RIVERTON • REGIONAL AIRPORT

AIRPORT MASTER PLAN

JVIATION®

900 S. Broadway, Suite 350 | Denver, CO 80209 | p. 303.524.3030 | f. 303.524.3031 | www.jviation.com

DRAFT

Riverton Regional Airport Master Plan

February 17, 2011

As required by Paragraph 429.A of FAA Order 5100.38, Airport Improvement Plan (AIP) Handbook:

The preparation of this document was financed in part through a planning grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

JVIATION®

900 S. BROADWAY ● SUITE 350 ● DENVER, COLORADO 80209
PHONE: 303-524-3030 ● FAX: 303-524-3031
● WWW.JVIATION.COM ●

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

1.0 Introduction

1.0 INTRODUCTION

The City of Riverton was founded in 1906 during the "land rush" to settle acreage withdrawn by a treaty from the Wind River Indian Reservation. Today Riverton is home to approximately 10,000 people, who are primarily employed in mining and hospitality industries. The City is located near where the Big Wind River and Little Wind River join in Wind River Country. Riverton is surrounded by the Wind River Indian Reservation, home to over 8,000 members of the Shoshone and Arapahoe tribes[1].

The Riverton Regional Airport (RIW) is a publicly owned facility that serves the aviation needs of the greater Riverton area. The Airport is located approximately three miles northwest of the Riverton Central Business District. According to the 2008 Wyoming Statewide Airport Economic Impact Study, RIW contributes over $4.5 million in economic activity for the State.[2]

The Riverton Regional Airport provides the community with scheduled service to and from Denver International Airport through Great Lakes Airlines. The airport serves a diverse aviation community with facilities for scheduled air service, military, general aviation, and recreational activities.

The primary objective of this study is to update the Airport's Master Plan and Airport Layout Plan (ALP), which were last updated in 2000. The main objectives for this study are summarized below:

- Assess the condition and adequacy of existing facilities;
- Create forecasts of aviation activity for a 20-year timeframe, to include: operations, based aircraft, and passenger enplanements;
- Determine the needed improvements over the next 20 years and prepare a realistic Capital Improvement Plan (CIP);
- Prepare a financial plan that considers the Airport's budget, revenue, and expenses along with likely grant funding scenarios.

[1] Riverton Chamber of Commerce. http://www.rivertonchamber.org/community/RegionalFacts.asp
[2] WYDOT Wyoming Statewide Airport Economic Impact Study. 2008.

2.0 Inventory

2.0 INVENTORY

The objective of the Inventory is to document the type and general condition of the existing facilities that comprise the Riverton Regional Airport (RIW). It is a complete compilation of all systems, including airfield, terminal area, NAVAIDs, ground access, parking, pavement conditions, utilities, and physical characteristics of the Airport.

2.1 AIRPORT REFERENCE CODE

The Federal Aviation Administration (FAA) classifies airports with a coding system known as the Airport Reference Code (ARC) to apply design criteria appropriate to operational and physical characteristics of the types of aircraft that operate at the airport. The ARC is made up of two components: aircraft approach category designated with letters A through E, and wingspan or tail height, called the Airplane Design Group (ADG), denoted by roman numerals I through VI.

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, letter A being the slowest approach speed and E being the fastest. 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. The categories are list 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 Airplane Design Group (ADG) is a ***numerical*** classification aircraft based on wingspan or tail height. If an airplane is in two categories, the most demanding category should be 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. The groups are identified in **Table 2-1**. Examples of ARC aircraft types are shown in **Figure 2-1**.

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

FIGURE 2-1 - ARC AIRCRAFT TYPES

2.2 RUNWAY AND TAXIWAY DIMENSIONAL CRITERIA

The primary consideration for runway and taxiway design is the standards established by the FAA. These standards are based upon a critical aircraft. **Table 2-2** shows the FAA design standards from FAA Advisory Circular (AC) 150/5300-13, *Airport Design* (Change 14). The existing Airport Reference Code (ARC) of Riverton Regional Airport is C-II and design standards will be detailed to those standards.

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 critical aircraft for the current users at RIW is a C-II; however in the past, Runway 10/28 was developed to meet C-III standards, which can accommodate a Boeing 737 type aircraft. Runway 1/19 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 higher ARC for the infrequent larger aircraft use of the airport is not available or justifiable. The standards for RIW are shown in **Table 2-2** and **Table 2-3**.

TABLE 2-2- ARC A (RW 1/19) 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’	250’
ROFA beyond runway end	300’	500’
Runway CL to Parallel TW CL	240’	240’
Runway CL to Aircraft Parking	250’	250’
RWY Holding Position Markings	200’	200’

Source: FAA AC 150/5300-13, Change 14

TABLE 2-3 - ARC C&D (RW 10/28) FAA RUNWAY DESIGN STANDARDS

Standard	Current Conditions	C-II Design Standards	C-III Design Standards
Runway Width	150’	100’	100’
Runway Shoulder Width	10’	10’	20’
Runway Safety Area Width	500’	500’	500’
RSA beyond runway end	1,000’	1,000’	1,000’
Runway Object Free Area Width	800’	800’	800
ROFA beyond runway end	1,000’	1,000’	1,000
Runway CL to Parallel TW CL	400’	400’	400’
Runway CL to Aircraft Parking	400’	500’	500’
RWY Holding Position Markings	250’	250’	250’

Source: FAA AC 150/5300-13, Change 14

2.3 EXISTING AIRFIELD DESIGN STANDARDS

Riverton Regional Airport is presently a C-II airport; however Runway 10/28 is constructed to C-III standards and the crosswind Runway 1/19 is currently constructed to B-II standards.

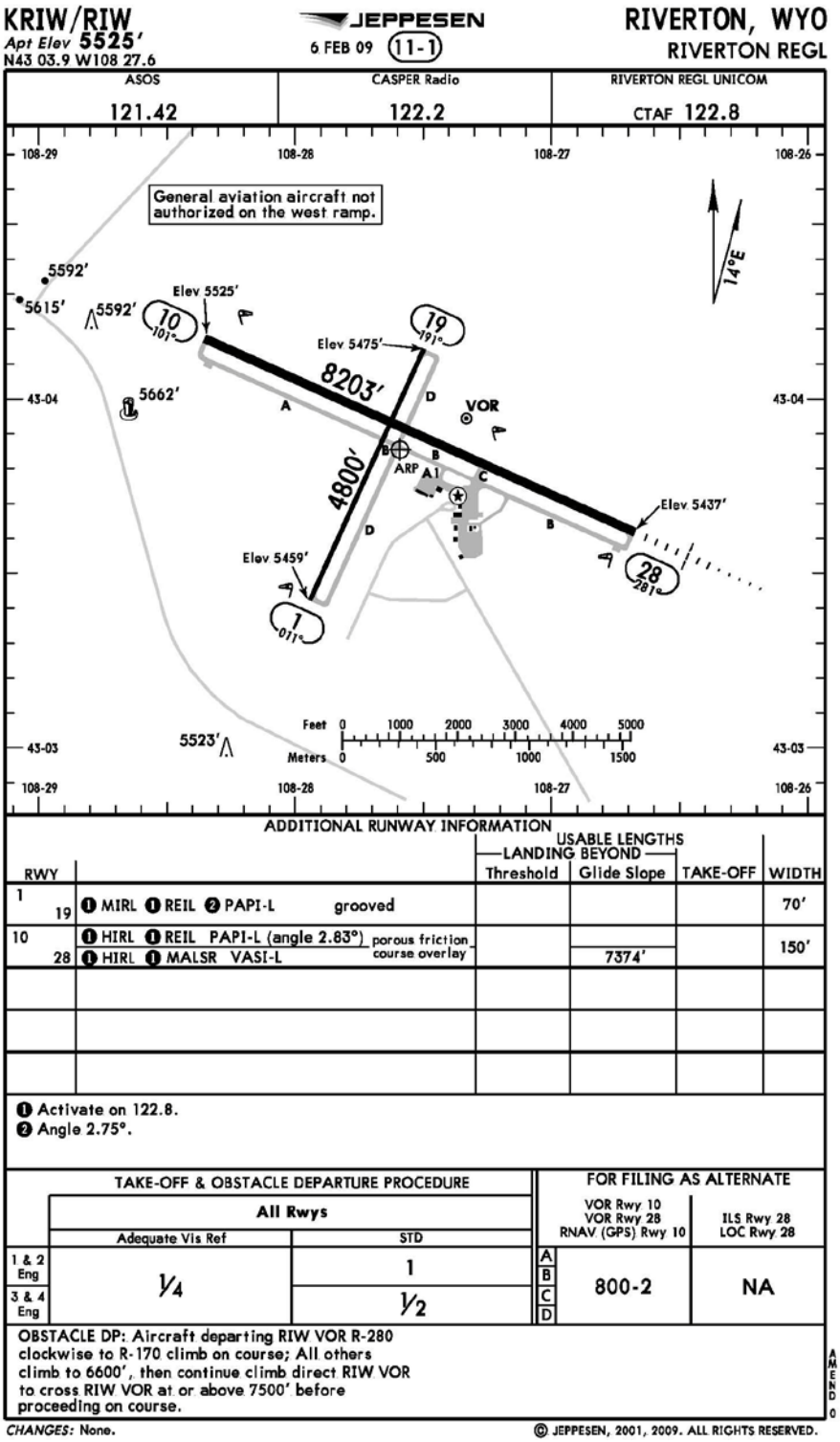
Table 2-4 summarizes the major landside and airside components of RIW. These items are discussed in detail throughout the remainder of this chapter.

TABLE 2-4- AIRPORT INVENTORY

Item	Description	Condition
Runway 10/28	Primary Runway; 8,203' x 150'; High Intensity Runway Lighting (HIRL); Precision Approach Markings; Asphalt; Strength 75,000 SWG, 110,000 DWG, & 190, 000 DTG	Good/Fair
Runway 1/19	Crosswind Runway; 4,800'x75'; Medium Intensity Runway Lighting (MIRL); Non-Precision Approach Markings; Asphalt; Strength 30,000 SWG, 50,000 DWG	Good/Fair
Taxiways	Medium Intensity Taxiway Lighting (MITL); Pavement Strength is variable.	Good/Fair
Commercial Apron	3,890 Square yards of concrete; Strength 12,500 SWG, with a concrete pad with strength of 75,000 SWG, 110,000 DWG, & 190,000 DTG	Good
General Aviation Apron	62,300 Square yards of asphalt; Strength of 75,000 SWG, 110,000 DWG, & 190,000 DTG; south end of apron is 12,500 SWG	Fair/Poor
Navigational Aids	VOR/DME; ILS, GPS	Good
Visual Aids	Precision Approach Path Indicators (PAPI) for all runways; Medium-Intensity Approach Light System with Runway Alignment Indicator (MALSR) for Runway 28	Good
Terminal Building	11,013 Square feet	Good
FBO	Privately Owned - Jim's Aircraft Services	Fair
Auto Parking Lot	Long-, Short-term, and employee parking	Good/Fair

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

FIGURE 2-2 - AIRPORT DIAGRAM



Source: Jeppesen

The previous Master Plan stated the non-standard conditions at RIW, list in **Table 2-5**. This non-standard condition is planned to be corrected with the Runway 10 reconstruction project that is currently scheduled for 2015.

TABLE 2-5 - EXISTING NON-STANDARD CONDITIONS

Description	Standard	Condition
Longitudinal Grade on Runway	Maximum longitudinal grade change may not exceed ±0.8% in the first and last quarter of the runway length	Grade for first quarter of Runway 10 is ±1.38%

2.4 WYDOT AERONAUTICS WYOMING STATEWIDE AIRPORT INVENTORY AND IMPLEMENTATION PLAN REPORT CARD

In November 2009, the Wyoming Department of Transportation (WYDOT) Division of Aeronautics (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 into four classifications: Commercial Service Airports, Business Airports, Intermediate Airport, and Local Airports. For this Plan, RIW 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 2-6** is the "Report Card" the AI&I Plan created for RIW, which evaluates the airport's current facilities and service objectives as a commercial service airport in Wyoming. Each airport should strive to the minimum objectives established for by WYDOT for their category. RIW's "Report Card", shown in **Table 2-6,** illustrates the "Objectives" that RIW does not currently meet.

TABLE 2-6 - WYDOT AERONAUTICS AIRPORT INVENTORY AND IMPLEMENTATION PLAN RIW REPORT CARD

WYDOT Airport Inventory Report Card - Riverton Regional Airport			
Facility/Service Objectives	**Objective**	**RIW**	**Objective Met?**
AIRSIDE (Primary Runway)	ARC C-II	C-II	Yes
Runway Length	7700 Feet	8203 Feet	Yes
Runway Width	100 Feet	150 Feet	Yes
Runway Lights	HIRL	HIRL	Yes
Pavement Strength	Dual 55000 lbs	Dual 110000	Yes
Taxiway	Full Parallel, Width = 35 Feet	Full Parallel - Width = 50 Feet	Yes
Taxiway Lights	MITL	MITL	Yes
Instrument Approach	Precision	Precision	Yes
Approach Lighting System	MALSR (one end)	MALSR - One End MALS - None ODALS - None	Yes
Visual Aids	PAPI or VASI (both runway ends). Combination of REIL, MALSR, MALS or ODALS on each runway end. Beacon and Lighted Wind Cone	PAPIs - All Ends REIL - One End Beacon - Yes Wind Cone - Yes Lighted Wind Cone - Yes	Yes
Wind Coverage	Greater than or Equal to 95%	99.84%	Yes
RSA	Standard RSA on all paved runways	No	**No**
LANDSIDE			
Weather Reporting	AWOS or ASOS	ASOS	Yes
Terminal	Terminal Commercial	Terminal Commercial - Yes General Aviation - Yes	Yes
Perimeter Fencing	Security or Wildlife Fence	Perimeter – Yes Type - Wildlife Fence	Yes
Hangars	100% of Based Aircraft	75%	**No**
Lighted Hangar Areas	Lighted Hangar Areas	Yes	Yes
Paved Auto Parking	Paved Auto Parking	Number of Spaces - 154	Yes
SERVICES			
FBO	Suggested	Yes	Not an Objective
Fuel	Jet A and 100LL	Jet A and 100LL	Yes
Ground Transportation	On-Airport Rental Car	On-Airport Rental Car Taxi Service & Courtesy Car	Yes
Pilot Lounge and Planning Room	Pilot Lounge & Planning Room	Pilot Lounge – Yes Planning Room - Yes	Yes
Public Restrooms	Public Restrooms – 24/7	Yes - Not 24 Hour	**No**
Public Phone	Public Phone – 24/7	Yes - Not 24 Hour	**No**
Food	Restaurant Suggested	Restaurant – Yes Vending Machines - Yes	Not an Objective
Aircraft Maintenance	Major Airframe & Powerplant	Major Airframe & Powerplant	Yes
Aircraft De-icing System	De-icing	De-icing - Yes	Yes
De-icing Containment System	Containment System	Containment System - No	**No**
ADMINISTRATION			
Airport Master Plan	Less than 10 years old	11/2000	Yes
Airport Layout Plan	Less than 5 years old	11/2000 (Update in Progress)	**No**
Land Use Protection Plan	On record with Aeronautics	Yes	Yes
Noise Contour Map	Less than 10 years old	10/2000	Yes
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	Legislative Liaison	No	**No**
RPZ Ownership	Fee or Easement Ownership of all RPZs	No	**No**

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

2.5 WYDOT DESIGN STANDARDS INVENTORY 2007

In 2007, WYDOT Division of 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/observations. The study noted several non-standard items and obstructions, shown in **Table 2-7** and **Table 2-8**. Many of these non-standard items have been corrected since the study, as indicated in the table on the next page.

TABLE 2-7 - WYDOT DESIGN STANDRDS INVENTORY 2007

#	Non-Standard Item	Correction Date	Project No.	Comments
1	Runway 10-28 Safety Area Slope is flatter than standard on north side of 28 threshold.	10/2009	AIP 3-56-0024-29	
2	3 non-frangible stop signs are in runway 10-28 object free area, 257'-328' from runway centerline.	5/2009	Corrected by airport.	
3	Non-frangible windcone and segmented circle are in runway 10-28 object free area, 298' from runway centerline.	2015	To be corrected with Runway 10 Reconstruction project.	
4	4 non-frangible ILS critical signs are in the runway 10-28 object free area, 264'-313' from runway centerline.	10/2009	AIP 3-56-0024-29	
5	Runway 10 Quarter End longitudinal slope exceeds 0.8%.	2015	To be corrected with Runway 10 Reconstruction project.	
6	Runway 28 quarter end longitudinal slope end exceeds 0.8%.	10/2009	AIP 3-56-0024-29	
7	Terrain Southwest of runway intersection obstructs visibility between runway 10-28 and runway 1-19.		Corrected by airport.	Vegetation must be kept at a minimum to meet criteria.
8	Runway 10-28 edge light have 12' spacing from pavement edge on south side near 10 threshold.	2015	To be corrected with Runway 10 Reconstruction project.	
9	Metal T-post is in Runway 10 end object free area, abeam the threshold and 362' from runway centerline.			FAA owned signs. Responsibility of FAA.
10	Antenna post is in runway 28 end safety area/object free area, 320' beyond threshold. Unable to determine frangibility of wooden post.	10/2009	AIP 3-56-0024-29	
11	Hangar A is in taxilane object free areas for taxilanes to the south and west, 23' and 25' from centerline of respective taxilane pavements.			Not completed.
12	Hangar B is in taxilane object free areas for taxilanes to the east and west, 27' and 28' from respective taxilanes centerlines.		To be corrected with G.A. (AIP #32) Development construction project.	
13	Hangar C is in taxilane object free area for taxilane to the south, 41' from center of taxilane pavement.		To be corrected with G.A. (AIP #32) Development construction project.	
14	Segmented circle is 96' in diameter, minimum diameter is 100'.	2015	To be corrected with Runway 10 Reconstruction project.	
15	Enhanced taxiway centerline markings are not present at any runway holdlines.	10/2008	AIP 3-56-0024-26/27/28	
16	Surface painted holding signs are not present at any runway holdlines.	10/2008	AIP 3-56-0024-26/27/28	
17	Runway 10-28 threshold markings stripes are 12' wide.	10/2008	AIP 3-56-0024-26/27/28	
18	Runway 10-28 threshold marking stripe spacings are 3' wide.	10/2008	AIP 3-56-0024-26/27/28	
19	Runway 10-28 threshold markings center spacings are 16' wide.	10/2008	AIP 3-56-0024-26/27/28	
20	Runway 10 threshold markings are 29' from threshold.	10/2008	AIP 3-56-0024-26/27/28	
21	Runway 10-28 aiming markings are 1,007'/99' from respective thresholds.	10/2008	AIP 3-56-0024-26/27/28	
22	Heliport has non-standard designation marking.	10/2008	AIP 3-56-0024-26/27/28	

Source: WYDOT Design Standards Inventory 2007: Riverton Regional Airport

TABLE 2-8 WYDOT DESIGN STANDARDS INVENTORY 2007: OBSTRUCTIONS

No.	Obstructions Noted	Correction Date	Project No.
A	3 stop signs penetrate runway 10-28 primary surface.	10/2009	AIP 3-56-0024-29
B	2 ILS critical area signs penetrate runway 10-28 primary surface.	10/2009	AIP 3-56-0024-29

Source: WYDOT Design Standards Inventory 2007: Riverton Regional Airport

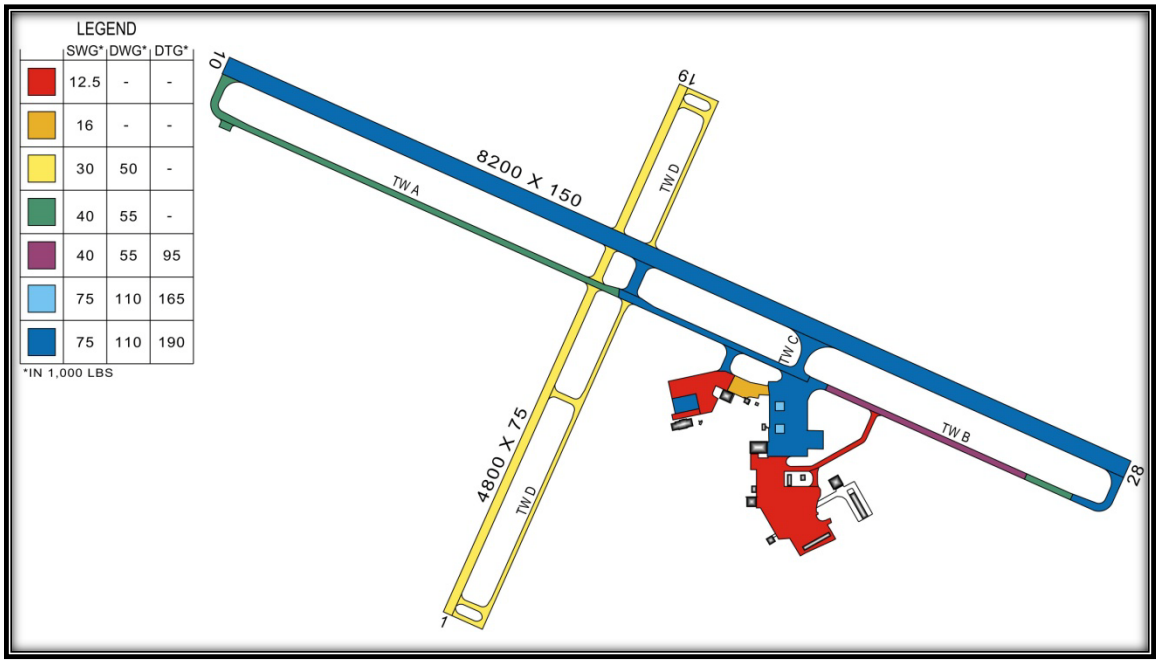
2.6 AIRFIELD/AIRSPACE

2.6.1 Runways

The existing airfield at RIW has two active runways, identified as Runway 10/28 and Runway 1/19, as shown in **Figure 2-2**.

Runway 10/28 is the primary runway, and is orientated southwest/northeast. The runway is 150 feet wide by 8,203 feet long and has a weight-bearing capacity that allows 75,000 pound for Single Wheel Gear (SWG) equipped aircraft, 110,000 pound Double Wheel Gear (DWG) equipped aircraft, and 190,000 pound Dual Tandem Gear (DTG) equipped aircraft, as shown in **Figure 2-3**.

FIGURE 2-3 - PAVEMENT STRENGTH



Source: WYDOT Aeronautics

Currently, the longitudinal gradient on Runway 10/28 does not comply with current FAA criteria. The maximum longitudinal gradient of a C or D category runway (see **Section 2.1** for more information on airport categories) is ±0.8% in the first and last quarter of the runway. In 2009, 600 feet of Runway 28 and 700 feet of parallel Taxiway B was rehabilitated and reconstructed. This

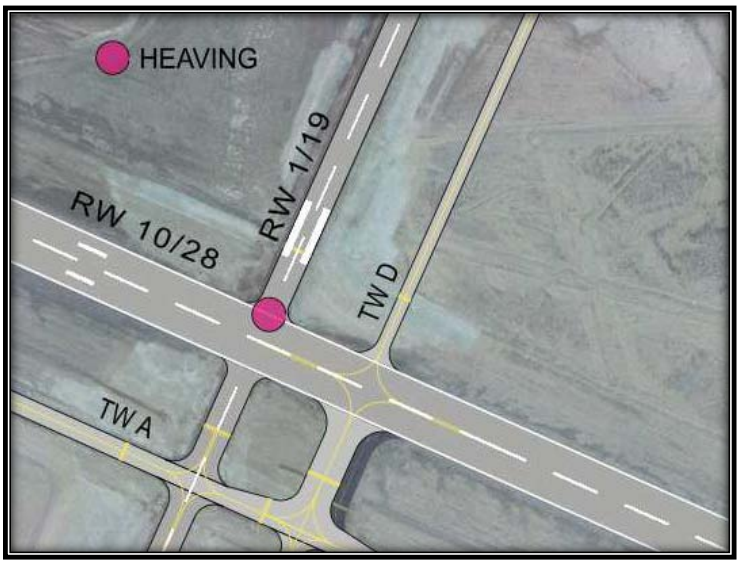
reconstruction included adjusting the elevation on the end of Runway 28 up approximately 2.25 feet in order to achieve the longitudinal gradient criteria. The longitudinal grade was reduced from 1.26% to 0.8%.

Additionally, scheduled in RIW's 2010 Capital Improvement Plan, the end of Runway 10 will be adjusted approximately 12 feet down in elevation in 2015 (pending funding) to correct the longitudinal gradient to FAA criteria, adjusting the gradient from +1.38% to +0.8%. The project consists of rehabilitation and reconstruction of 3,350 feet of runway and approximately 2,100 feet of parallel taxiway, as well as one 90-degree connector taxiway. By correcting the longitudinal gradients, this will increase the level of safety during landing and take-off procedures, while adhering to FAA runway design criteria.

Runway 1/19, the crosswind runway, is orientated north/south, and is 75 feet wide by 4,800 feet long. This runway was constructed for light aircraft use under high crosswind conditions, having a weight-bearing capacity no greater than 30,000 pounds for Single Wheel Gear (SWG) aircraft, and 50,000 for Double Wheel Gear (DWG). The runway is constructed of asphalt.

The intersection of Runway 10/28 and Runway 1/19 is experiencing isolated heaving, in the location shown in **Figure 2-4**. This should be investigated further to determine whether this occurrence will cause the gradient and/or the transverse slope to exceed the FAA runway standards.

FIGURE 2-4 – PAVEMENT HEAVING



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 Latitude 43°03'51.246"N and Longitude 108°27'35.428". The established airport elevation, which is defined as the highest point long the Airport's runway(s) is 5524.5' above mean sea level (MSL), and is located at the end of Runway 10.

2.6.2 Taxiways

The existing paved taxiway systems at RIW consist of two full-length parallel taxiways, with connecting taxiways to the runways. Taxiway A and B compromise of the full-length parallel taxiway for Runway 10/28, and has three connecting taxiways. Taxiway D is the full-length parallel taxiway for Runway 1/19 and has five connecting taxiways. The pavement design strengths for all the taxiways is shown in **Figure 2-3**, and varies in strength from medium sized aircraft to heavy aircraft.

2.6.3 Apron

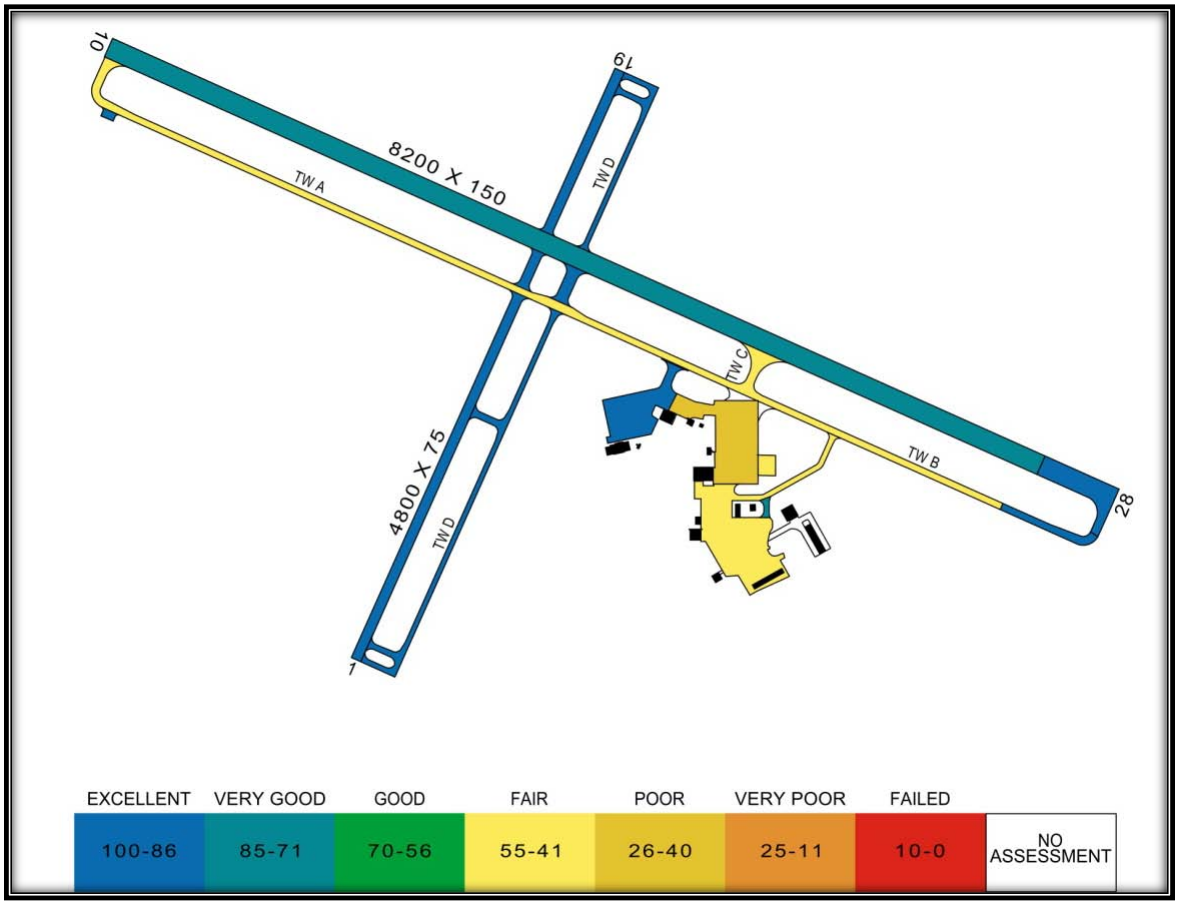
RIW has two primary apron areas: the commercial apron and the general aviation (GA) apron. The commercial apron is north of the terminal building, and is made up of roughly 3,890 square yards of concrete with pavement strength of 12,500 pounds SWG aircraft up to 190,000 pounds for DTG equipped aircraft, shown in **Figure 2-3**. The commercial apron has two 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 east of the terminal building and is composed of roughly 62,300 square yards of asphalt pavement, which includes the former commercial apron. The GA apron has a pavement strength of 12,500 pound for SWG aircraft; except the old commercial apron which has a pavement strength of 75,000 SWG, 110,000 DWG, and 190,000 DTWG. Additionally, there are two concrete fueling pads on this apron with a pavement strength of 75,000 SWG, 110,000 DWG, and 165,000 DTG, shown in **Figure 2-3**.

2.6.4 Pavement Condition

The 2009 Pavement Index Condition Study performed by the WYDOT Division of Aeronautics found that the runway pavement at RIW was in "Very Good" or "Excellent" condition. However, the majority of the taxiway and apron pavements were in "Fair" or "Poor" condition, as shown below in **Figure 2-5**.

FIGURE 2-5 - RIW PAVEMENT CONDITION INDEX



Source: 2009 WYDOT Pavement Index Condition Study; Map: Jviation

2.6.5 Lighting, Markings, and Signage of Runways and Taxiways

Runway 10/28 has High Intensity Runway Lighting (HIRL) and Precision Runway Markings. Runway 1/19 has Medium Intensity Runway Lighting (MIRL) and Non-Precision Runway Markings. Taxiways A, B, C and D are equipped with Medium Intensity Taxiway Lights (MITLs). 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. The commercial apron is equipped with flood lighting for safety and security.

The FAA recently established new airfield marking standards with new enhanced taxiway centerline and runway hold signs for airports. These new marking standards can be found in Change 2 of AC 150/5340-1J, *Standards for Airport Markings*. In summer 2008, RIW's airfield was painted with the new airfield markings standard. The taxiways at the runway intersections are marked with a yellow enhanced centerline and enhanced runway hold bars. Runway 10/28 is marked with precision markings, which includes centerline, edge stripes, aiming points, threshold, and touchdown zone

markings. While Runway 1/19 has non-precision markings, which only includes the centerline, threshold, and aiming point markings.

RIW is equipped with 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. RIW is equipped with a wide array of signage which includes the five sign types mandated by the FAA (AC 150/5300-13), instruction signs, location signs, direction signs, destination signs, and information signs.

In addition, the Airport has a segmented circle on the airfield located on the north side of Runway 10/28, adjacent to Taxiway C. A segmented circle includes a lighted wind cone, and provides a centralized location for wind and traffic pattern indicators for the airport's runways. The airfield also has a standard rotating beacon located directly south of the FBO, Jim's Aircraft Services.

2.6.6 Visual and Navigational Airport Aids

All the runways at RIW are equipped with Precision Approach Path Indicators (PAPIs) which provide visual descent guidance. A PAPI is a light system positioned on the normally located on left side of the runways and is constructed with four box lights in one row. The PAPIs for Runways 1, 19, and 10 are located on the left side of the runways, and the PAPI for Runway 28 is on the non-standard right side of the runway. These lights can be detectable from up to five miles during the day, and 20 miles or more at night. The approach ends of Runways 10, 1 and 19 have Runway End Identification Lights (REILs) to indicate to approaching aircraft where the beginning of the usable runway begins.

The Riverton VOR/DME (Very High Frequency Omni-directional Radio-range/Distance Measuring Equipment) is located on the airport, north of Runway 10/28 and east of Runway 1/19. This equipment is used in the precision approaches on Runways 10 and 28, and the non-precision approaches Runways 1 and 19.

An Instrument Landing System (ILS) is installed on Runway 28. An ILS provides both horizontal and vertical guidance to an approaching aircraft. The horizontal position of the aircraft, which is relative to the runway centerline, is provided by the localizer. The vertical guidance, which is relative to the runway end elevation, is provided by the glideslope. Additionally, Runway 28 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 and PAPIs on Runway 28 are owned and maintained by the FAA. The PAPIs on Runways 1, 19, and 10 are owned and maintained by the City of Riverton.

2.6.7 Approach Equipment and Procedures

RIW 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 10 has two published approaches: a RNAV (GPS) approach and a VOR approach. Runway 28 has three published approaches: a RNAV (GPS) approach, VOR approach, and an ILS approach. Runway 1/19 has no instrument approaches and is currently used in visual conditions only. **Table 2-9** gives information about each approach at RIW, 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 2-9 – RIW INSTRUMENT APPROACH MINIMUMS

Runway 10 - Approach	Lowest Minimums	Decision Height (feet-AGL)
RNAV (GPS)	5,919' - 1¼ mile	357'
VOR	5,940' – 1 mile	415'

Runway 28 - Approach	Lowest Minimums	Decision Height (feet-AGL)
RNAV (GPS)	5,656' - ½ mile	364'
VOR	5,940' - ½ mile	324'
ILS or LOC	5,656' - ½ mile	200'

Additionally, there are airports in the vicinity of Riverton that have instrument approach procedures. These airports include Casper/Natrona County International, Big-Piney-Marbleton Airport, Ralph Wenz Field, Rawlins Municipal, South Big Horn County, and Worland Municipal. These airports are listed in **Table 2-10**.

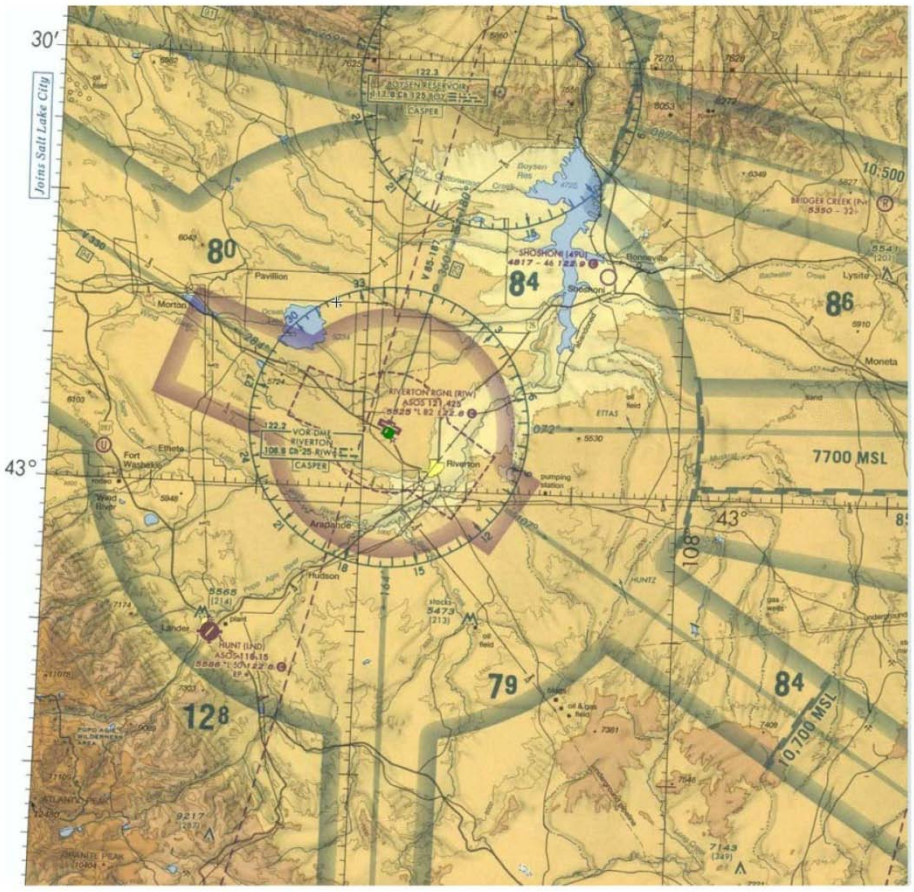
TABLE 2-10- NEARBY AIRPORTS WITH INSTRUMENT APPROACHES

Airport	Identifier	Dist. From RIW	Procedures Available
Worland Municipal Airport	WRL	58nm Northeast	VOR, GPS
Pinedale/Ralph Wenz Field	PNA	61nm West	RNAV, GOS, NDB-A
Big Piney-Marbleton Airport	BPI	78nm West	VOR, GPS
Casper/Natrona County International Airport	CPR	88nm East	ILS, LOC, RNAV, GPS, VOR/DME, TACAN
Greybull/South Big Horn County Airport	GEY	89nm North-Northeast	RNAV, GPS, NDB
Rawlins Municipal Airport	RWL	104nm Southeast	RNAV, GPS, VOR/DME

2.6.8 Airport Airspace Usage

RIW is in Class E Airspace, situated inside a corridor of four intersecting Victor Airways, which are imaginary "highways in the sky" connecting two ground-based navigational aids. Class E Airspace is the least restrictive classification of controlled airspace. Class E Airspace extends upward from either the surface or a designated altitude or overlaying or adjacent controlled airspace. It also includes control of IFR aircraft, and is only traffic advisory when able to VFR aircraft. 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 2-6**.

FIGURE 2-6 - SECTIONAL CHART



2.6.9 Noise Abatement Procedures

Currently, there are no noise abatement procedures for Riverton Regional Airport. 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 Riverton, actions may need to be taken to ensure that future noise issues are minimized.

2.6.10 Obstructions to Air Navigation

TO BE COMPLETED PENDING OBSTRUCTION SURVEY

2.7 COMMERCIAL PASSENGER FACILITIES

2.7.1 Passenger Service

This Airport was subsidized by the Essential Air Service (EAS) program until October 1, 2006, when Great Lakes Airlines began providing subsidy-free service to the facility. The EAS program was created following the Airline Deregulation Act of 1978, to minimize loss of air service to the

746 communities that had air service prior to deregulation. In order to keep service to those communities, Congress added Section 419 to the Federal Aviation Act, establishing the EAS Program.

Currently Great Lakes Aviation provides passenger service for RIW to and from Denver International Airport in Denver, Colorado. The daily flight schedule for Great Lakes Aviation is shown in **Table 2-11**. The aircraft used include the 19-seat Beech 1900D and the 30-seat Embraer EMB-120, which is also called the "Brasilia". Both aircraft are turboprop commuter aircraft. The average age of Great Lakes Airlines' aircraft is about 15 years.[3] Great Lakes has firm orders for five new Embraer 120s. As Great Lakes fleet continues to age, new aircraft types and sizes may be needed to serve RIW.

TABLE 2-11 - GREAT LAKES FLIGHT SCHEDULE - EFFECTIVE 02/11/11

Riverton to Denver

Departure Time	Arrival Time	Flight Number	Aircraft	Days*
7:37am	8:47am	5006	EMB-120	1, 2, 3, 4, 5, 6, 7
1:17pm	2:35pm	5093	BEECH 1900D	1, 2, 3, 4, 5, 6, 7
3:49pm	4:59pm	5008	EMB-120	1, 2, 3, 4, 5, 7

Denver to Riverton

Departure Time	Arrival Time	Flight Number	Aircraft	Days
11:45am	1:07am	5092	BEECH 1900D	1, 2, 3, 4, 5, 6, 7
2:14pm	3:29pm	5009	EMB-120	1, 2, 3, 4, 5, 7
6:48pm	8:03pm	5011	EMB-120	1, 2, 3, 4, 5, 7
5:33pm	6:52pm	5007	EMB-120	6

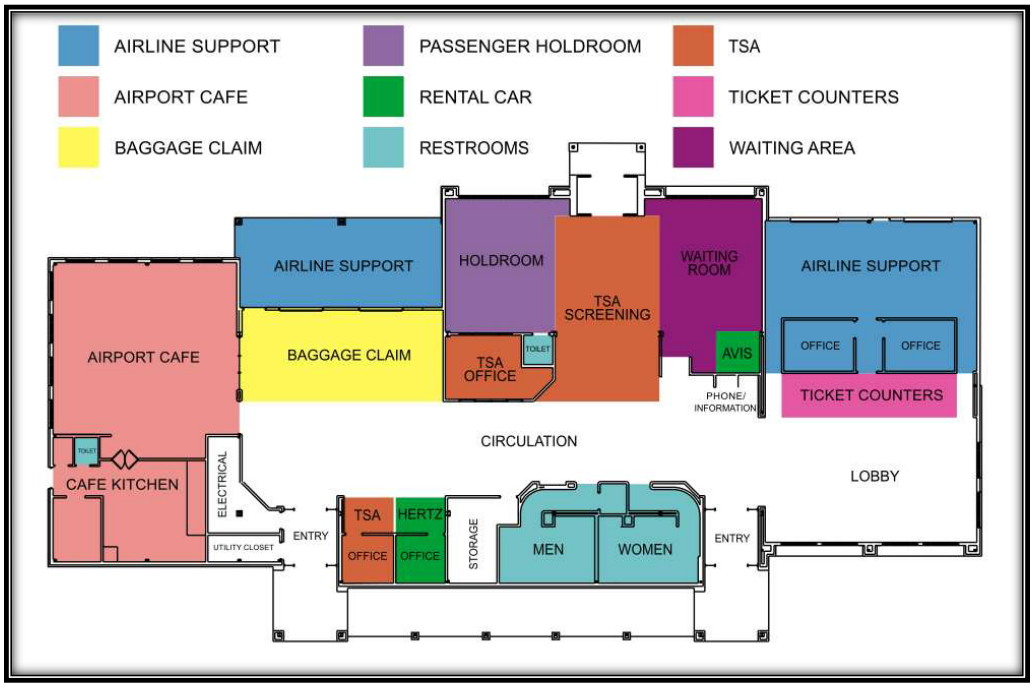
**Source: Great Lakes Aviation, Days 1= Mon, 2=Tues, 3=Wed, etc.*

2.7.2 Terminal Building

The terminal building was constructed in 1998, and includes approximately 11,013 square feet of enclosed area and 12,888 square feet of gross building area; with the ability for expansion to the east for an additional 10,500 square feet. The terminal is located on the southeast corner of the commercial apron. Inside the terminal are two rental car companies, Hertz and Avis, passenger ticketing, Great Lakes operations/office area, passenger screening, passenger hold room, baggage claim, and the Aircraft Café. The terminal has been overcrowded since 9/11 and the addition of TSA. TSA has taken up former rental car and gift shop space. As a result, Avis relocated to a desk situated in the non-secure passenger waiting area due to the lack of space and the gift shop closed.

[3] Great Lakes Aviation. Form 10-K Fiscal Year End 12/31/09.

FIGURE 2-7- TERMINAL BUILDING



Source: Jviation, Inc.

2.7.2.1 Airline Spaces

The ticket counters are located just inside the main entrance of the terminal. There are two counters, each with two positions. Currently, Great Lakes Airlines leases only one of the ticket counters. Behind each ticket counter is about 125 square feet for the Airline Ticket Office (ATO). An enclosed and heated baggage make-up space is located behind the ATOs and allows pull-in and out baggage cart operations. The airline has a motorized cart that hauls the checked baggage to and from the aircraft, airline support areas, and baggage claim. The baggage claim uses small garage doors and a slide to get bags to the baggage claim area.

2.7.2.2 Aircraft Parking and Gates

Commercial aircraft parking is located directly north of the terminal building and can accommodate up to two commuter aircraft. The terminal has one holdroom for scheduled passenger service with all the outgoing passengers into the existing a single gate door to the ramp.

2.7.2.3 Concessions

The Airport Café, a popular local restaurant, is located on the northwest side of the terminal. The Café offers a full service menu, and is open seven days a week, from 5:30am to 10:00pm. The majority of the Airport Café's business comes from non-aviation related customers. The Café has 1,120 square feet of seating area and a fully equipped 535 square foot kitchen. Currently, the Café

does not have a liquor license, but if it were to acquire one it could possibly generate significantly more revenue.

2.7.2.4 Rental Car Facilities

There are two rental car companies located within the terminal, Avis and Hertz. Both of the companies' business hours correspond with the arrival and departures of the scheduled air service. The rental car companies utilize the parking lot in front of the terminal where signage is in place to designate parking positions for each.

Additionally, Jim's Aircraft Service (FBO) offers rental cars for the GA users of the airport.

2.7.2.5 Passenger and Baggage Screening (TSA Facilities)

Since 9/11, security measures took effect authorizing the creation of the Transportation Security Administration (TSA) to perform all passenger and checked bags screening. TSA passenger screening is located in the center of the terminal. Passenger screening facilities consist of one Walk Through Metal Detector (WTMD) and one X-Ray Conveyor belt machine. Based on the current volume of commercial airline traffic, the quantity and configuration of the TSA equipment is sufficient.

Baggage screening is performed using two General Electric Itemizer Trace Detection (ETD) machines, where the exterior of all checked bags are swabbed by TSA personnel and tested with an ETD machine for explosive materials. This type of baggage screening is far slower than the automated Explosive Detection System (EDS). However, due to the low volume of passenger traffic the current method is adequate.

As stated previously, the terminal wasn't initially designed for TSA facilities. TSA office needs resulted in the loss of the gift shop and relocation of the Avis Rental Car to relocate to a desk situated in the non-secure passenger waiting. Also, TSA procedures and equipment are continually evolving in reaction to new threats. Changes to space in the terminal may be needed to meet evolving TSA security methods.

2.7.2.6 Curb Front

The curb front is located direct in front (south) of the terminal. The curb front is only used for passenger drop off and pickup. There is no curbside check-in due to low passenger volumes.

2.8 General Aviation Facilities

General Aviation (GA) facilities provide services to GA operators at an airport. GA facilities include the Fixed Base Operator (FBO), hangars, and apron/tiedown space.

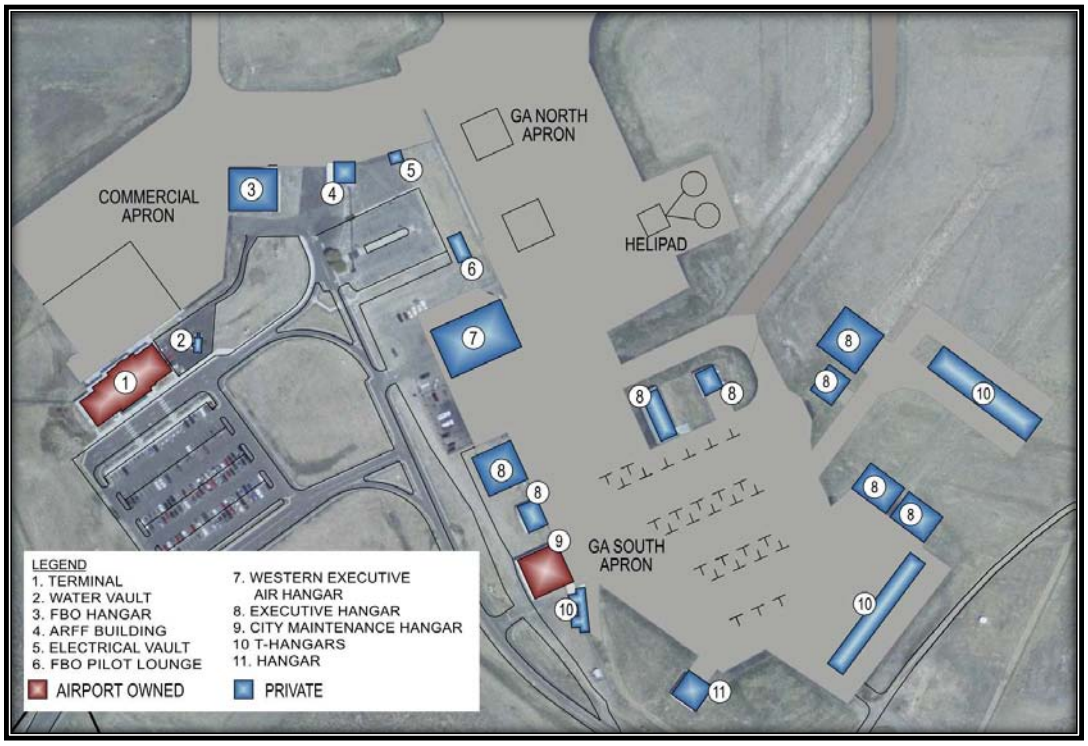
2.8.1 Fixed Base Operator

RIW has one FBO, Jim's Aircraft Services. The FBO is open during normal business hours, which includes weekdays from 7:00am to 5:30pm, weekends 8:00am to 4:00pm. After hour call-service is offered with prior arrangement and/or a callout fee. Jim's Aircraft Service is a full service FBO. 100 Low Lead (AvGas) and Jet A are available for purchase, in addition to other services such as oxygen service, aircraft parking on the ramp, tie-downs, a GPU/Power cart, pilot lounge, aircraft rental, aircraft maintenance, pilot supplies, and rental cars. The fueling and maintenance facilities are located on GA apron, directly south of Taxiway A1. The pilot lounge is located on the northwest side of the GA ramp.

2.8.2 Airport Hangars

The hangars at RIW as shown in **Figure 2-8** include two T-hangar units, six executive hangars, one private hangar, Jim's Aircraft Services hangar, the City Maintenance Hangar, and the old Western Executive Air hangar. The only buildings owned by the Airport are the City Maintenance Hangar and the Terminal Building, shown in red in **Figure 2-8**. The rest of the hangars are privately owned (hangars in blue), with the land leased from the Airport. The land leases are normally for five years, with the option to renew for another five year, and there is a reversion clause, meaning once the lease has expired anything built on airport property will become property of to the airport. The land lease rate is $0.13 per square foot, and increases each year according the Consumer Price Index.

FIGURE 2-8- AIRPORT HANGARS



Source: Jviation

2.8.3 Based & Transient Aircraft Parking Aprons & Tiedowns

Jim's Aircraft Services manages all the tiedowns while the airport keeps a current list of the hangars with the airplanes and their owners. There are 37 designated tie-downs. The airport/FBO do not charge tie-downs fees. This may need to be re-assessed, to determine if a significant amount of revenue can be generated from tie-down fees.

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). ARFF & Snow Removal Equipment (SRE) are eligible for FAA funding, most other maintenance equipment is eligible for WYDOT Aeronautics funding.

2.9.1 ARFF Equipment

Aircraft Rescue and Firefighting (ARFF) is a special category of firefighting on airports for response, evacuation, and possible rescue of passengers and crew in an aircraft. Since RIW is a Federal Aviation Regulations (FAR) Part 139 airport, it is required to provide ARFF service during air carrier operations. Riverton Regional Airport (RIW) has an ARFF Index of A. RIW has one ARFF truck. It is a 2001 KME/Walters ARFF Vehicle with a capacity of 1,500 gallons of water, 150 gallons of Aqueous Film Forming Foam (AFFF), and 500 pounds of dry chemical. See **Section 2.14** for more information on Part 139.

2.9.2 Snow Removal Equipment (SRE)

Snow removal equipment (SRE) requirements are also regulated under FAR Part 139. RIW's category requires it to have enough equipment to clear one inch of falling snow per hour from the primary runway, taxiway(s), and commercial service apron. RIW's snow removal equipment includes two snowplows and two tractors. One snowplow is a 1980 Sincard with an 18-foot blade and the other is a 2003 Kodiak Northwest with a 20-foot blade and snowblower. The tractors are the 1999 John Deere tractor 5510 2x4 with a snow blower, and the 2009 John Deere 5095M 4x4 with bucket, broom, snowblower, and rear blade attachments. The SRE is adequate to meet FAR Part 139 standards for snow removal. The snow removal equipment is operated by the airport's operations staff and is stored in the maintenance hangar on the GA ramp.

2.10 SUPPORT FACILITIES

2.10.1 Aircraft Rescue and Firefighting (ARFF) Station

The Airport's Aircraft Rescue and Firefighting (ARFF) Station is located on the commercial apron. It is a 40 by 40 foot metal building, and is adequate for housing the ARFF truck. The ARFF building is also the on-site airport operation's office. Since the ARFF Station was built, the sewer line leading into the old terminal was replaced due to freezing in the winter months. Also a new stairway to the upper storage area was installed, the previous method was a ladder. Additionally, the

ARFF Station's garage doors are showing signs of deterioration and will need to be repainted or may need to be replaced.

2.10.2 Snow Removal Equipment (SRE) Building

The Snow Removal Equipment is stored in the maintenance hangar on the GA ramp. The maintenance hangar is not an ideal method of storage for the SRE equipment, as the hangar could be leased for aircraft storage.

2.10.3 Aircraft Fuel Storage

RIW has two fuel tanks located on the southwest corner of the GA ramp. The fuel tanks are above ground with one tank able to hold 12,000 gallons of fuel and the other tank capable of holding 15,000 gallons Jet A fuel. The fuel tanks are owned by the Airport and leased and operated by Jim's Aircraft Services (FBO). Additionally, Jim's Aircraft Services owns and operates four fuel trucks: 1995 Ford 2,500 gallon Jet A truck, 1998 Ford 1,600 gallon Jet A truck, 1983 Ford 1,200 gallon AvGas truck, and 1979 GMC 1,400 gallon 100 Octane Low Lead (100LL) truck.

2.11 Access, Circulation, and Parking

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

2.11.1 Airport Access Road Network

RIW's public entrance roads, Chandelle Boulevard and Airport Road (Old Highway 26) are located on the southeast side of the airport. Chandelle Boulevard provides direct access to the terminal building, and Airport Road provides access to the GA side of the Airport's aprons. Airport Road approaching the Airport is in poor condition; however it is off airport property and is not eligible for repair through the federal or state grants.

2.11.2 Circulation Roads

A loop road circles the parking lots providing curb front access as well as general circulation.

2.11.3 Auto Parking

RIW has free long- and short-term paved parking, located in front of the terminal building. There are 153 parking spaces in front of the terminal: two for TSA, 20 allocated to Hertz Rental Car, 10 allocated to Avis Rental, 5 for handicap, and 116 for general parking. Additionally, there are seven parking spaces on the east side of the terminal: six for employees and one handicap parking space.

2.12 UTILITIES

RIW has a variety of basic utilities including water and sewer, telecommunications, gas, and electricity. The utility lines serving the Airport are buried underground and provide service to the buildings and airfield facilities.

2.12.1 Water & Sanitary Sewer

The City of Riverton provides water and sanitary sewer to RIW. The municipal water system has two separate sources, a well field of 13 wells ranging from 450 to 1,300 feet below the surface for the use during the winter months, and a surface water treatment plant for use during the summer months. The sustained combined yield of the water production facilities is slightly in excess of eight million gallons per day, sufficient to accommodate a population of 35,000 people.

2.12.2 Fiber Optics and Communications

Qwest Communications provides both residential and business telephone and broadband for the area. Additionally, Bresnan Communications competes with Qwest by providing residential telecommunication services and McLeod USA provides business services.

2.12.3 Natural Gas

KN Energy is the natural gas utility provider for the Riverton area.

2.12.4 Electricity

Rocky Mountain Power and High Plains Power, Inc. provide electricity for the City of Riverton.

2.13 METEOROLOGICAL DATA

Since the City of Riverton is surrounded by the Wind River Mountains and Rocky Mountains to the west and north, it has some of the mildest year-round weather in the state of Wyoming.

2.13.1 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 completely different airport. Per the FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, when the current runway(s) provide less than 95% wind coverage for any aircraft that use the airport on a regular basis, a crosswind(s) runway should be considered. The crosswind components of 10.5, 13, 16, and 20 knots were used for this analysis to look at different size aircraft's allowable crosswind component. A 10.5 knot crosswind component is used for small aircraft weighing

12,500lbs or less, and a crosswind component 20 knots is used for an aircraft the size of a Boeing 767.

The weather observations taken at Riverton Regional Airport were obtained from the National Climatic Data Center (NCDC). Observations were taken at RIW from 2000 to 2007. This data indicates that during All Weather conditions, the current runway orientations provide 97.48% coverage for a 10.5 knot crosswind, 99.04% coverage for a13 knot crosswind, 99.74% coverage for a 16 know crosswind, and 99.97% coverage for a 20 knot crosswind.

Moreover, the data taken indicated that during Instrument Flight Rules (IFR) conditions, the existing runway orientations provide 99.35% coverage for a 10.5 knot crosswind, 99.80% coverage for a13 knot crosswind, 99.85% coverage for a 16 knot crosswind, and 99.86% coverage for a 20 knot crosswind.

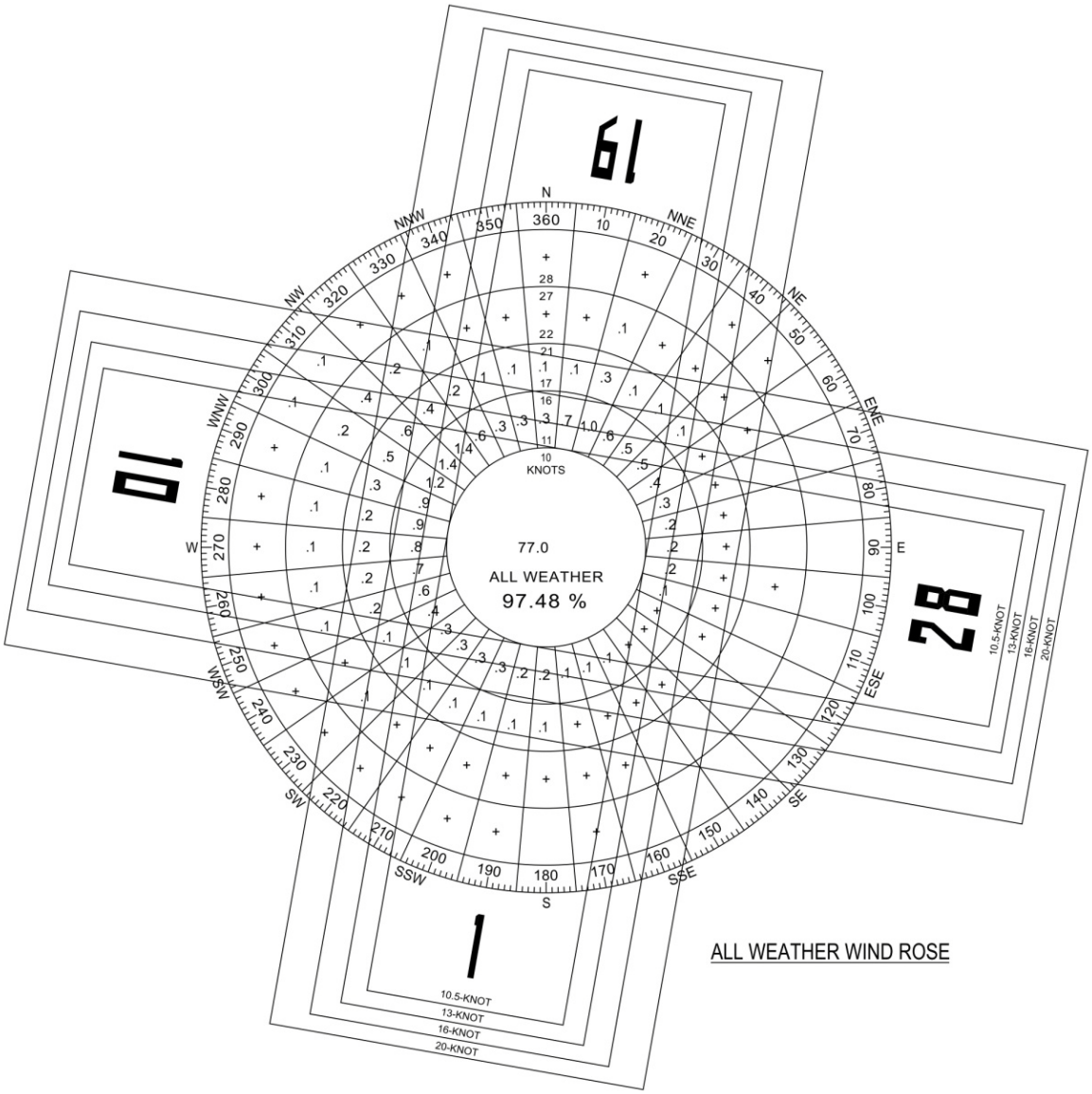
Looking closer at the wind data, **Table 2-11** shows that a runway with a northwest/southeast orientation provides the highest percent of wind coverage for "All Weather" conditions, which is Runway 10/28. It also shows that a north/south runway orientation is best during IFR conditions, which is Runway 1/19.

TABLE 2-12- RUNWAY ALIGNMENT WIND COVERAGE (10.5 KNOTS)

Runway Orientation	% Coverage (All Weather)	% Coverage (IFR)
1/19	**87.07**	**96.41**
2/20	87.10	96.99
3/21	87.41	96.90
4/22	87.81	96.02
5/23	88.19	94.27
6/24	88.44	91.06
7/25	88.71	88.10
8/26	89.14	85.91
9/27	89.71	84.21
10/28	**90.47**	**83.13**
11/29	90.79	82.40
12/30	90.56	82.27
13/31	90.09	83.23
14/32	89.62	85.19
15/33	89.17	88.01
16/34	88.58	90.95
17/35	87.99	93.86
18/36	87.45	93.86

The FAA All Weather and IFR weather wind roses are depicted in **Figure 2-9** and **Figure 2-10** on the following pages.

FIGURE 2-9 - ALL WEATHER WIND ROSE

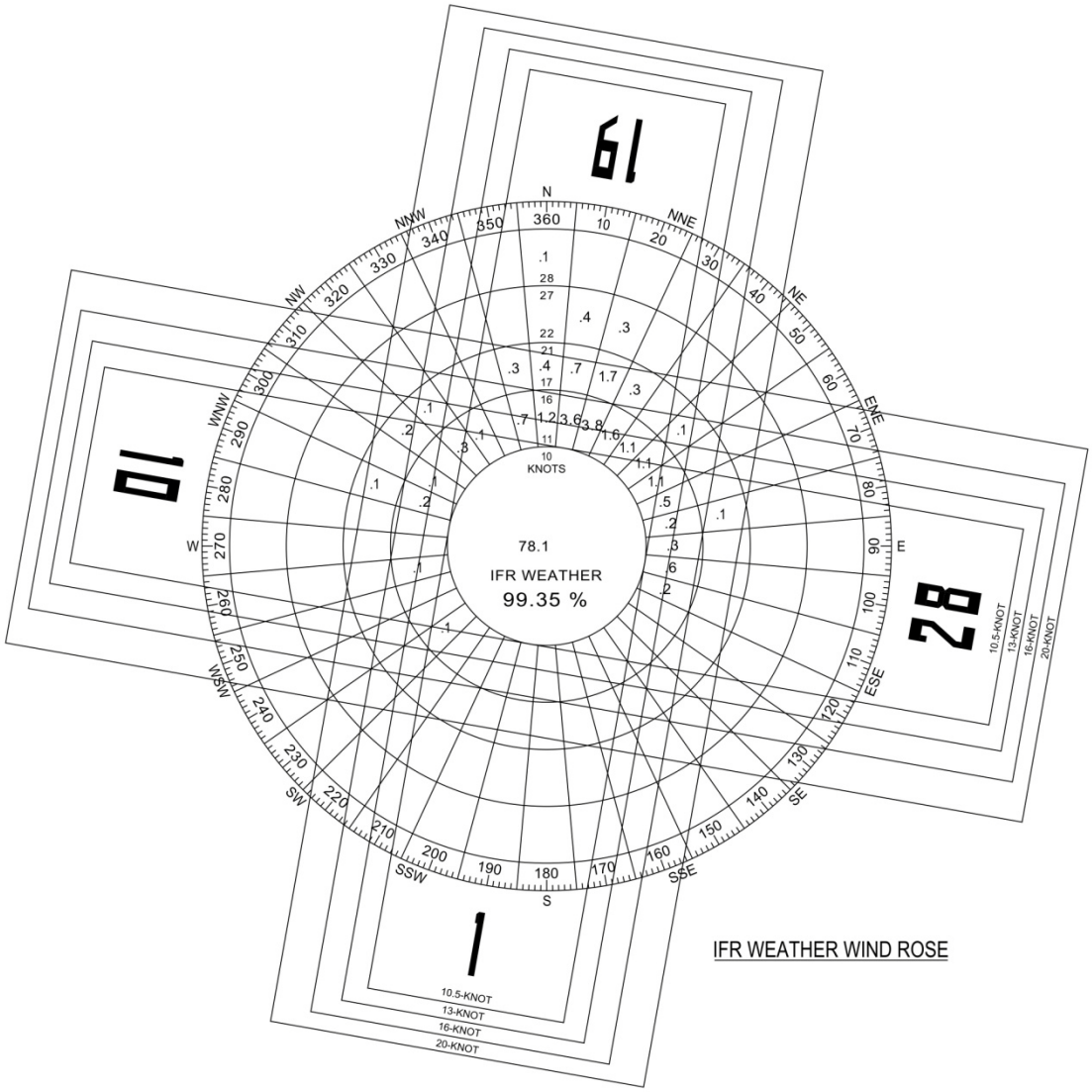


ALL WEATHER WIND ROSE

ALL WEATHER WIND ROSE

Runway Designation	20-Knot Crosswind Component	16-Knot Crosswind Component	13-Knot Crosswind Component	10.5-Knot Crosswind Component
RUNWAY 01/19	98.53%	96.27%	91.85%	87.07%
RUNWAY 10/28	99.26%	97.78%	94.43%	90.47%
COMBINED	99.97%	99.74%	99.04%	97.48%

FIGURE 2-10 - IFR WIND ROSE



IFR WEATHER WIND ROSE

IFR WEATHER WIND ROSE

Runway Designation	20-Knot Crosswind Component	16-Knot Crosswind Component	13-Knot Crosswind Component	10.5-Knot Crosswind Component
RUNWAY 01/19	99.87%	99.48%	98.20%	96.41%
RUNWAY 10/28	98.13%	95.03%	88.67%	83.13%
COMBINED	99.86%	99.85%	99.80%	99.35%

2.13.2 Temperature

The mean maximum temperature of the hottest month, also known as the airport reference temperature, occurs in July with a temperature of 88.8 ºF. The average temperature in January is 29.4ºF and in June it is 79.6 ºF. These temperatures are recorded by the Western Region Climate Center. [4]

2.13.3 Precipitation

May is typically the rainiest month in Riverton, and the total precipitation averages 8.79 inches per year. The average snowfall for the city averages 33.6 inches per year, with most of the snow fall occurring in March, April, and November.[5] High winds can continue to cause hazardous blowing snow conditions even when no new snow is accumulating.

2.13.4 Instrument Meteorological Conditions (IMC)

From the information provided by National Climatic Data Center (NCDC), Instrument Meteorological Conditions (IMC) occur 2.1% of the time at RIW. IMC is defined as a period when cloud ceiling 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 adhered to. A review of the data indicates that periods of IFR mostly occur between October and April, as displayed in **Table 2-13**.

TABLE 2-13 - PERCENT IMC OCCURS PER MONTH

Month	IMC%
January	2.3%
February	4.6%
March	2.4%
April	3.5%
May	1.2%
June	0.2%
July	0%
August	0.05%
September	0.9%
October	2.5%
November	4.1%
December	2.9%
Annual	**2.1%**

2.14 AIRPORT CERTIFICATION AND REGULATIONS

Riverton Regional Airport (RIW) is a commercial service airport, meaning that it provides scheduled passenger service on commercial airliners. As a commercial service airport, RIW is required to follow the

[4] Western Region Climate Center, Colorado Climate Summaries. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?wyrive
[5] Western Region Climate Center, Colorado Climate Summaries. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?wyrive

Federal Aviation Regulation (FAR) Part 139, *Certification Requirements*, and Transportation Security Regulations (TSR) Title 59, Part 1542, *Airport Security*.

2.14.1 FAR Part 139

FAR Part 139, *Certification Requirements*, 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 9 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, RIW 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

2.14.1.1 FAA Certification Inspection

The last FAA Certification Inspection was in May 19, 2010. There were four corrective actions needed.

- **139.311C1 - Operations: Marking, Signs, and Lighting.** Runway edge lighting system on Runway 10/28 is failing. Airport operations are replacing bulbs continuously. The illumination of runway edge lights is inconsistent with several lights in a row being dim then two or three being as bright as medium intensity. Moisture in system is creating maintenance problems and unsafe conditions for personnel when replacing bulbs. The lighting system is over 20 years old and direct buried wire. *To be corrected with Runway 10 Reconstruction when funds become available.*

- **139.311F -Operations: Marking, Signs, and Lighting.** Road stop signs shall be placed at any service road at intersection of a runway, taxiway, or ramp where aircraft are transitioning. *The Airport corrected on June 22, 2010.*

- **139.321B5 – Operations: Handling and Storing of Hazardous Substances and Materials.** FBO small Ford fuel truck does not have fire extinguisher mounted on outside of truck. Extinguisher enclosed in cabinet of truck. Nozzle is rough with metal spars and needs to be filed down so spars aren't dislodged. *The Airport corrected on June 8, 2010.*

- **139.321.B5 – Operations: Handling and Storing of Hazardous Substances and Materials.** FBO Ford 100LL truck needs faded placarding replaced. No Smoking, AVGAS 100LL, and Flammable. *The Airport corrected on June 8, 2010.*

2.14.1.2 Part 139: Aircraft Rescue and Firefighting

A major item of Part 139 pertains to Aircraft Rescue and Firefighting (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 the airport must have.

TABLE 2-15 - ARFF INDEX DETERMINATION

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

The Beech 1900D operated by Great Lakes operates at RIW on an average of six times per day and are 57'10" long, which means RIW has an ARFF Index of A.

Part 139 requires Index A airports to have the following[6]:

One vehicle carrying at least:

1) 500 pounds of sodium-based dry chemical, halon 1211, or clean agent; or

2) 450 pounds of potassium-based dry chemical and water with a commensurate quantity of Aqueous Film Forming Foam (AFFF) to total 100 gallons for simultaneous dry chemical and AFFF application.

RIW meets the requirements of Index A with the KME/Walters ARRF Vehicle, because it has a capacity of 1,500 gallons of water, 150 gallons of AFFF, and 500 pounds of dry chemical.

The airport has five certified firefighters to provide coverage during commercial flights.

2.14.2 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 airports 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 Transportation Security Administration (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 are 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. [7] 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, RIW is in compliance with all the applicable security regulations and requirements.

[6] Federal Aviation Regulations (FARs) Part 139, Airport Certification
[7] Code of Federal Regulations (CFR), Title 49, Part 1542, *Airport Security*

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

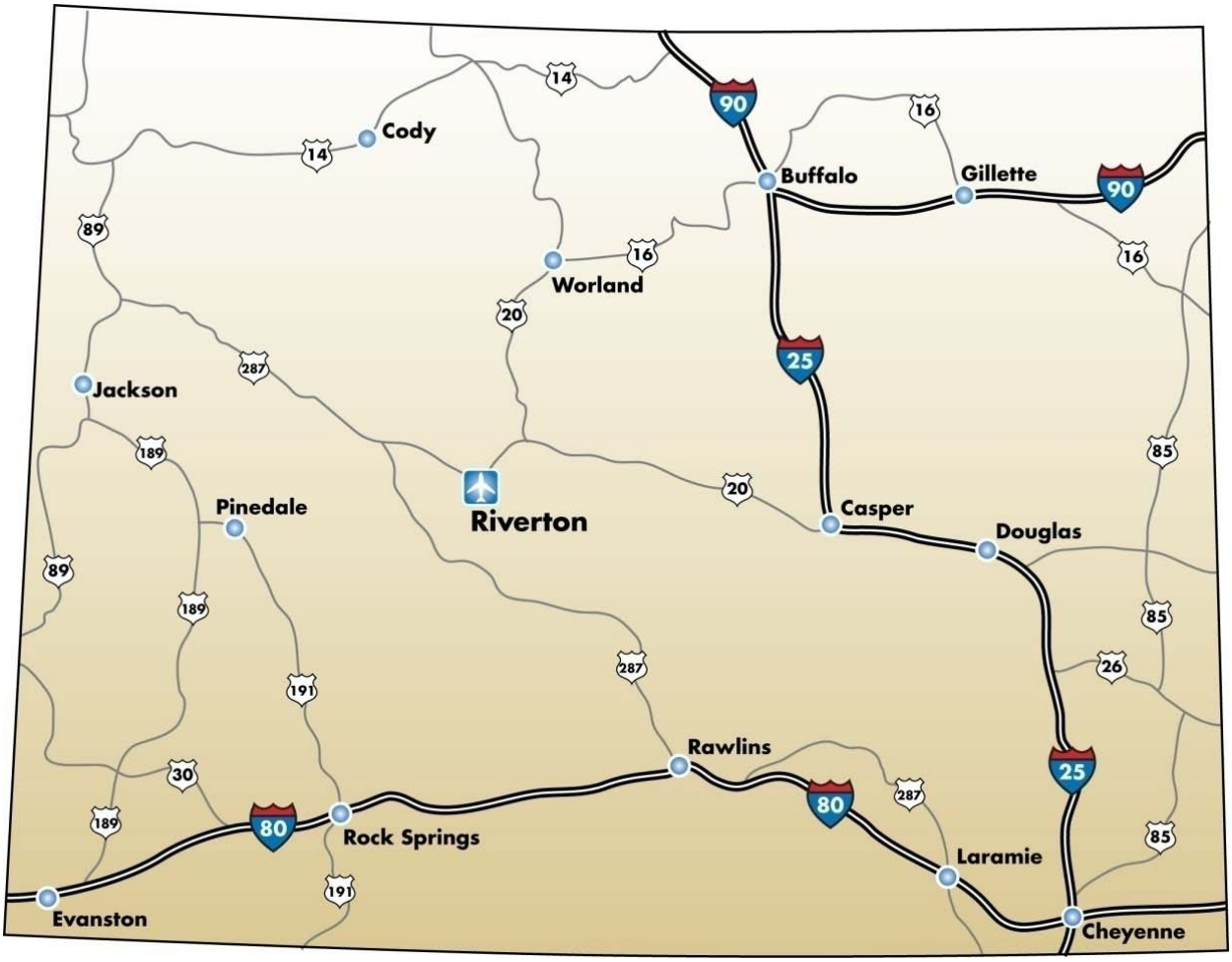
However, because RIW's terminal was designed and constructed prior to the creation of Part 1542, the additional rental car space, as well as the gift shop area, have been unexpectedly occupied by the TSA. Avis has relocated to a desk situated in the non-secure passenger waiting area due to the lack of space and the gift shop closed.

The airport provides three Law Enforcement Officers (LEOs) for all commercial flights. All three LEOS are cross trained as ARFF responders.

2.15 REGIONAL SETTING

RIW is located in central Wyoming, approximately 100 miles west of Casper, shown in **Figure 2-11**. The City of Riverton is in Wind River Country, located where the Big Wind and Little Wind River join. It is surrounded by Owl Creek (to the north), Wind River Mountain Ranges (south & west), and Gas Hills to the east. Surrounding Riverton is the Wind River Indian Reservation.[8] The Reservation is the seventh largest reservation in the country, with more than 2.2 million acres, and is home to over 8,000 members of the Eastern Shoshone and the Northern Arapahoe tribes.[9]

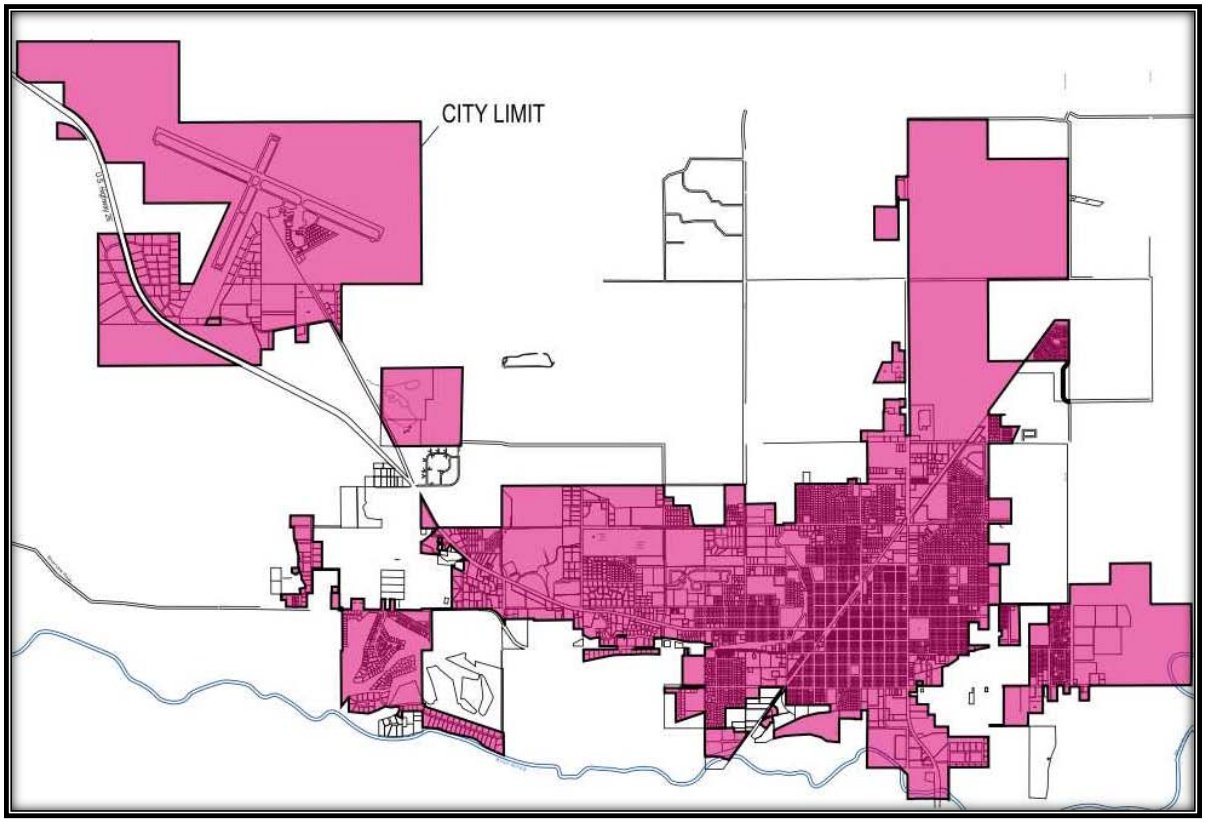
FIGURE 2-11 - LOCATION MAP



[8] Riverton Chamber of Commerce. http://www.rivertonchamber.org/community/RegionalFacts.asp
[9] Wyoming's Wind River Country. http://www.wind-river.org/

The City of Riverton boundary incorporates the airport property, as shown in **Figure 2-12**. The City of Riverton is compromised of 6,251 acres; of that 2,249 are currently developed or pending development applications; 2,794 acres are in active use for parks, schools, utilities, and other major public facilities, and 1,208 are vacant lands, agricultural uses, and right-of-way. Almost half (45%) of the City is public/quasi-public land, the remainder is privately owned. Additionally, a large portion of the public land is zoned for the airport, Central Wyoming College, the State Honor Farm, and the Rendezvous site.[10]

FIGURE 2-12 - CITY OF RIVERTON BOUNDARY



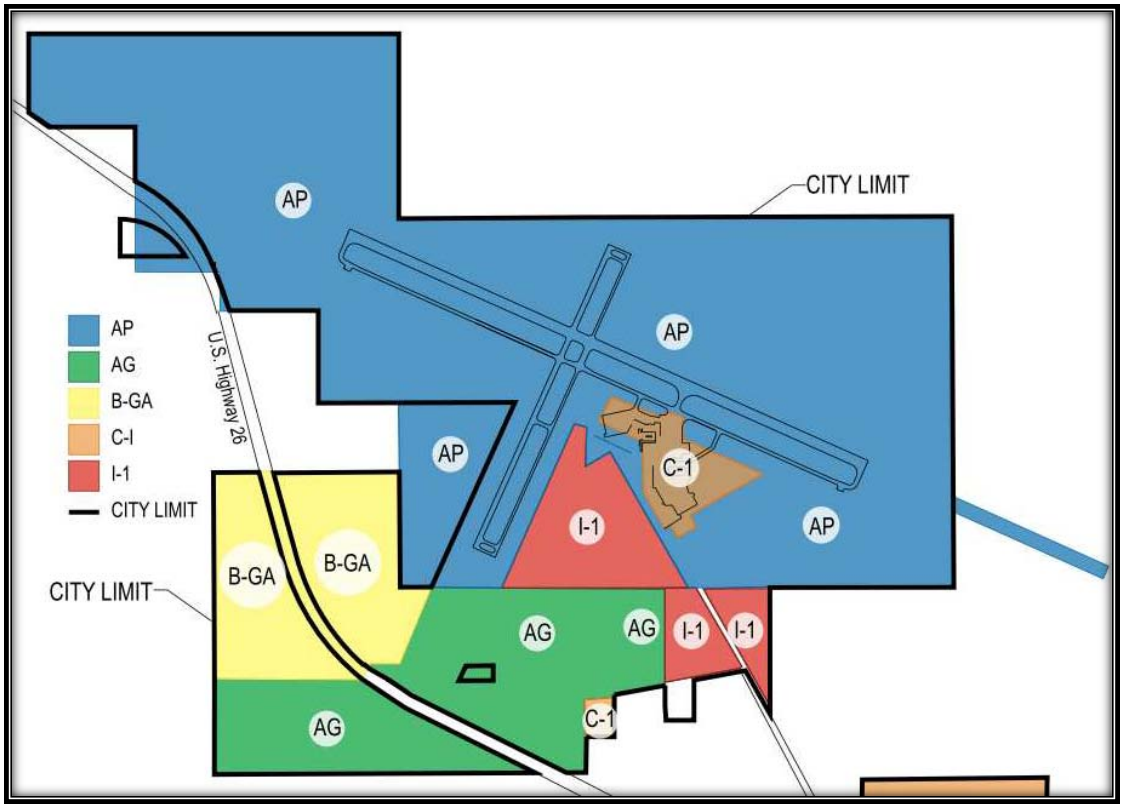
Source: City of Riverton

[10] City of Riverton Master Plan, Adopted April 2007.

2.16 AIRPORT PROPERTY AND LAND USE

The Airport presently owns approximately 1,301 acres of land, which encompasses the airfield and the property surrounding the Airport (**Figure 2-13**). On the east side of the Airport property, is an 11.61-acre parcel that the Airport acquired from the Department of interior in 1983. This area is to accommodate Runway 28's MALSR system.

FIGURE 2-13 - CITY ZONING



Source: City of Riverton Future Land Use Plan, Adopted April 2007

Figure 2-13 shows the zoning areas within the Airport property. The map depicts Agricultural (AG), Commercial (C-1), Industrial (I-1), and Residential (B-GA) zoning adjacent to or within the Airport's property. Each zoning uses and characteristics are explained in **Table 2-17**.

TABLE 2-17 - LAND USE

Category	Description
Airport (AP)	Compatible land use includes airports, single family dwellings located on the unsubdivided tracts of one acre or more, agricultural activity and public parks and recreational areas. Height restrictions within this district dictate that no structure or tree shall be erected, altered, allowed to grow, or be maintained to a height in excess of the applicable height limitations established by the FAR Part 77 Imaginary Surface that surround the Airport. No dwellings are to be erected or located within the 65 DNL noise contour.
Agricultural (AG)	Compatible land use includes any form of agricultural activity, but excluding feed lots and sales or auction yards, single family dwelling located on unsubdivided tracts of one acre or more, and public parks and recreation areas. There are no height restrictions placed within this zone.
Estate Residential (B-GA)	Compatible land use includes single and multiple family dwelling on the lots that are a minimum of 5,000 square feet, parks, churches, libraries, barns, one livestock unit per ½ acre, and pasturage or the production of crops. A 45- height restriction is placed on any buildings or structures in this zone.
Commercial (C-1)	Compatible land use includes offices, automobile parking, airport hangars, and FBO's that can service and fuel aircraft. A 45-foot height restriction is placed on any building or structure in this district.
Industrial (I-1)	Compatible land use includes, among others, animal hospitals, auto body repair shops, billboards, greenhouses, motor vehicle and machinery sales and services, and warehouses. Buildings located with 150 feet from a residential district have a height restriction of 45 feet.

Source: City of Riverton Master Plan, Adopted April 2007

2.17 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.

2.17.1 Population

According to the U.S. Census Bureau and the Wyoming Department Transportation between 2000 and 2008, the City of Riverton has grown as fast as the cities of the nearby competitor airports. Moreover, it has grown approximately 2% faster than Fremont County, as shown in **Table 2-18.**

TABLE 2-18 - POPULATION DATA

Place	Census 2000 Population	July 2004 Population	July 2005 Population	July 2006 Population	July 2007 Population	July 2008 Population	% Change July 2007 to July 2008	% Change 2000 to 2008
Fremont County	35,804	35,941	36,273	36,770	37,461	38,113	1.7	6.45
City of Riverton	9,310	9,300	9,428	9,608	9,820	10,032	2.16	8.36
Town of Dubois	962	975	985	1,008	1,032	1,053	2.03	9.26
Town of Hudson	407	409	412	416	423	429	1.41	5.40
City of Lander	6,867	6,837	6,878	6,989	7,132	7,264	1.85	5.08
Town of Shoshoni	635	652	655	661	677	689	1.77	8.50
Town of Pavilion	165	163	163	164	167	169	1.2	2.4
Balance of Fremont County	17,458	17,605	17,752	17,924	18,210	18,477	1.5	5.8

Source: State of Wyoming, Economic Analysis Division

2.17.2 Employment

The Fremont County School District is the largest employer of the City of Riverton. **Table 2-19** shows the top employers in Riverton.

TABLE 2-19 – RIVERTON'S PROFILE OF MAJOR EMPLOYERS

COMPANY	EMPLOYEES	PRODUCT/SERVICE
Fremont County School District 25	525	Education
Central Wyoming College	500	Education
Wal-Mart	390	Retail
Wind River Casino	300+	Entertainment
Riverton Memorial Hospital	218	Medical
Community Entry Services	189	Government
City of Riverton	114	Government
BTI	93	Trucking
Pertech Resources, Inc.	87	Retail
Brunton	76	Retail

Source: Wyoming Business Council 2009

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 2-20** shows the latest data and numbers for Fremont County.

TABLE 2-20 - 2007 NAICS TOTALS FOR FREMONT 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	8	7	1	0	0	0	0	0	0	0
Mining	54	26	5	7	12	3	1	0	0	0
Utilities	5	1	2	1	1	0	0	0	0	0
Construction	242	166	49	20	6	1	0	0	0	0
Manufacturing	35	18	6	7	3	1	0	0	0	0
Wholesale Trade	38	18	13	4	2	1	0	0	0	0
Retail Trade	208	95	62	31	12	5	2	1	0	0
Transportation and Warehousing	61	41	9	5	5	1	0	0	0	0
Information	30	12	7	6	4	1	0	0	0	0
Finance and Insurance	60	35	19	2	4	0	0	0	0	0
Real Estate and Rental and Leasing	78	65	5	5	2	0	1	0	0	0
Professional, Scientific, and Technical Services	117	88	19	9	1	0	0	0	0	0
Management of Companies and Enterprises	1	0	0	0	1	0	0	0	0	0
Administrative and Support and Waste Management and Remediation Services	36	25	8	2	1	0	0	0	0	0
Educational Services	14	5	2	2	2	1	2	0	0	0
Health Care and Social Assistance	128	69	19	19	11	7	3	0	0	0
Arts, Entertainment, and Recreation	32	24	3	4	0	1	0	0	0	0
Accommodation and Food Services	134	52	34	24	22	2	0	0	0	0
Other Services (except Public Administration)	121	93	20	6	1	1	0	0	0	0
Unclassified	4	4	0	0	0	0	0	0	0	0
Total	1406	844	283	154	90	25	9	1	0	0

Source: Census County Business Patterns. NAICS for Fremont County

2.17.3 Income

The per capita income in Fremont County is slightly lower than the State of Wyoming and the U.S. Average. However, in 2009 the cost of living index for Riverton was 85.5, which means it is 14.5% less expensive to live in Riverton than the "average" U.S. city.

TABLE 2-21- PER CAPITA PERSONAL INCOME COMPARISON

Place	2003	2004	2005	2006	2007	2008
Fremont County	$26,656	$28,560	$30,699	$34,047	$35,887	$37,431
State of Wyoming	$33,920	$36,261	$39,446	$44,677	$46,726	$48,580
U.S. Average	$32,271	$33,881	$35,424	$39,698	$39,392	$40,166

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

2.18 Environmental Overview

FAA Order 1050.1E, *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 these categories and their existence at the airport.

2.18.1 Air Quality

The Airport is located in Fremont 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: 1-Hour Ozone, 8-Hour Ozone , Carbon Monoxide, Nitrogen Dioxide, Sulfur Dioxide, Particulate Matter PM-10, Particulate Matter PM-2.5, and Lead. Sheridan County is the only county in Wyoming designated as non-attainment, with only part of the county included.

TABLE 2-22 - NONATTAINMENT AREA, WY

County	Pollutant	Area Name	Nonattainment in Year	Classification	Cnty Whole/Part	Pop (2000)
WYOMING						
Sheridan	PM-10	Sheridan, WY	1992 - 2010	Moderate	Part	15,782

Source: U.S. Environmental Protection Agency, Nonattainment Status for Each County by Year, WY, 2010

2.18.2 Department of Transportation Act: Section 4(f)

The Department of Transportation (DOT) Act, Section 4(f)[11] 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

[11] *U.S. Department of Transportation Act, section 4(f),* recodified and renumbered as § 303(c) of 49 U.S.C.

significance or land from an historic site of national, state, or local significance unless there is no feasible or prudent alternative and the use of such land includes all possible planning to minimize harm resulting from the use".

An analysis of DOT 4(f) properties in the vicinity of the Airport was completed (see **Table 2-23** for a list of properties). The City has seven City parks and the Fremont County Fairgrounds. Jaycee Park is the closet park to the Airport, located 2.5 miles to the southeast.

TABLE 2-23 - DOT 4(F) PROPERTIES

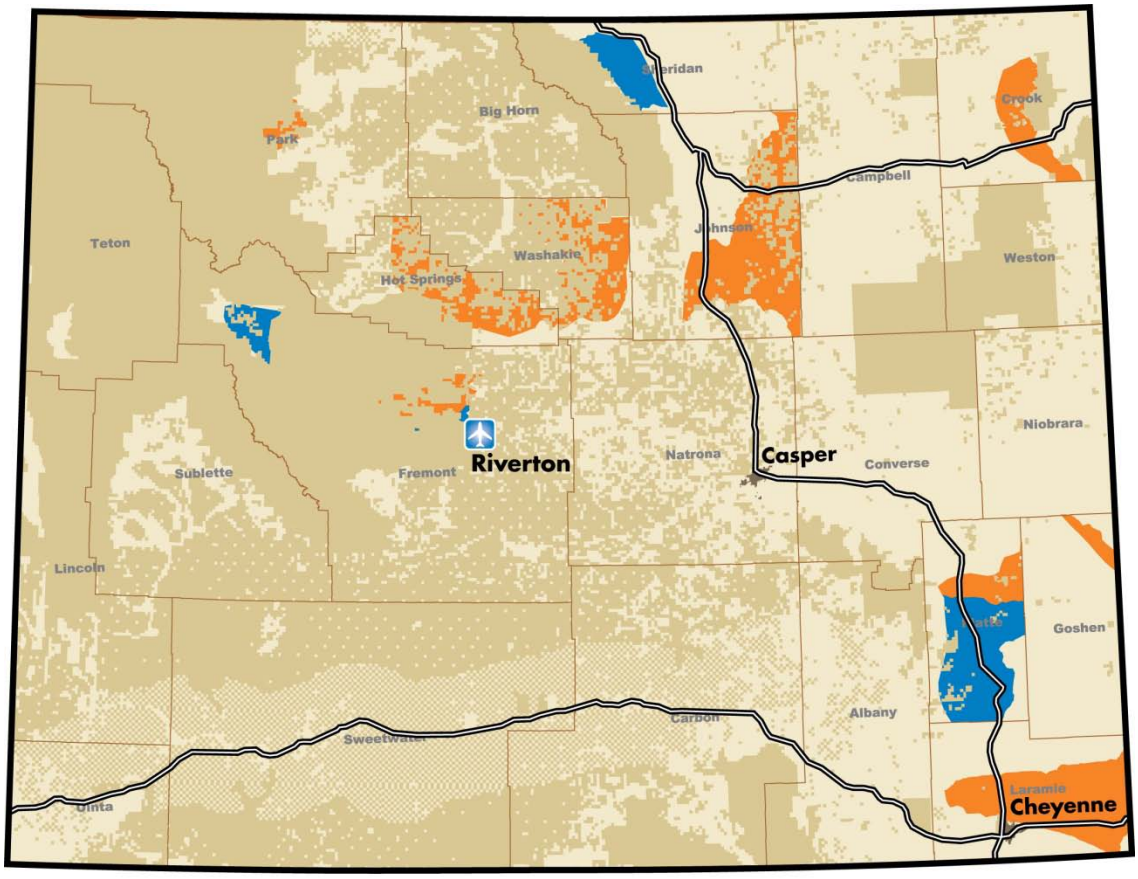
Property	Address	Type	Distance to Airport
Sunset Park	North 8th St. and W. Sunset Dr.	Park	3 miles
Jaycee Park	Major Ave and W. Sunset Dr.	Park	2.5 miles
Teter Park	N Broadway and Elk Dr.	Park	3 miles
City Park	S. Federal Blvd. and E Washington Ave	Park	4 miles
Aspen Park	N. 16th St. and E. Sunset Dr.	Park	4 miles
Monroe Park	Monroe Ave	Park	4 miles
Fremont County Fairgrounds	S. 6th St. and S. 8th St.	Fairgrounds	4 miles
Rein Park	W. Monroe and Spire Dr.	Park	4 miles

Source: Google Earth, 2009 and www.rivertonwy.gov

2.18.3 Farmlands

The Farmland Protection Policy Act (FPPA) regulates federal actions that may impact or convert farmland to a non-agricultural use. FPPA defines farmland as "prime or unique land as determined by the participating state or unit of local government and considered to be of statewide or local importance". Fremont County has a small amount of "prime and unique" farmland with a combination of high and low development associated with the farmland. The land of Fremont County is predominantly federal, Indian, and/or "other" land. "Other" land is land that is not have relatively large amounts of prime or unique farmlands or have rapid loss of high-quality farmland.

FIGURE 2-14 - FARMLAND



2.18.4 Fish, Wildlife, and Plants

Requirements have been set forth by The Endangered Species Act[12], The Sikes Act[13], The Fish and Wildlife Coordination Act[14], The Fish and Wildlife Conservation Act[15], and the Migratory Bird Treaty Act[16], for the protection of fish, wildlife, and plants of local and national significance.

Fremont County has several species listed by the US Fish and Wildlife Service as being threatened or endangered as depicted in **Table 2-24**.

[12] Endangered Species Act of 1973, U.S. Congress, Public Law 93-205, 16 U.S.C §1531-1544
[13] Sikes Act, Amendments of 1974, U.S. Congress, Public Law 93-452
[14] Fish and Wildlife Coordination Act of 1958, U.S. Congress, Public Law 85-624, 16 U.S.C §661-666c
[15] Fish and Wildlife Conservation Act of 1980, U.S. Congress, Public Law 96-366, 16 U.S.C §2901-2912
[16] Migratory Bird Treaty Act of 1981, 16 U.S.C §703-712

TABLE 2-24 - THREATENED & ENDANGERED SPECIES (FREMONT COUNTY)

Fremont County, WY			
Species/Critical Habitat	**Scientific Name**	**Status**	**Habitat**
Black-footed Ferret	*Mustela nigripes*	Endangered	Prairie dog towns
Blowout Penstemon	*Penstemon haydenii*	Endangered	Sand blowouts or dunes
Canada Lynx	*Lynx canadensis*	Threatened	Montane forests
Canada Lynx Critical Habitat	Designated areas include boreal forest landscapes within Fremont, Lincoln, Park, Sublette, and Teton Counties of Wyoming (see 50 CFR 17.95(a))		
Colorado River Fish (Bonytail, Colorado Pikeminnow, Humpback Chub, Razorback Sucker)	*Gila elegans* *Ptychocheilus lucius* *Gila cypha* *Xyrauchen texanus*	Endangered Endangered Endangered Endangered	Downstream riverine habitat in the Yampa, Green, and Colorado River systems*
Colorado River Fish Critical Habitat	Designated for Colorado River Fish in Colorado and Utah in downstream riverine habitat in the Yampa, Green, and Colorado River systems (50 CFR 17.95(e))*		
Desert Yellowhead	*Yermo xanthocephalus*	Threatened	Beaver Rim, Fremont County
Desert Yellowhead Critical Habitat	Designated for desert yellowhead in Fremont County, Wyoming and consists of 360 acres of Bureau of Land Management administered lands within portions of Township 31 North, Range 95 West, Sections 27 and 34 (50 CFR 17.96(a))		
Gray Wolf	*Canis lupus*	Experimental	Greater Yellowstone Ecosystem
Greater Sage-grouse	*Centrocercus urophasianus*	Candidate	Sagebrush communities
Grizzly Bear	*Ursus arctos horribilis*	Threatened	Montane forests
Platte River Species (Interior Least Tern, Pallid Sturgeon, Piping Plover, Whooping Crane)	*Sternula antillarum* *Scaphirhynchus albus* *Charadrius melodus* *Grus americana*	Endangered Endangered Threatened Endangered	Downstream riverine habitat of the Platte River system*
Platte River Species Critical Habitat	Designated for whooping crane in Nebraska in riverine habitat of the Platte River system (50 CFR 17.95(b))*		
Ute Ladies'-tresses	*Spiranthes diluvialis*	Threatened	Seasonally moist soils and wet meadows of drainages below 7,000 ft. elevation
Yellow-billed Cuckoo (Western)	*Coccyzus americanus*	Candidate	Riparian areas west of Continental Divide

** If the proposed action may lead to consumptive use of water or have the potential to affect water quality in the Platte or Colorado River Systems, there may be impacts to threatened and endangered species inhabiting the downstream reaches of these river systems.*

Source: U.S. Fish and Wildlife Services, Federal Endangered, Threatened, Candidate Species, Fremont County, WY, 2010

2.18.5 Floodplains

Executive Order 11988, *Floodplain Management*[17] 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".

[17] Executive Order 11988, Floodplain Management, 1977

An examination of the Flood Insurance Rate Maps (FIRM) for Fremont County shows that the area surrounding the Airport is not mapped, but is considered Zone D by the National Flood Insurance Program as stated "Areas with possible but undetermined flood hazards. Zone D are areas in which flood hazards are undetermined, but possible. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk".

2.18.6 Hazardous Materials, Pollution Prevention, and Solid Waste

The Resource Conservation and Recovery Act (RCRA)[18], Comprehensive Environmental Response, Compensations, and Liability Act (CERCLA)[19], Superfund Amendments and Reauthorization Act (Superfund)[20], and the Community Environmental Response Facilitation Act (CERFA)[21] 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.

One NPL site is located in Fremont County, a groundwater investigation in Pavilion, WY. Pavilion is located approximately 17 miles northwest of the Airport.

2.18.7 Historical, Architectural, Archaeological, and Cultural Resources

The National Historic Preservation Act[22] and the Archaeological and Historical Preservation Act[23] 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 four properties within and near the city of Riverton. The properties are listed in **Table 2-25**. The closest property to the airport is Riverton Railroad Depot, which is approximately 3.5 miles to the southeast of the airport.

[18] U.S. Code, 1976, Resource Conservation and Recovery Act, 42 USC, §6901
[19] U.S. Code 1980, Comprehensive Environmental Response, Compensation and Liability Act, 42 USC, §9601-9628
[20] U.S. Code 1986, Superfund Amendments and Reauthorization Act, 42 USC
[21] U.S. Code 1992, Community Environmental Response Facilitation Act, Public Law 102-426
[22] U.S. Code, 1966, National Historic Preservation Act of 1966, Public Law 89-665
[23] U.S. Code, 1974, Archaeological and Historical Preservation Act of 1974, 16 USC 469

TABLE 2-25 - NRHP PROPERTIES

	Property Name	Address	Added to Registry	Distance to Airport
1	BMU's Bridge over Wind River	WY 132, Ethete	1985	16 miles
2	Delfelder Schoolhouse (Hall)	North of Riverton off US 26, Riverton	1978	4 miles
3	Riverton Railroad Depot	1st and Main Street, Riverton	1978	3.5 miles
4	St. Michael's Mission	Ethete	1971	15 miles

Source: National Register of Historic Places, Fremont County, 2010

2.18.8 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. The Airport has seven primary sources of light including:

- Airport beacon: rotating light used to locate the airport
- Taxiway Lighting: lights outlining the taxiways and classified by the intensity or brightness the lights are capable of producing
- Medium Intensity Runway Lighting (MIRL): lights outlining the runway and classified by the intensity or brightness the lights are capable of producing
- Runway End Intensity Lights (REIL): 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): 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.
- Other sources of light can include parking lot lights, ramp/apron lights, building lights, and passenger/airport vehicle lights and aircraft lights.

All seven 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.

2.18.9 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.

The Airport does not currently have a published noise abatement procedure plan. The land surrounding the Airport both inside the Airport property boundary and land directly bordering Airport property are zoned AP – Airport property. Thus, sensitive land uses are not located or approved in the vicinity of the Airport.

Noise contours will be generate for the current and future condition during this study and will be discussed in the in the report.

2.18.10 Water Quality

The Clean Water Act[24] 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 Riverton has wastewater collection, treatment and distribution systems in place to ensure optimum water quality for the community. The wastewater treatment plant is designed to treat 4.9 million gallons of waste per day, and currently averages approximately 1.8 million gallons per day. In addition to the wastewater treatment plant, the system is composed of thirteen water wells, one booster station, and five reservoirs. The water wells are located throughout the city and at the Airport, and are used primarily in the off peak season as the reservoirs are used when demand is highest.

2.18.11 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.

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

2.18.12 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968, as amended[25], 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[26], 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 70 miles to the west and the Yellowstone River is approximately 120 miles to the north of the Airport.

2.18.13 Aviation Industry Sustainability Initiatives

Sustainability can be defined as "meeting the needs of the present without sacrificing the ability of future generations to meet their own needs". The aviation industry has developed numerous sustainable initiatives that are utilized throughout the country. These initiatives can be federal, state or local mandates; however, they are more effective when the airport independently realizes sustainability makes good business sense. A few of the various benefits airports can gain from embracing sustainability are:

- Reduced capital asset life cycle costs
- Reduced operating costs
- Better customer service and satisfaction
- Enhanced relationships with the community

2.18.14 Local Sustainability Initiatives

The city of Riverton has one significant sustainable initiative that both benefits the community as well as the surrounding environment. The city developed a wastewater collection, treatment and distribution plant. The plant collects an average of 1.8 gallons per day and removes approximately 95 percent of pollutants. The city initiated sustainable practices through the plant as the by-product of the cleaning process (sludge) is used by the public as a soil amendment for lawns and gardens throughout the community. The Plant has sold an average of 250 cubic yards of the bi-product in the last three years to be reused rather than disposed of.

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

2.19 FINANCIAL INFORMATION

Airport facilities that are self-sustaining can provide services with minimal outside funding and reciprocal influence. Unfortunately few airports are able to accomplish this, including RIW. Airports sponsors should continually strive to become an agent for economic development and self-sufficiency. **Table 2-26** below shows the financial summary for 2009 for Riverton Regional Airport as reported to the FAA via Form 127.

TABLE 2-26 - 2009 RIW AIRPORT FINANCIAL SUMMARY

Category	2009
1.0 Passenger Airline Aeronautical Revenue	$87,325
2.0 Non-Passenger Aeronautical Revenue	$87,779
3.0 Total Aeronautical Revenue	$175,104
4.0 Non-Aeronautical Revenue	$51,247
5.0 Total Operating Revenue	$226,351
6.0 Operating Expenses	$655,144
7.0 Operating Income (Loss)	$(428,793)
8.0 Non-Operating Revenue (Expenses) & Capital	$4,433,864
9.0 Net Assets	$0
10.0 Capital Expenditures & Construction in Progress	$3,658,651
11.0 Indebtedness at End of Year	$180,000
12.0 Restricted Assets	$0
13.0 Unrestricted Net Assets	$2,196,366
14.0 Reporting Year Proceeds	$0
15.0 Debt Service	$0

Source: 2009 RIW FAA Form 127

2.19.1 Revenues

RIW's operating aeronautical revenue consists of Operating Revenue from Aeronautical and Non-Aeronautical, and Non-Operating Revenue. These revenue sources include landing fees , hangar land leases, aviation fuel tax, aviation fuel flowage fee, terminal concession lease agreements, and FBO fees.

Landing Fee: Commercial service airports typically charge a landing fee to airlines (and sometimes GA aircraft) for landing an aircraft at the airport. Landing fees can be based on a many factors, including: weight, numbers of seats, time of day, etc. The landing fee charged at RIW is $0.35 per 1,000 pounds per aircraft.

Hangar Land Leases: The majority of airports make a large portion of their revenue from hangar rental fees. However, since RIW only own the maintenance hangar and does not own any of the other hangars on the airport the land under the hangars is leased. The land lease rate at RIW is $0.13 per square foot per year.

Fuel Flowage Fee: This fee is charged to the users of the airport and the airport's commercial tenants, such as the FBO, based on a percentage of the fuel sold. RIW charges Jim's Aircraft Services $0.05 per gallon for fuel flowage fee.

Indirect Revenue: This is revenue that is usually property taxes on hangars and aircraft. Unlike direct airport revenue, indirect may be placed in the City or County's general fund and may be used for other purposes.

Non-Aeronautical Revenue: RIW's non-aeronautical revenues include land and non-terminal facilities, terminal food and beverage, retail stores, and rental cars.

Non-Operating Revenue: An airport's non-operating revenue consists of interest income, grant receipts, and passenger facility charges.

2.19.2 Expenses

Typical operating and non-operating expenditures to airports include personnel compensation and benefits, communications and utilities, maintenance, contractual services, and insurance. Personnel compensation and benefits costs are the expense of a full- or part-time manager and support staff. Primary utility expenses are the cost of electricity to operate airfield lighting and visual aids, airport buildings and the cost of water for public use areas or irrigation. Pavement maintenance cost includes annual crack sealing and seal coating, and remarking pavements every three to eight years. Facility maintenance costs are mowing, snow removal, repair and replacement of equipment, and building up-keep on airport property. The insurance cost is a non-operating expense and consists of the airport's liability insurance and property insurance.

2.19.3 Contributed Capital

Currently the FAA and Wyoming Department of Transportation (WYDOT) Division of Aeronautics contributed funding for the projects that are eligible for federal funding. The FAA provides 95 percent grant funding for eligible projects in the Sate of Wyoming, and WYDOT Aeronautics provides three percent. Presently, without contributed capital from the FAA and WYDOT Aeronautics, Riverton Regional Airport is operating at a loss.

2.20 Airport User Surveys

To assess the adequacy of the airport facility and desired improvements, surveys were mailed to local airport owners, pilots, and Great Lakes Airlines to solicit their input. The list of aircraft owners and pilots were provided by the FBO, Jim's Aircraft Services. A total of 69 surveys were sent to aircraft owners and pilots, and one survey was sent to Great Lakes Airlines. The surveys were mailed out in mid-September with a requested return date of two weeks. If a response was not received within the two week period, a second survey was mailed with a new requested return date of November 2, 2010. A total of 31 surveys were returned, resulting in an overall response rate of 44%. An example of the surveys sent out are located in **Appendix C**.

From the returned surveys, the respondents overwhelmingly indicated the substantial need for a 24-hour self service fuel and hangar space. In the survey, respondents were asked to specify the most essential facilities and capabilities of the Airport. They most frequently indicated that aircraft fueling services, aircraft maintenance, GA terminal facilities, and aircraft tiedowns/hangars are the most essential facilities for the Airport. The least essential was tourism/entertainment related activities. Additionally, survey respondents were asked to rate the Airport's facilities and capabilities from "1" to "10", "1" being poor and "10" being excellent. The lowest scored categories were hangar space, hangar availability, and hangar lease rates, with an average score of "4.5". The remainder of the categories (runway, pavement, NAVAIDs, FBO, etc.) scored high, with averages between "8" and "10".

In the comments section of the survey, many respondents indicated a need for a 24-hour self-service fueling station, as the FBO is only opened during normal business hours. The second most common request noted was the need for more hangars and hangar space on the airport. Additional comments included: rehabilitation of the GA apron, improvement of the FBO's pilot lounge, a run-up for Runway 28, and the need for a more affordable and reliable airline service.

2.21 Historical Aviation Activity

2.21.1 Commercial Activity

Table 2-27 below shows data for the last 10 years of enplanement history at RIW. The information was obtained from the Terminal Area Forecast (TAF) provided by the FAA. It is important to note that when enplanements drop below 10,000 per year an airport is at risk of losing a substantial portion of their FAA entitlement funding; however RIW has little risk with its recent enplanement activity. Funding levels are further discussed in **Chapter 7.**

TABLE 2-27 - ENPLANEMENT INFORMATION

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Air Carrier	0	0	40	116	311	165	36	0	0	0	0
Commuter	13,320	12,934	9,729	9,830	11,241	11,938	14,027	14,949	16,920	15,713	14,040
Total	**13,320**	**12,934**	**9,769**	**9,946**	**11,552**	**12,103**	**14,063**	**14,949**	**16,920**	**15,713**	**14,040**

Source: FAA TAF (Terminal Area Forecast)

2.21.2 Number & Mix of Based Aircraft

According to information provided by the Airport Management, RIW has 48 aircraft based. Of the 48 aircraft, 43 are single engine aircraft, three are multi-engine aircraft, one turboprop aircraft, and one is a jet. The 2000 Master Plan indicated that RIW had 27 based aircraft, meaning in the last ten years RIW has increased its based aircraft count by 77.8%.

2.21.3 Aircraft Operations

An aircraft operation is a landing, take-off, or touch-and-go procedure by an aircraft on a runway at an airport. Since RIW does not have an air traffic control tower, it should be noted precise records for aircraft operations are not available. The FAA data is based on estimates of operations is provided to the FAA by the airport.

TABLE 2-28 - AIRCRAFT OPERATIONS ESTIMATES

Operations	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Itinerant Air Carrier	0	0	0	0	0	0	0	0	1,957	1,957
Itinerant Air Taxi & Commuter	4,689	4,698	4,707	4,717	4,726	2,524	2,529	2,534	2,468	2,473
Itinerant Military	12	12	12	12	12	12	12	12	31	31
Itinerant GA	4,457	4,506	4,506	4,506	4,506	4,506	4,506	4,506	2,216	2,216
Local Military	0	0	0	0	0	0	0	0	0	0
Local GA	4,527	4,578	4,578	4,578	4,578	4,578	4,578	4,578	2,369	2,369
Total	**13,685**	**13,794**	**13,803**	**13,813**	**13,822**	**11,620**	**11,625**	**11,630**	**9,041**	**9,046**

Source: FAA TAF (Terminal Area Forecast)

3.0 Aviation Activity Forecasts

3.0 AVIATION ACTIVITY FORECASTS

Aviation activity forecasts are essential for airport master plans because they determine 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 conditions at the airport, and provide adequate justification for airport planning and development. Additionally, forecasts must be prepared for short- (5 year), medium- (10 year), and long-term (20 year) periods, and specify the existing and future critical aircraft.

It is important to note that while forecasting is essential for a successful master plan, they are only approximations of future activity based on historical data and present conditions. There are many factors that can influence forecasts positively and negatively as time goes on. For this reason, forecasts and the projects that they justify, should be revisited frequently.

3.1 FORECASTING AVIATION ACTIVITY MEASURES AND METRICS

The forecasting parameters are determined by the level and type of aviation activity expected at RIW. As a commercial service airport, the forecast focus for Riverton Regional Airport (RIW) is on commercial passenger (e.g. passenger enplanements) as well as General Aviation (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 Terminal Area Forecast (TAF), and Woods & Poole, Inc. socioeconomic data.

3.1.1 Commercial Aviation

Commercial aviation consists of all scheduled and unscheduled air service, and is measured by passenger enplanements. The scheduled air service at RIW is provided by Great Lakes Airlines, who offers three daily round trip flights from Riverton to Denver on a Beach 1900D aircraft. Great Lakes Airlines was provided with a subsidy by the federal government to operate the flights under a program called the Essential Air Services (EAS) until October 1, 2006 when Great Lakes Airlines began providing subsidy-free service to the facility, as explained earlier in **Section 2.7.1**.

3.1.1.1 Passenger Enplanements

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

3.1.2 General Aviation Overview

Forecasting metrics of General Aviation (GA) activity normally consists of aircraft operations and number of based aircraft.

3.1.2.1 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 and identifies the critical aircraft. It is by this demand that the runway and taxiway requirements are defined. An aircraft operation is defined as either a take-off or a landing of aircraft.

Since RIW is a non-controlled airport, meaning it does not have 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 RIW were derived from estimates provided by airport management.

3.1.2.2 Based Aircraft

Based aircraft forecasts are directly related to the need for specific types of hangars and aircraft parking apron. Based aircraft include all aircraft that are registered with the FAA at RIW as their home base, or aircraft that spend more time on the ground at RIW than any other airport.

3.1.3 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. This 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 for 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 thirty years. The population in the Western region is forecast to increase by 45.9 million people between 2008 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 29.1 million jobs from 2007 to 2040, with a projected total U.S. job gain of 39%. Moreover, Woods & Poole predicts that specifically Fremont County in Wyoming will grow between 0.0% and 0.92% annually by 2040.

3.2 NATIONAL AVIATION FORECASTS

The FAA prepares a national forecast each year. This forecasting attempts to project commercial and General Aviation (GA) demand 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 documents are for Fiscal Years 2010-2030.

Despite of the impacts of September 11th, the bankruptcy of four legacy airlines, record high fuel prices, and the economic downturn, the FAA states that the number of airline passengers will continue to grow over the long-term, accentuating the importance of the air transportation industry. Moreover, the FAA predicts that the aviation industry will continue to grow despite current global economic conditions. Even though there has been a slowdown in air travel growth recently, the FAA predicts that one billion passengers will be flown in 2023.

The 2010 FAA forecast predicts a slow growth in the near-term for commercial aviation, but that the growth will return to "normal" in the long-term. Additionally, system capacity will drop 1.6% this year, after a 7.4% decrease in 2009, and will then grow at an average of 3.6% per year through to 2030. In the domestic market, capacity will decrease by 1.1% in 2010; however, regional carrier market capacity will increase by 1.9%. Enplanements will grow by 0.4% for the year, and will then grow at an average annual rate of 2.5% for the remainder of the forecast.

Furthermore, the average size of domestic aircraft is expected to decrease by 0.3 seats in Fiscal Year (FY) 2010, for an average of 121.6 seats. While demand for 70-90 seat aircraft continues to increase, the FAA expects the number of 50 seat regional jets in service to fall, increasing the average regional aircraft size in 2010 to 56.2 seats per mile.

For GA, the economic downturn has slowed near-term growth, but the long-term forecast remains encouraging. The FAA predicts growth for business aviation demand over the long-term due to the growing U.S. and world economies. As the fleet grows, the number of GA hours flown is forecasted to grow by an average of 2.5% each year through 2030.[27]

3.3 REVIEW OF EXISTING FORECASTS

Several existing forecasts for Riverton Regional Airport were examined. Each of the existing forecasts that were examined are discussed in the following text.

3.3.1 2000 Master Plan Forecasts

The 2000 Airport Master Plan Update forecasted enplanements, operations, and based aircraft, as shown in **Table 3-1**.

[27] FAA Aerospace Forecast Fiscal Years 2010-2030

TABLE 3-1 - 2000 AIRPORT MASTER PLAN FORECAST

	2005	2010	2015	2020
Enplanements	12,699	13,346	14,026	14,744
Operations	13,685	15,117	15,888	16,698
Based Aircraft	28	30	32	34

Source: 2000 Airport Master Plan Update

3.3.2 FAA Terminal Area Forecast

The FAA prepares a Terminal Area Forecast (TAF) for each airport in the National Plan of Integrated Airport Systems (NPIAS) annually. The NPIAS is an inventory of the nation's aviation infrastructure. It identifies all airports in the United States that are considered significant to the national aviation infrastructure network. The TAFs are the FAA's official airport-specific forecast used for budgeting and staffing purpose. The latest TAF for RIW was published 2010, and is presented in **Table 3-2**. The TAF forecasts at airport the size of RIW often show little or no growth. These forecasts are not always site specific, so the FAA uses a conservative approach when site specific data cannot be obtained.

TABLE 3-2 - FAA TAF FORECAST FOR RIW

	2010	2015	2020	2025	2030
Air Carrier Enplanements	0	0	0	0	0
Commuter Enplanements	15,786	16,158	16,536	16,923	17,324
TOTAL ENPLANEMENTS	**15,786**	**16,158**	**16,536**	**16,923**	**17,324**
Iterant Operations					
Air Taxi & Commuter	4,435	4,460	4,486	4,512	4,537
GA	2,216	2,216	2,216	2,216	2,216
Military	31	31	31	31	31
Total Itinerant	**6,682**	**6,707**	**6,733**	**6,759**	**6,784**
Local Operations					
GA	2,369	2,369	2,369	2,369	2,369
Military	0	0	0	0	0
Total Local GA	**2,369**	**2,369**	**2,369**	**2,369**	**2,369**
TOTAL OPERATIONS	**9,051**	**9,076**	**9,102**	**9,128**	**9,153**
Based Aircraft	38	38	38	38	38

Source: 2009 FAA Terminal Area Forecast

3.3.3 WYDOT Aviation Forecast

In November 2009, the Wyoming Department of Transportation (WYDOT) Division of Aeronautics (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. In this Plan, a forecast was created for commercial and general (GA) activity from the years 2007 to 2027. High and low forecasts were prepared using the compound annual growth rates (CAGR). **Table 3-3** shows the growth rates for the State of Wyoming, while **Table 3-4** shows the growth rate projected for RIW. These forecasts utilized a variety of methods that will be explained further in **Section 3.4**.

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

Type	2007-2027 CAGR		2027	
	Low	High	Low	High
Enplanements	1.25%	2.00%	644,139	736,642
Operations	0.12%	1.54%	435,957	577,340
Based Aircraft	0.09%	1.92%	981	1,410

Source: WYDOT AI&I Plan

TABLE 3-4 - WYDOT AI&I PLAN RIW FORECASTS

Type	2007-2027 CAGR		2027	
	Low	High	Low	High
Enplanements	0.14%	2.00%	16,280	23,524
Operations	0.13%	2.85%	8,645	14,776
Based Aircraft	0.14%	1.92%	52	68

Source: WYDOT AI&I Plan

The forecasts generated for RIW by WYDOT indicate that the based aircraft and aircraft operations are projected to grow slightly faster than the statewide forecast; however, the enplanement forecast is predicted to grow at a slower rate than the rest of the state.

3.4 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.

3.4.1 Time Series Analysis

A Time Series Trend Analysis, also known as a Trend 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.

3.4.2 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.

3.4.3 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 has a weakness. 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.

3.5 PASSENGER ENPLANEMENT FORECAST

Due to the number of scheduled flights and few to no unscheduled flights at RIW, forecasting enplanements is relatively simple. Because of this, scheduled enplanements have remained so consistent over the past 10 years that any major growth is unforeseen and could not be justified. However, different forecasting methodologies were tested. Socioeconomic regression analyses were employed using population, employment, total earnings, personal income, and retail sales as the independent variables, were all obtained from Woods & Poole Economic data as previously discussed in **Section 3.1.3**. The airport management records were purged before 2005, so FAA TAF was used as the baseline for this forecasting.

Additionally, time series analysis and market share analysis were employed for forecasting passenger enplanements. The market share analysis was based on the percentage of enplanements at RIW compared to the total FAA forecasted regional airline enplanements. The outputs from the different forecasting methods are shown in **Figure 3-1**. Additionally, **Figure 3-1** illustrates the comparison of the FAA TAF, as well as WYDOT's Low and High enplanement forecasts.

FIGURE 3-1 - ENPLANEMENT FORECAST

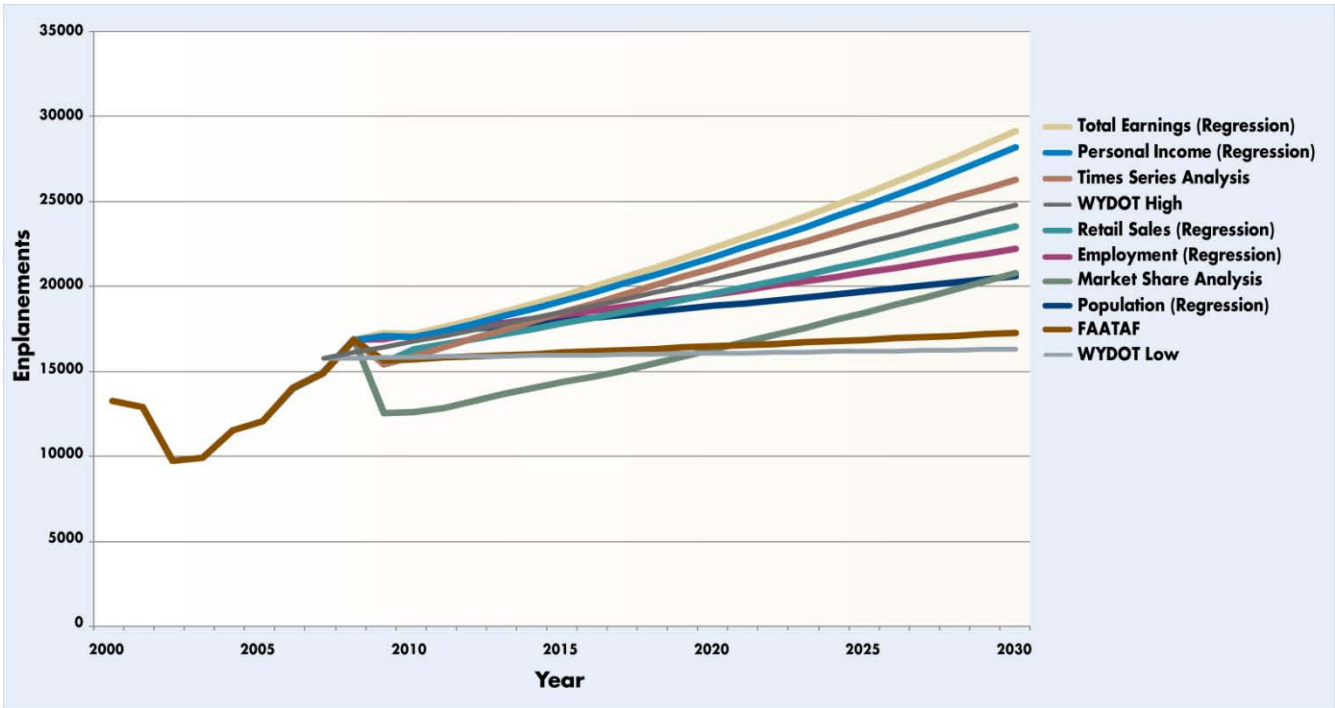


Table 3-5 presents the high, medium, and low enplanements forecasts. The lowest forecast is the WYDOT I&I Plan's Low forecast, the medium is the WYDOT I&I Plan High forecast, and the highest forecast is regression analysis for total earnings. The forecasting scenarios represent a range in enplanements of 16,348 to 29,287 in final year of the forecast period (2030). This represents a range in annual compounded growth rates of between 0.47% (WYDOT Low) and 2.68% (Total Earnings). The medium forecast will be used for planning purposes.

TABLE 3-5 - ENPLANEMENT FORECAST

Year	LOW	MEDIUM	HIGH
2010	15,898	16,820	17,268
2015	16,009	18,570	19,588
2020	16,122	20,503	22,354
2025	16,235	22,637	25,568
2030	16,348	24,855	29,287

3.6 AIRCRAFT OPERATIONS FORECAST

Since RIW is a non-controlled airport, meaning that it does not have an Air Traffic Control Tower (ATCT), it is more difficult to obtain an exact count of aircraft operations. Airport management records of aircraft operations were logged by airport staff while operating/monitoring the CTAF frequency and by visual observations. The airport management records were purged before 2006, so FAA TAF was used as the baseline for forecasting.

The same methodologies that were used for passenger enplanement forecasting were used for forecasting aircraft operations: socioeconomic regression analysis, time series analysis, and market share analysis. Regression analyses were used for population, employment, total earnings, personal income, and retail sales. The outputs from the methodologies are shown in **Error! Reference source not found.**

FIGURE 3-2 – OPERATIONS FORECAST

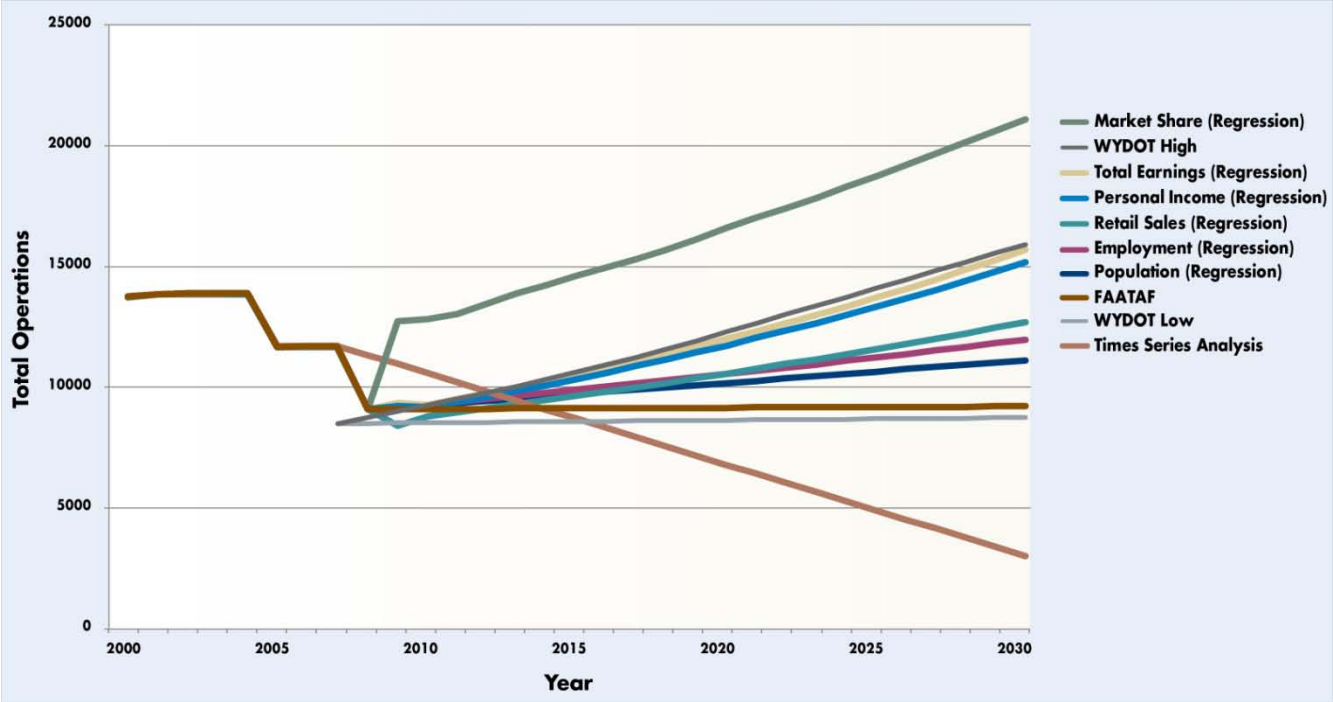


Table 3-6 represents the high, medium, and low operations forecasts. The lowest forecast is the time series analysis, the medium is the retail sales regression analysis, and the high is the market share analysis. The forecasting scenarios represent a range in the total operations of 2,951 to 21,029 in final year of the forecast period (2030). This represents a range in annual compounded growth rates of between 0.06% (FAA TAF) and 2.68% (Total Earnings). Again, the medium forecasts will be carried forward for planning purposes.

TABLE 3-6 - OPERATIONS FORECAST

Year	LOW	MEDIUM	HIGH
2010	10,516	8,741	9,051
2015	8,625	9,578	9,076
2020	6,733	10,500	9,102
2025	4,842	11,515	19,692
2030	2,951	12,634	21,029

3.6.1 Military Operations

Historically, military operations have not contributed to any significant number of operations at the Airport. Military operations are not dependent on the same stimuli as general aviation or

commercial activity; therefore, for purposes of this study it is projected that military operation will remain constant throughout the forecast period.

3.6.2 Local/Itinerant Operations

Local Operations are aircraft operations performed by aircraft that are based at the airport (RIW) and operate in the local traffic pattern and/or within sight of the airport These operations are known to be departing for or arriving from flights in 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 leaves the local airspace, and are usually operations by aircraft not based at the local airport (RIW). The majority of operations at RIW are GA itinerant operations.

3.6.3 Aircraft Operations Forecast Summary

In all forecast scenarios, commercial operations were projected to grow at a similar rate as the enplanement forecasts, 1.9%. GA operations were directly tied to the economic variables and projected using that data. For planning purposes, the preferred forecast is related to the regression analysis – retail sales model. This model represents an overall 20 year annual compounded growth rate of 1.86% and is summarized in **Table 3-7**. The scenario is on the middle-lower end of the forecast scenarios, but may accurately portray the increased flying that typically accompanies increased income. The data presented in **Table 3-7** assumes that the current distribution of aircraft per operations category will remain the same in the future.

TABLE 3-7 - AIRCRAFT OPERATION FORECAST SUMMARY

	2010	2015	2020	2025	2030
Itinerant Operations					
Commuter/Air Taxi	0	0	0	0	0
Air Carrier	2,920	3,203	3,514	3,855	4,229
Military	180	180	180	180	180
GA Itinerant	3,216	3,531	3,879	4,263	4,688
Local Operations					
GA Local	2,426	2,664	2,926	3,216	3,537
Total Operations	**8,741**	**9,578**	**10,500**	**11,515**	**12,634**

3.6.4 Design Hour Operations

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

- Peak Month Operations is the busiest month in a year that has the most operations. The Peak Month for RIW is August, having approximately 11% of the annual operations.
- Design Day is the Peak Month operations divided by 30 days. The Design Day for RIW in 2010 is 32 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 percent of the design day operations; for planning purposes, 12 percent was used to determine the Design Hour. The Design Hour Operations at RIW in 2010 is four.

Table 3-8 shows the forecasted Design Hour for the planning period of this report.

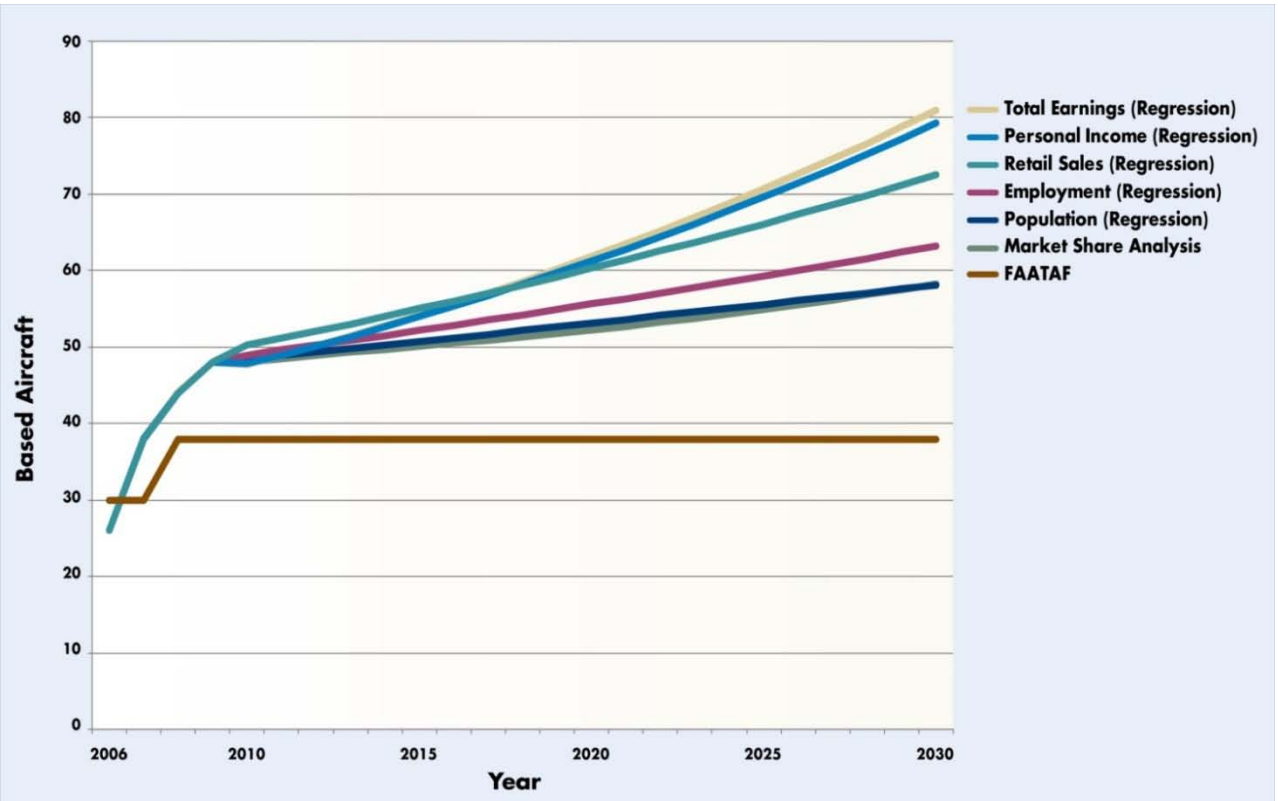
TABLE 3-8 - DESIGN HOUR OPERATIONS FORECAST

Operations	2010	2015	2020	2025	2030
Annual	8,741	9,578	10,500	11,515	12,634
Peak Month	961	1,054	1,155	1,267	1,390
Design Day	32	35	39	42	46
Design Hour	4	4	5	5	6

3.7 BASED AIRCRAFT FORECAST

The based aircraft forecast is a valuable indicator in determining the future activity levels and the need for expanded or improved airport facilities. Airport management records indicated a higher number of current based aircraft (48) than the FAA TAF (38), so the airport records were used as a baseline for this forecasting. The same forecasting methods were used for based aircraft as enplanements and operations: regression analysis and market share analysis. The time series analysis was not used because due to the large growth of based aircraft at RIW over the past four years, the times series analysis shows RIW having 243 based aircraft in 2030, which is completely illogical. **Figure 3-3** shows the different forecasting methods used.

FIGURE 3-3 - BASED AIRCRAFT FORECAST



As shown in **Table 3-9**, there are presently 48 aircraft based at RIW, which is composed of 43 single-engine, three multi-engine, one turbo prop, and one jet. It is anticipated that based aircraft will grow at a rate similar to operations, 1.82%. The national growth rate for each aircraft type was used for forecasting the based aircraft. Nationally, the FAA projects strong growth in the business market, including jets and turboprops, with less growth expected for the recreational market, which primarily consists of single-engine piston powered aircraft. The based aircraft are expected to grow to a total of 73 over the planning period, with the largest increase in the number of jets. RIW currently represented in jet and helicopter aircraft. A typical airport with 48 based aircraft would have four jets and three helicopters. The based aircraft forecasts reflect a movement towards national distribution of types of GA aircraft.

TABLE 3-9 - RIW BASED AIRCRAFT FORECAST SUMMARY

	2010	2015	2020	2025	2030
Single Engine Piston	43	46	47	48	51
Multi-Engine Piston	4	3	4	4	5
Turbo Prop	0	1	2	3	4
Jet	1	2	3	5	7
Helicopter	0	2	2	3	4
Other	0	0	0	1	2
Total	**48**	**54**	**58**	**64**	**73**

3.8 CRITICAL AIRCRAFT

The FAA considers that once reaching a level of 500 annual operations of an aircraft that falls into the next highest ARC level, the airport should upgrade its facilities in order to meet the design standards of that level. Airport Reference Code (ARC) is further explained in **Section 2.1**. Presently, RIW has an ARC of C-II, meaning that it is designed for aircraft with a maximum approach speed of 121 knots but less than 141 knots, and maximum wingspan of 49 feet but less than 79 feet or tail height of 20 feet but less than 30 feet. Aircraft that are in this category include corporate aircraft and smaller commercial jets, such as Gulfstream 350 and CRJ 700. The current ARC of C-II for RIW should be appropriate for future critical commercial and GA aircraft.

3.9 ANNUAL INSTRUMENT OPERATIONS

According to data provided by the National Climatic Data Center (NCDC), Instrument Meteorological Conditions (IMC) exist at a rate of 2.1% at RIW. By applying this percentage to the current number of current operations results in 184 current IFR operations. This figure is potentially over simplified since no precise count exists for the number of instrument operations; nonetheless, it certainly accounts for a reasonable percentage of current operations. **Table 3-10** details the estimated instrument operations based on the chosen operations forecast.

TABLE 3-10 - FORECAST IMC OPERATIONS

	2010	2015	2020	2025	2030
Instrument Ops	184	201	220	242	265

Source: IMC data from NCDC

3.10 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. A forecast is considered to be consistent with the TAF if it:

a) Differs by less than 10 percent in the 5-year forecast and 15 percent 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.*

3.10.1 Passenger Enplanement Forecast

As discussed in **Section 3.3.3**, the WYDOT forecasts project a range of 16,348 to 24,855 enplanements in 2030. The FAA TAF projects enplanements to with a compound annual growth rate of 0.47%, with an enplanement forecast of 17,324 in 2030. The forecasts prepared for this study use the WYDOT High forecast of 24,855 for 2030.

The enplanement forecasts in the 10-year period only differ by 14.9%, which is below the 15% threshold allowed. However, the 20-year forecast presented in this document represents a 43.5% increase over the TAF forecasts in 2030. Nonetheless, the increase in enplanement projections will not impact the timing or scale of any projects or affect the role of the airport as described in Items b) and c) above. The enplanement forecasts prepared for this report are therefore consistent with existing state and federal planning forecasts.

3.10.2 Aircraft Operations Forecast

The FAA TAF projects an operations forecast of 9,153 in 2030 with a compound annual growth rate 0.06%. The forecasts prepared for this study uses the regression analysis using retail sales with 12,634 operations projected for 2030, which is the middle range for this forecast. The FAA forecasts almost no growth in operations, while WYDOT forecasts between 0.13% and 2.77% average annual growth.

The operations forecasts in the 10-year period, the forecasts only differ by 5.5%, which is well below the 15% threshold allowed. However, the 20-year forecast presented in this document represents a 38.0% increase over the TAF forecast for 2030. Nonetheless, the increase in operations projections will not impact the timing or scale of any projects or affect the role of the airport as described in Items b) and c) above. The operations forecasts prepared for this report are therefore consistent with existing state and federal planning forecasts.

3.10.3 Based Aircraft Forecast

The forecast shows 73 based aircraft at the end of the planning period. For the same time period, the WYDOT forecasts anticipate 36 to 49 based aircraft in 2027 and the FAA predicts no growth for based aircraft, predicting 38 for the duration of the forecast. Both of these forecasts do not apply because RIW currently has 48 aircraft based at the airport

The growth for based aircraft is also justified as previously discussed in **Section 2.20**, as many pilots and aircraft owners indicated the need for more hangars at RIW.

3.11 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 , costs of aircraft owner's insurance, airline stability, 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.

The infrastructure needed to attract these types of operations to the airport will be explored in later chapters of this report.

4.0 FACILITY REQUIREMENTS