1.0 INTRODUCTION

The purpose of this study is to provide the Town of Buena Vista and the Central Colorado Regional Airport (AEJ or Airport) with a document that determines the extent, type, and schedule of development needed to not only meet current service levels but to accommodate future demand in a healthy and feasible way. This study will provide a current Master Plan and Airport Layout Plan (ALP). The prior documents were completed in 2004.

1.1 Study Goals

The overall goal is to develop a plan that guides AEJ and the community in the future while meeting existing and future aviation needs. To accomplish this goal the following main objectives have been developed:

- Determine the current condition of existing facilities and their efficiencies.
- Provide a planning document for the next 20 years that is technically accurate, realistically executable, and financially feasible. This plan will also be completed to achieve financial and environmental sustainability.
- Prepare forecasts of aviation activity.
- Prepare a financial plan that considers the operating budget, revenue, expenses, and potential FAA grant funding.
- Incorporate public involvement throughout the process to ensure that the future of the airport aligns with the values and vision of the community.

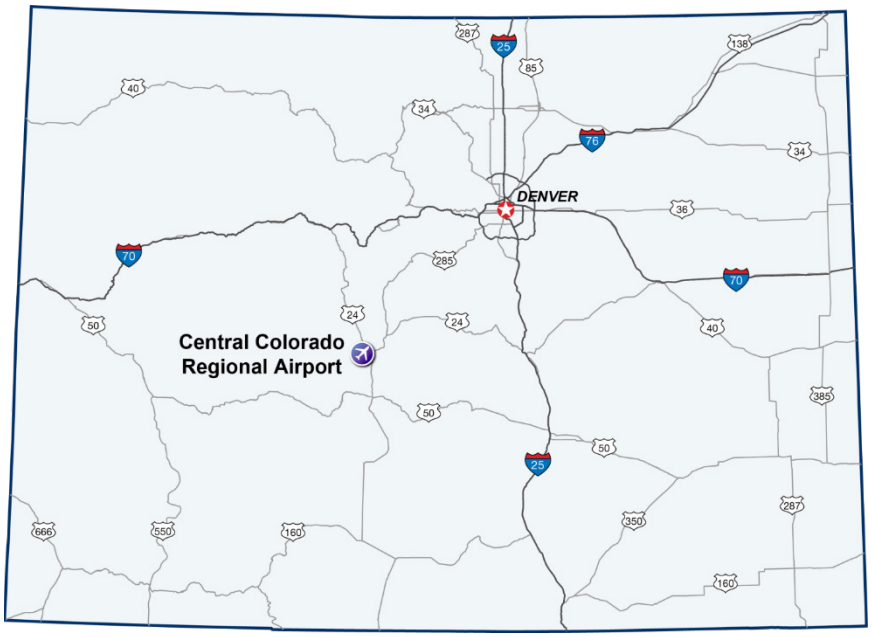
1.2 Local Information/History

The Airport is located within Chaffee County, Colorado. A portion of the Airport is located within the town limits of Buena Vista. Chaffee County is situated in the Upper Arkansas River Valley, as depicted in **Figure 1-1**. This region is known for its beautiful scenery and abundance of outdoor activities. The area was originally settled in the 1860's by early gold miners, resulting in many deserted ghost towns that add to the unique characteristics of the region.

Chaffee County had a population of 16,242 in 2000 which grew to 17,809 in 2010, a 9.65 percent increase. The population in Buena Vista experienced a larger increase over the same period. The town's population was 2,195 in 2000 and grew to 2,617 in 2010; an increase of 19.23 percent.[1]

[1] Census Viewer, http://censusviewer.com/county/CO, Accessed August 2014

FIGURE 1-1 – LOCATION MAP

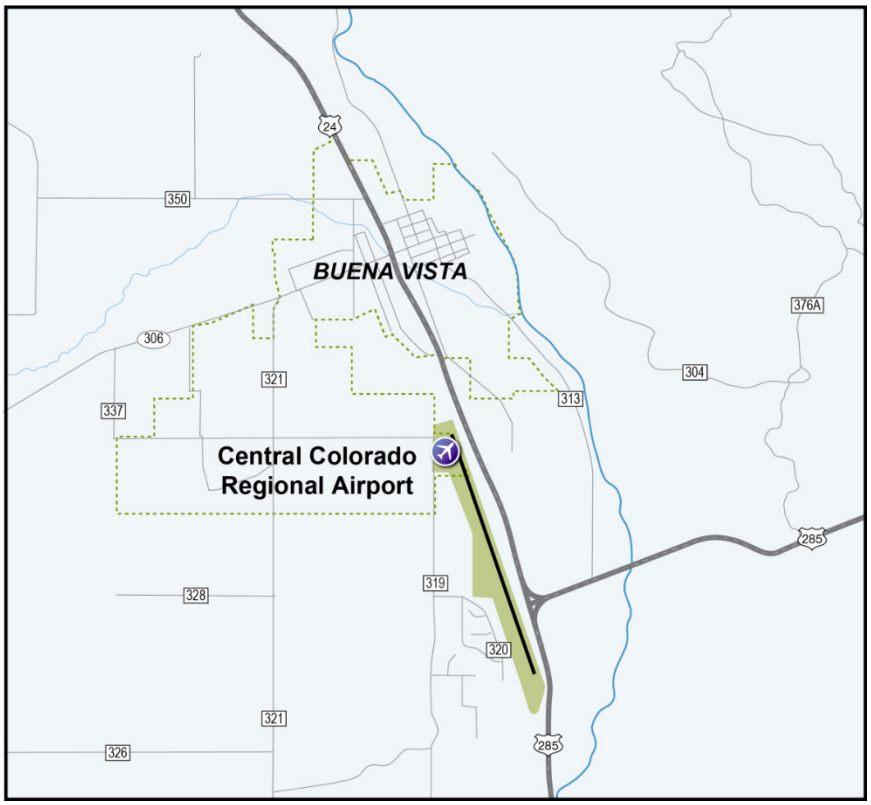


Note: Not to scale
Source: Jviation

1.3 Airport Location

The Central Colorado Regional Airport is located approximately two miles south of the Central Business District (CBD) of Buena Vista. The Airport sits at an elevation of 7,950 feet above mean sea level (MSL). U.S. Highway 285 provides access to the region from Denver, the nearest large city. Main Airport access is via Steele Drive to County Road 319. **Figure 1-2** depicts the Airport's location relative to the Town of Buena Vista.

FIGURE 1-2 – VICINITY MAP



Note: Not to scale
Source: Jviation

1.4 Airport Management and Ownership Structure

The Airport is owned by the Town of Buena Vista and overseen by the Buena Vista Airport Advisory Board. The Board consists of five members and up to two alternates appointed by the Town Board of Trustees. The current board is comprised of five voting members, one alternate member, and a Trustee Liaison (appointed annually by the Board). The board members serve five year terms and meet the third Tuesday of each month. The Town Administrator is responsible for overseeing all airport projects, policies and procedures, and budget, while the manager is responsible for the day-to-day operations at the Airport.

The Town of Buena Vista is responsible for all airport policy considerations, as well as compliance with all federal, state, and local regulations.

1.5 Airport History and Activity

The Airport is made up of approximately 184 acres. A portion of the property is owned in fee simple and the remainder through long-term leases/easements from the Colorado Department of Corrections, Colorado Department of Natural Resources, and the Colorado Division of Wildlife. Significant projects or events that have occurred at the Airport consist of the following:

- 1985: Two 15,000 gallon above-ground fuel tanks installed

- 1985: Fixed Based Operator (FBO) hangar constructed
- 1991: Airport Overlay Zone District was established by the town of Buena Vista
- 1993: Airport Master Plan
- 1996: Runway relocated 300 feet to the east to provide a full-length parallel taxiway
- 2002: Installation of tether (100,000-pound strength) for high altitude testing
- 2004: Airport Master Plan

High altitude testing has become a constant at AEJ since it began in 2002. The testing typically occurs during summer months, mid-June through September. Numerous companies and organizations have come to AEJ to test aircraft, and during the testing they rent office space, conference rooms, and the flight test center.

Figure 1-3 depicts photos from military testing at AEJ in January 2014, an atypical month for testing. Companies and organizations that have tested at AEJ in the past include:

- Augusta
- Bell
- Boeing
- Sikorsky
- Qinetiq (London, England)
- U.S. Army
- U.S. Air Force
- U.S. Navy Seals

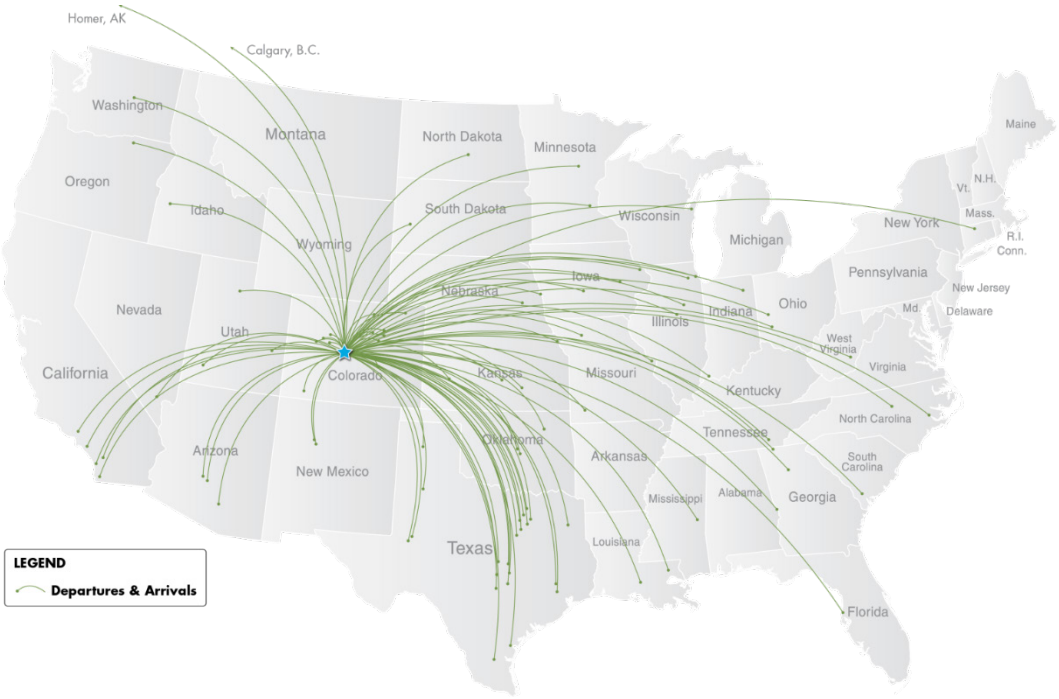
FIGURE 1-3 – MILITARY TESTING

Source: AEJ Airport Management, 2014

The Buena Vista area is also a destination for many aircraft throughout the United States and western Canada. The destinations for IFR plans[1] filed from AEJ for a five-year period, August 2009 through August 2014, are depicted in **Figure 1-4** (each route shown represents a destination, not the number of flight plans filed with FAA). This broad reach is a significant asset for the viability and economic health of the town and county as well as neighboring towns in the Arkansas River Valley.

[1] During certain meteorological conditions, the FAA requires pilots to file a flight plan and follow instrument flight rules (IFR), which requires pilots to comply with more restrictive weather requirements and certain air traffic control procedures. IFR flight plans are required for air carrier operations and typically filed by the business segment of GA that uses turboprop and business jet aircraft (rather than the pleasure fliers).

FIGURE 1-4 - IFR FLIGHT PLANS (AUGUST 2009 – AUGUST 2014)



Note: Not to scale
Source: Jviation

1.6 Economic Impact

The Colorado Department of Transportation (CDOT) Division of Aeronautics completed an Economic Impact Study (Study) in 2013 to determine how Colorado commercial and general aviation (GA) airports support the state and local economies. Estimated impacts were developed for jobs supported, annual payroll, and total annual economic output.

The jobs supported element is defined by those jobs that the operation and development of airports support through off-airport visitor spending and by off-airport companies that rely on air cargo services to ship their goods. Annual payroll is defined as that which is associated with aviation supported jobs. Total annual economic activity is comparable to the spending required to purchase goods and services to support operations for all activities considered. **Table 1-1** depicts the total economic output for AEJ.

TABLE 1-1– AEJ TOTAL ANNUAL ECONOMIC OUTPUT

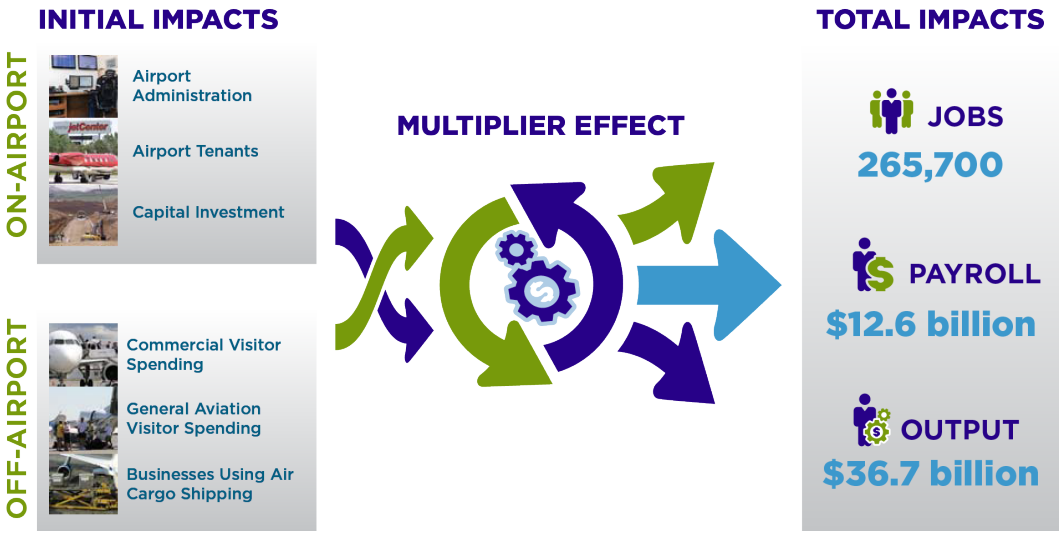
Airport	Town	Service Category	Total Employment	Total Payroll	Total Output
AEJ	Buena Vista	General Aviation	26	$901,093	$3,078,973

Source: CDOT, Division of Aeronautics, Economic Impact Study, 2013

Methodology for the study included all 86 airports providing assistance with data collection. Airport operators provided information for economic activities related to airport operations, tenants, capital investments, as well as visitor estimates. Initial economic impacts enter the economy and re-circulate which generate successive rounds of spending, employment, payroll and output in other economy

sectors. The impacts generated through recirculation are classified in this study as "multiplier" effects, see **Figure 1-5**. The Study used six regions to establish appropriate multipliers for each airport. State level multipliers were used to calculate total statewide aviation related economic impacts. As a higher percentage of all initial economic impacts are retained within the state's economy, statewide economic impacts are greater than the sum of the individual airport impacts.

FIGURE 1-5 – MULTIPLIER EFFECT (STATE-WIDE IMPACTS)



Sources: CDOT, Division of Aeronautics, Economic Impact Study, 2013 and Jviation

Table 1-2 shows the initial impacts, impacts after a multiplier was applied and total impacts in terms of employment, payroll, and output for AEJ.

TABLE 1-2 – STATE OF COLORADO: AEJ ON- AND OFF-AIRPORT IMPACTS ON TOTAL EMPLOYMENT, PAYROLL, AND WAGES

Impact Category	Employment			Payroll			Output		
	Initial	Multiplier	Total	Initial	Multiplier	Total	Initial	Multiplier	Total
Airport Administration, Tenants, & Capital Investment	7	3	10	$289,249	$89,844	$379,093	$1,063,096	$458,876	$1,521,972
General Aviation Visitor Spending	12	4	16	$363,000	$159,000	$522,000	$1,045,000	$512,000	$1,557,000

Source: CDOT, Division of Aeronautics, Economic Impact Study, 2013

2.0 INVENTORY

This chapter documents the type and general condition of the existing facilities at AEJ as of March 2015. The inventory is a complete compilation of all facilities and systems of the Airport including airfield, terminal area, navigational aids, ground access, parking, pavement conditions, utilities, and other characteristics.

Table 2-1 and Table 2-2 summarize the major landside and airside components of AEJ. Key items listed will be discussed in greater detail throughout this chapter.

TABLE 2-1 – AIRPORT PAVEMENT INVENTORY

Item	Description
Runway 15/33	– 8,300 feet by 75 feet – Asphalt – Published Strength: 30,000 pounds Single Wheel (SW) and Dual Wheel Gear (DW)
Taxiways	– Parallel Taxiway A – Connector Taxiways A1 through A6
Apron	– General Aviation (GA) / Fixed Base Operator (FBO): 950 feet by 175 feet

Source: Jviation

TABLE 2-2 – AIRPORT FACILITIES INVENTORY

Item	Description
Navigational Aids	Area Navigation (RNAV/Global Positioning System (GPS)
Visual Aids	– Medium Intensity Runway Lights (MIRL) – Non-Precision Runway Markings – Precision Approach Path Indicators (PAPI) – Runways 15 and 33 – Airport Rotating Beacon – Runway & Taxiway Guidance Signs – Segmented Circle / Wind Cone (lighted)
Airport Facilities	– Terminal – 5,900 square feet (two levels) – Apron – 18,800 square yards – Box Hangar (adjacent to terminal) – 1unit, 12,700 square feet – T-hangars (nested) – 11 units, 11,500 square feet – Box hangar – 5 units, 9,020 square feet – Box hangar – 1 unit, 4,070 square feet – Box hangar – 2 units, 6,000 square feet
Parking	Employee, Visitor, Rental Car –approximately 21 marked spaces and an additional 14 unmarked spaces are inside the secure area

Source: Jviation

2.1 Advisory Circular 150/5300-13A, *Airport Design*[1]

In October 2012, the Federal Aviation Administration (FAA) released the new Advisory Circular (AC) 150/5300-13A, *Airport Design*, which replaces the previous *Airport Design* AC in its entirety,

[1] FAA Advisory Circular 150/5300-13A, Airport Design

and is the first comprehensive update of this AC since 1989. This new airport design guidance will be used when assessing the facilities at AEJ in **Chapter 4, Facility Requirements**.

The most significant changes from the previous *Airport Design* AC include the new standards and technical requirements of the Runway Design Code (RDC) and Taxiway Design Group (TDG). The AC still uses a design aircraft[1]; however, in most cases the design aircraft is a composite aircraft representing a collection of aircraft classified by three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and TDG. The FAA notes that the critical design aircraft must generate a minimum of 500 operations (takeoffs and landings) per year to be classified as the critical aircraft.

The AAC and ADG are combined to form the RDC. The TDG relates to the undercarriage dimension of the aircraft. Taxiway width and fillet standards, and in some instances runway to taxiway and taxiway/taxilane separation standards, are still determined by the ADG. However, AC 150/5300-13A requires selection of the RDC(s) and the most demanding meteorological conditions for desired/planned levels of service for each runway. These are then applied to the airport design criteria associated with the RDC and designated or planned approach visibility minimums. The associated taxiways are then designed accordingly to the designated TDG.

2.1.1 Runway Design Code

The FAA classifies airport runway facilities with a coding system known as the RDC. This classification helps apply design criteria appropriate to operational and physical characteristics of various aircraft types operating at an airport. As mentioned previously, the RDC of a runway is made up of three separate components: the AAC, the ADG, and approach visibility minimums.

The AAC is an *alphabetical* classification of an aircraft based upon 1.3 times the stall speed in a landing configuration at its maximum certified landing weight. The approach category for an airport is determined by the approach speed of the fastest aircraft that has at least 500 operations annually, with Category A being the slowest approach speed and Category E the fastest.

The categories are:

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

The ADG is a *numerical* classification of aircraft based on wingspan or tail height. If an airplane's wingspan and tail height are in two categories, the most demanding category is used. Like the approach category, the ADG for an airport is determined by the largest aircraft operating at least 500

[1] The design aircraft is the aircraft type that is the most demanding on airport facilities that regularly uses the airport (at least 500 annual operations). Based on wing span and approach speeds, the design aircraft determines what design standards must be used, including pavement widths, lengths and strengths and separation distances between runways and taxiways.

times per year at the facility. Also, for airports with multiple runways, the published RDC is based on the most demanding aircraft for each runway specifically. ADG details are identified in **Table 2-3.** Examples of aircraft types are shown in **Figure 2-1**.

TABLE 2-3 – AIRPLANE DESIGN GROUP (ADG)

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

Source: FAA AC 150/5300-13A

FIGURE 2-1 - AIRCRAFT TYPES

Source: Jviation

The RDC of a runway determines the runway width, shoulder width, runway separation distances from other runways and taxiways, runway safety area (RSA) dimensions, object free area (OFA) dimensions, obstacle free zone (OFZ) dimensions, and the widths and length of the runway protection zone (RPZ).

2.1.2 Taxiway Design Group

Previously, taxiway design was determined solely on the ADG of a runway complex. An ADG is based exclusively on the wingspan and tail height of the design aircraft, not the dimension of the aircraft undercarriage. With the release of AC 150/5300-13A, taxiway design standards are now based on the TDG and the ADG of a taxiway complex. The TDG of a taxiway complex is determined by the undercarriage dimensions, overall Main Gear Width (MGW) and the Cockpit to Main Gear (CMG) distance, of the most demanding aircraft. Taxiway/taxilane width, shoulder width, and fillet standards, *and in some instances*, runway to taxiway and taxiway/taxilane separation requirements, are governed by the TDG. TDG improves the design of taxiways fillets and radii, enabling safe and efficient taxiing by airplanes while minimizing excess pavement.

The ADG of a taxiway complex determines the taxiway separations from other taxiways/taxilanes, the taxiway safety area, the taxiway/taxilane object free area, and wingtip clearances.

2.2 Airfield Design Standards

The primary consideration for runway and taxiway design is the standards established by the FAA. These standards are based upon the critical aircraft. 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 RDC for the runway and the type of approach that is provided. The most demanding, or critical aircraft[1], using AEJ currently are B-II.

In accordance with previous FAA airport design standards, AEJ was designated with an Airport Reference Code (ARC) of B-II and currently meets or exceeds B-II standards. Under new design standards, AEJ has an RDC of B-II as well. The current runway design standards for AEJ, as well as B-II design standards, are shown in **Table 2-4**.

TABLE 2-4 - RDC B-II (RW 15/33) FAA RUNWAY DESIGN STANDARDS

Standard	Current Conditions	B-II Design Standards
Runway Width	75’	75’
Runway Shoulder Width	10’	10’
Runway Safety Area (RSA) Width	150’	150’
RSA Beyond Runway End	300’	300’
Runway Object Free Area (ROFA) Width	500’	500’
ROFA Beyond Runway End	300’	300’
Runway Centerline to Parallel Taxiway Centerline	300’	240’
Runway Centerline to Aircraft Parking	550’	250’

[1] FAA defines a critical aircraft as one having a minimum of 500 operations (takeoffs and landings) per year.

Standard	Current Conditions	B-II Design Standards
Runway Holding Position Markings	200'	200'

Source: FAA AC 150/5300-13A

2.3 Airfield/Airspace

2.3.1 Runways

AEJ's airfield configuration consists of one active runway, Runway 15/33, as depicted on **Figure 2-2**. The runway is constructed of asphalt. Runway 15/33 is positioned north/south, and is 8,300 feet long by 75 feet wide with unpaved shoulders. Runway pavement condition and strength are discussed in **Section 2.3.4**.

Per the FAA Airport Master Record (FAA Form 5010-1), the current Airport Reference Point (ARP) is located at Latitude 38˚48'51.1000"N and Longitude 106˚07'14.2000"W. The ARP is the latitude and longitude of the approximate center of the runway(s) at an airport. The established airport elevation, which is defined as the highest point along an airport's runway(s) is 7,950.4' above mean sea level (MSL), and is located at the end of Runway 15.

The needle on a compass orients according to the earth's magnetic field. Compasses are used in aircraft to provide directional guidance. Runway designations are determined by magnetic north and adjusted orientation. The earth's magnetic shifting is measured, recorded, and applied to an airport's runway numerals. Different numbers are therefore periodically painted on the runway to accurately represent the magnetic heading of the runway. The magnetic heading for the runway should be re-evaluated periodically.

A declination must be applied to a compass to arrive at a true north heading; and the same principle is utilized to maintain runway designations that are in accordance with FAA regulations. The magnetic bearing of a runway will change as the location of magnetic north shifts. Per the National Geophysical Data Center, as of July 30, 2014, the current declination for AEJ is 8˚59'27" east changing by 7.6' west annually[1]. The current true bearing for Runway 15 is N 160˚49' 41.2" W and the current true bearing of Runway 33 is S 340˚50' 2.5". The runway designation at AEJ should be appropriately adjusted to reflect magnetic changes since the last runway marking project. Numerals painted on the runway surface currently indicate an orientation of 15/33; however, they should be updated to reflect an orientation of 16/34.

2.3.2 Taxiways

The taxiway system at AEJ is constructed of asphalt and consists of one full length parallel taxiway (Taxiway A) on the west side of Runway 15/33 and six connector taxiways (A1-A6). Refer to **Table 2-5** and **Figure 2-2** for an overview of the existing taxiway information and layout.

Taxiway pavement condition and strength are discussed in **Section 2.3.4**.

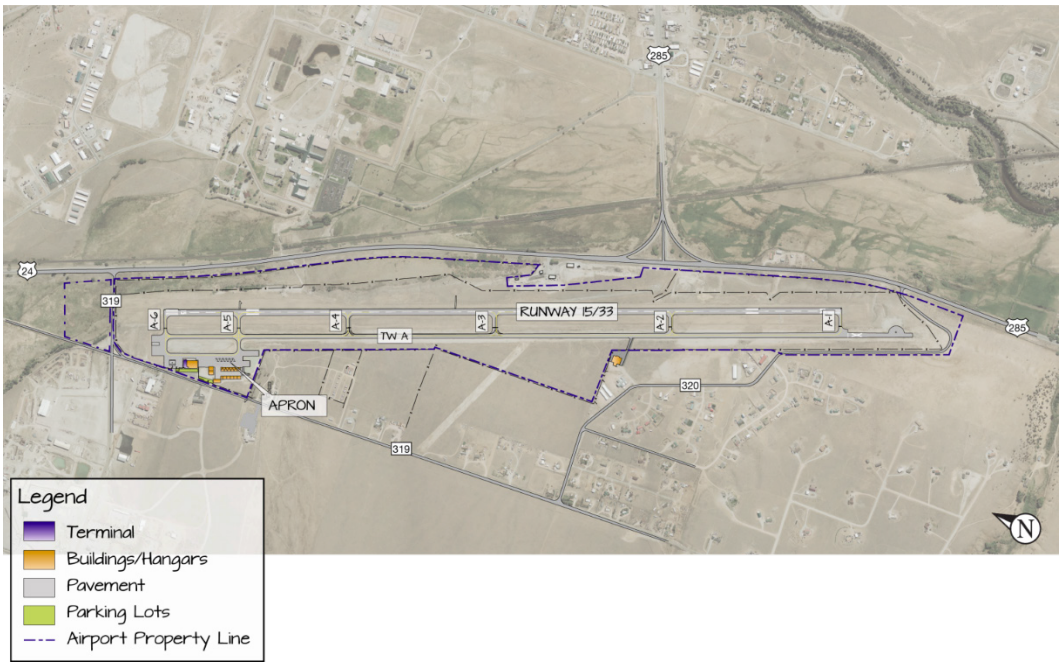
[1] http://www.ngdc.noaa.gov/geomag-web/, accessed July 2014.

TABLE 2-5 – TAXIWAY SYSTEM

Taxiway	Description	Width (feet)
A	Full length parallel taxiway on the west side of Runway 15/33	50
A1	Taxiway connector from parallel Taxiway A to the threshold of Runway 33	35
A2	Taxiway connector from parallel Taxiway A to Runway 15/33	35
A3	Taxiway connector from parallel Taxiway A to the midpoint of Runway 15/33	35
A4	Taxiway connector from parallel Taxiway A to Runway 15/33	35
A5	Taxiway connector from parallel Taxiway A to the GA apron and Runway 15/33	35
A6	Taxiway connector from parallel Taxiway A to the threshold of Runway 15	35

Source: Jviation

FIGURE 2-2 - AIRFIELD LAYOUT



Note: Not to scale
Sources: Jviation and Woolpert, Inc.

2.3.3 Apron

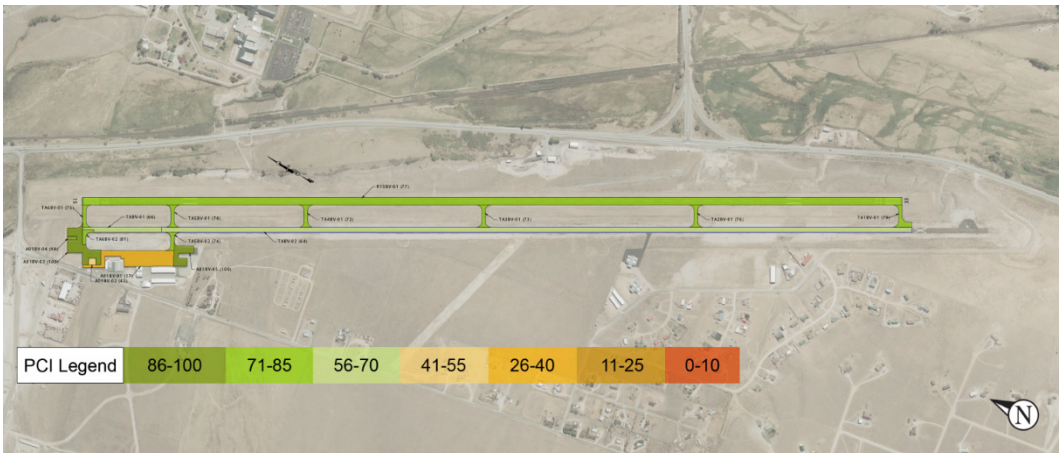
AEJ has one apron serving both the based and transient aircraft needs as depicted in **Figure 2-2**. The apron is located west of Runway 15/33 and Taxiway A. The total apron area is approximately 166,250 square feet of asphalt with a concrete hardstand.

2.3.4 Pavement Condition and Strength

The FAA recommends in AC 150/5380-6b, *Guidelines and Procedures for Maintenance of Airport Pavements,* that a detailed pavement inspection be conducted that follows the American Society for Testing and Materials (ASTM) D5340, Standard Test Method for Airport Pavement Condition Index Surveys. This method employs a visual rating system for pavement distress and is known as the Pavement Condition Index (PCI). The PCI scale ranges from a value of zero (representing a

pavement in a failed condition) to a value of 100 (representing a pavement in excellent condition). The last major PCI study performed by the CDOT Division of Aeronautics for AEJ was completed in 2012. Overall, the surfaces at AEJ range from a PCI of 37 to 100 as shown on **Figure 2-3**. Runway 15/33 is constructed to support a weight-bearing capacity of no greater than 30,000 pounds for a single wheel gear (SWG) and dual wheel gear (DWG) equipped aircraft. The taxiway and apron weight-bearing capacities are not published.

FIGURE 2-3 - EXISTING PAVEMENT CONDITION INDEX



Note: Not to scale
Sources: CDOT 2013 System Update, Pavement Evaluations and Management and Jviation

2.3.5 Lighting, Markings, and Signage of Runways and Taxiways

Runway 15/33 is equipped with a medium intensity runway lighting (MIRL) system. The MIRL's were installed in 1996 and have been maintained since that time but are currently in fair condition.

Taxiway A and all associated connector taxiways are not equipped with a lighting system. All taxiway pavement edges are marked with blue and yellow reflectors.

The Airport is equipped with standard airfield signage which is in good condition. The signage 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. AEJ is equipped with a wide array of FAA required signage including instruction, location, direction, destination, and information signs.

2.3.6 Visual and Navigational Airport Aids

The Airport has numerous visual and navigational aids as summarized in **Table 2-6**.

TABLE 2-6 – AEJ VISUAL AND NAVAID SUMMARY TABLE

General	Runway 15/33
Rotating Beacon	MIRL /b/
Lighted Wind Cone and Segmented Circle	PAPI /c/
AWOS/a/	RNAV (GPS)/d/ – Runway 33

General	Runway 15/33
UNICOM	

Notes: /a/ Automated Weather Observation System, /b/Medium Intensity Runway Lighting (MIRL), /c/ Precision Approach Path Indicator, /d/Area Navigation
Source: Jviation

Runways 15 and 33 are equipped with two light precision approach path indicators (PAPIs), providing a three-degree glide slope to arriving aircraft. The PAPIs provide visual descent guidance and are found on the left side of each runway. PAPI lights are visible from up to five miles during the day and up to 20 miles at night. The PAPIs are owned by the Airport, were installed in 1995, and are in fair condition. An Area Navigational (RNAV)/GPS approach is available for Runway 33. The approach is a non-precision approach that provides aircraft with lateral navigation (LNAV) but is without Vertical Guidance (LP).

AEJ has an Automated Weather Observation System (AWOS) located east of the end of Runway 15. An AWOS is an automated sensor suite which is voice synthesized to provide a weather report that can be transmitted via VHF radio, non-directional beacon (NDB), or VHF omni directional radio range (VOR), ensuring that pilots on approach have up-to-date airport weather for safe and efficient aviation operations. Most AWOS observe and record temperature and dew point in degrees Celsius, wind speed and direction in knots, visibility, cloud coverage and ceiling up to 12,000 feet, freezing rain, thunderstorm (lightning), and altimeter setting. The AWOS at AEJ was installed in 2005 with grants from CDOT and FAA. The AWOS is in good condition.

AEJ has a segmented circle located east of the mid-point of Runway 15/33 as well as a standard green and white rotating beacon located 650 feet west of the Runway 15 end; both in good condition.

2.3.7 Air Traffic Service Areas and Aviation Communications

FAA air traffic controllers, stationed in Air Route Traffic Control Center (ARTCC), provide air traffic control within defined geographic jurisdictions. There are 22 ARTCC geographic jurisdictions established within the continental United States. AEJ is within the Denver ARTCC jurisdiction which includes the airspace in all of Colorado and portions of Kansas, Nebraska, Wyoming, Utah, Arizona, and New Mexico. The Denver ARTCC can be reached at frequency 118.575 MHz.

Aviation communication associated with AEJ includes an Aeronautical Advisory Station (UNICOM) on frequency 122.8 which is also the frequency to activate the runway lights and PAPIs. As discussed in **Section 2.3.6**, an AWOS is stationed at the Airport and can be accessed on frequency 132.925 MHz.

2.3.8 Instrument Approach Procedures

An instrument approach procedure is a sequence of maneuvers to guide aircraft operating under FAA's Instrument Flight Rules (IFR) from the beginning of the initial approach to a runway to landing. Currently, the FAA recognizes three instrument approach types: precision, approach with

vertical guidance (APV) and non-precision. The FAA definitions of these approach types are as follows.

Precision Approach - An instrument approach procedure providing course and vertical path guidance conforming to FAA Order 8260.3B, *U.S. Standard for Terminal Instrument Procedures (TERPS),* requirements. Instrument Landing System (ILS), Precision Approach Radar, and Microwave Landing System (MLS) are examples of precision approaches and are commonly referred to in the context of conventional approach technologies via the use of ground based navigational aids.

Approach Procedure with Vertical Guidance (APV) - An instrument approach based on a navigation system that is not required to meet the precision approach standards of TERPS but provides course and glidepath deviation information. Localizer type directional aid (LDA) with glidepath, lateral navigation (LNAV)/vertical navigation (VNAV), and localizer performance with vertical guidance (LPV) are examples of APV approaches. Guidance provided for APV approaches via GPS do not require the use of ground-based navigational aids.

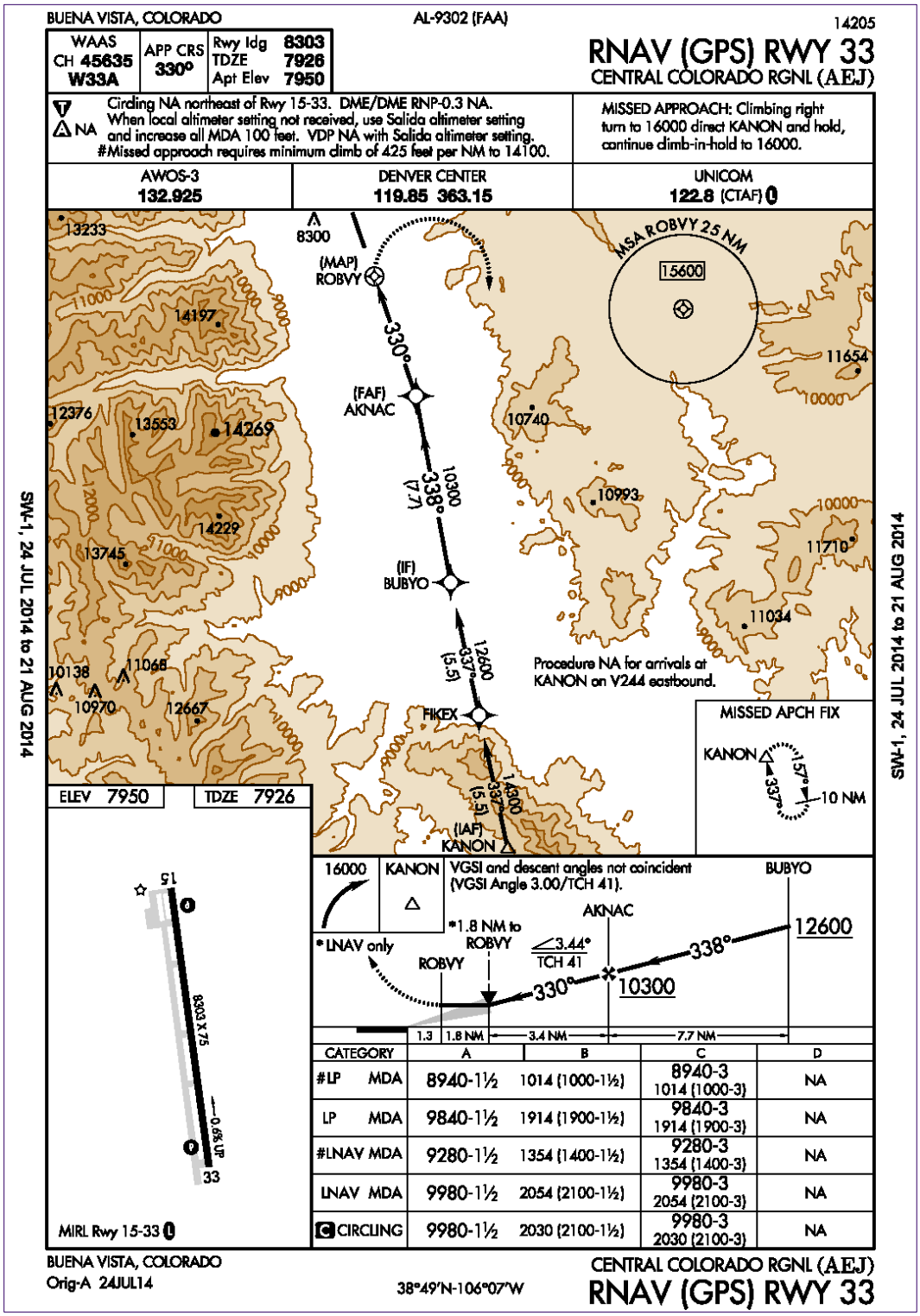
Non-precision Approach - An instrument approach based on a navigation system which provides course deviation (horizontal) information, but no glidepath deviation (vertical) information. VOR, non-directional beacon (NDB), LNAV, and circling minima are examples of non-precision approaches. Guidance provided for non-precision approaches via GPS do not require the use of ground-based navigational aids.

ILS precision approaches are divided into three categories: CAT I, CAT II, and CAT III, based on minimum altitudes an aircraft is capable of descending, as well as minimum visibility. CAT I systems are the most common ILS found at airports, as CAT II and CAT III systems allow for lower minimum altitudes and lower visibility, and therefore require increased airport investments in equipment and obstacle clearance to protect larger imaginary surfaces and meet additional airport design standards. It is important to point out that use of these ILS approaches is subject to aircraft being properly equipped and certified and properly trained aircrew.

GPS satellite based instrument approaches follow the same basic guidelines as ground-based systems, with the lowest possible minimums for approaches with horizontal only guidance being 300 feet above threshold and at least one mile of visibility (300-1). With the addition of vertical guidance through Wide Area Augmentation System (WAAS) or Ground Bases Augmentation System (GBAS), the lowest minimums are generally 200- ½ when an approach lighting system is installed.

As discussed previously, AEJ has one published non-precision approach procedure, an RNAV/GPS for Runway 33 (see **Figure 2-4**). The approach provides a minimum descent altitude of 1,000 feet and 1 ½ mile visibility and the lowest minimums are 8,940 feet (MSL) and 1 ½ mile visibility. 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 seen the airport environment by the designated Missed Approach Point (MAP), a missed approach is initiated.

FIGURE 2-4 - AEJ RNAV/GPS APPROACH

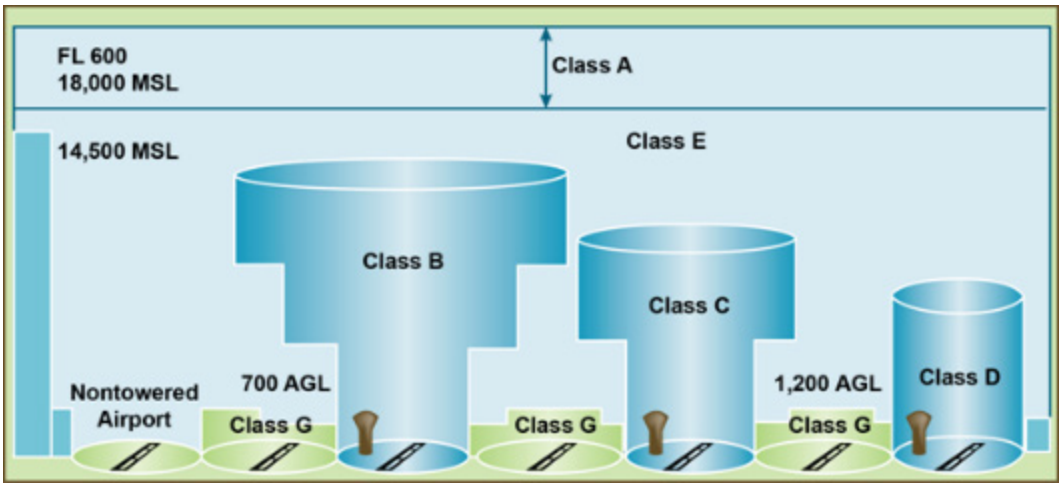


Source: SkyVector, https://skyvector.com/files/tpp/1408/pdf/09302R33.PDF, Accessed July 2014

2.3.9 Airport Airspace Usage

The FAA designates the airspace surrounding airports using a letter classification ranging from A to E, as depicted in **Figure 2-5**. The most restrictive of these airspaces is Class A airspace. It exists between 18,000 and 60,000 feet above mean sea level (MSL). Class A is controlled airspace applicable during the en route portion of flight. Classifications are based on the level and type of aircraft operations for a specific airport. Airspace surrounding the nation's busiest airports, like Denver International Airport, is designated as Class B, and is strictly controlled by air traffic control. Other towered airports are surrounded by Class C and D airspace. For airports, such as AEJ that have no tower, the surrounding airspace is designated as Class E. Airspace that has not been designated as Class A, Class B, Class C, Class D, or Class E airspace is classified as Class G (uncontrolled) airspace. This airspace extends from the surface to 1,200 feet above ground level (AGL), as described in FAA Order JO 7400.2K, *Procedures for Handling Airspace Matters*.

FIGURE 2-5 – AIRSPACE CLASSIFICATIONS

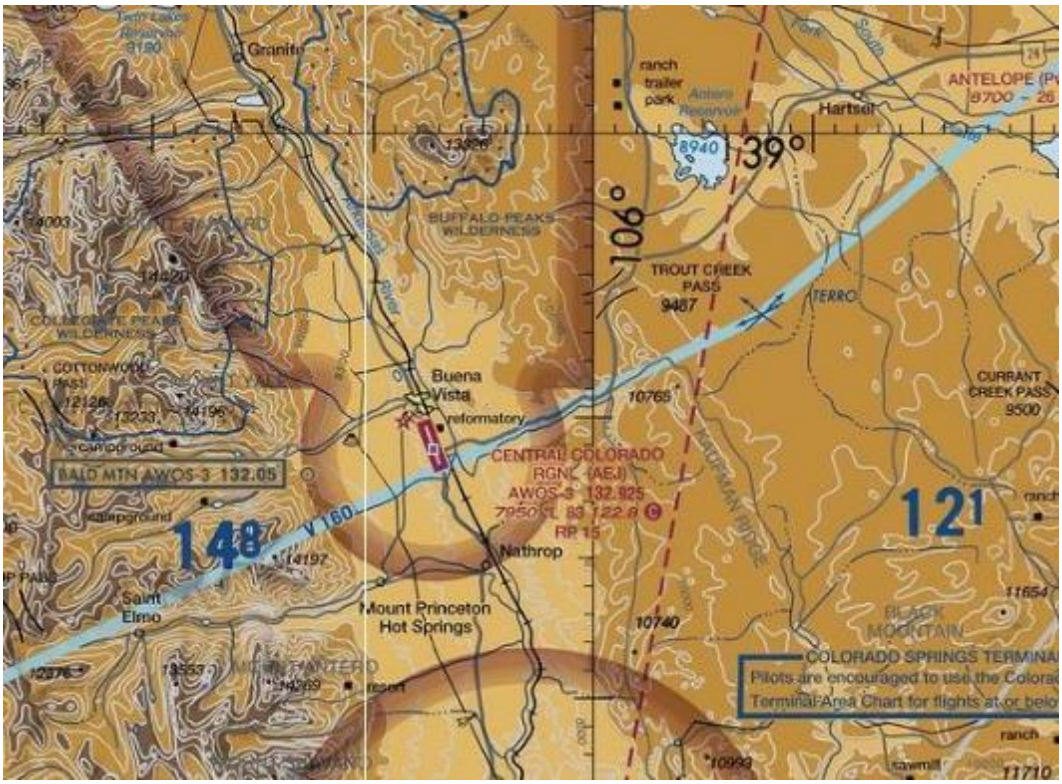


Source: Federal Aviation Administration

As previously mentioned, the Denver ARTCC provides air traffic control for AEJ. The airspace surrounding AEJ is designated as Class E airspace, with a secondary designation as a surface area. This secondary designation expands the airspace to surround all instrument approach procedures to the extent practicable[1]. Airspace classified as Class E is subject to less restrictive air traffic control than that of Classes A through D. The primary restriction to this airspace is maintaining separation from other aircraft and minimum weather requirements of three statute mile visibilities and remaining clear of clouds by 1,000 feet above, 500 feet below, and 2,000 feet horizontally. **Figure 2-6** depicts the airspace surrounding AEJ.

[1] Federal Aviation Administration. (2014). Order JO 7400.2K, Procedures for Handling Airspace Matters, Chapter 18. Class E Airspace. Section 1 Paragraph b. p. 18-1-1.

FIGURE 2-6 – AERONAUTICAL CHART



Note: Not to scale
Source: Denver Aeronautical Sectional Chart, 90th edition - January 9, 2014

2.3.10 Obstructions to Air Navigation

Obstructions are defined as any object of natural growth, terrain, permanent or temporary construction equipment, or permanent or temporary manmade structures that penetrate an imaginary/protected surface as specified in 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace* (Part 77).

A survey of the pertinent objects near AEJ has been completed by Woolpert, Inc. The survey follows FAA AC 150/5300-16A, *General Guidance Specifications of Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey*; 150/5300-17C, *Standards for Using Remote Sensing Technologies in Airport Surveys*; and 150/5300-18B, *General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards*. The survey was uploaded on FAA's web site and reviewed and approved by the FAA and the National Geodetic Survey (NGS). The survey identified penetrations to the imaginary surfaces, which are shown on drawings in the Airport Layout Plan (ALP) set, and discussed subsequently in this plan.

2.4 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/tie-down space.

2.4.1 Fixed Base Operator

A fixed base operator (FBO) is an aviation related business that provides services for non-air carrier pilots, aircraft, and passengers. However, some FBOs fuel air carrier aircraft, as well as provide deicing and light maintenance. FBO services range from GA aircraft fueling, ground servicing, aircraft maintenance and repair, in-flight catering, flight training, and aircraft rental. FBOs may also serve as a terminal for passengers boarding GA aircraft and may include a lobby, restrooms, vending, and rental car services. Pilot lounges, flight planning rooms, weather computers, and pilot shops are also typical in FBOs.

Currently, AEJ is served by one FBO, managed by the Town of Buena Vista. The FBO is located on the GA apron at the northwest side of Runway 15; see **Figure 2-7**.

The FBO is open during the summer (June 1st through September 30th) from 7:00 AM to 5:00 PM and during the winter (October 1st through May 31st) from 8:00 AM to 4:00 PM. However, self-fueling is available 24 hours a day and assisted service is provided during hours of operation.

Other services offered by the FBO include:

- Aircraft tie-downs
- Self-serve and full-serve Avgas and Jet A fuel
- Pilot lounge with WiFi
- Executive pilot lounge
- Conference center
- Flight planning room
- Rental Cars

FIGURE 2-7 – TERMINAL/FBO

Source: Jviation, 2014

2.4.2 Airport Hangars

Hangars are enclosed structures for the parking, servicing, and maintenance of aircraft which are designed to protect aircraft from environmental elements such as wind, snow, hail, ice, and rain. Most hangar structures are either box-style or T-style designs. Box-style hangars, also known as conventional hangars, have a box-shaped or rectangular footprint and range in size to hold one or

two single-engine aircraft up to accommodating several corporate jet aircraft. T-style hangars are known as T-hangars which are a series of interconnected aircraft hangars with footprints in the shape of a "T". T-hangars generally store one single- or multi-engine aircraft each, while box-style hangars can range in size from those that accommodate one small plane to those that accommodate many aircraft of various sizes.

AEJ has both T-hangars and box hangars for aircraft storage. **Table 2-7** details the hangar units, and **Figure 2-8** depicts the hangar locations. A through-the-fence (TTF) operator[1] has a box hangar with six units located just north of the taxiway connector A-2 (

Figure 2-9).

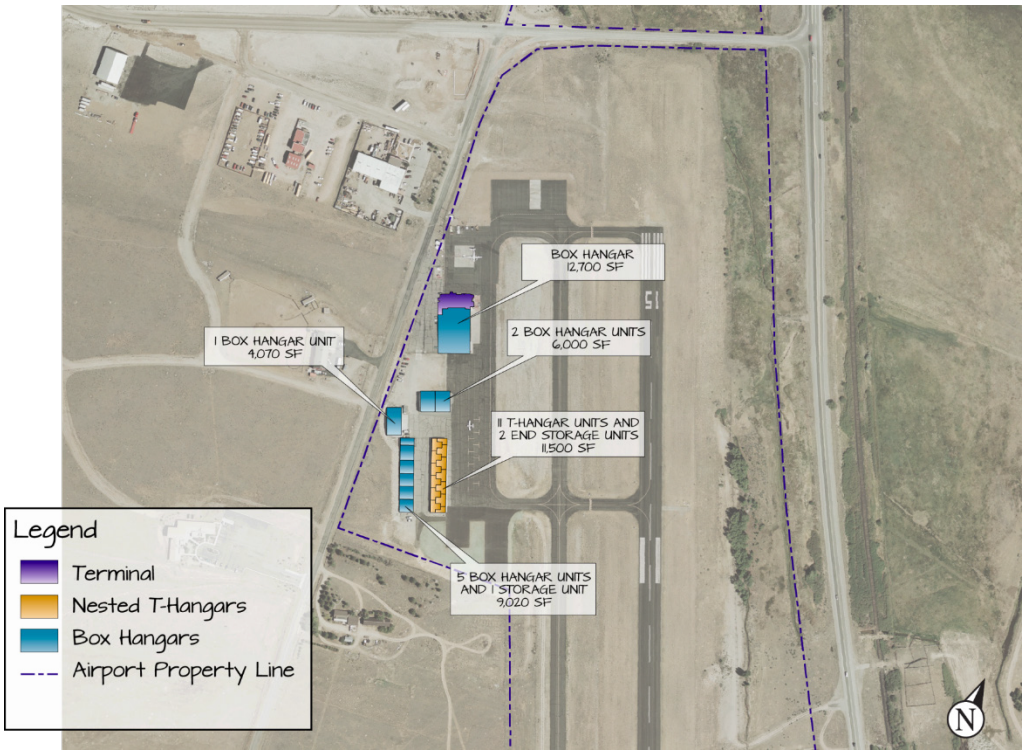
TABLE 2-7 – EXISTING HANGARS

Type	Name	Units	Area (square feet)	Year Constructed	Condition	Utilities[a]
Box	Mandes Hangar	1	12,700	1983	Fair	E
Box	Twin Peaks	2	6,000	2007	Good	E
Box	Jay Jones	1	4,070	2012	Excellent	E
T-hangar[b]	B	11	11,500	2004	Good	E
Box	A	5	9,020	1985	Fair/Good	E
Box – TTF[c]	TTF	6	9,438	1995	Good	E

Notes: [a]Water (W), Sewer (S), Electric (E), Gas (G), [b] Includes as storage unit on either end of hangar, [c]TTF = through the fence
Source: Airport Management Records, 2015

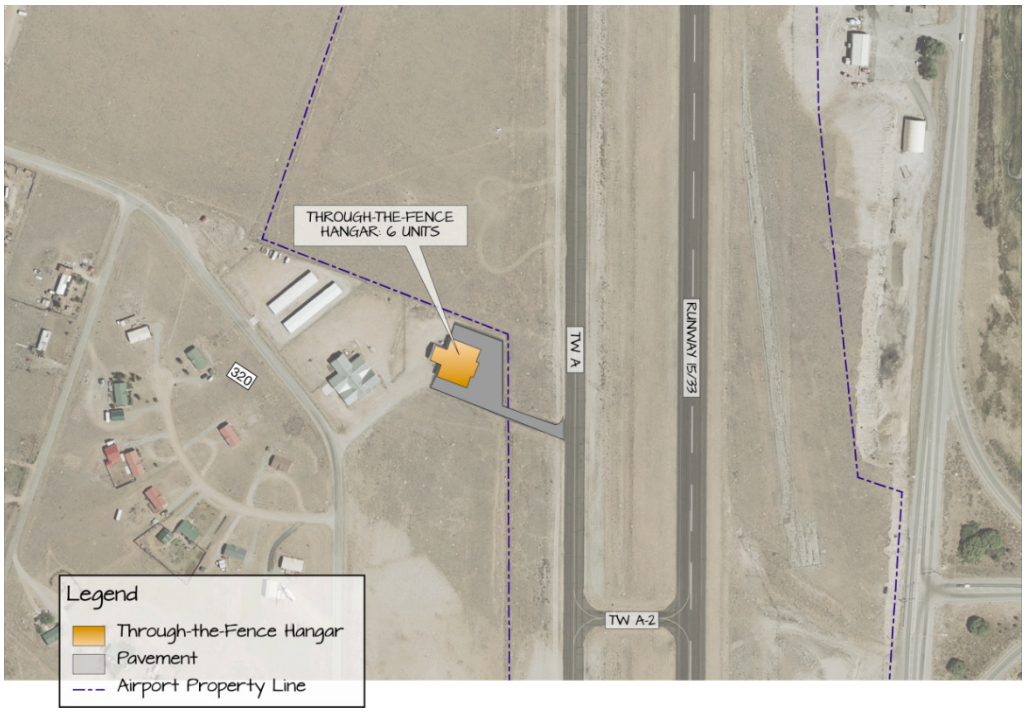
[1] Through-the-Fence Operator per FAA AC 150/5190-7, *Minimum Standards for Commercial Aeronautical Activities* – the owner of an airport may, at times, enter into an agreement (i.e. access agreement or lease agreement) that permits access to the public landing area by independent operators offering an aeronautical activity or to owners of aircraft based on land adjacent to, but not a part of, the airport property.

FIGURE 2-8 - HANGARS



Note: Not to scale
Source: Jviation

FIGURE 2-9 – THROUGH-THE-FENCE HANGAR



Note: Not to scale
Source: Jviation

2.4.3 Based Aircraft

The Airport has a total of 27 based aircraft which are primarily stored in hangars. Table 2-8 lists a breakdown of based aircraft by type.

TABLE 2-8 – BASED AIRCRAFT

Aircraft Type	Amount
Single Engine	21
Multi Engine	3
Jet	2
Glider	1
Helicopters	0

Source: Airport Administration, 2015

2.4.4 Based & Transient Aircraft Parking Aprons & Tie-downs

Aircraft parking aprons, also known as ramps, are large paved surfaces designed for parking and servicing aircraft. Aprons provide access to terminals, hangars, and FBO facilities, locations to transfer cargo from aircraft, and areas for aircraft fueling and maintenance. An apron's size and pavement strength varies greatly at different airports and even on the same airport. Factors contributing to size and strength include: aircraft type, available space, special aircraft needs, and the configuration of terminals, hangars, and FBOs. In addition, whether aircraft power-in/power-out to parking positions, or if tugs are used to pull-in and/or push-out the aircraft, can greatly impact an apron's parking capacity.

The Airport has one apron to serve all aircraft and passenger needs. The apron is approximately 166,250 square feet and is located west of the end of Runway 15. The apron has 12 tie-downs for both based and transient aircraft. Pavement type and condition is discussed in Section 2.3.4.

2.5 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 and Snow Removal Equipment (SRE) are eligible for FAA funding and most other maintenance equipment is eligible for CDOT Aeronautics funding.

2.5.1 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 AEJ is not a Federal Aviation Regulations (FAR) Part 139 airport, it is not required to provide ARFF services. AEJ has one ARFF vehicle, a 3,000 gallon 1985 foam truck donated to Buena Vista for Airport use. The vehicle is in poor condition. The truck is located at the Buena Vista Fire Department, located approximately one and a half miles to the north of the Airport on Linderman Avenue. The ARFF vehicle is staged at the Airport during high altitude testing.

2.5.2 Snow Removal Equipment

Snow removal equipment (SRE) is used to clear the runway, taxiways, and apron at the Airport. Two plow trucks, a 1987 Ford L-8000 dump truck 200 and a 2003 International 7400 snow plow, purchased in 2013, are owned by the Airport. Both the 1987 dump truck and snow plow are in fair condition. The Airport also uses a 1998 Caterpillar IT28B front end loader. The loader is in fair condition.

2.5.3 Other Equipment

The Airport has other equipment which is used for mowing, aircraft fueling, courtesy cars, and maintenance. **Table 2-9** includes a list of this equipment as well as its current condition.

TABLE 2-9 – AIRPORT EQUIPMENT

Year	Make/Model	Use	Condition
2004	Ford Excursion	Airport staff	Fair
1998	Ford Taurus	Courtesy car	Fair
2005	Massey Ferg Tractor	Mowing	Fair
1983	Ford Tug	Aircraft movement	Poor
2005	Lektro Tug	Aircraft movement	Good
1999	Chevrolet Venture Van	Courtesy car	Fair
1974	Chevrolet Custom 30 Truck	Maintenance	Fair/Poor
2014	Sealcoat Machine	Maintenance	Excellent
1998	International 4700 T444E	Aircraft Fueling	Good

Source: Airport Administration Records, 2014

2.6 Support Facilities

2.6.1 Aircraft Rescue and Firefighting (ARFF) Station, SRE Storage Building, and Maintenance Building

The Airport does not currently have a specific building dedicated to storing ARFF and SRE equipment or a maintenance facility. Space is leased in the hangar adjacent to the terminal building to store the 1983 Ford tug and the Lektro tug. The remainder of the equipment is stored outside along the south end of the hangar adjacent to terminal (**Figure 2-10**).

FIGURE 2-10 – EQUIPMENT STORAGE

Source: Jviation, 2014

2.6.2 Aircraft Fuel Storage and Use

Aircraft typically use one of two fuel types: AvGas or Jet A. AvGas, or Aviation Gasoline, is used by aircraft with reciprocating piston engines. The most common grade of AvGas is 100 low lead (LL). Jet A is a kerosene type fuel, which contains no lead, and is used for powering jet and turbo-prop engine aircraft. Aviation fuel is currently stored northwest of the apron in the fuel farm. The fuel farm has two 15,000-gallon above ground storage tanks (AST) that were installed in 1985. They are single-walled with fuel containment. The Airport's fuel truck is a 1998 International 4700 T444E with a 3,000-gallon capacity. The tanks and fuel truck are owned by the Town of Buena Vista; see **Figure 2-11**. The tanks are in good condition as is the fuel truck. However, the fuel truck was purchased from Florida and does not have a cold weather package which is not ideal for a Colorado airport.

FIGURE 2-11 – FUEL FARM AND FUEL TRUCK

Source: Jviation, 2014

Self-serve fuel is also available at the Airport for use during FBO non-operating times and is located north of the terminal building, directly east of the fuel storage tanks. A 72-foot by 66-foot concrete apron surrounds the fuel pumps where aircraft park for fueling. **Figure 2-12** depicts the self-fueling facility.

FIGURE 2-12 – SELF-SERVICE FUELING FACILITY

Source: Jviation, 2014

Airport records indicated fuel flowage at AEJ has steadily increased over the past five years (2009-2013), with peak usage in 2011. **Table 2-10** details the fuel pumped from 2009 through 2013.

TABLE 2-10 – FUEL FLOWAGE

Year	Total Jet A & AvGas Fuel (gallons)
2009	42,656
2010	53,094
2011	60,374
2012	58,180
2013	59,847

Source: Airport Administration Records, 2014

2.7 Access, Circulation, and Parking

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

2.7.1 Airport Access Road & Circulation Network

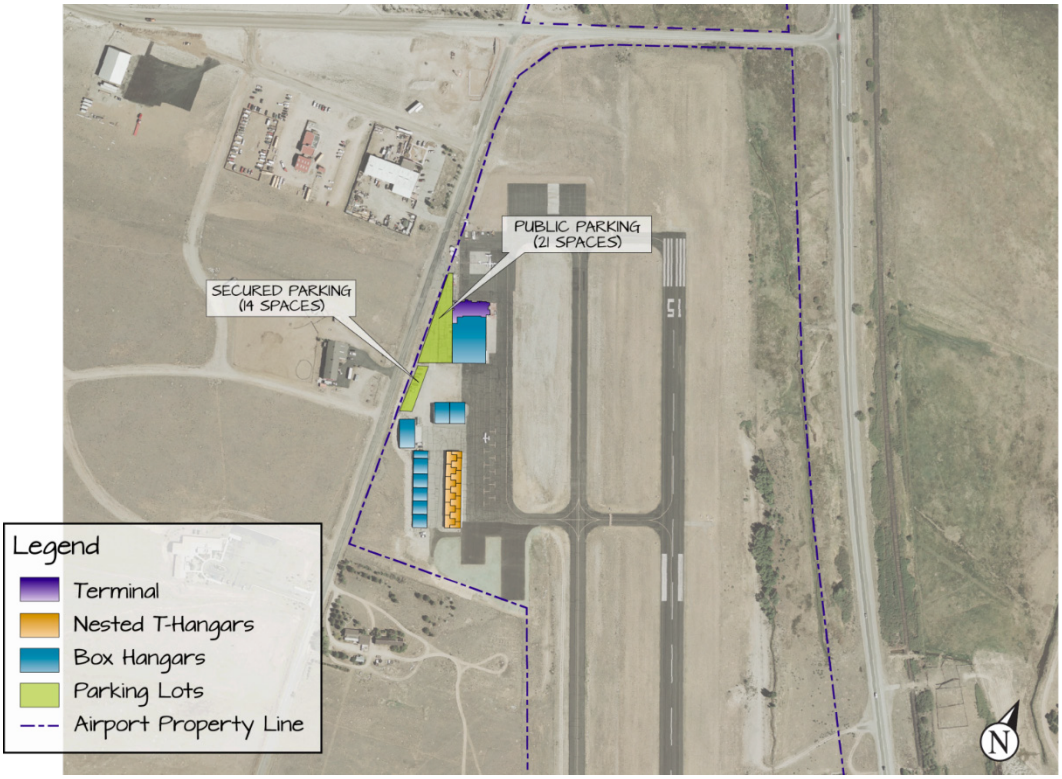
The main access road to the Airport is County Road 319 which connects to U.S. Highway 24 via Steele Drive. County Road 319 is a two-lane road that sits directly adjacent to the Airport's auto parking lot. Alternatively, access is available from the south via U.S. Highway 285 to County Road 320 which connects to County Road 319.

2.7.2 Auto Parking

Public parking at AEJ consists of one lot located west of the apron and FBO and east of County Road 319. The parking lot has 21 spaces and is free of charge for airport users. The parking lot is also used for employee vehicles, rental cars (as needed), and airport courtesy cars. An additional

unpaved secure lot is located through the gate, southwest of the terminal, with 14 spaces. **Figure 2-13** illustrates the parking areas.

FIGURE 2-13 – AEJ PARKING



Note: Not to scale
Source: Jviation

2.8 Utilities

AEJ has a variety of public utilities. Public utilities include natural gas, electrical service, water supply, and fiber optics and communications. All utility lines serving the Airport are buried underground and provide service to buildings and airfield facilities. Waste water is treated on-site.

2.8.1 Natural Gas

Natural gas is supplied by Atmos Energy.

2.8.2 Electricity

Electricity is provided by the Sangre de Cristo Electric Association.

2.8.3 Water Supply

Water lines serving the Airport are from the Buena Vista Municipal Water Plant and provide potable water and fire protection.

2.8.4 Waste Water

A four-inch sanitary sewer line provides waste water discharge into the Airport's wastewater treatment facilities, which consist of a 1,500-gallon septic tank and associated leach field.

2.8.5 Fiber Optics and Communications

Century Link provides phone service to the Airport while Matrix provides internet and data services.

2.9 Meteorological Data

Environmental elements play a significant role in an airport's layout and design. Temperatures impact runway length and prevailing winds are one of the most important environmental elements as they dictate runway orientation.

2.9.1 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 FAA AC 150/5300-13A, Airport Design, when the current runway(s) provide less than 95 percent 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 the allowable crosswind component for various sizes of aircraft. A 10.5 knot crosswind component is used for small aircraft weighing 12,500 pounds or less, and a 20 knot crosswind component is used for an aircraft the size of a Boeing 767.

Typically, weather observations are obtained from the National Climatic Data Center (NCDC). However, the NCDC noted that 10 years of data did not exist for AEJ as observations were just started in 2010. It was also noted that wind data was not obtained during the 2004 Master Plan. However, a local meteorologist has been collecting data at AEJ since November 2007; see **Appendix B** for qualifications. Observations used were taken November 11, 2007 through October 20, 2014. Per the FAA, the desirable wind coverage for an airport is 95 percent during all weather conditions, which means that runways should be oriented so that the maximum crosswind component does not exceed more than five percent of the time. As shown in **Table 2-11,** the runway orientation of Runway 15/33 provides 90.64 percent coverage for a 10.5-knot crosswind, which is under the FAA crosswind component requirement of 95 percent. "All Weather" includes data on the winds observed for all types of weather conditions during the observation period. The FAA All Weather wind rose is depicted in **Figure 2-14**.

TABLE 2-11 – AEJ WIND COVERAGE

All Weather	10.5-Knots	13-Knots	16-Knots	20-Knots
Runway 15/33	90.64%	93.95%	96.96%	98.93%

Sources: Mal Sillars, Consulting Meteorologist, and FAA AGIS Wind Rose Form, https://airports-gis.faa.gov/airportsgis/publicToolbox/windroseForm.jsp

2.9.2 Temperature

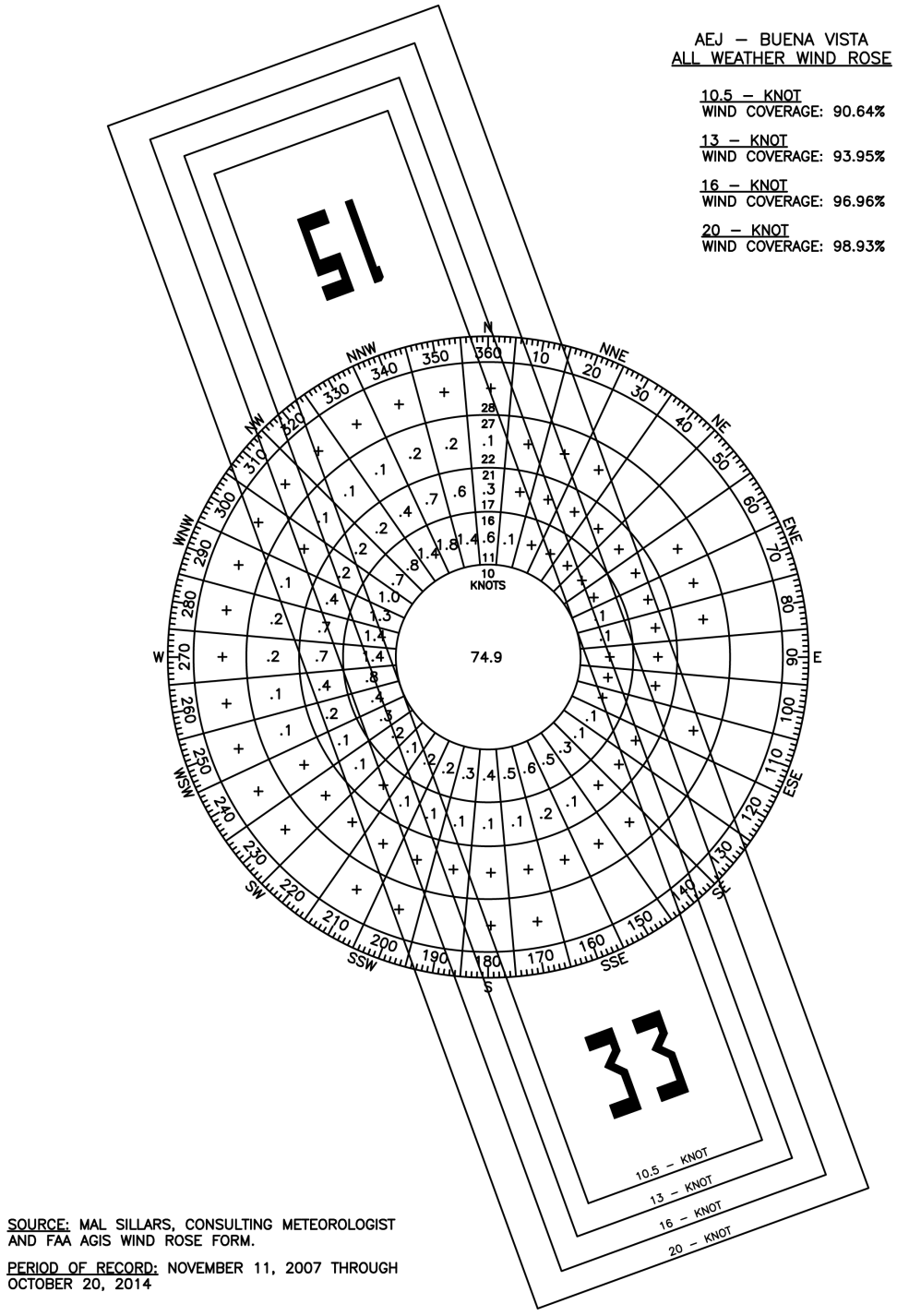
The mean maximum temperature of the hottest month, also known as the airport reference temperature, occurs in July with a temperature of 82.1°F. The average temperature in January is 25.8°F and in June it is 60.4°F. These temperatures are recorded by the Western Region Climate Center. [1]

2.9.3 Precipitation

July is typically the rainiest month in Buena Vista, and the total precipitation averages 9.8 inches per year. The average snowfall for the city averages 41.2 inches per year, with most of the snowfall occurring November through April.[2]

[1] Western Region Climate Center, Colorado Climate Summaries. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?co1071, Accessed August 2014.
[2] Western Region Climate Center, Colorado Climate Summaries. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?co1071, Accessed August 2014.

FIGURE 2-14 – ALL-WEATHER WIND ROSE



2.10 Airport Property

The Airport property is comprised of 184 acres. The land is owned in fee simple and through long-term leases/easements with the State of Colorado Departments of Corrections, Colorado Division of Wildlife, and Colorado Department of Natural Resources.

The land depicted as the airport on the Exhibit "A" Property Map must be used in accordance with the Airport Layout Plan. The Exhibit "A" is an inventory of the parcels that makeup dedicated airport property and indicates how the land was acquired and the funding source. Property that is designated for aeronautical use cannot be used for non-aeronautical purposes except under limited circumstances or with FAA approval.

2.11 Regional Setting and Land Use

The Airport is located approximately two miles south of the Town of Buena Vista, as shown in **Figure 1-2**. The Airport is zoned by both the Town of Buena Vista and Chaffee County (see **Figure 2-15**). Buena Vista controls the portion of the airport that includes the buildings and hangars, while the County controls the remaining areas. The portion of the Airport controlled by Buena Vista is zoned as Industrial (I-1). The principal use of land zoned as I-1 is:

> "for the fabrication, assembly and manufacture of goods and materials in conjunction with related retail and wholesale activities. It is the intention of these regulations to encourage the development and orderly expansion of the district with such uses and in such a manner as to avoid dangerous, noxious or unsightly land uses"[1].

The portion of the Airport controlled by Chaffee County is zoned as Industrial (IND). The intent of IND is:

> "areas for industrial businesses in locations where conflicts with residential, commercial and other land uses can be minimized. It is the intent of this district to allow uses that are complementary to industrial uses. This land use district is intended to promote the development of local employment centers as well as to provide a location for uses that may be considered undesirable in other areas, such as concrete and asphalt plants, heavy equipment storage, and intensive manufacturing processes. These land uses should have easy access to the state highways or other transportation modes"[2].

In addition to the zoning designations by the Town of Buena Vista and Chaffee County, both entities have included an airport overlay district in their municipal codes. The Town of Buena Vista adopted an Airport Protection Overlay District (APO). The intent of the APO is:

> The Airport Protection Overlay ("APO") District is a supplemental district that may overlay any standard zoning district. Any use by right or conditional use permitted in the underlying district is also permitted in an APO District so long as that use meets the special conditions required in an APO District.
>
> The APO District is established to minimize exposure of residential and other sensitive land uses to aircraft noise areas, to avoid danger from aircraft accidents, to reduce the possibility of such accidents, to discourage traffic congestion within the

[1] Colorado Code Publishing Company, Buena Vista Municipal Code, Section 16-160, 1992
[2] Chaffee County Commissioners, Chaffee County Land Use Code, Section 2.2.7, 2014

area of the district and to restrict non-compatible land uses in proximity to and within airport influence areas.

The APO District shall be applied in the vicinity of all general aviation airports which would be significantly affected by air traffic, noise or any hazard related to the establishment, operation or maintenance of an airport.

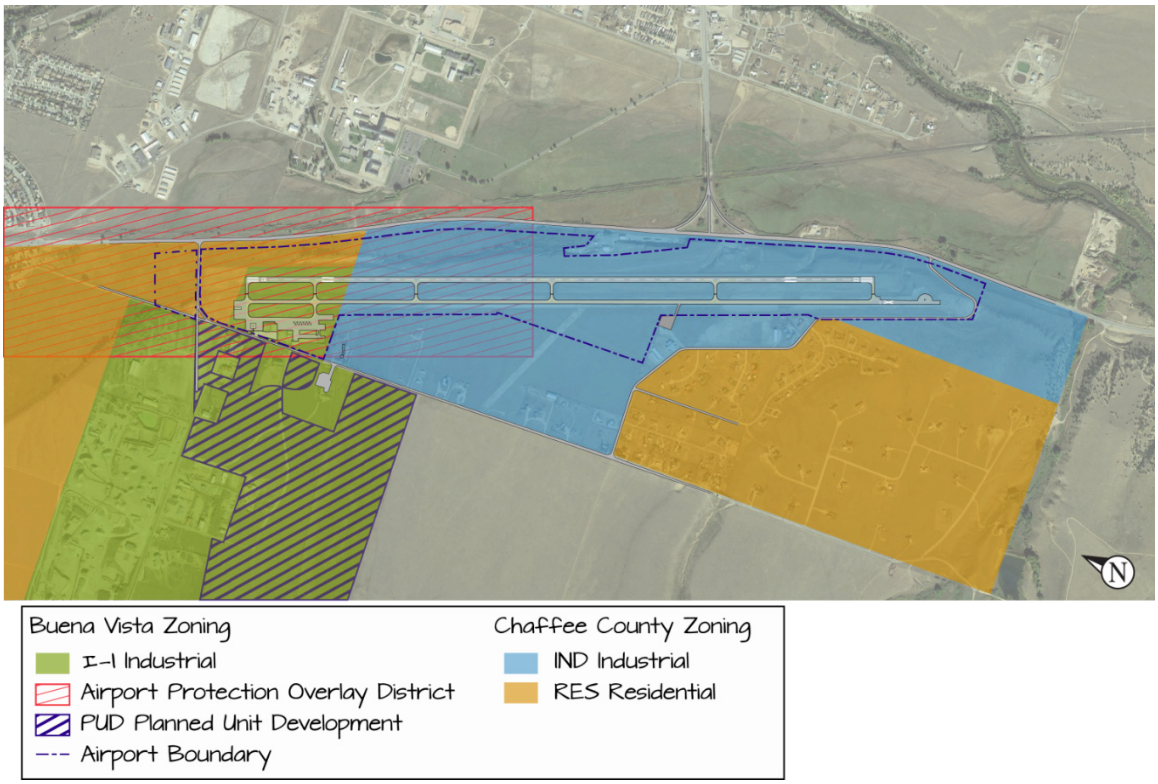
The degree of protection provided by this overlay district is considered reasonable and prudent for land use regulatory purposes and is based on established parameters of control. Establishment of this district, however, does not imply that areas outside of the district will be totally free from airport and aircraft related hazards, or that all hazards within the APO District will be completely mitigated. Establishment of this district shall not create a liability on the part of or create or cause action against the Town or any officer, employee or contractor thereof for any damages that may result directly or indirectly from reliance on the provisions contained herein.[1]

Chaffee County adopted an Airport Overlay District (AIO) with the intent of:

- To support and encourage the continued operation and vitality of public use airports and heliports.
- To reduce potential safety hazards for persons living, working or recreating near public use airports and heliports.
- To minimize environmental impacts resulting from the operation of public use airports and heliports.[2]

[1] Colorado Code Publishing Company, Buena Vista Municipal Code, Section 16-168, 1992
[2] Chaffee County Commissioners, Chaffee County Land Use Code, Section 2.6.3, 2014

FIGURE 2-15 – ZONING



Note: Not to scale
Sources: Town of Buena Vista and Chaffee County

2.12 Environmental Overview

FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and Order 5050.4B, *National Environmental Policy Act: Implementation Instruction for Airport Actions* addresses specific environmental categories that are to be evaluated in environmental documents in accordance with the National Environmental Policy Act (NEPA). The following section inventories the applicable environmental categories and their existence at AEJ. The following environmental categories are not discussed as they are not relevant to AEJ and/or they relate to impacts from a specific project.

- Coastal Resources
- Construction Impacts
- Secondary Impacts
- Socioeconomic Impacts
- Environmental Justice
- Children's Health and Safety Risks

2.12.1 Air Quality

Air quality analysis for federally funded projects must be prepared in accordance with applicable air quality statutes and regulations that include the Clean Air Act of 1970[1], the 1977 Clean Air Act Amendments[2], the 1990 Clean Air Act Amendments[3], and the National Ambient Air Quality

[1] U.S. Code. The Clean Air Act of 1970. U.S. Congress, Public Law 91-604, 42 U.S.C. §7401
[2] U.S. Code. The 1977 Clean Air Act Amendments, U.S. Congress, Public Law 95-95, 42 U.S.C. §7401
[3] U.S. Code. The 1990 Clean Air Act Amendments, U.S. Congress, Public Law 101-549, 42 U.S.C. §7401

Standards[1] (NAAQS). The air pollutants of concern in the assessment of impacts from airport-related sources include six "criteria pollutants"; carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM-10 and PM-2.5), and sulfur dioxide (SO_2).

The Airport is in Chaffee County, which is designated by the U.S. Environmental Protection Agency (EPA) as being in attainment status for all parts of the county in all criteria[2].

2.12.2 Department of Transportation Act: Section 4(f)

The Department of Transportation (DOT) Act, Section 4(f)[3] provides that the "Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land from 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".

The FAA has adopted the regulations the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issued in March 2008 (23 CFR Part 774)[4] to address project-related effects on Section 4(f) resources.

For Section 4(f) purposes, a proposed action would eliminate a resource's use in one of two ways.

- *Physical use.* Here, the action physically occupies and directly uses the Section 4(f) resource. Here an action's occupancy or direct control (via purchase) causes a change in the use of the Section 4(f) resources. For example, building a runway safety area across a fairway of a publicly-owned golf course is a physical taking because the transportation facility physically used the course by eliminating the fairway.
- *Constructive use*. Here, the action indirectly uses a Section 4(f) resource by substantially impairing the resource's intended use, features, or attributes. For example, a constructive use of an overnight camping area would occur when project-related aircraft noise eliminates the camping area's solitude. Although not physically occupying the area, the project indirectly uses the area by substantially impairing the features and attributes (i.e., solitude) that are necessary for the area to be used as an overnight camping area.[5]

The Town of Buena Vista has numerous park and recreation areas as listed in **Table 2-12** and shown on **Figure 2-16;** however, none are located adjacent to or near the Airport.

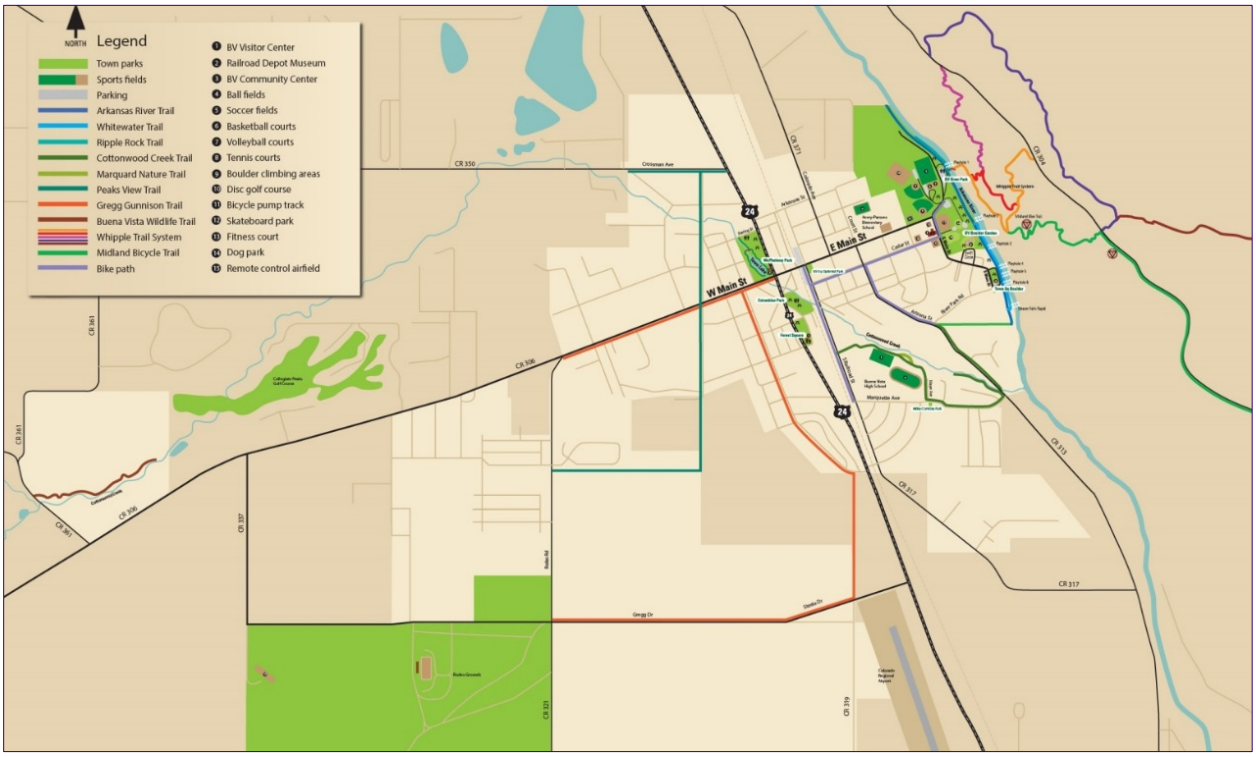
[1] 40 CFR Part 50, Section 121, National Ambient Air Quality Standard
[2] U.S. Environmental Protection Agency, Green Book – Nonattainment Status for Each County by Year, www.epa.gov/airquality/greenbook/astate.html, accessed July 2014
[3] U.S. Department of Transportation Act, section 4(f), recodified and renumbered as § 303(c) of 49 U.S.C.
[4] Vol. 73 Federal Register, page 13395, Mar. 2008.
[5] A de minimis use cannot occur if a project constructively uses a Section 4(f) property. This is because the substantial impairment associated with a constructive use is more severe than the minor effects to which de minimis provisions apply.

TABLE 2-12 – BUENA VISTA PARK FACILITIES

Park Name	Location
Buena Vista Square Optimist Park (future park)	Corner of East Main Street and Railroad Street
Remote Control Airstrip	West of Buena Vista Rodeo Grounds
Millie Crymble Park	Marquette Avenue, east of Buena Vista High School
Dog Park	Across from Community Center on East Main Street
Buena Vista Rodeo Grounds	Rodeo road (CR 321) just west of Gregg Drive intersection
River Walk	Follows the Arkansas River, connecting the South Main area to the recreation area north of the River Park
Whitewater Park	South Main neighborhood
Disc Golf Course	Within River Park, end of Main Street next to Arkansas River
Skate Park	South of Community Center on East Main Street
South Main Square park	South Main development along the Arkansas River
River Park	End of Main Street next to Arkansas River
Forest Square Park	Highway 24, 3 blocks south of the stoplight in Buena Vista
Columbine Park	Highway 24, just south of stoplight in Buena Vista
McPhelemy Park	Intersection of Highway 24 and Main St.

Source: Buena Vista Parks and Recreation, http://bvparksandrec.org/category/park/

FIGURE 2-16 – BUENA VISTA PARKS AND RECREATION AREAS



Source: Buena Vista Parks and Recreation, http://bvparksandrec.org/wp-content/uploads/2014/03/Parks-Map.jpg

2.12.3 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".

The Natural Resources Conservation Service (NRCS) Web Soil Survey was used to review soils on and around AEJ. **Table 2-13** details the soil types on Airport property, none of which are classified as prime farmland, and **Figure 2-17** depicts the NRCS soils.

TABLE 2-13 – ON-AIRPORT SOIL CLASSIFICATIONS

Map Unit Symbol	Map Unit Name	Farmland Classification
AdC	Adilis loam, 1 to 5 percent slopes	Not prime farmland
ChB	Chaffee loam, 1 to 3 percent slopes	Not prime farmland
DoD	Dominson gravelly sandy loam, 1 to 9 percent slopes	Not prime farmland
DoF	Dominson gravelly sandy loan, 9 to 45 percent slopes	Not prime farmland
GcB	Gas Creek gravelly sandy loam, 1 to 30 percent slopes	Not prime farmland
GP	Pits, gravel	Not prime farmland
Gv	Gravelly alluvial land	Not prime farmland
OrC	Ouray sandy loam, 1 to 5 percent slopes	Not prime farmland
RcF	Rockland, 15 to 60 percent slopes	Not prime farmland

Map Unit Symbol	Map Unit Name	Farmland Classification
Ro	Rock outcrop	Not prime farmland
Ru	Rough broken land	Not prime farmland
SsC	San Isabel stony sandy loam, 1 to 5 percent slopes	Not prime farmland
StC	Sawatch sandy loam, 1 to 5 percent slopes	Not prime farmland
W	Water	Not prime farmland

Source: Natural Resource Conservation Service, Web Soil Survey, www.websoilsurvey.nrcs.usda.gov, accessed July 2014

FIGURE 2-17 - NRCS SOILS

Note: Not to scale
Source: Natural Resource Conservation Service, Web Soil Survey, www.websoilsurvey.nrcs.usda.gov, accessed July 2014

2.12.4 Fish, Wildlife, and Plants

Requirements have been set forth by The Endangered Species Act[1], The Sikes Act[2], The Fish and Wildlife Coordination Act[3], The Fish and Wildlife Conservation Act[4], and the Migratory Bird Treaty Act[5], for the protection of fish, wildlife, and plants of local and national significance. The U.S. Fish and Wildlife Service's (USFWS) Information, Planning, and Conservation (IPaC) System was used to identify species of concern. It was found that various species listed by the USFWS as being threatened, endangered, or candidates may be found in Chaffee County. The identified species are depicted in **Table 2-14**.

A survey would need to be completed prior to development to determine if any listed species occur on Airport property.

TABLE 2-14 – THREATENED AND ENDANGERED SPECIES IN CHAFFEE COUNTY

Group	Species	Scientific Name	Status
Birds	Gunnison sage-grouse	*Centrocercus minimus*	Proposed Endangered
	Mexican spotted owl	*Strix occidentalis lucida*	Threatened
Insects	Uncompahgre Fritilary butterfly	*Boloria acrocnema*	Endangered
Mammals	Black-Footed ferret	*Mustela nigripes*	Experimental Population, Non-Essential
	Canada Lynx	*Lynx canadensis*	Threatened
	North American wolverine	*Gulo gulo luscus*	Proposed Threatened

Source: USFWS, Information, Planning, and Conservation System, Species Report, https://ecos.fws.gov, accessed July 2014

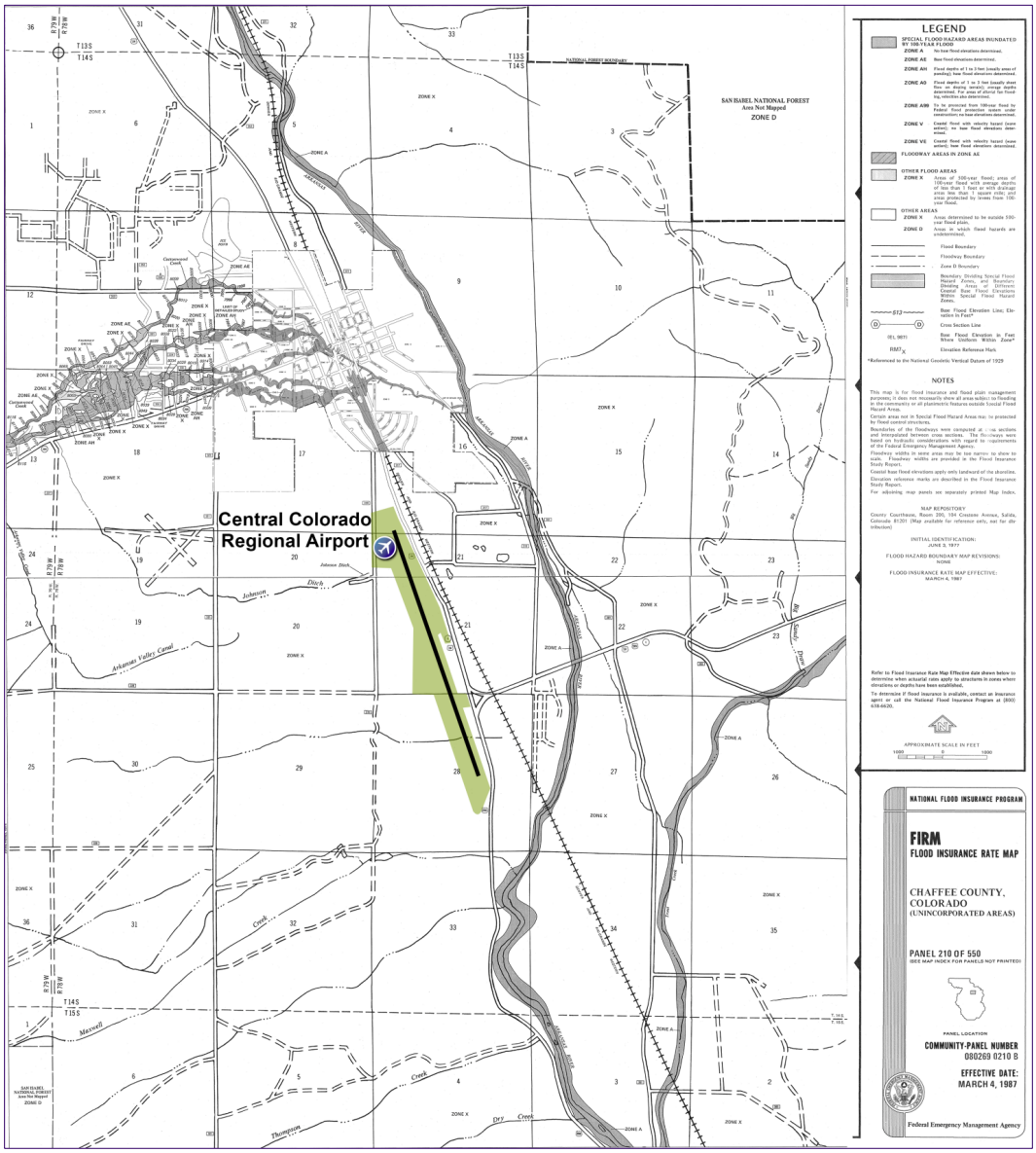
2.12.5 Floodplains

Executive Order 11988, *Floodplain Management,*[6] 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".

The Airport is located on Flood Insurance Rate Map (FIRM) Panel 0802690210B, effective March 4, 1987. The Airport, in its entirety, is in an area designated by the Federal Emergency Management Agency (FEMA) as Zone X, as shown in **Figure 2-18**. Areas within Zone X are areas determined to be outside the 500-year flood plain.

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

FIGURE 2-18 - FLOOD INSURANCE RATE MAP



Note: Not to scale
Source: *FEMA, Flood Insurance Rate Map, Panel 0802690210B, effective March 4, 1987*

2.12.6 Hazardous Materials, Pollution Prevention, and Solid Waste

The Resource Conservation and Recovery Act (RCRA)[1], Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)[2], Superfund Amendments and Reauthorization Act (Superfund)[3], and the Community Environmental Response Facilitation Act (CERFA)[4] are the four predominant laws regulating actions related to the use, storage, transportation, or disposal of

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

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.

Per the NPL, no sites are located near the Airport.

2.12.7 Historical, Architectural, Archaeological, and Cultural Resources

The National Historic Preservation Act[1] and the Archaeological and Historical Preservation Act[2] regulate the preservation of historical, architectural, archaeological and cultural resources. Federal actions and undertakings are required to evaluate the impact on these resources.

For the purposes of this Master Plan, historic, archaeological and cultural resources are districts, sites, buildings, structures, objects, landscapes, and Native American Traditional Cultural Properties (TCPs) that are on or eligible for listing on the National Register of Historic Places (NRHP). The NRHP currently lists seven properties for Buena Vista, as noted in **Table 2-15**.

A survey would be required prior to development to determine if any historic, archaeological and cultural resources occur on Airport property.

TABLE 2-15 – NATIONAL REGISTER OF HISTORIC PLACES – BUENA VISTA

Property Name	Location	Year Added to Registry	Distance from Airport
Bridge over Arkansas River	U.S. Highway 24, Buena Vista	1985	0.8 miles east
Chaffee County Courthouse and Jail Buildings	501 E. Main St., Buena Vista	1979	1.2 miles north
Grace Episcopal Church	Main and Park Ave., Buena Vista	1978	1.2 miles north
Bonney, J.M. House	408 Princeton Ave., Buena Vista	1994	1.4 miles north
Clear Creek Canyon of Chaffee County	North of Buena Vista	1974	14.7 miles north
Vicksburg Mining Camp	Northwest of Buena Vista on SR. 390	1977	15 miles northwest
Winfield Mining Camp	Northwest of Buena Vista on SR. 390	1980	15 miles northwest

Source: National Register of Historic Places, www.nationalregisterofhistoricplaces.com, accessed July 2014

2.12.8 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 near an airport. A significant portion of light emissions at airports are a result of safety and security equipment and facilities. AEJ has four primary sources of light:

- Runway Lighting: lights outlining the runway; classified by the intensity or brightness the lights can produce.
- Airport beacon: a rotating light used to locate the Airport.

[1] U.S. Code, 1966, National Historic Preservation Act of 1966, Public Law 89-665
[2] U.S. Code, 1974, Archaeological and Historical Preservation Act of 1974, 16 USC 469

- PAPIs: system of lights on the side of an airport runway threshold that provides visual descent guidance information during approach
- Apron/Parking Lights: pole lighting on aprons and parking areas

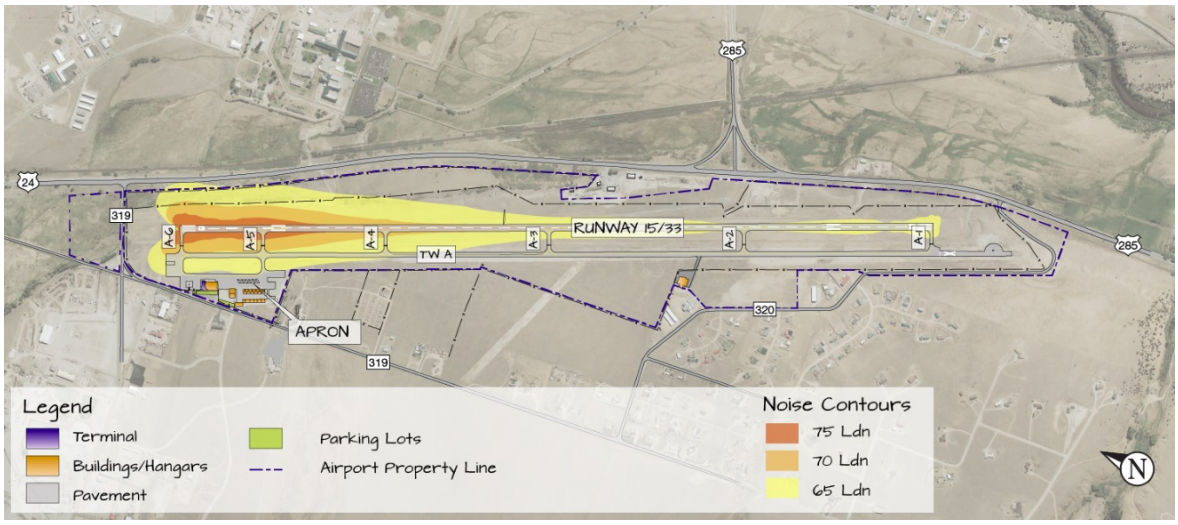
All sources of light aid in the safety of operations at the airport and produce an insignificant amount of light on the surrounding area.

2.12.9 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 near the airport.

A noise analysis for existing conditions was completed by KB Environmental Sciences, Inc., see **Appendix C** for full report. **Figure 2-19** illustrates the 2015 65 Day-Night Average Sound Level (DNL). The noise contour was generated using the Aviation Environmental Design Tool (AEDT), Version 2b. As shown, the noise contour remains well within AEJ's boundary with exception to a small area west of the Runway 15 end. Land use (road right-of-way) within that area is compatible with the 65 DNL contour.

FIGURE 2-19 – 2015 DNL NOISE CONTOURS



Source: KB Environmental Sciences, Inc., 2016

2.12.10 Water Quality

The Clean Water Act[1] 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."

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

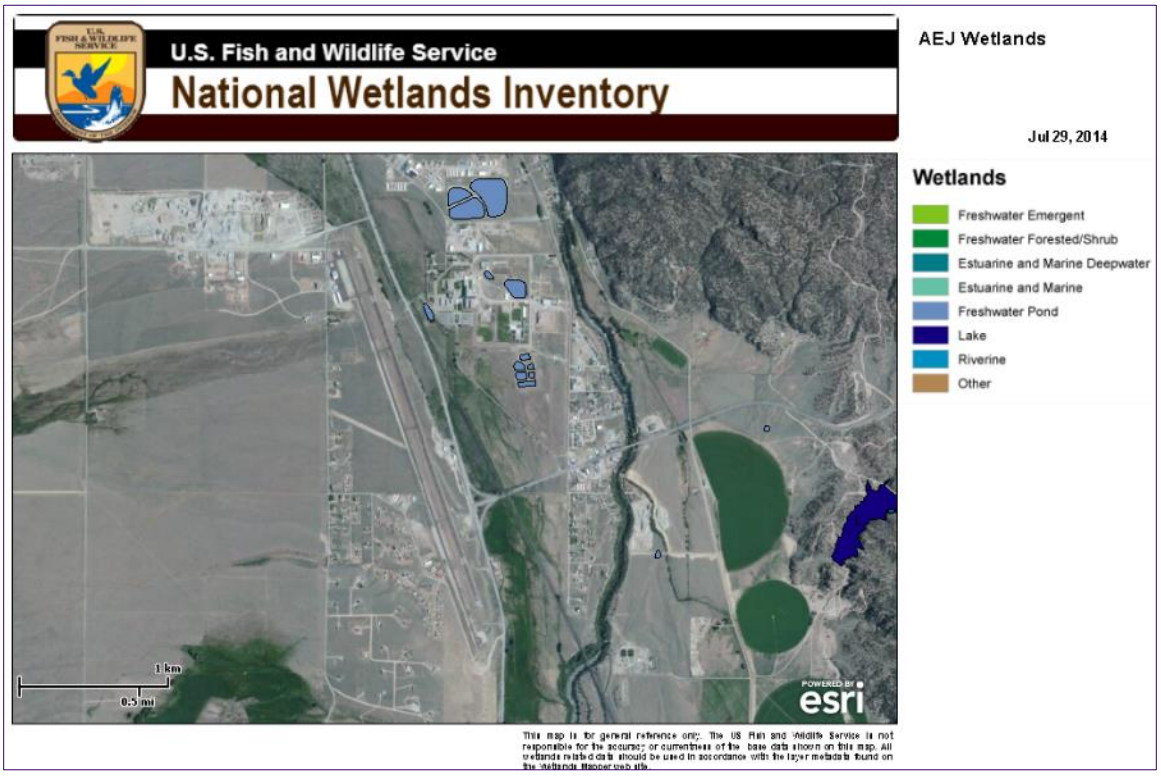
The major watershed for the Buena Vista area is the Arkansas Headwaters. As discussed in **Section 2.8.3**, the Airport's water supply is obtained from the Town of Buena Vista.

2.12.11 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.

Per the National Wetlands Inventory (NWI) wetlands exist near the Airport; however, none have been delineated on airport property. The nearest known wetlands are depicted in **Figure 2-20**. A survey would need to be completed prior to development to determine if any wetlands occur on Airport property.

FIGURE 2-20 - NATIONAL WETLAND INVENTORY MAP



Note: Not to scale
Source: U.S. Fish and Wildlife Service, National Wetlands Inventory, Wetlands Mapper, www.fws.gov/wetlands/Data/Mapper.html

2.12.12 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968, as amended[1], describes those river segments designated as, or eligible to be included in, the Wild and Scenic Rivers System. Impacts to designated rivers should

[1] U.S. Code, The Wild and Scenic Rivers Act of 1968, 16 USC 1271-1287, 1977

be avoided or minimized to the extent possible. In addition, the President's 1979 *Environmental Message Directive* on Wild and Scenic Rivers[1] 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.

Rivers are classified as wild, scenic, or recreational. **Table 2-16** describes each classification. However, regardless of classification, each river in the National System is administered with the goal of protecting and enhancing the values that caused it to be designated. A designated river is neither prohibited from development nor does it give the federal government control over private property. Protection of the river is provided through voluntary stewardship by landowners and river users and through regulation and programs of federal, state, local, or tribal governments. In most cases, not all land within boundaries is, or will be, publicly owned, and the Act limits how much land the federal government can acquire from willing sellers.[2]

As of July 2011, the National System protects 12,598 miles of 203 rivers in 38 states and the Commonwealth of Puerto Rico; this is less than one-quarter of one percent of the nation's rivers.[3]

TABLE 2-16 – WILD & SCENIC RIVER CLASSIFICATIONS

Classification	Description
Wild	Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
Scenic	Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
Recreational	Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Source: National Wild and Scenic Rivers System, www.rivers.gov, accessed July 2014

AEJ is in central Colorado, with the Cache la Poudre River being the nearest river designated as "Wild and Scenic". The Poudre River, located in the northern Front Range of Colorado, is approximately 100 miles to the north of AEJ.

2.13 Airport Waste Recycling

The Airport currently collects oil, plastic, paper, aluminum, and glass for recycling. The oil is collected and taken to NAPA Automotive by airport staff for recycling. The remaining items are sorted and transported to the B.V. Recycling Center on Gregg Drive, just west of the Airport, by Airport staff. Solid waste at the Airport is taken to the Public Works facility located on Gregg Drive.

Appendix D contains the AEJ's Recycling, Reuse, and Waste Reduction Plan.

[1] Office of Environmental Policy, 1979, Policy Guidelines for Wild and Scenic Rivers, 1980
[2] National Wild and Scenic Rivers System, www.rivers.gov, accessed July 2014
[3] Ibid.

2.14 Financial Information

2.14.1 Revenues

AEJ's operating aeronautical revenue consists of Operating Revenue from Aeronautical and Non-Aeronautical, and Non-Operating Revenue. These revenue sources include landing fees, tie-down fees, jet pad parking fees, towing fees, hangar land leases, aviation fuel tax, aviation fuel sales, and high altitude testing fees.

Landing Fee: These fees are charged for the use of airport infrastructure and facilities for landing, take-off, and ground maneuvering. The rates are based on the certified maximum take-off weight for each aircraft; see **Table 2-17** for AEJ's rates. Landing fees vary each year depending upon activity. Fees collected in 2012 and 2013 were $1,600 and $2,035, respectively.

TABLE 2-17 – AEJ LANDING FEES

Weight (pounds)	Fee
Under 12,500	No fee per FAA Rules
12,500 to 16,500	$20.00
Over 16,500 to 30,000	$30.00
Over 30,000 to 50,000	$40.00
Over 50,000 to 100,000	$75.00
Over 100,000	N/A

Source: Airport Management, 2014

Tie Down Fee: Aircraft parking fees for tie-down on the apron are based on the parking duration and wingspan. **Table 2-18** details AEJ's rates. Tie-down fees collected in 2012 and 2013 were $2,126 and $2,375, respectively.

TABLE 2-18 – AEJ TIE-DOWN FEES

Wing Span	Daily	Weekly	Monthly
40' or less	$5.00	$25.00	$75.00
Over 40'	$10.00	$50.00	$150.00

Source: Airport Management, 2014

Jet Pad Parking Fees: This fee is based on a daily basis and aircraft weight (**Table 2-19**).

TABLE 2-19 – AEJ JET PAD PARKING FEES

Weight (pounds)	Daily Fee
Up to 16,500	$30.00
Over 16,500 to 30,000	$45.00
Over 30,000 to 50,000	$50.00
Over 50,000 to 100,000	$75.00
Over 100,000	Negotiated

Source: Airport Management, 2014

Towing Fees: The fee for towing aircraft is based on aircraft weight (**Table 2-20**).

TABLE 2-20 – AEJ AIRCRAFT TOWING FEES

Weight (pounds)	Fee
Under 12,500	$10.00
12,500 to 16,500	$20.00
Over 16,500 to 30,000	$30.00
Over 30,000 to 50,000	$40.00
Over 50,000 to 80,000	$50.00
Over 80,000	N/A

Source: Airport Management, 2014

Hangar Land Leases: Most airports make a large portion of their revenue from hangar rental fees. However, the hangars at AEJ are owned by others which limits hangar lease revenue. Many the hangars are leased to a private owner until 2043. AEJ does receive 20 percent of revenue from the Mandes hangar, which is attached to the terminal, for managing the space. Rent revenue in 2012 and 2013 was $15,750 and $5,811, respectively.

Aircraft Fuel Sales and Excise Tax Refund: Revenue from Jet A and AvGas is the largest revenue generator at AEJ. An excise tax refund is received when fuel is sold to certain users including but not limited to, military aircraft. Fuel sales for 2012 and 2013 were $290,910 and $312,390, respectively and the tax refund was $2,429 and $2,691.

High Altitude Testing: High altitude testing has become a constant at AEJ since it began in 2002 with various companies and organizations. During testing they often rent office space, the conference room, and the flight test center. Revenue from this testing in 2012 and 2013 was $29,037 and $13,564, respectively.

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: 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[1]. **Table 2-21** details AEJ's FAA grant history.

TABLE 2-21 – AEJ FAA GRANT HISTORY

Grant Number	Fiscal Year	Project
001-1991	1991	Conduct Airport Master Plan Study
002-1993	1993	Construct Runway
002-1993	1993	Acquire Land for Development
002-1993	1993	Construct Runway

[1] Passenger facility charges are only collected at commercial service airports; therefore they are not applicable at AEJ.

Grant Number	Fiscal Year	Project
003-1994	1994	Construct Runway
003-1994	1994	Acquire Land for Development
004-1994	1994	Construct Runway
005-1995	1995	Install Runway Vertical/Visual Guidance System
005-1995	1995	Extend Taxiway
005-1995	1995	Construct Runway
005-1995	1995	Install Runway Lighting
005-1995	1995	Improve Building
005-1995	1995	Install Airfield Guidance Signs
005-1995	1995	Construct Taxiway
006-2001	2001	Conduct Airport Master Plan Study
007-2003	2003	Rehabilitate Taxiway
007-2003	2003	Rehabilitate Apron
007-2003	2003	Rehabilitate Runway
008-2004	2004	Install Perimeter Fencing
009-2005	2005	Install Weather Reporting Equipment
009-2005	2005	Update Airport Master Plan Study
010-2006	2006	Expand Apron
010-2006	2006	Rehabilitate Apron
011-2008	2008	Construct Terminal Building
012-2009	2009	Rehabilitate Runway (fog seal)
013-2009	2009	Rehabilitate Taxiway (fog seal)
013-2009	2009	Rehabilitate Apron (fog seal)
013-2009	2009	Rehabilitate Runway (fog seal)
014-2014	2014	Conduct Airport Master Plan Study

Source: Federal Aviation Administration, Denver Airports District Office

2.14.2 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 costs includes 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.

2.15 Airport User Surveys

To further assess the adequacy of the airport facilities and desired improvements, surveys were sent to local aircraft owners and pilots, local businesses, car rental agency, and high altitude testing companies that have operated at AEJ in the past. The surveys are in **Appendix E**.