the privately owned Spokane Raceway Park. Renamed the Spokane Motorsports Park, the facility is home to a drag strip, road course and paved oval, and hosts numerous drag and oval racing events throughout the year. Recreational assets of this nature can be immense economic attractors to local communities. However, with the increased attraction once rural communities can be faced with infrastructure considerations, traffic congestion, and other operational impacts such as increased noise levels. For Fairchild AFB, operation of the track during the night could present light and glare obstacles to aircraft.

2 Safety Zones Factors

Definition:

Safety zones are areas in which development should be more restrictive in terms of use and concentrations of people due to the higher risks to public safety. Issues to consider include aircraft accident potential zones, weapons firing range safety zones and explosive safety zones.

Military installations often have activities or facilities that require special consideration by local jurisdictions when evaluating compatibility due to public safety concerns. The factor locations described under this factor are listed on Table 3-3 and described on the following pages.

Table 3-3. Safety Zone Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|------------|--|--|--|
| Aircraft Safety Areas/Zones: potential for incompatible uses with safety zones | 2A, 2B, 2D |  |  |  |
| Bird attraction hazards | 2C, 1D, 1O |  |  |  |
| Firing Ranges and Explosive Safety Areas: safety buffers for firing ranges, areas with explosive safety arcs | 2E, 1H |  |  |  |
| Airspace: joint use and air traffic coordination | 2F | N/R | N/R | N/R |

Notes:  Most Critical  Moderately Critical  Least Critical N/R = No Rating

Aircraft Safety Areas/Zones

The following discussion details the safety areas or zones associated with civilian airports and military air operations with emphasis on the unique aspects of aircraft operations safety within the study area.

Spokane International Airport



Spokane International Airport's current runways

Source: www.wsdot.wa.gov

Spokane County and the City of Airway Heights have both recognized the need to address aircraft safety related to civilian and military aircraft operations. As incorporated in the Spokane County Zoning Code (Chapter 14.702) and in the Airway Heights Zoning Code (Chapter 17.15), an Airport Overlay Zone was created that influences development in certain areas on and adjacent to SIA of Fairchild AFB.

These ordinances utilize accident potential zones (APZ) as defined by Federal Aviation Administration regulations for civilian/public airports. These APZs are trapezoidal in shape and are identified on zoning maps as APZ-A and APZ-B. These zones are defined as follows:

- **APZ-A** - all land in that portion of the approach area of the runway, which extends outward from the end of the primary surface a distance equal to one-third of the existing or planned length of the runway. For SIA's primary runway (Runway 3/21), this length

equates to 3,000 feet. For Runway 7/25, SIA's secondary air carrier runway, this length is 2,730 feet.

- **APZ-B** – all land in that portion of the approach area of a runway, which extends outward from APZ-A a distance equal to two-thirds of the existing or planned length of the runway, which is 6,000 feet long for SIA's primary runway. For the secondary air carrier runway, this length is 5,466 feet.

Figure 3-5 illustrates APZ-A and APZ-B for SIA's runways. Additionally, two locations are currently under consideration for construction of a third SIA runway. Figure 3-6 shows the locations of the runway options and the associated safety zones. The runway site closest to Fairchild AFB is oriented parallel to the installation's runway. The runway option closest to SIA is oriented parallel to and west of the airport's 9,000-foot primary runway. The SIA Study referenced earlier in this section will guide the SIA Board of Directors to the selection of a preferred future third runway.

Identified under ● Factor 2A is the concern that incompatible uses will be allowed inside the APZs of the existing and preferred SIA runways. To address these concerns, the Airport Overlay Zone (AOZ) imposes height and land use restrictions within air space and accident potential areas for the protection and safety of aircraft operations. The AOZ currently provides protective APZs at both ends of the proposed SIA runway parallel to the facility's primary runway. The proposed SIA runway east of and parallel to Fairchild AFB's runway is not afforded protection the Spokane County Zoning Code (Chapter 14.702). Height factors will be discussed later in this section under Compatibility Factor 3, Vertical Obstructions.

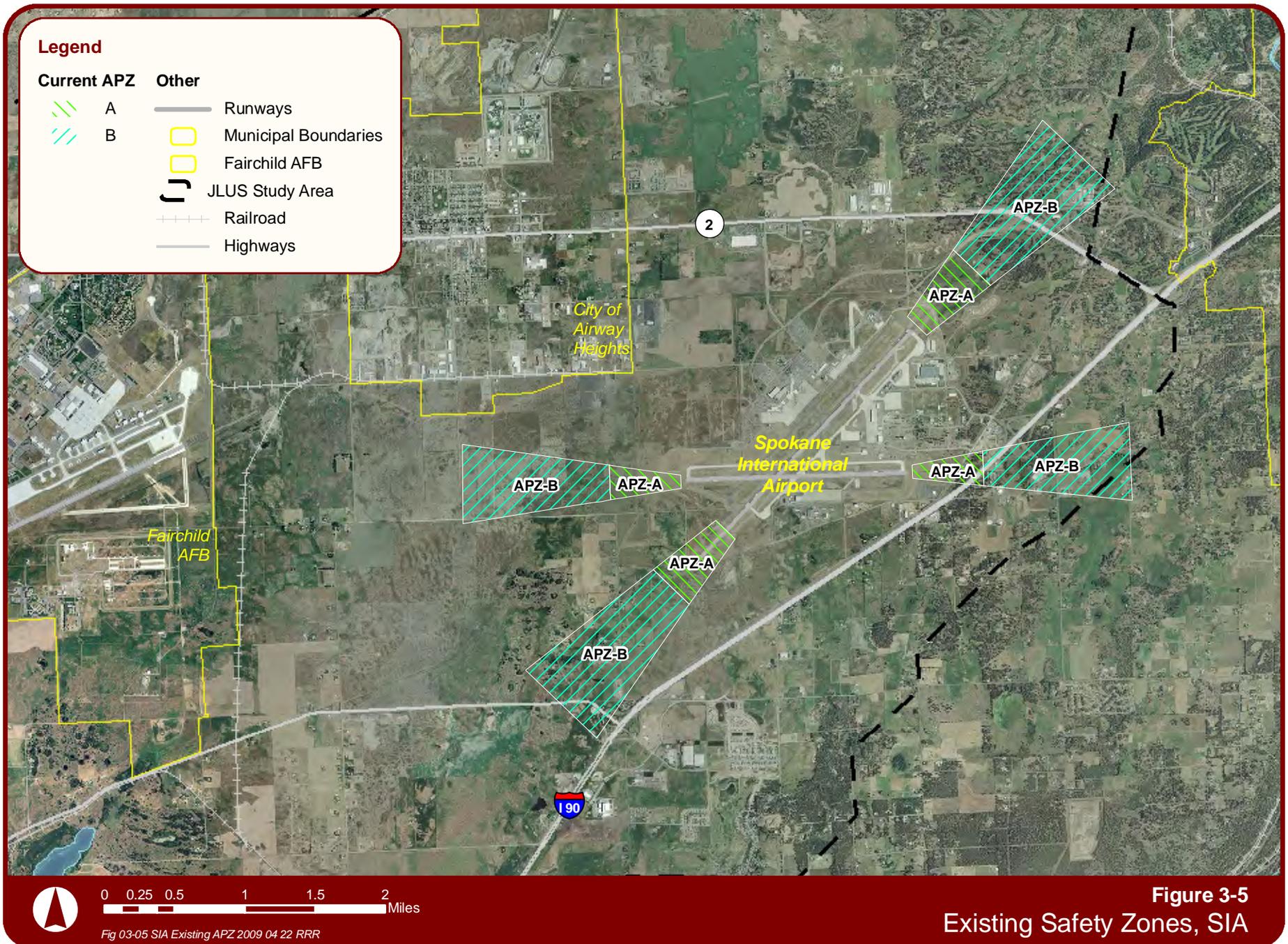
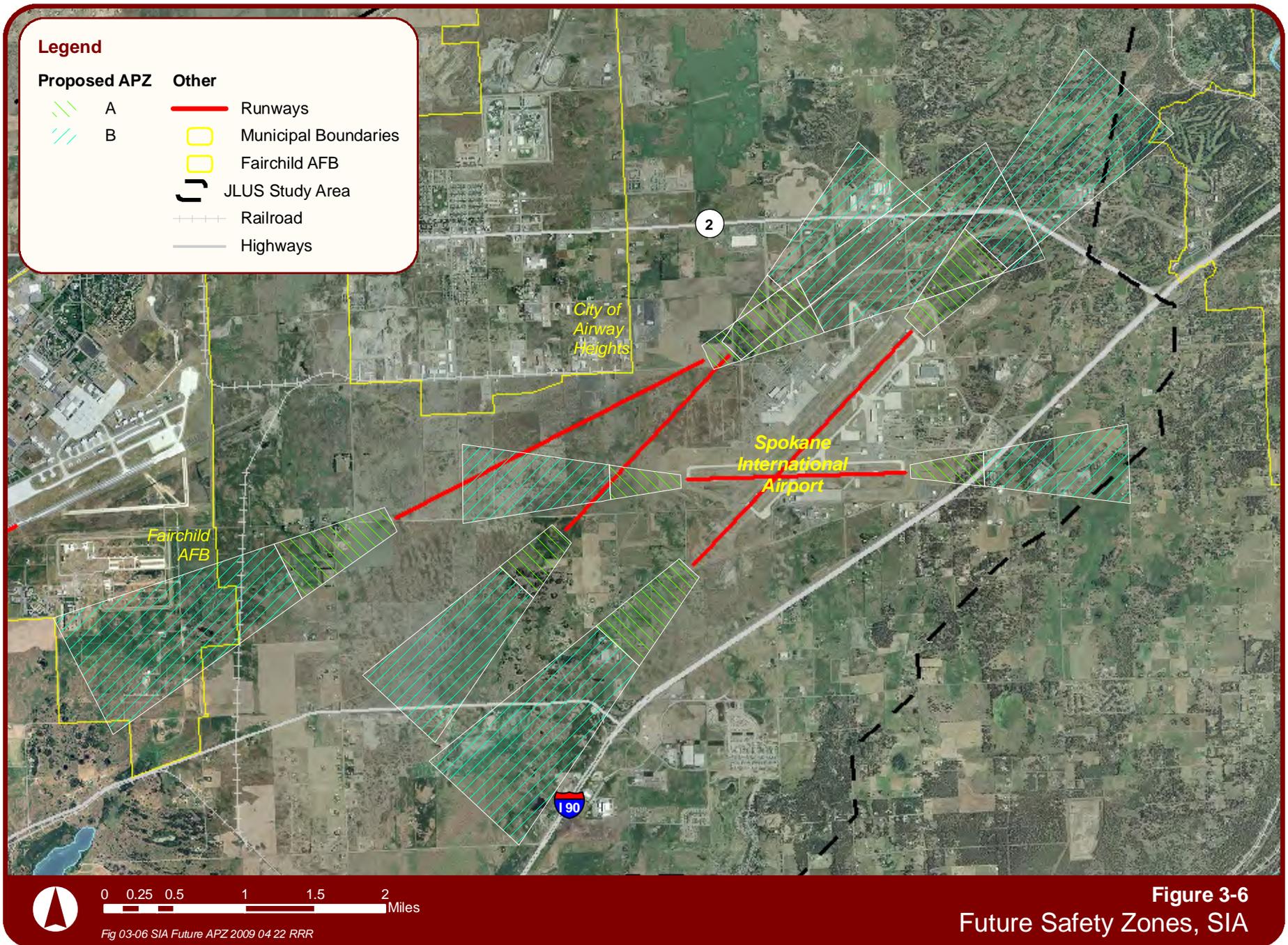


Figure 3-5
Existing Safety Zones, SIA



As noted in the Spokane County and Airway Heights zoning codes, only the following specifically permitted uses are allowed in the APZ-A located at both ends of the Fairchild AFB runway:

- Warehousing/self storage facility including building(s) for commercial storage of personal property.
- Outdoor storage of equipment, automobiles, machinery, building materials, contractor's equipment storage yards
- Cemetery
- Nursery
- General agricultural use, except feed lots or other agricultural uses that attract substantial quantities of birds
- Public utility local distribution or transmission facilities necessary for public service
- Quarry, gravel pit, mining
- Maintenance and repair facility
- Open storage area for commercial storage of personal property such as boats and travel trailers.
- Auto wrecking; junk, and salvage yard
- Rail or trucking freight terminal

Within APZ-B, the uses associated with the Spokane International Airport and Fairchild AFB specifically prohibited in the Spokane County and Airway Heights zoning codes are as follows:

- Child day-care center
- Church
- Community treatment facility
- Family day-care provider
- Heliport or helipad
- Hospital
- Hotel
- Manufactured home park
- Motel
- Nursing home
- Participant sports and recreation
- Recreational vehicle park
- School
- Spectator sports facility
- Theater
- Residential subdivision as defined in Chapter 58.17 RCW, as well as residential binding site plans as defined in the Spokane County Subdivision Ordinance.

*Two types of Accident Potential Zones are used in the study area today. The first was developed by the FAA for public (civilian) airports: **APZ-A and APZ-B.***

*The second was developed by the Department of Defense for military airfields: **APZ I and APZ II.***

Fairchild AFB

Department of Defense (DOD) analysis has determined that the areas immediately beyond the ends of the runways and along the approach and departure flight paths have the highest potential for aircraft accidents. Based on this analysis, DOD developed three zones that have a relative potential for accidents. These zones are rectangular in shape and are defined as Clear Zones (CZ), Accident Potential Zone I (APZ I), and Accident Potential Zone II (APZ II) (see Figure 3-7). Similar to Factor 2A, there is concern for possible incompatible uses locating in the Fairchild AFB safety zones (● Factor 2B), which could have serious negative impacts to the installation's current and future mission.

Clear Zones are the most hazardous areas and lie closest to the ends of the runway. The Fairchild AFB runway CZ measures 3,000 feet wide by 3,000 feet long extending directly beyond the end of the runway and outward along an imaginary extension of the runway's centerline. Above ground structures are generally not permitted in these areas and land is optimally undeveloped. For this reason, acquiring sufficient real property interest in land within the CZ is critical to ensure that incompatible development does not occur.

APZ I possesses a high potential for accidents. APZ I begins at the end of the CZ and extends out 5,000 feet. APZ II is an area beyond APZ I having measurable potential for accidents. This zone extends from the end of APZ I out an additional 7,000 feet. Both APZ I and APZ II are 3,000 feet wide. While aircraft accident potential in APZs I and II does not warrant acquisition by the USAF, land use planning and controls are strongly encouraged for the protection of public safety. Within APZ I and II, a variety of land uses are compatible; however, uses sensitive to noise, such as hospitals and schools, and occupant-intensive uses such as high density

residential, commercial, and industrial should be avoided due to the greater potential for safety incidents in these areas.

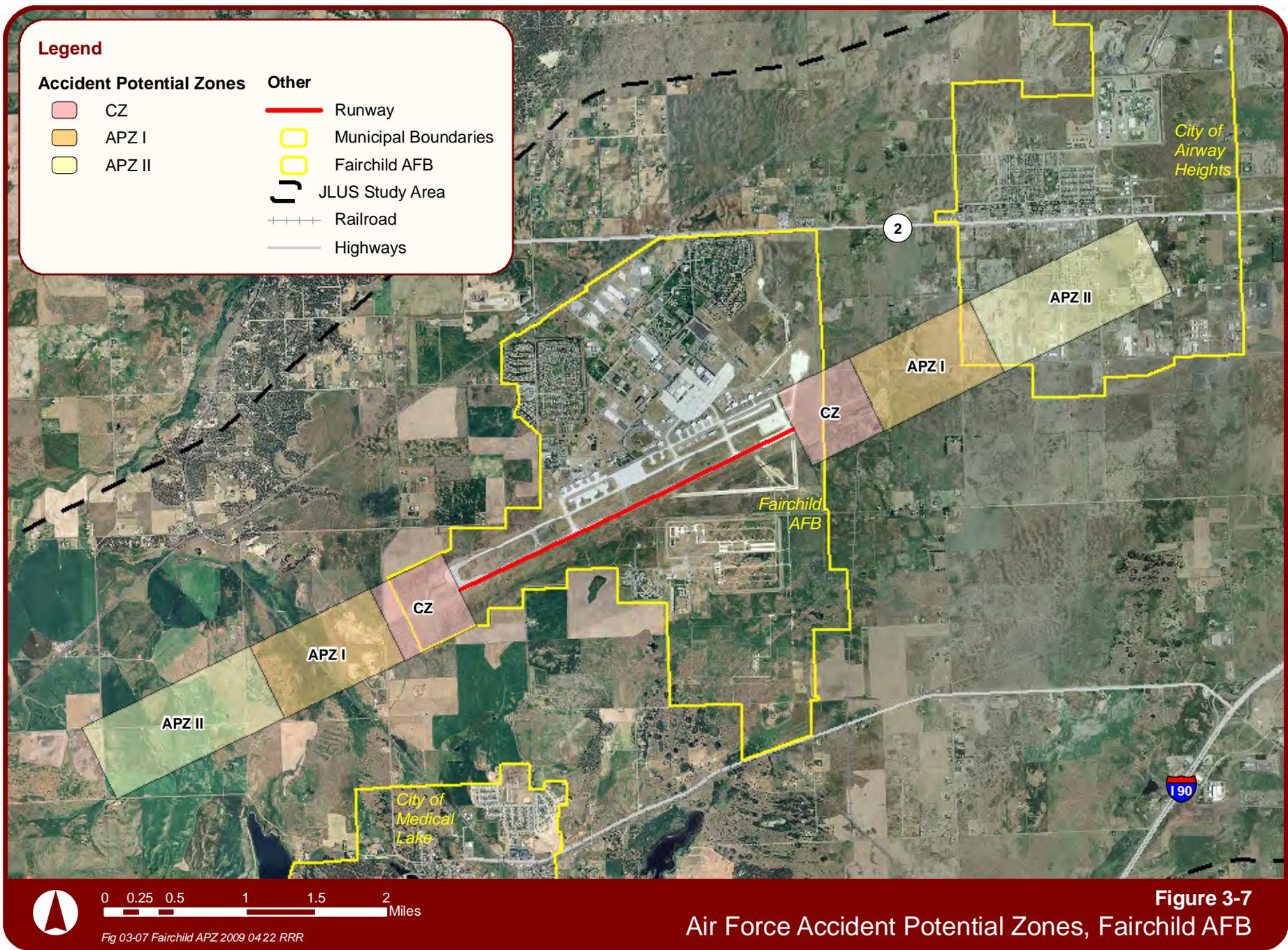
Each Air Installation Compatible Use Zone (AICUZ) study contains general land use guidelines related to safety and noise associated with aircraft operations. The Fairchild AICUZ Study lists the USAF-recommended land use compatibility guidelines in relation to noise zones and APZs (see Appendix D). The information presented in the table is essentially the same as the information published in the June 1980 publication by the Federal Interagency Committee on Urban Noise (FICUN) entitled *Guidelines for Considering Noise in Land Use Planning Control* (FICUN 1980) and in the *Standard Land Use Coding Manual* (USURA 1965) published by the US Urban Renewal Administration (USURA).

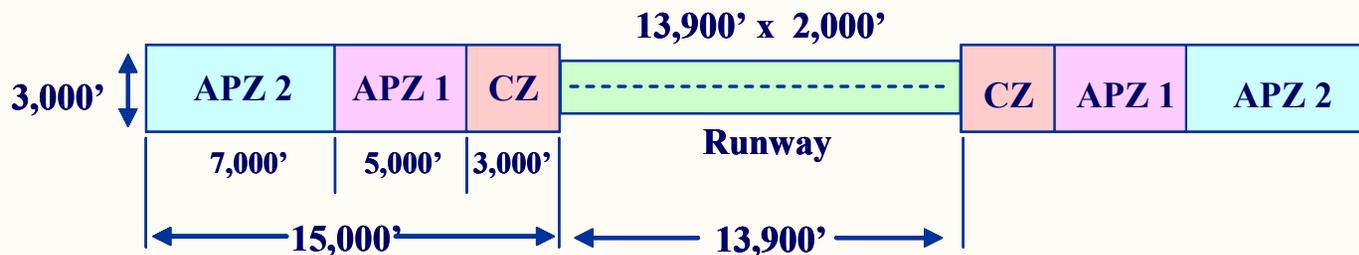
AOZ/AICUZ Comparison

Although the Airport Overlay Zone adopted by Spokane County and Airway Heights and the Fairchild AFB CZ / APZ I / APZ II safety zones all seek to protect public health, safety, and welfare by identifying accident potential areas and limiting incompatible uses in those areas, there are several key differences between the AOZ and AICUZ safety zones.

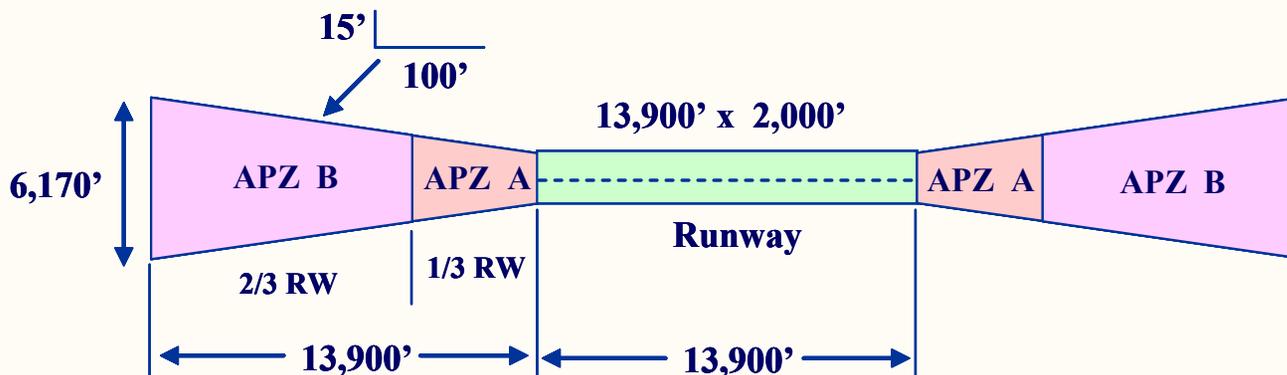
- AOZ has more stringent building/structure height restrictions;
- AOZ incorporates two safety zones while the AICUZ has an additional safety zone (the Clear Zone);
- AICUZ APZs are a different size, shape and length than AOZ APZs (Figure 3-8 and 3-9); and
- AICUZ is more detailed relative to APZ land use criteria than AOZ.

NOTE: The AICUZ and AOZ safety zones overlap each other and operate concurrently within the City of Airway Heights.





AICUZ Safety Zones (Plan View)

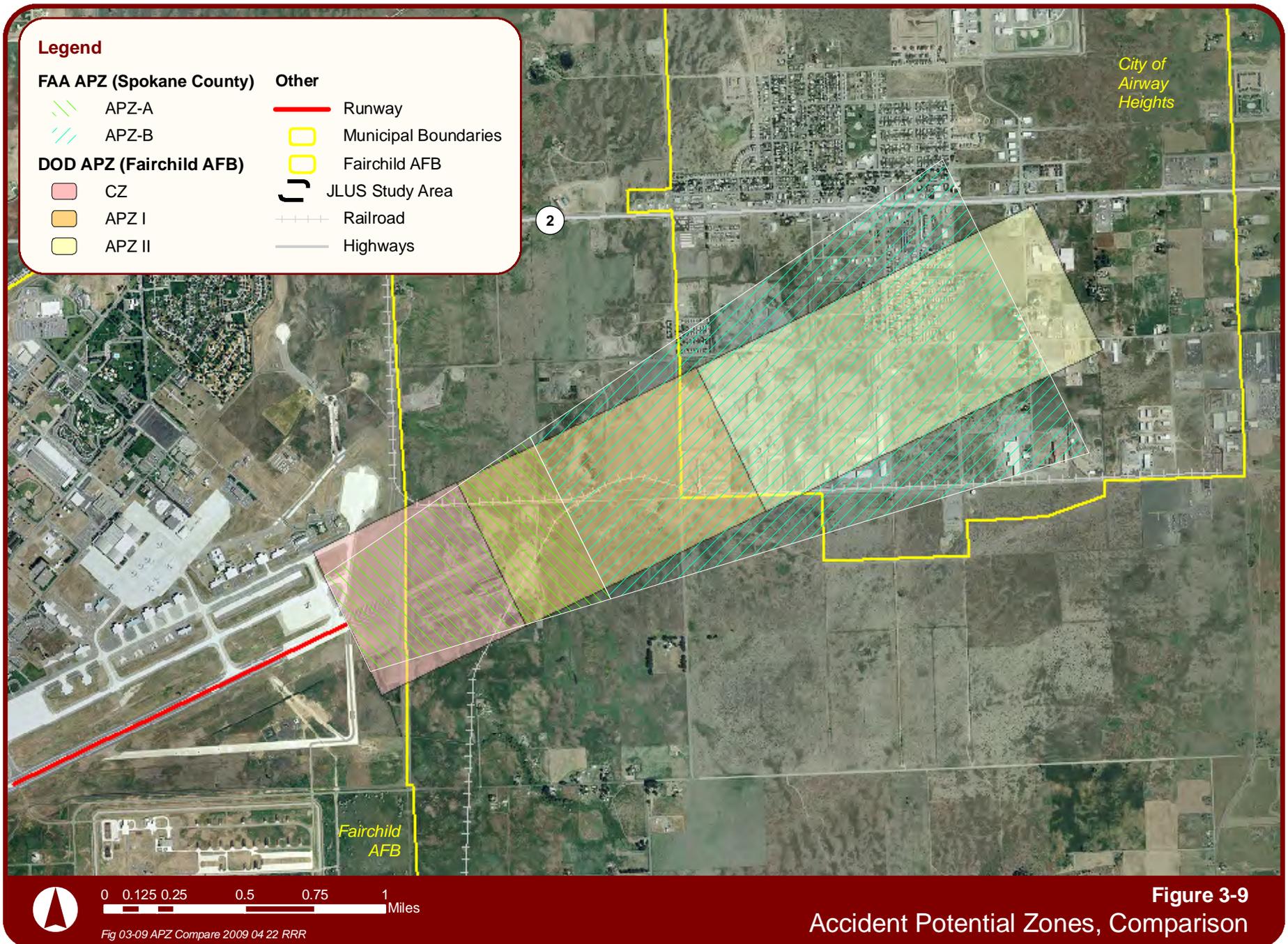


AOZ Safety Zones - Military Airport (Plan View)

Figure 3-8

AICUZ (Air Force) and AOZ (Local Jurisdictions) Safety Zones

Fig 03-08 APZ Diagrams 2009 04 22 RRR



Fairchild AFB is mandated to use DOD AICUZ criteria while the local jurisdictions elect to use AOZ criteria. AOZ criteria allow development that is considered incompatible under AICUZ criteria, which equates to factors regarding safety, quality of life, and mission impact for Fairchild AFB. Tables 3-4 and 3-5 identify the differences between land use criteria of the AOZ and AICUZ.

It is important to note that the AICUZ and AOZ safety zones overlap each other and operate concurrently within the City of Airway Heights. The existence of two safety zone geometry standards affecting Fairchild AFB is problematic, specifically when applied to Fairchild AFB and in the locations of overlap in the City of Airway Heights. Spokane County, City of Airway Heights, and WSDOT aviation maps all show the Fairchild AFB APZs as trapezoidal shapes in accordance with FAA guidance for civilian airports. This situation may cause confusion in the interpretation of allowable land uses within and in close proximity to the Fairchild safety zones, which could ultimately result in the siting of land uses incompatible with Fairchild aircraft operations (● Factor 2B). To ensure the highest level of safety for its citizens, Airway Heights adopted both the AOZ and AICUZ APZs and corresponding land uses in their development code, Section 17.15 and Section 17.16, respectively. This ensures the safety considerations and recommended land uses for both the SIA AOZ and Fairchild AICUZ are taken into consideration. However, it is essential that the overlap/redundancy be eliminated to ensure protection of Fairchild AFB.

Table 3-4. AICUZ Safety Zones Generalized Land Use Criteria

| Generalized Land Use | Accident Potential Zones | | |
|---|--------------------------|------------------|------------------|
| | Clear Zone | APZ I | APZ II |
| Residential | No | No | Yes ¹ |
| Manufacturing | No | No ² | Yes ² |
| Transportation, Communications, & Utilities | No | Yes ² | Yes ² |
| Trade, Business, and Offices | No | Yes ² | Yes ² |
| Shopping Districts | No | No ² | Yes ² |
| Public and Quasi-Public Service | No | No | Yes ² |
| Recreation | No | Yes ² | Yes ² |
| Public Assembly | No | No | No |
| Agriculture and Mining | No ³ | Yes ² | Yes ² |

Notes:

1. Suggested maximum density 1-2 dwelling units per acre.
 2. Only limited low-density, low-intensity uses recommended.
 3. Except limited agricultural uses are permitted.
 4. Chart is for general information. Refer to Fairchild AFB AICUZ Study, Volume I, Fig 4 for specific land uses/guidelines.
 5. Red italic text indicates significant difference with AOZ.
- Source: Fairchild AFB Off-Base Land Use Planning presentation dated 1 November 2007

Table 3-5. AOZ Safety Zones Generalized Land Use Criteria

| Specific Land Use | Accident Potential Zones | |
|--|--------------------------|------------|
| | APZ A | APZ B |
| Warehousing, Outdoor Storage | Yes | |
| Cemetery, Plant Nursery | Yes | |
| General Agriculture | Yes ¹ | |
| Public Utility Transmission Facility | Yes | |
| Maintenance & Repair Facility | Yes | |
| Concrete Batch Plant | Yes | |
| Rail or Freight Terminal | Yes | |
| Recreation Vehicle & Manufactured Home Park | | No |
| Church, Hospital, School | | No |
| Hotel, Motel | | No |
| Stadium, Theatre | | No |
| Nursing Home, Day Care Facility | | No |
| Residential, Shopping Districts, Trade, Business & Offices | | Yes |

Notes:

- 1. No feed lots or operations that attract birds.
- 2. Red italic text indicates significant difference with AICUZ.

Source: Fairchild AFB Off-Base Land Use Planning presentation dated 1 November 2007

Bird Attraction Hazards

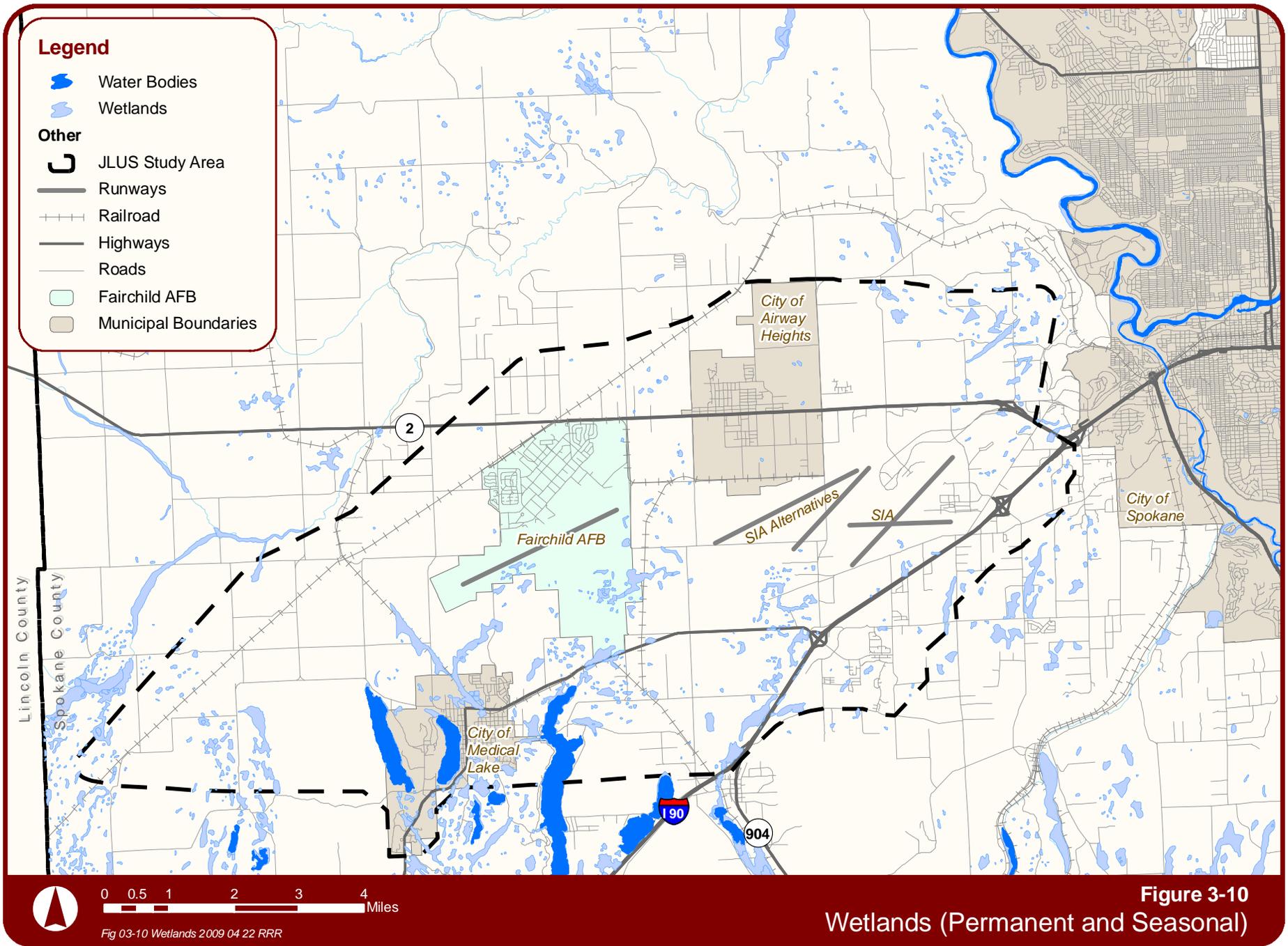
In-flight collisions with birds are dangerous for pilots, people on the ground, and aircraft operations in general. This hazard can be increased by incompatible land uses adjacent to the installation and within approach and departure flight tracks. Within the Fairchild JLUS study area and in close proximity to the installation, bird attractants exist that could impact aircraft operating at the airfield. These attractants include wetlands and agricultural land uses (● Factor 2C). Mineral extraction activities located near Fairchild AFB also have a potential to accumulate standing water during and after operations. The standing water, temporary or permanent, can be significant bird attractants.

Most wetlands identified in the Fairchild AFB Integrated Natural Resources Management Plan (INRMP) wetland inventory were in the southern portion of the installation (see Figure 3-10). Wetlands in this area consist mostly of emergent seasonal flood wetlands. Within 1 kilometer of Fairchild AFB to the south are several large, open water wetlands. Fourteen areas on the installation exhibit characteristics indicative of vernal pools, which are small relatively shallow water areas that remain wet during the cool season. These become completely dry during most of the warm season. According the Fairchild’s Asset Management Flight Manager, these seasonal wetlands are more problematic than perennial wetlands because the seasonal pools are typically located closer to the installation and aircraft operations. A total of 61 plant species have been found in Fairchild’s vernal pools, which can also attract birds.

(Source: Fairchild AFB Integrated Natural Resources Management Plan, March 2005; and Gerald Johnson, Fairchild AFB Asset Management Flight Chief, March 5, 2009)



Emergent wetland in southern portion of Fairchild AFB



Another activity of particular concern is farmers who lease their land for goose hunting. Although not a regular occurrence, this activity can be very dangerous as birds cross the flightline in response to hunters' bird calls south of the runway (● Factor 2C).

The area's numerous agricultural activities can also attract birds in proximity to the installation, particularly near the runway and approach and departure tracks.

Man-made ponds located on Fairchild AFB are not considered to pose hazards to aircraft operations. These have been fitted with netting to reduce the potential for BASH incidents. The installation's two stormwater ponds have 4-inch square netting across them so that birds cannot take off in a flock – a major hazard to aircraft operations. Likewise, the Fairchild fire training area has one pond fitted with 2-inch square netting. (*Gerald Johnson, Fairchild AFB Asset Management Flight Chief, March 5, 2009*)

Active and inert landfills can pose compatibility factors to aircraft operations since these operations have the potential to attract wildlife, specifically birds, can be significant. The Graham Road inert landfill is located approximately one-quarter mile northwest of the installation; however, it is not currently seen as a factor for Fairchild AFB.

Lastly, as described in Compatibility Factor 1, Land Use, the study area's numerous mining operations can create areas of standing water attractive to birds and waterfowl.

Residential

As mentioned in Compatibility Factor 1, Land Use, several existing or proposed developments in the JLUS study area pose factors for compatible land uses. One development was identified by the JLUS committees as posing a compatibility

factor related to aircraft operations safety zones at SIA. The Blue Grouse Estates proposed development is located on 46.5 acres of land approximately one mile east of SIA's secondary runway (Runway 7/25). This location is at the northeast corner of Thorpe Road and Grove Road, just southeast of the Interstate 90-Geiger Boulevard interchange, which is within the runway's APZ-B (● Factor 2D). The development includes lot sizes ranging from 5,600 square feet to 13,100 square feet, with the majority of the lots at the smaller end of that range. This factor was not identified as a compatibility factor associated with Fairchild AFB.

Another residential use that was identified as posing a compatibility factor for Fairchild AFB is the Deer Creek apartment complex located less than 4 miles from northeast end of Fairchild's runway (● Factor 2D). This complex is situated just outside of Fairchild's APZ II; however, it is extremely close to the extension of the runway's centerline (less than 0.4 miles). This places the high-occupancy complex almost directly beneath departing or approaching Fairchild AFB aircraft, which is a concern. Since this site is outside of both the AICUZ recommended APZ and the AOZ APZ, it would not be considered a safety zone factor; however, it would be considered a land use and noise compatibility factor. Refer to the discussion of this project under Compatibility Factor 1, Land Use and Compatibility Factor 7, Noise.

Firing Ranges and Explosives Safety Areas

Fairchild AFB has one small arms firing range, a grenade launcher range, and an Explosives Ordinance training range. Figure 3-11 shows the safety arcs for each range. The safety arcs shown represent the areas that may be impacted by ordnance fired at the range. The small arms range safety arcs do not extend off-base.

The explosives ordinance training range at the far south of the base is used by Explosives Ordinance Detachment (EOD) personnel for proficiency training, which occurs once per month. This training may include up to two detonations; however, the training may not include explosives detonation at all. The range has specially constructed barricades of 6-foot walls that minimize vibration and over pressurization. The explosive limit of the explosives ordinance range is 5 pounds. Prior to 2006, the limit was 60 pounds. To conduct a detonation using over 5 pounds of explosives is considered an emergency condition and requires approval from a Major Command (MAJCOM).

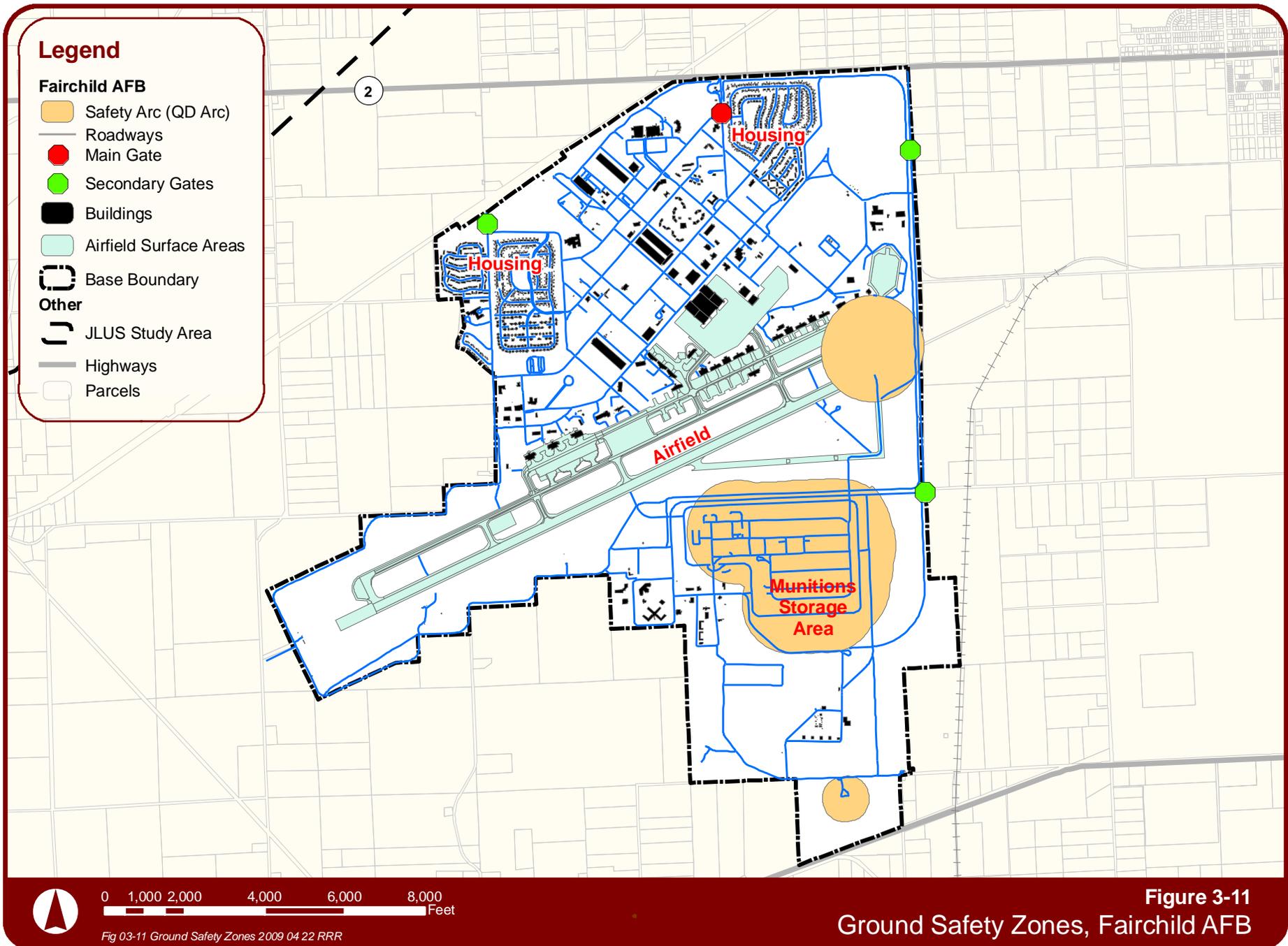
The grenade launcher range located at the base's southeast boundary supports the M-203 single-shot 40mm grenade launcher firing paint marking rounds, rather than high explosive (HE) ammunition. The paint marking round has an extremely limited noise signature and safety area. One of the safety arcs (called a "QD" arcs) shown on Figure 3-11 extends slightly off of the installation (● Factor 2E). The QD arcs (the acronym stands for quantity distance) shown on Figure 3-11 are determined based on a number of factors, including the quantity and type of material stored. Using federal regulations, the standoff distance from these storage and use areas are calculated to ensure safety.

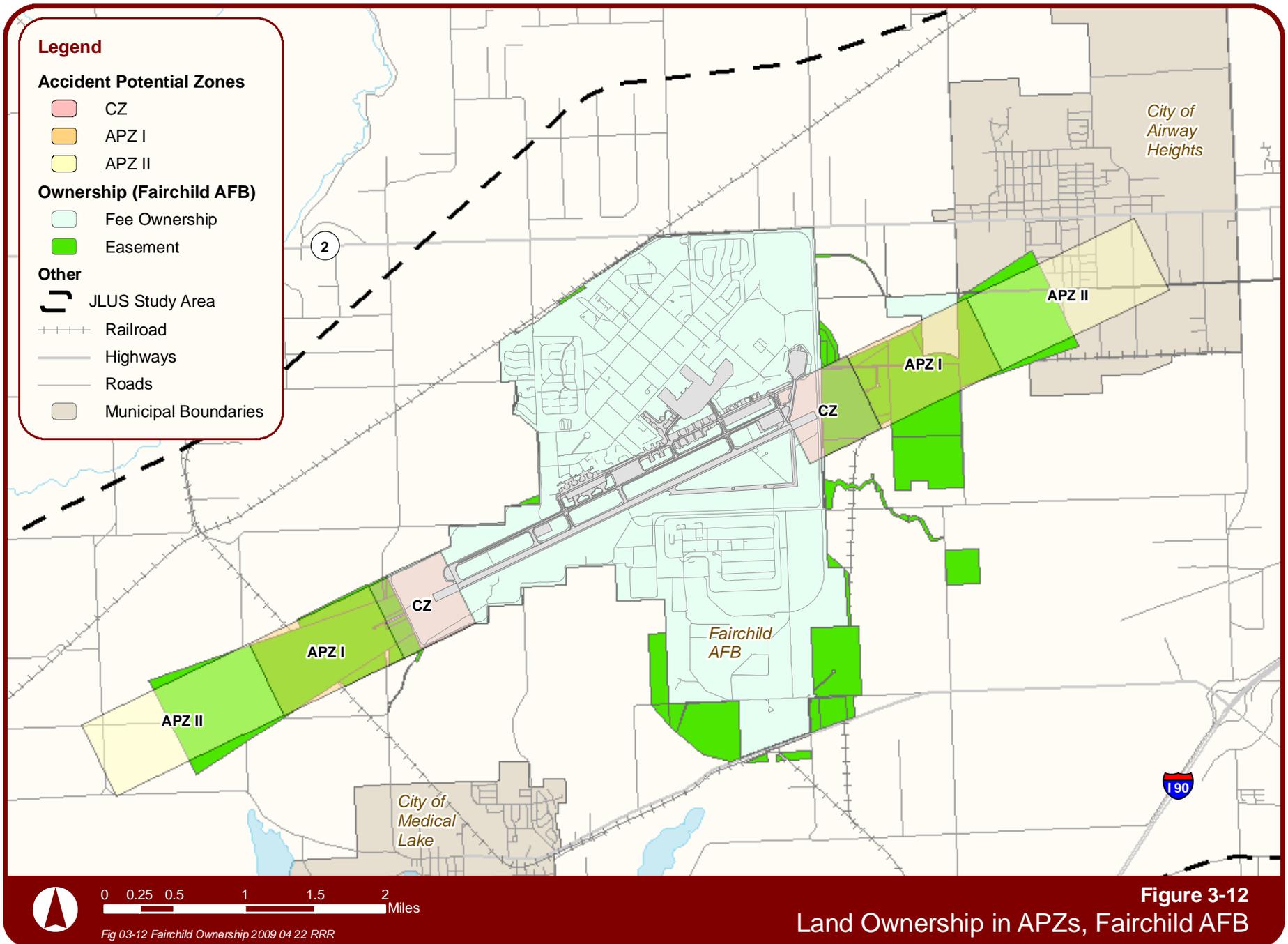
Fairchild AFB has another safety area at the far east end of the runway (● Factor 2E). This is the only parking spot for hot cargo. This explosive arc extends off of the base approximately 118 feet along the fenceline a length of almost 990 feet. Fairchild AFB purchased easements on these parcels of land between 1956 and 1959 to ensure the safety of civilians (see Figure 3-12). The land owner still retains the right to farm the land but cannot build structures or hold assemblies of more than 25 people. As of March 16, 2009, Fairchild AFB is in the final preparation phases of a waiver package for submittal to Air Mobility Command (AMC) to move the hot cargo point west approximately 580 feet from its current location. Final approval is expected to be in the Summer of 2009. (Source: MSgt Bill Kowalski, Fairchild AFB Weapons Safety Officer, March 16, 2009)

Airspace

Controlled and Uncontrolled Airspace Descriptions

To help controllers and pilots deal with varying traffic conditions in the sky, United States airspace has been divided into six different classes (A, B, C, D, E, and G). These different classes have different requirements for entry into the airspace, pilot qualifications, radio and transponder equipment, and Visual Flight Rules (VFR) weather minimums.





Spokane International Airport airspace is classified as Class C. This airspace has a mandatory communication requirement. Controlled airspace weather minimums are the same for Class C and Class D airspace (see Table 3-6).

Table 3-6. Airspace Classes and VFR Minimums

| | |
|---------|---|
| Class C | Generally extends around busy airports with operational control towers, radar approach control, and a significant amount of IFR and/or passenger traffic. It is outlined on sectional charts with a solid magenta line. Generally this airspace is from the surface to 4,000 feet above the airport elevation (charted in MSQ surrounding those airports that have an operational control tower), are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Two-way radio contact with approach control is required before entry into Class C airspace, and all aircraft entering this airspace must be equipped with two-way radios and an altitude-encoding transponder. VFR weather minimums in Class B airspace require three-mile visibility. VFR flights must maintain at least 2,000 feet horizontal clearance from clouds, and must remain at least 500 feet below and 1,000 feet above any clouds. |
|---------|---|

To operate inside or above Class C airspace, all aircraft are required to have a Mode C transponder (up to 10,000 feet mean sea level (MSL)). In addition, two-way radio communication must be established when operating within Class C. Any aircraft wishing to depart or return to a satellite airport located within Class C airspace must contact ATC approach control prior to entering Class C.

Fairchild AFB and SIA Airspace Operations

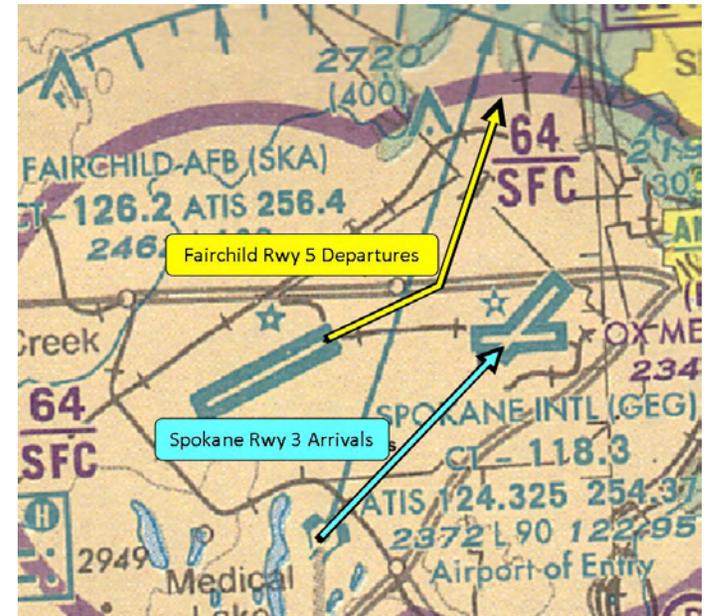
Fairchild AFB is located west of and adjacent to the second largest commercial service airport in the State of Washington, the Spokane International Airport. SIA shares a unique relationship with Fairchild's immediate airspace operations area. A significant part of Fairchild's immediate airspace is shared with SIA, and in fact, Fairchild has no controlled airspace. This shared airspace could have far reaching impacts on how compatible land uses should be addressed in the study area. No other facilities in the US share this unique relationship. To ensure safe aircraft operations in this joint use airspace, there is close coordination of Fairchild's air operations between Fairchild ATC and the FAA's Air Traffic Control Tower (ATCT) at SIA.

The airspace surrounding SIA and Fairchild AFB is classified Class C, which is controlled by the FAA ATCT. Therefore, within SIA's Class C airspace, Fairchild aircraft are under the control of the FAA ATCT. Upon final approach into Fairchild AFB, control of the inbound aircraft is handed off to the Fairchild ATC. Conversely, when departing the installation's runway, Fairchild ATC provides departure clearance to outbound military aircraft taking off. Immediately after take-off, the aircraft contact the FAA ATCT and fall under the ATCT control once again. Figure 3-13 depicts the different classes of airspace. The coordination between Fairchild ATC and FAA ATCT at SIA reportedly works

smoothly and efficiently. (Source: Ryan Sheehan, Air Operations Manager, Spokane International Airport, March 24, 2009)

To assist in the safe aircraft operations at both SIA and Fairchild AFB, the FAA developed a notice to inform pilots landing/departing from either Spokane International Airport or Fairchild AFB IFR concerning the special use of visual separation to maintain efficiency at both airports. Sequencing aircraft simultaneously to GEG and SKA under Instrument Flight Rules requires lateral and or vertical separation between aircraft while ensuring protected airspace for potential missed approaches. These requirements directly affect the capacity of both airports.

In a north flow, the ILS approach to SIA Runway 3 converges with the departure path of Fairchild Runway 5. The convergence and divergence of flight paths and distance between airports has made it possible to use visual separation under certain weather conditions to reduce the spacing normally provided to aircraft landing and departing both air facilities. According to the FAA, these procedures have proven to provide an equivalent level of safety compared to standard visual separation rules. This special use of visual separation procedures enables both airports to operate at or near capacity during periods of heavy demand.



SIA Runway 3 Arrivals and Fairchild Runway 5 Departures

Source: www.faa.gov

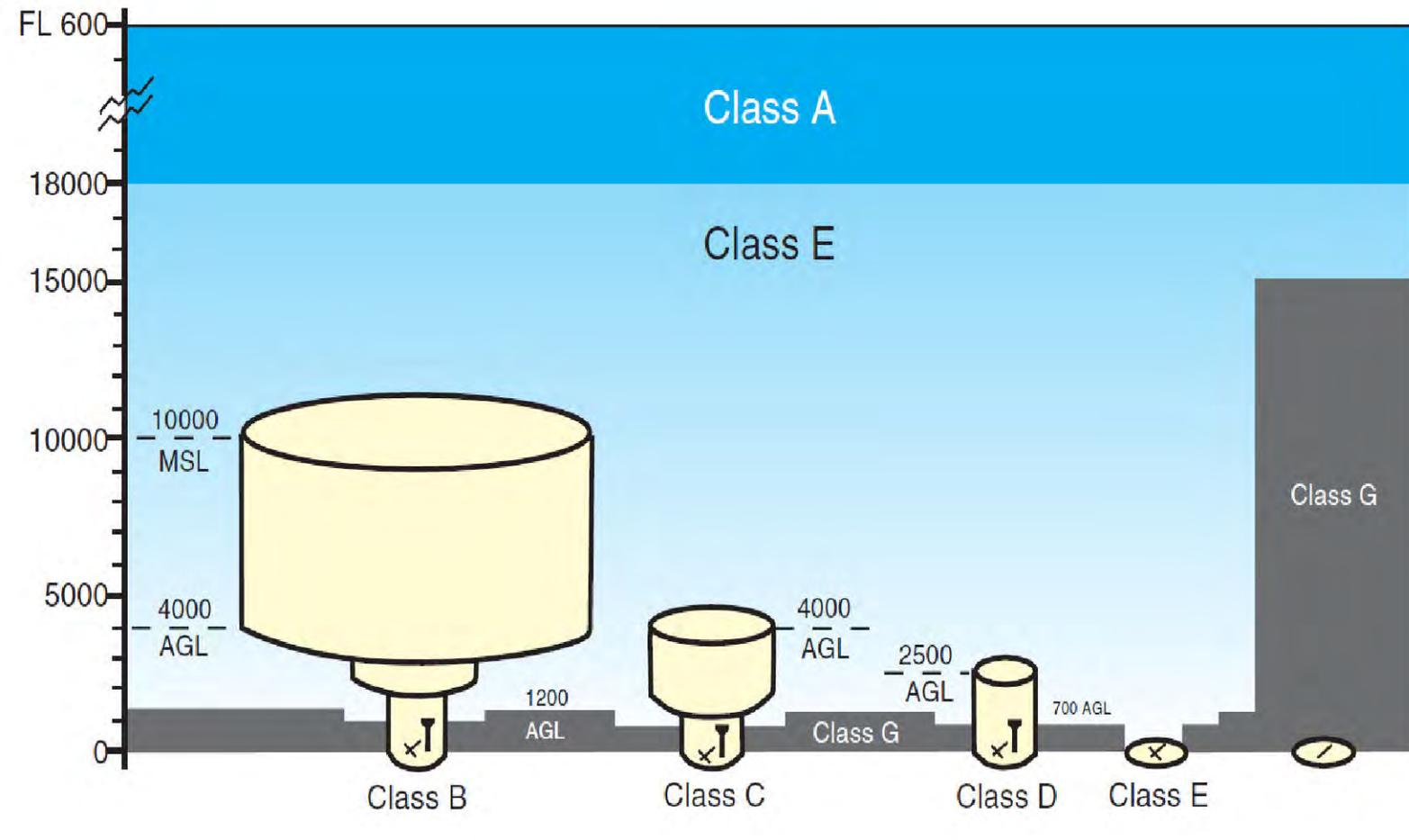


Figure 3-13
Airspace Classes

Fig 03-13 Airspace Classes 2009 04 22 RRR

3 Vertical Obstructions Factors

Definition:

Vertical obstructions are created by buildings, structures or other features that may encroach into the navigable airspace used by military operations (aircraft approach, transitional, inner horizontal, outer horizontal and conical areas, as well as military training routes), presenting a safety hazard to both the public and military personnel and potentially impacting military readiness.

The factors identified for this compatibility factor are listed on Table 3-7 and further described in the following discussion.

Table 3-7. Vertical Obstruction Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|----------------|----------------|----------|------------------|
| Height of current / future development creating obstructions or hazards to air navigation | 3A, 3B, 3C, 3D | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Evaluating Vertical Obstruction

Vertical obstruction in relation to flight operations from an airport (military or civilian) are addressed through compliance with Federal Regulation Title 14 Part 77, which establishes standards and notification requirements for objects affecting navigable airspace. Commonly referred to as Part 77 compliance, this regulation provides details on how to evaluate the potential for a vertical obstruction based on the elevation of the airfield, the height and resulting elevation of the new structure or facility, and the location of the structure

or facility in relation to the airfield in question. Figure 3-14 illustrates common terms used in the Part 77 regulation, and Figure 3-15 provides a graphic representation of the airspace controls of imaginary surfaces. These are how structures and facilities are evaluated to determine if they pose a vertical obstruction in relation to the airspace around Fairchild AFB. The various imaginary surfaces build upon one another and are designed to eliminate obstructions to air navigation and operations, either natural or man-made. The key terms related to imaginary surfaces and as illustrated in Figures 3-14 and 3-15 are described below.

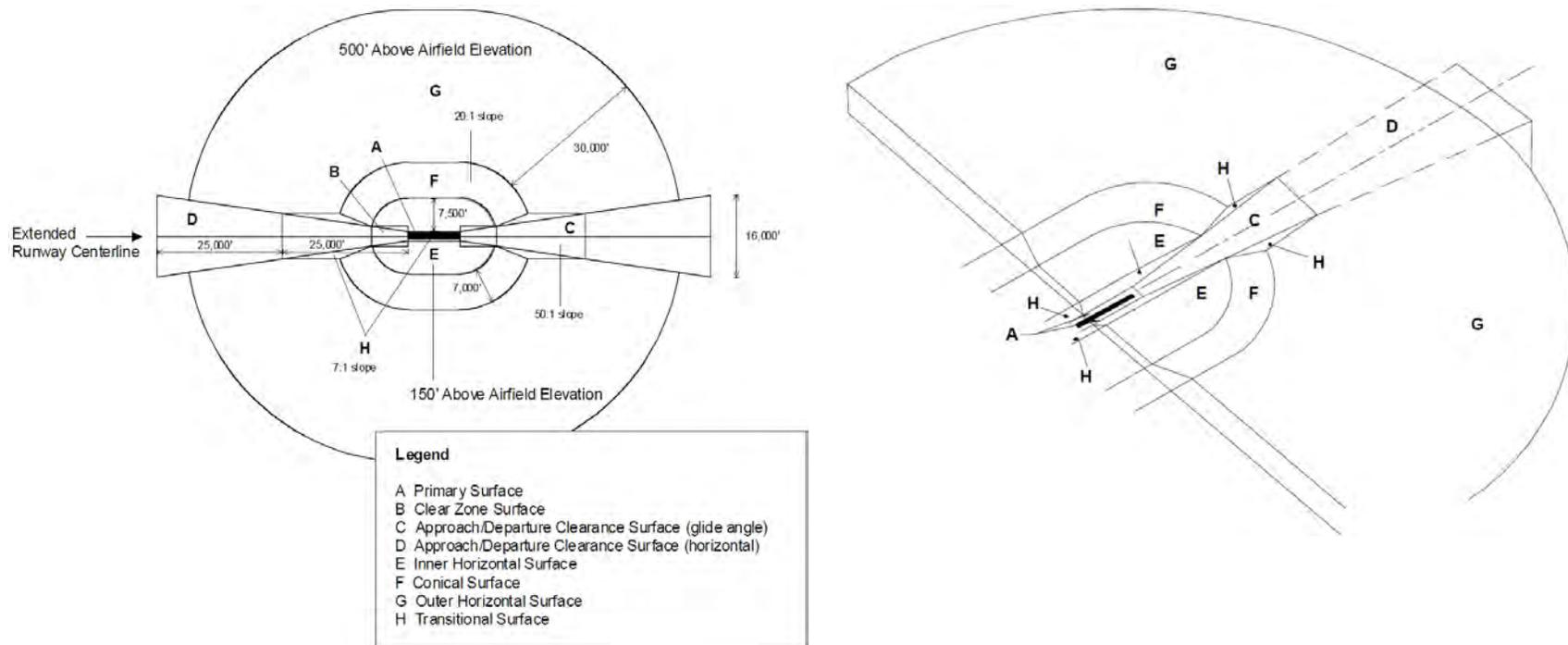
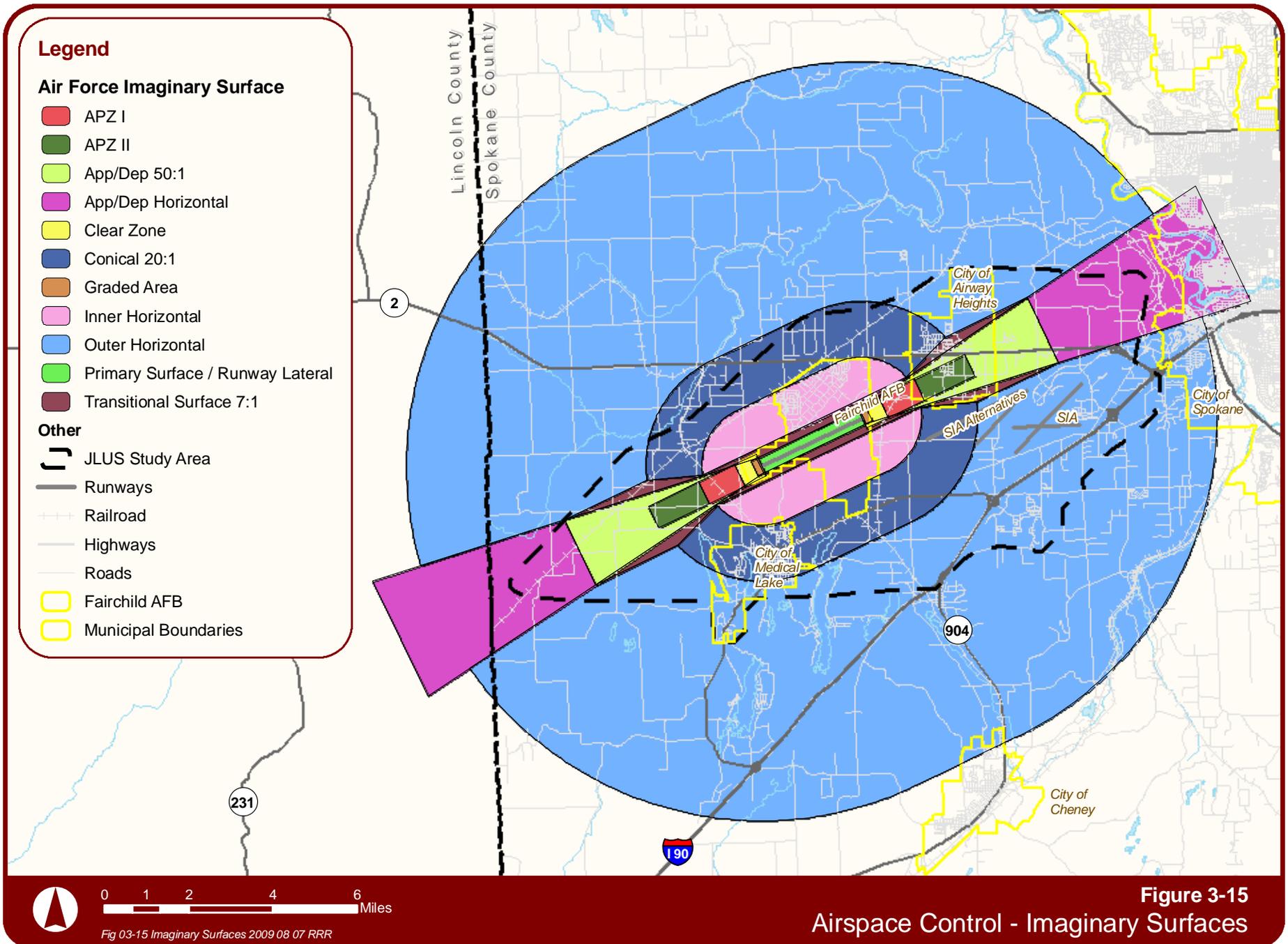


Figure 3-14. Part 77 Terminology, Imaginary Surfaces



Primary Surface – This surface defines the limits of the obstruction clearance requirements in the immediate vicinity of the landing area. It comprises surfaces of the runway, runway shoulders, and lateral safety zones and extends 200 feet beyond the runway end. For a single class “B” runway, this surface is 2,000 feet wide, or 1,000 feet on each side of the runway centerline.

Clear Zone – This surface defines the limits of the obstruction clearance requirements in the vicinity contiguous to the end of the primary surface. For a single runway end, it measures 3,000 feet by 3,000 feet. This area has the highest accident potential of all zones.

Approach-Departure Clearance Surface – This surface is symmetrical from the extended runway centerline. It begins as an inclined plane (glide angle) 200 feet beyond each runway end, and extends for 50,000 feet; it begins with the centerline elevation of the runway end. The slope of the approach-departure clearance surface is 50:1 along the extended runway (glide angle) centerline until it reaches an elevation of 500 feet above the established airfield elevation. It then continues horizontally at this elevation to a point 50,000 feet from the start of the glide angle. The width of this surface at the runway end is 2,000 feet; it flares uniformly, and the width at 50,000 feet is 16,000 feet. This surface extends into a significant portion of north Airway Heights to include the city’s commercial corridor along US Highway 2.

Inner Horizontal Surface – This surface is a plane, oval in shape at a height of 150 feet above the established airfield elevation. This surface is constructed by scribing an arc with a radius of 7,500 feet above the centerline at the end of the runway and interconnecting these arcs with tangents. This

surface includes a small portion of western Airway Heights and a small portion of northern Medical Lake.

Conical Surface – This is an inclined surface extending outward and upward from the outer periphery of the inner horizontal surface for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation. The slope of the conical surface is 20:1. This surface encompasses the western half of Airway Heights and the majority of Medical Lake.

Outer Horizontal Surface – This surface is a plane 500 feet above the established airfield elevation. It extends for a horizontal distance of 30,000 feet from the outer periphery of the conical surface. For areas not already covered by another imaginary surface, this surface encompasses the remainder of Airway Heights, Medical Lake, a small portion of western Spokane, unincorporated land in the West Plains, and the northern tip of Cheney.

Transitional Surfaces – These surfaces connect the primary surfaces, Clear Zone surfaces, and approach-departure clearance surfaces to the outer horizontal surface, conical surface, other horizontal surface, or other transitional surfaces. The slope of the transitional surface is 7:1 outward and upward at right angles to the runway centerline. To determine the elevation for the beginning of the transitional surface slope at any point along the lateral boundary of the primary surface, including the Clear Zone, draw a line from this point to the runway centerline. This line will be at right angles to the runway axis. The elevation at the runway centerline is the elevation for the beginning of the 7:1 slope. The land areas outlined by these criteria should be regulated to prevent uses that might otherwise be hazardous to aircraft operations. *Source: Fairchild AFB AICUZ Study, October 2007*

To determine when proposed structures or facilities require notification to the FAA, Part 77 (§ 77.13) states the following requirements.

§ 77.13 - Any person/organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA (paraphrased):

- (1) Any construction or alteration of more than 200 feet in height above the ground level at its site.
- (2) Any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the following slopes:
 - within 20,000 ft of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 ft.
 - within 10,000 ft of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 ft.
 - within 5,000 ft of a public use heliport which exceeds a 25:1 surface
- Any highway, railroad, or other traverse way whose prescribed adjusted height would exceed that above noted standards
- When requested by the FAA
- Any construction or alteration located on a public use airport or heliport regardless of height or location

Further, Part 77 identifies the height at which an object may be considered an obstruction at a designated distance. An excerpt from Section 77.23 follows:

§ 77.23 – Standards for determining obstructions

- (a) An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:
 - (1) A height of 500 feet above ground level at the site of the object.
 - (2) A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within three nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet.

Figure 3-16 depicts how Part 77 requirements impact allowable vertical structures over distance.

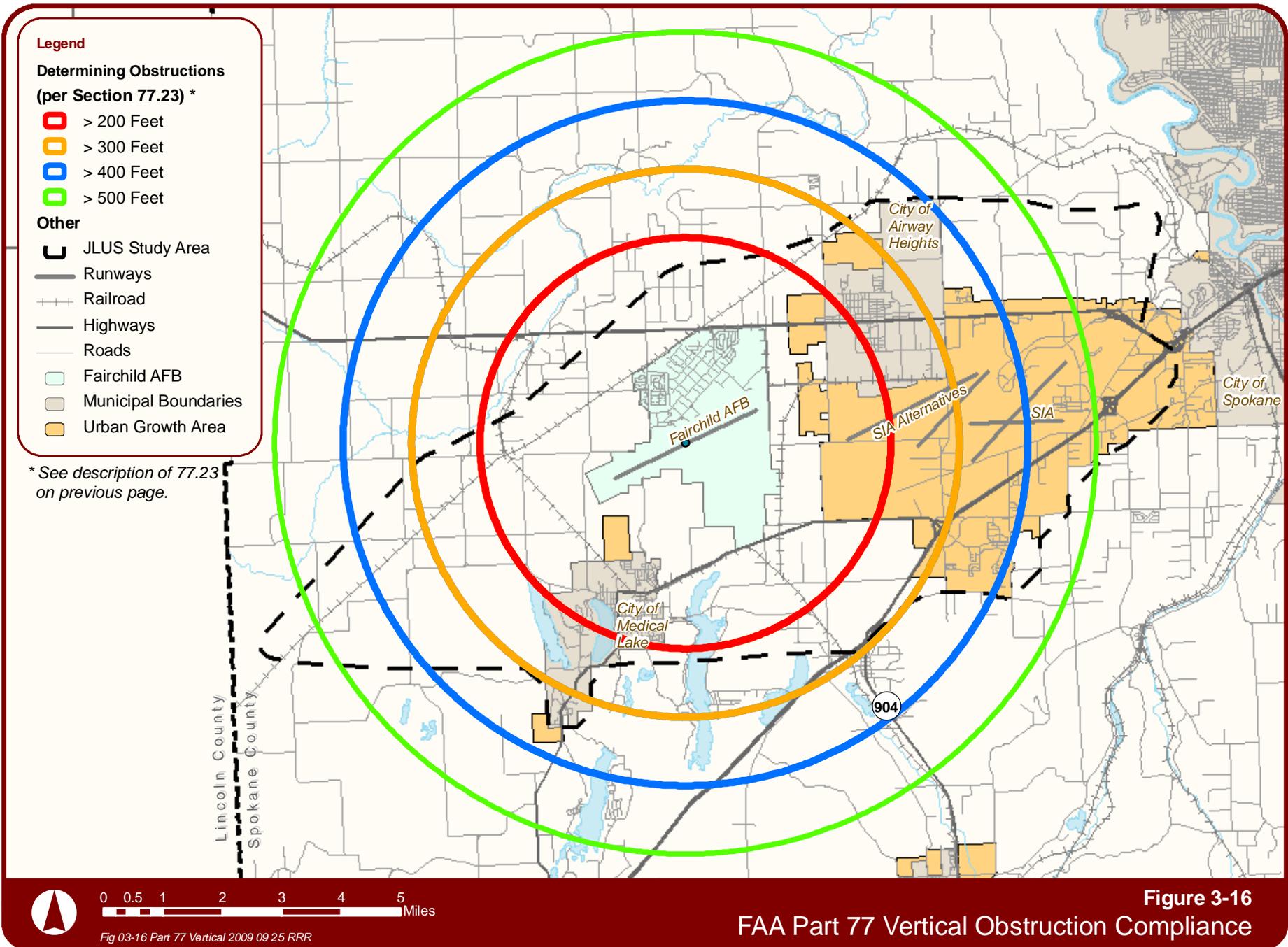


Figure 3-16
FAA Part 77 Vertical Obstruction Compliance

As described in Compatibility Factor 2, Safety, Spokane County incorporated an Airport Overlay Zone into their zoning code to reduce the potential for airport hazards at SIA, Fairchild AFB, Felts Field, and Deer Park Airport. The regulation references FAA Part 77 height guidelines detailed above. Chapter 14.702 of the County's Zoning Code establishes height guidelines and restrictions for the area's four airports and seeks to engage Fairchild AFB in the development review process for buildings that could potentially impact installation operations. The regulations require that prior to development or issuance of a building permit within Fairchild AFB's APZ-A, APZ-B, or a permit which will result in a facility greater than 35 feet in height within the conical surface as defined in the AOZ chapter; the proponent shall provide a copy of the proposal to the Fairchild AFB Base Civil Engineer. Fairchild AFB shall be given 15 working days to review and comment on the proposal.

The factor of lack of a single safety zone geometry standard still remains as Spokane County applies the FAA trapezoidal shapes to Fairchild AFB APZs, while the DOD adheres to rectangular shapes for its safety zones (see Compatibility Factor 2, Safety).

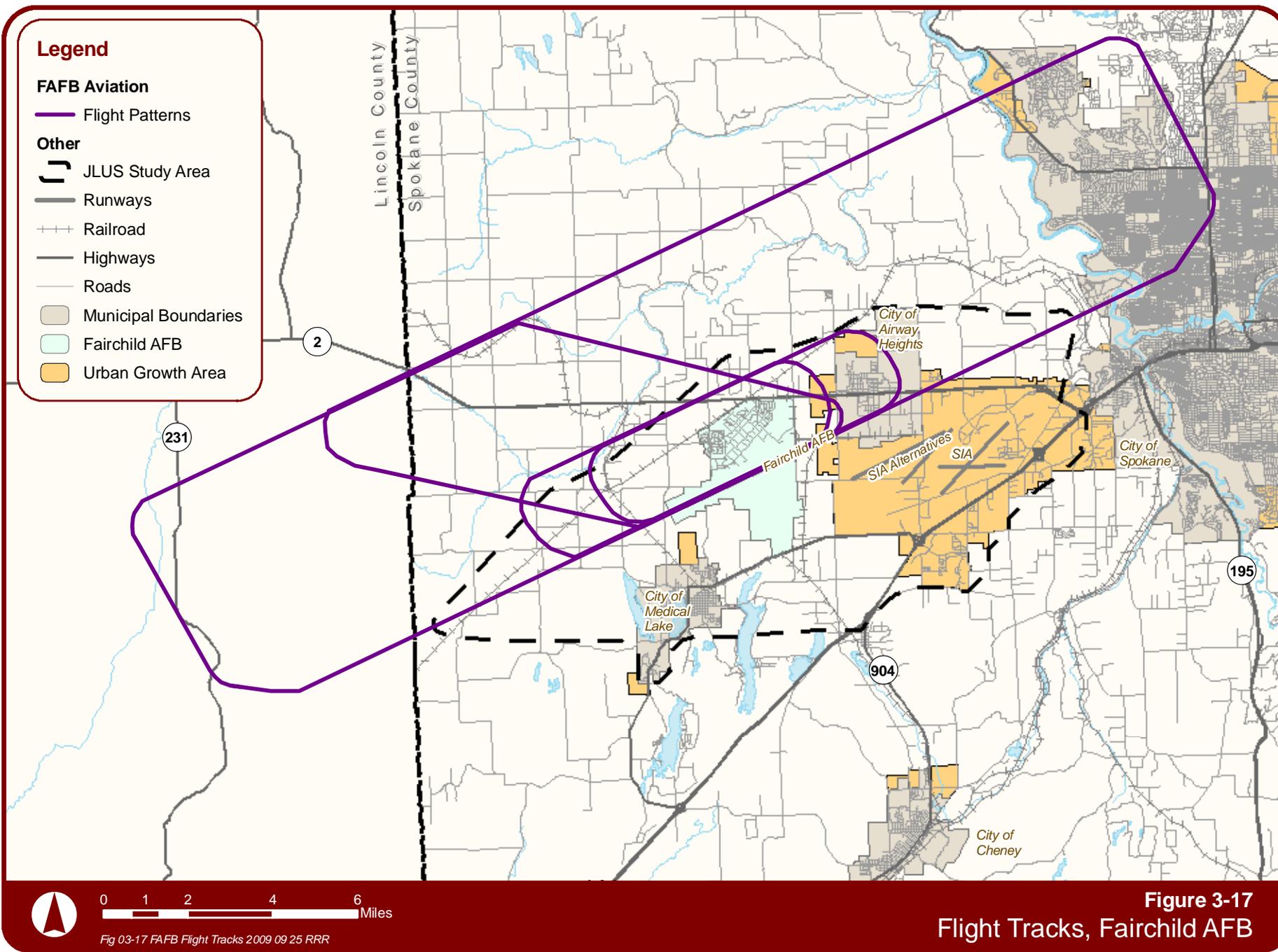
The County Zoning Code details height restrictions applicable to structures or vegetation within the AOZ. Structures or vegetation may not be constructed, altered, maintained, or allowed to grow in any airspace area as described hereinabove so as to project above the conical surface. There are several exemptions to this provision.

Airway Heights incorporated guidelines for both the AOZ (for SIA) and AICUZ (for Fairchild AFB). As with Spokane County, Airway Heights AOZ chapter defines imaginary airspace surfaces and provides general use and height restrictions in accordance with FAA Part 77. For the Fairchild AFB AICUZ

chapter, airspace definitions and height requirements are provided consistent with the 1995 AICUZ Study recommendations.

Within the Fairchild JLUS study area, several factors were noted relating to vertical obstructions. Multi-story hotels in close proximity to the Fairchild AFB runway, specifically along designated flight tracks are a concern for safe aircraft operations (□ Factor 3A). Even if these hotels are outside of the established safety zones at either end of the runway (CZs and APZs), consideration should be given to safety aspects of aircraft low-level flight operations prior to development approval. Arrival and departure flight tracks for Fairchild's aircraft generally follow one or two relatively straight ingress or egress paths over Airway Heights. Multi-story hotels can conflict with Fairchild's closed flight patterns, however, which take circuitous routes over Airway Heights and Medical Lake (see Figure 3-17). The Northern Quest Resort and Casino's proposed nine-story hotel and atrium expansion would be located in close proximity to established closed pattern flight tracks to the northeast of Fairchild AFB (● Factor 3D). Compliance with Part 77 (described earlier in section) and coordination with Fairchild AFB and SIA will be needed.

As mentioned in Compatibility Factor 1, Land Use, a Waste to Energy Facility is sited approximately 0.6 miles southeast of the north end of SIA's primary runway. This location is outside of SIA's established APZs and is on the border of the airport's 3,500-foot conical boundary. The facility's 175-foot tall concrete stack was noted as a potential vertical obstruction to aircraft operations at SIA (● Factor 3B). Along with civilian aircraft traffic, SIA supports Fairchild's aircraft when weather conditions restrict landing at the installation, which according to SIA, equates to approximately 18 operations per year.



In addition to the vertical obstructions detailed above, vertical obstructions to low level aircraft flight throughout the region were identified by the JLUS committee members. Of note were tall structures off of either end of the preferred new SIA runway (● Factor 3C), including amateur radio operator towers throughout the study area.



Spokane's Waste to Energy Plant

4 *Local Housing Availability Factors*

Definition:

Local housing availability addresses the supply and demand for housing in the region, the competition for housing that may result from changes in the number of military personnel and the supply of military families housing provided by the base.

Given personal choice and the limited availability of installation housing, military personnel assigned to Fairchild AFB often seek housing in nearby communities. Factors identified for compatibility are identified in Table 3-8.

Table 3-8. Local Housing Availability Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|--------|----------------|----------|------------------|
| Availability of affordable housing and general quality of life | 4B, 4C | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

In reviewing local housing availability, no specific areas or concerns were identified other than need to ensure quality housing is available both on and off the installation (● Factors 4B and 4C). Similar to many installations across the nation, Fairchild AFB recently underwent privatization of its military housing areas. Congressionally authorized since 1996, the Military Housing Privatization Initiative allows the military to work with the private sector to design, construct and/or renovate, operate, manage, and maintain family housing assets located on installation property, both on and off of the primary installation (i.e., remote housing locations).

Fairchild AFB’s privatization project is a public-private venture with the firm Balfour Beatty designed to revitalize the installation’s existing housing stock. Under this partnership agreement, Balfour Beatty will provide 641 units on the installation in one of four neighborhoods (Command Circle, Galena Station, NCO Capehart and Fort Wright Village). The 798 total family housing units on base is a significant decrease in units compared to installation housing available in the past (see Section 2). The decrease in units leaves more military households looking for housing off base within the region.

Military families are not required to live in military family housing and can obtain housing anywhere within the local communities. Changes in missions at the installation could increase or decrease the number of Fairchild AFB personnel and students, which translates to a requirement for more or less housing. In the case of an increase in personnel, the increased demand would likely be handled by the local communities, at least in a short-term situation. Depending on the size of the increase, this could impact housing supply in the local region.

5 *Infrastructure Extensions Factors*

Definition:

This factor covers the extension or provision of infrastructure (roads, sewer, water, etc.). Infrastructure plays an interesting role in compatibility. On the positive side, infrastructure can enhance the operations of the installation by providing needed services, such as sanitary sewer treatment capacity and transportation systems. Infrastructure can also be an encroachment issue if enhanced or expanded infrastructure encourages urban density growth into areas near the installation that would not be compatible with current or future missions.

Infrastructure plays an interesting role in compatibility planning. Historical development has shown that the old adage “if you build it, they will come” is particularly true when it comes to infrastructure extensions. On the positive side, infrastructure can enhance the operations of the installation by providing needed services, such as transportation systems. It can also be a compatibility concern if enhanced infrastructure encourages growth into areas near the installation where it would not be compatible with current or future missions. Factors identified for this compatibility factor are listed in Table 3-9 below and described in the following discussion.

Utility extensions or expansion of infrastructure in proximity to military installations, promotes the desirability of the area for growth increasing the potential for incompatible development. Through careful planning, the extension of infrastructure can serve as a means to guide development into appropriate areas while providing the community opportunities for new development potential.

Table 3-9. Infrastructure Extensions Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|------------|----------------|----------|------------------|
| Stormwater: Areawide stormwater and groundwater factors | 5A, 5B, 5C | ■ | ■ | ■ |
| Development of new Airway Heights Wastewater Treatment Facility | 5D | ■ | ■ | ■ |
| Water Extension: Proposed water infrastructure extensions from City of Spokane into West Plains | 5E | ■ | ■ | ■ |
| Geiger Spur | 5F | ■ | ■ | ■ |
| US Highway 2 Enhancements | 5G | N/R | N/R | N/R |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Stormwater

Stormwater impacts to the West Plains are resulting in potential flooding problems and aquifer contamination (● Factor 5A). As the West Plains area continues to grow, the urbanization of once rural lands creates more rooftops, driveways, streets and other impermeable surfaces. Development is occurring in areas needed for water absorption and stormwater conveyance. Poorly draining soils, poor natural infiltration rates, bedrock, and perched water tables close to the ground surface further complicate the ability of the remaining natural surface to accommodate runoff. Seasonal flooding has become a common occurrence in the West Plains as surface water runoff resulting from significant rainfall events or rapid snow melt pond in ditches and shallow depressions until evaporation or infiltration occurs. Each new development increases the impacts of

stormwater leaving many to rely on large evaporation ponds. These ponds are often viewed as expensive, aesthetically undesirable, a temporary solution with questionable long-term viability, and a potential safety concern relative to attracting birds and wildlife into flight corridors.

Techniques employed by Spokane County to control stormwater include grass lined ditches, ponds, and pipes to convey, cleanse, and dispose of stormwater runoff. To support the development of this regional stormwater “backbone”, annual stormwater rates are assessed to residential, businesses, industries, farms, and other non-residential uses based on standard calculation rates and drainage service area. The West Plains area currently has the second highest annual rate assessed. New development is also assessed a one-time system development charge (SDC) to access the regional stormwater system. This “growth pays

for growth” concept assesses SDCs based on the amount of impervious surface anticipated as a result of development.

Stormwater infrastructure projects recommended as part of Spokane County’s Stormwater 6-year Capital Improvement Plan for the West Plains include:

- **Additional Water Quality Studies.** This project recommends geotechnical studies and monitoring to determine the suitability of specific parcels or locations for siting regional infiltration facilities and to assess potential water quality impacts associated with such facilities.
- **Additional Groundwater/Environmental Studies.** This project includes geotechnical and scientific studies of the potential water quality and quantity impacts to the Wanapum Aquifer and downgradient impacts related to localizing infiltration of larger volumes of surface water.
- **Regional Infiltration Facility.** This project involved the construction of a regional infiltration facility north of Spokane International Airport.
- **Regional Conveyance Improvements.** This project involves the construction of necessary improvements to the stormwater conveyance system to improve flow capacity throughout the West Plains.

Airway Heights Wastewater Treatment Facility

Planned infrastructure enhancements, such as the development of a projected \$28 million, one million gallon wastewater treatment plant serving the City of Airway Heights (● Factor 5B), raise factors of potential growth inducement within close proximity to the installation. As discussed earlier under the land use compatibility factor,

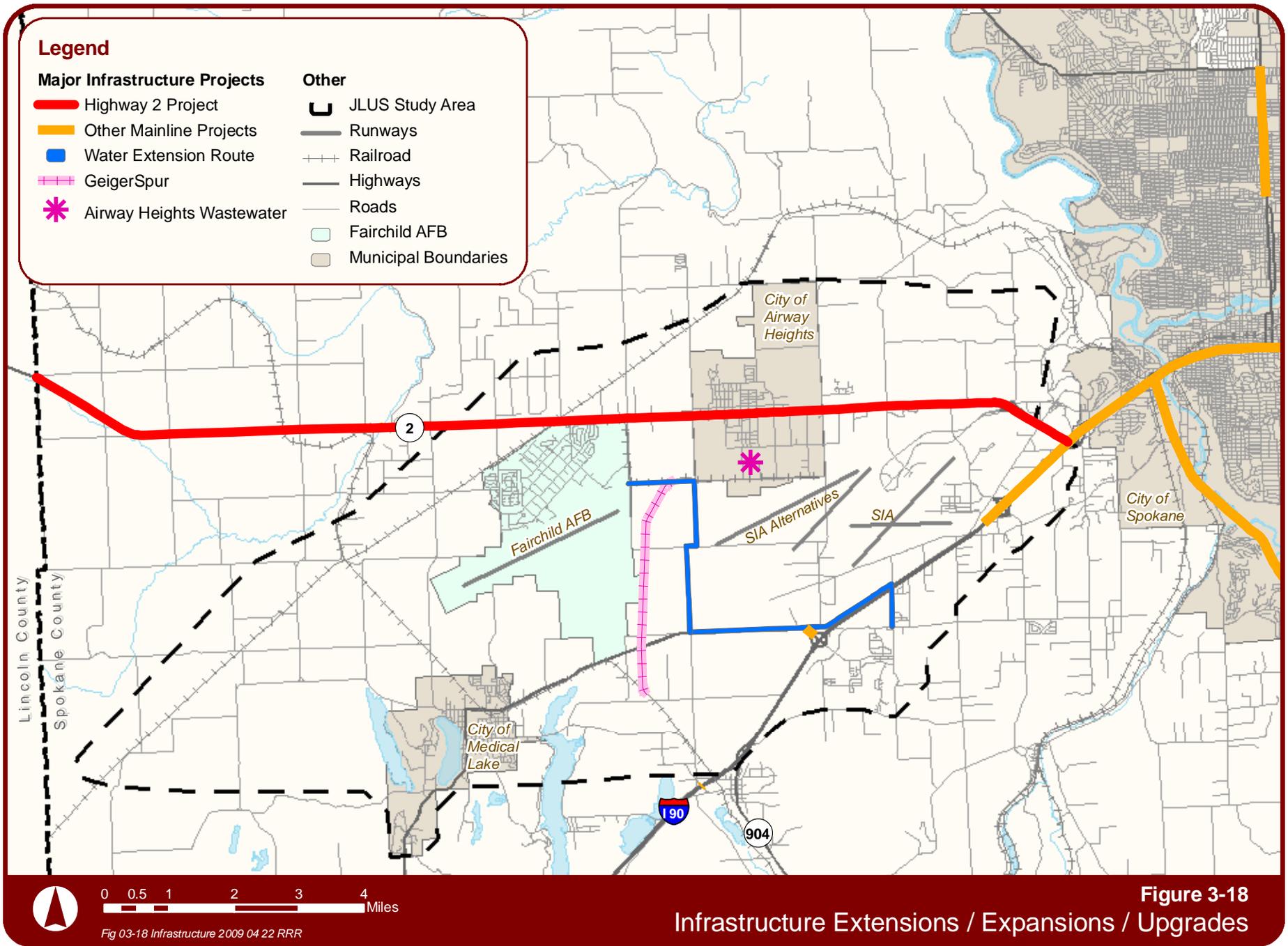
developers cite the relatively low price of land in these largely undeveloped areas as an attractive component to the potential development. Until recently, the lack of infrastructure in these areas served as a major deterrent to development. However, Airway Heights recent installation of water and sewer improvements have allowed developers to take on other infrastructure improvements, such as road projects, themselves in order to develop in less costly areas.

Water Extension

South of Fairchild AFB, the City of Spokane recently extended a 36-inch transmission line along SR-902 to Craig Road (● Factor 5C) (see Figure 3-18). The line was extended in response to the need to provide water to acreage within the City’s service area spanning from south of Interstate 90 to McFarlane Road, which previously received no water transmission or distribution. This area has long been an interest for future growth. Furthermore, the City of Spokane is extending an offer of service to the City of Medical Lake provided certain conditions are met. Although the City of Medical Lake has concerns with the conditions as presented, the ability to provide additional water to the area, especially during peak use months in the summer will stimulate growth within the area.

Other water infrastructure enhancements providing increased service to the West Plains accommodating additional growth include:

- **Spotted Road Sewer Pump Capacity Improvements.** This project will add a fourth pump to the booster station to accommodate growth near Spokane International Airport and the West Plains (Source: *Spokane Capital Improvements Program 2007-2012*)



- **Thorpe Road Water Reservoir No. 2.** This project will construct a second reservoir next to the existing one on Thorpe Road to provide redundancy and additional capacity for growth near Spokane International Airport and the West Plains (Source: Spokane Capital Improvements Program 2007-2012)
- **Westside Transmission Line.** This project will construct a 36-inch transmission main from the West Drive Booster Station to Spotted Road for system reliability and completion of the Westside main project providing additional for growth west of the City (Source: Spokane Capital Improvements Program 2007-2012)
- **Fairchild AFB Transmission Extension.** This is a joint project with Fairchild AFB to extend the 30-inch transmission line from Thomas Mallon and 57th to serve the installation. Possible routes include Rambo Road via Geiger Boulevard, Hayford, Thorpe and McFarlane Roads, but the exact route has not yet been determined. Fairchild AFB and the State will participate in funding (Source: Spokane Capital Improvements Program 2007-2012)

Water Supply

As detailed in Section 2, a multi-phase project is underway by the City of Spokane to extend a 36-inch water transmission line towards Fairchild AFB and the West Plains area. This line will provide the installation with an option to obtain its water from sources other than on base wells and pumps on the Spokane River. Future compatibility factors, however, may result from the line extension as this will encourage urban growth in the area south of Fairchild AFB (● Factor 5E).

Geiger Spur

The 5-mile Geiger Spur track is located on the West Plains of Spokane County and connects the Geiger Spur with the Palouse and Coulee City Railroad (PCC) near Medical Lake. As discussed under Compatibility Factor 1, Land Use, a portion of the spur is currently located inside the secure area of Fairchild AFB along the installation's eastern boundary. The



Geiger Spur realignment

Source: www.wsdot.wa.gov

rail line will be relocated off of the installation in response to security concerns about trains traveling through the secured area of the base. This relocation project will allow freight service to continue to existing customers currently located on the line; however, the newly constructed spur rail line east of Fairchild AFB is expected to attract new industrial and commercial uses that have the potential to negatively impact installation operations.

Ground Transportation

One notable future project impacting the JLUS study area is the development of a Route Development Plan (RDP) along US Highway 2 from the Lincoln County line to I-90. Initiated in January 2007, this RDP will include an analysis of operating conditions, environmental factors, population and land use changes, and other factors impacting the facility and neighboring jurisdictions. Final recommendations and selected improvements are being determined with public presentation scheduled for the spring of 2010.

With the potential widening of US Highway 2 and continued development in the corridor along the Fairchild AFB northern boundary, there will be an increase in vehicular traffic as the region becomes more accessible due to the improved roadway (● Factor 5G). As the region grows, demand for existing transportation facilities will increase, creating potential congestion and maintenance factors on the supporting transportation system (● Factor 24A).

In regards to military sustainability, additional capacity on US Highway 2 will continue to feed desires to locate urban uses west of the City of Spokane towards Fairchild AFB. If incompatible uses are approved within this area, the magnitude of such growth may restrict operations on the installation, curtail future missions, and create avoidance areas on the installation which limits the ability of the installation to utilize on-station. Local jurisdictions and Fairchild AFB will need to collaborate to ensure traffic flows smoothly and emergency transportation routes to and from the installation are not congested.

Factors associated with state and county road systems are addressed under Compatibility Factor 24, Ground Transportation Capacity.

6 *Antiterrorism/Force Protection Factors*

Definition:

Antiterrorism/Force Protection (AT/FP) relates to the safety of personnel, facilities, and information on an installation from outside threats.

The factors identified for this compatibility factor are listed on Table 3-10 and further described in the following discussion.

Table 3-10. Antiterrorism/Force Protection Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|--------|----------------|----------|------------------|
| No factors were noted for this Compatibility Factor. | N/A | N/A | N/A | N/A |

7 Noise Factors

Definition:

Defining noise from a technical perspective, sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. More simply stated, sound is what we hear. As sounds reach unwanted levels, this is referred to as noise.

The factors identified for this compatibility factor are listed on Table 3-11 and further described in the following discussion.

Table 3-11. Noise Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|------------------------------------|----------------|----------|------------------|
| Aircraft Noise: noise from aircraft operations impacting existing and proposed development | 7A, 7C, 7D, 7F, 7G, 7H, 7I, 1M, 4A | ■ | ■ | ■ |
| Expanding / shrinking Fairchild AFB noise contours | 7B, 7E | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Understanding Noise

Due to the technical nature of this resource topic and its importance to the JLUS process, this section provides a discussion of the characteristics of sound and the modeling process used to evaluate noise impacts.

The following key terms are used to describe noise.

- **Ambient Noise.** The total noise associated with an existing environment and usually comprising sounds from many sources, both near and far.

- **Attenuation.** Reduction in the level of sound resulting from absorption by the surrounding topography, the atmosphere, distance from the source, barriers, construction techniques and materials, and other factors.
- **A-weighted decibel (dBA).** A unit of measurement for noise having a logarithmic scale and measured using the A-weighted sensory network on a noise-measuring device. An increase or decrease of 10 decibels corresponds to a tenfold increase or decrease in sound energy. A doubling or halving of sound energy corresponds to a 3-dBA increase or decrease.

- **Noise Contours.** Connecting points of equal noise exposure. Typically expressed in 5 dBA increments (60, 65, 70, 75, etc.).
- **Sensitive Receptors.** Sensitive receptors are defined as locations and uses typically more sensitive to noise, including residential areas, hospitals, convalescent homes and facilities, schools, and other similar land uses.

Characteristics of Sound

Sound is characterized by oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary by over one trillion times within the range of human hearing, a logarithmic loudness scale (i.e., dB scale) is used to present sound intensity levels in a convenient format.

Since the human ear is not equally sensitive to all frequencies within the entire spectrum, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called “A-weighting” written as dBA. The human ear can detect changes in sound levels of approximately 3 dBA under normal conditions. Changes of 1 to 3 dBA are typically noticeable under controlled conditions, while changes of less than 1 dBA are only discernable under controlled, extremely quiet conditions. A change of 5 dBA is typically noticeable to the general public in an outdoor environment. Figure 3-19 summarizes typical A-weighted sound levels for a range of indoor and outdoor activities.

Environmental noise fluctuates over time. While some noise fluctuations are minor, others can be substantial. These fluctuations include regular and random patterns, how fast the noise fluctuates, and the amount of variation. When describing noise impacts, it is common to look at the average noise over an average day.

Characteristics of Noise Modeling

The Air Force adopted the NOISEMAP computer model to analyze and describe noise impacts created by aircraft operations. NOISEMAP is one of two Environmental Protection Agency (EPA) approved models. The other is the Integrated Noise Model (INM), which is used by the FAA for civilian airports.

In 1974, EPA designated the noise descriptor Ldn, or Day-Night Average Sound Level (DNL), as the standard measurement for noise impacts. Ldn is an average sound level exposure, measured in decibels, over a 24-hour period (see the definition earlier in this section for details). On a national level, Ldn measurements are projected down to 65 decibels.

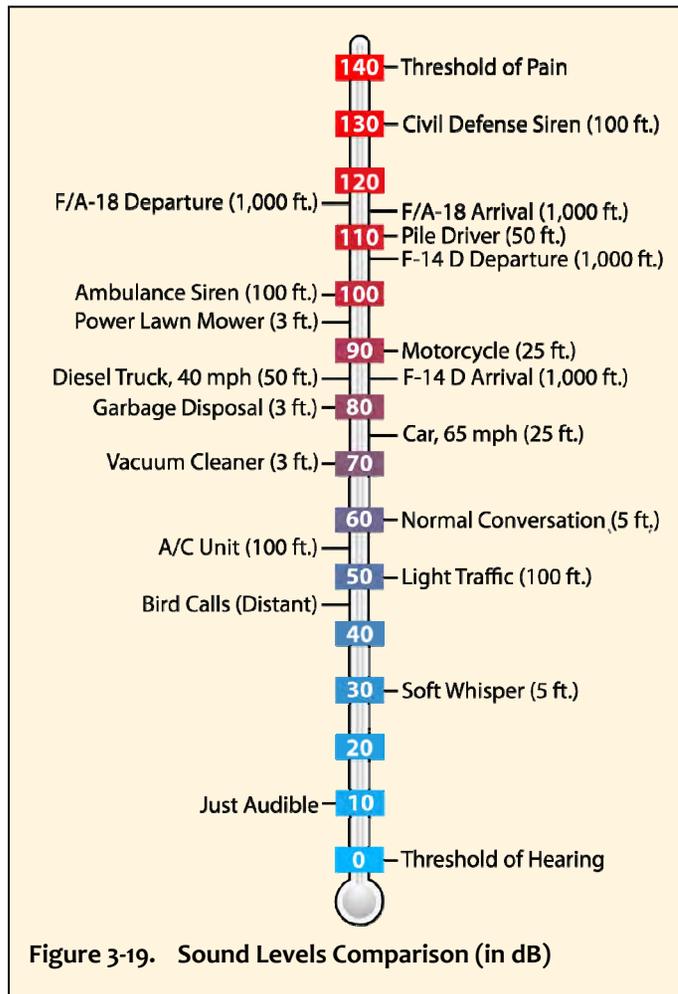


Figure 3-19. Sound Levels Comparison (in dB)

Aircraft Noise

For noise sources attributable to Fairchild AFB, aircraft noise is the primary concern relative to compatibility planning. Over the years, several studies have been developed regarding noise levels associated with aircraft operations at Fairchild AFB. The analysis of airborne noise varies based on the type of aircraft modeled, flight operations, training activities, flight frequency, and other aircraft using the airspace.

As described in Section 4, Fairchild AFB published an updated AICUZ study in October 2007, which revised the previous AICUZ study from 1995. One major difference between the 1995 and 2007 AICUZ studies is the identified noise zones. The 2007 update and subsequent noise zone changes were the result of:

- Changes in flight operations and the addition, elimination, or alteration of flight tracks for mission and training purposes;
- Post September 11, 2001, aircraft operations tempo supporting wartime mission and homeland security requirements;
- Technical improvements to NOISEMAP, a computer program for modeling noise levels that determines noise zones (NZs) based on aircraft activity; and
- Changes in aircraft type, such as the replacement by the Washington Air National Guard of the KC-135E aircraft with the KC-135R, and based aircraft composition.

The 2007 Fairchild AICUZ provided detailed noise modeling of current aircraft operations at the installation. Aircraft operations at Fairchild AFB have the most noticeable noise effect in the surrounding area to residential and commercial

uses. Additionally, noise generated at the Fairchild explosives ordinance range can have limited impacts to uses off of the installation.

The Fairchild AICUZ looks at noise for a typical or average day over a given year. On any given day, noise levels on a specific property will be higher or lower depending on a number of factors, including the number of flights, aircraft mix, the actual flight tracks taken, flight elevations, and so forth. Other changes at the base could result in changes to the noise contours. As such, the noise contours should be used as guidance in making future land use decisions, not absolute constraints.

The AICUZ noise contours show areas where noise compatibility factors are likely to occur with more sensitive land uses. Outside of these contours are additional areas where overflight will occur and new development will notice noise from flight operation. The overall shape and size of the study area reflects locations that experience periodic low level overflight, and therefore, may be exposed to occasional noise.

Many of the compatibility factors related to aircraft noise stem from existing or proposed residential developments within the study area. According to the 2007 AICUZ, residential uses are not allowed within areas 65 dB or higher.

Expanding/Shrinking Noise Contours

Due to changes discussed earlier, the 2007 AICUZ noise contours are significantly smaller than those presented in the 1995 AICUZ (see Figure 3-20). Differences in assumptions based on current mission factors, changes in aircraft type, and technical characteristics of the model have profound implications to the resulting noise contours. Much emphasis is placed on the delineation of these contours and land use policies or decisions are often based on the assumptions presented by these contours. AICUZ studies represent current conditions, should conditions change, a new AICUZ would have to be prepared. As a result, specific land use decisions should not be based solely on AICUZ boundaries.

As a component of this JLUS, a study was conducted to assess potential noise related to four future mission scenarios. These scenarios assume the replacement of Fairchild's KC-135 tanker aircraft with next generation tanker aircraft based on civilian passenger airframes. In all scenarios the new aircraft are larger than the KC-135 aircraft currently

operated. Transient operations for each scenario remained the same as in the AICUZ study.

For each scenario, the operations at Fairchild AFB were combined with the 20-year operations forecast for SIA to provide an overall perspective on the effect of all aircraft operations within the region. For the purposes of this analysis, the scenarios assumed operations at a new third runway at SIA. For modeling purposes, the SIA alternative runway assumed was the runway closest to Fairchild AFB, thus yielding a worst-case assessment for noise.

Characteristics of the four scenarios are as follows:

- **Scenario 1** – 48 based KC-767A Aircraft
- **Scenario 2** – 48 based A330 aircraft
- **Scenario 3** – 32 based KC-767A aircraft and 16 B-52 aircraft
- **Scenario 4** – 32 based A330 aircraft and 16 B-52 aircraft

The results of each of the scenarios were combined with the 20-year forecast for SIA to provide an overall perspective on the effect of all aircraft operations within the region. For the purposes of this analysis, the scenarios assumed operations at a new third runway at SIA. For modeling purposes, the SIA alternative runway assumed was the runway closest to Fairchild AFB, thus yielding a worst-case assessment for noise.

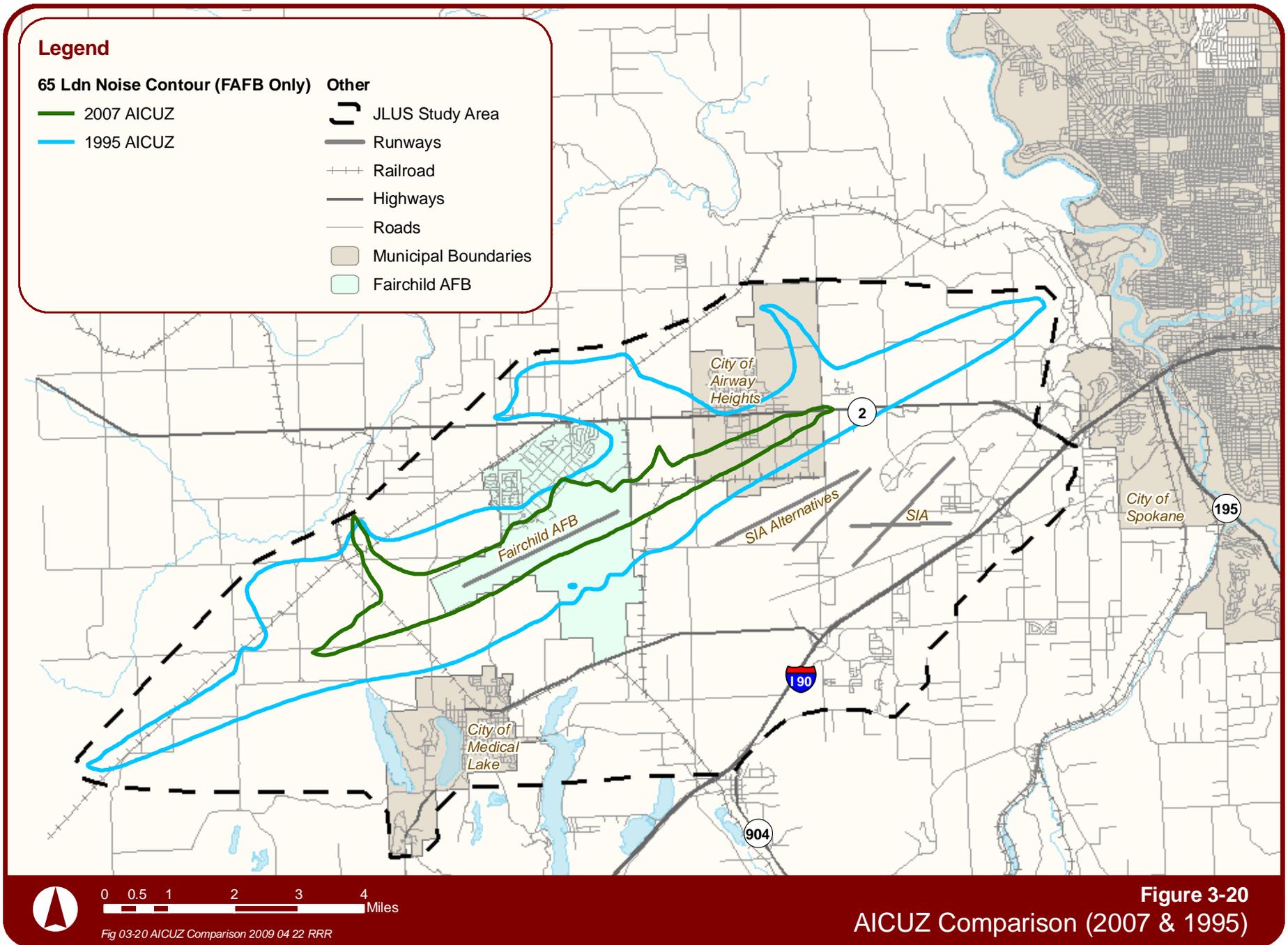


Figure 3-20
AICUZ Comparison (2007 & 1995)

The noise modeling indicated that the scenarios including the KC-767 (Scenarios 1 and 3) would have a slightly larger noise signature than those including the A330 aircraft. To ensure Fairchild's ability potential future aircraft and missions were properly reflected in this study, the JPSC decided to use Scenario 3 as the basis for JLUS strategies development.

The results of this analysis, presented in Figure 3-21, portray the area covered within the 65 dB noise contour or higher from each of the four scenarios. The close proximity of Fairchild AFB and SIA presents unique challenges to noise management within the region. As a shared airspace, the impact of one facility compounds the noise exhibited by the other. As previously discussed, the area potentially included within a 65 dB noise from one or both installations is significant and covers much of the West Plains area within the JLUS study area. Only the central part of the City of Airway Heights is outside of the 65 dB noise contour. Almost the entire extent of US Highway 2 from I-90 to the Fairchild main entry gate lies within an area of noise concern.

Schools are sensitive noise receptors, and as such, siting of schools outside of high noise areas is important. Figure 3-22 depicts school locations within the JLUS study area.

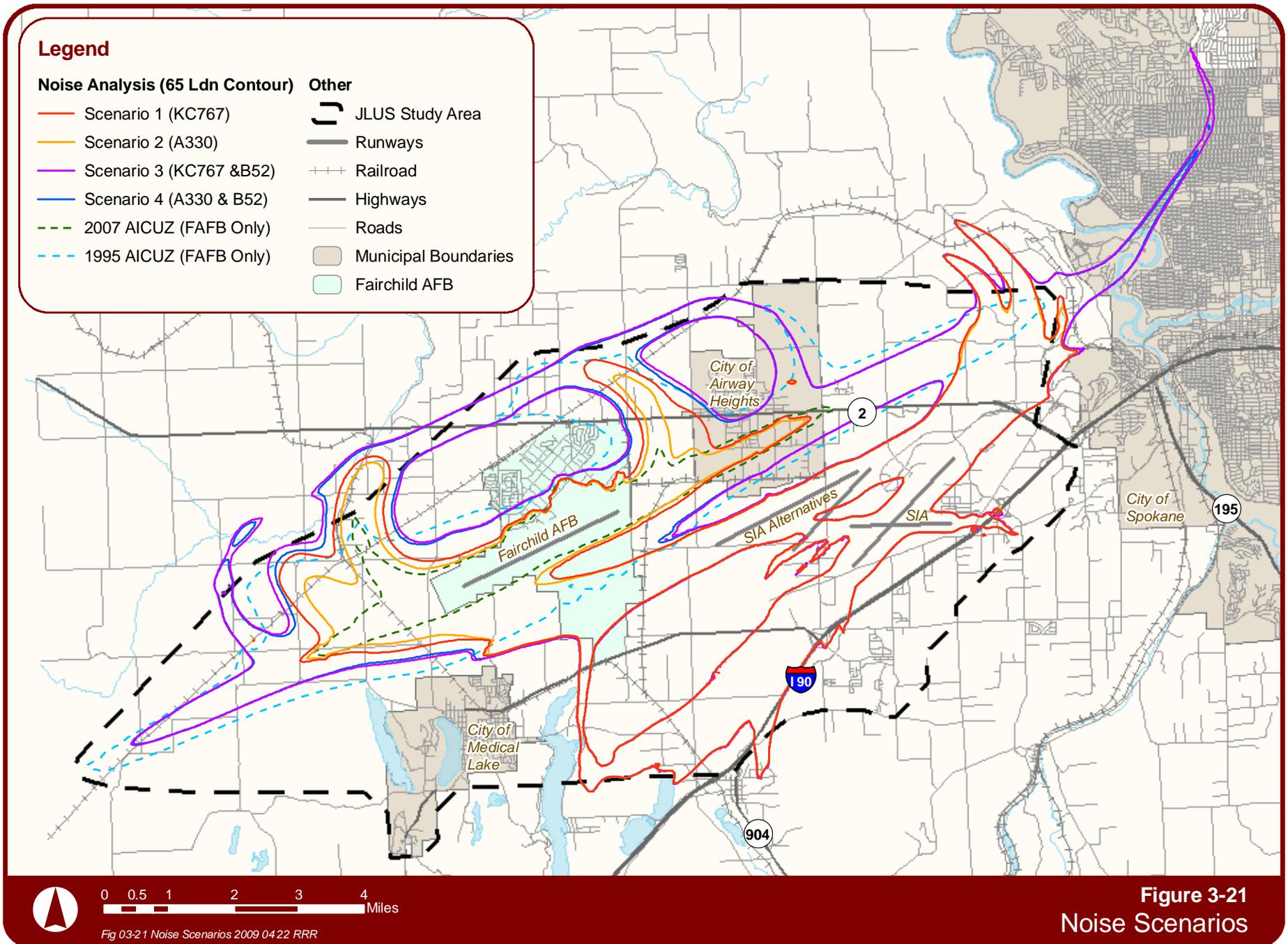
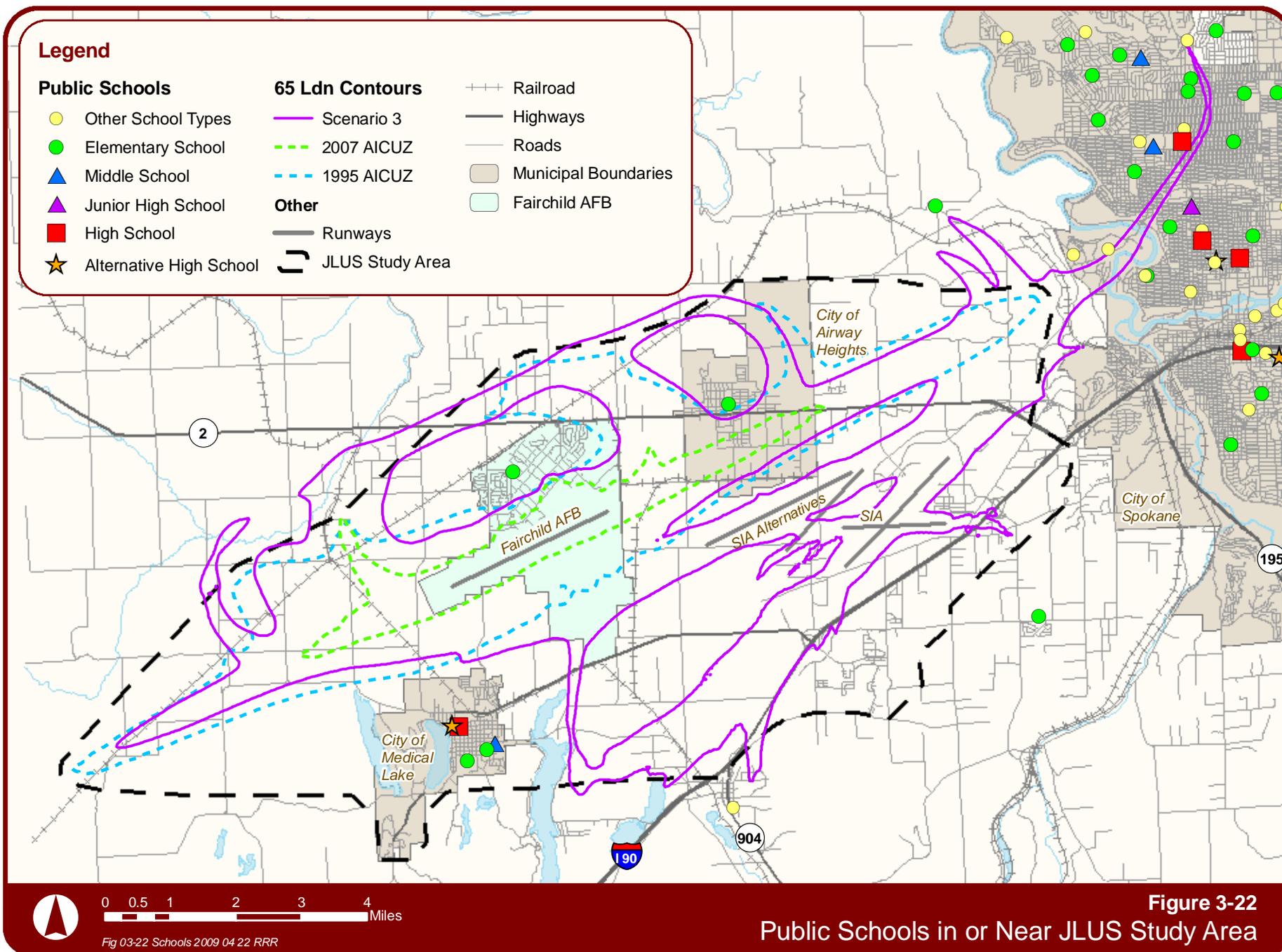


Figure 3-21
Noise Scenarios



8 *Vibration Factors*

Definition:

Vibration is an oscillation or motion that alternates in opposite directions and may occur as a result of an impact, explosion, noise, mechanical operation or other change in the environment.

The factors identified for this compatibility factor are listed on Table 3-12 and further described in the following discussion.

Table 3-12. Vibration Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------|----------------|----------|------------------|
| Vibration impacts from Fairchild AFB operations (i.e., EOD, firing ranges, aircraft operations, etc.) | 8A, 8B | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Fairchild AFB operations can produce vibration related to aircraft operations and explosions associated with ordnance training and disposal (● Factors 8A and 8B). Noise from aircraft operations are the primary sources of vibration and include Fairchild’s jet tanker fleet, as well as transient aircraft and Army helicopters. Noise from Fairchild AFB aircraft does not produce sound at the decibel and frequency levels typically connected with significant vibration.

Consequently, vibration is not considered to be a major compatibility factor; however, it is something that should be disclosed to property owners in the area.

Explosions from ordnance training and munitions disposal are infrequent. As described in Compatibility Factor 2, Safety, the detonation area of the Fairchild AFB explosives ordnance range is enclosed by barricades of 6-foot walls. This minimizes the vibration and over pressurization from explosives detonations.

9 *Dust, Smoke, and Steam Factors*

Definition:

Dust is the common term used to describe the suspension of particulate matter in the air. Dust, smoke, and steam can be created by fire (controlled burns, agricultural burning), ground disturbance (agricultural operations, grading), industrial activities, or other similar processes. Dust, smoke, and steam become a compatibility issue if sufficient in quantity to impact flight operations (such as reduced visibility or equipment damage).

Civilian and military activities can produce dust, smoke, and steam from grading, agriculture, industrial practices, vehicle movement, or weapons training. Suspended particulate matter becomes a compatibility factor if sufficient in quantity to impact flight operations (such as reduced visibility or equipment damage) or substantially impacting the quality of life of local residents. Sources of dust, smoke, and steam in the airfield vicinity could obstruct the pilot’s vision during takeoff, landing, or other periods of low altitude flight. Factors identified for this compatibility factor are presented in Table 3-13 and further described in the following discussion.

Table 3-13. Dust, Smoke, and Steam Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------|--|--|--|
| Dust from regional uses (Waste to Energy plant, agriculture, grading) | 9A |  |  |  |

Notes:  Most Critical  Moderately Critical  Least Critical N/R = No Rating

To reduce the impacts associated with prescribed outdoor burns, the state legislature called for the gradual reduction and elimination of outdoor burns in 1991. Outdoor burning is currently limited to natural vegetation, less populated areas, and areas with fewer commercially available alternatives to burning. Outdoor burns are not permitted within any incorporated city or their Urban Growth Areas within Spokane County. In other areas of the county, the five types

of permitted outdoor burning or natural vegetation include: yard and garden debris, recreational burning (camp/cook fires), silvicultural debris, land clearing debris, and agricultural debris. Regulated through the Spokane Regional Clean Air Agency, permits must be obtained before burning can commence. Individuals engaging in illegal burns are subject to civil penalties up to \$10,000 per day, per violation.

Although there can be benefits to controlled agricultural burning, such as the control of weeds and easy removal to clear debris, smoke and dust caused by agricultural burning can result in visibility reductions for Fairchild AFB aircraft operations. A continued coordinated approach for the timing of burning will ensure the factor is controlled.

Particulate concerns from the Waste to Energy Facility will be discussed under Compatibility Factor 12, Air Quality; however, it is important to note that compliance with federal and state air quality laws will help keep smoke and dust factors to a minimum, especially those generated by industrial uses.

10 Light and Glare Factors

Definition:

This compatibility factor refers to man-made lighting (street lights, airfield lighting, building lights) and glare (direct or reflected light that is harsh and disrupts normal vision). Light sources from commercial, industrial and residential uses at night can cause excessive glare and illumination, which impacts the use of military night vision devices and air operations. Conversely, high intensity light sources generated from a military area (such as ramp lighting) may have a negative impact on the adjacent community

The factors identified for this compatibility factor are listed on Table 3-14 and further described in the following discussion.

Table 3-14. Light and Glare Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|----------|----------------|----------|------------------|
| Light and glare from proposed development | 10A, 10C | ■ | ■ | ■ |
| Urban light sources | 10B | ■ | ■ | ■ |
| Racetrack: Spokane Raceway Park | 10D | N/R | N/R | N/R |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

As discussed under Compatibility Factor 1, Land Use, intense development proposed on lands managed by the Spokane Tribe has the potential to present light and glare factors for the installation (● Factor 10A). Located north of the installation along US Highway 2, the proposed 145-acre resort and casino will include a mix of hotel, commercial, and casino facilities.

The Kalispel Tribe's proposed expansion of the current Northern Quest Resort and Casino includes a 50,000-square foot nine-story glass atrium that connects two hotel towers. The glass atrium poses a potentially significant glare factor for aircraft in the area, including military aircraft from Fairchild AFB and civilian aircraft using SIA or other local airports (● Factor 10C).

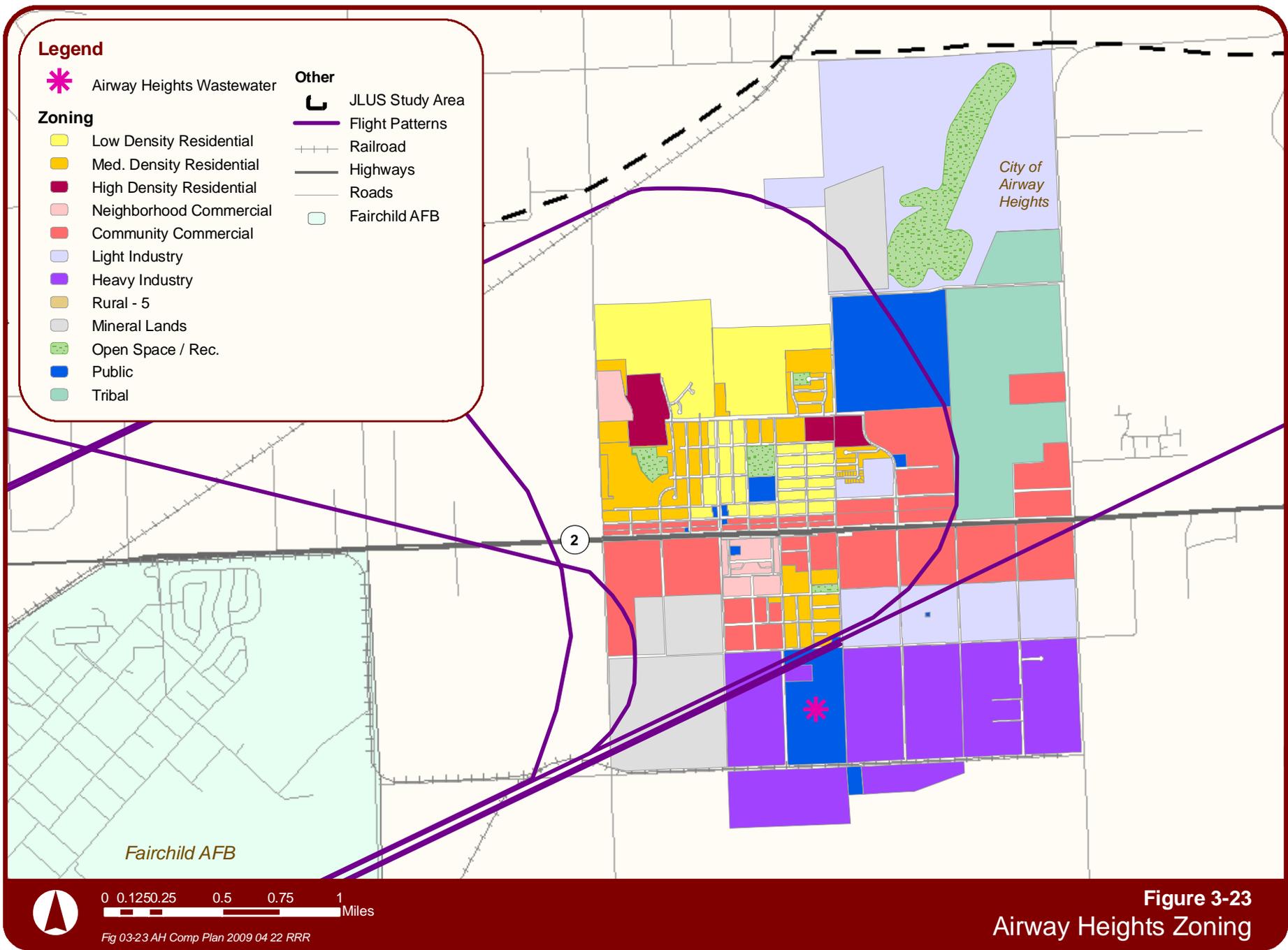
At both casino locations, parking lot lighting (similar to other commercial uses) and specialty lighting (changeable-face signage, building accents, use of spotlights, building lighting, etc.) are a concern relative to light and glare. The design of light-emitting sources at both facilities is particularly critical due to their proximity to Fairchild AFB and approach / departure routes typically used.



Northern Quest Resort and Casino expansion concept shown at left edge of image

The City of Airway Heights Zoning Map indicates that the US Highway 2 corridor is and will be the community's commercial center (see Figure 3-23). A common characteristic of commercial centers is typically the heavy use of exterior lighting on buildings and in parking or logistical areas (● Factor 10B). Care must be taken to ensure lighting associated with Airway Heights commercial development does not create excessive light pollution, which can interfere with aircraft departing from or landing at Fairchild AFB. A key focus area for light pollution control or mitigation is in the vicinity of US Highway 2 and Garfield Street intersection. This area falls in line with the Fairchild AFB runway centerline and is therefore highly visible to all inbound or outbound Fairchild aircraft.

In addition to the lighting concerns associated with commercial uses in Airway Heights, existing and expanded commercial facilities have the potential to pose light and glare factors for Fairchild aircraft, specifically in the vicinity of US Highway 2 and Hayford Road intersection (● Factor 10A). This location has experienced extensive new commercial land multifamily development and is between Fairchild AFB and SIA along the approximate centerline of Fairchild's runway.



11 *Alternative Energy Development Factors*

Definition:

Alternative energy refers to sources such as solar, wind or biofuels that can be used to replace or supplement traditional fossil-fuel sources, as coal, oil and natural gas. Alternative energy development could pose compatibility issues related to glare (solar energy) or vertical obstruction (wind generation). Other alternative energy developments, such as biofuels, have no typical compatibility issues and would be judged for compatibility on a case-by-case basis.

The factors identified for this compatibility factor are listed on Table 3-15 and further described in the following discussion.

Table 3-15. Alternative Energy Development Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|-----------------------------------|--------|----------------|----------|------------------|
| Wind and solar energy development | 11A | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating



Wind turbines near Ellensburg and Walla Walla, WA

Solar facilities in the region could cause substantial amounts of glare depending on the time of year, the facility type, location, angle, and direction, resulting in a reduction of the pilot’s view, even at a very high altitude (□ Factor 11A).

Wind turbines have two potential compatibility factors (□ Factor 11B). The most prominent is the vertical obstruction aspect of the systems, which can be several hundred feet in height for modern commercial structures. Currently, in Washington, these commercial wind turbines are primarily located in the central and south central parts of the state in areas such as Ellensburg, Pasco, and Walla Walla. In the Fairchild area, wind is not considered strong enough or

constant enough to support large scale wind development, but smaller, localized applications may be possible. Future placement of wind turbines, commercial and private, would need to be coordinated with Fairchild AFB to avoid height factors (i.e., vertical obstruction).

12 *Air Quality Factors*

Definition:

Air quality is defined by a number of components that are regulated at the federal and state level. For compatibility, the primary concerns are pollutants that limit visibility, such as particulates, ozone and potential non-attainment of air quality standards that may limit future changes in operations at the installation.

In 2005, Spokane achieved attainment of all federal, health-based air pollution standards (particulate matter, carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, and lead) after a decades-long battle to improve regional air quality. Of the six criteria pollutants, three are of particular concern to the Spokane region: carbon monoxide, particulate matter, and ozone. Motor vehicle emissions are largely responsible for increased levels of carbon monoxide and ozone. In regards to air quality concerns, factors pertaining to compatibility identified are presented in Table 3-16 and described in the following discussion.

Table 3-16. Air Quality Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|-----------------------|--------|----------------|----------|------------------|
| Waste to Energy Plant | 12A | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Environmental concerns associated with the capacity of regional landfills coupled with new state solid waste regulations, led to the development of a regional program for solid waste reduction, recycling, energy recovery, and residue disposal – the Spokane Regional Solid Waste System. As a component of this system, the Waste to Energy Facility located off Geiger Road east of Spokane International Airport turns refuse into electric power (● Factor 12A). The processes of combustion used to turn refuse into energy

results in several potential air quality concerns including particulate matter/dust and acid gases. These concerns are mitigated through the use of air quality emission controls at the plant. The negative pressure used by the facility prevents dust and ash from escaping the building. Ash produced at the facility is sent to an ash mono fill at Rabanco’s Roosevelt Regional Landfill in Klickitat County, Washington. Good combustion minimizes the formation of carbon monoxide and other products associated with incomplete combustion.

“Dry scrubbers” use lime to neutralize acid gases and ammonia is used to convert nitrogen oxide into harmless nitrogen and oxygen prior to emitting exhaust.

Although documented as a concern, when functioning properly, this facility should not create adverse impacts for the installation or its operations.

A variety of air pollution control strategies are used within Spokane County to control dust, other particulate matter, and other emissions. These strategies include auto emission inspections, restrictions on open burning, wood stove certification, restrictions on wood stove use, oxygenated fuels for vehicles, road paving using low volatile organic compound asphalt, and use of chemical deicers instead of road sanding. These strategies have improved air quality within the region; however, the substantial growth projected with the region could lead to added degradation of air quality in the future. Provided the region maintains its focus on achieving and maintaining compliance with federal air quality standards, this compatibility factor should not impact Fairchild AFB operations.

13 *Frequency Spectrum Impedance and Interference Factors*

Definition:

Frequency spectrum impedance and interference refers to the interruption of aircraft related electronic signals by a structure (impedance) or the inability to distribute / receive a particular frequency because of similar frequency competition (interference).

Factors pertaining to this compatibility factor are presented in Table 3-17 and described in the following discussion.

Table 3-17. Frequency Spectrum Impedance and Interference Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------|----------------|----------|------------------|
| Frequency spectrum impedance and interference throughout the region. (☐ not shown on Figure 3-1) | 13A | N/R | N/R | N/R |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

In the performance of typical operations, the military relies on a range of frequencies for communications and support systems. Similarly, public and private uses rely on a range of frequencies to support daily life. The potential for increased background radio frequency interference / electromagnetic interference is developing as a mission impact to the US military’s high-tech combat forces. Frequency interference can result from a number of factors, including:

- New transmissions using a frequency that is near an existing frequency used by the military
- Reducing the distance between two antennae transmitting similar frequencies
- Increasing the power of a similar transmission signal
- Using poorly adjusted transmission devices that transmit outside their assigned frequency
- Production of an electromagnetic signal that interferes with a signal transmission
- Explosion of consumer electronic sources and uses from portable systems to whole communities utilizing Wi-Fi broadband systems and industrial sources that produce an electronic noise by-products

As the use of the frequency spectrum increases (such as the rapid increase in cellular phone technology over the last decade) and as development expands near military installations and operations, the factor of frequency spectrum interference and competition increases.

The final factor of concern is frequency impedance. Key factors to consider relative to frequency spectrum impedance include the construction of buildings or other facilities that block or impede the transmission of signals from antennas, satellite dishes, or other transmission/reception devices affected by line-of-sight requirements. As development continues in and around Fairchild AFB and the West Plains area, care must be taken to avoid impedance by construction outside the installation (□ Factor 13A).

14 Public Trespassing Factors

Definition:

This factor addresses public trespassing, either purposeful or unintentional, onto Fairchild AFB. This issue is related to Compatibility Factor 6, AT/FP.

The factors identified for this compatibility factor are listed on Table 3-18 and further described in the following discussion.

Table 3-18. Public Trespassing Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|--------|----------------|----------|------------------|
| No factors were noted for this Compatibility Factor. | N/A | N/A | N/A | N/A |

15 *Cultural Resources Factors*

Definition:

Cultural resources may prevent development on the base, apply development constraints or require special access by Native American tribal governments or other authorities.

Special considerations must be made for any development or expansion of military missions considered for areas with cultural significance. The factor identified for this compatibility factor is listed in Table 3-19 and described further in the following discussion.

Table 3-19. Cultural Resources Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------|----------------|----------|------------------|
| Cultural significance of West Plains (□ not shown on Figure 3-1) | 15A | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Evidence of habitation within Spokane County dates back at least 13,000 years, and county lands were home to the early ancestors of the Spokane and Kalispel tribes. According to the Spokane County Comprehensive Plan, Cultural Resources are those buildings, structures, sites or associations left behind by a group of people and are generally over 50 years old.

Although the area exhibits historic and archaeological significance, most cultural resource sites are located outside of potential development areas, and the presence of these resources does not constrain development or mission operations at Fairchild AFB. Similarly, there are several

historic sites and districts in the City of Spokane; however, none of these are listed in the JLUS study area. (Source: Washington Information System for Architectural and Archaeological Records Data (WISAARD))

Prescribed methods for identifying and evaluating potential impacts to the environment, including cultural resources, are described under the National Environmental Policy Act (NEPA) and the State Environmental Policy Act of Washington (SEPA). Modeled after the NEPA legislation, the SEPA policies and the intent are similar to NEPA's.

16 *Legislative Initiatives Factors*

Definition:

Legislative initiatives are federal, state or local laws and regulations that may have a direct or indirect effect on a military installation to conduct its current or future mission or a community's ability to direct growth.

The factors identified for this compatibility factor are listed on Table 3-20 and further described in the following discussion.

Table 3-20. Legislative Initiatives Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|--------|----------------|----------|------------------|
| No factors were noted for this Compatibility Factor. | N/A | N/A | N/A | N/A |

17 *Interagency Coordination Factors*

Definition:

Interagency coordination relates to the level of interaction on compatibility issues between military installations, jurisdictions, land and resource management agencies, and conservation authorities.

The development of proactive partnerships between the Air Force, other governmental agencies, and local jurisdictions is required to ensure continued sustainability for Fairchild AFB and local economies. The factors for this compatibility factor are listed in Table 3-21 and described further in the following discussion.

Table 3-21. Interagency Coordination Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|--------|----------------|----------|------------------|
| Coordination between entities (Fairchild AFB, communities, tribes, SIA) (□ not shown on Figure 3-1) | 17A | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Many of the complications associated with urban development near military installations rise from a general lack of knowledge concerning operations at the installation and a lack of understanding about the needs and desires of local communities on behalf of the military (□ Factor 17A). Although the installation and the region collaborate routinely on factors, solidifying this relationship through inclusive development review processes would be beneficial.

One of the factors requiring attention is the inclusion of the military in the early phases of the development review process or the drafting of legislation affecting the installation.

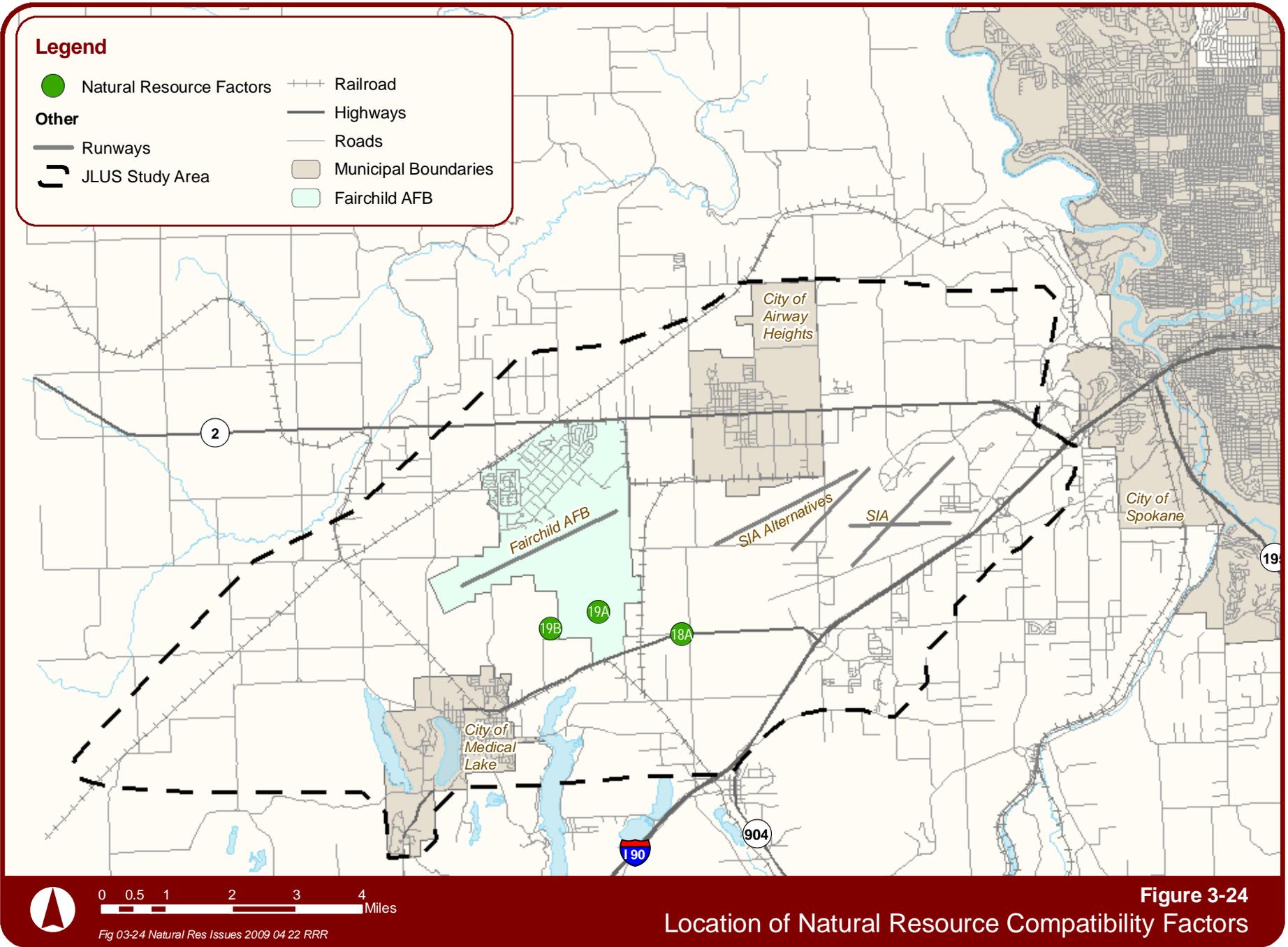
Active participation by all entities is essential to addressing this factor as the development of incompatible land uses could create safety concerns, cause pressure to modify operations and increase disturbance to new residents.

Given the unique relationship of the jurisdictions and stakeholders involved in the direction of the West Plains, the strategies in Section 5 will need to provide direction on a coordinated planning process that ensures all stakeholders are informed and involved.

3.3 NATURAL RESOURCE COMPATIBILITY FACTORS

In addition to man-made compatibility factors, natural compatibility factors are also potential sources of conflict with military readiness activities. Two of the three natural resource compatibility factors were identified during the JLUS process that currently present compatibility factors for Fairchild AFB.

Figure 3-24 illustrates the location of the natural resource compatibility factors identified by the JLUS committees, the public, and the consulting team during preparation of this JLUS. Some factors identified apply to the entire study area, and therefore, do not have a specific location on the map. The strategies presented in Section 5 were designed to address the significant compatibility factors identified in this section.



18 *Water Quality / Quantity Factors*

Definition:

Water quality / quantity concerns include ensuring adequate water supplies of good quality for use by installations and surrounding communities as the area develops.

The long term availability of water at sufficient quality and quantity within the study area is vital to sustaining local communities and Fairchild AFB. The factor identified for this compatibility factor is listed in Table 3-22 and further described in the following discussion.

Table 3-22. Water Quality/Quantity Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------|----------------|----------|------------------|
| Water supply in developing areas (water extensions needed to serve new development) | 18A | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Communities within the study area obtain potable water from three major water purveyors: the City of Spokane, the City of Airway Heights and the City of Medical Lake. Each purveyor is responsible for providing water service within their respective service area. The City of Spokane relies almost entirely on groundwater from the Spokane Valley-Rathdrum Prairie Aquifer, also commonly known as the “Rathdrum-Spokane Aquifer”. The City of Airway Heights draws water from the Wanapum Basalt Aquifer. It also relies on the City of Spokane’s water supply during dry times of the year. The City of Medical Lake’s water is drawn from four deep wells. (Source: City of Medical Lake, 2007 Annual Drinking Water Report, May 30, 2008.)

As the communities surrounding Fairchild AFB continue to grow and expand, additional pressures will be placed on existing water supplies (● Factor 18A). Many measures have been taken to conserve existing water supplies within regional aquifers such that they can continue to produce a continuous water supply to accommodate the growth of communities and potential mission expansions of Fairchild AFB. Airway Heights set a goal to reduce water consumption by five percent, and is providing public education on water conservation methods to customers. Although the city is promoting conservation, it has not established any incentives to encourage water conservation.

As mentioned under the Infrastructure compatibility factor, the city recently completed planning studies and construction documents for a new water reclamation facility.

As described in Section 2, Fairchild AFB receives its water from dedicated wells on base and pumps on the Spokane River. The installation is working under a directive to implement public education and information programs, audit distribution systems to identify leaks and repair needs, upgrade boiler/steam systems, and identify processes using high volumes of water. Most of these measures were completed in 2002, with education performed on an on-going basis.

Medical Lake is metering all facilities and reviewing meters to identify problems with the system. In addition, the City discharges reclaimed water into West Medical Lake to maintain lake levels and to Deep Creek for water quality purposes.

Almost all of the City of Spokane's customer's are metered and the City installed a leak detection system in the 1970s. Other measures enacted with the City include the establishment of a pilot program for water reuse on golf courses and the completion of a feasibility study to form an irrigation district using reclaimed water. Spokane County is also planning and conducting studies for the development of a regional water reclamation facility.

As with many areas in the western United States, water availability within the West Plains is largely a function of water rights administration. Water rights within the State of Washington are administered by the Washington Department of Ecology. Uncertainties with water rights contribute to the challenges associated with managing water within the region. These uncertainties are to such as extent that the

Department of Ecology is requesting funding of over \$1 million in fiscal year 2010-2011 for water rights adjudication within the region.

One of the major factors associated with water rights administration within the West Plains is the existence of inchoate water rights. Inchoate water rights are portions of municipal rights that are not currently used but are available for future use as water demand increases. They are usually known as conditional or permit rights. They represent a right to begin withdrawing water and placing it to beneficial use. These are not vested property rights; therefore, these rights may need to be assigned rather than conveyed by deed. Additionally, they will generally need to be "perfected" through beneficial use within a certain amount of time.

Currently, the City of Airway Heights does not hold sufficient water rights to serve their anticipated growth. Using inchoate rights could place additional burdens on water resources as purveyors use water presently held in reserve but not being used. Once a purveyor extinguishes their inchoate rights, additional water rights must be sought through other means. The inability to acquire rights or service additional users has led Fairchild AFB and the City of Airway Heights to purchase additional water from the City of Spokane through interties. Reliance on interties places a community at risk as these agreements can be withdrawn should the provider of the intertie require the rights to provide for their own users. As mentioned previously, the extension of infrastructure to Craig Road and Highway 902 may provide intertie opportunities for Medical Lake with the City of Spokane water system.

Similar to inchoate rights, federal and Native American reserved water rights are not subject to continuous use provisions and can be accessed at any time. Native American nations within the study area could assert reserved rights and draw water from within the region.

Another factor that affects the study area is the lack of a coordinated approach to water supply planning and infrastructure development. Water purveyors in the West Plains are experiencing difficulties with meeting demands with existing wells, straining the aquifers. The rural nature of the West Plains is also characterized by the proliferation of individual permit-exempt wells, further impacting groundwater aquifers.

19 *Threatened & Endangered Species Factors*

Definition:

A **threatened** species is one that may become extinct if measures are not taken to protect it. An **endangered** species is one that has a very small population and is at greater risk of becoming extinct. Many species that become extinct never make it to the endangered species list. The presence of threatened and endangered species may require special development considerations, could halt development and could impact performance of military missions.

The maintenance and enhancement of biodiversity is an important component to Fairchild AFB’s land management stewardship responsibilities. Natural resource management on Fairchild AFB is influenced by federal legislation and Department of Defense policies, including the Federal Endangered Species Act of 1973, Department of Defense Directive number 4700.4, United States Air Force Instruction 32-7064, and the Department of Defense Ecosystem Management Principles. Based on the need to adhere to the aforementioned policies, habitat management for the installation is guided by its 2005 Integrated Natural Resources Management Plan (INRMP). The factor identified for this compatibility factor is listed in Table 3-23 and further described in the following discussion.

Table 3-23. Threatened and Endangered Species Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------|---|---|---|
| Spalding Catchfly Habitat | 19A |  |  |  |
| Vernal Pools | 19B | N/R | N/R | N/R |
| General habitat considerations ( not shown on Figure 3-24) | 19C | N/R | N/R | N/R |

Notes:  Most Critical  Moderately Critical  Least Critical N/R = No Rating

The installation supports numerous native species and habitats, as well as Federal and state-listed threatened and endangered species. One of the species of principal concern is Spalding's catchfly (*Silene spaldingii*) (● Factor 19A). Listed as a threatened species pursuant to the Endangered Species Act in 2001, the species was first discovered at Fairchild AFB in 1994. Installation activities occurring in the vicinity of Spalding catchfly habitat include survival training exercises, military storage, grenade training range, and recreational uses. Factors contributing to species decline include grazing by domestic livestock, competition from non-native plant species, herbicide/pesticide application, fire suppression, agricultural conversion, urban development, insect predation, reduced pollinator activity, and demographic and genetic effects of small populations.

Unique topographical features in the southern portion of the installation (and other areas in the West Plains) contribute to the development of vernal pools (● Factor 19B). The impervious basalt substrate creates pools of water resulting from wet winters that slowly evaporate. These pools provide a habitat for numerous rare species. A study of vernal pools on the installation identified 14 vernal pools and 84 associated plant species; however, annual fluctuations in winter and spring precipitation lead to a highly variable suite of species each year.

Additional concerns identified within the Fairchild INRMP with impacts to the JLUS include (□ Factor 19C):

- Natural resources in the area provide ample habitat for species that present potential factors with flying operations (i.e., BASH hazards)
- Deer populations could increase to the point of becoming an airfield flight hazard
- Habitat enhancement (i.e., controlled burns or fire regime activities) could increase BASH-threat species
- Ground maintenance and construction activities might adversely affect sensitive species
- Other species of importance include Russian olive shrub, Burrowing owls, and White-tailed jackrabbit.
- Wetlands on the installation potentially serve as habitat for sensitive species; management of this resource will rise as military training and civilian activities increase

Protecting natural resources while maintaining operational mission capabilities will be paramount to continued sustainability for Fairchild AFB. The installation, as with many military installations, can act as a refuge for threatened and endangered species. As the areas around the installation are developed, the base becomes the last place with habitat to support the displaced species. Given that Fairchild AFB is a relatively small base, this situation could significantly impact the installation's mission. To ensure this does not occur, future habitat enhancements on or off the installation need to be evaluated to determine impacts on Fairchild AFB operational missions. Open communication with adjoining landowners will be critical to developing sustainable regional ecosystem management activities.

20 *Marine Environments Factors*

Definition:

Regulatory or permit requirements protecting marine and ocean resources can cumulatively affect the military’s ability to conduct operations, training exercises, or testing in the marine environment.

The factors identified for this compatibility factor are listed on Table 3-24 and further described in the following discussion.

Table 3-24. Marine Environments Factors

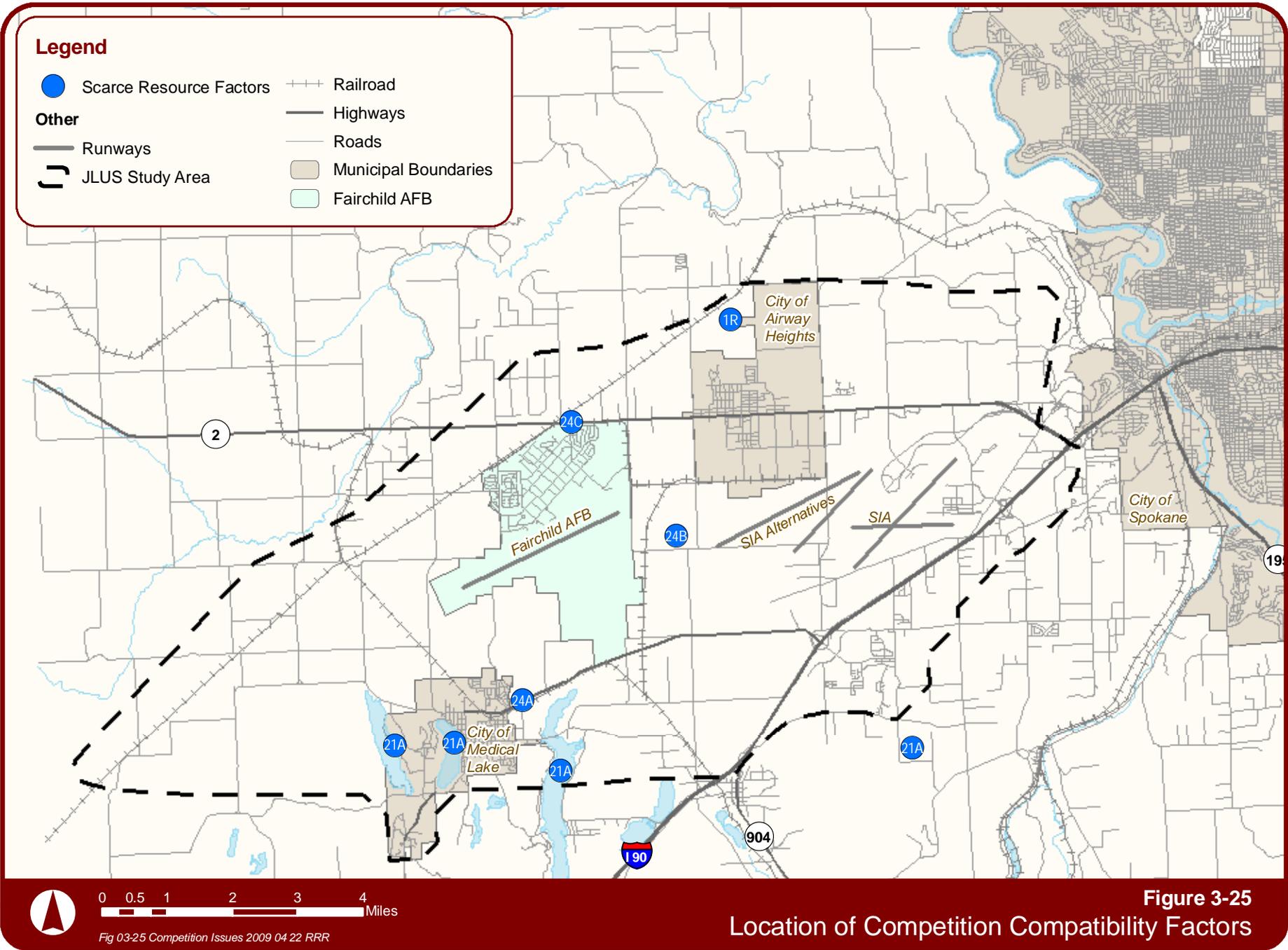
| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|--------|----------------|----------|------------------|
| No factors were noted for this Compatibility Factor. | N/A | N/A | N/A | N/A |

3.4 COMPETITION FOR SCARCE RESOURCES

Competition for scarce resources can cause compatibility factors due to competition between local and federal government agencies, other agencies, private development concerns, and the military when demand exceeds the supply of the desired attribute. The following is a description of the key resources that could be in high demand. Two of the four competition factors on the overall list of 24 compatibility factors were identified as applying to Fairchild AFB.

Figure 3-25 illustrates the location of the compatibility factors related to competition for scarce resources as identified by the JLUS committees, the public, and the consulting team during preparation of this JLUS. In general, these factors were not determined to be a major concern in the JLUS study area. There were only a few factors identified related to Compatibility Factor 21, Scarce Natural Resources, and Compatibility Factor 24, Ground Transportation Capacity.

The strategies presented in Section 5 were designed to address the significant compatibility factors identified in this section.



21 *Scarce Natural Resources Factors*

Definition:

Pressure to gain access to valuable natural resources (such as oil, gas, minerals, and water resources) located on military installations, within military training areas, or on public lands historically used for military operations can impact resource utilization and military operations.

Pressures to gain access to valuable natural resources located on military installations, within military training areas, or on public lands historically used for military testing and training can affect the ability to use these areas for operational activities. Furthermore, pressure to use natural resources outside of military installations for recreational purposes can increase the number of people in critical operational areas. The factor identified for this compatibility factor is listed in Table 3-25.

Table 3-25. Scarce Natural Resources Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|--------|----------------|----------|------------------|
| Recreational assets (local water bodies) | 21A | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Natural resources within the West Plain offer numerous opportunities for recreation, most notably boating and fishing in area lakes and water bodies southwest of Fairchild AFB near the City of Medical Lake (● Factor 21A). Development history within this area is closely tied to the presence of these lakes. Medical Lake is one of the most popular recreational assets within Spokane County.

Many of the West Plains’ unique natural resources are the result of the region’s unique soils, climatic conditions and geologic structure. As finite resources, they cannot be recreated if depleted or destroyed. Protecting these

resources ensures the continued viability of local economies dependent on the quality of life prevalent within the region. A variety of techniques are available to conserve and protect the region’s natural resources. Spokane County requires notification to development permit applicants planning to develop in natural resource areas. Property tax policies also encourage the continuation of existing resource activities. Other conservation techniques that should be considered include appropriate use of conservation easements.

22 *Land, Air, and Sea Spaces Factors*

Definition:

Land, Air, and Sea Spaces with regard to other airports in the proximity of the military installations.

The factors identified for this compatibility factor are listed on Table 3-26 and further described in the following discussion.

Table 3-26. Land, Air, and Sea Spaces Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------|----------------|----------|------------------|
| Competition for airspace with Spokane International Airport | 22A | N/R | N/R | N/R |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Competition for land space refers to a situation where Fairchild AFB would be in competition for the use of one or more parcels of land. For Fairchild AFB, the DOD owns the installation, and long-term easements are held for areas within the Clear Zone and Accident Potential Zones and other off-installation safety zones (see discussion under Factor 2, Safety Zones). There is no land area that is needed for operations at Fairchild AFB that is not currently controlled by the military. Therefore, this was not a factor to be addressed further in this JLUS.

Fairchild AFB uses various airspaces to accomplish its training and operational missions. These resources must be available and of sufficient size, cohesiveness, and quality to accommodate effective training for existing and future

missions. Airspace near Fairchild AFB is a high-demand resource. Increases in demand for flights from SIA or local airports may impact existing and future aircraft operations at Fairchild AFB (i.e., approach and departure tracks, closed pattern flight tracks, etc.). Current facilities at SIA include two runways, with a third runway currently in the planning stages. Growth at SIA, and the inclusion of a third runway, could add additional constraints on military operations. Based on the study of the new runway and coordination with Fairchild AFB, this is not considered a critical issue at this time, but if new missions were brought to Fairchild AFB or if the flight parameters at SIA were to change significantly, this issue may become a high priority.

23 *Frequency Spectrum Capacity Factors*

Definition:

Frequency spectrum capacity is critical for maintaining existing and future missions at Fairchild AFB. This also needs to be addressed from the standpoint of consumer electronics.

The factors identified for this compatibility factor are listed on Table 3-27 and further described in the following discussion.

Table 3-27. Frequency Spectrum Capacity Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|--|--------|----------------|----------|------------------|
| No factors were noted for this Compatibility Factor. | N/A | N/A | N/A | N/A |

24 *Ground Transportation Capacity Factors*

Definition:

This factor addresses ground transportation capacity on highways and other local roads.

As urban development expands into rural areas, roads once used primarily to provide access to rural areas or transport a limited number of vehicles per day begin to function more as urban major arterial roadways. These once rural roads are often the main transportation corridors for access to military installations. In addition, these facilities also induce growth as rural areas become more accessible. The factors identified for this compatibility factor are listed in Table 3-28 and described further in the following discussion.

Table 3-28. Ground Transportation Capacity Factors

| Compatibility Factor | Map ID | Current Impact | Location | Potential Impact |
|---|--------|----------------|----------|------------------|
| Ground transportation capacity throughout region (increasing demand from new development) | 24A | ■ | ■ | ■ |
| Fairchild AFB entry traffic | 24C | ■ | ■ | ■ |

Notes: ■ Most Critical ■ Moderately Critical ■ Least Critical N/R = No Rating

Historically, growth and development tends to follow major roads. The case is the same for areas around Fairchild AFB. Development along the US Highway 2 and Interstate 90 (I-90) corridors has greatly increased in the past several decades. As describe in Section 2, there are several road improvements taking place within the JLUS study area that have the potential to impact regional mobility and access to the installation (● Factor 24A).

The Spokane Regional Transportation Council (SRTC), the local Metropolitan Planning Organization (MPO), is currently working with stakeholders (including Fairchild AFB) on a West Plains-Spokane International Airport study in response to continued development of the airport business park, land use changes in the area, and the impact of these changes on the Geiger interchange and the surrounding transportation network. This study is expected to be complete in late 2009 or early 2010.

In addition to these studies, peak hour traffic congestion at the main entry gate to Fairchild AFB was identified as a potential factor (● Factor 24C). This factor could be factored into discussions for both the US Highway 2 RDP and the West Plains-Spokane International Airport studies. Development proposals along US Highway 2, such as the development of a casino-resort by the Spokane tribe, could dramatically increase congestion associated with accessing the installation.

Please see the next page.