CHAPTER 1

INVENTORY

1.0 INTRODUCTION

The Spokane International Airport (GEG or "the Airport") is the second busiest airport in the State of Washington in terms of passenger and cargo service. GEG is designated as a primary commercial service airport by the Federal Aviation Administration (FAA) because more than .05% of the total U.S. passengers board flights at the Airport. In addition to the many buildings and systems in place to support the passenger and cargo service, airport facilities support general aviation, and military activity. The Airport manages a nearby business and industrial park which supports airport-compatible development. Fairchild Air Force Base (FAFB), home of the 92nd Air Refueling Wing, is located four miles to the west.

This chapter will provide an overview of existing activities, facilities and infrastructure at the Airport, beginning with a community profile, and a description of the Airport's role in the community as a provider of aviation services. The inventory includes on-airport features such as airfield facilities, the terminal building, ancillary facilities, and the business park. Inventory also includes an overview of regional circulation, environmental factors, existing utilities, and surrounding airspace.

1.1 COMMUNITY PROFILE

The Airport is an integral part of the transportation infrastructure and economy in the Inland Northwest, a geographic area including Washington State east of the Cascades mountain range and Idaho north of the Salmon River. This section describes the community and the region surrounding the Airport.

1.1.1 Location and Setting

The Airport is located in Spokane County, the largest metropolitan area in the Inland Northwest. The Airport is located southwest of downtown the City of Spokane and southeast of the City of Airway Heights. The Spokane River, one of the many natural attractions in the region, flows through the middle of the City of Spokane. A location map of the Airport and surrounding area is illustrated in **Figure 1-1**.

Completion of the Northern Pacific Railway in 1881 established the community of Spokane as a development hub for the region. Today, Spokane is served by a network of federal and state highways including Interstate 90. Interstate 90 is passes along the south side of the Airport, continuing west to Seattle and east through the City of Spokane.

Seattle is 280 miles to the west of the Airport; Portland, Oregon is 344 miles to the southwest; Boise, Idaho is 428 miles to the south; and Vancouver, British Columbia is 409 miles to the northwest. Airport location is described by the airport reference point (ARP), which is the latitude and longitude of the geometric center of the Airport's runways. The ARP at GEG is 47° 37' 8.5'' N / 117° 32' 6.8'' W.

Spokane and the surrounding region are home to many businesses that rely on the Airport to move people and freight. **Table 1-1** provides a regional overview.

1.1.2 Climate

Spokane is part of the large inland basin between the Cascade and Rocky Mountains. The area enjoys four distinct seasons with warm, sunny summers and cold, cloudy winters. July is the warmest month of the year with and average high of 83°F and an average low of 56°F. January is the coldest month of the year with an average high of 31°F and an average low of 20°F.

The prevailing direction of the wind is from the southwest and west for most of the year. Monthly wind speeds average between 9 and 10 miles per hour and the ten year annual average wind speed at GEG is 9.4 mph. Winds occasionally originate out of the northeast during winter months.

Spokane is on the "sunny side" of Washington State, and regularly records over 260 clear days each year during the Spring, Summer, and Fall. Winter months from November to February average more than 20 cloudy days per month, and foggy conditions are reported more than nine days per month. Spokane averages 16 to 22 inches of precipitation annually, and receives an average of 50 inches of snow during the year.

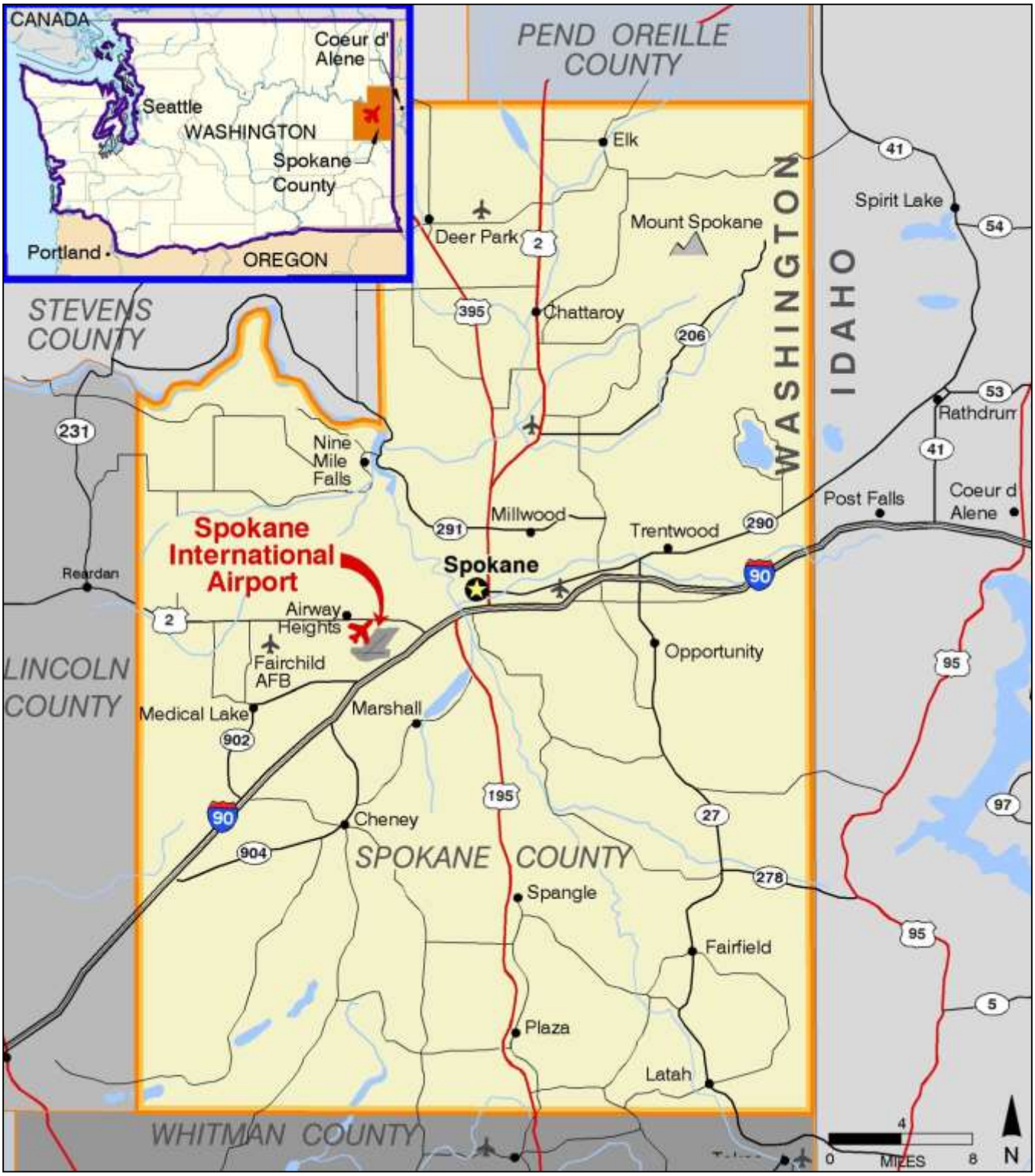


Figure 1-1

Location Map

Spokane International Airport

Table 1-1. Regional Overview

Geography

Location

- Spokane County is located in Eastern Washington
- Spokane County is part of the Inland Northwest region
- Spokane County total land area: 1,764 square miles
- 19 miles from the Idaho border
- 110 miles south of the Canadian border
- 280 miles east of Seattle
- 351 northeast of Portland

Topography

- Airport elevation: 2,385 ft. MSL
- Terrain in Spokane County varies from 1,879 to 2,400 ft

Surface Transportation

Major Highways

- Highways through Spokane:
  - Interstate 90 (I-90): E/W through Spokane, four-lane divided
  - US-395: N/S from Canada, two-lane
  - US-195: N/S to Lewiston, ID, two-lane
  - US-2: E/W west of Spokane, four-lane from I-90 to airport, 2-lane west of airport

Public Transportation

- Spokane Transit Authority (STA):
  - Service to Spokane County
  - Routes serving GEG and Spokane Station
  - Vanpool program
- Spokane Airport Shuttle Service
  - Daily shuttle service serving Washington, Idaho, Montana and Canada
- Private taxi and limousine services

Railways

- Freight Rail
  - Burlington Northern Santa Fe
  - Union Pacific/Southern Pacific
- Passenger Rail
  - Amtrak daily Empire Builder to Seattle, Portland, Chicago

Source: Western Regional Climate Center and Spokane County Comprehensive Plan

Population and Economy

Historical/Current Population (in thousands)

	1990	2000	2010
• City of Spokane	177	196	209
• Airway Heights	1.97	4.5	6.1
• Spokane County	361	418	471
• Service Area	502	584	650*
• Washington State	4,867	5,894	6,725

(Source: Office of Financial Management, State of Washington)

(Service Area: Spokane, Pend Orielle, Whitman, Lincoln, Adams, Okanagon, Stevens, and Ferry Counties in WA)

**estimated*

Projected Population

	2010	2020	2030
• Spokane County	46,6724	529,451	589,623

(Source: Office of Financial management, State of Washington)

Basis of Economy

- Spokane County's major employment sectors include education, medical services, information technology, digital media, manufacturing and aerospace
- 2010 Industry groups with greatest percentage of employment in Spokane County:
  - Government including education 17.6%
  - Healthcare and Social Assistance 16.8%
  - Retail 12.1%
  - Manufacturing 7.0%

(Source: Washington State Employment Security Department: Labor Market)

Climate

Temperature

	Avg. High	Avg. Low
• Hottest month (July)	83°F	56°F
• Coldest month (January)	31°F	20°F

Precipitation and Fog

- Average annual rainfall in Spokane County varies from 16-22 inches and also receives 50 inches of snow annually, mostly from November through February
- Fog occurs an average of 48 days per year with 37 days from November through February

Winds

- Prevailing winds from the southwest or west
- Annual average wind speed is 9.4 mph

Source: Western Regional Climate Center and Spokane County Comprehensive Plan

1.1.3 Socioeconomic Conditions

The U.S. Census reports the 2010 population of Spokane County to be 471,221 and the population of the City of Spokane to be 208,916, making Spokane the second most populous city in Washington after Seattle and ahead of Tacoma. The 2010 population of Airway Heights was 6,114 – a 36% increase from 2000. Continued population growth in the region is projected through 2030. Forecasts prepared by The State of Washington's Office of Financial Management (OFM) show that Spokane County's population will reach 561,627 by 2025. The Airway Heights/West Plains area is projected to experience continued residential growth over the next several decades. It is expected FAFB will no longer provide on-base housing in the future, shifting approximately 1,000 housing units into nearby communities.

The region's growing economy is a driving factor in residential and Airport growth. In spite of the national economic recession of the past several years, Spokane has a growing economic base in industries including education, medical services manufacturing, and aerospace. Employment in Spokane County is projected to increase by 90,000 employees by 2030, exceeding 339,000 employees. Employment at FAFB is projected to increase by 2,000 jobs during that time. Airway Heights/West Plains is also expecting employment gains.

1.1.4 Area Land Use

Land use in the vicinity of the Airport includes residential, industrial, commercial, agricultural and open space, as shown in **Figure 1-2.** A more detailed exploration of land use compatibility, including current and future land uses and regional planning initiatives, is provided in the Land Use Compatibility chapter.

Land use planning around airports addresses several fundamental compatibility issues including safety, noise and operational expansion. The proximity of FAFB to the Airport adds a layer of complexity to local land use planning. Coordinated planning efforts and ongoing communications are essential to meeting the stakeholders land use planning goals.

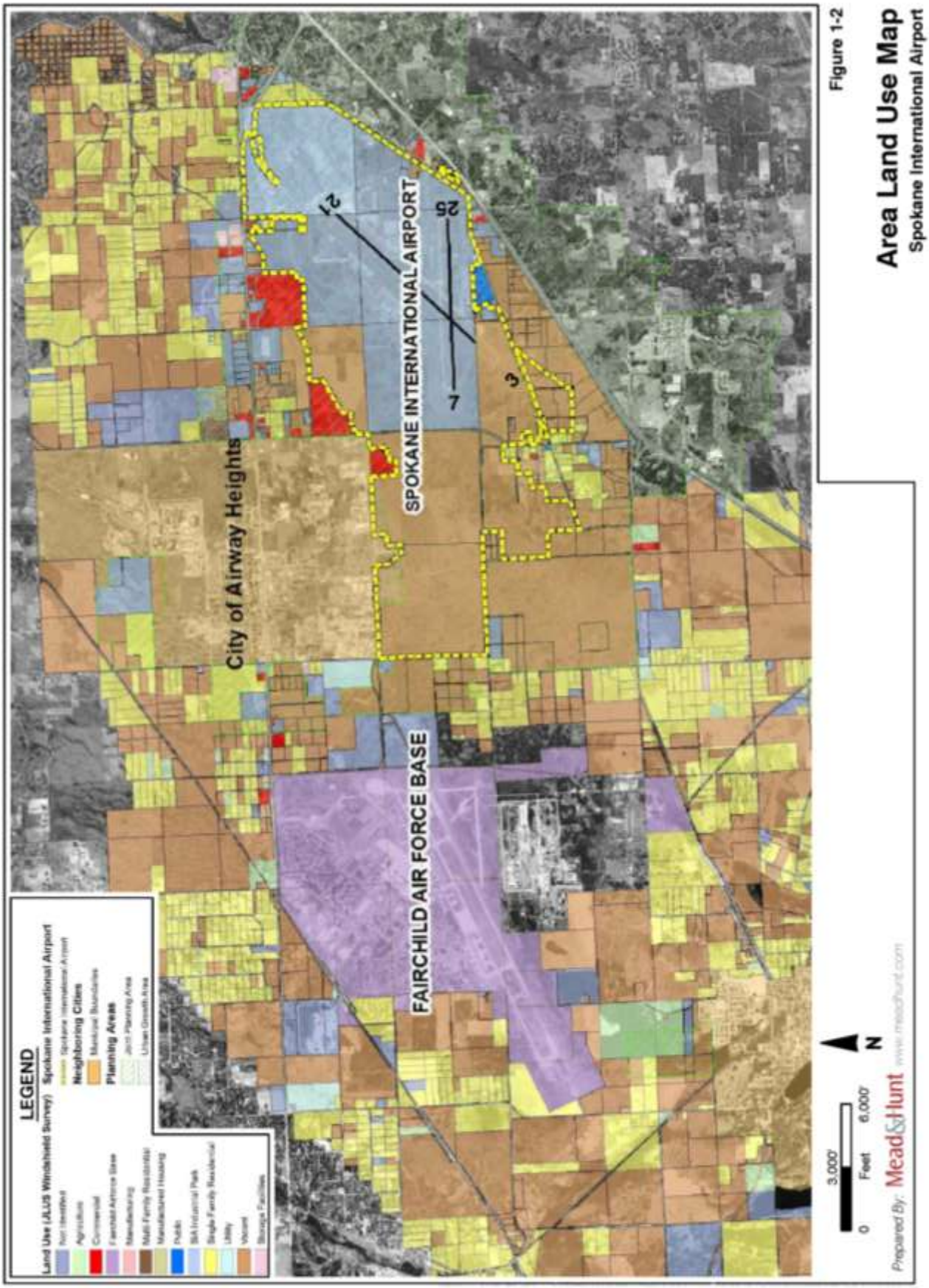


Figure 1-2

Area Land Use Map

Spokane International Airport

1.2 THE AIRPORT'S ROLE

Spokane International Airport is the largest passenger and air cargo airport in the Inland Northwest. The Airport is categorized as a primary commercial service airport by the FAA National Plan of Integrated Airport Systems (NPIAS). GEG is one of twelve airports in Washington categorized as primary commercial service out of the 67 Washington airports in the NPIAS. The NPIAS expands on the commercial service classification with the sub-classification of large hub, medium hub, small hub, and non-hub. In Washington, Seattle-Tacoma International Airport (SEA) is classified as a large hub, and GEG is a small hub. The remaining ten airports are classified as non-hub.

The Washington Aviation System Plan of 2003 (2003 System Plan) classifies GEG as a primary airport with regard to commercial service. Annual passenger enplanements at SEA represent 85 percent of annual passenger enplanements in Washington, and annual passenger enplanements at GEG represent nine percent. The 2003 System Plan indicates that 15 percent of Washington's air cargo tonnage passes through GEG, with 93,424 tons reported in 2005. In 2009, the U.S. Department of Transportation Bureau of Transportation Statistics reported 40,000 tons of inbound freight and 30,000 tons of outbound freight at GEG.

There are 579 based aircraft in stored at the five airports in the Spokane area, and 67 are based at GEG. Felts Field, which also owned and operated by the Spokane Airports Board, has 345 based aircraft. Crosswinds Airport, Deer Park Municipal Airport, and Mead Flying Service are also in the Spokane area.

The Airport is an integral part of the regional transportation network and economic structure. The Airport provides convenient air service for business and recreational travel. GEG also facilitates the transport of goods, materials and supplies in and out of the region and its tenant are employers and purchasers of supplies and services from local businesses. The Airport is an economic engine for development, bringing new businesses to the region. The Airport supports the following activates.

- Scheduled passenger service
- Cargo service (includes FedEx, UPS, USPS)
- A point of air access for the community
- Business and corporate aviation
- Recreational aviation
- Flight instruction
- Air ambulance (such as organ donors and critical care)
- Law enforcement
- Emergency service response (lifeline in case of natural or other disasters)
- Military operations
- A place to conduct business

The future role of the Airport is not expected to change. Roles are expected to expand over time to support population and economic growth in the region.

1.2.1 Airport Ownership and Management

The City and County of Spokane jointly own Spokane International Airport, Felts Field Airport, and the Airport Business Park (Spokane Airports). The operating authority of Spokane Airports is the Spokane Airport Board, consisting of seven appointees from the two governmental bodies. The airports and business park are funded using airport-generated revenue and grants, and do not receive funding from public tax dollars.

1.2.2 Spokane's Aviation History

Aviation activity began in Spokane in 1913 at Felts Field. Commercial air service moved from Felts Field to GEG in 1946, and the Airport was renamed from Geiger Field to Spokane International Airport in 1960.

Aviation activity began at FAFB in 1924 when Spokane raised 10,000 dollars in response to a friendly competition proposed by the National Guard's Adjutant General and became the location of the 116th Observation Squadron. In 1942, the War Department chose Spokane for the Army Air Depot because it found that the Cascade Mountain range provided a natural barrier against attack, and because citizens purchased 1,400 acres of land and presented the title to the War Department. Spokane's aviation history is described in **Table 1-2**.

Felts Field in 1927

Table 1-2. Spokane Aviation Timeline

1913	Aviation activities began at Felts Field.
1920	The field, then called the Parkwater airstrip, was designated a municipal flying field at the instigation of the Spokane Chamber of Commerce.
1926	The United States Department of Commerce officially recognized Parkwater as an airport, one of the first in the West.
1927	Parkwater Airfield renamed Felts Field in honor of Lt. Buell Feltz, who was killed in a plane crash there May 29, 1927.
1929	Aviation milestone by pilots Nick Mamer and Art Walker, who flew their single-engine Sun-God airplane from Spokane to New York via San Francisco and returned to Spokane without stopping on the five-day run.
1930	Daily air passenger service between Spokane and Seattle begins. Fliers make the flight from Felts Field in a tri-motored Ford plane.
1937	A survey was conducted to determine the location for a larger, more modern airport.
1939	The city agreed to lease what is now GEG to the military for one dollar a year, banning civilian use. The Works Progress Administration and the army jointly prepared the runways at Sunset Field.
1941	The Department of the Defense purchased Sunset Field from Spokane County for World War II B-17 and C-47 training facility.
1942	The War Department begins construction of the Spokane Army Air Depot, now FAFB.
1943	Sunset Field is renamed Geiger (GEG) Field in honor of Major Harold C. Geiger, a pioneer in Army aviation and ballooning. The Army Air Depot begins operations.
1946	A portion of the airfield was designated a municipal airport, and commercial airline operations were moved from Felts Field to Geiger Field.
1947	The 92nd and 98th Bomb Groups arrive at FAFB.
1960	Geiger Field was renamed Spokane International Airport.
1961	The first scheduled passenger jet from Spokane's new terminal lifts off in August bound for Minneapolis, MN, and Washington, D.C.
1961	At FAFB, the 92nd became the first "aerospace" wing in the nation with the acquisition of the Atlas intercontinental ballistic missile.
1974	Over five million people from around the world visited Riverfront Park in Spokane for "Expo '74" the first environmentally themed World's Fair. Many travelled through Spokane International Airport.
1974	The Air Force moves the Air National Guard 141st from GEG to Fairchild.
1993	FAFB begins its transition to an air refueling wing.
2009	Associated Painters and the consolidated rental car facility opened.
2010	Runway 3/21 extended from 9,000 to 11,000 feet.

Source: Mead & Hunt

1.2.3 Airport Activities

GEG serves scheduled and charter commercial passenger airlines, scheduled and charter commercial freight airlines, military users, and general aviation. The Airport offers non-stop service to destinations across the Western, Midwestern, and Central United States, and onward connections to the rest of the country and the world. The Airport is served by the following scheduled commercial airlines.

- Alaska Airlines
- Delta Airlines / Delta Connection
- Frontier Airlines
- Southwest Airlines
- United Airlines / United Express
- U.S. Airways

1.2.4 The Airport's Service Area

The extent of the Airport's service area, the area from which it draws users, varies by user type. General aviation and military users have more options within the region than scheduled commercial airlines. The service area for scheduled commercial airline service is known as the catchment area. Other airports in the region do not have passenger terminals or associated facilities. As a result, the catchment area includes eastern Washington, northern Idaho, western Montana, and southern British Columbia, Canada. The service area for corporate and business users is large on account of GEG's runway length, instrument approach procedures, and proximity to population centers. For light general aviation, the service area is smaller as a result of competition from smaller airports such as Felts Field that are specifically tailored to general aviation users.

1.3 AIRFIELD FACILITIES

Airfield facilities include runways, taxiways, and ancillary facilities designed to support aircraft operations. Airfield facilities are shown in **Figure 1-3** and described in **Table 1-3**.

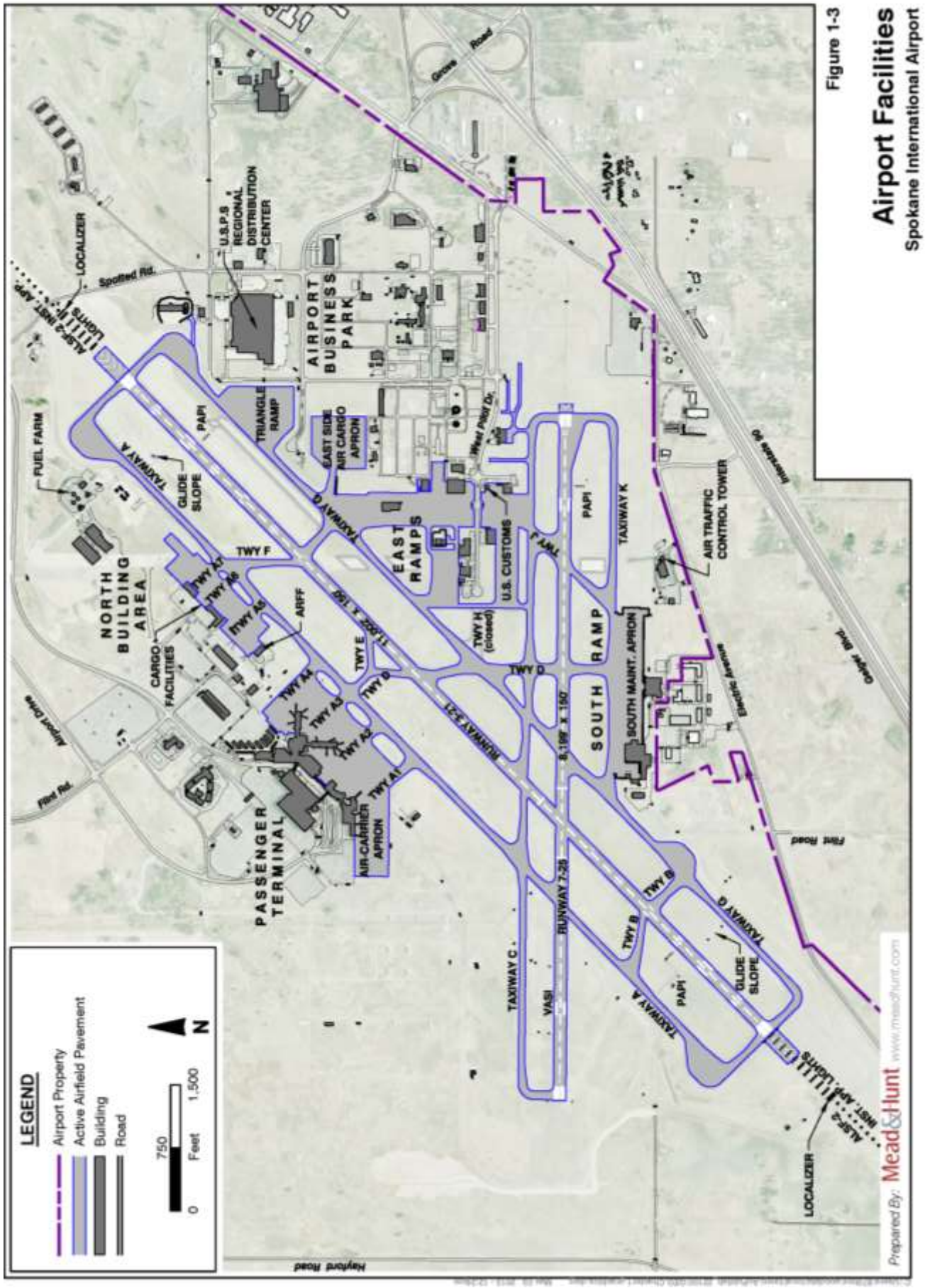

Airport Facilities
Spokane International Airport
Figure 1-3
LEGEND
Airport Property
Active Airfield Pavement
Building
Road
750
0
Feet
1,500
N
NORTH BUILDING AREA
CARGO FACILITIES
PASSENGER TERMINAL
AIR-CARRIER APRON
AIRPORT BUSINESS PARK
U.S.P.S. REGIONAL DISTRIBUTION CENTER
EAST RAMPS
EAST SIDE AIR CARGO APRON
TRIANGLE RAMP
SOUTH RAMP
SOUTH MAINT. APRON
AIR TRAFFIC CONTROL TOWER
U.S. CUSTOMS
FUEL FARM
ARFF
RUNWAY 7-25
8,196' x 150'
RUNWAY 3-21
11,002' x 150'
TAXIWAY A
TAXIWAY B
TAXIWAY C
TAXIWAY D
TAXIWAY K
TWY A1
TWY A2
TWY A3
TWY A4
TWY A5
TWY A6
TWY A7
TWY B
TWY D
TWY E
TWY F
TWY H (closed)
PAPI
VASI
GLIDE SLOPE
LOCALIZER
ALSF-2 INST. APP. LIGHTS
Spotted Rd.
Grove Road
Westbound 90
Eastbound 90
Electric Avenue
Geiger Blvd
Flint Road
Hayford Road
Airport Drive
West Pkwy Dr.
Prepared By: Mead&Hunt www.meadhunt.com

Table 1-3. Airport Features

GENERAL INFORMATION

- *Airport Ownership:* Joint ownership, City and County of Spokane
- *Property Size:*
  - Fee simple: 4,914 acres
- *Airport Classification:* Commercial Service, Primary, Small-Hub
- *Airport Elevation*: 2,385 ft. MSL
- *ATCT hours of operation:* 6:00 a.m. - 10:00 p.m.

RUNWAY/TAXIWAY DESIGN

Runway 3/21

- *Airport Reference Code:* D-IV
- *Critical Aircraft:* Boeing 767-300
- *Dimensions:* 11,002 ft. long, 150 ft. wide
- *Pavement Strength (main landing gear configuration)*
  - 200,000 lbs. (single wheel)
  - 200,000 lbs. (dual wheel)
  - 400,000 lbs. (dual-tandem wheel)
- *Average Gradient: 0.57% (rising to the southwest)*
- *Runway Lighting:* High intensity runway edge lights, centerline, touchdown points
- *Approach Aids:*
  - Rwy. 3: ALSF2 (High Intensity Approach Lighting System with Sequenced Flashing Lights), Localizer, RVR, 4-light Precision Approach Path Indicator (PAPI), 3.0° glide angle
  - Rwy. 21: ALSF2, Localizer, RVR, 4-light PAPI, 3.0° glide angle
- *Runway Markings:* Precision
- *Primary Taxiways:* Full-length parallel Taxiway A on west side and full-length parallel Taxiway G on east

Runway 7/25

- *Airport Reference Code:* C-III
- *Critical Aircraft:* Boeing 737-500 / Bombardier Q400
- *Dimensions*: 8,199 ft. long, 150 ft. wide
- *Pavement Strength* (main landing gear configuration)
  - 150,000 lbs. (single wheel)
  - 180,000 lbs. (dual wheel)
  - 280,000 lbs. (dual-tandem wheel)
- *Average Gradient:* 0.05% (rising to the west)
- *Runway Lighting:* Medium intensity runway lights,
- *Approach Aids*
  - Rwy. 7: 4-light Visual Approach Slope Indicator (VASI), runway end identifier lights (REIL)
  - Rwy. 25: 4-light PAPI, 3.0° glide angle, REILs
- *Runway Markings*: Non-precision
- *Primary Taxiways:* Full-length parallel Taxiway C north side

MANAGEMENT AND SERVICES

Management

- Operational authority granted by the Spokane Airport Board
- On-Airport management and staff

Facilities / Services

- *Scheduled passenger service*
- *Cargo:* UPS and FedEx
- *U.S. Customs:* U.S. port-of-entry for private charter aircraft from Canada
- *Fuel service*: Jet A, 100LL and 100
- *Airport Rescue and Firefighting:* Index B
- Airfreight, avionics, cargo, charter, flight instruction, parachute jumping, aircraft rental and sales
- *Airport Visual Approach Aids*: Beacon, lighted wind indicator

BUILDING AREAS

- *Passenger Terminal*: Passenger terminal and cargo facilities located on north side of Airport
  - Passenger gates: 24
  - Remain overnight parking: 20 at terminal and 3 dedicated spaces
- *North Building Area*: Fuel, terminal support, and cargo facilities located north of passenger terminal
- *East Ramps*: General aviation facilities, FBOs, flight school, U.S. Customs
- *South Ramp:* Maintenance and repair facilities

TRAFFIC PATTERNS AND APPROACH PROCEDURES

Airplane Traffic Patterns

- *Determined by ATCT*
- *Runways 3/21 and 7*: Right traffic
- *Runway 25*: Left traffic

Instrument Approach Procedures (lowest minimums)

- *Runway 3*: Category III
  - Straight-in: Decision altitude: 0 ft. above TDZE
- *Runway 21:* Category III
  - Straight-in: Decision altitude: 0 ft. above TDZE
- *Runway 7:* GPS LPV
  - Straight-in: (¾ mi. visibility, 200 ft. AGL decision altitude)
  - Circling: (1 mi. vis., 600 ft. AGL decision alt.)
- *Runway 25:* GPS LPV
  - Straight-in: (1 mi. visibility, 400 ft. AGL decision alt.)
  - Circling: (1 mi. vis., 600 ft. AGL descent alt.)

Source: Mead & Hunt (April 2013)

1.3.1 Airport Layout

The Airport is located on 4,906 acres, and includes two runways, a passenger terminal building, airside and landside development areas, parking facilities and access points. GEG's two runways, Runway 3/21 and Runway 7/25, intersect on the south end of the Airport.

The primary building areas are located north of Runway 7/25, on both sides of Runway 3/21. Facilities in these areas include aircraft parking aprons, cargo and passenger terminal buildings, hangars, the aircraft rescue and firefighting (ARFF) station, and automobile parking. The area south of Runway 7/25includes a variety of aviation related business activities including corporate hangars and an aircraft painting facility. The Airport Business Park is located on the east side of the airfield.

The Airport is generally bound by surface roads. Geiger Boulevard is to the east; Electric Avenue is to the south; McFerron and Craig Roads are to the west; and McFarland Road and U.S. Highway 2 are to the north. Airport Drive is the primary route to and from the passenger terminal facilities and the primary access to the Airport's Business Park area is provided by Flightline Boulevard.

1.3.2 Runway 3/21

Runway 3/21 is the primary runway at GEG, and is 11,002 feet long and 150 feet wide. Runway 3/21 is constructed of asphalt over concrete except for the southern 2,002 feet which is concrete. The pavement strength for Runway 3/21 is:

- 200,000 pounds for single- and dual-wheel gear
- 400,000 pounds for aircraft with dual-tandem gear.

Each end of Runway 3/21 is equipped with an Instrument Landing System (ILS) capable of Category III approaches. ILS is referred to a precision approach system, offering vertical and horizontal guidance for specially equipped aircraft. The ILS approaches allow the Airport to remain operational during most weather conditions. Additional visual aids include 4-light Precision Approach Path Indicators (PAPIs) assist pilots staying on the glide path as they approach Runways Ends 3 and 21.

Runway 3/21 has high intensity edge lighting and in-pavement centerline lights, and both runway ends have touchdown zone lights. The Runway End 21 approach lighting system with sequenced flashing lights (ALSF-2) may be operated as a Simplified Short Approach Lighting System with Runway Alignment Indicator Lights (SSLAR) when visibility conditions do not require the full ALSF-2.

1.3.3 Runway 7/25

Runway 7/25 is the secondary runway, and gives aircraft operators and air traffic controllers increased flexibility, and provides crosswind protection for smaller aircraft. Runway 7/25 is 8,199 feet long and 150 feet wide. Runway 7/25 is made of asphalt over concrete and has the following pavement strengths:

- 150,000 pounds for single-wheel gear.
- 180,000 pounds for dual-wheel gear.
- 280,000 pounds for aircraft with dual-tandem gear.

Runway 7/25 is outfitted with medium intensity runway edge lights (MIRL) the length of the runway, and runway end identifier lights (REILs) at each end. A 4-box visual approach slope indicator (VASI) lights are located at Runway End 7, and a 4-light PAPI is located at Runway End 25.

1.3.4 Taxiways

The taxiway system consists of eight main taxiways and additional connector taxiways, shown in **Figure 1-3**. Each taxiway is defined as a movement area, and is under the control of the airport traffic control tower (ATCT). Primary taxiways include Taxiways A and G, which run parallel to Runway 3/21. Taxiway A serves the west side of the runway including the passenger terminal and cargo area. Taxiway G provides access to the east side general aviation areas. Taxiway C runs parallel to Runway 7/25 on the north side of the runway and also services the general aviation area.

1.3.5 Runway Setbacks and Protections

The FAA has established a variety of setbacks and clearance standards to enhance airfield safety efficiency. Primary airfield setbacks are described below.

Entirely on-airport:

- Safety Areas — Graded and drained surfaces surrounding runways and taxiways.
- Object Free Areas — Clear areas beyond the safety areas that provide wingtip clearance.
- Obstacle Free Zones — Clear airspace at the runways for transitioning aircraft between flight and ground operation.
- Electronic and transmitter critical areas —Clear areas that protect electronic signals from interference and distortion. These surround radio communications devices, navigational aids, weather aids, and visual aids.
- Runway Visibility Zone — Clear area that provides unobstructed line of sight between aircraft operating on intersecting runways.
- Aircraft Parking Limits— Setback distance from runway and taxiway movement areas.
- Building Restrictions — A setback established using the most restrictive composite set of clearing requirements for future building development.
- Controller line-of-sight — Clear view from the tower to all critical aircraft movement areas.

Extending off-airport:

- Runway Protection Zones (RPZ) — A trapezoidal-shaped area beyond the runway end with land use recommendations intended to enhance the protection of people and property on the ground.
- Airport Imaginary Surfaces— Surfaces defined by Code of Federal Regulations (C.F.R.) Title 14, Part 77 intended to identify obstacles in the vicinity of an airport and to establish notification requirements for any new construction.
- Runway End Clearances— A set of FAA design standards for establishing landing and takeoff threshold locations.
- Instrument Procedure Clearances—Obstacle clearances that determine the vertical separation between aircraft and ground obstacles along a specifically defined segment of airspace of a published instrument procedure.
- Air carrier protection surfaces— Surfaces defined by each individual air carrier operator used in determining the maximum takeoff weight.

The FAA recommends that airports own all of the property within the RPZ. GEG owns the majority of property within the established RPZ's for all four runway ends. The only area that the Airport does not own is located where the Geiger Boulevard right-of-way clips the southeast corner of the Runway End 25 RPZ.

RPZs begin 200 feet beyond the end of the runway. The RPZs at Runways Ends 3 and 21 are 2,500 feet long, with an inner width of 1,000 feet and an outer width of 1,750 feet. The RPZ for Runway End 7 is 1,700 feet long, with an inner width of 1,000 feet, and an outer width of 1,510 feet. The RPZ for Runway End 25 is 1,700 feet long, with an inner width of 500 feet, and an outer width of 1,010 feet.

1.3.6 Navigational and Weather Aids

Navigational aids at GEG include a white and green rotating beacon indicating a lighted land airport. Lighted wind indicators are present near the touchdown locations of each runway and an automated surface observing station (ASOS) provides pilots with current weather conditions at the Airport. A VOR (Very High Frequency Omni-directional Range beacon) is located five miles southwest of the Airport.

Runway visual range (RVR) sensors are used to accurately determine visibility at various points along the runway. RVR represents the distance a pilot can see on the ground in feet. Three RVR indicators are stationed on Runway 3/21, with one each at the touchdown, midfield and rollout points. The Airport also has an Airport Surveillance Radar (ASR) which is used to guide and separate air traffic in the vicinity of the Airport.

1.3.7 Airfield Lighting

An inventory of airport lighting is presented in **Table 1-3**. Runway 3/21 is equipped with ALSF-2, centerline sequence flashers and touchdown zone lights at each approach end. High intensity edge lights are installed the entire length of Runway 3/21. Runway 7/25 is equipped with medium intensity edge lights and runway end identifier lights at each end. Taxiways have blue taxiway edge lights. Taxiways A and G are equipped with green centerline lights. Taxiway entrances to Runway 3/21 and taxiway intersections with Runway 7/25 are equipped with runway guard lights. These features are shown on **Figure 1-4**.

1.3.8 Signage and Markings

Airfield signage is installed in accordance with AC 150/5340-18F, *Standards for Airport Sign Systems*. The following describes the basic signage and markings at the Airport:

Signage:

- Hold Position Signs – red signs with white inscriptions that indicate a hold position prior to a taxiway/runway or runway/runway intersection. Similar signs are used to identify the hold position for ILS critical areas, runway approach areas, and CAT II/III operations clear areas.
- Location Signs – yellow signs with black inscriptions that identify the taxiway or runway.
- Directional Signs – yellow signs with black inscriptions that identify taxiway name and direction with a letter and arrow.
  - Taxiway Direction Signs – indicate directions of other taxiways leading out of an intersection.
  - Runway Exit Signs – signs identifying taxiways serving as exits off of a runway
  - Destination Signs – specify the general direction of service facilities.
- Distance Remaining Signs – black signs with white numbers located along the side of runways indicating the runway distance remaining in increments of 1,000 feet.

Runway surface marking schemes are based on the most critical approach category for the runway.

- Runway 3/21 is marked with precision approach markings. These include the following.
  - Runway end designator –numbers that identify the magnetic heading of that runway.
  - Centerline – identifies the physical center of the runway and provides alignment guidance.
  - Threshold – establishes the actual beginning point of the threshold used for landings.
  - Aiming point – provides a visual aiming point for pilots during landing operations.
  - Touchdown zone – identifies the touchdown zone with symmetrically arranged pairs of rectangular bars.
  - Edge markings – define runway width for operations and provides contrast between runway edge and shoulders.
- Runway 7/25 is marked with non-precision approach markings that include the above, except touchdown zone markings.

- Taxiway surface markings:
  - Centerline marking – identifies the physical center of the taxiway and provides alignment guidance. Enhanced marking provides visual cues to alert of upcoming hold position.
  - Edge marking – defines taxiway width and provides contrast between taxiway edge and the infield.
- Enhanced runway hold position markings – surface painted sign that identifies a hold position on a taxiway or runway prior to intersecting an active runway. Similar markings are used to identify the hold position for ILS critical areas and precision obstacle free zones.
- Geographic position markings – pink spots painted on taxiways to enhance ground movement during low-visibility, used by pilots to confirm holding points or report location to ground control. The location and numbering used for geographic positions at GEG are illustrated in **Figure 1-4**.

1.4 AIRLINE PASSENGER TERMINAL FACILITIES

The terminal building supports the commercial activities of nine commercial airlines, two concessions providers and seven car rental companies. The terminal building includes three concourse areas (A, B and C) with a combined total of 25 gates—11 ground boarding and 14 with passenger boarding bridges (PBB). The A and B concourses together form a hub and spoke facility while the C concourse has a linear form. There is one ticketing counter, one baggage claim area, baggage screening, security checkpoints and a ground transportation area to serve concourses A and B and a second set to serve concourse C. The consolidated rental car facility is located at the north end of the terminal building. Two parking structures are connected to the terminal by skywalks. All of these facilities are located on the first floor. There is a second floor above the ticketing area with the airport administration offices and the second floor in the concourse areas is used for passenger holding and circulation. Basement areas are used primarily for mechanical and support spaces.

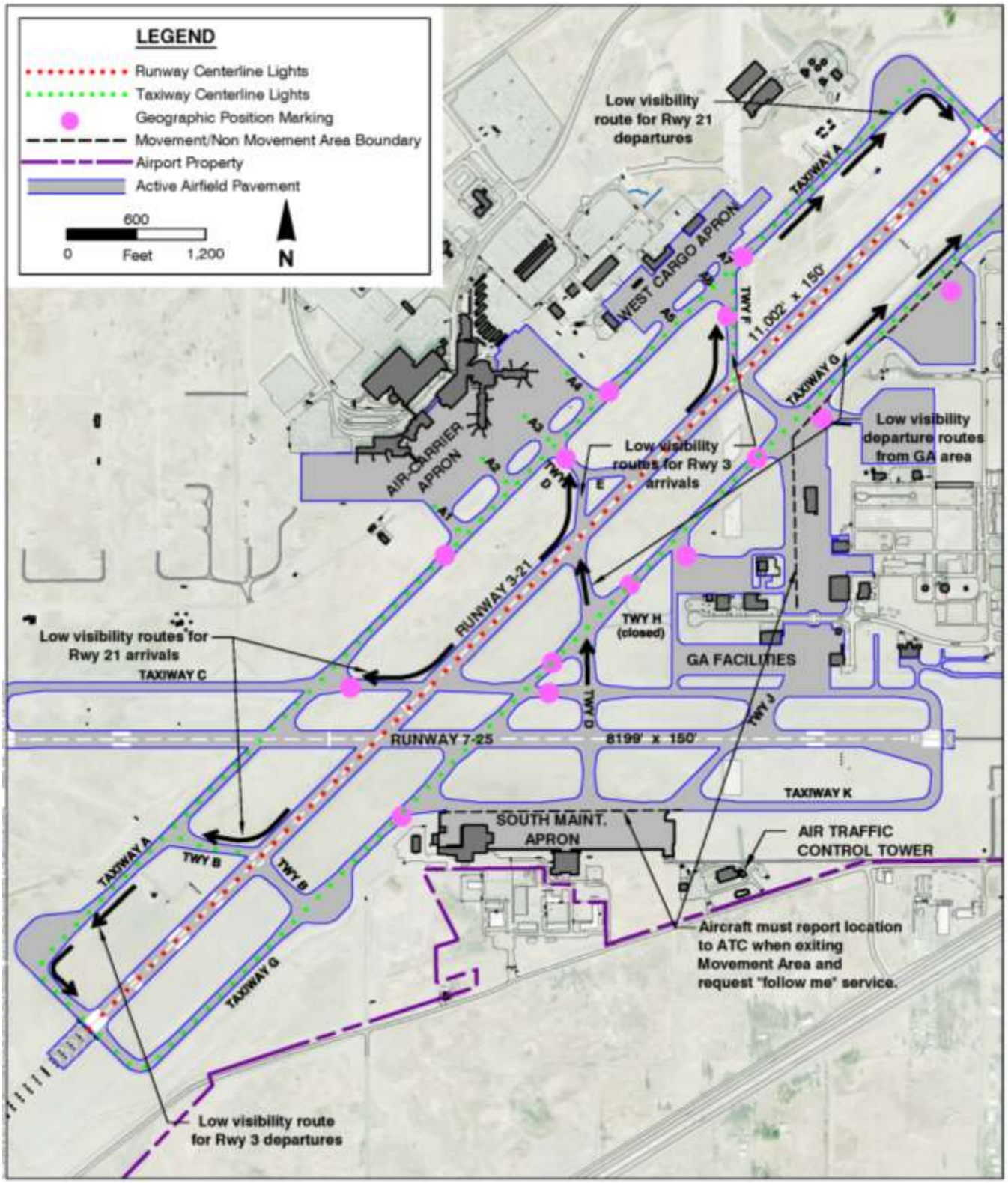


Figure 1-4

SMGCS System and Low Visibility Routes

Spokane International Airport

The terminal facility today is comprised primarily of 2 structures with connecting corridors. Because of the linear layout of the facility, there is a long walk between concourse C and concourse A/B where the rental car counters are located. In front of the building, there is ample covered and non-covered sidewalk at the drive aisle for passenger pick-up and drop-off. The non-secured circulation areas include ticketing, restrooms, visitor seating and concession stands (see **Figure 1-5**).

The A and B concourses have both ground boarding and passenger boarding bridge gates. The A/B checkpoint and rotunda floors are elevated approximately five feet above ground level. The rotunda offers restaurants and retail shops for travelers. Although the associated ticketing hall and bag claim areas were built around 1969, the security checkpoint has been redesigned to meet changes in security requirements and the ticketing hall was recently widened to improve circulation.

The Concourse C facility was added in 1990s. It is connected to the A/B facility via a long, narrow corridor. Like the A/B structure, it could function as a stand-alone terminal. Retail amenities are grouped to service the ground boarding gates at the first floor and the PBB gates at the second floor.

In addition to the facilities directly supporting passenger travel, Transportation Security Administration (TSA) and law enforcement offices are located in the corridor connecting concourses A/B and C. Miscellaneous office, storage and support spaces are below Concourses A and B. Concessions storage, gate hold room and ground boarding walkway are at the ground level of the concourse C building. Second floor space includes airport management offices and meeting rooms, and connections to the parking structures.

1.5 ANCILLARY FACILITIES

Ancillary facilities include support operations of the airport including emergency response, maintenance, and the Air Traffic Control Tower. They also include a variety of operations located on the North, East and South Ramps at the airport. An airport security inventory is also provided in this section.

1.5.1 Support Facilities

The Aircraft Rescue and Fire Fighting (ARFF) building is located northeast of the airline terminal, south of the air cargo facilities, and staffed by Spokane County. When an aircraft emergency is declared, emergency vehicles leave the ARFF building and proceed to the incident or specified staging positions in accordance with standard operating practices. The available equipment combined with incident response times classifies the Airport as “Index C” according to Code of Federal Regulations (CFR), Title 14 Part 139, *Certification of Airports*.

The Airfield Maintenance Department is responsible for keeping the airfield clear of snow during the winter months. Snow is discharged on Airport property, east of the approach end of Runway 21. The Department also operates the deicing trucks that spray chemicals on commercial aircraft prior to departure. Commercial aircraft are usually deiced at the gate or on the terminal ramp. General aviation aircraft may utilize the FBOs for deicing service.

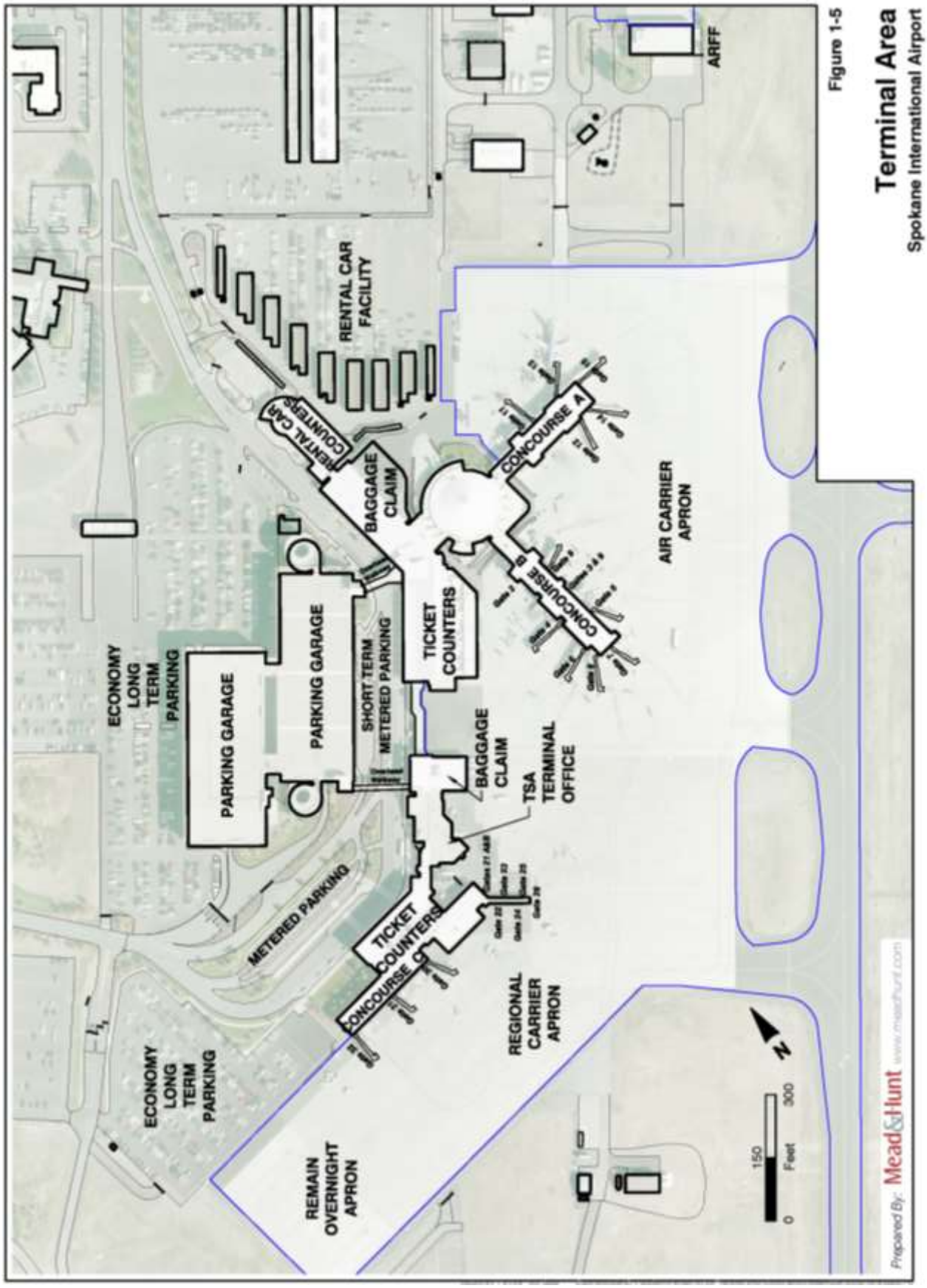


Figure 1-5
Terminal Area
Spokane International Airport
ARFF
RENTAL CAR FACILITY
RENTAL CAR COUNTERS
BAGGAGE CLAIM
CONCOURSE A
CONCOURSE B
AIR CARRIER APRON
TICKET COUNTERS
SHORT TERM METERED PARKING
PARKING GARAGE
PARKING GARAGE
ECONOMY LONG TERM PARKING
BAGGAGE CLAIM
TSA TERMINAL OFFICE
METERED PARKING
TICKET COUNTERS
CONCOURSE C
REGIONAL CARRIER APRON
ECONOMY LONG TERM PARKING
REMAIN OVERNIGHT APRON
N
150
0
300
Feet
Prepared By: Mead&Hunt

The air traffic control tower (ATCT) is located south of Runway 7/25 and east of the National Guard facility. The ATCT became operational in August of 2010. The ATCT is staffed 24 hours a day. The elevation of the ATCT 2,650 feet above mean sea level and has a cabin floor height of 2,623 feet above mean sea level.

1.5.2 North Building Area

The north building area is located north of the passenger terminal and west of Taxiway A. In addition to the ancillary facilities described earlier, the north ramp contains the west cargo apron and the air cargo and fuel facility centers. The west cargo apron is 400,500 square feet. Access to this area is provided via Flint Road from Airport Drive. Facilities located in the north building area are illustrated in **Figure 1-6**.

The fuel facility is located west of the approach end of Runway 21, north of the west cargo apron. All fuel is stored in above ground tanks, including three Jet A fuel storage tanks and one tank each for 100 Avgas and 100 low lead Avgas. Fuel trucks enter the property through Gate K and are escorted by Airport staff to the facility for dispensing. Fuel storage, refueling, and testing are managed and maintained by the Airport.

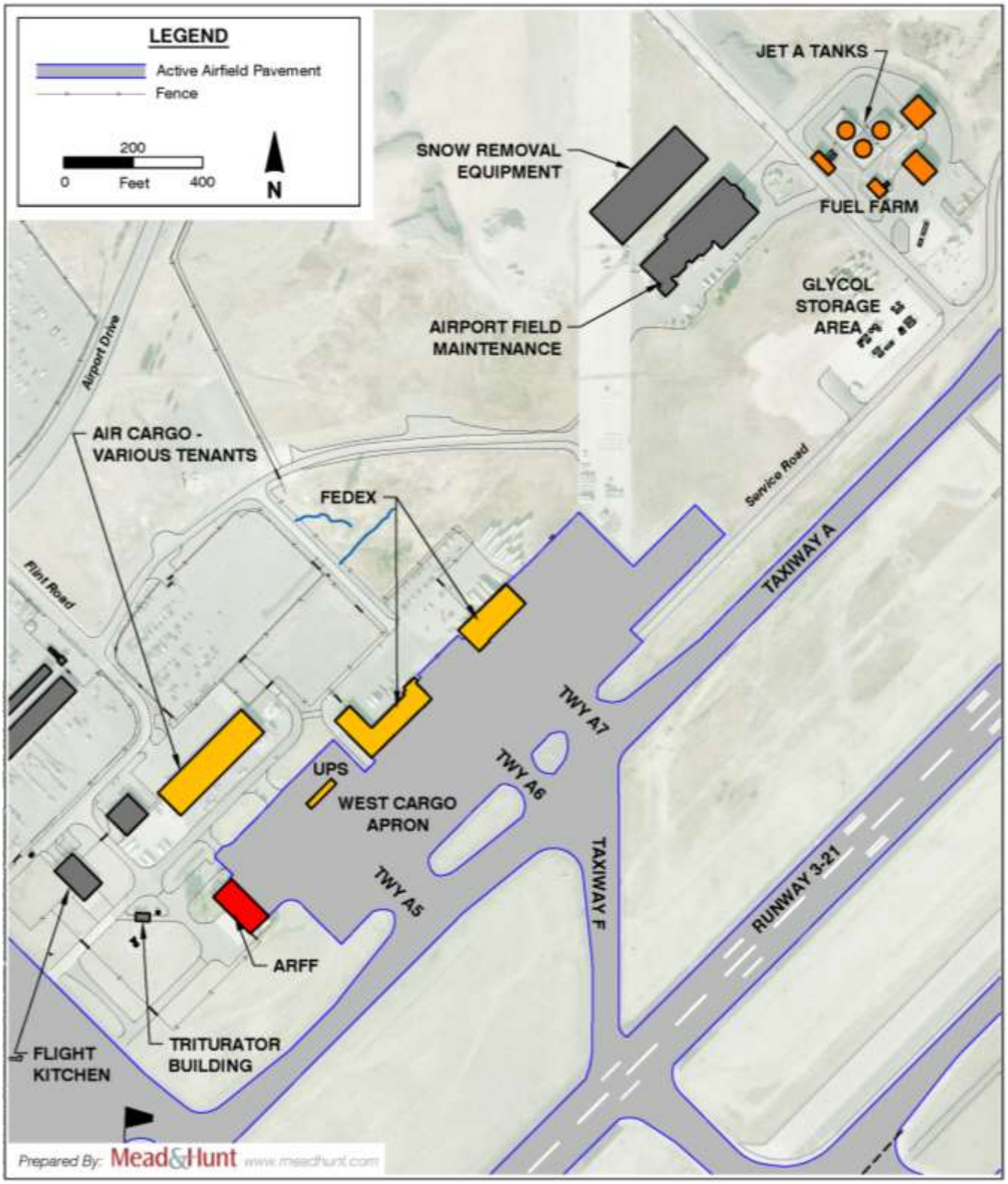


Figure 1-6

North Ramp Building Area

Spokane International Airport

1.5.3 East Ramp

The facilities located on the east side of the Airport support general aviation operations. These include fixed base operators (FBOs). FBOs and specialty aeronautical service operators provide a wide range of general aviation services such as aircraft maintenance, fueling and ground service, deicing, aircraft charter, flight lounge and lobby, flight training, car rental, and hangar rental. Five aprons offer airside access to the east ramp buildings and facilities.

- Triangle ramp (375,000 square feet)
- Eastside air cargo apron (400,500 square yards)
- Central general aviation ramp (649,800 square yards)
- North pilot ramp (198,000 square yards)
- South pilot ramp (500,400 square yards)

The aprons provide airside access to multiple facilities serving different functions. The central general aviation ramp and north and south pilot ramps are actively used by a variety of tenants, including service and maintenance FBOs, U.S. Customs and Border Patrol (U.S. CBP), and a flight school. The east ramp aprons and buildings are detailed in **Figure 1-7**.

The triangle ramp and eastside cargo apron are located north of the central ramp. They may be used as auxiliary aircraft parking for airlines or cargo operators. When military aircraft were displaced from Fairchild Air Force Base during runway construction in 2011, some were relocated to the triangle and eastside cargo aprons. Both aprons were originally constructed to entice cargo to move from the west cargo ramp. The goal was to ease traffic congestion near the passenger terminal and on Taxiway A. At this time there are no cargo operations or established facilities on either the triangle or east cargo aprons.

A regional distribution center operated by the U.S. Postal Service (USPS) is located on the northeast side of the airfield, just south of the approach end of Runway 21. The USPS facility is designated as a processing and distribution center for mail that is unloaded from cargo aircraft. The USPS facility does not have direct access to the airfield and mail is trucked to and from the west cargo apron. From the facility, trucks distribute mail throughout the region.

Two full service FBOs – Spokane Airways and XN Air –operate at GEG. Spokane Airways is located on the south end of the central ramp and XN Air has buildings on the north and south pilot ramps. Empire Airlines is located on the north pilot ramp and provides aircraft maintenance services.

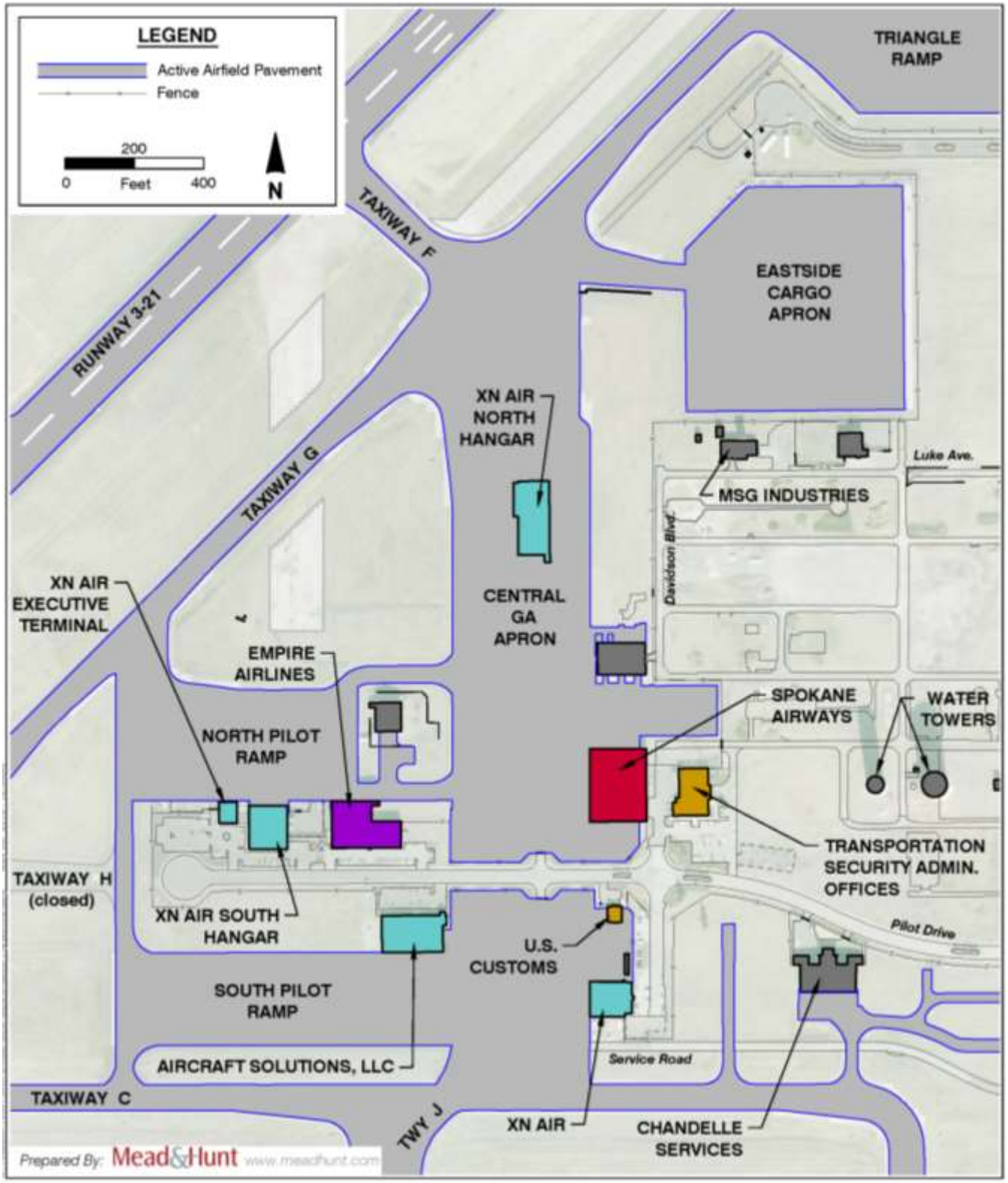


Figure 1-7

East Ramp Building Area

Spokane International Airport

The Airport is designated Port of Entry into the United States by the U.S. CBP. The U.S. CBP screening facility is located on the south pilot ramp. The facility operates as an on-call service for international charter and general aviation flights.

The Transportation Security Administration (TSA) occupies several buildings east of Spokane Airways and the general aviation ramp. The TSA helps screen commercial passengers and baggage, and helps secure the perimeter of the Airport.

In conjunction with Spokane Falls Community College (SFCC), the University of North Dakota's (UND) School of Aerospace Science offers flight training at the Airport. The flight school is located on the central general aviation ramp.

Street access to the facilities located on the south side of the east ramp, including the U.S. CBP and the FBOs, is provided by Pilot Drive from Geiger Boulevard and the Grove Road/Interstate 80 Interchange. The north facilities, including the USPS regional distribution center, are accessed using either Spotted Road from Airport Drive, or Bush Street and Alton Drive from Geiger Boulevard.

1.5.4 South Ramp

The south ramp is located south of Runway 7/25 and east of the approach end of Runway End 3. Aircraft access the south ramp from Taxiway K. The south ramp contains the MRO apron (maintenance, repair, and overhaul). The MRO apron is 640,000 square feet in size and hosts two major maintenances facilities. The south ramp and facilities are shown in **Figure 1-8**.

The facilities on the south ramp include a 52,000 square foot hangar and six acres of ramp and aircraft storage area. Associated Painters has a 41,000 square foot aircraft paint facility on the south ramp. An Army National Guard facility is located south of the MRO apron.

Facilities on the south ramp are located 1.5 miles from the Grove Road/Interstate 80 interchange and are accessed using Electric Avenue from Geiger Boulevard. The new air traffic control tower is located southeast of the MRO apron.

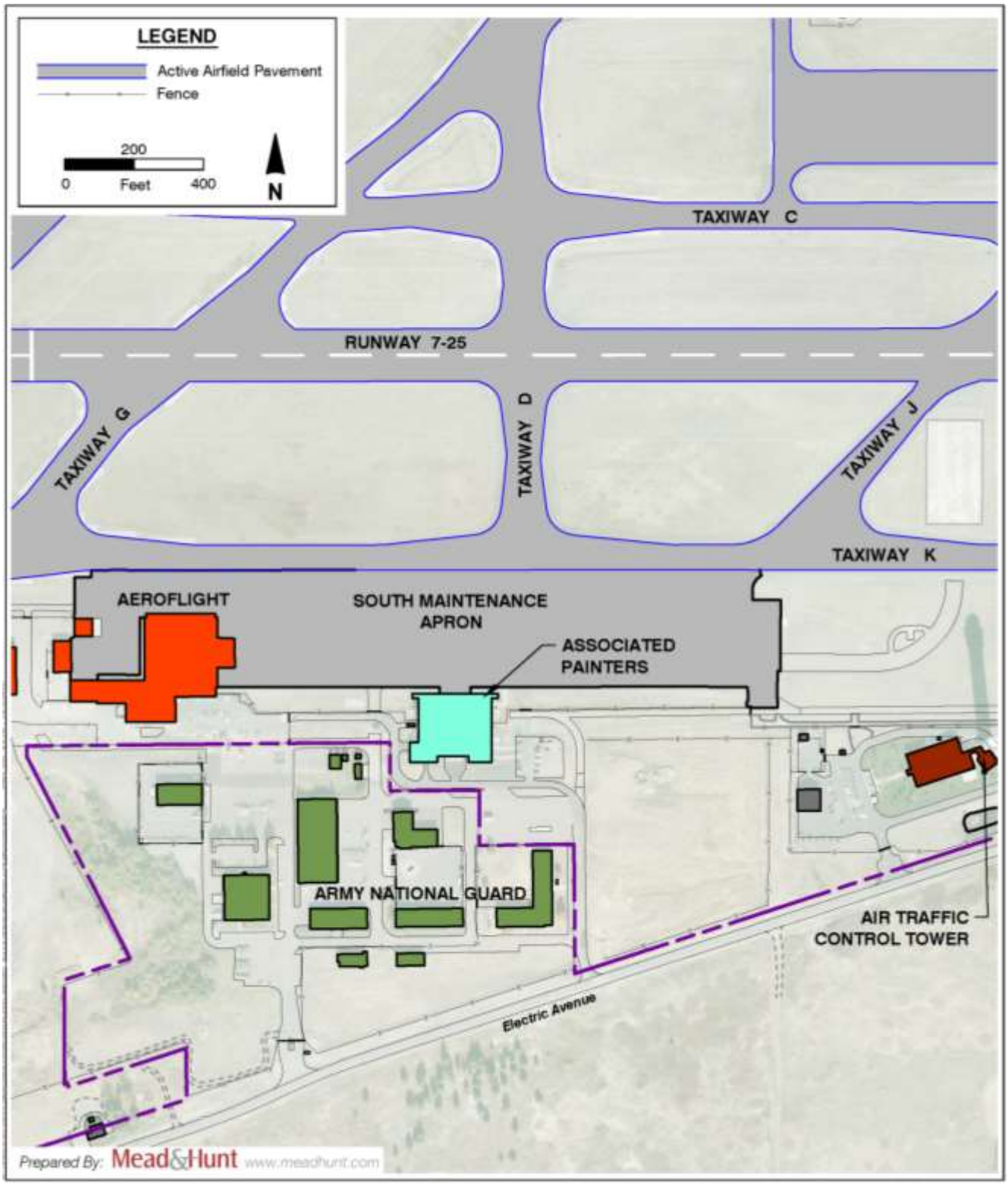


Figure 1-8

South Ramp Building Area

Spokane International Airport

1.5.5 Airport Security Inventory

As a certified Part 139 Airport, the Airport is required to maintain secure, limited access to the airfield. Multiple agencies are responsible for keeping the Airport secure from unauthorized people and other potential hazards. These agencies include the TSA, airport police, local police and airport operations personnel.

A perimeter fence is installed at the Airport with the purpose of limiting access to the airfield and features vehicle and pedestrian gates. **Figure 1-9** details the existing fence layout and each gate at the Airport. A total of 35 gates allow for vehicle and pedestrian access to the airfield by authorized personnel. Two types of gates are utilized at Spokane: an automatic security card reader gate and chained vehicle gates.

1.6 BUSINESS PARK

The Business Park has 1,330 acres available for development across nine development categories. This vacant land may be developed through third party development or the Airport can build-to-suit a potential tenant, and then leases the land and building back to the tenant. In addition to available parcel development, existing buildings are available for lease in the Airport Business Park and the Air Cargo complex. The park and the Airport as a whole have been granted foreign trade zone status (FTZ No. 224).

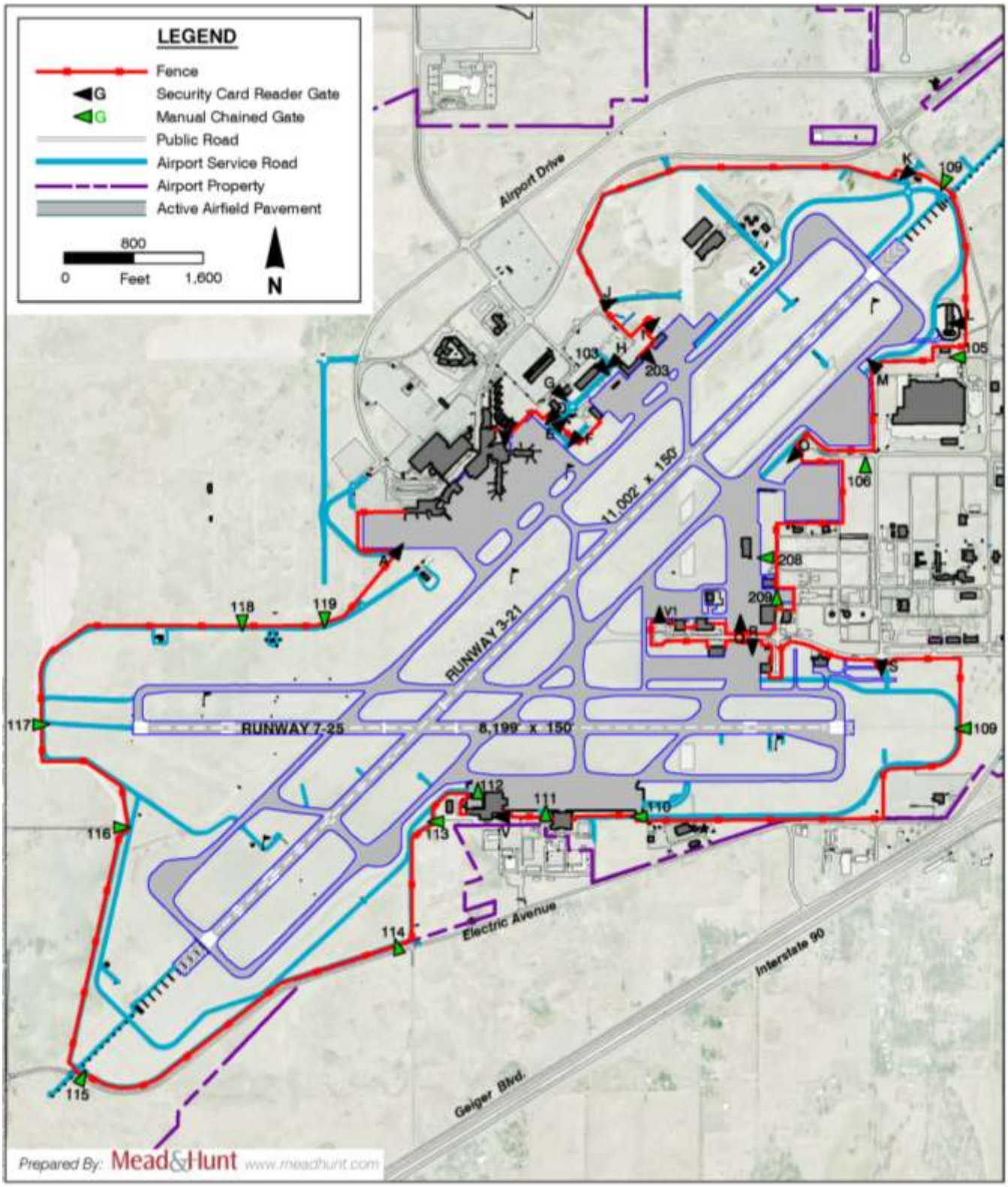


Figure 1-9

Perimeter Security

Spokane International Airport

Table 1-5: Airport Real Estate Area	
Real Estate Area	**Acres**
Airport Business Park (ABP)	510
Airport Business Park – Industrial (ABP-I)	100
Air Cargo	60
Aircraft Maintenance	31
Airport Drive	104
Commercial Aviation	7
Corporate and General Aviation Hangar Development	29
Large Parcels	402
Technology Park	84

Source: http://spokaneairports.net/abp_main.htm

Access to the Business Park is provided initially by the Grove Road entrance off of I-90 which becomes Flightline Boulevard at the business park. Once on the airport property, the Business Park is served by a network of internal roads. Other major roads include Will D. Alton Lane, Spotted Road, Pilot Road, and Godfrey Boulevard. Parcels for corporate and general aviation use have taxiway access.

1.7 REGIONAL CIRCULATION AND ACCESS

Specific transportation features linked to Spokane International Airport and summarized in this inventory include:

- Airport Ground Access
- Airport Roadway and Curbside Facilities
- Parking Facilities
- Public Transportation
- Rental Car Facilities
- Existing Traffic Conditions and Planned Roadway Improvements

Figure 1-10 indicates parking lot locations and vehicle access points for the Airport.

1.7.1 Airport Ground Access

Ground access system to GEG includes Interstate, regional and local access roadways, on-airport circulation roads, and associated ground access facilities. Major roads include I-90, U.S. Highway 2, Spotted Road, Flint Road. Airport Drive which serves as the primary route to and from the terminal facilities. The primary access to the Airport's Business Park area is provided by Flightline Boulevard.

1.7.2 Airport Roadway and Curbside Facilities

Airport Drive provides primary access to the terminal facilities. Airport Drive is comprised of a couplet roadway, which begins east of the intersection with Spotted Road. Traffic bound for the rental car return, north shuttle parking, and Air Cargo Facilities exits Airport Drive at Flint Road. Traffic destined for the outside parking, garage parking, and Concourses A, B and C continues along Airport Drive.

1.7.3 Parking Facilities

Vehicle parking facilities at GEG include spaces for public parking, employee parking and rental car parking. Public parking consists of two parking garages, three outside parking lots and two short-term metered parking areas. There are 6,870 parking spaces are available for public use.

An additional 1,060 parking spaces are available in the two designated employee parking lots in the vicinity of Flint Road and McFarlane Road. The Flint Employee parking lot is located north of the Air Cargo terminal and contains 550 parking spaces. The McFarland Employee lot is located north of the Outside Lot parking area and contains approximately 520 parking spaces.

1.7.4 Public Transportation

Spokane Transit Authority (STA) Route 60, *Airport/Browns Addition,* provides bus service from the STA facility in downtown Spokane to the Airport terminal. Spokane Cab Taxi Service is the sole taxi service provider. There are 24 hotels in the vicinity that provide shuttle services to and from the Airport.

1.7.5 Rental Car Facilities

There following eight rental car companies operate at GEG.

- Alamo
- Avis
- Budget
- Dollar
- Enterprise
- Hertz
- National
- Thrifty

The pick-up and drop off facilities are shared between the rental car companies. The pick- up/return lot is located northeast of the terminal facilities baggage claim area.

1.7.6 Existing Traffic Conditions and Planned Roadway Improvements

A traffic study, conducted by DKS Associates in 2010, identified the Level of Service (LOS) for Airport Drive at Flint Road (inbound) as "A" for morning peak hour (5:00A.M.) and "C" for midday peak hour (12:15). No significant delays were indicated at this location.

GEG is in the process of evaluating options for improvements to Airport Drive in the vicinity of terminal where passengers are dropped off and picked-up to improve traffic and pedestrian movements and reduce congestion for inbound and outbound passengers using the airport, shown in **Figure 1-10**.

The current draft Spokane Regional Transportation Council comprehensive study identifies 10 transportation alternatives for the entire West Plains area; two of the ten alternatives have a direct linkage to GEG. Alternative 2, *New Minor Arterial through Airway Heights south of U.S. Highway 2*, is a transportation alternative that could directly affect the access to Airport property at the Flint Road intersection. Transportation Alternative 2 could affect current eastbound traffic patterns along U.S. Highway 2. Alternative 8, *Geiger Interchange Modifications*, is the other transportation alternative that could affect the access to and from airport property. Alternative 8 will make modifications to the I-90/Geiger interchange to help improve congestion at the intersection of Geiger Blvd and Flightline Blvd. The improvements to the existing four way stop intersection include a free right turn lane for traffic accessing Geiger Blvd heading north and the signalization at the intersection.

WSDOT has currently awarded a reconstruction project for the north and southbound lanes of I-90 from Geiger Road to the Spokane viaduct. This project should not alter the Average Daily Traffic (ADT) to or from the Airport.

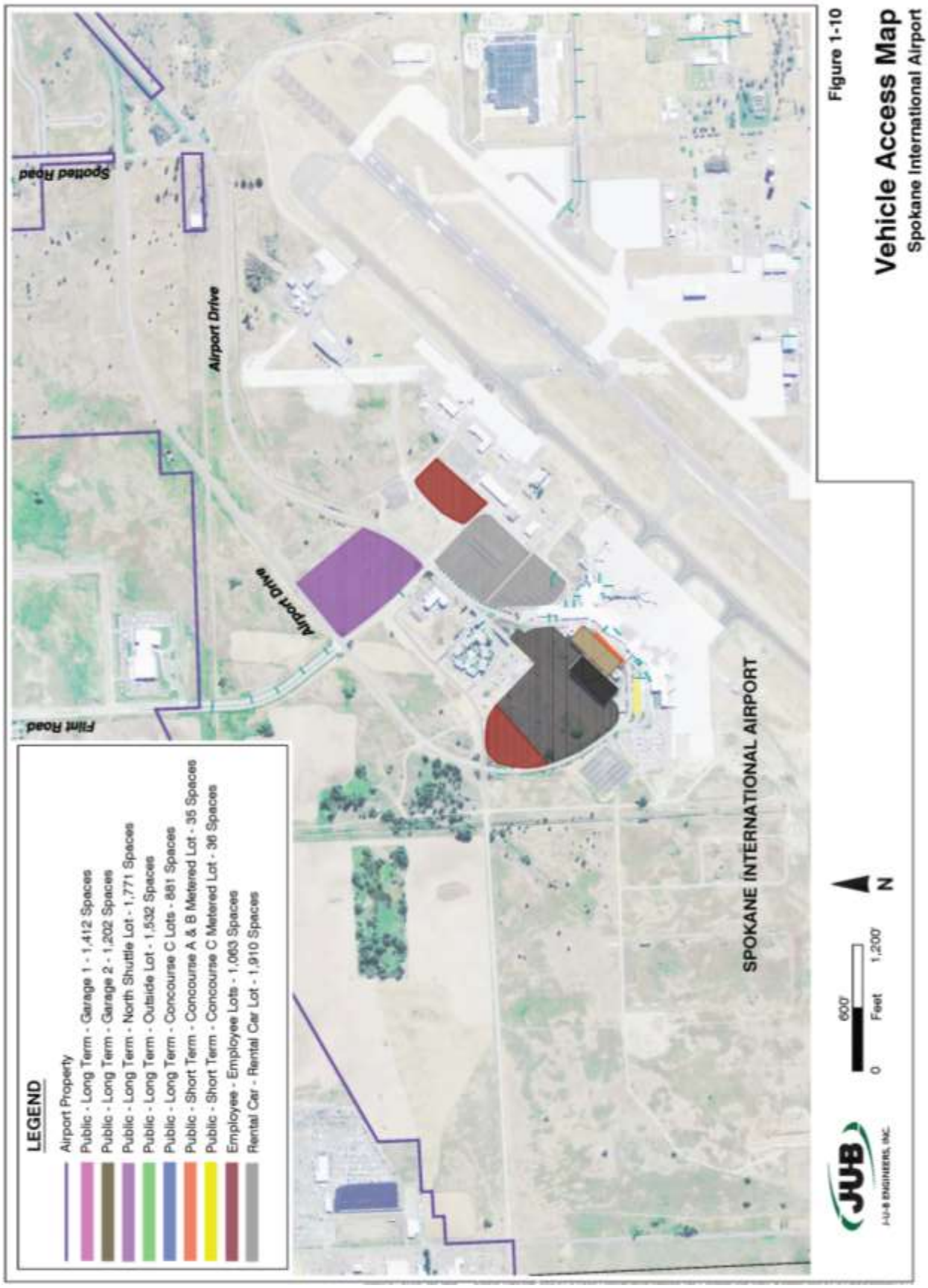


Figure 1-10
Vehicle Access Map
Spokane International Airport
LEGEND
Airport Property
Public - Long Term - Garage 1 - 1,412 Spaces
Public - Long Term - Garage 2 - 1,202 Spaces
Public - Long Term - North Shuttle Lot - 1,771 Spaces
Public - Long Term - Outside Lot - 1,532 Spaces
Public - Long Term - Concourse C Lots - 881 Spaces
Public - Short Term - Concourse A & B Metered Lot - 35 Spaces
Public - Short Term - Concourse C Metered Lot - 36 Spaces
Employee - Employee Lots - 1,063 Spaces
Rental Car - Rental Car Lot - 1,910 Spaces
Spotted Road
Airport Drive
Airport Drive
Flint Road
SPOKANE INTERNATIONAL AIRPORT
0
600
1,200
Feet
N
JUB
JUB ENGINEERS, INC.

1.8 ENVIRONMENTAL INVENTORY OVERVIEW

This section describes the natural environment at the Airport, and identifies environmental features that have the potential to influence future planning decisions. Environmental features described in this inventory include hydraulic features such as floodplains, surface water, and wetlands; aquifer recharge areas; critical farmland; known hazardous material sites; known threatened and endangered species habitat; areas with air quality maintenance standards; and cultural and historic sites.

1.8.1 Floodplains, Surface Water and Wetlands

Figure 1-11 was developed using information from the following sources: Federal Emergency Management Agency Flood Insurance Rate Maps; Washington State Department of Natural Resources Water Typing Base Maps; National Wetland Inventory maps; and, a 2009 Wetland Inventory for Spokane International Airport (Dawes 2009). The most significant hydrological feature in the area of GEG is an unnamed drainage that initiates near Runway End 21 and flows toward the east.

1.8.2 Aquifer Recharge Areas

Figure 1-12 displays critical aquifer recharge areas (CARAs) within the airport property, which were identified using information obtained from the Spokane County GIS Department. Washington Administrative Code Section 365-190-030(2) defines CARAs as areas that have a critical recharging effect on aquifers used for potable water. CARAs have geologic properties associated with high infiltration rates. High infiltration rates contribute to the replenishment of ground water, but also create a potential for contamination of ground water resources.

CARA are rated as having either a high, moderate or low susceptibility based on a combination of one or more of the following variables: scientific analysis of soils; hydraulic conductivity (the ease with which water moves between the surface and aquifers); annual rainfall; the depth to aquifers; the importance of the material between soils and aquifers (Vadose zone); and, wellhead protection information. Designated wellhead protection areas are considered high-susceptibility areas. Spokane County assigns a one thousand-foot buffer for wellheads without an engineered wellhead protection zone. The GEG property is dominated by moderately susceptible CARAs.

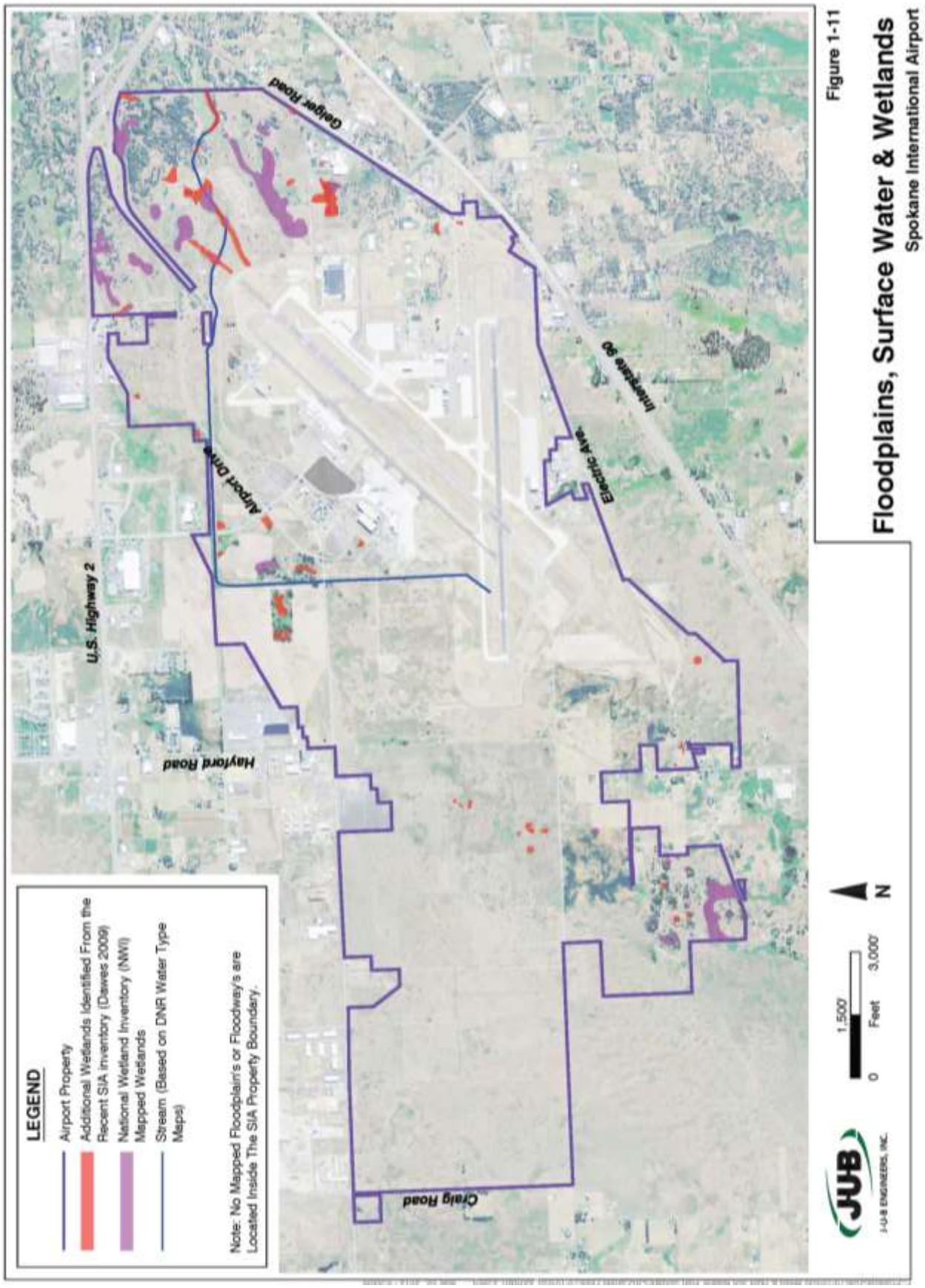


Figure 1-11
Floodplains, Surface Water & Wetlands
Spokane International Airport
Geiger Road
Airport Drive
U.S. Highway 2
Hayford Road
Craig Road
Interstate 90
Electric Ave.
LEGEND
Airport Property
Additional Wetlands Identified From the Recent SIA inventory (Dawes 2009)
National Wetland Inventory (NWI) Mapped Wetlands
Stream (Based on DNR Water Type Maps)
Note: No Mapped Floodplain's or Floodway's are Located Inside The SIA Property Boundary.
1,500'
0
Feet
3,000'
N
JUB ENGINEERS, INC.

1.8.3 Critical Farmland

The Farmland Protection Policy Act (FPPA) classifies mapped soil types into the following categories: prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be in agricultural production. According to the U.S. Department of Agriculture – Natural Resource Conservation Service (NRCS), the farmland can be forestland, pastureland, cropland, or other land, but not water or urban built-up land.

NRCS defines prime farmland as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor.

NRCS defines unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. It has favorable soil and climatic conditions and adequate moisture supply to produce economically sustainable yields of high quality crops when treated and managed according to acceptable farming methods.

NCRS defines farmland of statewide or local importance is land other than prime or unique farmland that is determined and designated as such by state or local governments.

Airport property contains a variety of designated farmland classifications which is shown on **Figure 1-13**. The information was obtained from the NRCS Web Soil Survey.

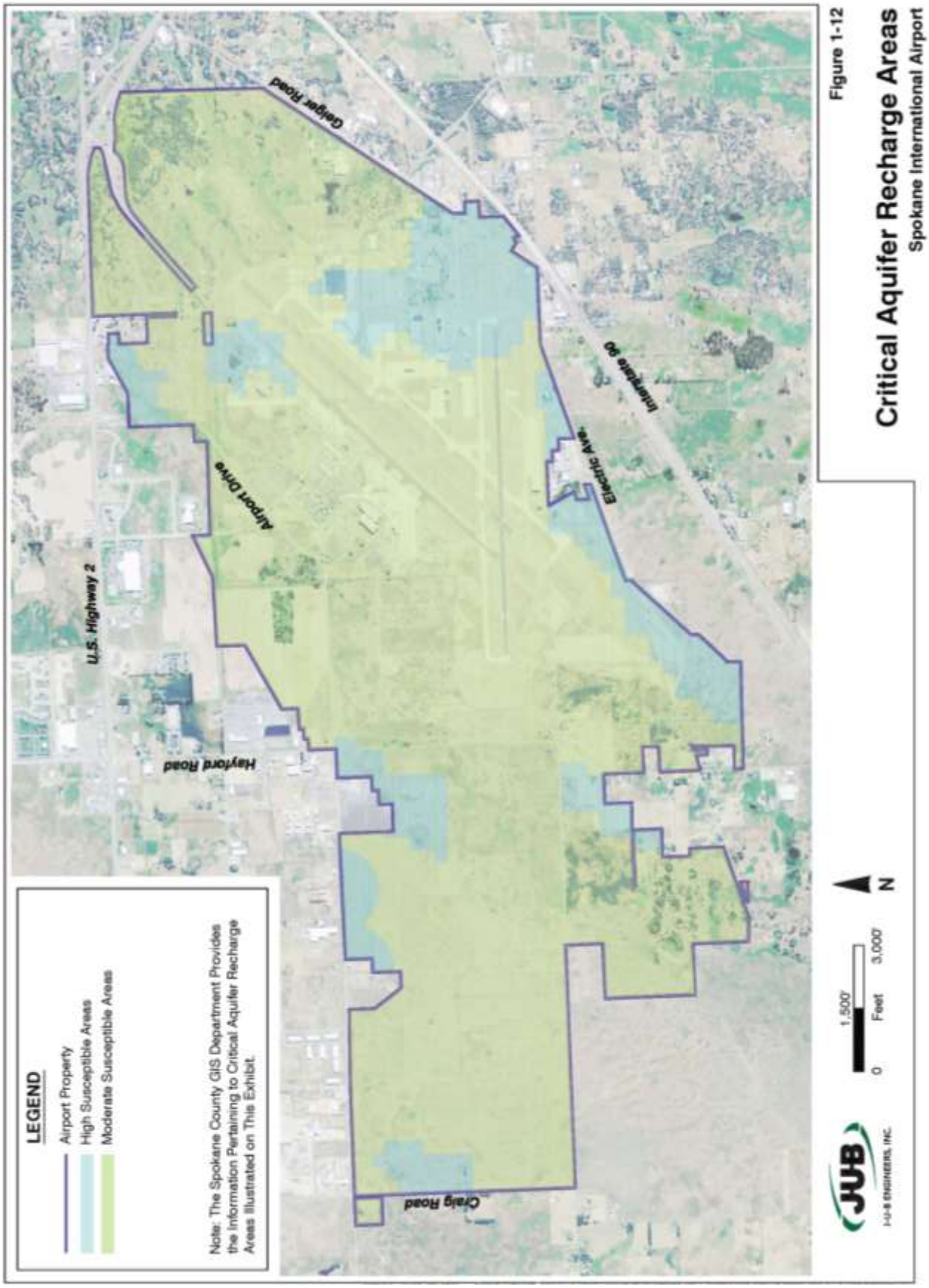


Figure 1-12
Critical Aquifer Recharge Areas
Spokane International Airport
Geiger Road
Interstate 90
Electric Ave.
Airport Drive
U.S. Highway 2
Hayford Road
Craig Road
LEGEND
Airport Property
High Susceptible Areas
Moderate Susceptible Areas
Note: The Spokane County GIS Department Provides the Information Pertaining to Critical Aquifer Recharge Areas Illustrated on This Exhibit.
1,500'
0
Feet
3,000'
N
JUB
JUB ENGINEERS, INC.

1.8.4 Hazardous Material Sites

Executive Order 12088, as amended, directs Federal agencies to comply with "applicable pollution control standards," in the prevention, control, and abatement of environmental pollution; and consult with the EPA, State, interstate, and local agencies concerning the best techniques and methods available for the prevention, control, and abatement of environmental pollution.

An Environmental Site Assessment was not performed as part of the Master Plan. Information displayed on **Figure 1-14** was obtained from the Washington Department of Ecology's database. The Airport property is known to contain a Federal Used Defense Site (FUDS), regulated by the U.S. Army Corps of Engineers (USACOE). **Figure 1-14** illustrates known hazardous material sites within Airport property.

1.8.5 Threatened and Endangered Species Habitat

Information on threatened and endangered species habitat comes from a data request processed by Washington Department of Fish and Wildlife (WDFW). Portions of the Airport property may have been characterized as steppe habitat historically; however, this habitat type within existing airport property has been disturbed and may no longer warrant a priority habitat code. Known or mapped priority habitats and species occurrence are shown in **Figure 1-15**.

1.8.6 Air Quality Maintenance Areas

The United States Environmental Protection Agency has established National Ambient Air Quality Standards (NAAQS) for the following criteria air pollutants: carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, particulate matter, and lead. Following requirements of the Clean Air Act (CAA), air quality conditions within the U.S. are designated with respect to the NAAQS as attainment, maintenance, non-attainment, or unclassifiable. Areas that do not exceed the NAAQS are designated as attainment, while areas that do exceed the NAAQS are designated as non-attainment. Non-attainment areas typically require further analysis to demonstrate what environmental consequences the proposed action would have on air quality. Areas that were once non-attainment but have since met NAAQS are designated as maintenance. Air quality designations on airport property are shown in **Figure 1-16**.

There are two former non-attainment areas on the Airport property; both of these areas are currently in maintenance area designations. These maintenance areas are for PM-10 and CO. Outside of these areas, the rest of airport property is in attainment status for all air quality standards.

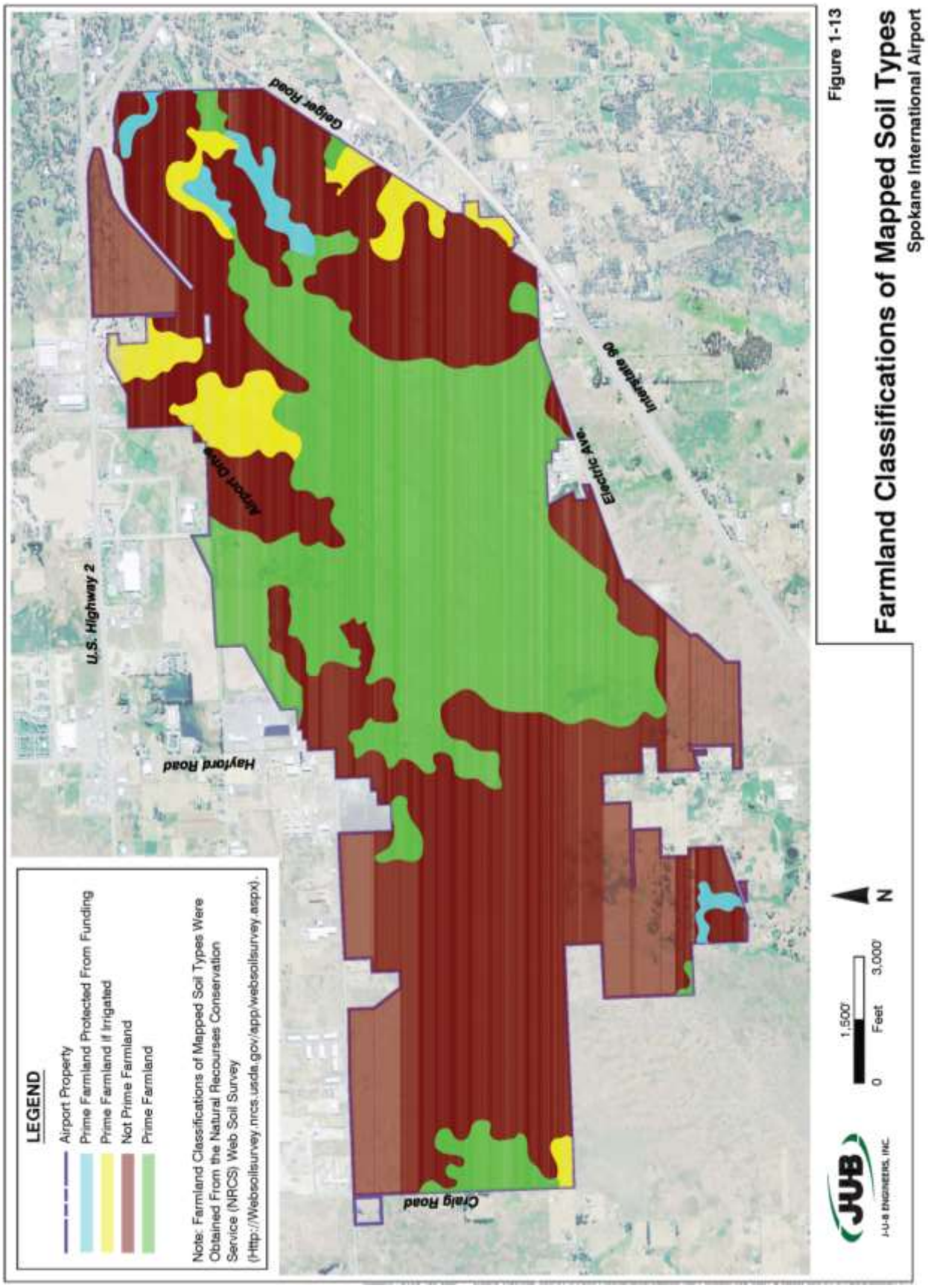


Figure 1-13
Farmland Classifications of Mapped Soil Types
Spokane International Airport
LEGEND
Airport Property
Prime Farmland Protected From Funding
Prime Farmland If Irrigated
Not Prime Farmland
Prime Farmland
Note: Farmland Classifications of Mapped Soil Types Were Obtained From the Natural Recourses Conservation Service (NRCS) Web Soil Survey (Http://Websoilsurvey.nrcs.usda.gov/app/websoilsurvey.aspx).
U.S. Highway 2
Geiger Road
Airport Drive
Hayford Road
Craig Road
Electric Ave.
Interstate 90
1,500'
0
Feet
3,000'
N
J-U-B ENGINEERS, INC.

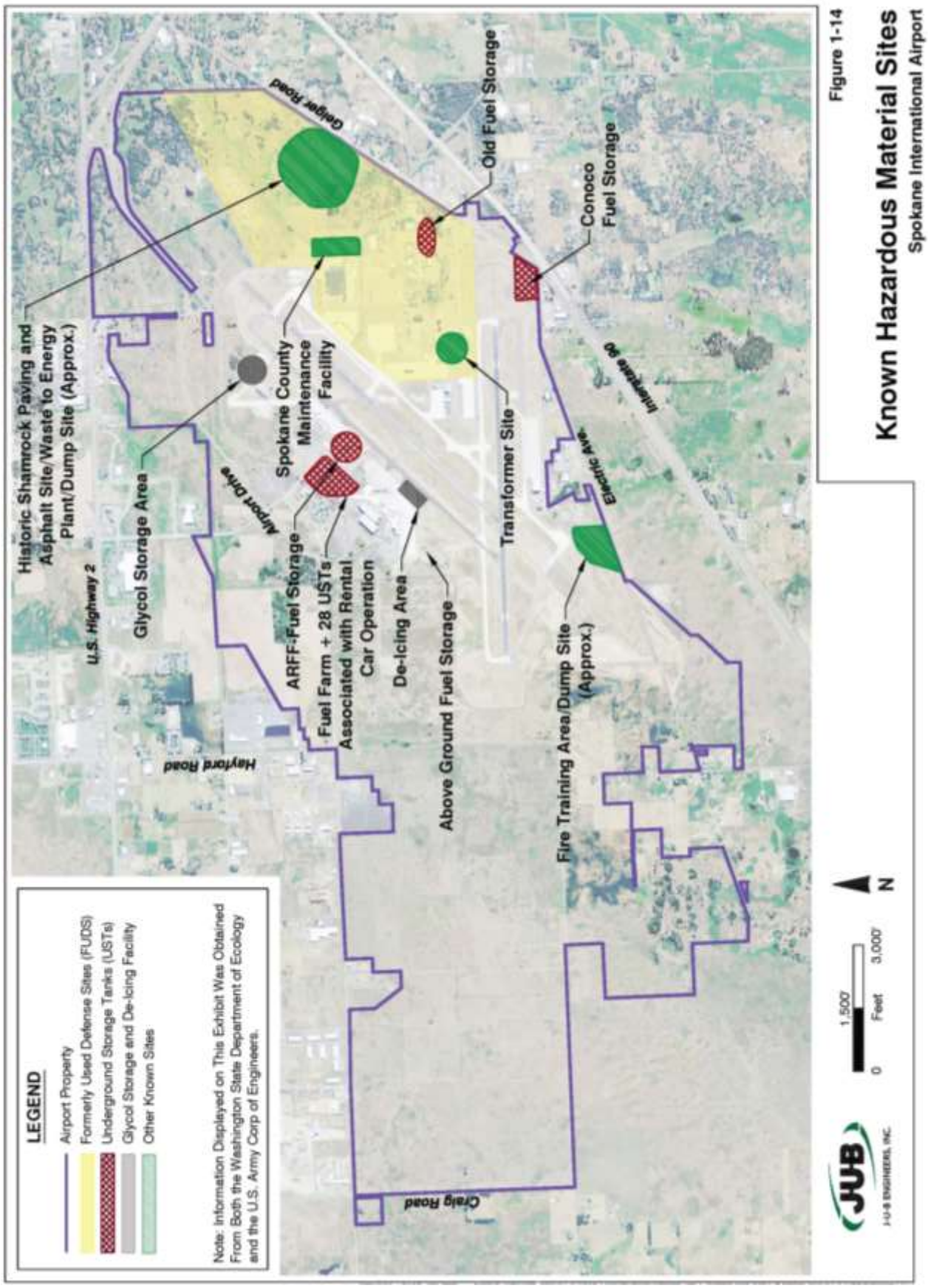


Figure 1-14

Known Hazardous Material Sites

Spokane International Airport

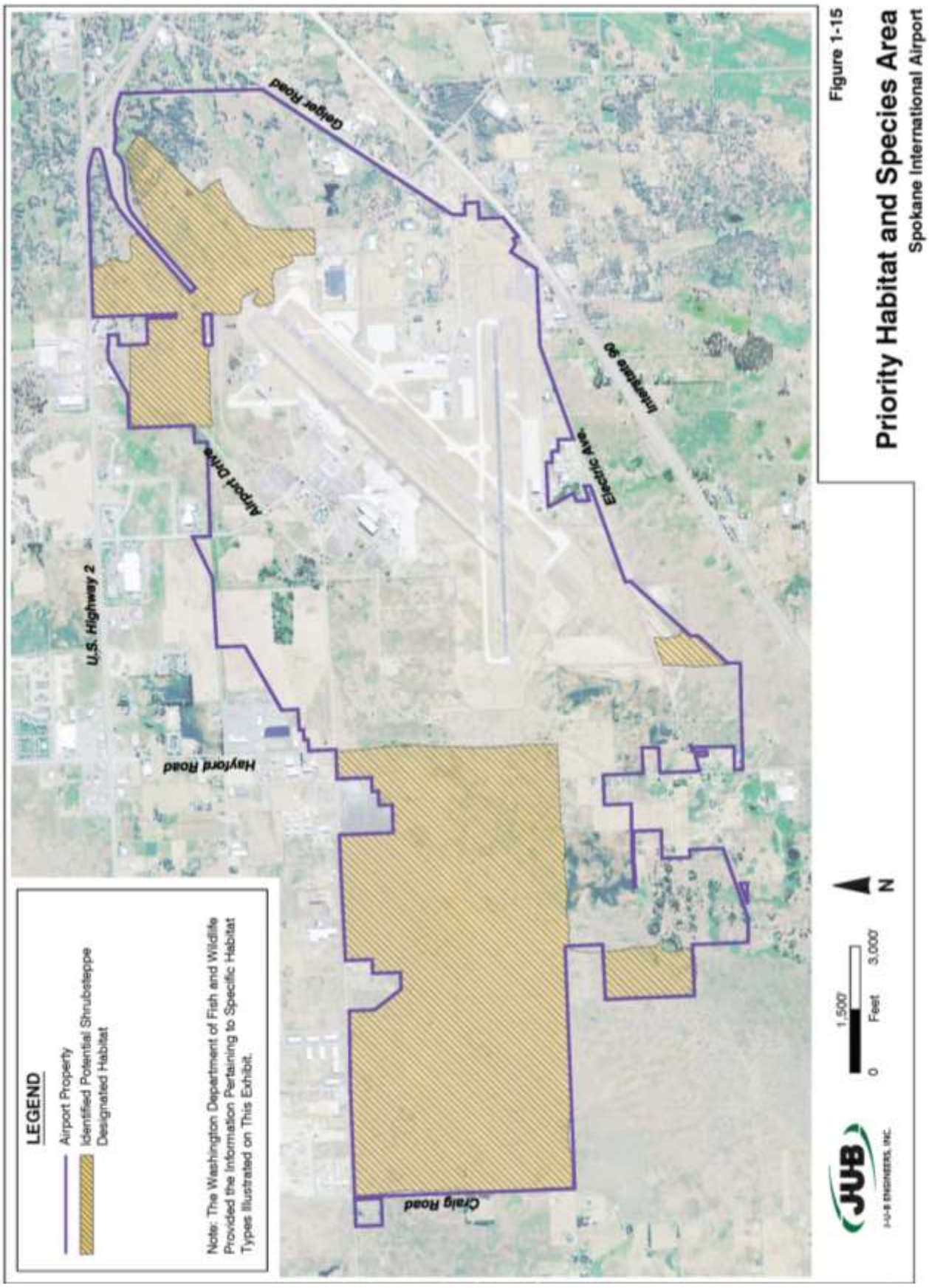


Figure 1-15
Priority Habitat and Species Area
Spokane International Airport
Geiger Road
U.S. Highway 2
Airport Drive
Haylord Road
Craig Road
Electric Ave.
Interstate 90
LEGEND
Airport Property
Identified Potential Shrubsteppe Designated Habitat
Note: The Washington Department of Fish and Wildlife Provided the Information Pertaining to Specific Habitat Types Illustrated on This Exhibit.
1,500'
0
Feet
3,000'
N
JUB
JUB ENGINEERS, INC.

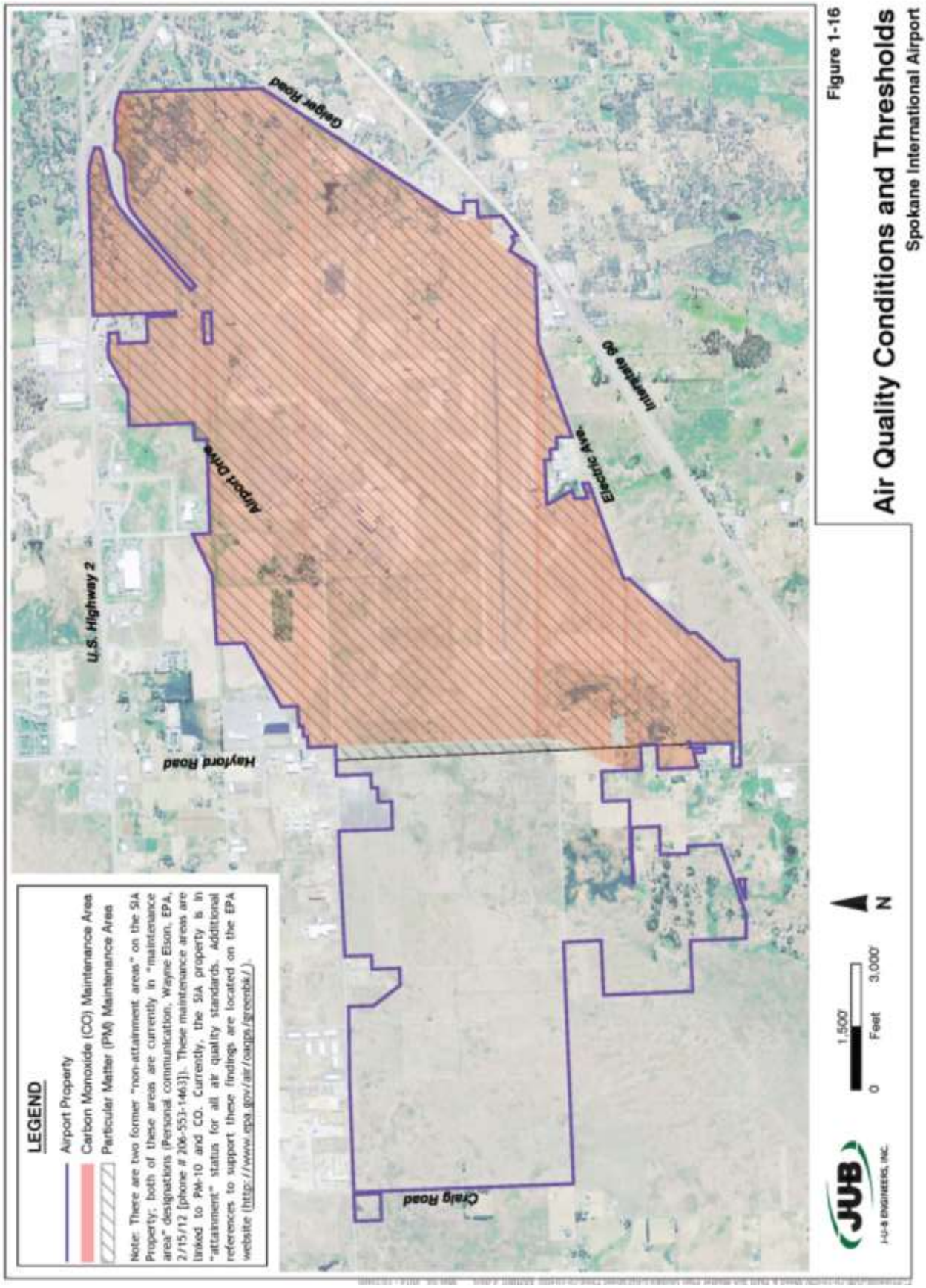


Figure 1-16
Air Quality Conditions and Thresholds
Spokane International Airport
LEGEND
Airport Property
Carbon Monoxide (CO) Maintenance Area
Particular Matter (PM) Maintenance Area
Note: There are two former "non-attainment areas" on the SIA Property; both of these areas are currently in "maintenance area" designations (Personal communication, Wayne Elson, EPA, 2/15/12 [phone # 206-553-1463]). These maintenance areas are linked to PM-10 and CO. Currently, the SIA property is in "attainment" status for all air quality standards. Additional references to support these findings are located on the EPA website (http://www.epa.gov/air/oaqps/greenbk/).
U.S. Highway 2
Geiger Road
Airport Drive
Electric Ave.
Interstate 90
Hayford Road
Craig Road
1,500'
0
Feet
3,000'
N
JUB
J-U-B ENGINEERS, INC.

1.8.7 Cultural and Historic Sites

Area surrounding the Airport was once occupied by ancestors of the Spokane Tribe throughout the Holocene epoch. Airport development projects have not found archaeological evidence of these first residents; however, archaeological sites may exist. The earliest recorded use of the property that is now GEG was by homestead farmers. The small community of Hayford developed from this agricultural foundation, evidence of which can be seen in some of the nearly 100 year old homes located southwest of the airport boundary. Local infrastructure development occurred throughout the 1920s and 1930s in anticipation of local growth. Aviation became the dominant local activity when the U.S. War Department purchased a small airport named Sunset Field and established Geiger Field in 1941. Buildings, airport features, railroad features, water features, and other cultural materials related to the historic use of Geiger Field during World War II are located within and around the present airport facility.

It is possible that some buildings located on airport property may be eligible for inclusion in the National Register of Historic Places (NRHP). The 1965 Spokane International Airport building was recognized for its architecture and design as part of the "Nifty from the Last Fifty" Washington State historic inventory. No buildings or features on the Airport are listed on the NRHP. Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to consider the effects of their actions on properties included or eligible for inclusion in the NRHP.

1.9 UTILITY OVERVIEW

This section summarizes the utilities that exist on the Airport property. The utility inventory map included in this section illustrates the approximate location of the utilities sufficient for planning level analysis (not survey quality). The utilities assessed in this section include water service, sanitary sewer service, storm water drainage, solid waste disposal, telephone and fiber optic lines, electrical power, natural gas supply and fuel storage and distribution. The Utility Map is illustrated in **Figure 1-17**.

1.9.1 Water Service

The City of Spokane provides water service to GEG. An 18-inch–diameter line brings water in from the south side, and a 24-inch-diameter line comes onto the Airport from the north side. Water is distributed throughout the airport property through various water lines.

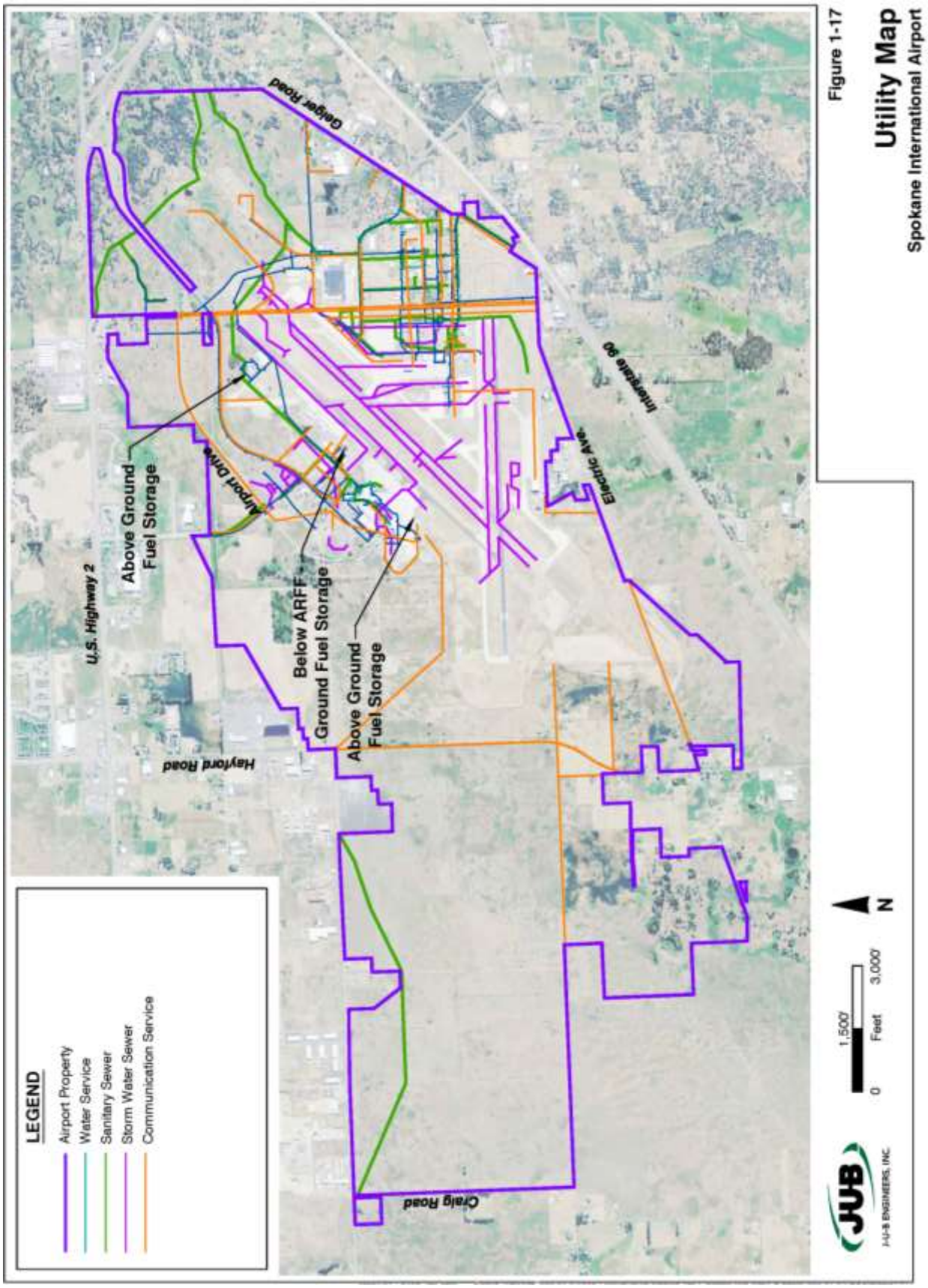


Figure 1-17
Utility Map
Spokane International Airport
Geiger Road
Interstate 90
Electric Ave.
Airport Drive
U.S. Highway 2
Above Ground Fuel Storage
Below ARFF Ground Fuel Storage
Above Ground Fuel Storage
Hayford Road
Craig Road
LEGEND
Airport Property
Water Service
Sanitary Sewer
Storm Water Sewer
Communication Service
1,500'
0
Feet
3,000'
N
JUB
JUB ENGINEERS, INC.

1.9.2 Sanitary Sewer Service

The City of Spokane Public Works Department provides sanitary sewer services to GEG. The waste water is collected at Airport Drive in front of the terminal and transported via a trunk line to the Spokane Wastewater Treatment Facility on the Spokane River. A lift station is located near Concourse C to pump waste water to the Airport Drive trunk sewer line. A dry line sewer is also in place a future westward expansion of the terminal building.

1.9.3 Storm Water Drainage

Storm water from the Airport is collected and transported through a series of collection structures to natural and man-made channels. While storm water ponding is not usually an issue at GEG, it can occur in the lower reaches of the drainage systems during heavy runoff periods. Also, seasonally high groundwater is a problem on the West Plains.

1.9.4 Solid Waste Disposal

Waste is deposited into trash receptacles that are located throughout the Airport. The waste is then collected at regular intervals by Waste Management of Washington, Inc. Trash receptacles are not shown on utility inventory maps.

1.9.5 Telephone and Fiber Optic Lines

Telephone and fiber optic lines are provided to the Airport from Qwest. Private companies may provide service within the airport through these lines. There are also intra-airport lines known as SI lines, which are owned by the Airport and provide intercom service within the Airport, and between selected hotels and rental car agencies. Airport businesses contract with telephone service providers independently for outside lines and equipment.

1.9.6 Electrical Power

Avista Utilities and Inland Power provide electric power to the Airport, which powers buildings and airfield lighting. The airport also has backup generators in the event of a power outage. These generators are provided for the ARFF Building, the fuel farm, the ATCT, the approach lighting systems and the terminal. Information provided on the location of the electrical power is considered proprietary and therefore not included as a separate map within this section.

1.9.7 Natural Gas Supply

Avista Utilities supplies natural gas to the Airport and surrounding areas. Information provided on the location of the natural gas lines is considered proprietary and not included as a map.

1.9.8 Fuel Storage and Distribution

Fuel is stored in multiple locations on airport property. The aircraft fuel storage facility is located northeast of the equipment storage and maintenance building. Glycol, used for deicing, is stored at a facility east of the fuel farm in above ground tanks. Four underground storage tanks are located at the ARFF facility. Fuel for emergency backup power and ground vehicles is stored in above ground tanks located next to the regulator building, southwest of the terminal.

Yellowstone Pipeline Co. maintains two lines inside the Airport's boundaries. A 3-inch line brings petroleum products into the fuel farm, and an 8-inch line transports petroleum products out of the Airport to FAFB and then on towards Moses Lake.

1.10 AERONAUTICAL SETTING

GEG and FAFB share overlapping arrival and departure corridors. The close proximity creates a complex operating environment. To mitigate risk, the control towers at both facilities coordinate extensively in the movement of airborne traffic.

1.10.1 Nearby Airports

Airport activity is influenced, in part, by the proximity of other airports. Because GEG is the largest airport in the region, most nearby airports have a minor competitive impact on airport activity. Of the nearby airports, FAFB is the nearest and has the greatest impact on operations due to the shared airspace. **Table 1-6**, Area Airports, identifies airports within 30 miles of GEG.

1.10.2 Regional Airspace and Air Traffic Control

The airspace that encompasses GEG and FAFB is designated as "Class C" Airspace C (See **Figure 1-18**). Separation services are available to aircraft operating within 20 miles from the centers of both airports. VFR operators must establish and maintain two-way radio communication with air traffic control and be equipped with an altitude encoding transponder.

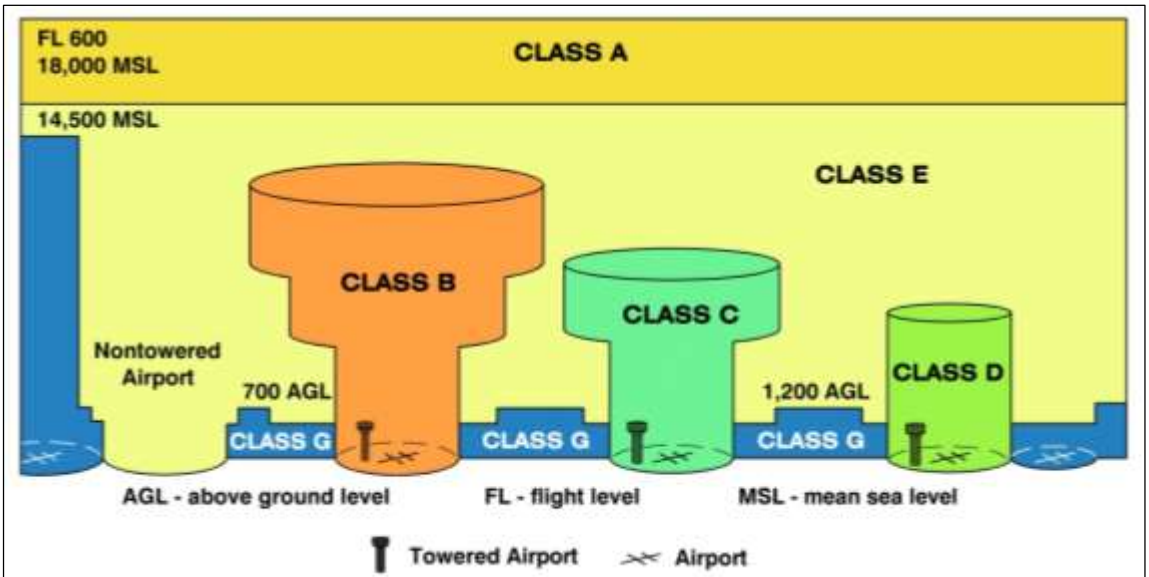
The control and separation of air traffic is complicated by overlapping arrival and departure corridors. The extended centerlines of both airports' primary runways are offset 20 degrees to one another. Aircraft approaching from the northeast to Runway End 21 at GEG or Runway End 23 at FAFB share a common intersection point. During VFR conditions (ceiling greater than 1,000 feet and visibility greater than 3 miles), pilots can visually maintain separation from other aircraft. During non-visual flight air traffic control must separate and sequence airborne traffic using a set of predefined rules. The amount of separation required increases significantly during non-visual conditions and subsequently, the arrival and departure rates of both airports drop appreciably.

Table 1-6. Area Airports

Airport Name [1]	*Owner*	Associated City (County)	Distance/Direction [2]	Based Aircraft [3]	Number of Runways	Longest Runway (ft.)	Surface [4]	Lighting Intensity [5]	Approach Visibility [6]	Control Tower	Airline Service	AvGas	Jet Fuel	Maintenance	Automobile Rentals
Spokane International	**City and County of Spokane**	**Spokane (Spokane)**	**–**	**67**	**2**	**11,002**	**Asph. or Conc.**	**H**	**½** [7]	***Yes***	***Yes***	✓	✓	✓	✓
Area Airports															
Fairchild Air Force Base	U.S. Air Force	Spokane (Spokane)	5 W	0	1	13,899	Conc.	H	½	Yes	No	–	–	–	–
Felts Field	City & Co. Spokane	Spokane (Spokane)	9 NE	163	2	4,500	Conc.	M	¾	Yes	No	✓	✓	✓	–
Mead Flying Service	Private	Mead (Spokane)	12 NE	21	1	2,481	Asph.	–	Vis.	No	No	–	–	–	–
Deer Park Municipal	City of Deer Park	Deer Park (Spokane)	21N	73	2	6,100	Asph.	M	1	No	No	✓	✓	✓	–
Cross Winds	Private	Clayton (Stevens)	22 N	2	2	3,800	Turf	–	Vis.	No	No	–	–	–	–
Rosalia Municipal	Town of Rosalia	Rosalia (Whitman)	23 S	9	1	2,807	Asph.	M	Vis.	No	No	✓	–	–	–
Davenport	City of Davenport	Davenport (Lincoln)	26 W	11	2	2,747	Asph.	M	Vis.	No	No	✓ ✓	–	–	–
Willard Field	City of Tekoa	Tekoa (Whitman)	30 SE	10	1	2,261	Asph.	M	Vis.	No	No	✓	–	✓	–
Coeur d'Alene Air Terminal	County of Kootenai, ID	Coeur d'Alene (Kootenai, ID)	30 ENE	206	2	7,400	Asph.	H	½	No	No	✓	–	✓	✓

[1] Airports within 30 nautical miles of Spokane International Airport
[2] Distance in nautical miles and approximate between airport reference points. Direction from Spokane Intl.
[3] FAA Airport Master Record data as of November 2010; totals exclude ultralights
[4] Asph. = asphalt; Conc. = concrete. For longest runway.
[5] L=low; M=medium; H=high. For longest runway.
[6] Lowest visibility minimums for instrument approach procedures; distance in statute miles. Vis = No instrument approach – VFR only.
[7] Spokane International is outfitted with Category I, II and III instrument approaches for specially-equipped aircraft. A CAT II approach allows for decision heights at 100 feet above runway elevation while a CAT III approach provides guidance to the surface of the runway.

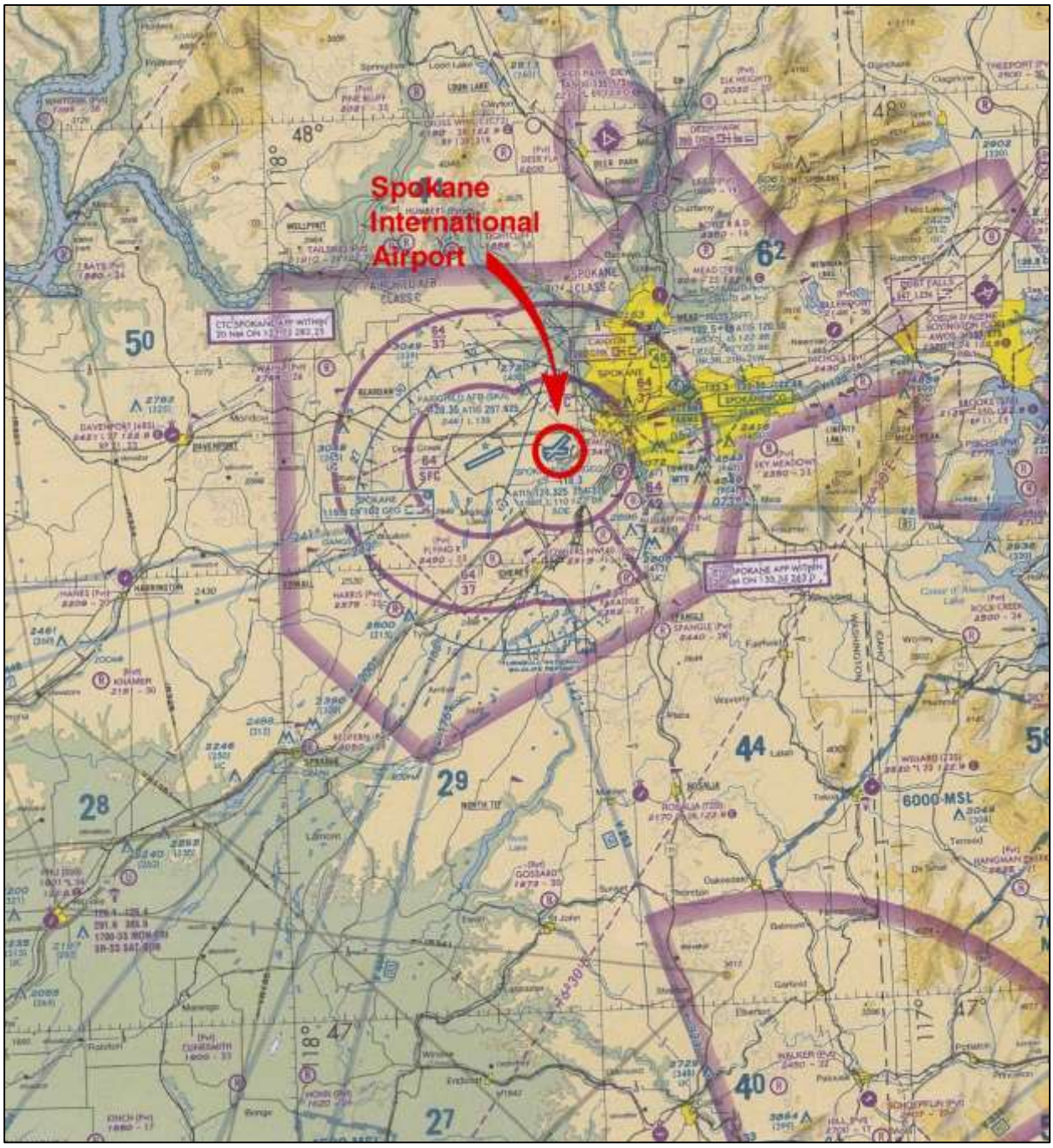
Source: Mead & Hunt



Airspace Class	Communication with ATC	Entry Requirements	Separation Services	Special VFR in Surface Area
A	Required for all operations	ATC clearance	All	N/A (No surface area)
B	Required for all operations	ATC clearance	All	Yes
C	Required for all operations	Two-way communications required prior to entry	VFR/IFR	Yes
D	Required for operations	Two-way communications required prior to entry	Runway operations	Yes
E	Required for IFR operations	Required for IFR operations	Required for IFR operations only	Yes
G	Not required	None	None	N/A (No surface area)

Figure 1-18

Airspace Classes



Source: skyvector.com, Seattle Aeronautical Chart

Figure 1-19

Airspace Map

1.10.3 Terminal Instrument Procedures

Terminal instrument procedures are published flight procedures that enable continued takeoff and landing operations during inclement weather conditions. Published takeoff and arrival procedures are in place for all four of the Airport's runways.

Approach Procedures

Instrument approach procedures are published to a specified runway end for each type of primary navigation. The degree of lateral and vertical accuracy varies according to the type of navigation used, on-board equipment available, and level of pilot certification or specially approved authorization. The most precise system currently available is an ILS Category-III approach, which enables landing with as little as 150 feet of forward visibility (Category-IIIb). An ILS Category IIIc approach would enable an airplane to land in zero visibility conditions, however, there are no Category IIIc approaches currently authorized. The Airport's Category IIIb approaches require 600 feet of forward visibility. **Table 1-7** identifies all of the approach procedures available for GEG.

Table 1-7. GEG Published Instrument Approach Procedures

	Runway Approach Ends			
	3	**21**	**7**	**25**
Procedure Type	ILS Cat-I ILS SA ILS Cat-II ILS Cat-IIIa + b RNAV (GPS) RNAV (RNP) VOR	ILS Cat-I ILS Cat-II ILS Cat-IIIa + b RNAV (GPS) RNAV (RNP)	RNAV (GPS) RNAV (RNP) Published Visual	RNAV (GPS) RNAV (RNP)

Source: FAA Instrument Approach Procedures published as of 2/24/2011.

Table Notes:

- ILS (Instrument Landing System)- Approach procedure using ground-based equipment at the runway having highly accurate lateral and vertical guidance.
- Category I, II, III- Indicates level of accuracy and performance associated with an ILS.
- SA- Special authorization required for aircrew and on-board equipment.
- RNAV (Area Navigation)- Approach procedure using on-board position determination.
- GPS (Global Positioning System)- Approach procedure using satellite-based navigational aids.
- RNP (Required Navigation Performance)- Indicates degree of accuracy associated with RNAV system. GEG's RNP procedures require special aircraft and aircrew authorization.
- VOR (Very High Frequency Omni-directional Range)- Approach procedure using a ground-based system of radio-beacons.
- Published Visual- Instrument procedure using ground visually identifiable reference positions.

The ILS procedures to Runway Ends 3 and 21 use ground-based equipment at the Airport. This equipment includes the following:

- Glide Slope Antennas (2)— A glide slope antenna provides vertical guidance for an ILS approach procedure. GEG has two glide slope antennas, one each for Runway End 3 and Runway End 21. The Runway End 3 glide slope is located abeam of the touchdown point approximately 1,100 feet from the Runway End 3 landing threshold, 450 feet east of centerline. The Runway End 21 glide slope is 941 feet from the landing threshold, 410 feet west of centerline. Glide slopes utilize the ground in front the antenna to reflect the signal into the approach corridor. As a result, the area in front of the antenna must be specially prepared and cleared in order to provide the required accuracy.
- Localizer Antenna Arrays (2)— A localizer antenna provides lateral guidance for an ILS approach procedure. GEG has two localizers, one each for Runway End 3 and Runway End 21. They are both positioned in the approach area 1,000 feet from the opposite runway ends on the extended runway centerline. Localizers require a clearance area between the antenna and touchdown zone to avoid signal blockage or interference.
- Marker Beacon Antennas- marker beacons transmit a signal upward to positively identify an aircraft position at critical points within the final approach segment of an instrument approach. These same positions can also be identified using a variety of other methods such that the number of marker beacons in service has declined over the years; the decline is expected to continue. GEG has an inner marker (IM) beacon located 1,000 feet along the extended centerline of Runway 3/21.
- Other equipment requirements— Other equipment required for obtaining the optimal performance of an instrument approach procedure include: approach lighting, runway marking and lighting, and weather reporting. The identification of these facilities is included **Section 1.3.7.**

Next Generation Navigation

Each runway at GEG has a published required navigation performance (RNP) approach procedure. These types of procedures are a critical step toward upgrading the National Airspace System to what is commonly referred to as NextGen. NextGen is the transition from ground-based air traffic control and navigation to a satellite-based / on-board system of air traffic management. Satellite infrastructure is in place with ground-based augmentation equipment installation nearing completion. RNP procedures use on-board equipment to establish the highest accuracy tolerance available. The technology enables equipped and trained operators to fly approach to lower approach minimums. RNP procedures are also being used to:

- Enhance airspace throughput capacity where airspace corridors are close together (such as between GEG and Fairchild Air Force Base),
- Reduce fuel consumption by enabling constant descent approaches that avoid level-off steps, and
- Reducing the Airport's noise exposure footprint by keeping approach procedures close to the Airport such that they more closely approximate a visual airport traffic pattern.

Departure Procedures

Similar to instrument approach procedures, instrument departure procedures are used for sequencing departing traffic so as to reduce the amount of radio communication needed and to avoid or otherwise identify terrain and obstacles. A departure procedure is available for each runway at GEG.

Surface Movement Guidance and Control

FAA Advisory Circular 120-57, *Surface Movement Guidance and Control System,* outlines requirements for aircraft surface movement during times of low visibility. Airports with instrument operations, like Spokane, are required to prepare a taxi plan in accordance with SMGCS requirements for times when the surface visibility is less than 1,200 feet. The purpose of SMGCS is to enhance position identification and reporting under low visibility conditions to reduce the potential for accidental incursion onto an active runway and taxiway incidences due to loss of positional awareness. The Airport established a SMGCS in 2000. The SMGCS plan at Spokane specifies operating procedures by aircraft and guidance for ground traffic by utilizing facilities, signage, lighting, and markings to help guide aircraft and vehicle movement.

SMGCS procedures are in effect when the RVR is below 1,200 feet and above 600 feet. Aircraft operate under SMGCS procedures exclusively on Runway 3/21. Arriving aircraft will typically be directed to land on Runway 3. If visibility minimums allow for landings on Runway 21 and the RVR is greater than 1,200 feet, then SMGCS procedures apply to Runway 21 also. Departures are allowed from both ends of Runway 3/21untill the RVR is lower than 600 feet, when operations at the Airport stop. Once on the ground, with direction from the control tower, aircraft follow low visibility taxi routes as designated in the Airport's SMGCS plan. Low visibility taxi routes are depicted **in Figure 1-3**.

Equipment and facilities installed at the Airport as stipulated in the established SMGCS plan include taxiway centerline lighting, runway guard lights, stop bar lights, geographic position markings, and taxiway guidance signs and markings.

Another technology available to the control tower to help locate and track air and ground traffic in low visibility is the Northrop Grumman Air NOVA 9000. The NOVA 9000 integrates data from sensors and databases and provides information on traffic movements on the surface of the Airport.

1.11 CONCLUSION

The inventory chapter begins the planning process by providing a benchmark of the Airport as it currently exists, both in relation to the surrounding community and the larger aviation system and as a physical inventory. The Airport itself is comprised of airside, terminal, and landside components that will be individually analyzed as part of this plan. The next chapter assesses future activity that the Airport should anticipate over the long term. Chapters 3, 4 and 5 will identify the facilities needed over the next 20-30 years for each of the airfield facilities, terminal facilities, and landside facilities.