ROCK SPRINGS
SWEETWATER COUNTY AIRPORT

DRAFT

Rock Springs – Sweetwater Country Airport Master Plan

September 24, 2012

As required by Paragraph 425.B(4) of FAA Order 5100.38C, Airport Improvement Program (AIP) Handbook:

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1.0 INTRODUCTION

1.1 STUDY GOALS

The purpose of this study is to update the Rock Springs-Sweetwater County Airport (RKS) Master Plan and Airport Layout Plan drawing set (ALP) and determines the extent, type, and schedule of development needed to accommodate future aviation demand at the airport over a 20 year planning period. The Master Plan and the ALP for RKS were last updated in 2003. The study's main objectives are to:

- Determine the condition and adequacy of existing facilities over the 20 year planning period
- Forecast aviation activity, including operations and based aircraft
- Recommend needed facility improvements to accommodate forecast demand and safety requirements while addressing the community's values and economic growth
- Prepare a financial plan that considers RKS's budget, revenue, and expenses as well as future funding scenarios

1.2 LOCAL BACKGROUND

Rock Springs is an incorporated city of the State of Wyoming located in Sweetwater County, in southwestern Wyoming. Sweetwater County was established on December 17, 1867 as a County within the Dakota Territory, and was derived from land that was previously part of Laramie County. The County was originally named Carter County after Judge W.A. Carter of Fort Bridges. In 1869, the newly established legislator of the Wyoming Territory renamed the county to Sweetwater County after the Sweetwater River.[1]

Rock Springs is the largest city in Sweetwater County, is the fourth largest in the State of Wyoming, and it is the most populated town in southwest Wyoming. Rock Springs is located in an energy-rich region with a large number of oil and natural gas wells. Coal mining brought many immigrants to the region in the 1860s to 1870s. In 1862, Rock Springs was originally a way station along Ben Holladay's Overland Stage Line, after the line was moved south to avoid the Native Americans. Rock Springs got its official start in 1868, with the coming of the Union Pacific Railroad, bringing with it settlers moving westward in search of gold, oil, and coal. In 1888, Rock Springs was incorporated as a City. Today, Rock Springs is a primary economic center for the oil and gas industry, coal and trona mining, and ranching in Wyoming.[2]

According to the U.S. Census Bureau, the City of Rock Springs is the 4th most populous municipality in the State of Wyoming, with 23,036 residents reported in 2010.[3] Additionally, according to the U.S. Census

[1] http://historical-county.newberry.org/website/Wyoming/documents/WY_Individual_County_Chronologies.htm #Individual_County_Chronologies
[2] http://www.wyomingtalesandtrails.com/rocksprings.html
[3] http://quickfacts.census.gov/qfd/states/56/5667235.html

Bureau, Sweetwater County had a population of 43,806 in 2010.[4] The State of Wyoming has experienced extreme growth recently, primarily driven by the energy industries. In the 2010 census, the State had grown by approximately 70,000 residents, nearly 14.1%, since 2000.

Just like roads, airports are regional assets that provide critical transportation, emergency services and economic benefits to its community. Although many of the users of the airport may come from other communities, the money they spend in Rock Springs on aircraft fuel, services, and other needs the community on the whole.

1.3 Airport Management and Ownership Structure

RKS is jointly owned and operated by the City of Rock Springs and Sweetwater County, Wyoming. Of the five member Airport Board, three are appointed by Sweetwater County Commissioners and two are appointed by the Mayor of the City of Rock Springs. The Airport Board provides recommendations regarding long-range planning, land-use, and necessary improvements for RKS. The Airport Board meets on the second Wednesday of each month. The day to day operation and administration of RKS is the responsibility of a dedicated Airport Manager, and administrative and operations support staff.

1.4 Airport Background

RKS was originally known as the Rock Springs Airport, and was located near the site of the present fair grounds. The Airport was used as a way stop for Amelia Earhart on a publicity tour with an auto gyro in June 1931. In 1942, RKS was relocated to its current location, seven miles east of the central business district of the City of Rock Springs, at the conjunction of Interstate 80 and Wyoming State Highways 50, 93, and 6. Originally, the Airport had two landing strips; Runway 12/30 and Runway 3/21. A third runway, Runway 7/25, was added later with runway lights to facilitate night aircraft operations. Additional improvements at RKS have included; construction of Runway 9/27; the decommissioning of Runway 7/25 and 12/30; the addition of new taxiways and aircraft aprons; and the construction of passenger and General Aviation (GA) terminals. In 1969, an agreement with Sweetwater County resulted in the Airport becoming a joint-powers facility which is overseen by a five-member Airport Board. It was during this time the airport name became the Rock Springs-Sweetwater County Airport.[5]

1.4.1 Current Activity

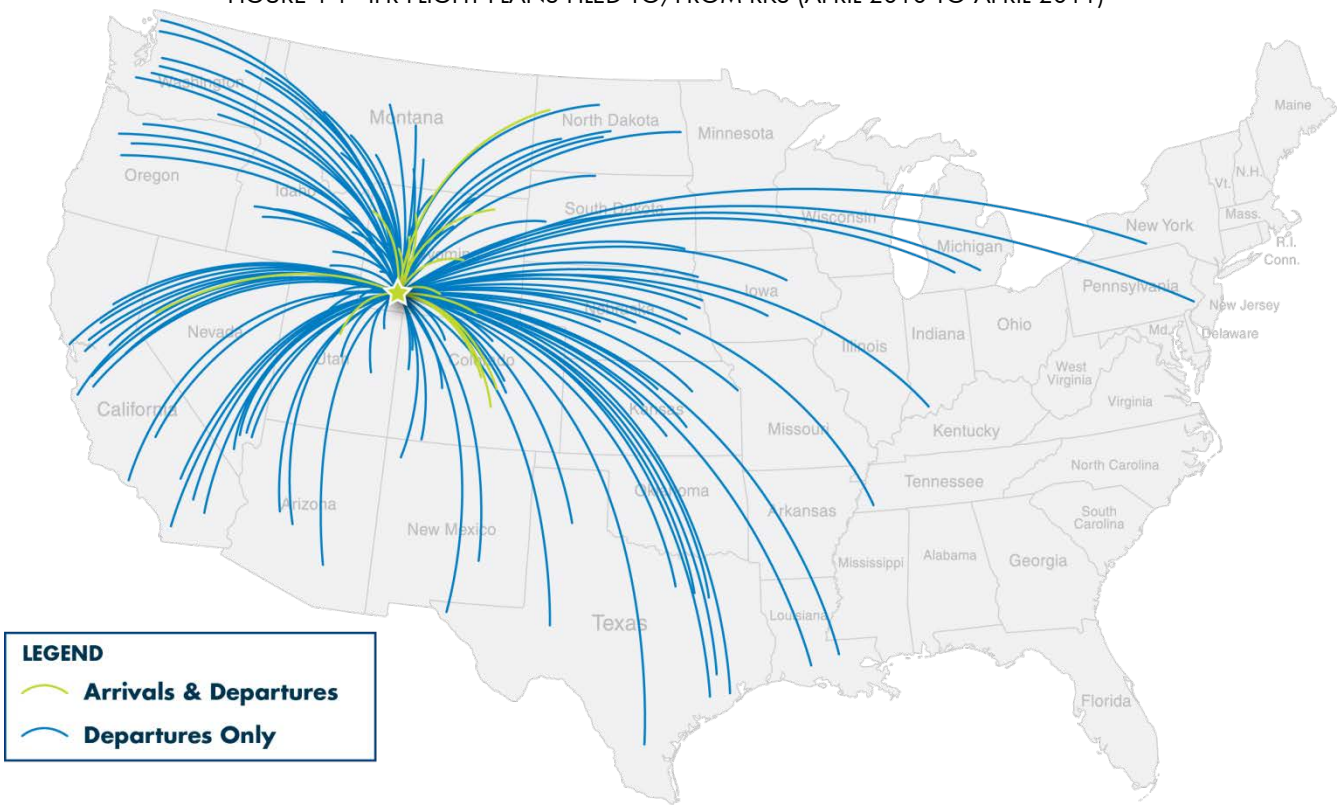
Current estimated activity at RKS is 14,075 annual aircraft operations (take-offs and landings), with 23,482 annual passenger enplanements in 2010. Currently, there are 48 based aircraft including 40 single engine, three multi-engine, two turbo-propeller, one helicopter, and two ultra-light aircraft. Scheduled air service is provided by SkyWest Airlines.

Beyond the local and regional uses of the airport, RKS is a destination for many aircraft throughout the United States. Instrument flight plans filed over the course of one year are depicted in **Figure**

[4] http://quickfacts.census.gov/qfd/states/56/56037.html
[5] http://www.rockspringsairport.com/index.php?/about/C5/

1-1, and show flights to and from every corner of the country. Instrument flight plans are typically filed for the business segment of GA rather than the pleasure fliers, and often represent flights of turboprop and business jet aircraft.

FIGURE 1-1 - IFR FLIGHT PLANS FILED TO/FROM RKS (APRIL 2010 TO APRIL 2011)



Source: Data: GCR, Inc.; Map: Jviation, Inc.

2.0 INVENTORY

This chapter documents the type and general condition of the existing facilities that comprise RKS for use in future planning phases. The inventory is a complete compilation of all facilities and systems of the airport including airfield, terminal area, navigational aids, ground access, parking, pavement conditions, utilities, and other characteristics of the airport.

2.1 AIRPORT REFERENCE CODE

The Federal Aviation Administration (FAA) classifies airports in the United States with a coding system known as the Airport Reference Code (ARC). This classification helps apply design criteria appropriate to operational and physical characteristics of the aircraft types operating at the airport. The ARC is made up of two separate components, the Aircraft Approach Category and the Airplane Design Group (ADG).

The Aircraft Approach Category is an ***alphabetical*** classification of an aircraft based upon 1.3 times the stall speed in a landing configuration at their maximum certified landing weight. The approach category for an airport is determined by the approach speed of the fastest aircraft that operates at the airport at least 500 times per year with Category A being the slowest approach speed and E being the fastest. Approach Categories are listed below:

Category A: Speed less than 91 knots.
Category B: Speed 91 knots or more but less than 121 knots
Category C: Speed 121 knots or more but less than 141 knots.
Category D: Speed 141 knots or more but less than 166 knots.
Category E: Speed 166 knots or more.

The ADG is a ***numerical*** classification of aircraft based on wingspan or tail height. If an airplane's wingspan and tail height is in two categories, the most demanding category is used. Similar to the approach category, the ADG for an airport is determined by the largest aircraft operating at least 500 times per year at the facility. Also, for airports with multiple runways, the published ARC is based on the most demanding runway design group. ADG details are identified in **Table 2-1**. Examples of ARC aircraft types are shown in **Figure 2-1**.

RKS is currently designed to accommodate aircraft with an ARC of C-III. This ARC includes mid-sized commercial jets, such as the Boeing 737, and most business jets like the Learjet and Cessna Citation models.

TABLE 2-1 - AIRPLANE DESIGN GROUP (ADG)

Group #	Tail Height (ft.)	Wingspan
I	<20	<49
II	20≤30	49≤79
III	30≤45	79≤118
IV	45≤60	118≤171
V	60≤66	171≤214
VI	66≤80	214≤262

Source: FAA AC 15/5300-13, Airport Design

FIGURE 2-1 - ARC AIRCRAFT TYPES

Source: Jviation, Inc.

2.2 New Advisory Circular 150/5300-13A, Airport Design, Change 19

The FAA has released a draft of the new Advisory Circular (AC) 150/5300-13, *Airport Design*, Change 19. It is a complete rewrite of the existing Airport Design AC that is currently being used, and is the first comprehensive update of this AC since 1989.

The most significant changes include the new standards and technical requirements of Runway Design Code (RDC) and Taxiway Design Group (TDG). The AC still uses a design aircraft, however in most cases the design aircraft is a composite aircraft representing a collection of the aircraft classified by three parameters: Aircraft Approach Category, ADG, and TDG. The aircraft approach category and ADG are combined to form the RDC. The TDG relates to the undercarriage dimension of the aircraft. Taxiway width and fillet standards, and in some instances runway to taxiway and taxiway/taxilane separation standards, are determined by the TDG. The TDG is to improve on the design of taxiways fillets and radii. AC 150/5300-13, *Airport Design*, Change 19 requires to first select the RDC(s), the most demanding meteorological conditions for desired/planned levels of service for each runway, and then applying the airport design criteria associated with the RDC and designated or planner approach visibility minimums, then to design the associated taxiways using the TDG.[6]

This new guidance will be used when assessing the facilities at RKS in Chapter 4, Facility Requirements.

[6] FAA Advisory Circular 150/5300-13A, *Airport Design*, Change 19

2.3 EXISTING AIRFIELD DESIGN STANDARDS

As previously discussed, RKS is presently designated as an ARC C-III airport. Runway 9/27 is the primary runway, and is constructed to C-III standards. Runway 3/21 is the crosswind runway and is constructed to B-II standards. **Table 2-2**, **Table 2-3**, and **Table 2-4** summarize the major land and airside components of RKS. These items are discussed in detail through the remainder of this chapter.

TABLE 2-2 – AIRPORT PAVEMENT INVENTORY

Item	Description	Condition
Runway 9/27	10,000'x150'; 115,5000lbs Dual Wheel Gear (DWG) pavement strength	Very Good
Runway 3/21	5,223'x75'; 16,000lbs Single Wheel Gear (SWG) pavement strength	Fair
Taxiway A	Full-length parallel taxiway (10,000'x50') north of Runway 9/27; five connectors; 110,000lbs DWG pavement strength	Excellent
Taxiway B	Connector taxiway for Taxiway A and GA Apron; 60,000lbs DWG pavement strength	Very Good
Taxiway C	Connector taxiway for Taxiway A and GA Apron; 30,000lbs SWG pavement strength	Excellent
Taxiway E	Taxiway for GA hangar area; 30,000lbs SWG pavement strength	Very Good
GA Apron	17,370 square yards of concrete; 44 tiedowns; 30,000lbs SWG, 60,000lbs DWG pavement strength	Excellent
Terminal Apron	7,000 square yards of concrete; 80,000lbs SWG, 130,000lbs DWG, and 260 Dual Tandem Gear (DTG) pavement strength	Excellent

TABLE 2-3 – NAVIGATIONAL AIDS/VISUAL AIDS INVENTORY

Item	Description
General NAVAIDS	Unicom 122.8; Rotating Beacon; Wind Cones; Segment Circle; VOR/DME
Runway 9/27	High Intensity Runway Lighting (HIRL); Supplement Wind Cone; Precision Approach Path Indicators (PAPIs) both ends; ODALs – Runway 9; MALSR – Runway 27; ILS- Runway 27
Runway 3/21	Medium Intensity Runway Lighting (MIRL); Supplement Wind Cone; PAPIs both ends; Runway End Identifier Lights (REILs) both ends

TABLE 2-4 – AIRPORT FACILITY INVENTORY

Item	Description	Condition
Terminal	Built in 1982; 25,000 square feet of space; one Airline (SkyWest); three rental car companies (Avis, Enterprise, Hertz); one Gate; one Holdroom	Good
FBO	Airport owned; Full-service FBO	Fair
Hangars	95,000 square feet of conventional hangars and t-hangar space	Good to Poor

The airfield is shown in the Airfield Diagram in **Figure 2-2**. The following pages describe each component of the airport in detail.

FIGURE 2-2- RKS AIRPORT

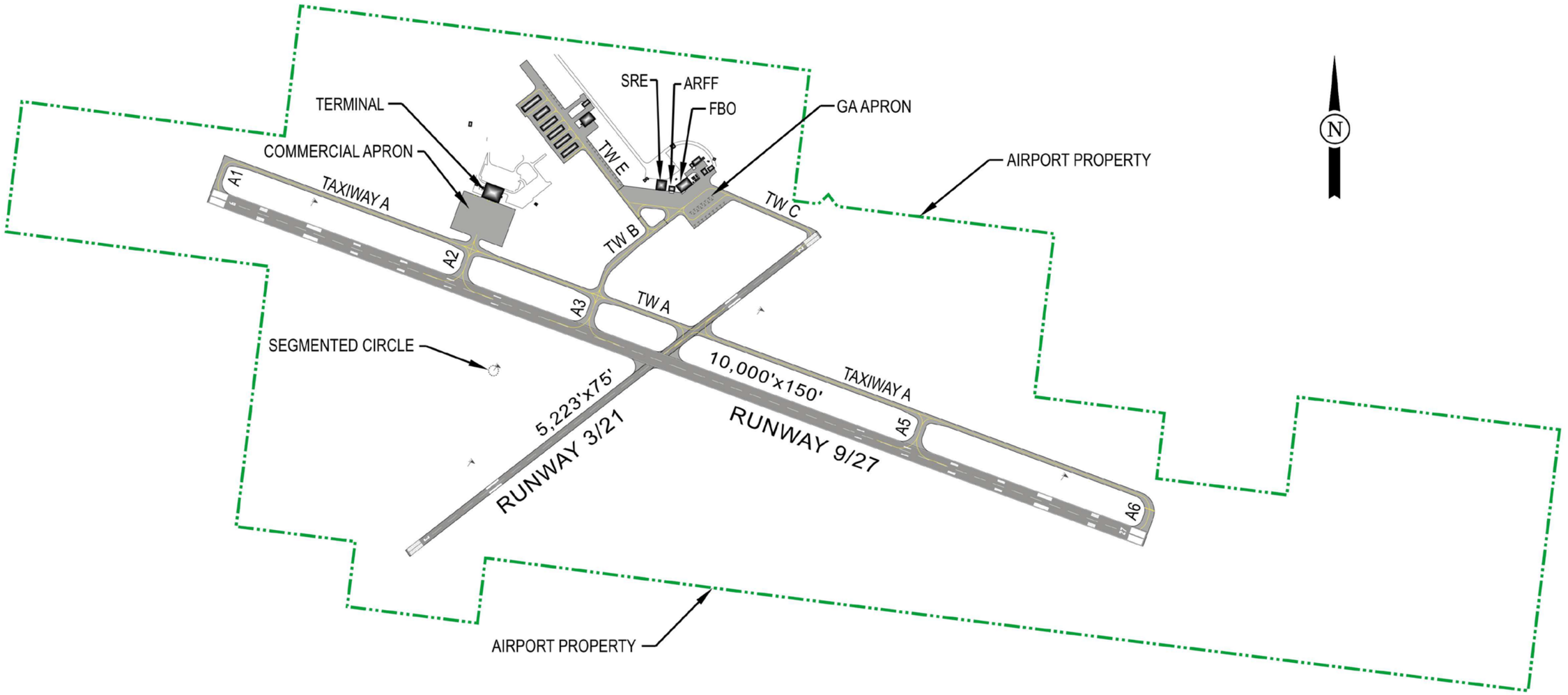


Image: Jviation, Inc.

2.4 AIRFIELD DESIGN STANDARDS

The primary consideration for runway and taxiway design is the standards established by the FAA. These standards are based upon a critical aircraft. **Table 2-5** and **Table 2-6** show the FAA design standards from FAA Advisory Circular (AC) 150/5300-13, *Airport Design* (Change 18). The existing ARC of RKS is C-III.

Runway dimensional design standards define the widths and clearances required to optimize safe operations in the landing and takeoff area. These dimensional standards vary depending upon the ARC for the runway and the type of approach that is provided. The most demanding, or critical aircraft, that currently utilizes RKS is a C-III aircraft. The Runway 9/27 complex is developed to meet C-III standards, which can accommodate aircraft such as a Boeing 737 type aircraft. The Runway 3/21 complex is designed to B-II standards. At many airports, the secondary runways are not designed to standards for all the potential airport users. This is normally due to economic reasons. Many times the funds needed to build the second runway to the standard for a higher ARC are not available or justifiable because of the infrequent use of larger aircraft. The standards for RKS are shown in **Table 2-5** and **Table 2-6**.

TABLE 2-5- ARC C AND D (RW 9/27) FAA RUNWAY DESIGN STANDARDS

Standard	Current Conditions	C-III Design Standards
Runway Width	150’	100’
Runway Shoulder Width	20’	20’
Runway Safety Area Width	500’	500’
RSA Beyond Runway End	1,000’	1,000’
Runway Object Free Area Width	800’	800’
ROFA Beyond Runway End	1,000’	1,000’
Runway CL to Parallel TW CL	400’	400’
Runway CL to Aircraft Parking	500’	500’
RWY Holding Position Markings	250’	250’

Source: FAA AC 150/5300-13, Change 18

TABLE 2-6 - ARC B-II (RW 3/21) FAA RUNWAY DESIGN STANDARDS

Standard	Current Conditions	B-II Design Standards
Runway Width	75’	75’
Runway Shoulder Width	10’	10’
Runway Safety Area Width	150’	150’
RSA Beyond Runway End	300’	300’
Runway Object Free Area Width	500’	500’
ROFA Beyond Runway End	300’	300’
Runway CL to Parallel TW CL	400’	240’
Runway CL to Aircraft Parking	500’	250’
RWY Holding Position Markings	250’	200’

Source: FAA AC 150/5300-13, Change 18

2.4.1 WYDOT Design Standards Inventory – 2007

In 2007, Wyoming Department of Transportation (WYDOT) Division of Aeronautics (Aeronautics) undertook a study to review each airport in the State for compliance with FAA design standards. The Study included a review of aerial survey data and ground survey/obstructions. The Study noted several non-standard items and modifications to standards, shown in **Table 2-7**, no obstructions were found. Many of these non-standard items have been corrected since the study, as indicated in the table. The Study also recommended paved taxiway shoulders for ADG III and higher. The 2007 WYDOT Design Standards Inventory findings for RKS can be found in **Appendix B**.

TABLE 2-7 - WYDOT DESIGN STANDARDS INVENTORY 2007

#	Non-Standard Item	Correction Date	Project No.
1	RW 9/27 shoulders are 9'-11' wide		
2	Glide slope critical area sign is in RW 9/27's RSA and ROFA, 213' from the RW centerline (CL). Unable to determine frangibility of wooden post.		
3	Glide slope antenna light post is in RW 9/27's RSA and ROFA, 212' from the RW CL. Unable to determine frangibility of wooden post.		
4	VSR stop sign is in RW 9/27 ROFA, 294' from Runway CL.		
5	Two fire hydrants are in TW E taxiway OFA, 80' from TW CL. Unable to determine frangibility of wooden post.		
6	All hangars along south side of TW E are in taxiway OFA, 50'-54' from TW CL.		
7	Parked aircraft are in TW E taxiway OFA, 45' from TW CL.		
8	All hangars along south side of TW E are in taxilane OFA, 29'-40' from TW CLs.		
9	Parked aircraft are in ramp taxilane OFA		
10	Supplemental windcone 1 is in RW 9/27 ROFA, 300' from RW CL.		
11	Supplemental windcone 2 is in RW 9/27 ROFA, 299' from RW CL.		
12	RW 9/27 CL stripe is 140' long near RW 9 aiming point markings.	11/4/09	RKS12A, AIP24
13	RW 9/27 CL stripes have 78' spacing near RW 9 aiming point markings.	11/4/09	RKS12A, AIP24
14	Enhanced TW CL marking are not present at any RW holdlines.	11/4/09	RKS12A, AIP24
15	Surface painted holding position signs are not present at any RW holdlines	11/4/09	RKS12A, AIP24
16	Runway 9/27 threshold marking stripes are 12' wide.	11/4/09	RKS12A, AIP24
17	RW 9/27 threshold marking stripe spacings are 2' wide.	11/4/09	RKS12A, AIP24
18	Runway 9/27 threshold marking center spacings are 15' wide.	11/4/09	RKS12A, AIP24
19	Runway 9/27 aiming point markings are 1,015'/1,008' from respective thresholds.	11/4/09	RKS12A, AIP24

Source: WYDOT Design Standards Inventory 2007: Rock Springs-Sweetwater County Airport

TABLE 2-8 - MODIFICATION TO STANDARDS (WYDOT 2007)

#	Modifications to Standards
MTS 1	Road Off Runway 9 end penetrates OFA on the northwest corner.
MTS 2	Wildlife fence encroaches object free area, but has a top elevation below RSA.
MTS 3	The horizontal plane of the PAPI is located 2' above the elevation of the Runway 3/21 centerline at the intercept point of the visual glide path with the runway.

Source: WYDOT Design Standards Inventory 2007: Rock Springs-Sweetwater County Airport

2.5 AIRFIELD/AIRSPACE

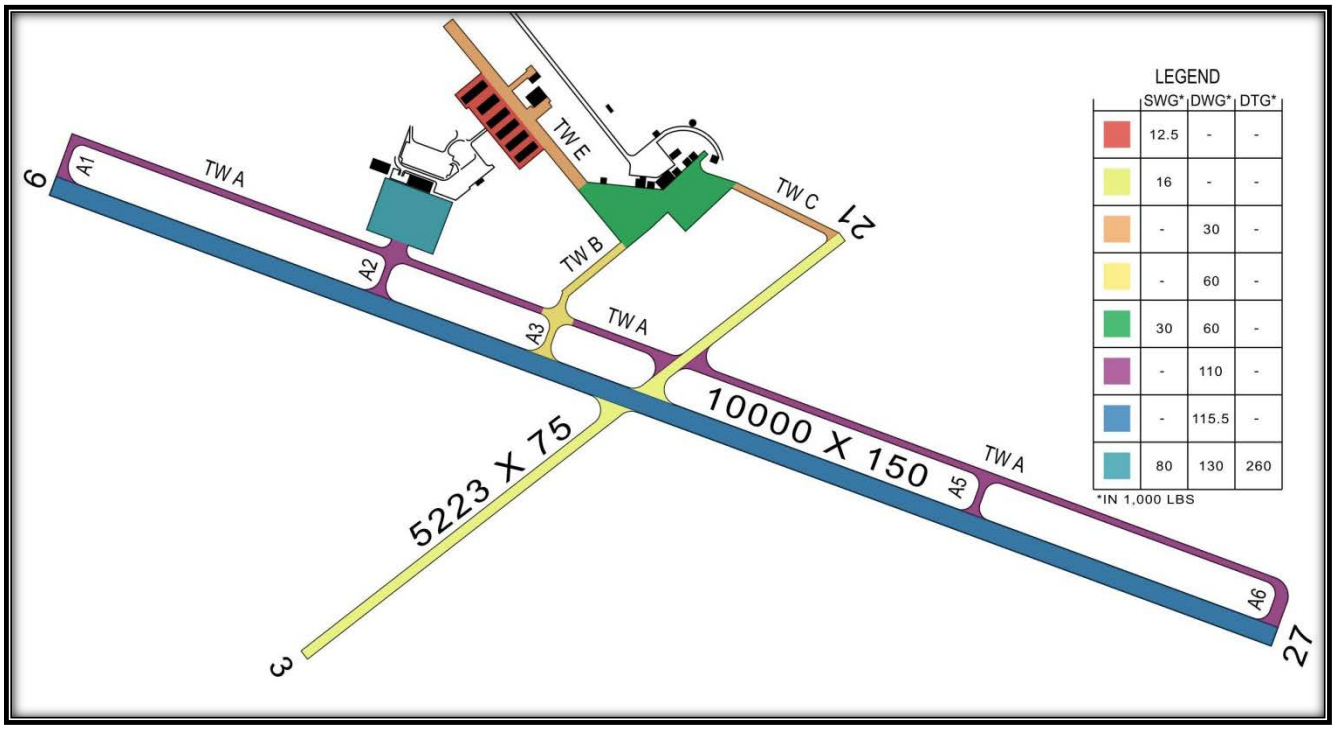
2.5.1 Runways

The existing airfield at RKS has two active runways, identified as Runway 9/27 and Runway 3/21, as shown in **Figure 2-2**.

Runway 9/27 is the primary runway, and is orientated southeast/northwest. The runway is 10,000 feet long by 150 feet wide. The runway is constructed of grooved asphalt, with a weight-bearing capacity that allows 80,000 pounds for Single Wheel Gear (SWG) equipped aircraft and 115,000 pounds for Dual Wheel Gear (DWG) equipped aircraft, as shown in **Figure 2-3**.

Runway 3/21, the crosswind runway, and is 5,223 feet long and 75 feet wide. This runway is constructed for light aircraft use during high crosswind conditions, and has a weight-bearing capacity of 16,000 pounds for SWG equipped aircraft. Runway 3/21 is constructed of asphalt with a porous fiction course overlay. See **Section 2.5.4** for airport pavement conditions.

FIGURE 2-3- PAVEMENT STRENGTH



Source: FAA Denver ADO; Image: Jviation, Inc.

The Airport Reference Point (ARP) is the latitude and longitude of the approximate center of the runway(s) at an airport. The current ARP is located at a Latitude of 41°35'39.185" north and Longitude of 109°03'54.594" west. The established airport elevation, which is defined as the highest point on the Airport's runway(s) is 6,760.4 feet above mean sea level (MSL), and is located at the end of Runway 9.

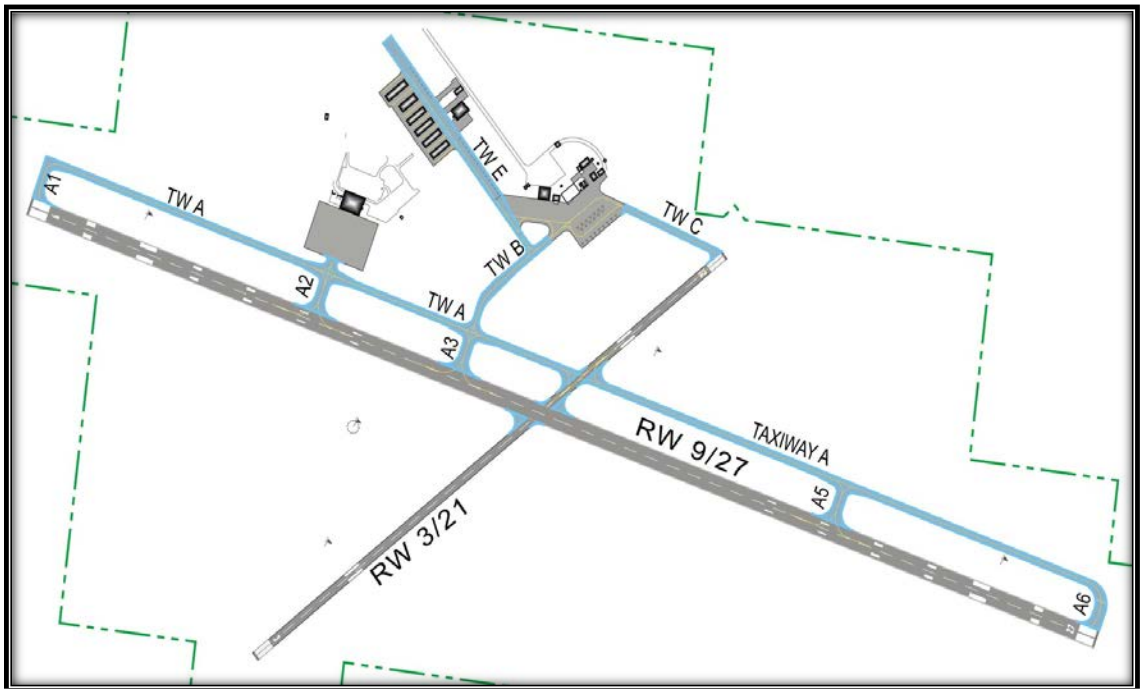
Aircraft compasses and runway identifiers utilize magnetic north for directional guidance. For this reason, it is important to evaluate an airport's runway numerals every few years to ensure that the numbers painted on the runway truly represent the magnetic heading of the runway. The magnetic forces across the planet are constantly shifting, and therefore a declination must be applied to a compass to arrive at a true north heading. According to the National Geophysical Data Center, as of May 15, 2012, the current declination for Rock Springs is 11˚0' east and is changing by 0°8' west per year7. The current true bearing for Runway 9/27 is N76°47'30"W with a magnetic declination 87° for Runway 9 and 267° for Runway 27. The current true bearing for Runway 3/21 is N45°12'30"E, with a magnetic declination of 34° for Runway 3 and 214° for Runway 21. This means that the current runway designations of all runways are correct. The magnetic heading for the runway should be revaluated every year.

2.5.2 Taxiways

The existing paved taxiway system at RKS consists of Taxiway A, which is a full-length parallel taxiway located on the north side of Runway 9/27; Taxiway B, which connects Taxiway A to the General Aviation (GA) apron; Taxiway C, which is connects Runway 21 to the GA apron; and Taxiway E, which gives access to the GA hangar area. Additionally, Taxiway A has five connecting Taxiways: A1, A2, A3, A5, and A6. All taxiways are 50 feet wide, meeting ARC C-III design criteria and are constructed of asphalt. The pavement design strengths for all the taxiways are shown in Figure 2-3, and vary in strength from small-sized aircraft to medium-sized aircraft. RKS's existing taxiway system is shown in Figure 2-4. See Section 2.5.4 for airport pavement condition.

[7] http://www.ngdc.noaa.gov/geomagmodels/struts/calcDeclination

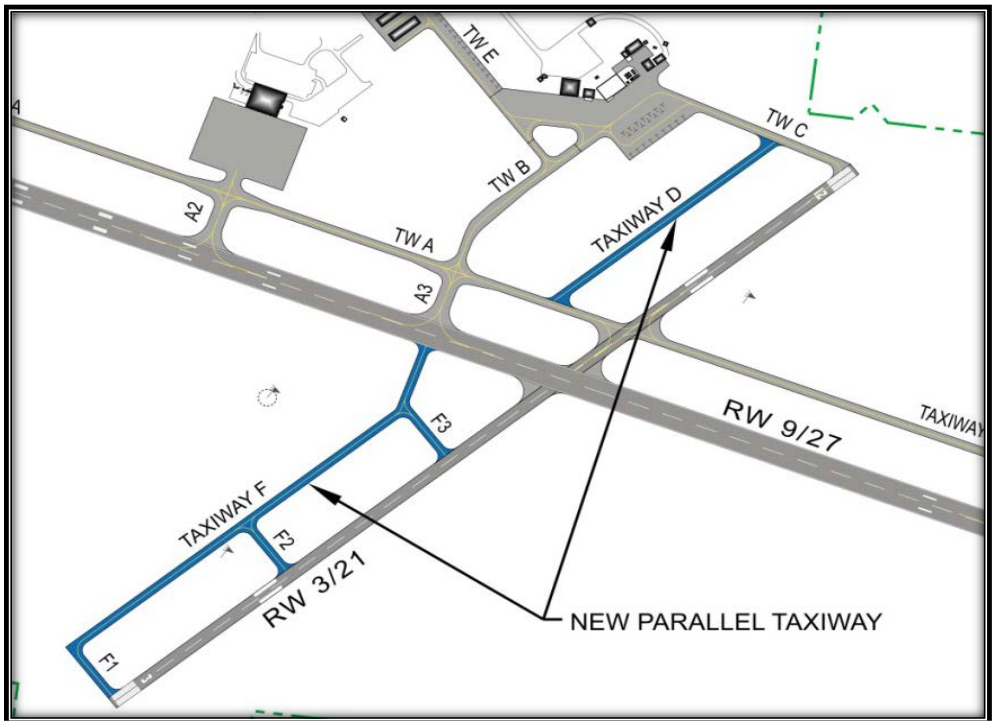
FIGURE 2-4 - RKS TAXIWAY SYSTEM



Source: Jviation

In 2012, RKS will be constructing a full parallel Taxiways D and F for Runway 3/21, on the west side of the Runway, as shown in **Figure 2-5**.

FIGURE 2-5 – NEW PARALLEL TAXIWAY D AND F



Source: Jviation

2.5.3 Aprons

RKS has two primary apron areas: the commercial apron and the GA apron.

The commercial apron, shown in **Figure 2-3**, is located north of Runway 9/27, directly off of Taxiway A2, and is made up of roughly 7,200 square yards of concrete with a pavement strength of 80,000 pounds for SWG equipped aircraft, 130,000 pounds for DWG equipped aircraft, 260,000 pounds for Dual Tandem Gear (DTG) equipped aircraft. The commercial apron has two aircraft parking positions, one immediately adjacent to the terminal building for easy passenger loading, with additional positions slightly further from the building on the apron.

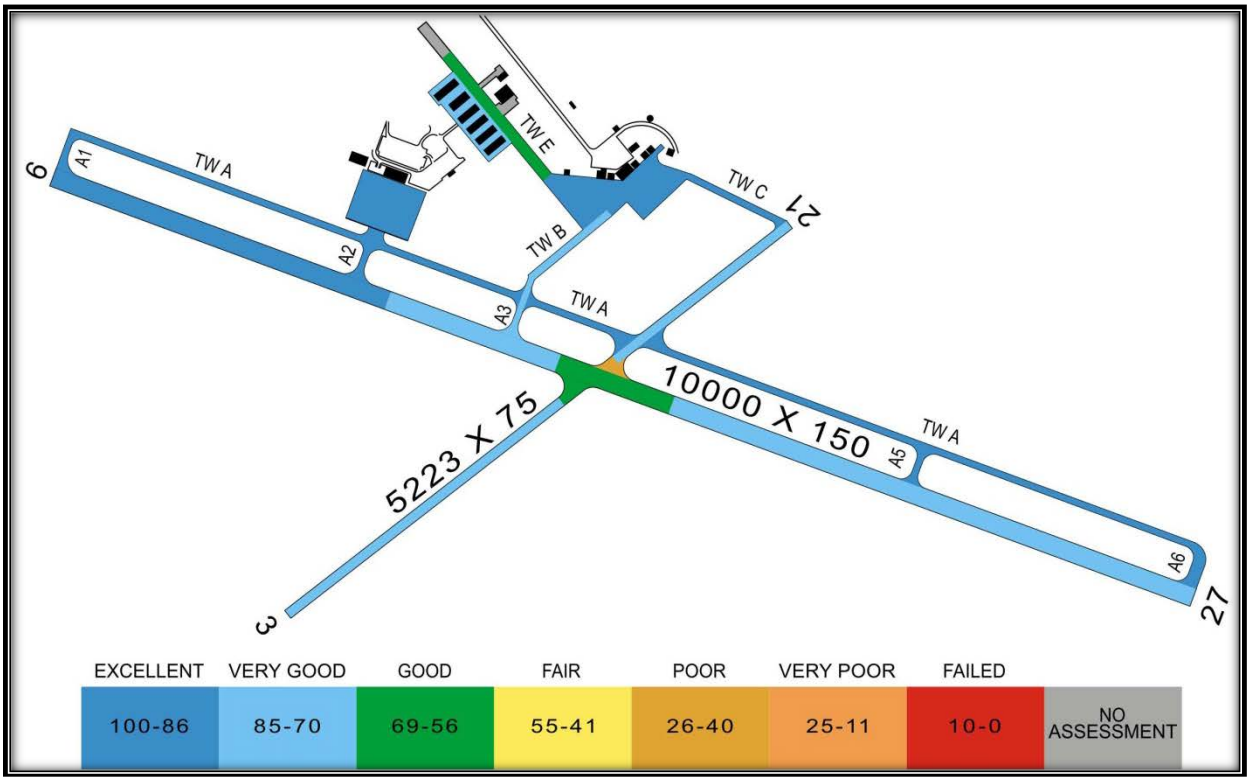
The GA apron is located adjacent to the FBO terminal, north of Runway 9/27 and just east of Runway 21. This apron has 44 tiedown positions for small piston aircraft, and also has a number of helicopter spaces available. It is composed of roughly 17,370 square yards of concrete. The GA apron has a pavement strength of 30,000 pounds for SWG equipped aircraft and 60,000 pounds for DWG equipped aircraft, shown in **Figure 2-3**.

2.5.4 Pavement Condition

The 2007 Pavement Condition Index (PCI) Study performed by the WYDOT Aeronautics found that the majority of the airfield pavement at RKS is in "Very Good" to "Excellent" condition. However, at the runway intersection, the pavement was rated from "Fair" to "Good", with a small portion being in "Fair" condition, as shown below in **Figure 2-6**.

Additionally, according to RKS's 2012 Wyoming Airports Capital Improvement Plan (WACIP), RKS will be rehabilitating Runway 3/21 in the summer of 2013 and Runway 9/27 in summers of 2016 and 2017.

FIGURE 2-6 - RKS PAVEMENT CONDITION INDEX 2007



Source: 2007 WYDOT Pavement Index Condition Study; Image: Jviation

2.5.5 Lighting, Markings, and Signage

Runway 9/27 has High Intensity Runway Lighting (HIRL) and Runway 3/21 has Medium Intensity Runway Lighting (MIRL). Taxiway A is equipped with Medium Intensity Taxiway Lighting (MITL). The commercial and GA apron are only lighted along the edges where Taxiways A2, B, and C meet the aprons. Additionally, all of the taxiway and runway lights are equipped with Pilot Controlled Lighting, meaning that the lights can be activated by keying the aircraft's radio on the Common Traffic Advisory Frequency (CTAF) of 122.8 MHz. This allows for a reduction in energy usage and light emissions when the airport is not in use. The lights remain on for 15 minutes after activation.

Runway 9/27 is marked with Precision Runway Markings, which include centerline, edge stripes, aiming points, threshold, and touchdown zone markings. Runway 3/21 has non-precision markings, which only includes the centerline, threshold, and aiming point markings.

In 2008, the FAA established new required airfield marking standards. These new marking standards can be found in Change 2 of AC 150/5340-1K, *Standards for Airport Markings*. In 2009, RKS's airfield was painted to meet the new airfield markings standards. The taxiways at the runway intersections are now marked with yellow enhanced centerlines and enhanced runway hold bars.

RKS is equipped with standard airfield signage, which provides essential guidance information that is used to identify items and locations on an airport. Airfield signage gives pilots visual guidance

information for all phases of movement on the airfield. RKS is equipped with a wide array of FAA required signage including instruction, location, direction, destination, and information signs.

2.5.6 Visual and Navigational Airport Aids

All four runway ends at RKS are equipped with Precision Approach Path Indicators (PAPIs) which provide visual descent guidance. A PAPI is a light system typically positioned on the left side of the runways and is constructed with two box lights in one row. The PAPIs for Runways 3, 21, and 9 are located on the left side of the runways, and the PAPI for Runway 27 is on the non-standard right side of the runway. The PAPIs for Runways 3 and 21 are 2-box PAPIs, and the PAPIs for Runway 9 and 27 are 4-box PAPIs. These lights can be detected from up to five miles during the day, and 20 miles or more at night. The approach ends of Runways 3 and 21 also have Runway End Identification Lights (REILs) to indicate to approaching aircraft where the usable runway begins.

The Rock Springs VOR/DME (Very High Frequency Omni-directional Radio-range/Distance Measuring Equipment) is located 1.4 nautical miles east of Runway 27. This equipment is used in the precision approaches and non-precision approaches for Runways 9 and 27.

RKS has a segmented circle on the airfield located on the south side of Runway 9/27 and east of Runway 3/21. A segmented circle includes a lighted wind cone, and provides a centralized location for wind and traffic pattern indicators for the airport runways. The airfield also has a standard green and white rotating beacon located directly north of the GA apron.

RKS has an Automated Surface Observation System (ASOS) located north of Taxiway A5. An ASOS is an automated sensor which transmits weather reports via the radio frequency of 118.375 MHz. The ASOS provides pilots with up-to-date airport weather information, such as temperature and dew point in degrees Celsius, wind speed and direction, visibility, cloud coverage and ceiling up to 12,000 feet, freezing rain, thunderstorm (lightning), and altimeter setting; all required for safe aviation operations.

An Instrument Landing System (ILS) is installed on Runway 27. An ILS provides both horizontal and vertical guidance to approaching aircraft. The horizontal position of the aircraft, which is relative to the runway centerline, is provided by the localizer. The localizer is located 1,000 feet from the departure end of Runway 27 (east of Runway 9 end). It provides horizontal positioning information to aircraft and is used to align the aircraft with the runway centerline.

The vertical guidance is provided by the glideslope. The glideslope for Runway 27 is an Endfire Glideslope, which is an uncommonly used glideslope. The Endfire-type glideslope is used when the terrain in front of the glideslope antenna is irregular or absent. This system is a non-image glideslope because it does not rely on the terrain to form the approach path. The glideslope provides a three-degree slope relative to the runway end elevation.

Runway 9 is equipped with an Omni-Directional Approach Lighting System (ODALS). ODALS are sequential flashing approach lights installed to help pilots locate the airport and the runway approach from any flight direction and are commonly used for non-precision approaches.

Runway 27 is equipped with a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) for transition from instrument flying to a visual approach and landing. It allows the pilot to visually identify and align the aircraft with the runway environment once the pilot has arrived at a prescribed point on the approach. The MALSR is installed with U.S. standard configuration for the ILS operation of a Category I approach.

The VOR, ILS System, MALSR, ODALS (discussed in **Section 2.5.7**), and PAPIs on Runways 9 and 27 are owned and maintained by the FAA. The PAPIs on Runways 3 and 21 are owned and maintained by the Airport.

TABLE 2-9 - NAVAID SUMMARY TABLE

RKS Visual and Navigational Aids (NAVIADS)
General
UNICOM – 122.8
Rotating Beacon
Lighted Wind Cone and Segmented Circle
ASOS
VOR/DME
Runway 9/27
High Intensity Runway Lighting (HIRL)
Supplemental Wind Cone – Runway 27
PAPI (4-Box) – Both ends
ODALS – Runway 9
MALSR – Runway 27
ILS – Runway 27
Runway 3/21
Medium Intensity Runway Lighting (MIRL)
Supplemental Wind Cone – Runway 21
PAPI (2-Box) – Both ends
REIL – Both ends

2.5.7 Instrument Approach Procedures

An instrument approach procedure is a sequence of maneuvers to guide aircraft operating under Instrument Flight Rules (IFR) from the beginning of the initial approach to a runway to landing. Currently the FAA recognizes three instrument approach types; Precision, Approach with Vertical Guidance (APV), and Nonprecision. Following are the FAA definitions of these approach types:

Precision Approach - An instrument approach procedure providing course and vertical path guidance conforming International Civil Aviation Organization (ICAO) annex 10 requirements. ILS, Precision Approach Radar, and MLS are examples of precision approaches and are commonly

referred to in the context of conventional approach technologies via the use of ground based navigational aids.

Approach Procedure with Vertical Guidance (APV) - An instrument approach based on a navigation system that is not required to meet the precision approach standards of ICAO Annex 10 but provides course and glidepath deviation information. Baro-VNAV, LDA with glidepath, LNAV/VNAV, and LPV are examples of APV approaches. Guidance provided for APV approaches via GPS do not require the use of ground-based navigational aids.

Nonprecision Approach - An instrument approach based on a navigation system which provides course deviation information, but no glidepath deviation information. VOR, NDB, LNAV, and circling minima are examples of nonprecision approaches. Guidance provided for nonprecision approaches via GPS do not require the use of ground-based navigational aids.

Instrument Landing Systems (ILS) approaches are broken into three categories: CAT I, CAT II, and CAT III, based on minimum altitudes an aircraft is capable of descending. CAT I systems are the most common ILS found at airports, as CAT II and CAT III systems allow for lower minimum altitudes, and require increased airport investments. It is important to point out that use of these approaches is subject to aircraft being properly equipped and certified with properly trained aircrew.

GPS satellite based instrument approaches follow the same basic guidelines as ground based systems, with the lowest possible minimums for approaches with horizontal only guidance being 300-1. With the addition of vertical guidance through Wide Area Augmentation System (WAAS) or Ground Base Augmentation System (GBAS), the lowest minimums are generally 200- ½. The visibility can be reduced by ¼ mile with the installation of an approach lighting system.

RKS currently has one precision and four non-precision approaches. A non-precision approach only provides horizontal guidance, while a precision approach provides horizontal and vertical guidance to approaching aircraft. Runway 9 has two published approaches: a RNAV (GPS) approach and a VOR (DME) approach. Runway 27 has three published approaches: a RNAV (GPS) approach, VOR (DME) approach, and an ILS approach. Runways 3 and 21 currently do not have published approaches. **Table 2-10** details each approach at RKS, including the including the lowest minimums and decision height or minimum descent altitudes. Minimum descent altitude is associated with non-precision approaches and is the lowest altitude an aircraft can fly until the pilot sees the airport environment. If the pilot has not found the airport environment by the Missed Approach Point (MAP), a missed approach is initiated. Decision Height (DH) is associated with precision approaches and the aircraft is continually descending on final approach. When the aircraft reaches the DH, the pilot must make a decision to land or execute the missed approach procedure. The current instrument approach charts and departure procedures are included in **Appendix B**.

TABLE 2-10 – RKS INSTRUMENT APPROACHES AND MINIMUMS

Runway 9 - Approach	Lowest Minimums	Decision Height (feet-AGL)
RNAV (GPS)	6,841' – ¾ mile	200'
VOR (DME)	7,020' – ¾ mile	279'
Runway 27 - Approach	**Lowest Minimums**	**Decision Height (feet-AGL)**
RNAV (GPS)	6,864' - ½ mile	200'
VOR (DME)	7,040' - ½ mile	280'
ILS or LOC	6,964' - ½ mile	200'

Source: FAA Instrument Approach Charts

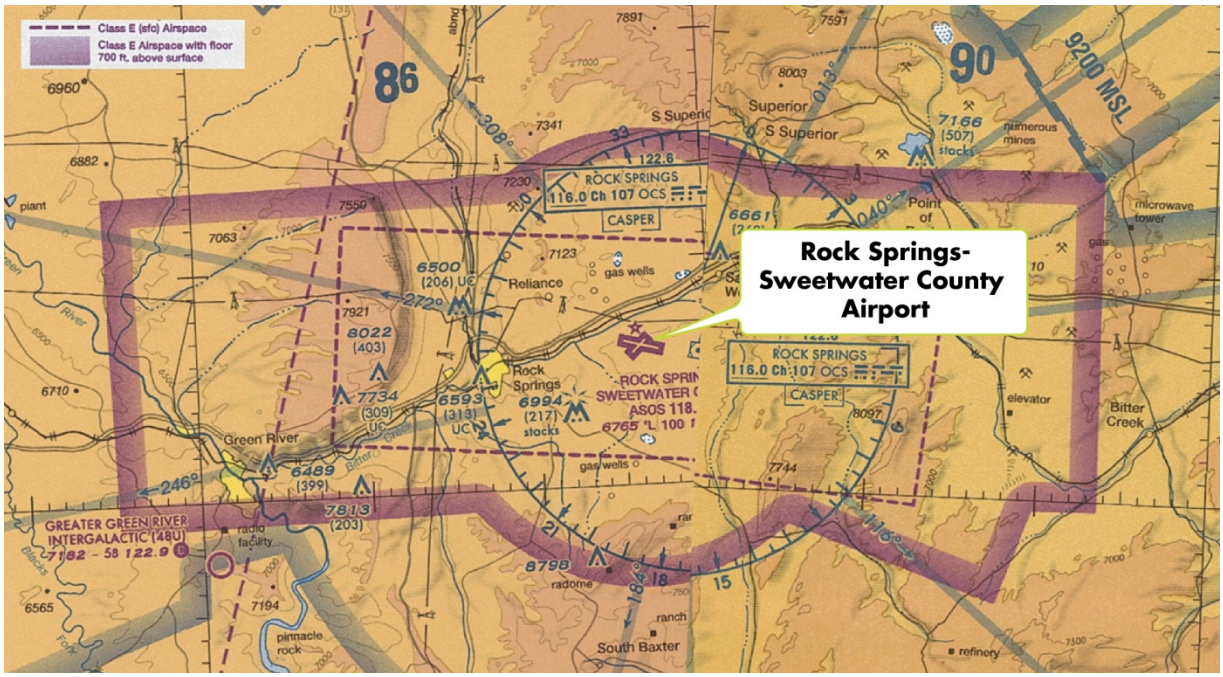
2.5.8 Airspace

RKS is in Class E Airspace, which is the least restrictive classification of controlled airspace. Controlled airspace is a portion of airspace that may be subject to air traffic control when operating under Instrument Flight Rules (IFR). There are no communication requirements to operate within Class E Airspace, but a pilot can request traffic advisory services from ATC. The airspace for RKS begins in a rectangle shape surrounding the Airport extending upward from the surface to 700 feet above the surface and then widens out at 700 feet above the surface to 18,000 feet above mean sea level, as shown in **Figure 2-7**.

RKS is situated inside a corridor of eight intersecting Victor Airways, which are imaginary "highways in the sky" connecting RKS's VOR to other ground-based navigational aids in the vicinity. IFR aircraft are controlled inside Class E airspace, while Visual Flight Rules (VFR) aircraft only receive traffic advisories. Pilots operating under VFR are not required to have a two-radio communications capability because RKS is an uncontrolled airport, meaning it does not have an air traffic control tower. IFR flights are required to file a Flight Plan and have two-way radio communication. Pilots communicate at RKS on the Common Traffic Advisory Frequency (CTAF) of 122.8 MHz.

There is no special use airspace (i.e. restricted airspace or Military Operations Areas) in the immediate vicinity. The airspace environment can be seen in the aircraft sectional chart shown in **Figure 2-7**.

FIGURE 2-7 - RKS AIRSPACE



Source: FAA Sectional Chart

2.5.9 Noise Abatement Procedures

Currently, there are no noise abatement procedures for RKS. The Airport is located far enough from the large population center, making noise less of an issue for the surrounding areas. As the population grows in Rock Springs, actions may need to be taken to ensure that future noise issues are minimized.

2.5.10 Obstructions to Air Navigation

To be completed pending obstruction survey.

2.6 Commercial Passenger Facilities

2.6.1 Passenger Service

Currently SkyWest Airlines provides passenger service for RKS, to and from Denver, Colorado operating under United Express; and Gillette, Wyoming and Salt Lake City, Utah operating under Delta Connection. The daily flight schedule for SkyWest Airlines is shown in **Table 2-11**. The aircraft used is the 30-seat Embraer 120 (Brasilia), a turboprop commuter aircraft.

TABLE 2-11 – SKYWEST AIRLINES SCHEDULE - ARRIVALS

Airline	Flight	From	Time	Days
Delta	7767	GCC	7:48 am	Daily
United	6525	DEN	10:49 am	Daily
United	5309	DEN	2:30 pm	Daily
Delta	7776	SLC	2:39 pm	Daily
Delta	7812	SLC	8:54 pm	Daily
United	6353	DEN	10:39 pm	Daily

Source: www.rockspringsairport.com; May 2012

TABLE 2-12 – SKYWEST AIRLINES SCHEDULE - DEPARTURES

Airline	Flight	From	Time	Days
United	5308	DEN	7:54 am	Daily
Delta	7767	SLC	8:03 am	Daily
United	6525	DEN	11:13 am	Daily
Delta	7776	SLC	3:03 pm	Daily
United	5309	DEN	3:17 pm	Daily
Delta	7812	GCC	9:09 pm	Daily

Source: www.rockspringsairport.com; May 2012

Additionally, Allegiant Air provides scheduled service to and from RKS. Allegiant Air is a low-cost scheduled air carrier; linking small U.S. cities to leisure destinations, providing nonstop, scheduled service from more than 70 U.S. cities and charter service through U.S., Mexico, and Canada. It was founded in 1997, in Fresno, California, and on October 15, 1999 began scheduled passenger service between Fresno and Las Vegas. In June 2001, Allegiant was restructured into a low-cost model. Allegiant currently operates a fleet of 51 McDonnell Douglas MD-80 type aircraft and one Boeing 757-200, and the company has announced that it signed a purchase agreement to acquire a total of six Boeing 757-200s.[8]

2.6.2 Terminal Building

Built in 1982, the RKS Commercial Passenger Terminal, is comprised of 25,000 square feet, and is located north of Runway 9/27, directly off of Taxiway A2. This location provides reasonable airside and landside access. Inside the terminal there are two rental car companies, passenger ticketing, SkyWest Airlines operations/office area, passenger screening, passenger hold room, baggage claim, TSA screening and offices, airport management offices, and the Aviator Café. In 2010, the Terminal bathrooms were remodeled, all Terminal light fixtures were replaced, and the Terminal was repainted.

[8] http://www.allegiantair.com/aaAboutAllegiant.php

TABLE 2-13 – TERMINAL FUNCTIONAL AREAS

Functional Area	Square Feet
Lobby/Waiting	5,000
Circulation	2,000
Restrooms	2,000
Ticket Counter	2,000
Airline Office/Operations	3,000
Baggage Claim	3,000
Food/Beverage	1,000
Rental Car	1,500
Airport Management	2,000
Building Maintenance	500
Miscellaneous (FBO)	3,000
TOTAL	**25,000**

Source: 2003 RKS Master Plan

The Terminal is currently 30-years old. The Terminal was not initially designed for TSA facilities, and is at maximum capacity for current activity.

2.6.2.1 Airline Space

The ticket counters are located just inside the main entrance, on the west side of the Terminal. There are three ticket counters, with a total of six positions available. Currently, SkyWest leases two of the ticket counters: one for United Express and the other for Delta Connection. Both United Express and Delta Connection have two check-in kiosks.

2.6.2.2 Aircraft Parking and Gates

Commercial aircraft parking is located directly south of the Terminal and can accommodate two 737 sized aircraft or up to four Embraer 120s. The Terminal has one gate and one holdroom for scheduled passenger service.

2.6.2.3 Concessions

The Terminal has one restaurant, Aviator Café, located on the east end of the Terminal building. The Café is currently not open and being remodeled, with completion expected in the late summer of 2012. The Terminal also has three vending machines, located near baggage claim on the east side of the Terminal.

2.6.2.4 Rental Car Facilities

There are two rental car companies located within the Terminal, Avis Rent-A-Car and Hertz Rent-A-Car. They are located at the northeast end of the building and their business hours correspond with the arrival and departures of the scheduled air service. Additionally, Enterprise Rent-A-Car has an on-site agreement with the Airport, with it office located in the City of Rock Springs. The rental car companies utilize the parking lot east of the Terminal. Avis has 22 pick-up

and nine drop-off parking spots, Hertz has 21 pick-up and nine drop-off parking spots, and Enterprise has five spots allocated for both pick-up and drop-off.

Avis and Hertz have Quick-Turn-Around (QTA), cleaning and fueling facilities at RKS. Avis's QTA is located east of the GA automotive parking lot, and Hertz's QTA is located east of the commercial automotive parking lot.

2.6.2.5 Passenger and Baggage Screening (TSA Facilities)

Since 9/11, security measures took effect authorizing the creation of the TSA to perform all passenger and checked bag screening. TSA passenger and baggage screening is located in the center of the Terminal. Passenger screening facilities consist of a Ceia Walk Through Metal Detector (WTMD), a L3 X-Ray Conveyor Belt, and a Itemizer Trace Detection machine. Based on the current volume of commercial airline traffic, the quantity and configuration of the TSA equipment is sufficient.

2.6.2.6 Curb Front

The curb front is located on the north side of the Terminal building. The curb front is only used for passenger drop off and pickup. There is no curbside check-in due to low passenger volumes.

2.7 Airport Certification and Regulations

RKS is a Federal Aviation Regulation (FAR) Part 139 certificated non-hub primary commercial service airport. As a non-hub primary commercial service airport, RKS accounts for less than 0.05% of all U.S. passenger enplanements, but more than 10,000 annual U.S. passenger enplanements.

The airport has been assigned the basic airport service level of primary commercial service due to the type of service RKS currently provides, and is anticipated to provide, to its community. This service levels also represents funding categories for the distribution of Federal aid to the airport sponsor. As a FAR Part 139 certificated airport, the airport is required to follow FAR Part 139, *Certification of Airport*, as well as Transportation Security Regulations (TSR) Title 59, Part 1542, Airport Security.

2.7.1 FAR Part 139

FAR Part 139, *Certification of Airports*, requires the FAA to issue airport operating certificates to commercial service airports to ensure safety in air transportation. Part 139 sets forth regulations for certification and operation of land airports that serve any scheduled or unscheduled passenger operations of an air carrier having aircraft with a seating capacity of more than nine passengers. To obtain a certificate, an airport must agree to these certain operational and safety standard requirements. These requirements vary depending on the size of the airport and the type of flights available. As a commercial service airport, RKS must meet the requirements for Part 139 as listed in **Table 2-14**.

TABLE 2-14 - PART 139 CONTENTS

Subpart D – Operations	
139.301	Records
139.303	Personnel
139.305	Paved areas
139.307	Unpaved areas
139.309	Safety areas
139.311	Marking, signs, and lighting
139.313	Snow and ice control
139.315	Aircraft rescue and firefighting: Index determination
139.317	Aircraft rescue and firefighting: Equipment and agents
139.319	Aircraft rescue and firefighting: Operational requirements
139.321	Handling and storing of hazardous substances and materials
139.323	Traffic and wind direction indicators
139.325	Airport emergency plan
139.327	Self-inspection program
139.329	Pedestrian and Ground vehicles
139.331	Obstructions
139.333	Protection of NAVAIDs
139.335	Public protection
139.337	Wildlife hazard management
139.339	Airport condition reporting
139.341	Identifying, marking, and reporting construction and other unserviceable areas
139.343	Noncomplying conditions

Source: FAR Part 139, Certification of Airports

2.7.1.1 Part 139: Aircraft Rescue and Firefighting (ARFF)

A major item of Part 139 pertains to ARFF. Part 139 dictates the number of personnel, type, and quantity of firefighting equipment required based on the largest commercial aircraft with five or more flights daily. An Index is assigned to each airport based on a combination of air carrier aircraft lengths, as shown in **Table 2-15**. This Index determines the required number and type of ARFF vehicles, and the amount of water and Aqueous Film Forming Foam (AFFF) needed at the Airport.

TABLE 2-15 - ARFF INDEX DETERMINATION

ARFF Index	Aircraft Length (Feet)
A	<90
B	>90≤126
C	>126≤159
D	>159≤200
E	>200

Source: FAR Part 139, Certification of Airports

Currently RKS has an ARFF Index B. This is based on the Embraer 120 (Brasilia) operated by SkyWest Airlines. The Brasilia is 65 feet 7.5 inches long and operates at RKS an average of twelve times per day.

Part 139 requires Index B airports to have the following[9]:

Either of the following:

1) One vehicle carrying at least 500 pounds of sodium-based dry chemical, halon 1211, or clean agent and 1,500 gallons of water and commensurate quantity of AFFF for foam production.

OR two vehicles

1) One vehicle carrying the extinguishing agents as specified in paragraphs 1) and 2) for ARFF Index A requirements; and
2) One vehicle carrying an amount of water and commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons.

RKS meets the requirements of Index B with an Oshkosh ARFF Vehicle, having a capacity of 1,500 gallons of water, 210 gallons of Aqueous Film Forming Foam (AFFF), and 450 pounds of dry chemical.

Additionally, according to RKS's 2012 Wyoming Airports Capital Improvement Plan (WACIP), RKS will be purchasing an additional ARFF vehicle in 2014.

RKS's Airport Manager and its seven airport operations personnel are all certified firefighters and provide coverage during commercial flights. Airport personnel provide immediate response with the staff and equipment required, and are backed-up by the Rock Springs Fire Department.

[9] Federal Aviation Regulations (FARs) Part 139, Certification of Airports

The location of the ARFF building provides for the FAR Part 139 response time of three minutes to the mid-point of the furthest runway, which is approximately the intersection of Runway 3/21 and Runway 9/27.

2.7.2 TSR Part 1542

The Code of Federal Regulations (CFR), Title 49, Part 1542, *Airport Security*, shown in **Table 2-16**, defines the security measures required at a commercial airport to be in compliance with the Aviation and Transportation Security Act (ATSA) of 2001. Before September 11th, the majority of airport security was the responsibility of the airport, aside from passenger and baggage screening, which was the responsibility of the individual airlines.

Since the inception of ATSA and Part 1542, the responsibilities of airport security have shifted. The TSA, a division of the Department of Homeland Security formed under Part 1542, is responsible for the screening process of passengers and baggage, but all other aspects of airport security remain the responsibility of the airport. Additionally, under Part 1542 the airport assumes supplementary responsibilities: developing an Airport Security Program (ASP), appointing an Airport Security Coordinator (ASC) who enforces the ASP, managing access control, and accessing the system and credentials required for aviation employees. [10] However, TSA continues to migrate into many other areas of airport security that have traditionally been the responsibility of the airport, including: bomb detection and assessment officers, K-9 officers, and visible intermodal protection and response teams. To ensure compliance, every airport must keep in mind that TSA regulations are subject to frequent change and should review the most up-to-date Part 1542 of the CFR for the current airport security regulations. Presently, RKS is in compliance with all the applicable security regulations and requirements.

TABLE 2-16 - PART 1542 CONTENTS

Part 1542 – Airport Security	
1542.201	Security of secured area
1542.203	Security of air operations area (AOA)
1542.205	Security of security identification display area (SIDA)
1542.207	Access control systems
1542.209	Fingerprint-based criminal history records checks (CHRC)
1542.211	Identification systems
1542.213	Training
1542.215	Law enforcement support
1542.217	Law enforcement personnel
1542.219	Supplementing law enforcement personnel
1542.221	Records of law enforcement response

Source: Part 1542, Airport Security

[10] Code of Federal Regulations (CFR), Title 49, Part 1542, *Airport Security*

TSA has four to five personnel on staff for each scheduled commercial flight. Additionally, one Law Enforcement Officer (LEO) is onsite during the scheduled commercial flights. The LEO is onsite one hour before the first commercial flight's scheduled arrival until 30 minutes after the last flights departure.

2.8 General Aviation Facilities

The GA facilities are comprised of six executive hangars, six t-hangars, an FBO facility/hangar, ARFF facilities, a large hangar, and an aviation fuel farm.

2.8.1 Fixed Based Operator (FBO)

RKS has one full-service FBO, located northeast of the Terminal building, shown in **Figure 2-8**. The FBO is owned and operated by the Airport, and currently sells 100 Low Lead (AvGas) and Jet A fuel. They also provide other services such as oxygen service, aircraft parking on the apron, tiedowns, aircraft rental, aircraft maintenance, pilot lounge, and pilot supplies. The FBO also has one courtesy car for the GA pilots to use. The FBO is open seven days a week from 5:00am to 10:00pm. The FBO offers after hour service with a callout fee.

2.8.2 Airport Hangars

The hangars at RKS, shown in **Figure 2-8** on the following page, include six t-hangar units, four box hangars, and one FBO hangar. RKS has approximately 95,000 square feet of conventional and t-hangar space to accommodate based aircraft. Currently there are no vacant hangars. The condition of the facilities range from new (good) to poor. Some hangars are being used beyond their useful life and will require replacement.

FIGURE 2-8- RKS AIRPORT BUILDINGS

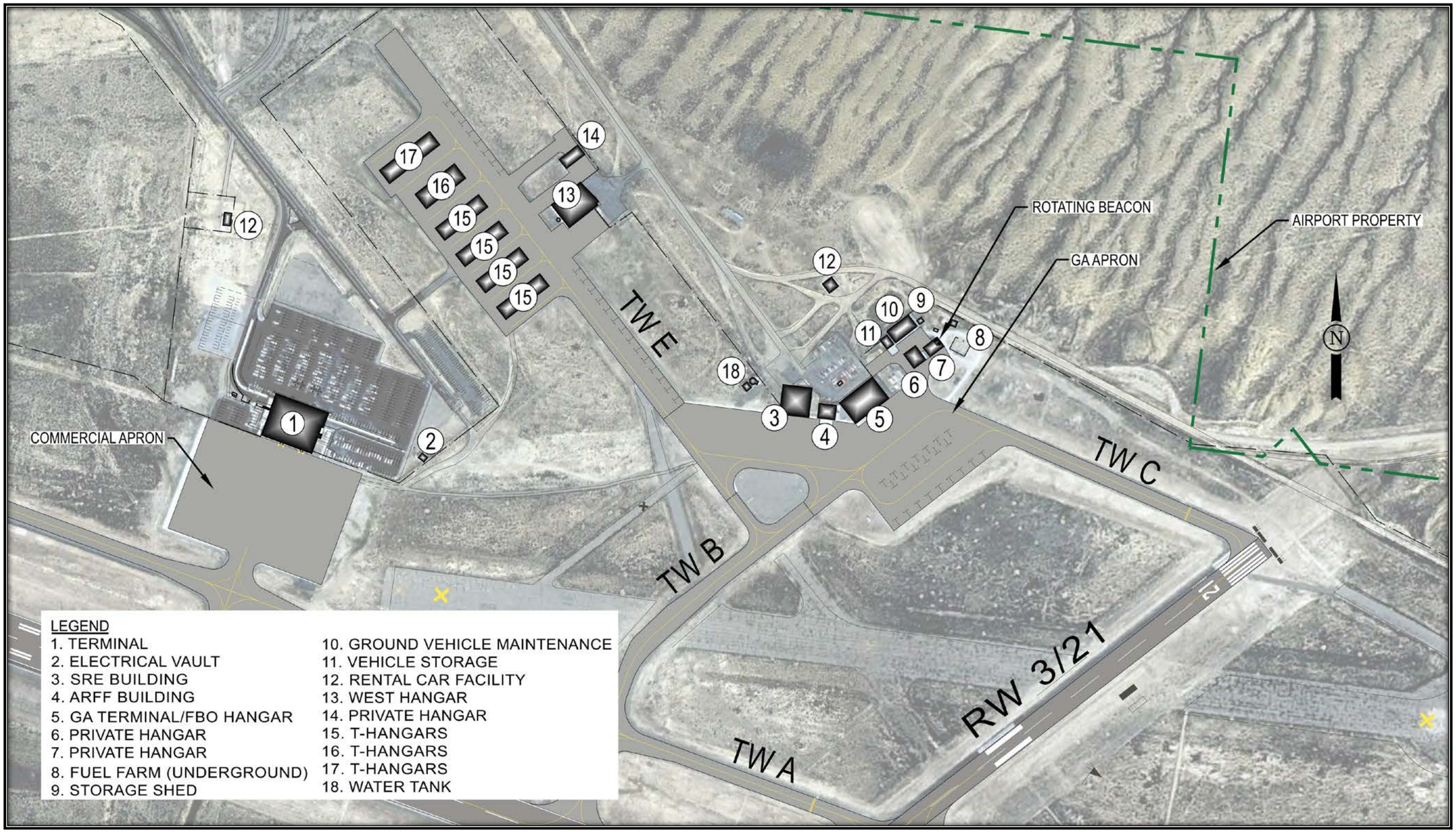


Image: Jviation, Inc.

2.8.3 Based and Transient Aircraft Parking Tiedowns

There are 44 tiedown positions for GA aircraft on either Taxiway E or the GA Apron. Two of the tiedowns are for based aircraft; the remaining 42 are for transient aircraft. The Airport manages all tiedowns.

2.9 Airport Equipment

The Airport owns and operates several pieces of large equipment to perform maintenance, snow removal, and Aircraft Rescue and Fire Fighting (ARFF).

2.9.1 ARFF Equipment

ARFF is a specialized category of firefighting response, evacuation, and possible rescue of passengers resulting from an aircraft accident. Since RKS is a Federal Aviation Regulations (FAR) Part 139 airport, it is required to provide ARFF service during air carrier operations. Current air carrier operations at RKS, require the airport to meet ARFF Index B. RKS currently has one ARFF vehicle. It is a 1999 Oshkosh with a capacity of 1,500 gallons of water, 210 gallons of AFFF, and 450 pounds of dry chemical.

FIGURE 2-9 - RKS'S ARFF VEHICLE

Source: Jviation, Inc.

2.9.2 Snow Removal Equipment (SRE)

Under FAR Part 139, airport SRE requirements are also regulated. RKS is required to have enough equipment to clear one inch of falling snow per hour from the primary runway, taxiway(s), and commercial service apron. RKS's SRE includes a 2006 Unimog Snow Plow with 14-foot blade attachment, a 1989 Oshkosh Snow Plow with 22-foot blade attachment, a John Deere loader with

front-end bucket and 12-foot blade attachments, and a Western Star Snow Plow with 20-foot blade and 20-foot Sweepster broom attachments, and a John Deere tractor.

The SRE is adequate to meet FAR Part 139 standards for snow removal. The SRE is operated by the airport's operations staff. SRE and other maintenance equipment are stored in the Airport's Maintenance Building, located southeast of the ARFF Building.

2.10 Support Facilities

2.10.1 Aircraft Rescue and Firefighting (ARFF) Station

The ARFF Station was constructed in 1998 and is located adjacent to the FBO Hangar on the GA Apron. It is a 50 by 50 foot building with two bays, one of which holds the ARFF vehicle. The ARFF Station is in excellent condition.

FIGURE 2-10 - RKS'S ARFF STATION

Source: Jviation, Inc.

2.10.2 SRE/Maintenance Building

The SRE/Maintenance Building was constructed at the same time as the ARFF Station in 2009, and it is located directly southeast of the ARFF Station. It is a 100 by 100 foot building with six parking bays which house all the SRE and maintenance equipment for the Airport. It also has several offices, restrooms, and a kitchen for Airport staff to use during snow removal operations. It is also in excellent condition.

FIGURE 2-11 - RKS'S SRE/MAINTENANCE BUILDING

Source: Jviation, Inc.

2.10.3 FAA Facilities

As mentioned in **Section 2.5.8**, RKS does not have an Air Traffic Control Tower (ATCT) and there are no FAA offices at the airport. The FAA does lease land for facilities such as the ILS antennas and MALSR.

2.10.4 Aircraft Fuel Storage

Aircraft typically use two fuel types: AvGas or Jet A. AvGas, or Aviation Gasoline, is used by aircraft with reciprocating piston engines. The most common grade of AvGas is 100 Low Lead (LL). Jet A is a kerosene type fuel, which contains no lead, and is used for powering jet and turbo-prop engine aircraft.

The Airport has four underground storage tanks (USTs), two 12,500 gallon Jet A tanks and two 12,500 gallon AvGas tanks. Both Jet A and AvGas are stored in the FBO service area, along the access road. Moreover, the Airport leases two fuel trucks for dispensing aviation fuel: one holds 750 gallons for dispensing AvGas and the other holds 2,200 gallons for dispensing Jet A.

2.11 Access Circulation and Parking

Adequate vehicular access to facilities at RKS, as well as parking facilities, is necessary for effective operation. The following summarizes the existing road and parking conditions at RKS.

2.11.1 Airport Access Road Network

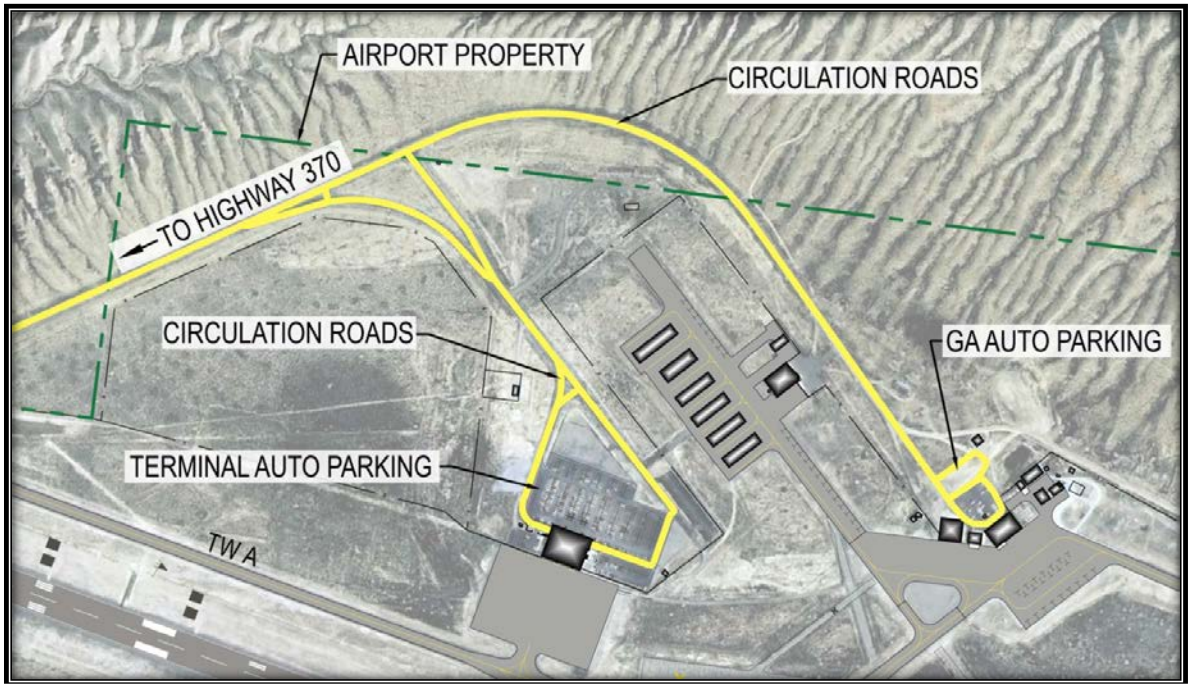
The primary access to the Airport is from Interstate Highway 80 to Wyoming Highway 370. The access roads leading to the Airport are sufficient to accommodate daily traffic, even during peak periods. There are three landside signs for RKS on Baxter Road, an Airport sign with an arrow, a

sign with an airplane symbol and an arrow, and an airport welcome sign. These signs are in excellent condition.[11]

2.11.2 Circulation Roads

The main access road for RKS is a two-lane asphalt road that comes off of Highway 370 and forms loop road around the terminal area parking and to the GA parking. The circulation roads for RKS are shown in **Figure 2-12**.

FIGURE 2-12 - CIRCULATION ROADS



Source: Jviation, Inc.

2.11.3 Auto Parking

RKS has 374 free long-term and short-term paved parking spaces for commercial passengers, located north of the Terminal building. Additionally, there are 19 parking spaces for employees and 10 handicap parking spaces on the west side of the Terminal.

For the GA, there are 54 paved public parking spaces located in front (west) of the FBO Hangar. The GA parking lot is heavily used and is currently over capacity. An unpaved overflow lot has been recently constructed to help meet the demand. Additionally, smaller private parking lots are available to other private operators and hangar owners. The parking lots are shown in **Figure 2-12**.

[11] RKS – WYDOT Design Standards Inventory, December 11, 2008.

2.12 METEOROLOGICAL DATA

2.12.1 Wind Coverage

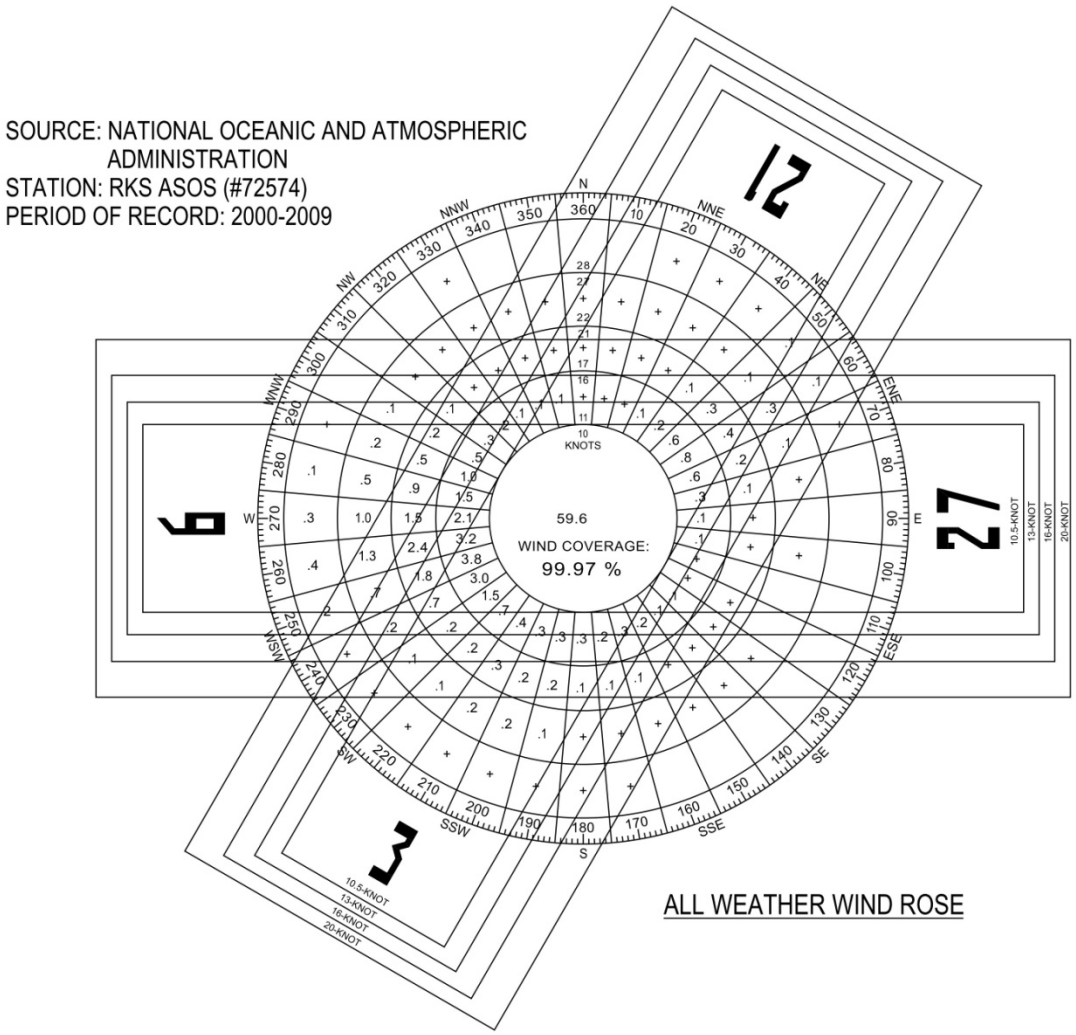
Wind conditions are particularly important for runway use at an airport. Each aircraft has an acceptable crosswind component for landing and takeoff. The crosswind component is a calculation of the speed of wind at a right angle to the runway centerline. When the acceptable crosswind component of an aircraft is exceeded the aircraft must divert to another runway or a different airport.

Per the FAA AC 150/5300-13*, Airport Design*, when the current runway(s) provide less than 95% wind coverage for aircraft that use the airport on a regular basis, a crosswind(s) runway should be considered. Wind speeds of 10.5, 13, 16, and 20 knots were analyzed to determine allowable crosswind components at RKS. A 10.5 knot crosswind component is used for small aircraft weighing 12,500 pounds or less, and a crosswind component of 20 knots is used for an aircraft the size of a Boeing 767.

Weather observations taken from 2000 to 2009 at RKS were obtained from the National Climatic Data Center (NCDC). This data indicates that during "All Weather" conditions, the combined runway orientations of Runways 9/27 and 3/21 provide 98.01% coverage for a 10.5 knot crosswind, 99.37% coverage for a 13 knot crosswind, 99.84% coverage for a 16 knot crosswind, and 99.97% coverage for a 20 knot crosswind. "All Weather" includes data on the winds present during all types of weather conditions. Moreover, the data collected indicates that during Instrument Flight Rules (IFR) conditions, the existing combined runway orientations provide 96.08% coverage for a 10.5 knot crosswind, 98.63% coverage for a13 knot crosswind, 99.76% coverage for a 16 knot crosswind, and 99.99% coverage for a 20 knot crosswind.

The FAA "All Weather" and IFR weather wind roses are depicted in **Figure 2-13** and **Figure 2-14** on the following pages.

FIGURE 2-13 - ALL WEATHER WIND ROSE

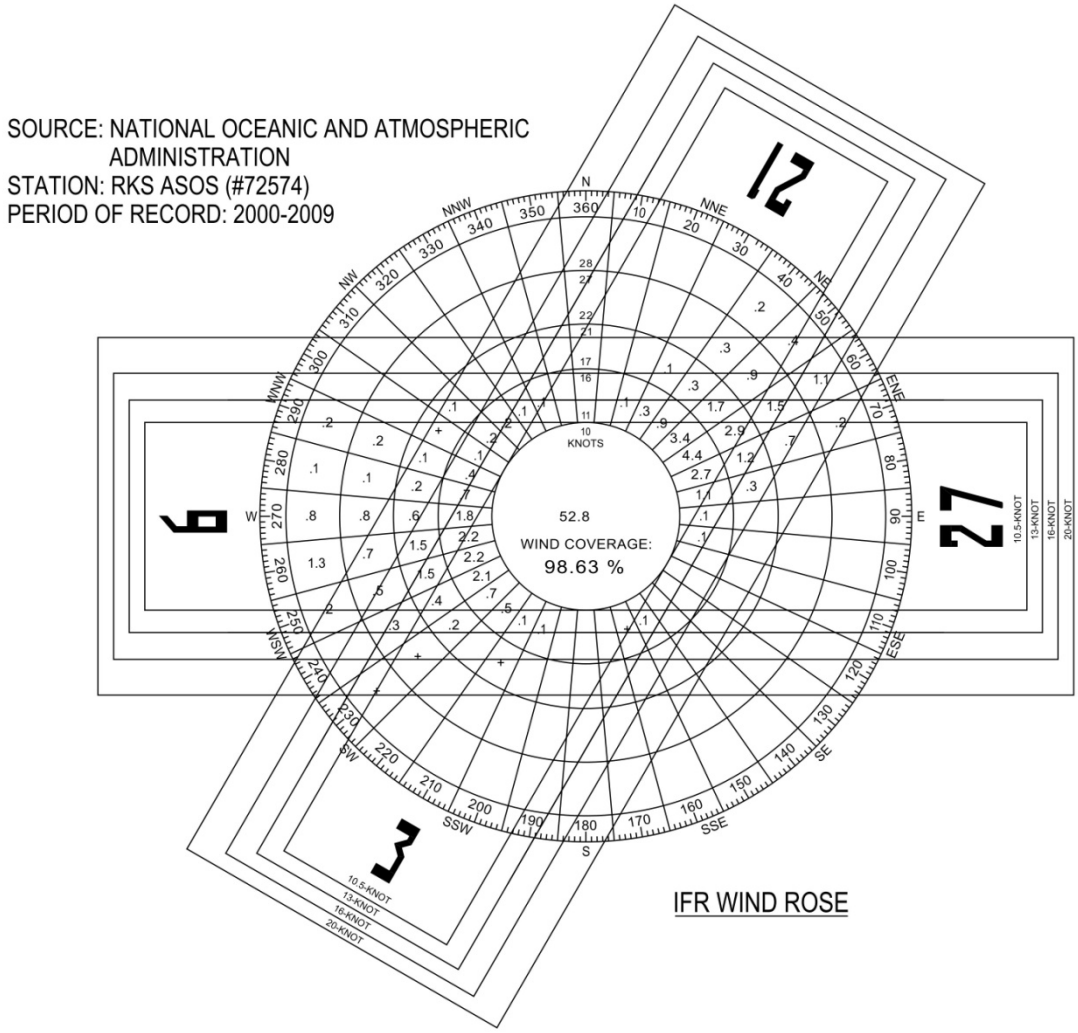


ALL WEATHER WIND ROSE

Runway Designation	20-Knot Crosswind Component	16-Knot Crosswind Component	13-Knot Crosswind Component	10.5-Knot Crosswind Component
RUNWAY 03/21	96.97%	92.35%	85.75%	78.39%
RUNWAY 9/27	99.11%	97.84%	95.79%	92.78%
COMBINED	99.97%	99.84%	99.37%	98.01%

Source: NCDC; Image: Jviation, Inc.

FIGURE 2-14 – IFR WIND ROSE



IFR WIND ROSE

Runway Designation	20-Knot Crosswind Component	16-Knot Crosswind Component	13-Knot Crosswind Component	10.5-Knot Crosswind Component
RUNWAY 03/21	96.03%	93.10%	87.24%	79.23%
RUNWAY 9/27	99.38%	97.84%	94.75%	89.49%
COMBINED	99.99%	99.76%	98.63%	96.08%

Source: NCDC; Image: Jviation, Inc.

2.12.2 Temperature

Rock Springs, Wyoming has a semi-arid climate, having cold, snowy winters and warm summers. The mean maximum temperature of the hottest month, also known as the airport reference temperature, occurs in July with a temperature of 83.8˚F. The average temperature in January is 21.4˚F and in June is 60.6˚F, as shown in **Table 2-17**.[12]

TABLE 2-17 - ROCK SPRINGS, WY TEMPERATURE SUMMARY

Temp.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Ann.
Av. Max. ˚F	30.3	33.2	43.9	53.7	63.8	74.8	83.8	81.5	70.3	56.5	40.4	29.8	55.3
Mean ˚F	21.4	24.0	33.5	41.6	50.8	60.6	68.9	66.9	56.5	44.4	30.8	21.1	43.5
Av. Min. ˚F	12.5	14.8	23.1	29.4	37.7	46.4	54.0	52.2	42.7	32.3	21.2	12.5	31.7

Source: National Weather Service, Western and Central Wyoming Weather Forecast Office, 1981-2010 Normals

2.12.3 Precipitation

May is typically the rainiest month in Rock Springs, with total precipitation averaging 8.56 inches per year. The average snowfall for the city averages 46.7 inches per year, with most of the snow fall occurring in March and April, as shown in **Table 2-18**. [13] High winds can cause hazardous blowing snow conditions even when no new snow is accumulating.

TABLE 2-18 - ROCK SPRINGS, WY PRECIPITATION SUMMARY

Precipitation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Ann.
Rain Av. (in.)	0.45	0.48	0.68	0.91	1.21	0.79	0.64	0.62	0.92	0.87	0.49	0.50	8.56
Snow Av. (in.)	6.6	6.5	7.1	6.8	1.9	0.3	0.0	0.0	1.1	4.5	5.6	6.3	46.7

Source: National Weather Service, Western and Central Wyoming Weather Forecast Office, 1981-2010 Normals

[12] http://www.crh.noaa.gov/RKS/?n=cms_climate_rocksprings_2011_summary#R
[13] http://www.crh.noaa.gov/RKS/?n=cms_climate_rocksprings_2011_summary#R

2.12.4 Instrument Meteorological Conditions (IMC)

From the information provided by National Climatic Data Center (NCDC), Instrument Meteorological Conditions (IMC) occur 2.51% of the time at RKS. IMC is defined as a period when cloud ceilings are less than 1,000 feet above ground and/or visibility is less than three miles. When IMC occurs, Instrument Flight Rules (IFR) must be followed. A review of the data indicates that periods of IMC mostly occur between October and March, as displayed in **Table 2-19**.

TABLE 2-19 - PERCENT IMC OCCURS PER MONTH (2000-2009)

Month	IMC%
January	3.83%
February	4.05%
March	4.30%
April	2.96%
May	2.08%
June	0.51%
July	0.19%
August	0.10%
September	0.77%
October	3.30%
November	2.67%
December	4.99%
Annual	**2.51%**

Source: NCDC; Table: Jviation, Inc.

2.13 Utilities

RKS has a variety of basic utilities including electricity, water, sanitary sewer, telecommunications, and natural gas as described below.

2.13.1 Electricity

Rocky Mountain Power provides electricity for RKS.

2.13.2 Water

One limiting factor of growth for RKS is the amount of water available to the Airport, which has stymied hangar growth. Currently, there is no water service that connects the Airport to the City of Rock Springs municipal water system. Potable water is provided by the City of Rock Springs and is delivered by truck and stored in a 74,000 gallon on-site water tank, located west of the SRE/Maintenance Building, shown in **Figure 2-15**. In 2011, 67 deliveries were made which totaled 532,000 gallons of water, averaging to 5.5 loads (44,333 gallons) per month. In 2012, RKS was awarded a Wyoming Business Council grant to construct a new 300,000 gallon tank, to serve both potable and non-potable water needs. It will be constructed in the summer of 2012 and will be located northwest of the existing rental car facility, as shown in **Figure 2-15**. This grant also

includes funding for replacement of the existing water tank used for potable water. This will reduce the water delivery frequency to RKS by at least 50%.

FIGURE 2-15 – WATER TANKS AT RKS

Source: Jviation, Inc.

There have been frequent discussions to extend the City's water supply to RKS. The complexity and cost to extend the water roughly seven miles has limited this option. Although, the City and County have indicated extending the water service to the Airport is still a priority project once funding becomes available. [14]

[14] Rock Springs Master Plan 2012, Chapter 7: Transportation – Roadways, Public Transit, Air Service

2.13.3 Sanitary Sewer

RKS has three leach fields, one west of terminal, another west of the ground vehicle maintenance building, and one east of "West Hangar", as shown in **Figure 2-16**.

FIGURE 2-16 - LEACH FIELDS AT RKS

Source: Jviation, Inc.

2.13.4 Fiber Optics and Communications

Century Link provides both residential and business telephone and broadband for the area, including these services at RKS.

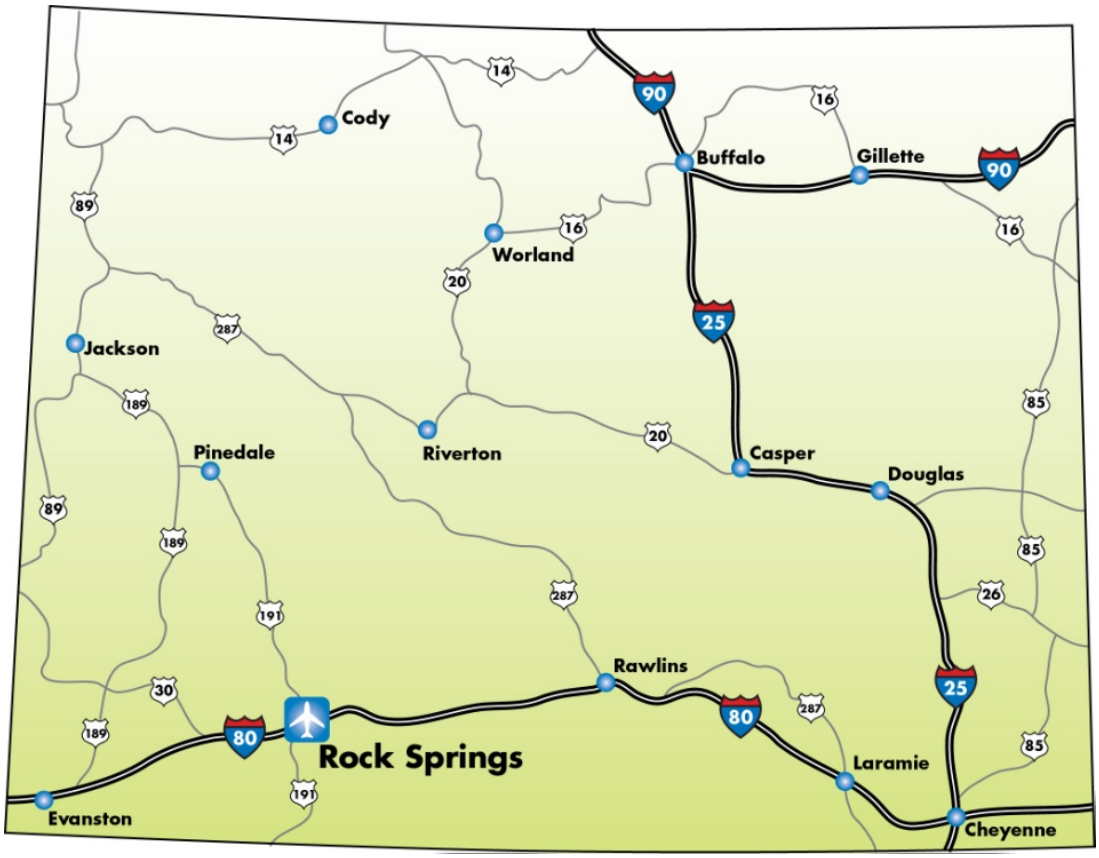
2.13.5 Natural Gas

Questar is the natural gas provider for the Rock Springs area and provides natural gas service at RKS.

2.14 REGIONAL SETTING AND LAND USE

RKS is located in southwestern Wyoming, approximately 100 miles south of Pinedale and 250 miles west of Cheyenne and seven miles east of the City of Rock Springs, as shown in **Figure 2-17**. Rock Springs, Wyoming is surrounded mostly by rangeland in all directions.

FIGURE 2-17 - RKS LOCATION MAP



Source: Jviation, Inc.

2.14.1 Airport Property

The City of Rock Springs boundary incorporates Rock Springs-Sweetwater County Airport. RKS presently owns approximately 1240.8 acres of land, which encompasses the airfield and the property surrounding the airport, as shown in **Figure 2-18**. The land is owned by the City of Rock Springs and governed by the City's rules and ordinances; however its operation is overseen by a joint power board.[15]

FIGURE 2-18 - RKS LOCATION MAP

Source: Jviation, Inc.

2.14.2 Zoning and Compatibility

According to the City of Rock Springs Planning and Zoning Commission, RKS is currently zoned as Light Industrial Zone (I-1) or Heavy Industrial Zone (I-2).[16] RKS is surrounded by either Sweetwater County zoned as Open Space (agricultural) land owned by the Rock Springs Grazing Association or land owned by Bureau of Land Management (BLM). There are no residentially zoned areas near the Airport.

[15] Rock Springs Master Plan 2012, Chapter 7: Transportation – Roadways, Public Transit, Air Service
[16]City of Rock Springs Planning and Zoning Commission. http://www.rswy.net/department/division.php?fDD=4-83

2.15 COMMUNITY SOCIOECONOMIC ANALYSIS

During the master planning process it is essential to know the social and economic health of the community that serves the airport. The foundation for development of aviation forecasts is typically centered on this information. Three socioeconomic indicators are population, employment, and income, all of which have an impact on the levels of aviation activity at an airport.

2.15.1 Population

According to the U.S. Census Bureau and the Wyoming Department of Transportation between 2000 and 2010, the City of Rock Springs has grown by approximately 23.1%. Moreover, it has grown approximately 6.6% faster than Sweetwater County as a whole, as shown in **Table 2-20.**

TABLE 2-20 - POPULATION DATA

Place	Census 2000 Population	Census 2010 Population	Change
Sweetwater County	37,613	43,806	16.5%
Rock Springs	**18,708**	**23,036**	**23.1%**
Bairoil	97	106	9.3%
Granger	146	139	-4.8%
Green River	11,808	12,515	6.0%
Superior	244	336	37.7%
Wamsutter	261	451	72.8%
Balance of Sweetwater County	6,349	7,223	13.8%

Source: State of Wyoming, Economic Analysis Division

2.15.2 Employment

School District #1 is the largest single employer in Sweetwater County, Wyoming; however, mining is the largest industry. **Table 2-21** shows the top employers in Sweetwater County.

TABLE 2-21 –SWEETWATER COUNTY'S MAJOR EMPLOYERS

Company	Employees	Product/Service
School District #1	1,042	Education
FMC Corporation	860	Mining (Trona)
Halliburton Energy Service	650	Oil & Gas
School District #2	521	Education
General Chemicals	494	Mining
Western Wyoming Community College	450	Education
Solvay Minerals	433	Mining
Bridger Coal Company	418	Mining (Coal)
Sweetwater Memorial Hospital	352	Healthcare
City of Rock Springs	323	Government
City of Green River	313	Government
Castle Rock Medical Center	200	Healthcare
Speedy Hauling	200	Oil/Gas Transportation
OCI Wyoming	198	Mining
JR Simplot	197	Manufacturing
Union Pacific Railroad	194	Transportation
Black Butte Coal Company	179	Mining
BJ Service	165	Oil & Gas
Church & Dwight	163	Manufacturing
Little America	147	Retail

Source: Rock Springs Chamber of Commerce, May 2012

The U.S. Bureau of Economic Analysis (BEA) tracks employment by category (NAICS – North American Industry Classification System) in every county in the nation. **Table 2-22** shows the latest data and numbers for Sweetwater County.

TABLE 2-22 - 2009 NAICS TOTALS FOR SWEETWATER COUNTY

		Number of establishments of employment-size class								
	Total	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Forestry, fishing, hunting, and Agriculture Support	2	2	0	0	0	0	0	0	0	0
Mining, quarrying, and oil and gas extraction	95	30	21	15	12	10	4	3	0	0
Utilities	10	3	1	1	3	0	2	0	0	0
Construction	163	118	21	14	6	4	0	0	0	0
Manufacturing	32	20	4	1	3	0	2	1	1	0
Wholesale trade	86	30	21	23	10	2	0	0	0	0
Retail trade	201	77	63	36	15	6	3	1	0	0
Transportation and warehousing	107	64	15	15	10	2	1	0	0	0
Information	16	9	1	2	3	1	0	0	0	0
Finance and insurance	56	29	16	6	5	0	0	0	0	0
Real estate and rental and leasing	86	61	13	9	2	1	0	0	0	0
Professional, scientific, and technical services	105	75	17	8	5	0	0	0	0	0
Management of companies and enterprises	6	2	1	3	0	0	0	0	0	0
Administrative and Support and Waste Mang and Remediation Srvs	45	24	9	6	4	1	1	0	0	0
Educational services	6	3	1	1	1	0	0	0	0	0
Health care and social assistance	94	41	34	11	6	1	0	1	0	0
Arts, entertainment, and recreation	15	9	2	2	1	1	0	0	0	0
Accommodation and food services	114	26	28	24	32	3	1	0	0	0
Other services (except public administration)	111	74	20	14	2	1	0	0	0	0
Industries not classified	2	2	0	0	0	0	0	0	0	0
Total	**1352**	**699**	**288**	**191**	**120**	**33**	**14**	**6**	**1**	**0**

Source: Census County Business Patterns; NAICS for Sweetwater County

2.15.3 Income

The per capita income in Sweetwater County is currently higher than the State of Wyoming and the U.S. Average.

TABLE 2-23- PER CAPITA PERSONAL INCOME COMPARISON

Place	2005	2006	2007	2008	2009	2010	2011
Sweetwater County	$36,972	$43,463	$43,962	$48,042	$43,060	$45,749	$50,150
State of Wyoming	$39,446	$43,836	$46,281	$49,104	$43,568	$44,961	$47,031[1]
U.S. Average	$35,424	$39,698	$39,392	$40,166	$38,846	$39,937	$41,663

[1] *Preliminary*

Source: U.S. Department of Commerce: Bureau of Economic Analysis

2.16 WYDOT Aeronautics: Wyoming Statewide Airport Inventory and Implementation Plan

In November 2009, the WYDOT Aeronautics published the Wyoming Statewide Airport Inventory and Implementation Plan (AI&I Plan). The AI&I Plan studied the inventory and evaluated the Wyoming Aviation System of 40 publicly owned airports, while assessing the conditions and performance-related measures of existing and future needs of each airport. The AI&I Plan defined a new classification system for the airports in Wyoming. The new system has four classifications: Commercial Service Airports, Business Airports, Intermediate Airport, and Local Airports. For this Plan, RKS is classified as a Commercial Service Airport, which is defined as an airport that serves major populations, economic centers, and areas of tourism providing a connection to national and global economies, and are designed to accommodate commercial air service and business general aviation activity consistent with user demand. **Table 2-24** is the AI&I Plan "Report Card" created for RKS, which evaluates the airport's current facilities and service objectives as a commercial service airport in Wyoming. Each airport should strive to meet the minimum objectives established by WYDOT for their category. RKS's "Report Card", shown in **Table 2-24,** illustrates the "Objectives" that RKS does not currently meet.

The AI&I Plan also advices, under the "Air Service Objectives", that RKS should:

- Evaluate results of the Salt Lake City service to determine what traffic and revenue levels are needed to restore a full complement of non-stop service.
- Evaluate the market to improve understanding of travel characteristics and special demands to better serve the energy sector.
- Continue on-going marketing in the community to increase use of RKS.

TABLE 2-24 - WYDOT AERONAUTICS AIRPORT INVENTORY AND IMPLEMENTATION PLAN RKS REPORT CARD

WYDOT Airport Inventory Report Card – Rock Springs-Sweetwater County Airport			
Facility/Service Objectives	**Objective**	**RKS**	**Objective Met?**
AIRSIDE (Primary Runway)	ARC C-II	C-III	Yes
Runway Length	8,000 Feet	10,000 Feet	Yes
Runway Width	100 Feet	150 Feet	Yes
Runway Lights	HIRL	HIRL	Yes
Pavement Strength	Dual 55,000 Pounds	Dual 110,000	Yes
Taxiway	Full Parallel, width of 35 Feet	Full Parallel, Width of 50 Feet	Yes
Taxiway Lights	MITL	MITL	Yes
Instrument Approach	Precision	Precision	Yes
Approach Lighting System	MALSR (One End)	MALSR – One End ODALS – One End	Yes
Visual Aids	PAPI or VASI Combination of REIL, MALSR, MALS, or ODALS on each end Beacon and Lighted Wind Cone	VASI – Both Ends Beacon - Yes Wind Cone – Yes Lighted Wind Cone – Yes	Yes
Wind Coverage	≥95%	99.82%	Yes
RSA	Standard RSA on all paved runways	Yes	Yes
LANDSIDE			
Weather Reporting	AWOS or ASOS	ASOS	Yes
Terminal	Terminal	Commercial - Yes General Aviation – Yes	Yes
Perimeter Fencing	Security or Wildlife	Perimeter – Yes Type – Wildlife	Yes
Hangars	100% of Based Aircraft	75%	**NO**
Lighted Hangar Areas	Lighted Hangar Areas	Yes	Yes
Paved Auto Parking	Paved Auto Parking	Yes; Number of Space = 420	Yes
SERVICES			
FBO	Suggested	No	Not an Objective
Fuel	Jet A & 100LL	Both	Yes
Ground Transportation	On-Airport Rental Car	On Airport Rental Car – Yes Taxi Service – Yes Courtesy Car - yes	Yes
Pilot Lounge and Planning Room	Pilot Lounge & Planning Room	Yes	Yes
Public Restrooms	Public Restroom – 24/7	Yes – Not 24 Hour	**NO**
Public Phone	Public Phone – 24/7	Yes	Yes
Food	Restaurant Suggested	Yes	Not an Objective
Aircraft Maintenance	Major Airframe & Powerplant	None	**NO**
Aircraft Deicing System	Deicing	Yes	Yes
Deicing Containment System	Containment System	No	**NO**
ADMINISTRATION			
Airport Master Plan	<10 Years Old	2003	Yes
Airport Layout Plan	<5 Years Old	02/2003	**NO**
Land Use Protection Plan	On Record with Aeronautics	Yes	Yes
Noise Contour Map	<10 Years Old	Unknown or None	**NO**
Pavement Management Plan	On Record with Aeronautics	Yes	Yes
Minimum Standards	On Record with Aeronautics	No	**NO**
Airport Manager	Airport Manager	Yes	Yes
Legislative Liaison	Legislation Liaison	No	**NO**
RPZ Ownership	Fee or Easement Ownership	Yes	Yes

Source: 2009 WYDOT Aeronautics Wyoming Statewide Airport Inventory and Implementation Plan

2.17 WYOMING STATEWIDE AIRPORT ECONOMIC IMPACT STUDY

In 2009, WYDOT's Aeronautics Division completed the Wyoming Statewide Airport Economic Impact Study to measure the economic impact of Wyoming's 35 public-use airports. This Study also documented the various ways air transportation is used in the State and the other benefits that airport transportation supports. Wyoming's airports serve as the base of operation for a multitude of businesses, including airlines, air cargo, flight schools, government agencies, crop dusters, and aircraft maintenance companies. Additionally, throughout Wyoming there are hundreds of businesses whose efficiency is improved and whose productivity is increased through their use of aviation.

The Study determined that Wyoming's 10 commercial service and 25 general aviation airports accounted for a total economic output of more than $1.4 billion, contributed to 14,460 jobs with an annual payroll of $375.5 million in 2008. The State of Wyoming's gross state product is estimated to be approximately $31.5 billion, meaning that more than 4% of the state gross product is attributed to Wyoming's airports.

Additionally, the Study determined that RKS's total economic output for the State of Wyoming in 2008 was approximately $33.9 million, with 265 jobs and a total payroll of $9.2 million.

Currently WYDOT's Aeronautics Division is in the process of updating the Wyoming Statewide Airport Economic Impact Study. It anticipated to be completed in 2013.

2.18 WYOMING AVIATION CAPITAL IMPROVEMENT PROGRAM (WACIP) 2012

Projects at RKS for the next five years are shown in **Table 2-25**. The WACIP is a list of all anticipated improvement projects for each public airport in Wyoming. The WACIP assists the WYDOT Aeronautics Division in planning the funding levels needed for each project at each airport, and is updated every year.

TABLE 2-25 - WYOMING AVIATION CAPITAL IMPROVEMENT PROGRAM 2012

Year	Project	State Priority Rating	Total Cost
2012	Construct Parallel Taxiway to RW 3/21, Phase II	67	$6,142,623
2012	Fire Protection Water System	51	$1,315,682
2012	Wildlife Hazard Assessment	48	$111,111
2013	Rehabilitation of RW 3/21	48	$1,052,632
2013	Seal Coat Parking Lots	34	$77,900
2014	Acquire ARFF Vehicle	45	$789,474
2015	Rehabilitation of RW 9/27, Design	52	$263,158
2016	Rehabilitation of RW 9/27, Phase 1	64	$2,105,263
2017	Rehabilitation of RW 9/27, Phase 2	64	$1,052,632
2017	Replace Beacon & Wind Indicators	46	$50,000

Source: WYDOT Aeronautics

2.19 Environmental Overview

FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, and Order 5050.4B, *National Environmental Policy Act: Implementation Instruction for Airport Actions,* address specific environmental categories that are evaluated in environmental documents through the National Environmental Policy Act (NEPA). The following section inventories the applicable environmental categories and their existence at the airport. Environmental categories found to be irrelevant to RKS or covered elsewhere in the Master Plan include Coastal Resources; Compatible Land Use; and Socioeconomic Impacts, Environmental Justice, and Children's Health and Safety Risks. In addition, agency coordination letters were sent out to the appropriate federal, state and local agencies, requesting comments or concerns with the Master Plan's recommendations.

2.19.1 Air Quality

RKS is located in Sweetwater County, which is designated by the U.S. Environmental Protection Agency as being in attainment status for all parts of the county in all criteria. The criteria includes: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter ($PM_{2.5}$ and PM_{10}), sulfur dioxide (SO_2), and lead (Pb). Sheridan County is the only county in Wyoming designated as being in non-attainment.

2.19.2 Department of Transportation Act: Section 4(f)

The Department of Transportation (DOT) Act, Section 4(f) provisions commonly govern impacts in this category; however, it was recodified and renumbered as Section 3030(c) of 49 U.S.C, which provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land from a historic site of national, state, or local significance as determined by the officials having jurisdiction thereof, unless there is no feasible and prudent alternative to the use of such land and such program, and the project includes all possible planning to minimize harm resulting from the use. This Master Plan will continue to refer to Section 4(f) as the criteria referenced.

An analysis of Section 4(f) properties in the vicinity of RKS was completed as depicted in **Table 2-26**. The nearest Section 4(f) property to the airport is the Prairie Park, located approximately 5.7 miles to the west.

TABLE 2-26 - DOT SECTION 4(F) PROPERTIES

Property	Address	Type	Distance to Airport
Prairie Park	2200 Westview Ave., Rock Springs	City Park	5.7 miles
Veterans Park	100 N. Side Belt Loop, Rock Springs	City Park	5.8 miles
Garnet Park	230 Garnet St., Rock Springs	City Park	6.0 miles
Rock Springs High School	1375 James Dr., Rock Springs	School	6.3 miles
Independence High School	1300 Lowell Ave., Rock Springs	School	6.5 miles
Lincoln Elementary	915 Edgar St., Rock Springs	School	6.6 miles
BeRKSnt Park	718 Connecticut Ave., Rock Spring	City Park	6.6 miles
Booker Park	Wright Street, Rock Springs	City Park	6.7 miles
Palisades Parks	1330 Palisades Way, Rock Springs	City Park	6.7 miles
Pearl Park	272 Pearl St., Rock Springs	City Park	6.7 miles
O Farrell Park	534 Pearl St., Rock Springs	City Park	6.8 miles
Wardell Park	4 Wardell Ct., Rock Springs	City Park	6.8 miles
Washington Park	608 D St., Rock Springs	City Park	6.8 miles
Railroad Park	448 S. Main St., Rock Springs	City Park	6.9 miles
RC Raceway	295 Community Park Dr., Rock Springs	City Park	7.0 miles
Bunning Park	J and Evans St., Rock Springs	City Park	7.1 miles
Greenbelt Walkway	204 Elk St., Rock Springs	City Park	7.1 miles
Holy Spirit Catholic School	210 A St., Rock Springs	School	7.1 miles
Walnut Elementary School	1115 Walnut, Rock Springs	School	7.1 miles
Century West Park	1002 Evergreen Way, Rock Springs	City Park	7.4 miles
Dog Park	850 West Center, Rock Springs	City Park	7.4 miles
Paintball Park	300 Community Park Dr., Rock Springs	City Park	7.4 miles
Stevens Park	810 W. St., Rock Springs	City Park	7.4 miles
Blairtown Park	900 1sr Ave. West, Rock Springs	City Park	7.5 miles
Desert View Elementary School	1900 Desert Blvd., Rock Springs	School	7.5 miles
Western WY Community College	2500 College Dr., Rock Springs	School	7.8 miles
Centennial Park	1722 Emigrant Dr., Rock Springs	City Park	7.9 miles
Arthur Park	3522 College Dr., Rock Springs	City Park	8.1 miles
Springland Pool	1020 Jackson St., Rock Springs	City Park	8.5 miles
Rock Springs Jr. High School	3500 Foothill Blvd., Rock Springs	School	8.6 miles
Paul J. Wataha Complex	North of Rock Springs	City Park	8.9 miles
White Mountain Golf Course	North of Rock Springs	Golf Course	8.9 miles
Northpark Elementary School	1 N. Park Dr., Rock Springs	School	9.7 miles
Sage Elementary School	903 Summit Dr., Rock Springs	School	10.2 miles

Source: City of Rock Springs (http://www.rswy.net/egov/apps/locations/facilities.egov) and Google Earth, 2012

2.19.3 Farmlands

The Farmland Protection Policy Act (FPPA) regulates federal actions with the potential to convert important farmland to non-agricultural uses. Important farmland includes all pasturelands, croplands, and forests considered to be prime, unique, or of statewide or locally important lands.

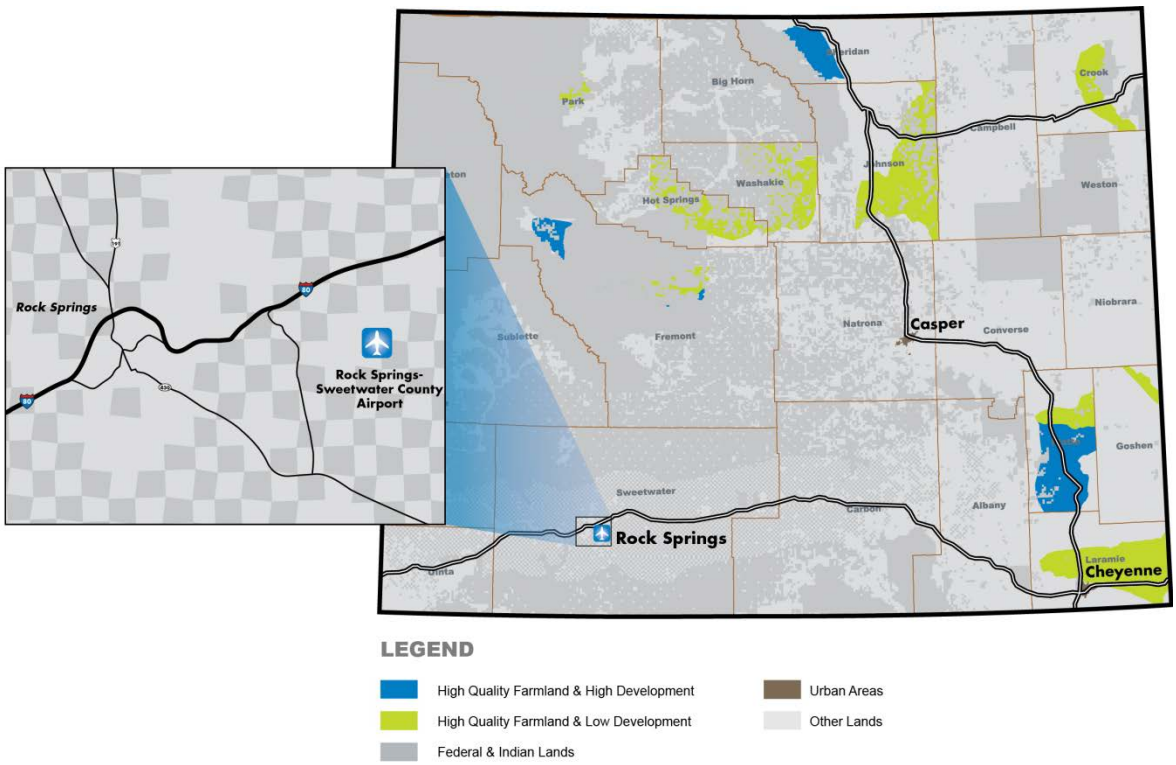
"Prime" farmland can be defined as "land having the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimal use of fuel, fertilizer, pesticides, or products." "Unique" farmland can be defined as "land

that is used for producing high-value food and fiber crops with a special combination of soil quality, location, growing season, and moisture necessary to produce high quality crops or high yields of them economically." Finally, farmland considered being of statewide and local importance is defined as "land that has been designated as 'important' by either a state government (State Secretary of Agriculture or higher office) or by county commissioners or an equivalent elected body." The State Conservationist representing the Natural Resource Conservation Service (NRCS) must agree with the designation.

Land on and surrounding the airport has been mapped by the American Farmland Trust (Trust), as depicted in **Figure 2-19.** The Trust defined "high-quality farmland by combining the U.S. Department of Agriculture's (USDA) "prime farmland" designation (land most suitable for producing food, feed, forage, fiber and oilseed crops) with the Trust's unique farmland definition (land used to grow vegetables, grapes and horticultural crops, including fruits, nuts and berries, that have unique soil and climatic requirements.)"

RKS is located in an area designated as "Other" and "Federal and Indian Lands". Neither designation displays the characteristics of high quality farmland.

FIGURE 2-19 - FARMLAND MAP



Source: Jviation, Inc., and American Farmland Trust, www.farmland.org, 2012

2.19.4 Fish, Wildlife, and Plants

Requirements have been set forth by The Endangered Species Act[17], The Sikes Act[18], The Fish and Wildlife Coordination Act[19], The Fish and Wildlife Conservation Act[20], and the Migratory Bird Treaty Act[21], for the protection of fish, wildlife, and plants of local and national significance.

Sweetwater County has several species listed by the US Fish and Wildlife Service (USFWS) as being threatened or endangered as depicted in **Table 2-27**. The USFWS also lists one National Wildlife Refuge within Sweetwater County.

TABLE 2-27 - SWEETWATER COUNTY THREATENED AND ENDANGERED SPECIES

Species	Scientific Name	Status
Birds		
Greater Sage-Grouse	Centrocercus urophasianus	Candidate
Yellow-Billed Cuckoo	Coccyzus Americanus	Candidate
Fishes		
Bonytail Chub	Gila Elegans	Endangered
Colorado Pikeminnow	Ptychocheilus Lucius	Endangered
Humpback Chub	Gila Cypha	Endangered
Razorback Sucker	Xyrauchen Texanus	Endangered
Flowering Plants		
Blowout Penstemon	Penstemon Haydenii	Endangered
Ute Ladies'-Tresses	Spiranthes Diluvialis	Threatened
Mammals		
Black-Footed Ferret	Mustela Nigripes	Endangered
National Wildlife Refuge		
Seedskadee National Wildlife Refuge		

Source: U.S. Fish and Wildlife Services, Federal Endangered, Threatened, Candidate Species, Sweetwater County, WY, 2012

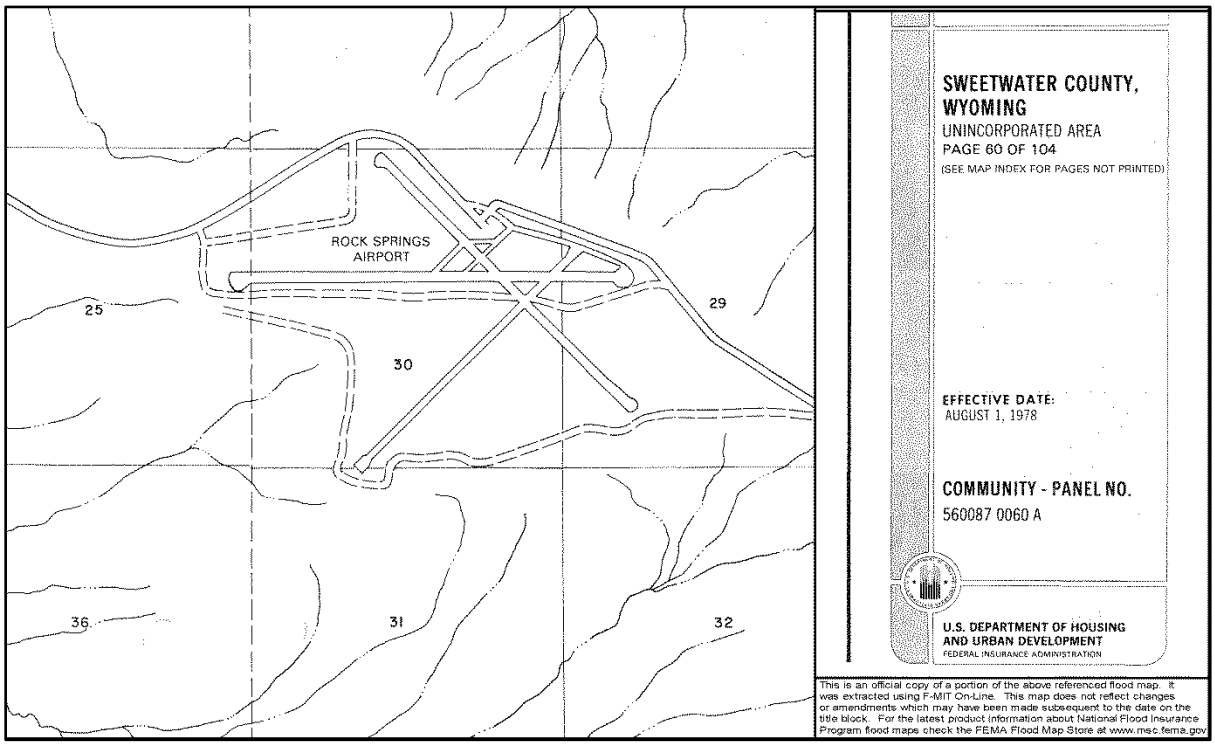
2.19.5 Floodplains

Executive Order 11988, *Floodplain Management*[22] directs federal agencies to "avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative".

An examination of the Flood Insurance Rate Maps (FIRM) for Sweetwater County shows that the area surrounding the Airport, as depicted in **Figure 2-20**, does not contain any areas designated as being within a flood hazard.

[17] Endangered Species Act of 1973, U.S. Congress, Public Law 93-205, 16 U.S.C §1531-1544
[18] Sikes Act, Amendments of 1974, U.S. Congress, Public Law 93-452
[19] Fish and Wildlife Coordination Act of 1958, U.S. Congress, Public Law 85-624, 16 U.S.C §661-666c
[20] Fish and Wildlife Conservation Act of 1980, U.S. Congress, Public Law 96-366, 16 U.S.C §2901-2912
[21] Migratory Bird Treaty Act of 1981, 16 U.S.C §703-712
[22] Executive Order 11988, Floodplain Management, 1977

FIGURE 2-20 - FLOOD INSURANCE RATE MAP



Source: Federal Emergency Management Agency, Flood Insurance Rate Map, Map Number 560087-0060A, 1978

2.19.6 Hazardous Materials, Pollution Prevention, and Solid Waste

The Resource Conservation and Recovery Act (RCRA)[23], Comprehensive Environmental Response, Compensations, and Liability Act (CERCLA)[24], Superfund Amendments and Reauthorization Act (Superfund)[25], and the Community Environmental Response Facilitation Act (CERFA)[26] are the four predominant laws regulating actions related to the use, storage, transportation, or disposal of hazardous materials, chemicals, substances, and wastes. Federal actions that pertain to the funding or approval of airport projects require the analysis of the potential for environmental impacts per the regulating laws. Furthermore, property listed or considered for the National Priority List (NPL) should be evaluated in relation to the Airport's location.

[23] U.S. Code, 1976, Resource Conservation and Recovery Act, 42 USC, §6901
[24] U.S. Code 1980, Comprehensive Environmental Response, Compensation and Liability Act, 42 USC, §9601-9628
[25] U.S. Code 1986, Superfund Amendments and Reauthorization Act, 42 USC
[26] U.S. Code 1992, Community Environmental Response Facilitation Act, Public Law 102-426

One site on Airport property, Continental Express[27], was found listed with the EPA as a facility that generates, transports, and treats, stores, or disposes of hazardous waste. The facility is active and reporting to the EPA. Additionally, no NPL properties exist within Sweetwater County[28].

2.19.7 Historical, Architectural, Archaeological, and Cultural Resources

The National Historic Preservation Act[29] and the Archaeological and Historical Preservation Act[30] regulate the preservation of historical, architectural, archaeological and cultural resources. Federal actions and undertakings are required to evaluate the impact on these resources.

The National Register of Historic Places lists 12 properties in Rock Springs as shown in **Table 2-28**. The nearest properties to the airport are located in the City of Rock Springs, approximately six miles to the west.

TABLE 2-28 - NRHP LISTED PROPERTIES

Property Names	Address	Added to Registry	Distance to Airport
City Hall	4th and B Sts., Rock Springs	1980	6 miles
Downtown Rock Springs Historic District	K, 4th, C, 2nd, A and 5th Sts, Rock Springs	1994	6 miles
Dug Springs Station Site	Address Restricted	1977	50 miles
First National Bank Security Building	502 S. Main St., Rock Springs	1980	6 miles
Gras House	616 W. Elias, Rock Springs	1986	6 miles
Laclede Station Ruin	Address Restricted	1978	6 miles
Our Lady Sorrows Catholic Church	A at Broadway, Rock Springs	1997	6 miles
Point of Rocks Stage Station	Off I-80, Rock Springs	1970	19 miles
Rock Springs Elks' Lodge No. 624	307 C St., Rock Springs	1993	6 miles
Slovenski Dom	513 Bridger Ave., Rock Springs	1997	6 miles
Taliaferro House	106 Cedar St., Rock Springs	1998	6 miles
Wardell Court Historic Residential District	Wardell Crt., jct. with D. St., Rock Springs	1997	6 miles

Source: National Register of Historic Places, Sweetwater County, 2012

2.19.8 Light Emissions and Visual Impacts

Federal regulations do not specifically regulate airport light emissions; however, the FAA does consider airport light emissions on communities and properties in the vicinity of the airport. A significant portion of light emissions at airports are a result of safety and security equipment and facilities. RKS has eight primary sources of light including:

- Airport Beacon: rotating light used to locate the airport.

[27] Environmental Protection Agency, MyEnvironment http://www.epa.gov/myenv/MyMap.html, 2012
[28] Environmental Protection Agency, Wyoming Site Locator http://www.epa.gov/region8/superfund/wy/index.html, 2012
[29] U.S. Code, 1966, National Historic Preservation Act of 1966, Public Law 89-665
[30] U.S. Code, 1974, Archaeological and Historical Preservation Act of 1974, 16 USC 469

- Taxiway Lighting: lights outlining the taxiways and classified by the intensity or brightness the lights are capable of producing.

- Medium Intensity Runway Lighting (MIRL) on Runway 03/21 and High Intensity Runway Lighting (HIRL) on Runway 09/27: lights outlining the runway and classified by the intensity or brightness the lights are capable of producing.

- Runway End Intensity Lights (REIL) on Runway 03/21: two synchronized flashing lights located one on each corner of the runway landing threshold.

- Precision Approach Path Indicator (PAPI): row of lights that provide visual glide slope guidance in non-precision approaches.

- Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) on Runway 27: combination of threshold lamps, steady burning light bars and flashers, that provide visual information to pilots on runway alignment, height perception, role guidance, and horizontal references.

- Omnidirectional Approach Lighting System on Runway 9: sequence of five flashing lights off the runway end that provide visual guidance to pilots for runway alignment.

- Other sources of light can include parking lot lights, ramp/apron lights, building lights, and passenger/airport vehicle lights and aircraft lights.

All eight sources of light aid in the safety of operations at the airport and produce an insignificant amount of light on the areas outside the immediate airport property.

2.19.9 Natural Resources and Energy Supply

Executive Order 13123, *Greening the Government through Efficient Energy Management*, supports the expansion and use of renewable energy within facilities and activities. It also requires federal agencies to reduce the use of petroleum, total energy use and associated air emissions, and water consumption in facilities. In addition, the FAA encourages the development of facilities that demonstrate high standards of design including principles of sustainability. To satisfy the requirements set forth by NEPA, the FAA must evaluate the proponent's effort in conserving resources, pollution prevention, minimization on aesthetic effects, and addressing public sensitivity to these concerns.

The FAA must also evaluate projects for significant impacts on energy supply and natural resources. Typical actions that have the potential to cause impacts on natural resources and energy supply include: airside/landside expansion; land acquisition for aviation-related use, new or moved access roadways, remote parking facilities and rental car lots; significant changes in air traffic and airfield operations; and significant construction activity.

The airports effects on natural resources and energy supply are primarily related to the amount of energy and resources required for aircraft, ground support vehicles, airport and airfield lighting, hangar buildings, and motor vehicles. RKS has very few airport-owned vehicles and facilities to contribute to the use of natural resources and energy supply.

2.19.10 Noise

Aircraft noise and noise surrounding airports are two of the most notorious issues related to the environment at airports. The FAA examines actions and development that may change runway configurations, airport/aircraft operation and/or movements, aircraft types, and flight patterns, all of which could ultimately alter the noise impacts on the communities in the vicinity of the airport.

RKS does not currently have a published noise abatement procedure plan; however, Sweetwater County has developed an Airport Influence Area Overlay District (AO). The AO maintains land use compatibility in the areas influenced by airport operations. As such, sensitive land uses are not located or approved in the vicinity of RKS.

Noise contours have been generated for the current and future conditions during this Master Plan and are discussed in this report.

2.19.11 Water Quality

The Clean Water Act[31] provides the federal government the "authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, location with regard to an aquifer or sensitive ecological area such as a wetland area, and regulate other issues concerning water quality".

The City of Rock Springs has wastewater collection systems to ensure water quality. As discussed in **Section 2.13.2**, the water is then trucked to the airport from the City. As such, the airport is not responsible for maintaining water quality; however they do ensure Wyoming Department of Environmental Quality (DEQ) requirements are met.

2.19.12 Wetlands

Executive Order 11990, Protection of Wetlands, defines wetlands as "those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction." Federal agencies are required to minimize the destruction, loss, or degradation of wetlands.

An examination of the National Wetlands Inventory depicts that no wetlands exist on or near airport property.

[31] U.S. Code, 1977 The Clean Water Act, 33 U.S.C. §1251-1387

2.19.13 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968, as amended[32], describes those river segments designated as, or eligible to be included in, the Wild and Scenic Rivers System. Impacts should be avoided or minimized to the extent possible when the rivers or river segments that fall under this Act may be affected by a proposed action. In addition, the President's 1979 *Environmental Message Directive* on Wild and Scenic Rivers[33], directs Federal agencies to avoid or mitigate adverse effects on rivers identified in the Nationwide Rivers Inventory as having potential for designation under the Wild and Scenic Rivers Act.

Wyoming has two rivers nationally designated as Wild and Scenic Rivers, the Snake River Headwaters and the Yellowstone River (Clark Fork). The Snake River Headwaters is approximately 150 miles to the northwest and the Yellowstone River is approximately 220 miles to the north of the airport.

2.20 Airport User Surveys

To further assess the adequacy of the airport facilities and desired improvements, surveys were sent to local aircraft owners and pilots, corporate businesses, the car rental companies at RKS, and SkyWest Airlines. Examples of the surveys are located in **Appendix C**.

2.20.1 Local Aircraft Owner and Pilot Surveys

A total of 15 local aircraft owner and pilot surveys were returned, resulting in an overall response rate of 37.5%. A majority of the respondents stated the airport is extremely important, "essential", to the local community and businesses. From the returned surveys, the respondents overwhelmingly indicated the desire for improved FBO services, including a mechanic on the field, and FBO hangar improvements. The survey also asked the respondents to specify the most essential facilities and capabilities of the airport. All of the respondents completed this section. The respondents most frequently indicated that aircraft fueling, GA terminal (FBO), tiedowns/hangars, fire and rescue, and instrument landing system as the most essential facilities at the Airport. The least essential were indicated as tourism, flight instruction, and a restaurant. Many respondents also indicated the need for more water or a water system at the Airport, the current limited water supply limits hangar growth and other improvements on the airfield.

Respondents were asked to rate the airport's facilities and capabilities from "1" to "10", with "1" being poor and "10" being excellent. **Table 2-29** shows the average rating and mode for each category. Additionally, respondents were asked to indicate which category should have the highest priority. The most commonly specified categories were hangar and hangar repair (20%); FBO services, facility, and hangar improvements (20%); and improvements to the water supply (20%).

[32] U.S. Code, The Wild and Scenic Rivers Act of 1968, 16 USC 1271-1287, 1977
[33] Office of Environmental Policy, 1979, Policy Guidelines for Wild and Scenic Rivers, 1980

TABLE 2-29 – AIRCRAFT OWNER AND PILOT RATINGS OF AIRPORT FACILITIES

Category	Average Score*	Mode (Most common number indicated)*
Runway Orientation	10	10
Runway Length	10	10
Condition of Pavement	9	10
Instrument Approaches	10	10
Visual Aids	9.5	10
Navigational Aids	9	10
Hangar Space	8	10
Hangar Availability	8	10
Hangar/Pad Lease Rates	8	10
FBO Services	7	10
Unicom Services	7	4
Apron Space	9.5	10

Source: Jviation, Inc.

**Rating Scale: 1 is "Poor", 10 is "Excellent"*

2.20.2 Corporate Aircraft Business Surveys

Businesses that have used RKS for their corporate aircraft within the past year were sent surveys, only six of the 26 surveys were returned. **Table 2-30** shows the average rating for each category. From the returned surveys, the respondents overwhelmingly indicated the desire for improved FBO services and hangar improvements, and pavement maintenance/resurfacing of Runway 3/21. The respondents also indicated the need for a hangar to store aircraft overnight during winter weather conditions.

TABLE 2-30 - BUSINESS USER RATINGS OF AIRPORT FACILITIES

Category	Average Score*	Mode (Most common number indicated)*
Runway Orientation	8.5	8
Runway Length	8.5	8
Condition of Pavement	7	7
Instrument Approaches	9	9
Visual Aids	8	8
Navigational Aids	9	10
Hangar Space	1	1
Hangar Availability	1	1
Hangar/Pad Lease Rates	7	N/A
FBO Services	7	1
Unicom Services	4	1
Apron Space	4.5	N/A
Safety of Apron	5	N/A

Source: Jviation, Inc.

**Rating Scale: 1 is "Poor", 10 is "Excellent"*

2.20.3 SkyWest Airlines

SkyWest Airlines was also sent a survey to assess the adequacy of RKS and its facilities. The returned survey stated that the majority of the Terminal and its facilities were adequate for their use. SkyWest did request an additional holdroom and suggested that the "interior could use a refresh". They also proposed for any Terminal improvements that the layout should allow for two separate airlines and ground handlers, current layout only allows for one.

2.20.4 Rental Cars

The three rental car companies that are based at RKS, Avis, Enterprise, and Hertz, were sent surveys to assess the adequacy of the facilities according their needs. The two of the three companies, Hertz and Avis, returned their surveys. The returned surveys stated that the majority of the Terminal and its facilities were adequate for their use. However, one company did assert that customers get confused on the return signs for the Ready Return parking lot.

3.0 AVIATION ACTIVITY FORECASTS

Aviation activity forecasts are essential for airport master plans because they project future demand activity levels. Per FAA Advisory Circular (AC) 150/5070-6B: *Airport Master Plans*, aviation forecasts should be realistic, based upon the latest available data, reflect current airport conditions, and provide adequate justification for airport planning and development. Additionally, forecasts must be prepared for short- (0-5 year), medium- (6-10 year), and long-term (10-20 year) periods, and specify the existing and future critical aircraft. In partnership with Jviation, Forecast, Inc. was retained to prepare the 20-year enplanement forecast and the market service analysis of RKS.

While forecasting is essential for a successful master plan, it only serves as an approximations of future activity based on historical data and present conditions. There are many unforeseen factors that can influence forecasts, both positively and negatively, as time progresses. For this reason, forecasts and the projects that they justify should be revisited periodically.

3.1 DATA SOURCES

The following sources of data and guidance were used in the development of the aviation activity forecasts.

3.1.1 FAA Terminal Area Forecast (TAF)[34]

The TAF is updated annually and is used by the FAA to determine budget and staffing needs of the FAA, as well as being a resource for airport operators, the general public and other interested parties. Due to limited staff resources, the FAA cannot forecast in as great of detail at small airports as they can at large airports.

3.1.2 FAA Advisory Circular 150/5070-7

This document was consulted to ensure that the methodology employed and forecasts produced were in compliance with FAA requirements for development of airport master plans.

3.1.3 FAA Form 5010-1

This document provided historical operational and enplanement data for RKS as filed with/by the FAA, and was utilized primarily to cross-reference other data sources.

[34] http://aspm.faa.gov/main/taf.asp

3.1.4 Airport Cooperative Research Program Report: Counting Aircraft Operations at Non-Towered Airports[35]

This 2007 report was prepared for the Airport Cooperative Research Program, a research arm of the Transportation Research Board of the National Academies. Methodologies used across the country to estimate operations at airports without an air traffic control tower are detailed in this report.

3.1.5 ACRP Report: Airport Aviation Activity Forecasting[36]

This 2007 report was also prepared by the ACRP. It discusses methods and practices for aviation activity forecasting.

3.1.6 Forecasting Aviation Activity by Airport[37]

Written by GRA, Inc. under contract to the FAA, this 2001 document provides guidance to individuals who prepare airport activity forecasts as well as those who review the forecasts.

3.1.7 FAA Aerospace Forecasts, Fiscal Years 2011-2032[38]

The FAA annually prepares this document to explain the current economic and aviation outlook, as well as macro level forecasts of aviation activity and the U.S. aircraft fleet.

3.1.8 FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems[39]

This order was last updated in 2000 and is used to set criteria for managing the National Plan of Integrated Airport Systems (NPIAS). According to Section 3.2(c) of this report:

> When forecast data of aircraft operations is not available, a satisfactory procedure is to forecast based aircraft using the statewide growth rate from the TAF and to develop activity statistics by estimating annual operations per based aircraft. A general guideline is 250 operations per based aircraft for rural general aviation airports with little itinerant traffic, 350 operations per based aircraft for busier general aviation airports with more itinerant traffic, and 450 operations per based aircraft for busy reliever airports. In unusual circumstances, such as a busy reliever airport with a large number of itinerant operations, the number of operations per based aircraft may be as high as 750 operations per based aircraft. An effort should be made to refine such estimates by comparing them to activity levels at similar airports or by conducting an activity survey.

[35] http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_004.pdf
[36] http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_002.pdf
[37] http://www.faa.gov/data_research/aviation_data_statistics/index.cfm?print=go
[38] http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2012-2032
[39] http://www.faa.gov/airports/resources/publications/orders/media/planning_5090_3C.pdf

As the order was written in 2000, it may not reflect current General Aviation (GA) aircraft utilization due to aviation security and usage changes following 9/11, current fuel prices, economic conditions, and other factors that affect aircraft usage.

3.1.9 FAA Advisory Circular 150/5070-7B, *Airport Master Plans*[40]

This AC explains the steps required for the development of a master plan, including the preparation of aviation activity forecasts and what elements should be forecasted.

3.1.10 Woods & Poole Economics[41]

Historical and forecast socioeconomic data for Sweetwater County was obtained from Woods & Poole Economics of Washington, DC. Use of this data source is recommended by the FAA in the document "Forecasting Aviation Activity by Airports."

3.1.11 Local Data Sources

Other sources of data, such as city and county comprehensive plans and economic development information was obtained and researched to understand local economic issues.

3.1.12 Federal and State Data Sources

Additional information was obtained from the State of Wyoming and the U.S. Department of Commerce, Bureau of Economic Analysis to support data needs as necessary and described throughout this section.

3.1.13 Diio Mi: Market Intelligence for the Aviation Industry

This software was used for the purposes of extracting historical flights schedules and passenger market and market sizes reported to the U.S. Department of Transportation by the airline industry on forms DB1B and T-100. The primary focuses of Diio Mi include:

- Worldwide schedule data, both historical and future, updated weekly
- U.S. Department of Transportation (DOT) traffic, fare, load factor, financial and on-time performance data
- US Based outlook of revenue and traffic data based on existing and historical market conditions
- Worldwide airline fleet data
- Demographics data and tools

[40] http://www.faa.gov/documentLibrary/media/advisory_circular/150-5070-6B/150_5070_6b_chg1.pdf
[41] http://www.woodsandpoole.com/

- Route forecasting tools

3.1.14 Airline Reporting Corporation

Airline Reporting Corporation was utilized in preparing this document to review passenger catchment areas as well as passenger retention for the RKS market. Airline Reporting Corporation Market Locator is a web-based data analysis tool representing the U.S. consumer air passenger market that is designed to help marketers and planners make informed strategic and tactical decisions that optimize market spending. Through a combination of the geographic location of the airline ticket purchaser, flight itinerary (e.g. origin, destination, marketing carrier) and other value-added information (e.g. premium vs. non-premium, U.S. Census), Market Locator provides unique and unprecedented insight into U.S. air passenger purchase and travel behavior.

3.2 Forecasting Aviation Activity Measures and Metrics

The forecasting parameters are determined by the level and type of aviation activity expected at RKS. As a commercial service airport, the forecast focus for RKS is on commercial passenger (e.g. passenger enplanements) as well as GA (e.g. aircraft operations and based aircraft) activity levels. The forecasts must also take into account demographic and economic activity, because demand for aviation is primarily a function of these. The data sources for these metrics are from the FAA TAF, and Woods & Poole, Inc. socioeconomic data.

3.2.1 Commercial Aviation

Commercial aviation consists of all scheduled and unscheduled air service, and is measured by passenger enplanements. The scheduled air service at RKS is provided by SkyWest Airlines, who offers six daily round trip flights from Rock Springs to Gillette, Wyoming; Salt Lake City, Utah; and Denver, Colorado on an Embraer 120 aircraft.

3.2.1.1 Passenger Enplanements

At an airport served by commercial air carriers, an important activity measurement is the number of passenger enplanements. A passenger enplanement is the act of a passenger boarding a plane that is departing RKS. A deplanement is the opposite, when a passenger exits an airplane arriving at RKS. At most airports, including RKS, enplanements and deplanements are equal since most passengers have round trip itineraries. For planning purposes, only enplanements are considered when forecasting. Enplanements are important for forecasting at a commercial service airport because they help determine the size of the terminal and the number of gates needed.

3.2.2 General Aviation Overview

Forecasting metrics of GA activity normally consist of aircraft operations and the number of based aircraft.

3.2.2.1 Aircraft Operations

Generally, the most important activity forecast for airfield planning is the level and type of aviation demand generated at the airport, which is measured by aircraft operations. An aircraft operation is defined as either a take-off or a landing of an aircraft. This activity identifies the critical aircraft and how adequate the airfield serves this and similar aircraft. It is by this demand that the runway and taxiway requirements are defined.

Since RKS is a non-controlled airport, not serviced by an Air Traffic Control Tower (ATCT), it is more difficult to obtain an exact count of the airport's current aircraft operations. The existing counts for RKS were derived from the FAA TAF.

3.2.2.2 Based Aircraft

Based aircraft forecasts identify the amount of aircraft that are stored at RKS. This data is used to calculate the need for specific types of hangars and aircraft parking aprons. Airport management records were used as the baseline for this forecasting and indicate that 48 aircraft are currently based at RKS.

3.2.3 Demographic and Economic Factors

The demand for aviation is largely a function of demographic and economic activity, given there is a causal relationship. When preparing forecasts, planners should consider socioeconomic data, demographics, disposable income, and geographic attributes. Socioeconomic data was collected from Woods & Poole Economics, an independent firm that specializes in long-term economic and demographic projections. Woods & Poole has a database for every county in the United States, with forecasts through 2040, using more than 900 variables.

According to Woods & Poole, the Western region, consisting of the Southwest, Rocky Mountain (including Wyoming), and Far West regions, will experience the most growth of any region in the nation for the next 30 years. The population in the Western region is forecast to increase by 44.2 million people between 2010 and 2040. By the year 2040, 36% of all Americans are expected to reside in the West; this is up from 24% in 1970 and 33% in 2008. It is also expected to generate 31.0 million jobs from 2010 to 2040, with a projected total U.S. job gain of 38%. Moreover, Woods & Poole predicts that the population of Sweetwater County, Wyoming, specifically, will grow between 0.64% and 0.68% annually through 2040.[42]

[42] Woods & Poole Economics. Sweetwater County, Wyoming: 2012 Data Pamphlet.

3.3 National Aviation Outlook

3.3.1 FAA Forecasts[43]

The FAA prepares a national aviation forecast each year. This forecast attempts to project commercial and GA activity levels so that the FAA can use the data to determine funding needs for various sections of the FAA, such as Air Traffic Control. The current forecast document is for Fiscal Years 2012-2032.

For the commercial air industry, the recent recession has slowed near-term growth, but the long-term forecast remains encouraging. Since 2000, the commercial air industry has endured several major events, to include September 11, skyrocketing fuel prices, debt restructuring in the U.S. and Europe, and a global recession. To manage this extreme instability, airlines have had to streamline their business models by lowering operating costs, eliminating unprofitable routes, grounding older, less fuel efficient aircraft, and introducing separate charges for services that once were traditionally bundled with the price of a ticket. As a result, the industry managed a profit for a second consecutive year in 2011.

The FAA predicts that the overall system capacity will remain flat in 2012, but predicts growth for the commercial air carrier market over the long-term due to future growth of the U.S. and world economies. In the domestic commercial carrier market, the mainline carrier capacity is projected to decline by 0.8% and the regional carriers are expected to decline by 0.5% in 2012. In 2013, the domestic commercial market is expected to increase with the mainline carriers growing at 1.6% and the regional carriers growing at 0.8%. The overall domestic (mainline and regional) capacity is predicted to grow by an average of 2.7% annually each year through 2032. Enplanements are forecasted to decline by 0.1% in 2012, but are expected to rebound and increase by 1.7% in 2013, with an annual average growth rate of 2.4% through 2032. The domestic enplanements are predicted to grow by an average of 2.6% for mainline carriers and 2.4% for regional carriers annually through 2032.

The following is an excerpt from the *FAA Aerospace Forecast, Fiscal Year 2012-2032*, and explains FAA's expectation for the future of commercial carrier operations.

> As the economy recovers from the most serious economic downturn and slow recovery in recent history, aviation will continue to grow over the long run. The 2012 FAA forecast now calls for one billion passengers in 2024, three years later than projected last year. Growth over the next five years will be moderate, with a return to historic levels of growth only attainable in the long term. This delayed trajectory represents the downward adjustments of the overall economy, here in the U.S. and abroad, and the aviation sector's responses. One of the many factors influencing the delayed recovery is the uncertainty that surrounds the U.S. and European economies. The latter, primarily those belonging to the Euro area, have been hit hard by the pressure from bond

[43] FAA Aerospace Forecast Fiscal Years 2012-2032.
http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2012-2032

markets for fiscal austerity. Combined with the slow pace of these economies, debt restructuring pulled the European economy into recession in early 2012. This has not helped the pace of U.S. economic growth given the importance of its trade with Europe. Despite this and the ambiguity surrounding its own fiscal imbalances, the U.S. economy has managed to avoid a double dip recession and trudges along the path of slow recovery.[44]

For GA, the FAA believes that demand for business jet aircraft is recovering from the recent recession. The FAA forecasts large growth for business aviation demand over the long-term due to higher corporate profits and the growth in the worldwide GDP. The FAA predicts that GA aircraft used for business proposes will increase faster than those used for personal or recreational use. The active GA fleet is projected to grow by an average of 0.6% each year through 2032. The more expensive and sophisticated turbine-powered fleet is projected to grow by 2.9%, with the turbine jet fleet growing at 4.0% annually through 2032. However, the number of GA piston-powered aircraft is forecasted to decrease from 159,007 in 2010 to 151,685 in 2023, and to increase to 155,395 in 2032. This results in an annual average decline rate of 0.1% for piston-powered aircraft from 2010 to 2032, with single-engine aircraft to decline at an annual rate of 0.1% and multi-engine aircraft declining at 0.5% each year. The number of GA hours flown is anticipated to increase by 1.7% yearly through 2032, mostly as a result of the increase in the turbine-powered and jet fleet.

3.4 Review of Existing Forecasts

Several existing forecasts for RKS were examined. Each of the existing forecasts examined is discussed in the following text.

3.4.1 2003 Master Plan Forecasts

The 2003 Airport Master Plan Update forecasted operations and based aircraft, as shown in **Table 3-1**.

TABLE 3-1 - 2003 AIRPORT MASTER PLAN FORECAST

	2002	2006	2011	2021
Operations	19,490	22,890	26,580	33,050
Based Aircraft	47	52	57	67

Source: 2003 Airport Master Plan Update

Additionally, the 2003 Master Plan Update for RKS developed the enplanement forecast through an air service analysis. It is based on the potential enplanement demand on the forecasted growth of the overall economy for the State of Wyoming. It should be noted that during the time that the 2003 Master Plan was prepared, RKS only had commercial air service to Denver on the Beech 1900 (19 passenger seat) aircraft, and did not have flights to Salt Lake City or Gillette. The 2003 Master Plan stated that RKS was losing passengers because many people were driving to Salt Lake City for flights to destinations in the west and northwest. **Table 3-2** shows the potential range of

[44] FAA Aerospace Forecast Fiscal Years 2012-2032.
http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2012-2032

enplanement counts for 2002 if Salt Lake City was added as a destination, if different sized aircraft were used, and whether another gate was added.

TABLE 3-2 - 2003 MASTER PLAN ENPLANEMENT FORECAST FOR 2002

	One Gateway	Two Gateways
Low Forecast (19 seat aircraft)	11,000	18,000
Mid Forecast (30 seat aircraft)	15,500	27,500
High Forecast (regional jets)	31,000	50,000

Source: 2003 RKS Master Plan

3.4.2 FAA Terminal Area Forecast

The FAA prepares a TAF for each airport in the NPIAS annually. It identifies all airports in the United States that are considered significant to the national aviation infrastructure network. The latest TAF for RKS was published 2012, and is presented in **Table 3-3**. The TAF currently forecasts that airports the size of RKS will have little or no growth. However, these forecasts are not always site specific, and traditionally the FAA uses a conservative approach when site specific data cannot be obtained.

TABLE 3-3 - FAA TAF FORECAST FOR RKS

	2012	2017	2022	2027	2032
TOTAL ENPLANEMENTS	**26,780**	**29,771**	**33,096**	**36,792**	**40,901**
ITINERANT OPERATIONS					
Air Taxi and Commuter	2,048	2,048	2,048	2,048	2,048
GA	9,849	9,849	9,849	9,849	9,849
Military	18	18	18	18	18
Total Itinerant	11,915	11,915	11,915	11,915	11,915
LOCAL OPERATIONS					
GA	2,160	2,160	2,160	2,160	2,160
Military	0	0	0	0	0
Total Local GA	2,160	2,160	2,160	2,160	2,160
TOTAL OPERATIONS	**14,075**	**14,075**	**14,075**	**14,075**	**14,075**
Based Aircraft	42	42	42	42	42

Source: 2009 FAA Terminal Area Forecast

3.4.3 WYDOT Aviation Forecast

3.4.3.1 WYDOT Statewide Aviation Forecast Update (2006)

In 2006, Wyoming Department of Transportation (WYDOT) Division of Aeronautics (Aeronautics) completed their WYDOT Statewide Aviation Forecast Update. This study was conducted to provide WYDOT Aeronautics with updated forecasts for the 35 public-use airports in Wyoming. **Table 3-4** shows the forecasts for RKS as part of this study. The Study also stated that energy development in and near Rock Springs, Wyoming has the potential to create a higher rate of growth than currently projected.

TABLE 3-4 - WYDOT STATEWIDE AVIATION FORECAST UPDATE FOR RKS

Type	2014		2024		2004-2024 CAGR	
	Low	High	Low	High	Low	High
Enplanements	11,320	14,898	10,321	17,870	-0.77%	2.00%
Operations	15,907	17,490	16,223	19,771	0.32%	1.32%
Based Aircraft	43	53	43	62	0.00%	1.73%

Source: WYDOT Statewide Aviation Forecast Update (2006)

3.4.3.2 Wyoming Statewide Airport Inventory and Implementation Plan (2007)

As discussed in **Section 2.16**, the WYDOT Aeronautics published the Wyoming Statewide Airport Inventory and Implementation Plan (AI&I Plan). The AI&I Plan studied the inventory and evaluated the Wyoming Aviation System of 40 publicly owned airports. In this Plan, a forecast was created for commercial and GA activity from the years 2007 to 2027. High and low forecasts were prepared using the compound annual growth rates (CAGR). **Table 3-5** shows the growth rates for the State of Wyoming, while **Table 3-6** shows the forecast and growth rates projected for RKS. These forecasts utilized a variety of methods that will be explained further in **Section 3.5**. The WYDOT generated forecasts for RKS indicate that enplanements, operations, and based aircraft are projected to grow at a similar rate as the statewide forecast.

TABLE 3-5 - WYDOT AI&I PLAN STATEWIDE FORECASTS

Type	2007-2027 CAGR	
	Low	High
Enplanements	0.38%	2.00%
Operations	0.12%	1.54%
Based Aircraft	0.09%	1.92%

Source: WYDOT AI&I Plan

TABLE 3-6 - WYDOT AI&I PLAN RKS FORECASTS

Type	2012		2017		2027		2007-2027 CAGR	
	Low	High	Low	High	Low	High	Low	High
Enplanements	20,965	24,059	20,170	26,563	18,670	32,380	-0.77%	2.00%
Operations	17,291	18,170	17,569	19,401	18,140	22,120	0.32%	1.32%
Based Aircraft	50	52	50	57	52	68	0.00%	1.73%

Source: WYDOT AI&I Plan

3.5 FORECASTING METHODOLOGIES

There are several types of methodologies that can be used when developing aviation forecasts. Each forecast methodology must show short- (5 years), medium- (10 years), and long-term (beyond 10 years) periods, while keeping in mind that a forecast prepared through the use of mathematical relationships must ultimately withstand the test of rationality/judgment. The different methodologies are briefly described below.

3.5.1 Time Series Analysis

A Time Series Analysis, also known as a Trend or Linear Analysis, uses historic patterns of activity and projects this trend into the future. The time series analysis is a regression analysis with time as the independent variable. The linear extrapolation uses the least squares method to fit a straight line between the historical points and projects that line into the future. This type of forecasting is widely used and is highly valuable because it is relatively simple to apply. However, its limitation is that it simply uses past historical data, and variables that are not present in past data, such as change in fuel prices and the economic downturn, are not considered in the result.

3.5.2 Regression Analysis

Regression Analysis is a statistical technique that ties aviation demand (dependent variable), such as operations, to economic measures (independent variables), such as population and income. The independent variable is considered the explanatory variable because it "explains" the projected estimated value. The explanatory power of this approach is measured by the R^2 statistic (called the correlation coefficient or the coefficient of determination). An R^2 helps determine if there is a correlation between the dependent and the independent variables; R^2 of 0 means there is no statistical relationship between changes of the variable, while a R^2 of 1.0 means there is a very strong statistical relationship. Regression Analysis should be restricted to relatively simple models with independent variables for which reliable forecast are available. Additionally, most regression models for aviation use gross economic measures like income, population, and employment to forecast activity levels.

3.5.3 Market Share Analysis

Market Share Analysis assumes a top-down model, and uses a relationship between national, regional, and local forecasts to predict the trends at the airport. This approach uses the forecast of large aggregates, such as the entire nation, which are used to derive forecasts for a smaller area (e.g. airport). One example is to determine an airport's percentage (market share) of the national enplanements and then forecast the airports growth rate based on the national forecast growth rate. However, the market share analysis approach to forecasting is not without weaknesses. The national forecasts are composed of airports that are growing fast, those that are growing slowly, and those that are not growing at all. Since this analysis is based off the national or larger aggregate, the planner must take into account historical trends, as well as local airport judgment, to better estimate the forecast.

3.6 AIRPORT MARKET PROFILE[45]

3.6.1 Factors Unique to RKS

Until 2007, Rock Springs was an Essential Air Service market. This simply meant that their air service was bound by the every-other-year bidding process for the market. Historically the market was flown to Denver by Great Lakes Aviation. Currently, RKS provides service to three destinations, international hubs Denver International Airport (DEN) and Salt Lake City International Airport (SLC), and a fellow regional market Gillette-Campbell County Airport (GCC).

Both SLC and GCC are operated through an agreement between Delta/SkyWest Airlines, Sweetwater County, Rock Springs and Green River, and WYDOT, Air Service Enhancement Program. This service on Delta/SkyWest has been offered since mid-2008 and is subject to annual contract renewals from all parties involved, and thus may skew future passenger forecasts.

RKS, like many of Wyoming's commercial airports, loses significant passenger segments to "leakage." "Leakage" is when a traveler opts to drive to a nearby airport, presumably for cost savings. (SLC is approximately three hours away by car; DEN is five-and-a-half.) In 2012, for example, monthly leakage rates have spanned the 40% to 60% range, meaning that essentially half of RKS's potential inbound and outbound travelers are choosing to fly into and out of alternate airports.

Still, passenger travel from RKS is on the rise. Since 2002, less than a decade ago, enplanements have increased from 8,218 to 26,219 in 2011. See **Table 3-7** below.

TABLE 3-7 - POPULATION AND ENPLANEMENT GROWTH 2002-2011

Year	Sweetwater County Population Estimates	TAF Historical Enplanements
2002	37,428	8,218
2003	37,450	9,071
2004	38,026	12,189
2005	38,739	14,662
2006	39,749	18,435
2007	41,470	22,730
2008	42,358	25,541
2009	44,133	19,458
2010	43,621	20,993
2011	43,899	26,219

Source: FAA; Forecast, Inc.

[45] Prepared by Forecast, Inc.

3.6.2 Scheduled Airline Service

Today, RKS is served by two airlines, United Airlines and Delta Air Lines. United, as SkyWest, provides service to and from Denver, three times daily. Delta, as SkyWest, flies to two destinations from Rock Springs; it serves Gillette once daily and Salt Lake City with two daily round trips. Currently, SkyWest operates the 30-seat Embraer 120 (Brasilia) to all three destinations.

FIGURE 3-1 - CITIES SERVED BY RKS

Source: Forecast, Inc; Image: Jviation, Inc.

3.6.2.1 Flight Schedules

RKS has long offered service to Denver and currently has three daily scheduled departures on United/SkyWest, one in the morning, one midday, and one in the late afternoon. Although passenger load factor had waned in recent years, bottoming out in 2009 at 42%, it rose by more than 10% from 2010 to 2011, landing at 60% in 2011. Through July 2012, total load factor for the year was 63%.

Gillette is a recent market for RKS; service by Delta/SkyWest began in mid-2008, then quickly ramped up to more than 10,000 available seats in 2009 and beyond. The single daily flight departs RKS later in the evening and returns the following morning. In 2011, Delta/SkyWest's one daily flight averaged a 34% load factor.

Salt Lake City's introduction also came in 2008; by 2009, Delta/SkyWest served the market with two daily flights, one departing midday, and one in the evening. Throughout the past three years, available seats have averaged in the 21,000 range and, as of late 2011, nearly half (48%) of seats to and from SLC were being purchased.

TABLE 3-8 - AVAILABLE SEATS AND LOAD FACTORS BY CITY

		2007	2008	2009	2010	2011
Denver	Passengers	20,509	20,354	11,964	12,620	16,535
	Seats	34,171	40,177	28,723	25,573	27,609
	Load Factor	60%	51%	42%	49%	60%
Gillette	Passengers	-	261	2,757	3,164	3,617
	Seats	-	1,590	10,305	10,620	10,680
	Load Factor	-	16%	27%	30%	34%
Salt Lake City	Passengers	-	3,618	8,509	8,640	10,467
	Seats	-	10,335	21,150	21,315	21,645
	Load Factor	-	35%	40%	41%	48%
Airport Totals	Passengers	20,509	24,243	23,229	24,424	30,618
	Seats	34,171	52,131	60,178	57,508	59,934
	Load Factor	60%	47%	38%	43%	52%

Source: Forecast, Inc; Diio Mi

TABLE 3-9 – SKYWEST AIRLINES SCHEDULE - ARRIVALS

Airline	Flight	From	Time	Days
Delta	7767	GCC	7:48 am	Daily
United	6525	DEN	10:49 am	Daily
United	5309	DEN	2:30 pm	Daily
Delta	7776	SLC	2:39 pm	Daily
Delta	7812	SLC	8:54 pm	Daily
United	6353	DEN	10:39 pm	Daily

Source: www.rockspringsairport.com; May 2012

TABLE 3-10 – SKYWEST AIRLINES SCHEDULE - DEPARTURES

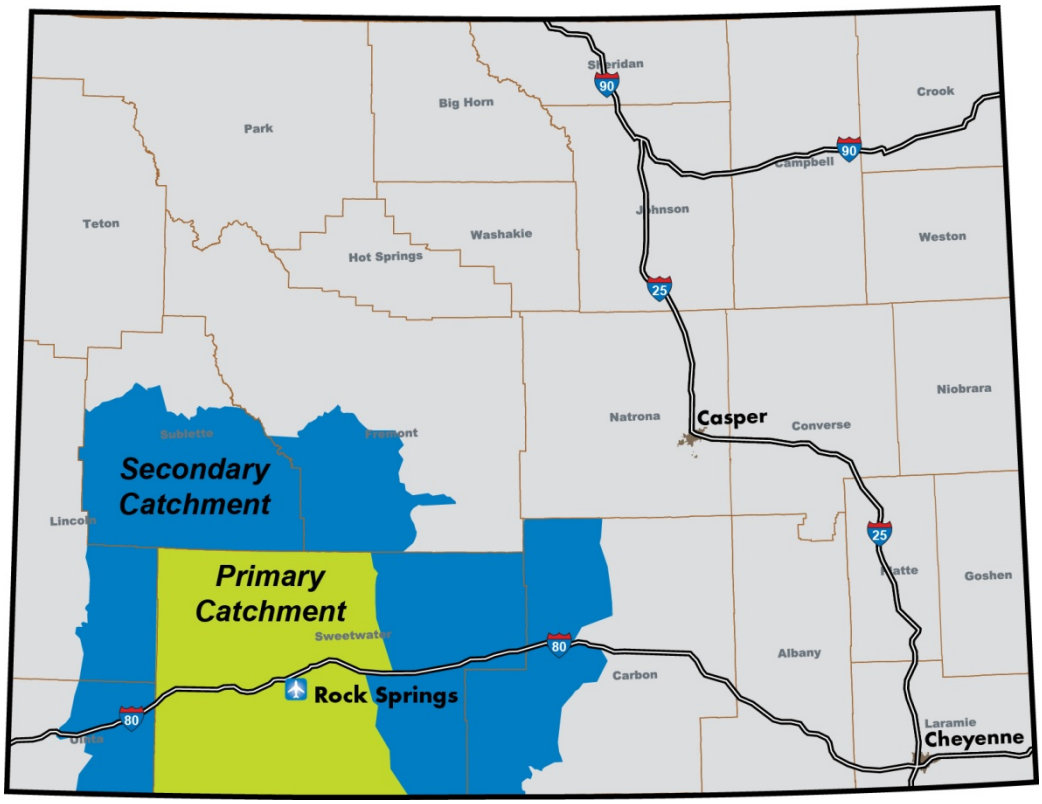
Airline	Flight	From	Time	Days
United	5308	DEN	7:54 am	Daily
Delta	7767	SLC	8:03 am	Daily
United	6525	DEN	11:13 am	Daily
Delta	7776	SLC	3:03 pm	Daily
United	5309	DEN	3:17 pm	Daily
Delta	7812	GCC	9:09 pm	Daily

Source: www.rockspringsairport.com; May 2012

3.6.3 RKS Catchment / Service Area

RKS's catchment area, the area from which the majority of RKS's passengers are drawn, has been split into two categories, primary and secondary. The airport's primary catchment area spans the western two-thirds of the county, stopping around Table Rock to the east. Secondary catchment goes farther north, west and east, as is illustrated in **Figure 3-2**. There are generally few seasonality concerns to take into consideration for the RKS market.

FIGURE 3-2 - RKS CATCHMENT AREA



Source: Forecast, Inc.

3.6.4 Economic Characteristics

3.6.4.1 Income

The average (mean) annual personal income of a Sweetwater County resident in 2012 is $51,665; the County's average (mean) household income is $134,548.

3.6.4.2 Employment

In 2012, nearly 70% of residents, 30,893 people, were employed. Top industries include:

- Mining (≈6,400 people)
- State and local government (≈4,300)
- Retail (≈2,800)
- Accommodation/food services (≈2,600)

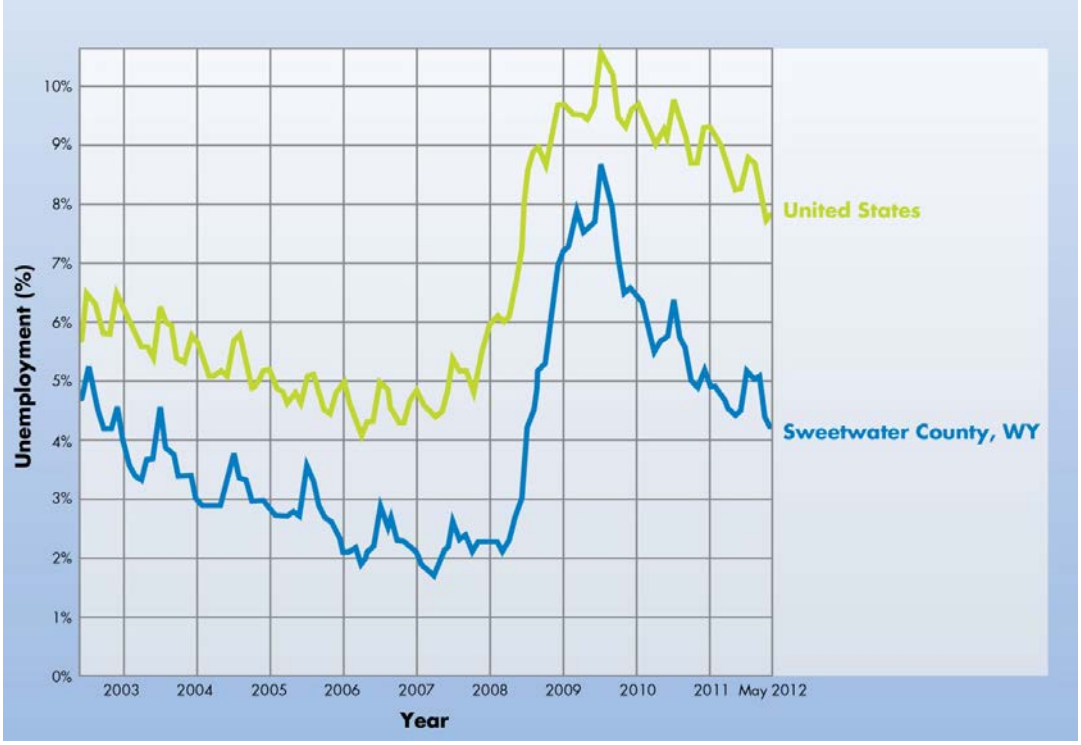
Construction, manufacturing, transportation/warehousing, real estate/rentals/leasing and healthcare/social assistance are also top industries, with each employing more than 1,000 Sweetwater County residents.

- Low on the list of employers in 2012 are:
- Forestry and fishing (down 20% since 2007 to ≈60 jobs)
- Management of companies and enterprises (≈130 jobs, but up 90% since 2007)
- Educational services (≈170 jobs, but up 30% since 2007)
- Farming (down 1% to ≈200 jobs)

Barring unforeseen economic variables, forecasts project a slight increase in Sweetwater County's employment, remaining in the low 70% range through 2032.

The county's *unemployment* rate is significantly lower than that of the nation; Sweetwater's current rate (as of May 2012) is just above 4%, down from a 2010 high of nearly 9%. (U.S. unemployment as of May was just below 8%, down from a high of over 10%).

FIGURE 3-3 - LOCAL AND NATIONAL UNEMPLOYMENT



Source: Forecast, Inc; U.S. Bureau of Labor Statistics

3.6.5 Trends in Connecting Markets

RKS flyers continue to make Denver their top destination. However in 2011, 85% of passengers connected to outlying markets from United's hub in Denver and Delta's in Salt Lake City.

Leisure markets in particular are experiencing a boost in total passenger segments from RKS. Not coincidentally, one-way fares are decreasing significantly versus those from just a few years ago.

Highlights from **Table 3-11**, a summary of top markets from RKS, include:

- Las Vegas traffic has increased 86% versus 2007; average fares are down to $83 from $195.
- Phoenix traffic has increased 82% versus 2007; average fares are down to $124 from $225.
- Seattle traffic has increased 82% versus 2007; average fares are down to $175 from $293.
- Portland traffic has increased 94% versus 2007; average fares are down to $129 from $265.
- San Diego traffic has increased 74% versus 2007; average fares are down to $105 from $299.

TABLE 3-11 - TOP MARKETS FROM RKS

2007					2011				
Rank	Destination	Annual Passenger Segments	Average One-Way Fare	Annual Passenger Revenue	Rank	Destination	Annual Passenger Segments	Average One-Way Fare	Annual Passenger Revenue
1	DEN	21,325	$87	$1,859,438	1	DEN	5,554	$111	$615,396
2	IAH	4,800	$322	$1,543,685	2	IAH	5,507	$247	$1,362,296
3	DFW	1,615	$283	$457,728	3	LAS	1,743	$83	$145,041
4	OKC	1,250	$303	$378,624	4	DFW	1,601	$226	$362,340
5	MSY	812	$365	$296,645	5	PHX	1,574	$124	$194,869
6	TUL	794	$298	$236,748	6	OKC	1,566	$225	$351,927
7	SAT	511	$288	$147,049	7	SEA	1,372	$175	$240,499
8	MCI	438	$203	$88,859	8	GCC	1,264	$43	$54,604
9	MSP	438	$270	$118,433	9	PIT	1,145	$241	$275,427
10	YYC	411	$392	$160,801	10	PDX	989	$129	$128,039
11	MAF	402	$446	$178,932	11	ATL	985	$175	$172,186
12	AUS	365	$298	$108,816	12	SLC	922	$82	$75,748
13	ORD	365	$254	$92,774	13	ORD	834	$184	$153,305
14	PIT	338	$375	$126,473	14	TUL	834	$220	$183,798
15	STL	292	$273	$79,844	15	MSP	791	$174	$137,986
16	OMA	283	$228	$64,614	16	SAN	666	$105	$69,726
17	PHX	283	$225	$63,510	17	LAX	651	$178	$115,920
18	ATL	274	$322	$88,193	18	MCI	649	$161	$104,219
19	ABQ	265	$248	$65,499	19	MSY	592	$251	$148,710
20	LGA	256	$335	$85,492	20	STL	581	$179	$104,297

Source: Forecast, Inc.; Diio Mi

3.7 PASSENGER ENPLANEMENT FORECAST[46]

3.7.1 Forecast Approach

Passenger enplanements are defined as a revenue paying passenger boarding a commercial service aircraft that departs from an airport. These enplanements include passengers on scheduled commercial service aircraft or un-scheduled charter aircraft, but not the airline crew or non-revenue passengers.

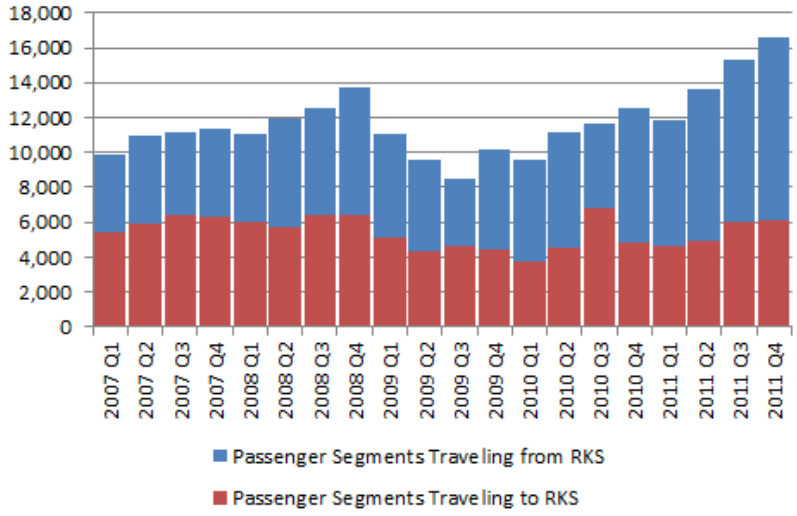
Passenger enplanement data is provided to Airport management by commercial passenger service carriers, who maintain data as they transport people to and from the facility. The FAA TAF has estimated figures on file and is compared with the projections developed for this Master Plan.

3.7.2 Methodology

Several methods for projecting passenger demand have been reviewed in preparing this forecast. Ultimately, forecasts derived from socio-economic and FAA TAF appears to provide the most realistic approaches. These forecasts attempt to apply both national and local industry trends in forecasting future demand.

With that said, this forecast also accounts for the point of origin for RKS and how it has changed over the last few years. The growth in the RKS air service market over the past several quarters has generally favored a more robust growth in the local market. This fact is further confirmed by the higher local passenger retention rates the market has experienced. This is shown in **Figure 3-4** below.

FIGURE 3-4 - INBOUND AND OUTBOUND PASSENGER SEGMENTS



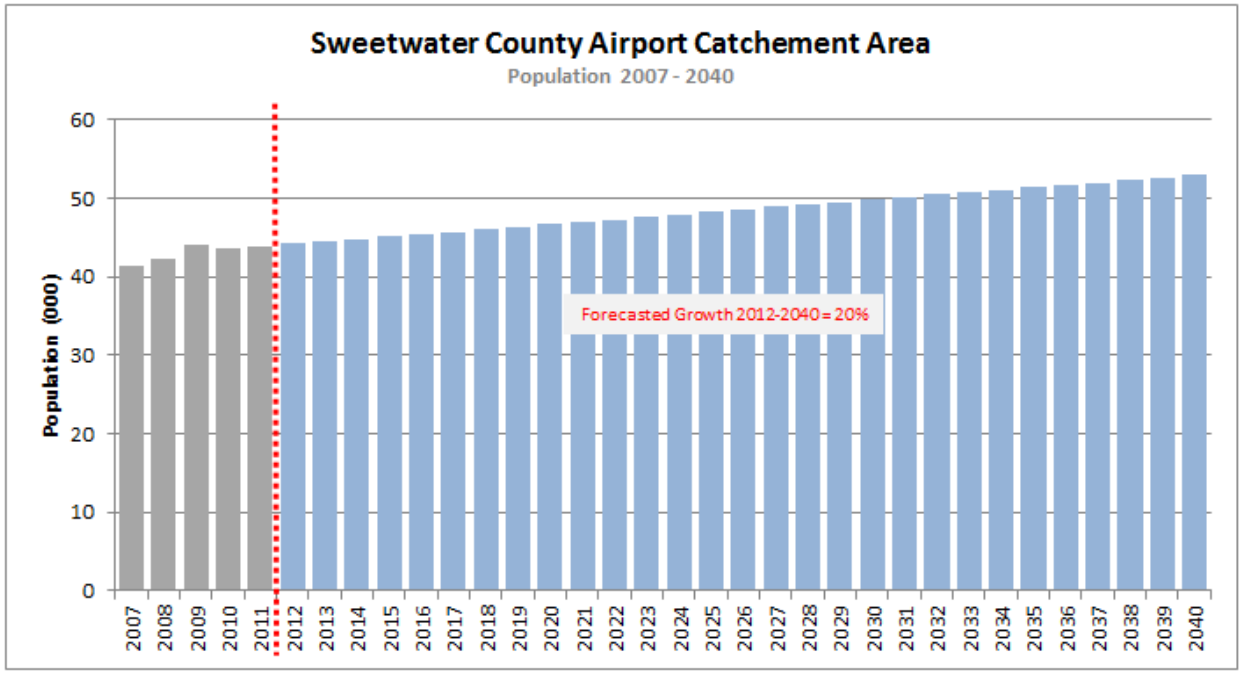
Source: Diio Mi Market Intelligence for the Aviation Industry; Forecast, Inc.

[46]Prepared by Forecast, Inc.

3.7.3 Service Area Demographics and Economic Metrics

Sweetwater County, Wyoming's 2012 population of 44,193 is up approximately 6.6% from 2007 levels. Future population growth, estimates are modest, with an approximate 1% per year increase expected. **Figure 3-5** estimates population growth through 2040 within RKS's catchment area.

FIGURE 3-5 - POPULATION GROWTH 2007-2040

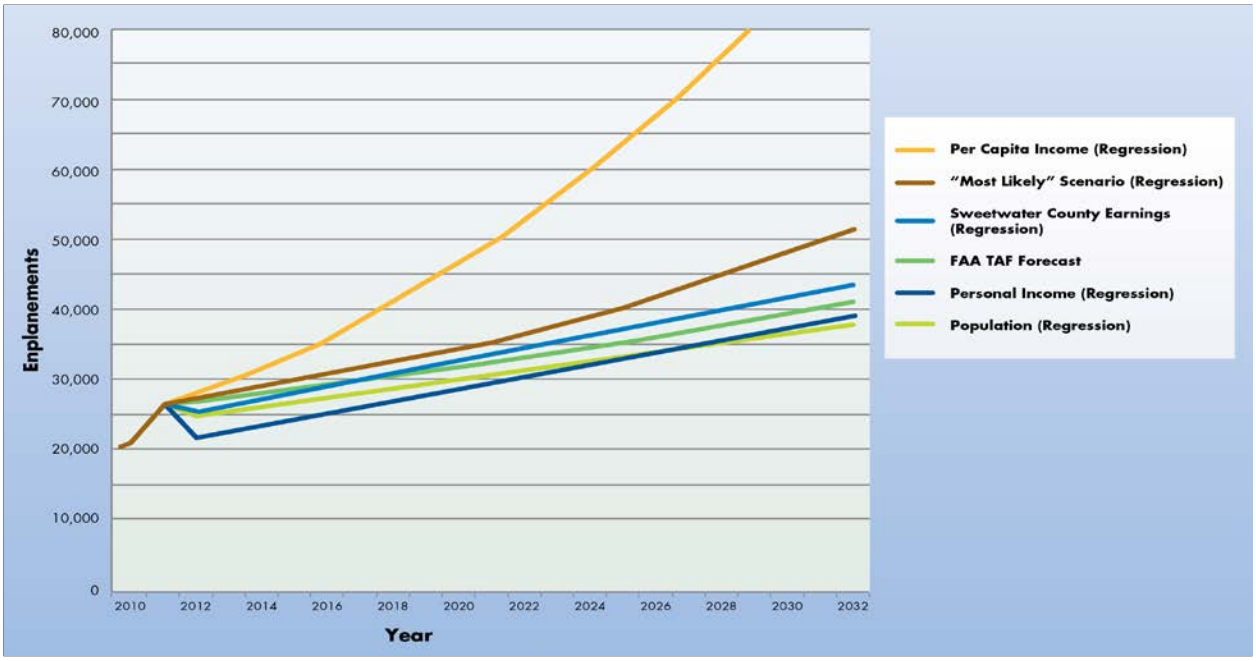


Source: Woods & Poole Economics; Forecast, Inc.

3.7.4 Enplanement Projections

As the catchment area's growth relates to enplanements, projections show that enplanement growth will exceed population growth on a percentage basis. Specifically, while the area's population is estimated to grow by 0.68% annually by 2032, enplanements are forecasted to increase by 2.14% annually, a total of nearly 15,000 passengers annually. **Figure 3-6** details RKS's enplanement projections through 2032.

FIGURE 3-6 - ROCK SPRINGS ENPLANEMENT PROJECTIONS AND METHODOLOGY



Source: Forecast, Inc.; Image: Jviation, Inc.

There were several assumptions made to forecast the "Most Likely" scenario for Rock Springs passenger enplanements. The first key assumption made is that the community of Rock Springs and Green River as well as Sweetwater County will continue to support services offered by Delta. Second, the assumption is that at some point during calendar year 2013 or 2014, SkyWest will transition existing Denver capacity from 30-seat Embraer 120 aircraft to 50-seat CRJ-200 aircraft.

Five traffic projections were calculated to derive a "Most Likely" scenario for future RKS's passenger enplanement activity. These projections were based on the 2011 FAA TAF, growth in Sweetwater County earnings estimates, growth based on historical population ratios, personal income estimates and estimates based on per capita incomes. These were all ultimately compared to the FAA TAF forecast and used to calculate the "Most Likely" scenario.

Forecasts were weighted more to ratios within the past three to five years as these enplanement numbers appear to be more of an indicator of future enplanements. There is no foreseeable reason for RKS to encounter a downturn in existing traffic growth and thus a near doubling in traffic is attainable in the forecasted 20-year period.

TABLE 3-12 - ENPLANEMENTS FORECAST

Year	LOW	MEDIUM	HIGH
2012	25,009	27,987	28,242
2017	28,185	31,941	38,305
2022	31,473	36,382	52,649
2027	34,775	43,369	71,686
2032	38,001	51,449	96,012

Source: Forecast, Inc.

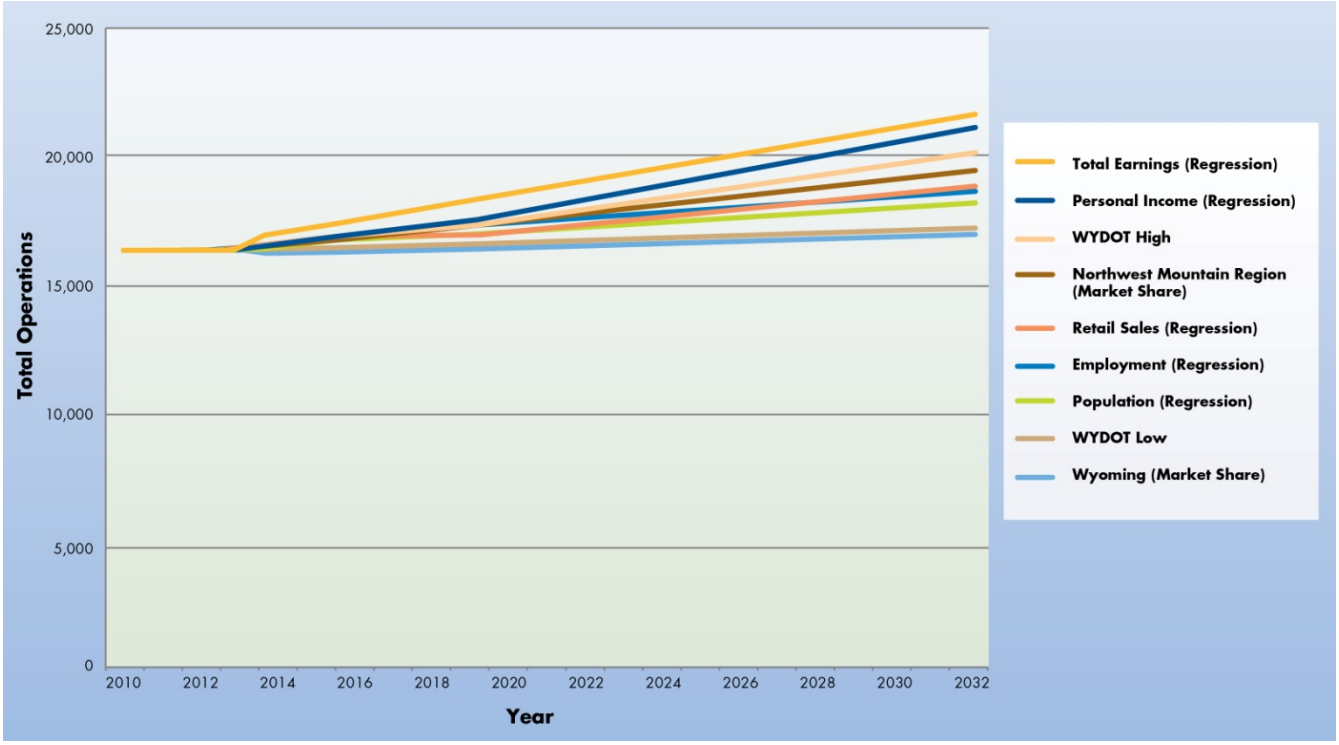
The lowest forecast is the Population regression analysis, the medium is the "Most Likely" scenario regression analysis, and the high is the Per Capita Income regression analysis. The forecasting scenarios represent a range in the total enplanements of 38,001 to 96,012 in the final year of the forecast period (2032). This represents a range in compounded annual growth rates (CAGR) of between 2.11% (Population regression analysis) and 6.31% (Per Capita Income regression analysis). The medium forecasts ("Most Likely" scenario regression analysis with a CAGR of 3.09%) will be carried forward for planning purposes because it is a conservative estimate of the operations forecast.

3.8 Aircraft Operations Forecast

Since RKS is a non-controlled airport, meaning that it does not have an ATCT, and is more difficult to obtain an exact count of aircraft operations. The FAA's TAF currently has 2,048 annual commercial operations annual (SkyWest). However, as discussed in **Section 2.6** and **Section 3.6**, SkyWest began offering 12 flights a day (six departures and six arrivals) seven days a week in 2008. Based on this information, the current commercial operations count for RKS is 4,380, more than double the FAA's TAF count. For the purposes of this Master Plan, the commercial operations count has been changed to reflect the current conditions and projected Air Market Analysis, while the itinerant and local operations counts use the FAA TAF as the baseline for forecasting, generating a total operations count of 16,407 in 2011 for RKS.

The methodologies used for forecasting aircraft operations include: socioeconomic regression analysis, time series analysis, market share analysis, and the "Low" and "High" CAGR used in WYDOT's I&I Plan (discussed in **Section 3.4.3**). Regression analyses were used for population, employment, total earnings, personal income, and retail sales. The outputs from these methodologies are shown in **Figure 3-7.**

FIGURE 3-7 – OPERATIONS FORECAST



Source: Jviation, Inc.

The times series analysis was not used for the operations forecast because uses historical data and projects those trends into the future, resulting in a projected continual decline in operations through the 20-year forecast period. **Table 3-13** represents the probable high, medium, and low operations forecasts, and these forecasts are used in this analysis. The lowest forecast is the Wyoming Market Share analysis, the medium is the Retail Sales regression analysis, and the high is the Total Earnings regression analysis. The forecasting scenarios represent a range in the total operations of 16,976 to 21,712 in the final year of the forecast period (2032). This represents a range in annual compounded growth rates (CAGR) of between 0.86% (Wyoming Market Share) and 1.25% (Total Earnings). The medium forecasts (Retail Sales regression analysis with a CAGR of 0.69%) will be carried forward for planning purposes because it is a conservative estimate of the operations forecast.

TABLE 3-13 - OPERATIONS FORECAST

Year	LOW	MEDIUM	HIGH
2012	16,235	16,463	16,938
2017	15,668	16,767	17,384
2022	16,575	17,304	19,316
2027	16,767	18,031	20,525
2032	16,976	18,887	21,712

Source: Jviation, Inc.

3.8.1 Commercial Operations

As previously discussed, commercial operations will remain the same throughout the forecast with six daily departures and six daily arrivals for a total of 4,380 commercial operations annually.

3.8.2 Military Operations

Historically, military operations have not significantly contributed to the number of operations at RKS. Military operations are not dependent on the same stimuli as GA or commercial activity; therefore, for purposes of this study it is projected that military operation will remain constant at 18 operations annually throughout the forecast period.

3.8.3 Local/Itinerant Operations

Local Operations are operations performed by aircraft that are based at RKS and operate in the local traffic pattern and/or within sight of the airport. These operations are known to be flights departing for or arriving from local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport. Itinerant or transient operations are operations by aircraft that leave the local airspace. The majority of operations at RKS are made up of GA itinerant operations.

3.8.4 Aircraft Operations Forecast Summary

The preferred forecast is the Retail Sales regression analysis because it is a conservative estimate for the potential operations growth at RKS. This model represents an overall 20-year CAGR of 0.69% of the total operations and is summarized in **Table 3-14**. The forecast data presented in **Table 3-14** reflects movement towards the FAA's national growth rates for each type of operation during the 20-year planning period.

TABLE 3-14 - AIRCRAFT OPERATION FORECAST SUMMARY

	2012	2017	2022	2027	2032
Commercial Operations					
Air Carrier	0	0	0	0	0
Commuter/Air Taxi	4,380	4,380	4,380	4,380	4,380
Itinerant Operations					
Military	18	18	18	18	18
GA Itinerant	9,946	10,443	10,964	11,512	12,087
Local Operations					
GA Local	2,119	1,926	1,942	2,121	2,402
TOTAL OPERATIONS	**16,463**	**16,767**	**17,304**	**18,031**	**18,887**

Source: Jviation, Inc.

3.8.5 Design Hour Operations

An additional measure of airport activity is design hour operations. The design hour is an estimate of the peak hour of the average day in the busiest month for an airport. Since RKS does not have an ATCT, design hour is estimated.

- Peak Month Operations is the month that has the most operations. The Peak Month for the average airport is normally in either July or August, at 11% of the annual operations. For RKS, the Peak Month had approximately 1,805 in 2011.
- Design Day is the Peak Month Operations divided by 30 days. The Design Day for RKS in 2011 was 60 operations.
- Design Hour is the average highest amount of operations within the most active hour of the day. Typically, these operations will range between 10% and 15% of the design day operations; for planning purposes, 12.5% was used to determine the Design Hour. The Design Hour Operations at RKS in 2011 is eight.

Table 3-15 shows the forecasted Design Hour for the planning period of this report.

TABLE 3-15 - DESIGN HOUR OPERATIONS FORECAST

Operations	2012	2017	2022	2027	2032
Annual	16,463	16,767	17,304	18,031	18,887
Peak Month	1,811	1,844	1,903	1,983	2,078
Design Day	60	61	63	66	69
Design Hour	8	8	8	8	9

Source: Jviation, Inc.

3.9 Annual Instrument Operations

According to the data provided by the National Climatic Data Center (NCDC), Instrument Meteorological Conditions (IMC) exists at a rate of 2.51% annually at RKS.[47] When applying this percentage to the current number of operations, it results in 412 IFR operations for 2011. This figure is potentially over simplified since no precise count exists for the number of instrument operations; nonetheless, it accounts for a reasonable percentage of current operations. **Table 3-16** details the estimated instrument operations based on the chosen operations forecast.

TABLE 3-16 - FORECAST IMC OPERATIONS

	2012	2017	2022	2027	2032
Instrument Ops	413	421	434	453	474

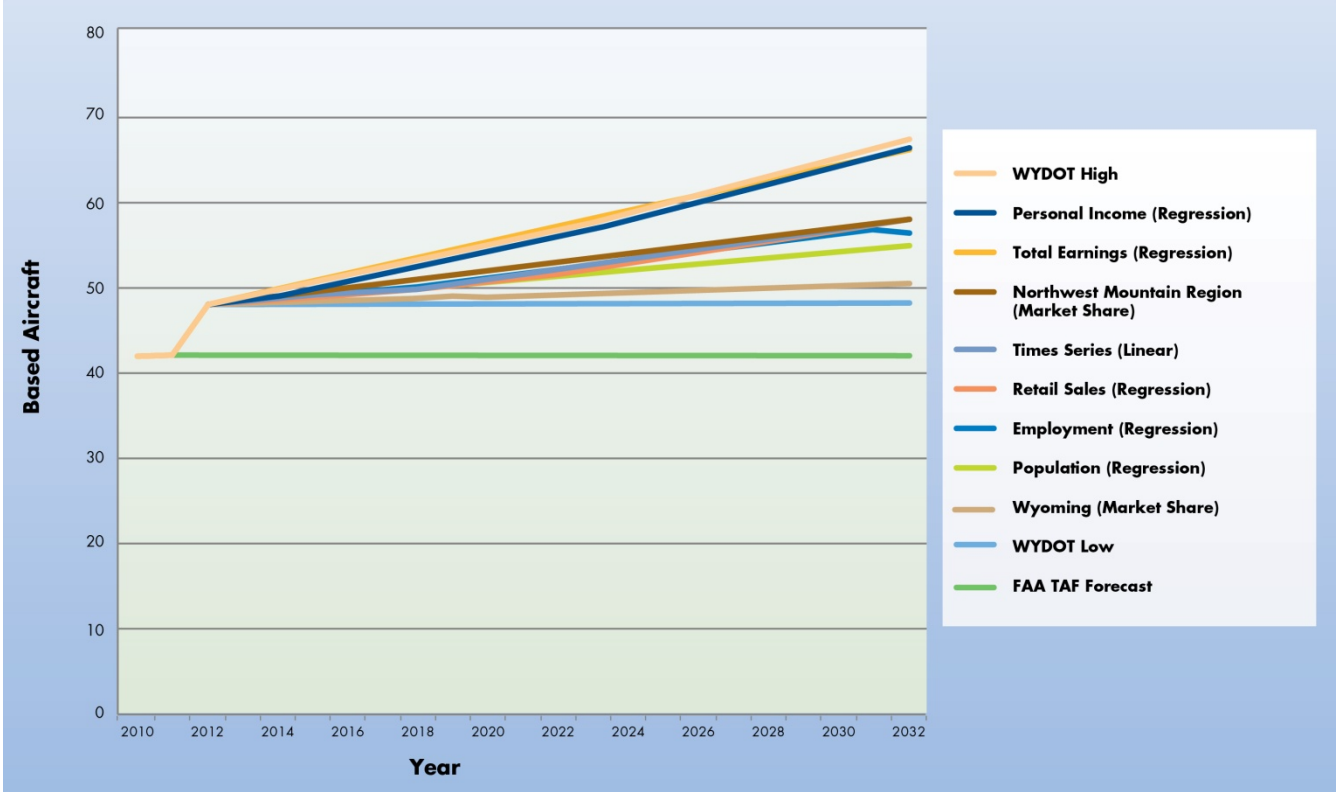
Source: IMC data from NCDC

[47] NCDC. RKS ASOS #72574. 2000 to 2009.

3.10 BASED AIRCRAFT FORECAST

The based aircraft forecast is a valuable indicator in determining the future activity levels and the potential requirement for expanded or improved airport facilities. Airport management records indicated a higher number of current based aircraft (48) than the FAA TAF (42). For the purpose of this forecast, the airport records were used as a baseline. The same methodologies used for operations forecasting were used for forecasting based aircraft: socioeconomic regression analysis, time series analysis, market share analysis, and WYDOT's AI&I Plan "Low" (0.0%) and "High" (1.73%) CAGR were used. Regression analyses were used for population, employment, total earnings, personal income, and retail sales. **Figure 3-8** shows the different forecasting methods used.

FIGURE 3-8 - BASED AIRCRAFT FORECAST



Source: Jviation, Inc.

Table 3-17 represents the probable high, medium, and low based aircraft forecasts used in this forecasting analysis. The lowest forecast is the WYDOT "Low" with no growth, the medium is the Population regression analysis, and the high is the WYDOT "High". The forecasting scenarios represent a range in the total based aircraft of 48 to 68 in the final year of the forecast period (2032). This represents a range in CAGR of between 0.0% (WYDOT "Low") and 1.73% (Total Personal income regression analysis). The medium forecast (Population regression analysis with a CAGR of 0.67%) is the closest to the national growth rate predicted by the FAA, and will be carried forward for planning purposes.

TABLE 3-17 - BASED FORECAST

Year	LOW	MEDIUM	HIGH
2012	48	48	48
2017	48	50	52
2022	48	52	57
2027	48	53	62
2032	48	55	68

Source: Jviation, Inc.

Table 3-18 shows the aircraft distribution for the planning period (2012-2032). It is anticipated that total based aircraft will grow at the rate of 0.67% (Population regression analysis), as previously discussed. The FAA national growth rate for each aircraft type was used for forecasting the composition of the total based aircraft based on the chosen forecast.[48] Nationally, the FAA projects strong growth in the business market, including jets and turboprops, with less growth expected for single-engine and multi-engine piston powered aircraft. The based aircraft are expected to grow to a total of 55 over the planning period. The based aircraft forecast also reflects the FAA's predicted growth rate for the type of GA aircraft.

TABLE 3-18 - RKS BASED AIRCRAFT FORECAST SUMMARY

Based Aircraft	2012	2017	2022	2027	2032
Single Engine	40	41	42	43	44
Multi-Engine	3	3	3	3	3
Turbo Prop	2	2	2	2	3
Jet	0	1	1	1	1
Helicopters	1	1	2	2	2
Other	2	2	2	2	2
Total	**48**	**50**	**52**	**53**	**55**

Source: Jviation, Inc.

3.11 CRITICAL AIRCRAFT

The FAA considers that once reaching a level of 500 annual operations of any aircraft that falls into the next highest Airport Reference Code (ARC) level, the airport should upgrade its facilities in order to meet the design standards of that level. ARC was explained further in **Section 2.1**. Presently, RKS has an ARC of C-III, meaning that it is designed for aircraft with a maximum approach speed of 121 knots but less than 141 knots, and maximum wingspan of 79 feet but less than 118 feet or tail height of 30 feet but less than 45 feet. This category includes such aircraft as an Airbus 320 and Boeing 737. **Table 3-19** shows the forecasted operations, broken down by ARC operations type. Additionally, the change from B-II to C-II aircraft during the planning period is result of RKS's fleet transitioning from Embraer 120 (B-II aircraft) to CRJ-200 (C-II aircraft). Using airport management estimates the distribution among the different ARC types is shown in **Table 3-19**. The current ARC of C-III for RKS should be appropriate for the 20-year forecast.

[48] Table 28: Active General Aviation and Air Taxi Aircraft.
http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2012-2032/

TABLE 3-19 - ARC AIRCRAFT FORECAST

ARC	2012	2017	2022	2027	2032
A-I, A-II	6,593	7,059	7,285	7,014	7,347
B-I	782	796	822	856	898
B-II (small aircraft)	914	931	961	1,001	1,048
Subtotal A & B	8,289	8,786	9,068	8,871	9,293
B-I	906	1,081	1,116	1,127	1,180
B-II	4,445	2,516	2,596	1,442	1,511
Subtotal B	5,351	3,597	3,712	2,569	2,691
C-I	542	553	571	595	623
C-II	692	2,213	2,284	4,273	4,476
C-III	514	528	546	563	590
D-I	206	210	216	225	236
D-II	170	168	173	168	176
Subtotal C & D	2,124	3,672	3,790	5,824	6,101
Helicopter	699	712	735	767	802
TOTAL OPERATIONS	**16,463**	**16,767**	**17,304**	**18,031**	**18,887**

Source: Jviation, Inc.

3.12 COMPARISON TO EXISTING FAA TAF

The FAA requires that study-related forecasts be consistent with the TAF or include sufficient documentation to explain the difference**. Table 3-20** summarizes the forecast comparison to the TAF as recommended in Appendix C of the FAA document, *Forecasting Aviation Activity by Airport*. A forecast is considered to be consistent with the FAA TAF if it:

a) Differs by less than 10% in the 5-year forecast and 15% in the 10-year forecast, or

b) Does not affect the timing or scale of an airport project, or

c) Does not affect the role of the airport as defined in the current version of FAA Order 5090.3, *Field Formulation of the National Plan of Integrated Airport Systems*.

3.12.1 Passenger Enplanement Forecast

The FAA TAF projects enplanements at a CAGR of 2.14%, with an enplanement forecast of 40,901 in 2032. For this Master Plan, the preferred 20-year forecast results in 51,449 enplanements in 2032, and is based on the mid-range forecast. The preferred enplanement forecast differs from the 5-year forecast by 7.3%, the 10-year forecast by 9.9%, and the 20-year forecast by 25.8%. The enplanements forecast is consistent with the FAA because it differs less than 10% in the 5-year forecast and less than 15% in the 10-year forecast, does not affect the timing or scale of an airport project, and does not affect the role of the airport as defined in FAA Order 5090.3.

3.12.2 Aircraft Operations Forecast

Currently FAA forecasts show no growth in operations for RKS, with an operations forecast of 14,075 from 2012 to 2032 (CAGR of 0%). For the purposes of this Master Plan Update, the preferred 20-year forecast results in 18,887 operations in 2032, and is based on the mid-range forecast. The preferred operations forecast differs from the 5-year forecast by 19.1%, the 10-year forecast by 22.9%, and the 20-year forecast by 34.2%. This difference is primarily due to the FAA TAF showing a flat growth rate of 14,075 operations with commercial operations of 2,048 throughout the 20-year forecasting period. The actual current commercial operations count is 4,380, the forecasts were adjusted using current commercial operations count. The operations forecast does not affect the timing or scale of an airport project and does not affect the role of the airport as defined in FAA Order 5090.3, and is therefore consistent with FAA TAF.

3.12.3 Based Aircraft Forecast

The FAA predicts no growth for based aircraft, with 42 shown for the duration of the forecast, currently below the existing number of based aircraft of 48. The preferred forecast indicates 55 based aircraft at the end of the planning period, which differs from the TAF because of the difference in the initial baseline number of aircraft and the projected growth. The preferred based aircraft forecast differs from the 5-year forecast by 19.0%, the 10-year forecast by 23.8%, and the 20-year forecast by 30.9%. This difference is result of the FAA TAF showing 42 based aircraft throughout the 20-year forecasting period. The based aircraft forecast is consistent with FAA TAF because it does not affect the timing or scale of an airport project and does not affect the role of the airport as defined in FAA Order 5090.3.

TABLE 3-20 – FAA TEMPLATE FOR COMPARING AIRPORT PLANNING AND TAF FORECASTS

Template for Comparing Airport Planning and TAF Forecasts

AIRPORT NAME: Rock Spring-Sweetwater County Airport

	Year	Airport Forecast	TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2012	27,987	26,780	4.5%
Base yr. + 5yrs.	2017	31,941	29,771	7.3%
Base yr. + 10yrs.	2022	36,382	33,096	9.9%
Base yr. + 15yrs.	2027	43,369	36,792	17.9%
Base yr. + 20yrs.	2032	51,449	40,901	25.8%
Commercial Operations				
Base yr.	2012	4,380	2,048	113.9%
Base yr. + 5yrs.	2017	4,380	2,048	113.9%
Base yr. + 10yrs.	2022	4,380	2,048	113.9%
Base yr. + 15yrs.	2027	4,380	2,048	113.9%
Base yr. + 20yrs.	2032	4,380	2,048	113.9%
Total Operations				
Base yr.	2012	16,463	14,075	17.0%
Base yr. + 5yrs.	2017	16,767	14,075	19.1%
Base yr. + 10yrs.	2022	17,304	14,075	22.9%
Base yr. + 15yrs.	2027	18,031	14,075	28.1%
Base yr. + 20yrs.	2032	18,887	14,075	34.2%

NOTES: TAF data is on a U.S. Government fiscal year basis (October through September).

Source: FAA; Jviation, Inc.

3.13 Factors that May Create Changes in the Forecast

A forecast of aviation activity attempts to predict the future based on known factors and conditions. Numerous factors, on a local and/or national scale, can greatly affect the future of the airport and are unknown at this time. Oil prices, local economic activity, disposable income, costs of aircraft owner's insurance, and the potential for national GA user fees are just a few items that are beyond that airport's control that may change future activity dramatically.

For this reason, implementation of development outlined in this report must be validated with the current conditions prior to the commencement of any further action.

3.14 Summary of Preferred Forecasts

Appendix B of the FAA document, *Forecasting Aviation Activity by Airport*, recommends formatting the preferred forecast data into a particular tabular format for ease of readability. This format is shown in **Table 3-21.**

TABLE 3-21 - SUMMARIZING AND DOCUMENTING AIRPORT PLANNING FORECASTS

Summarizing and Documenting Airport Planning Forecasts

A. Forecast Levels and Growth Rates

AIRPORT NAME: Rock Springs-Sweetwater County Airport **Specify base year:** 2012

	2012	2017	2022	2027	2032	Average Annual Compound Growth Rates 2012-2017	2012-2022	2012-2027	2012-2032
Passenger Enplanements									
Air Carrier	0	0	0	0	0				
Commuter	27,987	31,941	36,382	43,369	51,449	2.7%	2.7%	3.0%	3.1%
TOTAL	27,987	31,941	36,382	43,369	51,449	2.7%	2.7%	3.0%	3.1%
Operations									
Itinerant									
Air carrier	0	0	0	0	0	N/A	N/A	N/A	N/A
Commuter/air taxi	4,380	4,380	4,380	4,380	4,380	0.0%	0.0%	0.0%	0.0%
Total Commercial Operations	4,380	4,380	4,380	4,380	4,380	0.0%	0.0%	0.0%	0.0%
General aviation	9,946	10,443	10,964	11,512	12,087	0.98%	0.98%	0.98%	0.98%
Military	18	18	18	18	18	0.0%	0.0%	0.0%	0.0%
Local									
General aviation	2,119	1,926	1,942	2,121	2,402	-1.89%	-0.87%	0.01%	0.63%
Military	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
TOTAL OPERATIONS	16,463	16,767	17,304	18,031	18,887	0.37%	0.50%	0.61%	0.69%
Instrument Operations	413	421	434	453	474	0.38%	0.50%	0.62%	0.69%
Peak Hour Operations	8	8	8	8	9	0.00%	0.00%	0.00%	0.59%
Cargo/mail (enplaned+deplaned tons)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Based Aircraft									
Single Engine (Nonjet)	40	41	42	43	44	0.50%	0.50%	0.50%	0.48%
Multi Engine (Nonjet)	3	3	3	3	3	0.00%	0.00%	0.00%	0.00%
Jet Engine	2	3	3	3	4	8.45%	4.14%	2.74%	3.53%
Helicopter	1	1	2	2	2	0.00%	7.18%	4.73%	3.53%
Other	2	2	2	2	2	0.00%	0.00%	0.00%	0.00%
TOTAL	48	50	52	53	55	0.82%	0.81%	0.68%	0.68%

B. Operational Factors

	2012	2017	2022	2027	2032
Average aircraft size (seats)					
Air carrier	25.0	25.0	25.0	25.0	25.0
Commuter	30.0	40.0	40.0	50.0	50.0
Average enplaning load factor					
Air carrier	0.0%	0.0%	0.0%	0.0%	0.0%
Commuter	42.6%	36.5%	41.5%	39.6%	47.0%
GA operations per based aircraft	251	247	248	257	263

NOTE: Right hand side of worksheet has embedded formulas for average annual compound growth rate calculations.

Source: Jviation, Inc.