

## Executive Summary

### MASTER PLAN UPDATE

## Fort Collins-Loveland Municipal Airport



*As a general aviation and commercial service airport, Fort Collins-Loveland Municipal Airport serves as an important niche as a transportation infrastructure component for the two cities and the northern Colorado region. An overall master planning study of airport facilities has not been completed since 1993. During that time, aviation issues on a local, regional and national level have changed. The re-evaluation of these issues in the Master Plan Update involved an understanding of existing and likely future aviation needs. The Master Plan Update is intended to address a variety of concerns with the formulation of a long-range physical development plan for the Airport; the primary goal is the continued improvement of the Airport in a manner that is financially realistic and that is appropriate in consideration of its surroundings.*

The Master Plan Update has been conducted under the direction of the Cities of Fort Collins and Loveland, with financial assistance from the Federal Aviation Administration (FAA) and the Colorado Department of Transportation Division of Aeronautics. It has been prepared to assess and direct improvements that will likely be necessary to accommodate future aviation needs. Like a long-term plan for any major institutional campus (e.g., a hospital or university), the long-term development plan for an airport should reserve room for potentially needed facilities. However, those potential future facilities for which a site has been reserved are only constructed when actual demand occurs. Thus, the Airport Master Plan Update is not a decision document on whether or not an improvement will be built; it is a planning tool that indicates how the land at the Airport might best be used in consideration of anticipated future demand.

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The long-term development program for Fort Collins-Loveland Municipal Airport is intended to establish a strategy to fund airport improvements and maximize the potential to receive federal and state matching funds, while also establishing a financially prudent plan for improvement funding on a local level. This programming effort is a critical component of the Master Plan Update for the FAA, the Colorado Division of Aeronautics, and the local sponsors (the City of Fort Collins and the City of Loveland). From the FAA's perspective (keeping in mind that the FAA funded over 90% of the cost to prepare the Master Plan), the needs assessment or Capital Improvement Program (CIP) provides a detailed listing of projects and costs that are critical for their use in establishing priorities and budgeting expenditures at this Airport when compared with the needs of other airports. From the local sponsor's perspective, the needs assessment identifies improvement needs and allows budgeting/ financial decisions to be made with a comprehensive understanding of financial implications. All capital expenditures will require local budgeting approval. The overall concept is to maximize the opportunities to receive federal and state matching funds, within the context of, and in recognition of, the amount of local funds that are available for capital needs. Although the needs assessment will be used for programming by the FAA, there is no financial commitment for the federal government or the sponsor to provide funding for the CIP. If federal matching funds are unavailable for a certain project during the specified time frame, the project will almost certainly be unaffordable using only local money and the improvement project will not go forward until appropriate funding is available.

The master planning process has made use of a Study Committee to provide input concerning airport development issues. Five Study Advisory Committee meetings have been held, along with four Public Information meetings. The purpose of the Study Committee meetings and the Public Information meetings was to gather input on the Airport and establish a concept for future development at the Airport from a broad range of interested parties. In addition, the development of the Airport Master Plan Update has been coordinated with airport staff, the Cities of Fort Collins and Loveland staffs, the State of Colorado Division of Aeronautics, and the Federal Aviation Administration.

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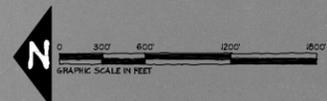
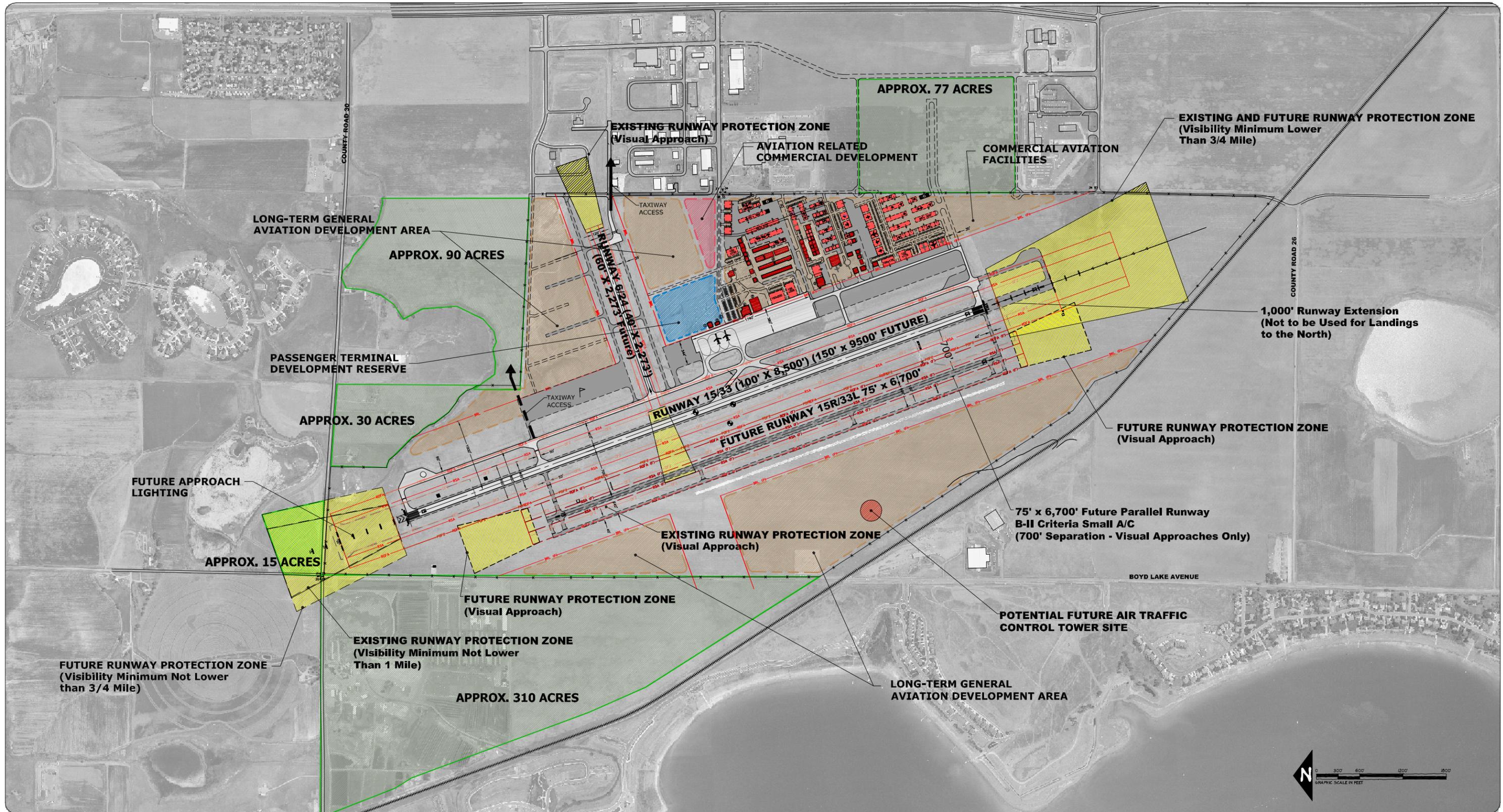
In January 2006, a meeting to review the Master Plan Update's recommended plan was held with the Study Committee, and Public Information meetings were held to review the Master Plan Update's recommended plan. Concerns expressed at these meetings primarily related to potential for increased noise due to the increased aviation activity that is forecast at the Airport. Several citizens at the Public Information meetings expressed concerns about the proposed extension of the main runway.

The long-term development plan for the Airport is described in the following paragraphs and is graphically depicted in the following figure, entitled *CONCEPTUAL DEVELOPMENT PLAN*.

### **Development Considerations and Assumptions**

Fort Collins-Loveland Municipal Airport will continue to be a busy general aviation airport with some commercial passenger service. The Airport is an important transportation facility; a center for aviation-related business and, it supports regional economic development activity.

The aircraft types projected to be used at Fort Collins-Loveland Municipal Airport, during the next 20 years, are the same types that use the Airport presently. These types include small single engine prop-aircraft, larger business-use aircraft, and narrow body commercial passenger service aircraft. The number of annual aircraft operations (landings and takeoffs) at the Airport is forecast to increase modestly during the next 20 years. The total number of aircraft operations is forecast to increase from just over 100,000, currently, to approximately 150,000 at the end of the 20-year planning period covered by the Master Plan Update. The number of based aircraft at the Airport is expected to increase, from the current number of approximately 200, to 280 in twenty years.



Conceptual Development Plan

- Runway Protection Zone
- Aviation Development Area (On Existing Airport Property)
- Acquisition Considerations (For Aviation Development and/or Approach Protection)
- Future Airport Structure
- Existing Building on Existing Property
- Runway Protection Zone
- Runway Safety Area (RSA)

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Several basic assumptions were established in the Master Plan Update, which are intended to direct the development of the Airport in the future. These include:

**Assumption One.** The Airport will be developed and operated in a manner that is consistent with local ordinances and codes, federal and state statutes, federal grant assurances, and Federal Aviation Administration (FAA) regulations.

**Assumption Two.** This assumption recognizes the role of the Airport. The Airport will continue to serve as a facility that accommodates general aviation activity, along with commercial passenger service activity and a small amount of military activity.

**Assumption Three.** This assumption relates to the size and type of aircraft that utilize the Airport and the resulting setback and safety criteria used as the basis for the layout of airport facilities.

### *Runway 15/33.*

It has been determined that the “Design Aircraft” for this runway is the MD-83. The MD-83 is currently utilized by Allegiant Air to provide scheduled passenger service at the Airport. The MD-83 has an approach speed of 135 knots and a wingspan of 107.8 feet. This indicates that, for Runway 15/33, the ARC C-III criteria will continue to be used to determine appropriate design criteria. The C-III designation is also appropriate because the Airport is heavily utilized by the business jet fleet, many of which have “C” or “D” approach speeds, and, the new, larger business jets (i.e., the Gulfstream G-V, Canadair Global Express, and the Boeing Business Jet) have category III wingspans.

### *Runway 6/24.*

Only smaller general aviation aircraft (under 12,500 pounds) use this runway. The “Design Aircraft” fleet for this runway is made up of the single engine piston-driven general aviation aircraft (e.g., the Beech Bonanza, Cessna 172, etc). The approach speeds for these aircraft are less than 121 knots and wingspans of less than 49 feet. This indicates that this runway should be designed using ARC B-I (small aircraft only) dimensional criteria.

**Assumption Four.** The fourth assumption relates to the need for the Airport to accommodate aircraft operations with great reliability and safety. This indicates that the airport’s runway

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system should be developed with instrument approach guidance capabilities and adequate runway length to accommodate the forecast operations as safely as possible under most weather conditions.

**Assumption Five.** Landside development area at an airport is always at a premium; therefore, the fifth assumption is that the plan for future airport development should strive to make most efficient use of the available area for aviation-related activities.

**Assumption Six.** The sixth assumption focuses on the relationship of the Airport to off-airport land uses and the compatible and complimentary development of each. To the maximum extent possible, future facilities will be designed to enhance the compatibility of the operation of the Airport with the environs.

**Assumption Seven.** A crosswind runway will be maintained at the Airport. Improvements to a crosswind runway will be identified in the capital improvement project listing section of the document; however, it is realized that the funding for crosswind runway improvements is a low priority with the FAA for Airport Improvement Program funds. This runway will continue to serve and be improved as a taxiway.

### Development Recommendations

Following an examination of several alternatives, along with input from the Study Committee, the public, City staff, the FAA and the State of Colorado, a recommended development plan was identified. The recommended plan has the following major features:

**Main Runway.** Extend the main runway (Runway 15/33) 1,000 feet to the south; however, to minimize the extension of the northern Runway Protection Zone onto non-airport property, the extended pavement will not be used for landings to the north. The planning justification for the extension of the runway 1,000 feet to the south is to better accommodate the existing users of the Airport (the corporate jet users and Allegiant Airlines). The extended runway will allow these aircraft to operate during hot summer months with less significant weight

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restrictions. The types of aircraft operating at the Airport will not change with the proposed extended runway.

**Crosswind Runway.** Maintain the crosswind runway (Runway 6/24) in its present configuration, while recognizing the need for improvements (increased width and the potential for parallel taxiways). These improvements will only be constructed when, and if, appropriate federal matching funds are available. The crosswind runway will continue to function as a taxiway, serving the aviation use sites just east of airport property.

**New Parallel Runway.** Reserve the room for the construction of new Runway 15R/33L approximately 700 feet to the west of Runway 15/33. The new parallel runway would significantly increase the capacity of the airport's airside facilities and will only be constructed if actual demand occurs. The new parallel runway would be developed to accommodate regular use by small general aviation aircraft (up to the size of small/medium business jets).

**Air Traffic Control Tower (ATCT).** One of the special tasks programmed as a part of this master planning effort is to identify potential sites for a new air traffic control tower (ATCT). The siting requirements for an ATCT facility are stringent with regard to sight lines to the aircraft operating surfaces, height of structure, and direction of view. Because of this, there are only a limited number of appropriate sites available. From a preliminary planning analysis perspective, the best site for the future ATCT facility appears to be in the southwest quadrant of airport property.

**Passenger Terminal Facilities.** The existing passenger terminal facilities at the Airport are appropriately located to provide easy landside access and it is recommended that they remain in this location for the future. The area to the north and east of the existing terminal building and parking should be reserved for future passenger terminal development. From a long-term planning perspective, the passenger terminal building at the Airport could need to be as large as 15,000 square feet in the future. Additionally, an automobile parking area to accommodate as many as 600 automobiles should be set aside (the existing parking area accommodates 362 automobiles).

**Aviation-Use Facilities.** Aviation-use facilities required for aircraft operation, storage, maintenance, and safety will occupy the majority of airport property. Aviation forecasts indicate that areas should be reserved for the storage of approximately 100 additional general aviation based aircraft. Initially, future facilities should be developed in the existing general aviation development area (southeast quadrant of airport property). As demand

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increases, the area north of Earhart Road, east of the passenger terminal building, will be utilized for General Aviation facilities. Also, the area east of the main runway and north of the crosswind runway is available for aviation use structures, including general aviation facilities.

In addition to general aviation storage facilities, space must also be reserved for commercial general aviation activity. These commercial activities include aircraft modification facilities, fixed based operations facilities, aircraft maintenance/repair facilities, etc. Due to the nature of these commercial activities, their location should be adjacent to the main apron and they must be provided with good landside access.

### **Development Program**

In overview, the Development Program for Fort Collins-Loveland Municipal Airport calls for the retention of existing layout of facilities as described in previous planning documents. As described above, major airside improvements are related to the extension of the main runway to the south and construction of a parallel runway. Other major improvements are related to aviation use facility development areas.

During the initial development phase (the first five years of the 20-year planning period), when detailed CIP project needs can best be identified, specific improvements will include:

- Construction and rehabilitation of aircraft parking aprons
- Runway and taxiway pavement rehabilitation and improvements
- Airfield lighting and electrical improvements
- General aviation hangar, access taxiway, and parking apron construction
- Security fencing and gate improvements
- Land acquisition
- Drainage improvements
- On-airport roadway, parking, and access improvements
- Prepare environmental assessment for the extension of Runway 15/33 (the decision document on the construction of the runway extension)
- Runway 15/33 - extension, runway improvements, taxiway improvements, etc.

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As identified above, before the runway extension can be constructed (i.e., before the federal government can allocate matching funds for the project), an Environmental Assessment must be prepared. From a federal, state and local perspective, this is the decision document on whether or not the extension should be constructed. The Environmental Assessment will contain documentation on the purpose and need for the proposed improvement. If the justification for the runway extension increases or decreases, from the information provided in the Master Plan, it will be reflected in the Environmental Assessment. In anticipation of the potential to construct the runway extension in Federal Fiscal Year 2011, the preparation of the Environmental Assessment for the runway extension is programmed for Federal Fiscal Year 2009.

During latter stages of the planning period, the need for projects will, for the most part, be driven by demand. Likely, latter stage improvements will include pavement rehabilitation, new technology instrument approach capabilities, aircraft storage, and aircraft maintenance facilities.

### **Land Use Planning**

The previous figure, entitled *CONCEPTUAL DEVELOPEMT PLAN*, depicts the recommended land uses for all land within the airport property line. For areas in the vicinity of the Airport, recommended land uses are indicated through the use of the following illustration, entitled *AIRPORT INFLUENCE AREA MAP*. This map illustrates land use planning criteria that have been implemented by the City of Loveland through its Comprehensive Plan for the area around the Airport. Larimer County utilizes similar criteria for the un-incorporated areas near the Airport and has done an excellent job of maintaining compatible land uses near the Airport through land use zoning. To facilitate ease of regulation and enforceability, it is anticipated that the City of Loveland will incorporate the Airport Influence Area land use planning criteria into its land use zoning ordinance, and that the City of Fort Collins will consider the use of the criteria in future land use planning considerations. Presently, only small areas of land within the city limit boundary of the City of Fort Collins are touched by the Airport Influence Area generated by the Master Plan. It should be noted that the noise contours and aircraft traffic patterns have been

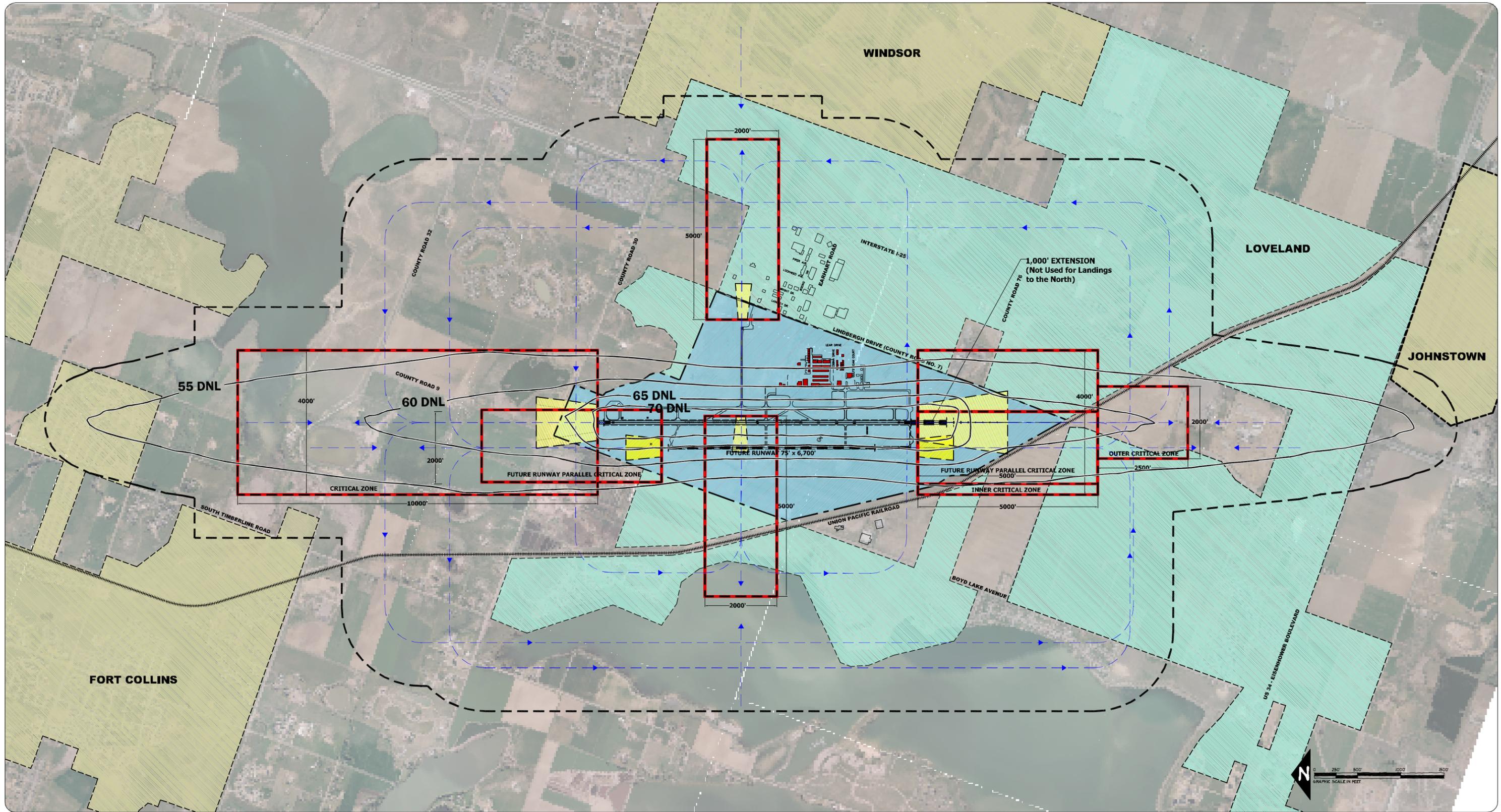
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updated in consideration of current conditions, technologies, and federal guidance (including the recommended noise metric) from the information that has previously been utilized by the City of Loveland in its Comprehensive Plan; however, they have not changed significantly in shape or size.

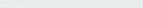
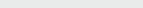
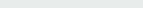
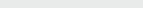
The *AIRPORT INFLUENCE AREA MAP* is utilized by the City of Loveland in conjunction with a set of Airport Philosophy Statements, including a Land Use Schedule matrix, to designate the types of land use that are recommended in the vicinity of the Airport. The City of Loveland's Airport Philosophy Statements and Map were developed in consideration of guidance provided in Colorado State House Bill 1041 *Model Land Use Regulations*.

### **Summary**

*The development plan for the Airport is a comprehensive proposal. If aviation demands continue to indicate that improvements are needed, and if the proposed improvements prove to be environmentally acceptable, the capital improvement financial implications discussed in the Master Plan Update are likely to be acceptable for the FAA and the Cities. However, it must be recognized that this is only a programming analysis and not a commitment on the part of the Sponsor or the FAA. If the cost of an improvement project is not financially feasible, it will not be instigated.*



**Airport Influence Area**

- |   |                                  |   |                               |
|---|----------------------------------|---|-------------------------------|
|  | <b>Noise Contours</b>            |  | <b>Airport Property Line</b>  |
|  | <b>Critical Zones</b>            |  | <b>City Limit Line</b>        |
|  | <b>Aircraft Traffic Patterns</b> |  | <b>Runway Protection Zone</b> |
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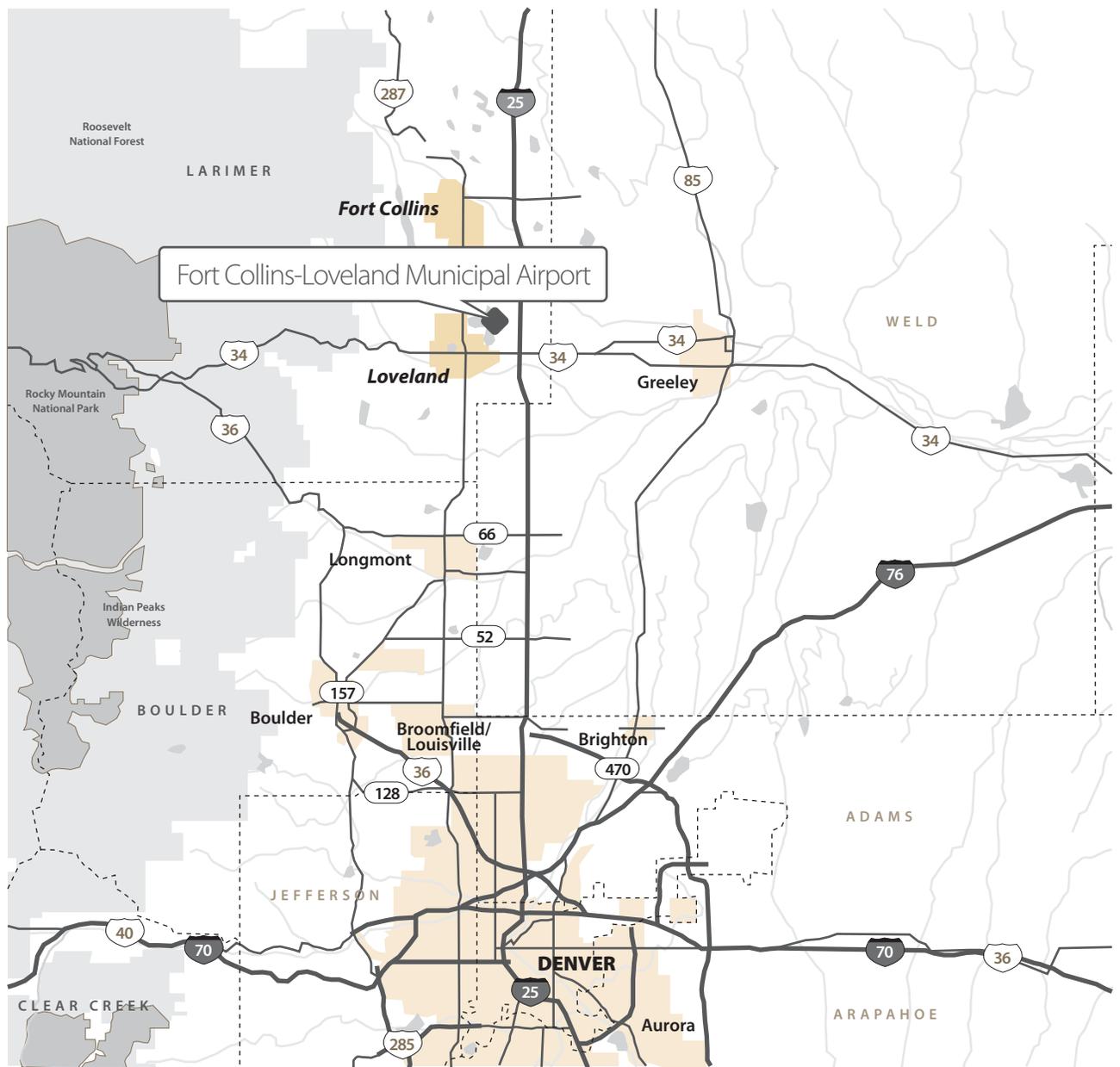
## A Inventory of Existing Conditions

*Fort Collins-Loveland Municipal Airport, jointly owned and operated by the Cities of Fort Collins and Loveland, is located in the heart of a region with a thriving economy, booming real estate market, breathtaking natural scenery, and abundant recreational opportunities.*

**As a commercial service and general aviation airport, Fort Collins-Loveland Municipal Airport serves an important niche as a transportation infrastructure component for the two cities and the surrounding region.**

The Airport is adjacent to Interstate 25 (I-25), on the eastern perimeter of the City of Loveland, and approximately ten (10) miles south of Fort Collins. The Cities of Fort Collins and Loveland are located on the high plains in north-central Colorado, east of Rocky Mountain National Park. The Airport provides a safe operating environment for a variety of general aviation and commercial service aircraft types, ranging from small single engine propeller driven aircraft, to corporate jets and airliners seating more than 150 passengers. The airports relative location within the region is illustrated in Figure A1, *AIRPORT LOCATION MAP*.

While airport planning documents related to the layout of airport facilities have been kept up-to-date, an overall master planning study of airport facilities has not been completed since 1993. During this time, aviation issues on the local, regional, and national levels have changed. The Master Plan Update's re-evaluation of these issues will involve an understanding of existing and future aviation demands, along with an accompanying analysis of future facility needs. These complex concerns are best addressed through the planning process. Based on these circumstances and other development issues, the Cities recognized that the preparation of an updated Master Plan for the Airport was essential for its continued enhancement and improvement. While the Airport Master Plan Update will respond to a variety of concerns with the formulation of a long-range development plan for the Airport, the primary goal is the continued improvement of the Airport in a manner that is compatible with its surroundings and that recognizes community goals.



North | Approximate Scale: 1" = 13 Miles

Figure A1 Airport Location Map

# MASTER PLAN UPDATE Fort Collins-Loveland Municipal Airport

Source: Basemap: Microsoft Streets & Trips 2004.

## MASTER PLAN UPDATE

This Airport Master Plan Update is intended to provide a comprehensive evaluation of the Airport, and result in a well-conceived long-term facilities and operational plan for the Airport. This *Inventory of Existing Conditions* chapter examines three (3) basic elements. These elements are:

- **Airport facilities** (runways, taxiways, aircraft parking aprons, hangars, ground access, etc.);
- **Relationship of the airport to the regional airspace system; and,**
- **The airport environs.**

In addition, the last section in this chapter identifies issues that will, to some degree, influence future activity and facilities at the Airport.

### **Airport Role and Facilities**

The construction of the Fort Collins-Loveland Municipal Airport began in 1964. The Cities of Fort Collins and Loveland agreed to jointly build and operate a regional airport in November 1963. While the agreement has been amended several times, the terms of the most recent agreement (renewed annually, unless modified or terminated by the mutual consent of both cities) states that the Cities will jointly operate the Airport, and all management, decisions, and policy making authority will be determined by both cities.

With Allegiant Air's service to Las Vegas, more than 10,000 passengers have been enplaned annually at the Airport since 2003; therefore, it is classified as a primary commercial service airport. It also serves all types of general aviation activity.

According to a study completed by the Colorado Department of Transportation Division of Aeronautics (*THE ECONOMIC IMPACT OF AIRPORTS IN COLORADO, 2003*), the Fort Collins-Loveland Municipal Airport generated \$37,178,000 in economic activity, \$14,274,000 in wages, and 619 jobs in 2002. It should be noted and emphasized that the data does not include consideration of the economic benefit provided by Allegiant Air service, which would add significantly to these totals. Economic activity was defined as the "economic contribution" of the Airport to the regional and state economy in terms of total jobs, wages, and economic activity (business sales). The Division of Aeronautics classifies the Airport as a "major" airport in the 2000 Statewide Airport Inventory and Implementation Plan (Airport System Plan). The Airport is located on the western side of Interstate 25 and north

## MASTER PLAN UPDATE

of US Highway 34, east of Boyd Lake. The airport's immediate surroundings are depicted on Figure A2, entitled *AIRPORT VICINITY MAP*.

### Airside Facilities

Fort Collins-Loveland Municipal Airport is operated with one (1) primary runway, oriented in a slight northwest-southwest direction, with an emergency-only use runway located perpendicular to the primary runway (oriented in a west/east direction). Figure A3, entitled *EXISTING AIRPORT LAYOUT*, provides a graphic presentation of the existing airport facilities.

The Airport Reference Point (ARP) for Fort Collins-Loveland Municipal Airport is located at Latitude 40° 27 06.578" N and Longitude 105° 00' 40.808" W. The Airport has an elevation of 5,016 feet Above Mean Sea Level (AMSL). The Airport encompasses approximately 1,065 acres.

**Runway.** The primary runway at the Airport has a designation of 15/33. It is 8,500 feet in length and 100 feet in width. The runway is constructed of grooved asphalt and has a gross weight bearing capacity of 50,000 pounds single wheel, 65,000 pounds dual wheel, and 130,000 pounds dual tandem wheel main landing gear configuration.

Runway 15/33 has a high intensity runway lighting system (HIRL). Runway 33 has a medium intensity approach lighting system with runway alignment indicator lights (MALSR), as well as precision approach path indicator (PAPI) lights on the left side of the runway. Runway 15 has visual approach slope indicator (VASI) lights on the left side of the runway.

The Airport has an additional runway, used exclusively by small general aviation aircraft as a crosswind runway, located perpendicular to the primary runway. Runway 6/24 is 2,273 feet long and 40 feet wide, with asphalt construction, and with full-length runway edge reflector lights.

**Taxiway.** In addition to the runways, the airside facilities at Fort Collins-Loveland Municipal Airport consist of a taxiway system that provides access between the runway surfaces and the landside aviation use areas.

A 50-foot wide full-parallel taxiway serves Runway 15/33 (Taxiway "A"). The taxiway system is constructed of asphalt. It has five connector taxiways that join to the runway and three that join the aircraft parking apron areas to the parallel taxiway system. The parallel taxiway is located on the east side of the runway and is separated from the runway by 400 feet (centerline to centerline). For night use, the taxiway system is equipped with a medium intensity taxiway lighting system (MITL).

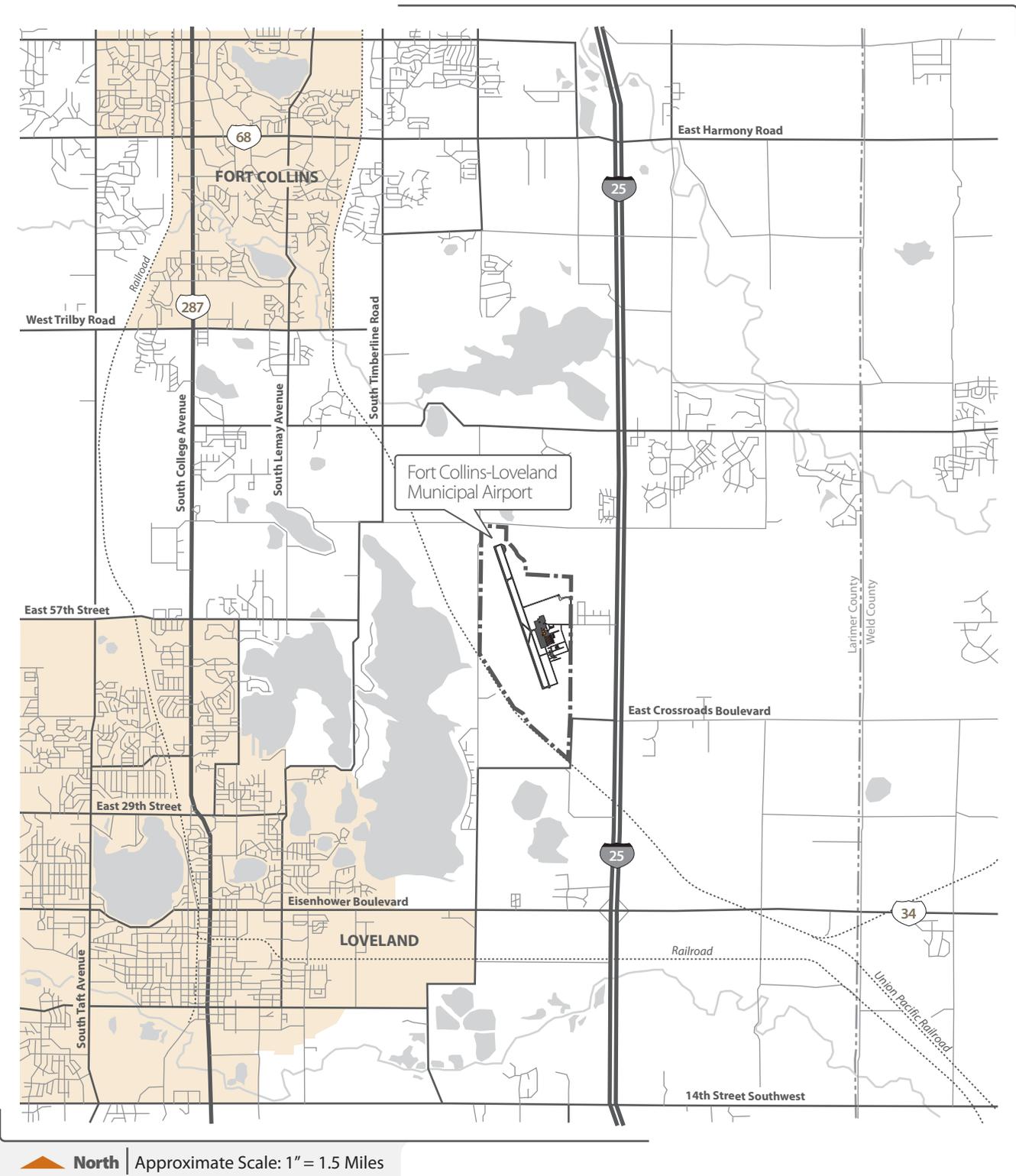


Figure A2 Airport Vicinity Map

Source: Basemap: Microsoft Streets & Trips 2004.

## MASTER PLAN UPDATE Fort Collins-Loveland Municipal Airport

## MASTER PLAN UPDATE

### Landside Facilities

Landside development at the Airport includes commercial passenger terminal facilities, aircraft parking aprons, Fixed Base Operator (FBO) hangars, general aviation facilities, fuel storage facilities, and access roadways.

**Passenger Terminal Facilities.** The passenger terminal is located approximately 1,000 feet east of the centerline for Runway 15/33. The Terminal is a general-purpose facility utilized for scheduled and chartered airlines, and has approximately 4,500 square feet of covered space.

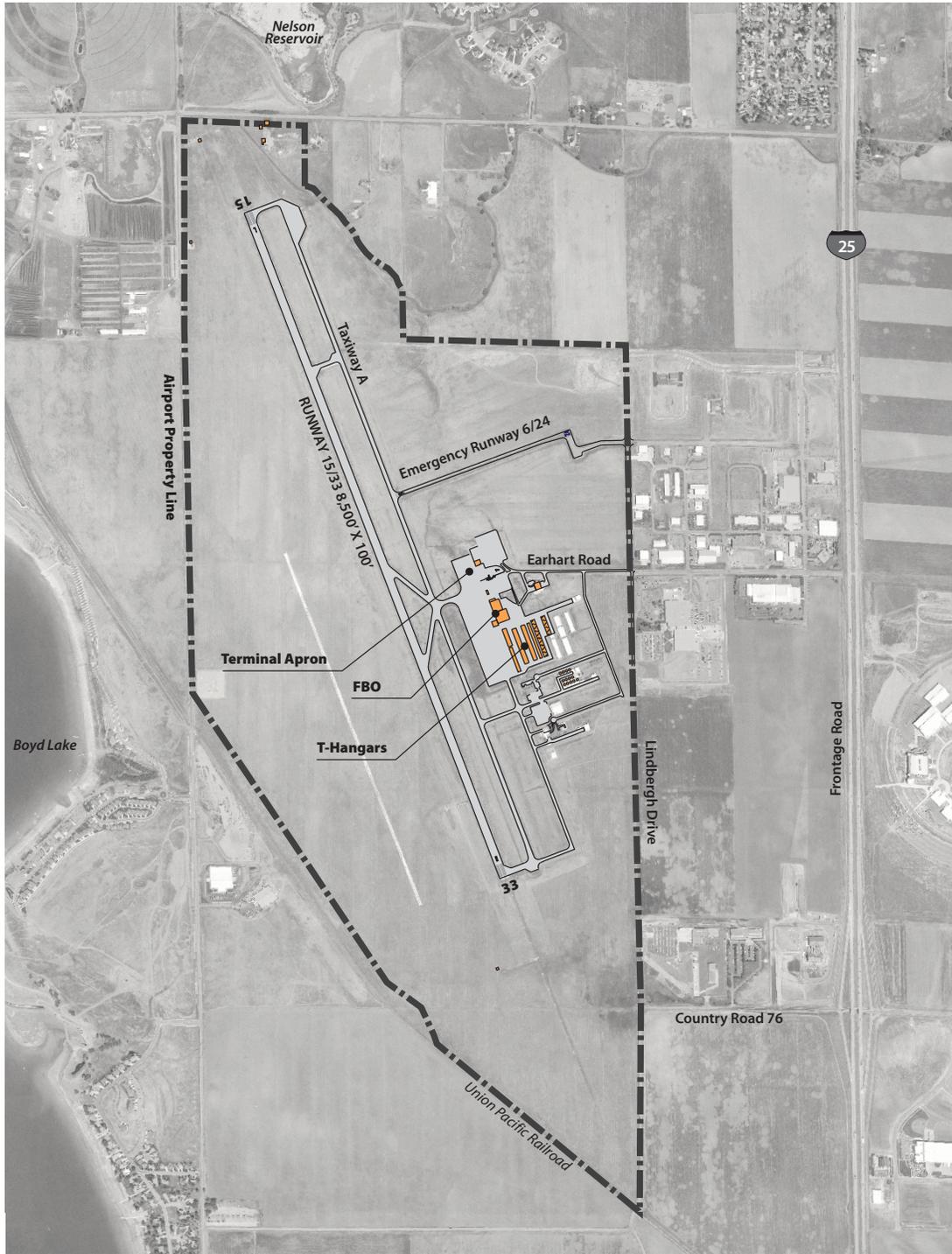
**Aprons.** The main aircraft parking apron is also located on the east side of the parallel taxiway. This apron consists of approximately 56,700 square yards of aircraft parking and movement space (approximately 10,300 square yards of this total are associated with the passenger terminal building, with the remainder being utilized for general aviation).

**Fixed Base Operator (FBO) and Commercial Aviation Businesses.** The Airport is currently served with one (1) full-service Fixed Based Operator (FBO), The Jet Center. The FBO facilities are centrally located on the east side of the main apron. The Jet Center currently provides services to private, corporate, and commercial aircraft for fueling, deicing, lavatory service, catering and rental car, along with tie-down and hangar aircraft storage space. The Jet Center also has two (2) sub-tenants that provide aviation services. The first is Colorado Contrails, which provides the on-airport flight training school. The second is Professional Aircraft Services, which specializes in the maintenance of piston engine aircraft. Another commercial aviation business on the Airport is Firewall Forward, offering aircraft engine and systems overhaul services.

**Hangars and Aircraft Storage.** General aviation hangar aircraft storage units (T-hangars, executive, and corporate hangars) are primarily located in the area south and east of the FBO facilities. In addition, there are some aircraft storage units just off airport property on the east end of the emergency runway. FAA records indicate that there are an estimated 245 based aircraft at the Airport.

**Fuel Storage Facility.** The FBO operates three (3) 10,000-gallon above-ground storage tanks, which are located on the east side of the main apron, north of the FBO hangar. Two of these tanks are used for Jet A fuel and one is used for AvGas. In addition, there are three (3) privately operated 10,000-gallon below-ground Jet A tanks located just off airport property in the hangar development area on the east end of Runway 6/24.

**Aircraft Rescue and Fire Fighting (ARFF) Facility.** The ARFF facility is located on the south side of the airport's entry road (Earhart Road), east of the terminal and FBO buildings. This structure also houses the Airport Manager and administrative staff. The ARFF building was completed in 1993, contains approximately 7,545 square feet and has five (5) vehicle stalls, dormitory and kitchen facilities, a training area, a large office, emergency/first aid facilities, administrative areas, and equipment storage and maintenance areas. The facility provides aircraft rescue services for the Airport and structural protection for the adjacent areas of the



North | Approximate Scale: 1" = 2,000'

Figure A3 Existing Airport Layout

Source: Basemap: Microsoft Streets & Trips 2004.

# MASTER PLAN UPDATE Fort Collins-Loveland Municipal Airport

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City of Loveland. The Airport has FAA approved procedures outlining crash, fire rescue, and other emergency, security, and airport management reporting and operations actions. The airport's ARFF facilities allow it to maintain an FAA ARFF index of "A".

**Automated Weather Observing System (AWOS).** The Airport is served by an Automated Weather Observing System III Precipitation/Thunderstorm (AWOS III P/T). This facility measures the following weather parameters: wind speed, wind gusts, wind direction, wind variable direction, temperature, dew point, altimeter setting, density altitude, visibility, sky condition, and cloud height and type. The system is also capable of tracking precipitation and thunderstorm activity within 30 miles of the Airport. The AWOS III provides a minute-by-minute update to airborne pilots via VHF radio frequency. The radio frequency for the Fort Collins-Loveland Municipal Airport AWOS III P/T is 135.075 MHz.

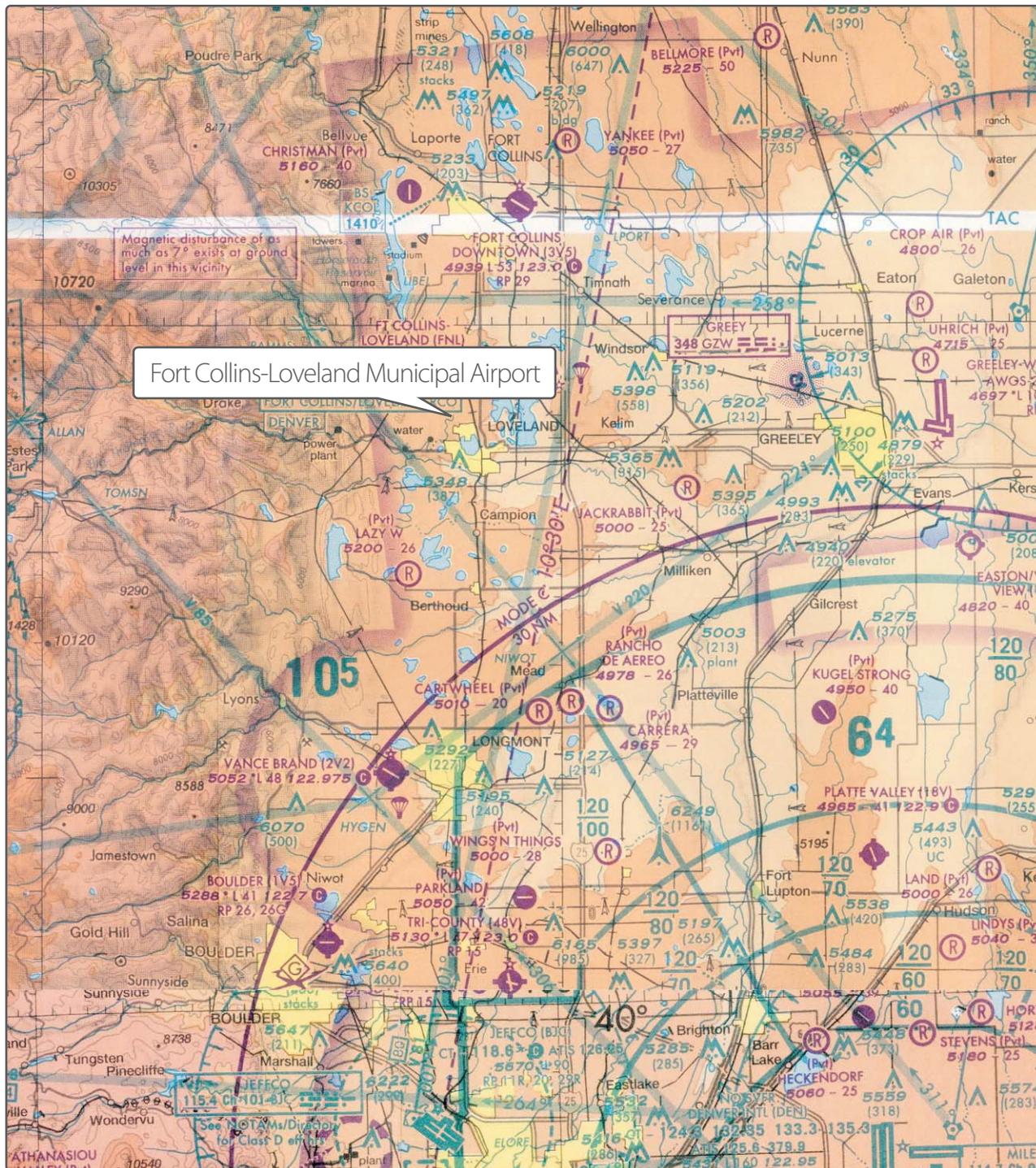
**Ground Access.** The Airport is served by one of Colorado's major interstate highways, I-25, which stretches across the state from north to south and serves as a major transportation corridor. Fort Collins-Loveland Municipal Airport is located just west of I-25, and can be accessed by way of the frontage road and Earhart Road.

### Airspace System/Navigation and Communication Aids

As with all airports, Fort Collins-Loveland Municipal Airport functions within the local, regional, and national system of airports and airspace. The following illustration, entitled *AIRSPACE/NAVAIDS SUMMARY*, and narrative, provide a brief description of the airport's role as an element within these systems.

### Air Traffic Service Areas and Aviation Communications

The Airport does not currently have an on-site air traffic control facility; however, within the continental United States, there are some 22 geographic areas that are under regional Air Traffic Control (ATC) jurisdiction. Air traffic services within each area are provided by air traffic controllers in Air Route Traffic Control Centers (ARTCC). The airspace overlying Fort Collins-Loveland Municipal Airport is contained within the Denver ARTCC jurisdiction. The Denver ARTCC includes the airspace in all of Colorado and portions of Kansas, Nebraska, Wyoming, Utah, Arizona, and New Mexico.



North | Approximate Scale: 1" = 7.5 Nautical Miles

Figure A4 Airspace/NAVAIDS Summary

## MASTER PLAN UPDATE Fort Collins-Loveland Municipal Airport

Source: Denver (70th Edition-January '04) and Cheyenne (65 Edition-January '04) Sectional Aeronautical Charts.

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### Airspace

Local airspace surrounding Fort Collins-Loveland Municipal Airport is designated as Class E airspace. The configuration of each Class E airspace area is tailored to individual airports. Generally, Class E airspace consists of the immediate controlled airspace at airports without control towers and is intended to provide a transition area from terminal or en-route environments. Class E airspace extends upward from either the surface or a designated altitude – in the case of Fort Collins, 700 feet Above Ground Level (AGL) – to the overlying or adjacent controlled airspace. This airspace is also configured to accommodate any existing instrument procedures. Within Class E airspace, radio communications and transponders are not required to operate under VFR conditions, unless the Airport has an air traffic control tower; however, IFR flights must be capable of communicating with ATC – currently Denver Center – and be Mode C Transponder equipped (capable of reporting altitude).

The primary airspace influence in the vicinity of Fort Collins-Loveland Municipal Airport is the Denver Class B Airspace, which is irregularly shaped and extends in concentric circles around Denver International Airport. The Denver Class B Airspace consists of controlled airspace extending upward from various floor elevations to a ceiling of 10,000 feet AMSL, within which all aircraft are subject to specific operating rules (an ATC clearance must be obtained to enter the airspace), specified requirements on pilot qualification (a pilot must have a private pilot certificate or better), and specific aircraft equipment (a transponder with automatic altitude reporting and a two-way radio). Fort Collins-Loveland Municipal Airport is located just outside (nine miles north) the 30-mile Class B airspace ring surrounding Denver International Airport.

### Navigational Aids

Several navigational facilities are currently available to pilots around Fort Collins- Loveland Municipal Airport, whether located at the field or at other locations in the region. Many of these navigational aids are available to en-route air traffic, as well. In addition, there is a complement of navigational aids (NAVAIDS) that allow a variety of instrument approaches to the Airport.

The navigational aids (NAVAIDS) available for use by pilots in the vicinity of the Airport are Non-Directional radio Beacon (NDB) facilities, VHF Omnidirectional Range/Tactical Air Navigation (VORTAC) facilities, and Instrument Landing Systems (ILS). NDBs are general purpose low- or medium-frequency radio beacons that an aircraft equipped with a loop antenna can home in on or determine its bearing relative to the sending facility. VORTAC

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systems are Very High Frequency Omnidirectional Range Station with Distance Measuring Equipment transmitting very high frequency signals, 360 degrees in azimuth oriented from magnetic north.

The Collin NDB (400 FN) is located approximately five (5) nautical miles (NM) from the Airport and the Greeley NDB (348 GZW) is located approximately eleven (11) NM from the Airport. The Gill VORTAC (114.2 GLL) is located 21 NM west of the field, the Mile High VORTAC (114.7 DVV) is located 33 NM southeast from the Airport, and the Jeffco VOR/DME (115.4 BJC) is located approximately 38 NM south of the Airport.

Presently, there are six (6) published straight-in instrument approach procedures at Fort Collins-Loveland Municipal Airport. These are listed in the following table, entitled *INSTRUMENT APPROACH PROCEDURES*.

**TABLE A1 INSTRUMENT APPROACH PROCEDURES**

Approach	Designated Runway	Ceiling Minimum (HAT)	Visibility <sup>1</sup> Minimum
ILS	Runway 33	200' AGL	½ Mile
VOR/DME RNAV	Runway 15	415' AGL	1 Mile
VOR/DME RNAV	Runway 33	464' AGL	½ Mile
NDB	Runway 33	504' AGL	¾ Mile
GPS	Runway 15	435' AGL	1 Mile
GPS	Runway 33	404' AGL	½ Mile

**Source:** US Terminal Procedures, Southwest (SW), Vol. 1 of 4, 20 June 2004.

**HAT:** Height Above Threshold.

1. Depending on category of aircraft.

In addition, several existing visual navigational aids are located on the Airport and available to pilots. These include a rotating beacon located on the south side of the general aviation apron and a lighted wind cone with segmented circle, which is located east of Runway 15/33. A network of low-altitude published airways (victor airways), in the vicinity of Fort Collins-Loveland Municipal Airport, also traverse the area, which spans between the regional ground based VOR equipment. Victor airways include the airspace within parallel lines located on either side of the airway and extend 1,200 feet above the terrain to, but not including, 18,000 feet AMSL.

## MASTER PLAN UPDATE

### Airport Environs

Although the airport property is entirely contained inside the corporate boundary of the City of Loveland, as can be seen on the following illustration, entitled *INCORPORATED AREAS*; some of the land in the vicinity of the Airport is in the City of Fort Collins and some is in unincorporated Larimer County. Relatively small parcels are within the City of Windsor (East) and the City of Johnstown (Southeast).

### Existing Zoning

Existing zoning within the vicinity of the Airport is shown in the following illustration, entitled *GENERALIZED EXISTING ZONING*. The City of Loveland's zoning map identifies the Airport as being zoned "Industrial". Industrial zoning also exists for parcels to the east, south, and west of the Airport. On the east side of Interstate 25, the land is zoned for industrial, business, and mixed use developments [the Larimer County Fairgrounds Planned Unit Development (PUD) and the Millennium PUD]. South of the Airport, the land is primarily zoned for PUDs, along with some business and industrial development. West of the Airport, along the east side of Boyd Lake, residential is the primary zoning category.

The unincorporated areas directly south and north of airport property are zoned "Airport" by Larimer County. Further to the north and south, Larimer County zoning indicates that the primary land use is farming, with some industrial zoning to the south. The City of Fort Collins' zoning to the north of the Airport is primarily residential.

### Land Use Planning

An understanding of the proposed future land uses in the vicinity of the Airport is also important. The land use plan for the area around the Airport is illustrated in the following figure, entitled *GENERALIZED FUTURE LAND USE*. The proposed future land use for the area is for the most part identified in the City of Loveland's Land Use Plan. Directly to the south, east, and west of the Airport, most proposed land uses are industrial, commercial, or employment center. Southwest of the Airport, the development adjacent to Boyd Lake will be residential in nature.

The area directly north of the Airport is in unincorporated Larimer County, which does not have a future land use plan; however, land use within this area is guided by another document, *Plan for the Region Between Fort Collins and Loveland*. This plan indicates that

## MASTER PLAN UPDATE

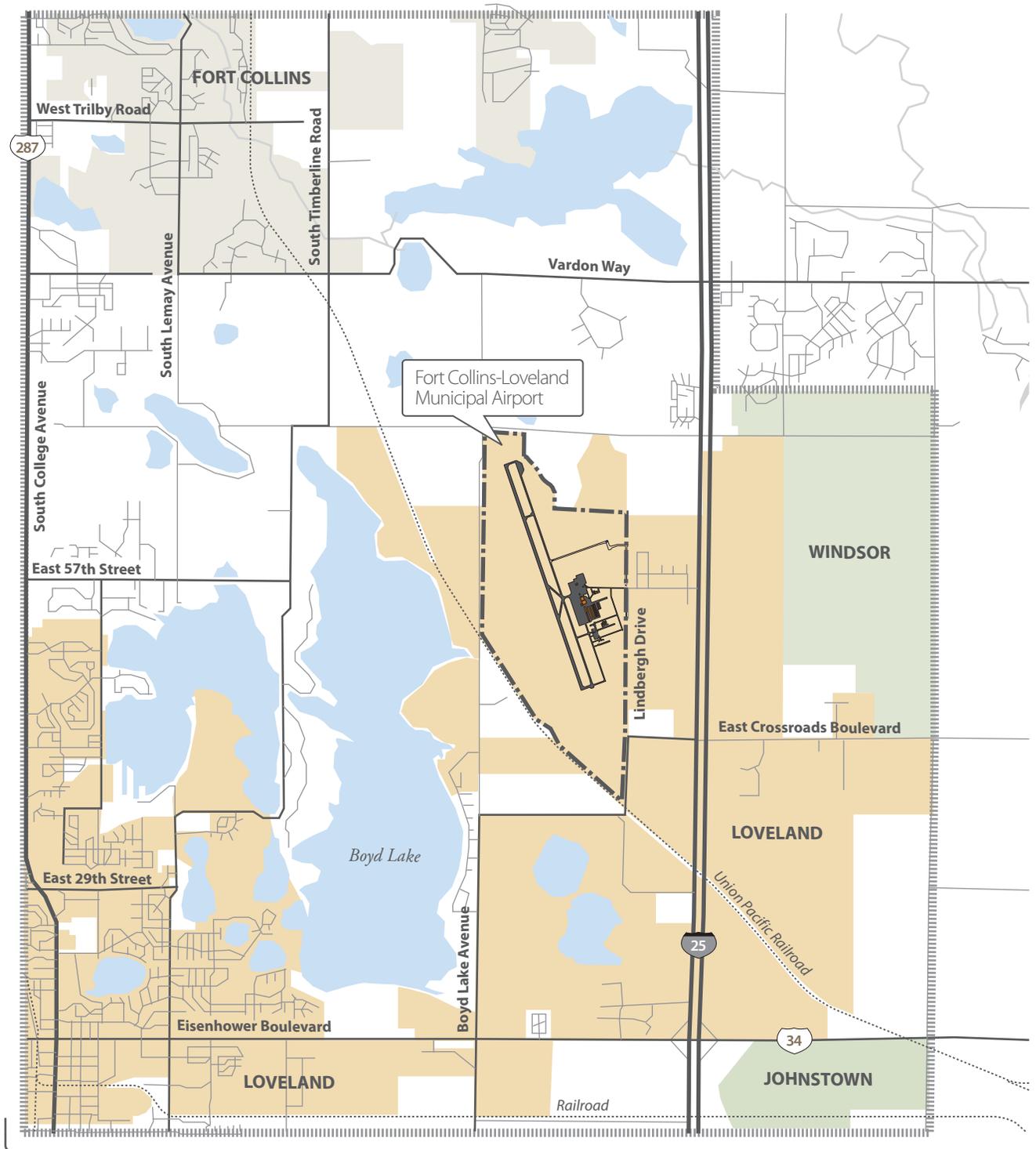
the area north of the Airport, particularly those areas influenced by aircraft operational activity, should remain in agricultural or open land use, with some low density residential.

Currently, there is a significant amount of proposed development in the vicinity of the Airport. An example of the changes that are proposed for the land use in the area surrounding the Airport is the Centerra project. The project is proposed to include a 115-bed advanced care hospital, 120-room hotel and conference center, and a mixed use master planned residential and shopping community. The development is located at I-25 and US Highway 34, just south of the Airport. The Centerra community will incorporate commercial and residential uses surrounding a 275-acre environmental wildlife habitat with 8.5 miles of planned trails. The community will feature dining and shopping opportunities, as well as a wide range of housing, office, and light industrial uses.

### Airport Influence Area

As a component of the City of Loveland Comprehensive Master Plan, an Airport Influence Area is illustrated on the City's Land Use Plan Map. The Airport Influence Area was first established in the City of Loveland's 1994 Master Plan and has since been illustrated on subsequent revisions to the City's Land Use Plan Map (the latest amendment is dated 10/15/02). The following illustration, entitled *AIRPORT INFLUENCE AREA*, provides a graphic description of the Influence Area, along with accompanying Critical Zones and noise contours.

One goal of this Airport Master Plan Update is to lay the ground work for an environs land use plan for the Airport that can be adopted by all of the surrounding local government entities within the Airport Influence Area, to assist with decisions regarding land use compatibility.



▲ North Approximate Scale: 1" = 1.5 Miles

**Figure A5 Incorporated Areas**

- City of Loveland
- City of Windsor
- City of Fort Collins
- City of Johnstown
- Study Area Limits

**MASTER PLAN UPDATE**

Fort Collins-Loveland  
Municipal Airport

Source: Basemap: Microsoft Streets & Trips 2004.

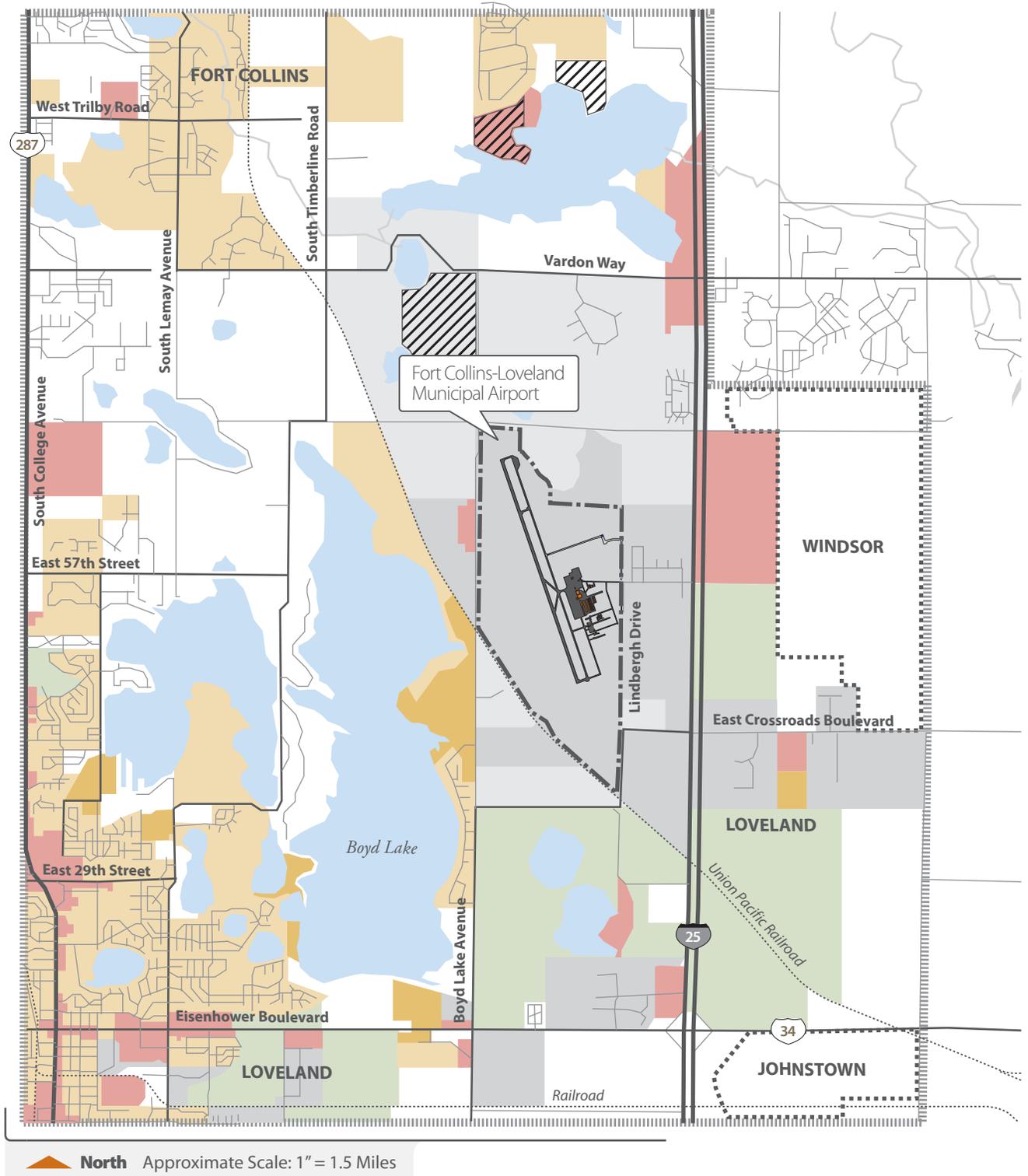


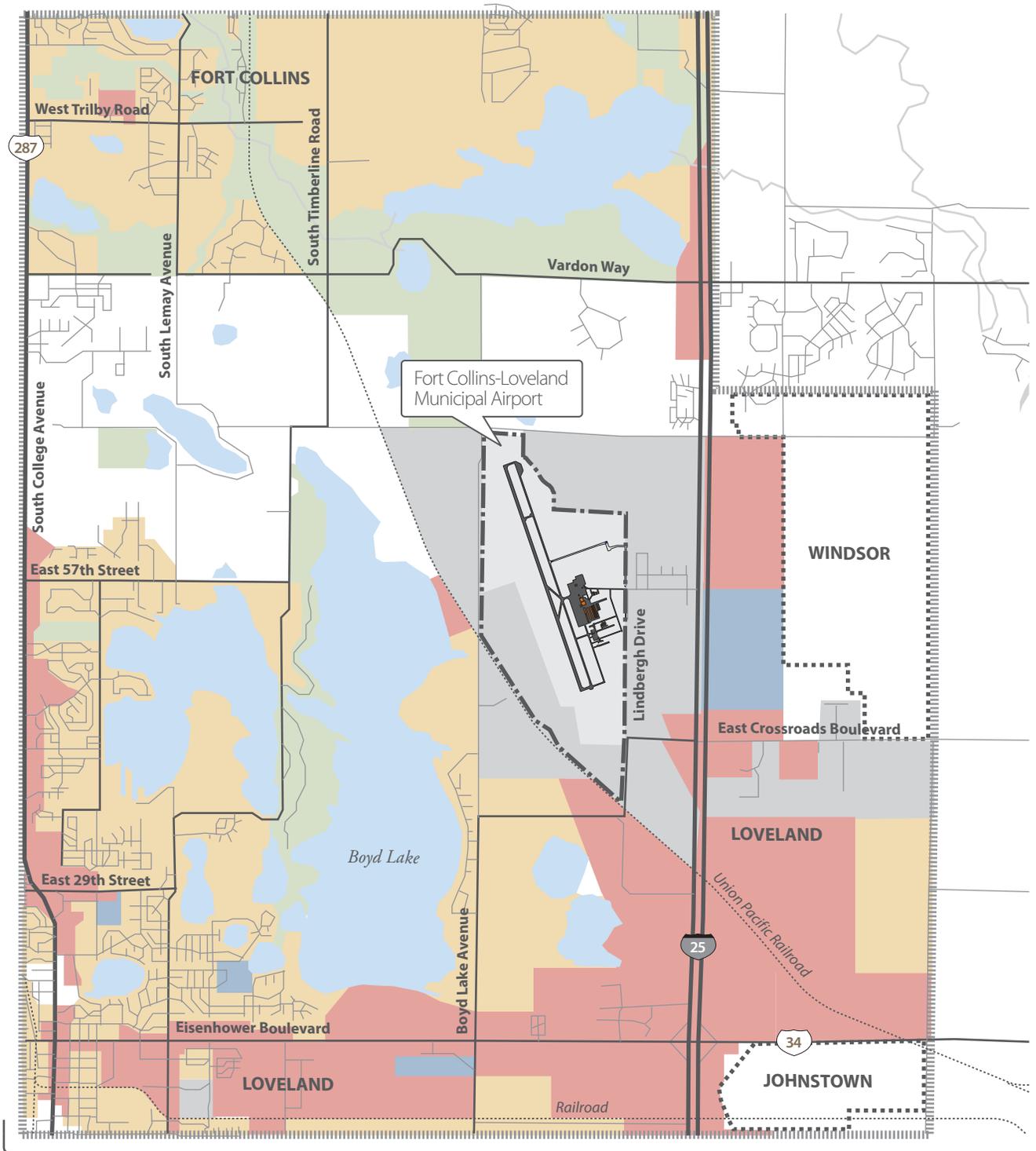
Figure A6 Generalized Existing Zoning

- Residential
- Business/Commercial
- Industrial
- Agricultural/Open Space
- PUD/Mixed Use
- Developing Resource
- Airport Zoning (County)
- Conservation Easement

**MASTER PLAN UPDATE**

Fort Collins-Loveland  
Municipal Airport

Source: Basemap: Microsoft Streets & Trips 2004.



North Approximate Scale: 1" = 1.5 Miles

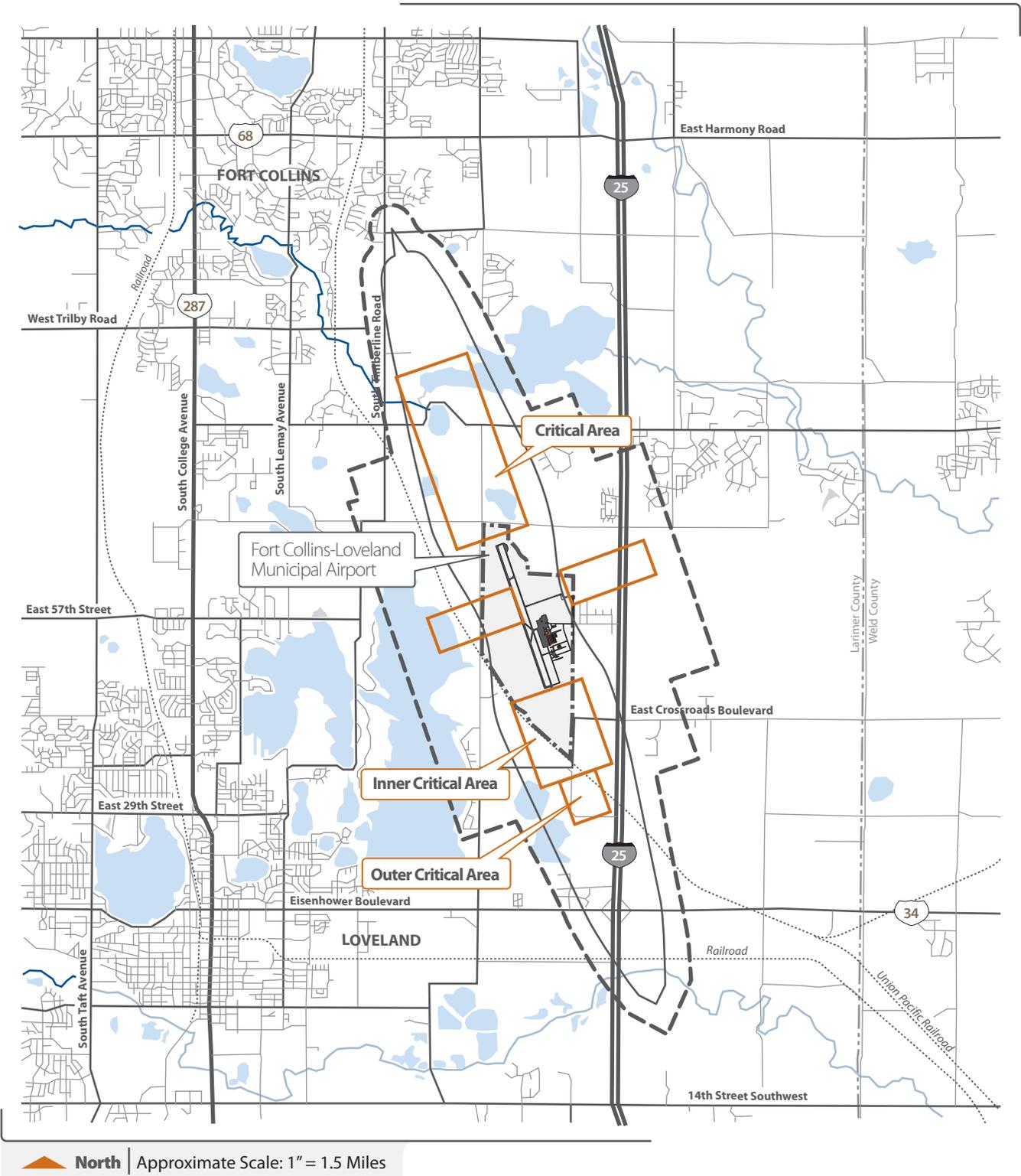
Figure A7 Generalized Future Land Use

- Residential Mixed-Use
- Activity Center Mixed-Use
- Industrial
- Airport
- Parks/Open Space
- Public Facilities

## MASTER PLAN UPDATE

# Fort Collins-Loveland Municipal Airport

Source: Basemap: Microsoft Streets & Trips 2004.



**Figure A8 Airport Influence Area**

- Airport Influence Area
- Noise Contour 55 dB (SIC)
- Critical Zones

Source: Basemap: Microsoft Streets & Trips 2004.

**MASTER PLAN UPDATE**  
**Fort Collins-Loveland**  
**Municipal Airport**

## MASTER PLAN UPDATE

### Issues Summary

The ability to comprehensively examine all development issues facing an airport is perhaps the single most important benefit provided by a master planning program. That being said, as we move into the process, it is recognized that some specific development issues for Fort Collins-Loveland Municipal Airport will be critical to this Master Plan Update.

Preliminary analysis and discussions with airport and city administration indicate that some of the critical issues, which will be of particular importance in the development of this Master Plan Update, include:

- **Understand the likely future aviation demands, including:**
  - ✓ *Commercial passenger activity*
  - ✓ *Types of aircraft operating at the Airport*
  - ✓ *Number and type of based aircraft*
  - ✓ *Programming for short- and long-term passenger terminal improvements to appropriately accommodate existing and future potential passenger volumes.*
  - ✓ *Definition of development areas for future aviation-use facilities (aircraft storage hangars, FBO facilities, corporate aviation facilities, etc.).*
  - ✓ *Recommendations of improvements that will be needed for the main runway (length, strength, instrument approach capabilities, etc.).*
  - ✓ *Identification of recommendations related to the secondary runway (need, configuration, etc.).*
  - ✓ *Recommendations on sustaining and improving the financial viability of the Airport.*
  - ✓ *Security considerations for general aviation and commercial passenger service activity.*
  - ✓ *Preparation of a master drainage plan.*
  - ✓ *Environs development and best integration of the Airport with surrounding land uses.*
  - ✓ *Environmental concerns (air quality, wildlife, noise, etc.).*

It is recognized that other “critical” issues will be identified as the planning process moves forward. To a great degree, an understanding of the development issues, how the issues interact with each other, and how they are impacted by over-arching airport development goals, defines the “comprehensive” development recommendations that will ultimately be produced by this Master Plan Update.

## **B** Forecasts of Aviation Activity

*Forecasting is a key element in the master planning process. The forecasts are essential for analyzing existing airport facilities and identifying future needs and requirements of the facilities. Forecasting, by its very nature, is not exact, but it does establish some general estimates for future aviation activity levels and provides a defined rationale for various changes at the Airport as demands increase.*

**The amount and kind of aviation activity occurring at an airport are dependent upon many factors, but are usually reflective of the services available to aircraft operators, the meteorological conditions under which the Airport operates (daily and seasonally), the businesses located on the Airport or within the community the Airport serves, and the general economic conditions prevalent within the surrounding area.**

Aviation activity forecasting generally commences by utilizing the present time as an initial point, supplemented with historical trends obtained from previous years' activity and recorded information. This data has evolved from a comprehensive examination of historical airport records from airport personnel, *Colorado Statewide Airport Inventory and Implementation Plan*, FAA Form 5010-1 data, *Airport Master Record*, *FAA Terminal Area Forecasts (TAF)*, *FAA Aerospace Aviation Forecasts Fiscal Year 2003-2014*, and the *1992 Fort Collins-Loveland Municipal Airport Master Plan Update* (approved in 1994). These documents were assembled in different years, making the base year data quite variable, and emphasizing the need for establishing a well-defined and well-documented set of base information from which to project future aviation activity trends.

Prior to an examination of current and future activity levels at the Airport, there are several conditions and assumptions that should be noted that form the basis or foundation for the development of the forecasts contained here. These variables represent a variety of physical, operational, and socioeconomic considerations and, to varying degrees, relate to and affect aviation activity at Fort Collins-Loveland Municipal Airport.

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### Weather Conditions

The most current and complete set of weather data available for Fort Collins-Loveland Municipal Airport was obtained and analyzed. With the exception of very few days annually, the Airport is not adversely affected by poor weather conditions. Visual Flight Rules (VFR) meteorological conditions are experienced, on average, approximately 95.2% of the time annually. In addition, the Airport has a complement of electronic landing guidance systems to assist aircraft operations during periods when weather conditions minimize a pilot's visual capacity. Therefore, aircraft can operate at the Airport on a regular basis throughout the year, with limited interruption due to weather.

### Socioeconomic Conditions

Historically, the socioeconomic conditions of a particular region impact aviation activity within that region. The most often analyzed indicators are population, employment, and income.

**Population.** Larimer County and all of the communities that lie within the county limits have experienced significant population growth over the past few years. According to the 2000 US Census, Larimer County is ranked as the 8<sup>th</sup> largest county in Colorado. The two largest cities in Larimer County, Fort Collins and Loveland, experienced significant population increases from 1990 to 2000 (35.2% and 35.5%, respectively).

The following table, entitled *POPULATION PROJECTIONS 1990-2020*, provides a summary of the population information for the Cities of Fort Collins and Loveland, Larimer County, Fort Collins-Loveland Metropolitan Statistical Area, and the State of Colorado.

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TABLE B1 **POPULATION PROJECTIONS, 1990-2020**

	1990	2000	2003	2008	2010	2020
City of Fort Collins <sup>1</sup>	91,434 <sup>1</sup>	118,651 <sup>1</sup>	124,647 <sup>1</sup>	141,383 <sup>1</sup>	---	---
City of Loveland <sup>1</sup>	38,538 <sup>1</sup>	50,607 <sup>1</sup>	54,121 <sup>1</sup>	59,726 <sup>1</sup>	---	---
Colorado	3,294,394 <sup>2</sup>	4,335,540 <sup>3</sup>	4,567,991 <sup>3</sup>	4,946,055 <sup>3</sup>	5,137,928 <sup>3</sup>	6,133,491 <sup>3</sup>
Larimer County	186,138 <sup>1</sup>	253,137 <sup>3</sup>	265,679 <sup>3</sup>	282,583 <sup>3</sup>	295,084 <sup>3</sup>	366,115 <sup>3</sup>
MSA <sup>4</sup>	186,138 <sup>1</sup>	253,137 <sup>3</sup>	265,679 <sup>3</sup>	282,583 <sup>3</sup>	195,084 <sup>1</sup>	366,115 <sup>1</sup>

**Source:** BARNARD DUNKELBERG & COMPANY.

--- Data not available.

1. Northern Colorado Economic Development Corporation, July 2004.

2. 2000 US Census data, July 2004.

3. Colorado Department of Local Affairs Demography Section, July 2004.

4. Colorado Department of Local Affairs Demography Section – Fort Collins-Loveland Metropolitan Statistical Area. The US Office of Management and Budget defines metropolitan statistical areas according to published standards that are applied to Census Bureau data. An MSA is a statistical area containing a substantial population nucleus, together with adjacent communities that have a high degree of economic and social integration within that core.

As the above table highlights, the population of the cities of Fort Collins and Loveland are projected to increase significantly from 2003 to 2008 (an average of 2.69% and 2.07%, respectively). Larimer County and its two largest cities (Fort Collins and Loveland) all grew significantly from 1990 through the 2000 US Census. It should be noted that the City of Fort Collins Advance Planning Department has estimated the official population of the City of Fort Collins, for August 2006, is 139,908.

**Employment.** According to demographic information provided by the Northern Colorado Economic Development Corporation, there were over 214,205 people (over the age of 16) employed in Larimer County in 2003. The Cities of Fort Collins and Loveland employed over 144,720 in 2003 (103,061 and 41,659, respectively). The unemployment rates in 2003 for Larimer County, the City of Fort Collins, and the City of Loveland were 3.04%, 3.74%, and 2.25%, respectively.

**Income.** Data from the Northern Colorado Economic Development Corporation indicates that the per capita income for Larimer County, the City of Fort Collins, and the City of Loveland in 2003 was \$25,388, \$23,699, and \$23,184. This compares to the 2003 US per capita income of \$23,201. The median household incomes for these three geographic regions were \$51,888, \$47,297, and \$49,895. The 2003 national median household income was \$45,128.

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### Community Support

Fort Collins-Loveland Municipal Airport benefits from the support of local governments, Larimer County, local industry, the citizens of Fort Collins, Loveland, and the surrounding communities. The Airport is recognized as a vital asset contributing to the economic stability of the city, region, and state.

### Community/Airport Location and Potential

The Cities of Fort Collins and Loveland, along with their surrounding communities, have numerous educational and recreational opportunities, tourist activities, and an affluent population base. This provides a strong and definable market area for continued business and recreational flying opportunities. The Airport is in a position to continue to support the economic vitality of the community and both Cities are committed to ensuring its use is of positive benefit.

Additionally, many of the surrounding county communities and much of the northern Front Range region of Colorado benefit from the close proximity of a high quality aviation facility and, in turn, provide an economic base that can attract additional based aircraft along with improved commercial passenger service, as well as industrial/ business development. This impact is realized by a study, *The Economic Impact of Airports in Colorado 2003*, completed by the Colorado Aeronautics Division, for all Colorado airports. According to the Study, Fort Collins-Loveland Municipal Airport generated \$37,178,000 in economic activity, \$14,274,000 in wages, and 619 jobs in 2002. Economic activity was defined as the “economic contribution” of the Airport to the region and state economy in terms of total jobs, wages, and economic activity (business receipts). As stated previously, the data generated by the Aeronautics Division does not include consideration of the economic benefit provided by Allegiant Air service, which would add significantly to these totals.

In addition to the regional economic impact, some local businesses rely heavily on the Airport to maintain a healthy synergistic environment. Again, according to the Study, those businesses that are dependent or rely upon the Airport produced \$13,962,000 in economic activity, \$4,696,000 in wages, and 106 jobs in 2002. From this standpoint, there is value in understanding the importance of what airports can do in terms of economics for a community and a region.

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### Negative or Neutral Factors

As a general comment, the Airport has very few negative factors and is in an enviable position, due to its many positive features and conditions. However, there are some broad factors that can have a negative or neutralizing impact on the Airport, and the aviation industry, and these are considered in the planning process. From an on-airport facilities standpoint, runway length and lack of appropriate passenger terminal facilities may be negative factors.

From a national perspective, one negative factor is due to the current state of the economy and the attitude of the traveling public toward commercial airline travel since the events of 9/11. Certainly, business and pleasure travel declined in the aftermath of those events; however, strong recovery trends are being seen in 2004 at many airports across the country. The economic condition of many of the hub-and-spoke “legacy” airlines is also of concern. This is being offset to a great degree by the positive economic conditions being experienced by the low-cost, point-to-point carriers.

The overall condition of the general aviation industry in the United States has been a negative factor for several years. Beginning in 1978, many sectors of the general aviation industry have been in recession, and the FAA has identified several factors that precipitated this downturn, including economic recessions, fuel crises, the termination of the GI Bill, and the repeal of the Investment Tax Credit. Factors including the rising expense of owning and operating an aircraft (i.e., costs of insurance, fuel, and maintenance), increases in air space restrictions affecting fair-weather flying, reductions in personal leisure time, and shifts in personal preference as to how leisure time is spent have tended to restrict the single engine light aircraft segment of the industry, in particular.

There are also a number of bright spots having a positive impact in certain segments of the general aviation industry. They include the passage of the General Aviation Revitalization Act of 1994. This legislation has caused renewed interest and optimism among US aircraft manufacturers, who are either re-entering the single engine aircraft market after several years’ absence, or are increasing future production schedules to meet expected renewed demand. The growth in the amateur-built aircraft market, and the strength of the used aircraft market, indicate that demand for inexpensive personal aircraft is still relatively strong.

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### Historical Airport Activity Summary

A tabulation of Fort Collins-Loveland Municipal Airport's historical aviation activity since 1990 is presented in Table B2, entitled *HISTORICAL AVIATION ACTIVITY, 1990-2003*. This table presents a summary of historic aviation activity at the Airport, which includes five (5) categories of aircraft operations, as well as total operations.

TABLE B2 **HISTORICAL AVIATION ACTIVITY, 1990-2003**

Year	Passenger Enplanements	Air Carrier Operations	Air Taxi Operations	General Aviation Operations	Military Operations	Total Aircraft Operations
1990	4,574 <sup>1</sup>	0 <sup>55</sup>	2,020	64,010	200	66,230
1991	21,816 <sup>1</sup>	0 <sup>55</sup>	5,110	70,000	200	75,310
1992	29,693 <sup>1</sup>	2 <sup>55</sup>	7,520	82,000	200	89,722
1993	51,920 <sup>1</sup>	2 <sup>55</sup>	7,520	80,000	200	87,722
1994	40,260 <sup>1</sup>	44 <sup>55</sup>	9,850	80,000	200	90,094
1995	30,220 <sup>1</sup>	32 <sup>55</sup>	9,330	84,795	200	94,357
1996	17,586 <sup>1</sup>	6 <sup>55</sup>	8,267	86,198	200	94,671
1997	10,854 <sup>1</sup>	6 <sup>55</sup>	8,267	87,669	200	96,142
1998	912 <sup>1</sup>	6 <sup>55</sup>	8,267	89,214	200	97,687
1999	855 <sup>1</sup>	6 <sup>55</sup>	8,267	90,759	200	99,232
2000	816 <sup>1</sup>	6 <sup>55</sup>	8,267	90,759	200	99,232
2001	1,174 <sup>1</sup>	6 <sup>55</sup>	8,267	90,503	200	98,976
2002	620 <sup>1</sup>	6 <sup>55</sup>	8,267	92,108	200	100,581
2003	11,154 <sup>2</sup>	348 <sup>3</sup>	8,267	93,468	200	102,283

**Source:** FAA Terminal Area Forecast (issued January 2005), except as noted otherwise.

1. Data obtained from Colorado Department of Transportation Division of Aeronautics.
2. Fort Collins-Loveland Airport Personnel – Allegiant Air began service on July 31, 2003 with four weekly flights to Las Vegas. This number reflects the scheduled Allegiant Air service only.
3. This number reflects 184 total scheduled air carrier operations (92 departures) and 164 non-scheduled air carrier operations in 2003.

As can be seen, total aircraft operations (an operation is defined as either a takeoff or a landing) at Fort Collins-Loveland Municipal Airport has, for the most part, increased through the last ten (10) years. Estimated annual counts have ranged from a low of 66,230 operations in 1990 to a high of approximately 102,283 operations in 2003.

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*Passenger Enplanements.* There has been a fluctuation in the number of passenger boarding since 1990. This is primarily related to whether or not the Airport was being served by a commercial service airline during a particular year. This trend will likely continue unless an airline offers consistent service with reasonable fare structures and city pairs. The additional service could minimize the desire of individuals to commute to alternate departing airports (i.e., Denver International Airport), ultimately increasing the number of enplanements at Fort Collins-Loveland Municipal Airport.

*Air Carrier Aircraft Operations.* Because airlines report passenger and operation statistics to airport administration on a monthly basis, accurate air carrier activity numbers are available. As counted by FAA personnel at individual airports, air carrier operations are defined as those commercially-operated aircraft capable of accommodating more than 60 passenger seats. As indicated in the previous table, the number of annual air carrier aircraft operations has been insignificant prior to 2003, when Allegiant Air initiated non-stop service to Las Vegas.

*General Aviation Operations.* With the absence of an Airport Traffic Control Tower (ATCT) located on the field, accurate counting measures for general aviation aircraft are not in place. The historical data provided in the preceding table for general aviation operations are estimates compiled by the State of Colorado and the FAA. General aviation operations are typically more directly tied to economic conditions than commercial passenger operations, and this trend is often reflected in the historical operations data for a particular airport. The amount of general aviation activity at many airports around the country has remained flat or declined since the early 1980s. The data available for Fort Collins-Loveland Municipal Airport illustrates fluctuations in general aviation activity since 1990; however, the overall trend is positive. As economic conditions in the region and nation change in the future, fluctuations in the number of general aviation operations at the Airport will likely continue; although, an increasing trend is expected over the long-term.

*Air Taxi Operations.* During the past decade, the number of air taxi operations has fluctuated significantly, with a high of approximately 9,850 annual operations in 1994, and a low of approximately 2,020 in 1990. Similar to the air carrier classification of aircraft at airports with ATCT facilities, Air Traffic Control personnel categorize “Air Taxi” as those aircraft capable of seating less than 60 passengers, which are being utilized for commercial passenger or air freight service and which use a three-letter company designator or the “Tango” designation. For purposes of this study, “Air Taxi” aircraft utilized for scheduled passenger service will be included in the commercial service operations category, and those

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utilized for freight or other purposes will be included in the general aviation operations category.

*Military Operations.* Historically, military aircraft have infrequently utilized Fort Collins-Loveland Municipal Airport for training and/or operational purposes, primarily using Lockheed C-130 aircraft and helicopters. Annual military aircraft operations during 2003 were approximately 200, and are expected to remain roughly the same throughout the planning period.

### Based Aircraft

The number of aircraft that can be expected to base at any airport is dependent upon many factors, such as aircraft maintenance facilities, airport communication practices, services provided at the Airport, airport proximity and access, and similar factors. According to the *FAA Airport Master Record Form 5010* (data is compiled from estimates made by the Colorado Department of Transportation Division of Aeronautics and/or the FAA), there are currently 204 based aircraft at Fort Collins-Loveland Municipal Airport, of which 181 are single engine aircraft, twelve (12) are multi-engine (both piston and turboprop) aircraft, five (5) are turboprop, and six (6) are business jets. A historical summary of based aircraft is presented in the following table, entitled *SUMMARY OF BASED AIRCRAFT, 1990-2003*.

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TABLE B3 SUMMARY OF BASED AIRCRAFT, 1990-2003

Year	Total Based Aircraft
1990	131
1991	128
1992	128
1993	128
1994	128
1995	158
1996	162
1997	166
1998	166
1999	173
2000	173
2001	245
2002	245
2003 <sup>1</sup>	204

Source: FAA Terminal Area Forecasts Fiscal Years 2003-2020.

1. Based aircraft count conducted Spring 2005 by airport personnel. This count does not take seasonal changes or fluctuations into account.

### Passenger Enplanement Forecasts

Forecasts can be utilized for various purposes. The ultimate use of the forecast data may influence the assumptions used to develop the forecasts. For instance, if the forecasts are to be used for financial planning, the goal being to make sure the Airport can properly fund its operation and capital improvement program, the assumptions that are used will tend to minimize revenue generation capabilities of the Airport. If the forecasts are to be used for facilities development planning, the assumptions will tend to maximize the operational activity expectations in order to make sure the Airport has adequate area set aside to build the facilities required to accommodate potential demand. The preferred forecast scenario may change, depending on the ultimate use of the forecast data.

Aviation activity forecasts for airports are often established using several sets of assumptions that generate different forecast scenarios. Several forecast scenarios are used in this Master Plan Update, the primary purpose of which is to provide a long-term facilities development

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plan for the Airport that safely and efficiently accommodates anticipated demand. Additionally, they are used to establish an on-airport/off-airport land use compatibility program in consideration of aircraft generated noise and other environmental influences.

The forecasting of any type of future activity is as much an art as a science, particularly in the current era of airline deregulation and changing operating methodologies (legacy airline hub and spoke systems vs. low cost carrier's point-to-point systems). Any forecast represents a "best guess" or "deducted guess" at a particular point in time. It must, therefore, be revised and updated periodically to reflect new conditions and developments.

Passenger enplanement forecasts are an important part of the forecasting effort as they form the cornerstone of formulating air carrier and commuter operational projections. Commercial passenger service was re-introduced at Fort Collins-Loveland Municipal Airport by Allegiant Air in 2003, after several years of no scheduled passenger service. United Express and Continental Express provided commuter service to Stapleton International Airport in Denver, Colorado (now closed, replaced by Denver International Airport) during the early and mid-1990s.

An important consideration is the fact that the commercial passenger market is expanding much more rapidly than that which would be realized because of population increases. The *FAA Aerospace Forecast Fiscal Years 2004-2015*, published in March 2004, indicates that domestic air carrier passenger enplanements are expected to increase at a 3.6% annual rate through the year 2015.

Three (3) forecast scenarios were developed to appropriately reflect current enplanement figures and provide realistic projections for the 20-year planning period. Data was also compiled from the 1994 Master Plan Update and FAA's *Terminal Area Forecast* for comparison purposes. The passenger enplanement forecasts are presented in the following table, entitled *PASSENGER ENPLANEMENTS FORECAST, 2003-2023*.

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TABLE B4 PASSENGER ENPLANEMENT FORECASTS, 2003-2023

Year	TAF <sup>1</sup>	1993 MPU <sup>2</sup>	Scenario One	Scenario Two	Scenario Three
2003 <sup>3</sup>	4,901	120,718	11,154	11,154	11,154
2004	26,256	---	32,863	32,863	32,863
2005	26,695	---	41,079	41,079	1,717
2006	27,135	156,936	49,295	49,295	1,717
2007	27,575	---	57,510	57,510	1,717
2008	28,015	---	65,726	65,726	1,717
2012	29,774	210,338	75,714	118,307	1,717
2013	30,213	---	78,440	131,452	1,717
2018	32,412	---	93,614	156,879	1,717
2023	---	---	111,721	187,226	1,717

Source: BARNARD DUNKELBERG & COMPANY.

--- Data not available.

1. FAA Terminal Area Forecast, Fiscal Years 2003-2020, issued January 2005.

2. Forecast obtained from the Fort Collins-Loveland Municipal Airport Master Plan Update dated May 1993. It is important to note that the forecasts contained in this document did not break out total operations by category.

3. Actual.

**Scenario One – Continued Activity by One Airline.** Scenario One is a medium-growth forecast scenario based on the assumption that the current commercial airline operating at the Airport is successful, and will continue to expand their service market to include additional flights to the market it currently serves (Las Vegas), as well as adding additional service to other markets (for example, Southern California). This scenario reflects a steady and progressive increase in enplanements at the Airport that is contingent upon the continued expansion and marketing of the current commercial service located at the Airport. This scenario reflects the existing and expected enplanement numbers during 2004 (additional frequency added to Las Vegas). Furthermore, passenger enplanement numbers are forecast to double over the first five (5) years of the planning study, and then increase 3.6% annually, based on the national FAA forecasted increase for domestic air carrier passenger enplanements (*FAA Aerospace Forecast Fiscal Years 2004-2015*, published in March 2004).

**Scenario Two – Two Successful Airlines.** Scenario Two is an accelerated growth forecast scenario based on the assumption that the current commercial airline operating at the Airport is successful, and that an additional airline enters the market during the first ten (10) years of the planning forecast. As with Scenario One, this forecast scenario includes the

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additional flight frequencies added to Las Vegas that occurred in 2004. This forecast scenario also assumes that aviation activity will double during the initial five (5) years of the planning period, and double again during years five through ten. During the remaining ten (10) years of the forecast period, enplanements are expected to increase 3.6% annually, based on the national FAA forecasted increase for domestic air carrier passenger enplanements (*FAA Aerospace Forecast Fiscal Years 2004-2015*, published in March 2004).

**Scenario Three –No Scheduled Commercial Passenger Service.** This forecast scenario is based on the possibility that the current commercial service airline will not be successful in this market and discontinues service to Fort Collins-Loveland Municipal Airport. It also assumes that the Airport is not able to attract any new scheduled service providers and, as such, the enplanement forecast reflects little commercial passenger activity (only infrequent charter traffic). As with the two previous scenarios, the 2004 enplanement number is based on the current Allegiant Air schedule and estimated passenger volumes for the remainder of the calendar year.

**Recommended Forecast Scenario.** The recommended forecast scenario for this Master Plan Update, Scenario One, reflects a steady, progressive, and realistic increase in enplanements. This scenario will be used for facilities planning to assist in determining the appropriate development objectives for the Airport.

### Aircraft Operations Forecasts

#### Commercial Service Operations Forecast

The establishment of projected passenger enplanements is required to properly project commercial service operations. To accommodate the expected increases in passenger enplanements, various strategies can be employed, including: utilizing larger aircraft on the same number of flights; increase the frequency of flights while using the same size aircraft; and, increase the Boarding Load Factor (BLF) by enplaning more passengers on the same number of flights and same size aircraft. Or, as is the case in most instances, a combination of the three strategies can be used.

**Fleet Mix.** The process of forecasting commercial service operations involves the evaluation of the type of aircraft currently providing service to the Airport and a projection of the type that may be expected to serve the Airport in the future. With the type of aircraft known, average seating capacity and load factors can be formulated, which can then be equated to a

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quantity of aircraft operations that will be required to accommodate forecast enplanement demand.

Because the passenger enplanement forecast is based on the continued success of a single airline (Allegiant Air), utilizing a single aircraft type (the MD-83 with 162 passenger seats), the forecasting of commercial service aircraft operations is made less complex. It is recognized that the MD-83 aircraft will eventually be replaced; however, for the foreseeable future, Allegiant Air plans to utilize this aircraft (or one of similar size) in this market. For general information, the FAA indicates that the national average seating capacity of air carrier aircraft used in the domestic market was 148.5 in 2003, and expects the capacity to increase to 154.0 by 2015. Additionally, according to the FAA, the national average seating capacity of regional/commuter aircraft in 2003 was 44.7, and predicts this average will increase to approximately 53.7 in 2015.

**Boarding Load Factor (BLF).** Boarding Load Factor (BLF) is the ratio of seats available on any particular aircraft compared to the number of passengers actually boarding (e.g., an aircraft has 50 seats and 25 passengers board, the BLF is 50%). According to FAA estimates, the nationwide average 2003 BLF being achieved by the large air carrier airlines within the domestic market was 72.7%, and foresees this ratio increasing to approximately 74.8% by 2015. The BLF for the national regional/commuter airline industry was 64.9% in 2003, and the FAA expects an increase of the BLF to about 67.1%. Since the inception of service in 2003, Allegiant Air's BLF has been 70.9%.

**Air Carrier Aircraft Operations Forecast.** This forecast is based the continued use of aircraft with 162 passenger seats per departure (narrow body jets similar to the MD-83). The following table, entitled *COMMERCIAL SERVICE AIRCRAFT OPERATIONS FORECAST, 2003-2023*, indicates that the BLF for scheduled commercial service aircraft is expected to increase to approximately 74% in 2023.

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TABLE B5 **COMMERCIAL SERVICE AIRCRAFT OPERATIONS FORECAST, 2003-2023**

Year	Enplanement Forecast <sup>2</sup>	Scheduled Enplanement Forecast <sup>3</sup>	No. of Scheduled Departures <sup>3</sup>	Total Scheduled Operations	Total Non-Scheduled Operations <sup>4</sup>	Total Commercial Service Operations
2003 <sup>1</sup>	11,154	9,437	92	184	164	348
2004	32,863	31,146	286	572	164	736
2005	41,079	39,362	356	712	164	876
2006	49,295	47,578	425	850	164	1,014
2007	57,510	55,793	495	990	164	1,154
2008	65,726	64,009	564	1,128	164	1,292
2013	78,440	76,723	664	1,328	164	1,492
2018	93,614	91,897	782	1,564	164	1,728
2023	111,721	110,004	920	1,840	164	2,004

Source: BARNARD DUNKELBERG & COMPANY.

--- Data not available.

1. Actual.

2. Includes both scheduled and non-scheduled enplanement forecast.

3. Initial numbers provided by Allegiant Air, primary service provider at the Airport in 2003 and 2004.

4. Private charters at Fort Collins-Loveland Municipal Airport were considered to be air taxi operations (and accounted for in the general aviation forecast). Public Charters were considered commercial service aircraft operations.

### Air Cargo Activity Forecast

Historically, air cargo activity has been closely associated with the Gross Domestic Product (GDP). National factors and trends that potentially stimulate demand for air cargo include increased market opportunities through open skies agreements, decreased costs from global airline alliances, and increased business volumes attributable to e-commerce. Other factors and trends potentially limiting growth of air cargo include increased use of e-mail, decreased costs of sending documents via facsimile, and the increased costs to airlines in meeting environmental and security restrictions.

Perhaps the most influential component currently affecting the air cargo industry is the security directives emanating from the terrorists attacks of September 2001. Directives since that time have strengthened security standards for transporting cargo on passenger flights (i.e., no USPS package weighing more than 13 ounces can be shipped on a passenger aircraft), and have required air cargo carriers to conduct random inspections of cargo. These

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restrictions are anticipated to remain in place for the foreseeable future and, in fact, may become more stringent.

Air Cargo activity at Fort Collins-Loveland Municipal Airport is generally counted in the general aviation air taxi category. It is anticipated that there is potential for increased cargo activity at Fort Collins-Loveland Airport. As part of the preparation of this Master Plan Update, facility needs for identified potential air cargo service providers will be incorporated into facility development recommendations.

### Military Operations Forecast

As a percentage of total annual aircraft operations, the number of military operations at the Airport has historically been relatively insignificant. No factors have been identified that would significantly increase the number of military operations in the future; therefore, the number of military aircraft operations is projected to remain at historic levels through the end of the planning period.

### General Aviation Activity Forecasts

In 2003, 101,735 general aviation operations were conducted at the Airport, which includes an estimated 8,267 air taxi operations.

In developing the general aviation activity forecasts, several general aviation forecasts and national trends were reviewed, along with airport-specific data and trends that were identified within the northwest region of Colorado. Included in this assessment, and presented in the following table, entitled *GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2003-2023*, are several general aviation operational forecasts, including the forecast contained in the 1993 Fort Collins-Loveland Municipal Airport Master Plan Update (MPU), the FAA Terminal Area Forecast Detail Report, and four (4) forecast scenarios developed for this study.

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TABLE B6 GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2003-2023

Year	TAF <sup>1</sup>	1993 MPU <sup>2</sup>	Scenario One 2.38%	Scenario Two 1.69%	Scenario Three 1.27%	Scenario Four 4.0% to 1.27%
2003	101,981	108,300	101,735	101,735	101,735	101,735
2004	103,571	---	104,156	103,454	103,027	105,804
2005	105,177	---	106,635	105,203	104,335	110,037
2006	106,783	119,300	109,173	106,981	105,661	114,438
2007	108,387	---	111,771	108,789	107,002	119,016
2008	109,993	---	114,432	110,627	108,361	123,776
2012	116,416	132,000	---	---	---	---
2013	118,022	---	128,713	120,296	115,419	131,838
2018	126,051	---	144,776	130,811	122,937	140,425
2023	---	---	162,844	142,244	130,944	149,572

Source: BARNARD DUNKELBERG & COMPANY.

--- Data not available.

1. FAA Terminal Area Forecast, Fiscal Years 2003-2020, issued January 2005. Includes air taxi operations.
2. Forecast obtained from the Fort Collins-Loveland Municipal Airport Master Plan Update dated May 1993. It is important to note that the forecasts contained in this document did not break out total operations by category.

Four (4) forecast scenarios were developed to appropriately reflect current general aviation operation activity and provide realistic projections for the 20-year planning period. The forecast scenarios generated for this Master Plan Update assume, for the most part, straight-line growth. While it is recognized that straight-line (consistent) growth never occurs year after year for many years, average annual growth methodologies serve intermediate and long-range planning purposes quite well. It should be noted that it is not the actual numbers that are most important, but the reasoning, assumptions, and trends that the numbers represent.

**Scenario One.** The forecast average population growth for the City of Fort Collins and the City of Loveland is forecast at 2.96% and 2.07%, respectively (for year 2003-2008). This forecast growth scenario uses the average of the two growth rates, corresponding to a growth rate of 2.38%, which is the percentage increase for Scenario One.

**Scenario Two.** This forecast uses an annual growth rate of 1.69%, which corresponds to the FAA nationwide general aviation operations forecast growth rate. This scenario assumes that the local, regional, and national economies improve and have a positive influence on general aviation activity. This forecast scenario is based on the assumption that general aviation

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operations at the Airport will grow at the same rate as that which is forecast nationally for general aviation operations (i.e., maintain its present national market share).

**Scenario Three.** This forecast scenario uses the average annual population growth rate of 1.27% for Larimer County for years 2003-2008 (published by the *Northern Colorado Economic Development Corporation* in July 2004).

**Scenario Four.** This forecast scenario is based on the assumption that Downtown Fort Collins Airport will permanently close in the first three (3) to four (4) years of the planning period, and Fort Collins-Loveland Municipal Airport will attract many of the based aircraft that will need to be accommodated in the region. Scenario Four assumes a growth rate of 4% during the first five (5) years of the planning period, and then is predicted to grow at 1.27% thereafter, which translates to the average annual population growth rate for Larimer County for years 2003-2008 (published by the *Northern Colorado Economic Development Corporation* in July 2004).

**Recommended Forecast Scenario.** The recommended forecast scenario for this Master Plan Update is Scenario Four. This scenario recognizes the fact that, unlike many general aviation airports in the US, the number of general aviation operations at Fort Collins-Loveland Municipal Airport has increased significantly during the last decade, a trend that should continue in the future. This scenario will be used for facilities planning to assist in determining the appropriate development objectives for the Airport.

### Operations Forecast by Aircraft Type

A further assessment of the forecasts involves the individual and collective use of the Airport by various types of aircraft. The types of aircraft expected to use the Airport assist in determining the amount and type of facilities needed to meet the aviation demand.

The following table, entitled *SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2003-2023*, depicts the approximate level of use by aircraft types that are projected to use Fort Collins-Loveland Municipal Airport. This table reflects a growing percentage of turbine and multi engine powered aircraft anticipated to operate at the Airport, and a decreasing percentage of single engine powered aircraft. This is indicative of the type of facility the Airport is, and the prevailing local economic conditions. As mentioned previously, there is no expected growth in military operations from the base year (2003).

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TABLE B7 **SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2003-2023**

Operations by Type	2003 <sup>1</sup>	2008	2013	2018	2023
<i>General Aviation</i>	101,735	123,776	131,838	140,425	149,572
Single Engine	67,871	81,073	85,695	89,872	94,828
Multi Engine	30,493	36,143	37,838	39,881	41,282
Turboprop	264	1,362	1,714	2,247	2,991
Business Jet	3,107	5,199	6,592	8,426	10,470
<i>Military</i>	200	200	200	200	200
<i>Air Carrier</i>	348	1,292	1,492	1,728	2,004
<b>TOTAL</b>	<b>102,283</b>	<b>125,268</b>	<b>133,530</b>	<b>142,353</b>	<b>151,776</b>

Source: BARNARD DUNKELBERG & COMPANY.

1. Actual.

Currently, it is estimated that approximately 67% of all general aviation operations are single engine operations, while three percent (3%) are business jet, less than half a percent are turboprop, and 30% are multi-engine. At the end of the forecast period (2023), approximately 63% of all general aviation operations are forecast to be single engine, 27% multi-engine, 2% turboprop, and 7% business jet.

### Local and Itinerant Operations Forecast

Forecasts of operations have also been categorized accordingly into local and itinerant operations. The *Air Traffic Control Handbook* defines a local operation as any operation performed by an aircraft operating in the local traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the Airport. Local operations account for 38.8% of all airport operations, and this percentage is expected to decrease slightly (to 35.0% at the end of the planning period) as a result of increased business and flight training activity. Based on this consideration, forecasts of local and itinerant operations are shown on the following table, entitled *SUMMARY OF LOCAL AND ITINERANT OPERATIONS, 2003-2023*.

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**TABLE B8 SUMMARY OF LOCAL AND ITINERANT OPERATIONS, 2003-2023**

Year	Local	Itinerant	Total
2003 <sup>1</sup>	39,686	62,597	102,283
2008	47,602	77,666	125,268
2013	49,406	84,124	133,530
2018	51,247	91,106	142,353
2023	53,122	98,654	151,776

Source: BARNARD DUNKELBERG & COMPANY.

1. Actual.

### Peak Period Forecast

An additional element in assessing airport use and determining various capacity and demand considerations is to ascertain peak period activities. In lieu of air traffic records or other reliable sources of information, FAA statistics and assumptions from airports with similar activity and operational characteristics have been applied to Fort Collins-Loveland Municipal Airport. These include: 10% of annual operations occur in the peak month, a 31-day peak month is assumed, and peak hour operations are 10% of the average day of the peak month. The peak period operational activities are illustrated in the following table, entitled *PEAK PERIOD AIRCRAFT OPERATIONS, 2003-2023*.

**TABLE B9 PEAK PERIOD AIRCRAFT OPERATIONS, 2003-2023**

Year	Annual	Peak Month	Average Day of Peak Month	Peak Hour/ Average Day Ratio	Peak Hour
2003 <sup>1</sup>	102,283	10,228	330	10.0%	33
2008	125,268	12,527	404	10.0%	40
2013	133,530	13,353	431	10.0%	43
2018	142,353	14,235	459	10.0%	46
2023	151,776	15,178	490	10.0%	49

Source: BARNARD DUNKELBERG & COMPANY.

Operation counts were tabulated based on methodology from FAA AC 150/5070-6A, *Airport Master Plans* and FAA AC 150/5060-5, *Airport Capacity and Delay*.

1. Actual.

### **General Aviation Based Aircraft Forecast**

The number of general aviation aircraft, which can be expected to base at an airport facility, is dependent on several factors, such as airport radio communications, available facilities, airport operator services, airport proximity and access, aircraft basing capacity available at adjacent airports, and similar considerations. General aviation operators are particularly sensitive to both the quality and location of their basing facilities, with proximity of home and work often being identified as the primary consideration in the selection of an aircraft basing location.

Generally, there is a relationship between aviation activity and based aircraft, stated in terms of operations per based aircraft (OPBA). Sometimes a trend can be established from historical information of operations and based aircraft. The national trend has been changing with more aircraft being used for business purposes and less for pleasure flying. This impacts the OPBA in that business aircraft are usually flown more often than pleasure aircraft. In 2003, the OPBA at Fort Collins-Loveland Municipal Airport was approximately 499. It is expected that the number of operations per based aircraft will increase at the Airport as more aircraft based there are used for business purposes.

The following table, entitled *GENERAL AVIATION BASED AIRCRAFT FORECAST, 2003-2023*, presents the forecasts for the 20-year planning period. The relatively large forecast increase in the number of based aircraft at the Airport is supported by the strong probability that Fort Collins Downtown Airport will close in the near future.

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TABLE B10 **GENERAL AVIATION BASED AIRCRAFT FORECAST, 2003-2023**

Year	OPBA	Selected General Aviation Operations Forecast	Based Aircraft
2003 <sup>1</sup>	499	101,735	204
2004	500	105,804	212
2005	501	110,037	220
2006	502	114,438	228
2007	503	119,016	237
2008	504	123,776	246
2013	514	131,838	256
2018	524	140,425	268
2023	534	149,572	280

Source: BARNARD DUNKELBERG & COMPANY. OPBA: Operations per Based Aircraft. 1. Actual.

The mix of based aircraft for incremental periods throughout the planning period is illustrated in the following table, entitled *GENERAL AVIATION BASED AIRCRAFT FLEET MIX, 2003-2023*. With an existing high percentage of single engine aircraft based at the Airport, the percentage of turboprop and business jet aircraft are expected to increase as a part of the total based aircraft population. This is in line, first, with overall trends in general aviation, but even more importantly, parallels the economic development and growth expectations and projections characteristic of the region.

TABLE B11 **GENERAL AVIATION BASED AIRCRAFT FLEET MIX, 2003-2023**

Aircraft Type	2003	2008	2013	2018	2023
Single Engine	181 (88.73%)	215 (87.50%)	222 (86.50%)	228 (85.50%)	236 (84.50%)
Multi-Engine	12 (5.88%)	14 (5.70%)	14 (5.50%)	14 (5.30%)	14 (5.00%)
Turboprop	5 (2.45%)	7 (3.00%)	8 (3.20%)	9 (3.40%)	10 (3.50%)
Business Jet	6 (2.94%)	10 (3.80%)	12 (4.80%)	17 (6.20%)	20 (7.00%)
<b>TOTAL</b>	<b>204</b> <b>(100.0%)</b>	<b>246</b> <b>(100.0%)</b>	<b>256</b> <b>(100.0%)</b>	<b>268</b> <b>(100.0%)</b>	<b>280</b> <b>(100.0%)</b>

Source: BARNARD DUNKELBERG & COMPANY.

### **Airport Reference Code (ARC)/Critical Aircraft Analysis**

The types of aircraft presently utilizing an airport, and those projected to utilize the facility in the future, are important considerations for planning airport facilities. An airport should be designed in accordance with the Airport Reference Code (ARC) standards that are described in *AC 150/5300-13 Airport Design*. The ARC is a coding system used to relate and compare airport design criteria to the operational and physical characteristics of the aircraft intended to operate at the Airport. The ARC has two components that relate to the Airport's "Design Aircraft". The first component, depicted by a letter (i.e., A, B, C, D, or E), is the aircraft approach category and relates to aircraft approach speed based upon operational characteristics. The second component, depicted by a Roman numeral (i.e., I, II, III, IV, or V), is the aircraft design group and relates to aircraft wingspan (physical characteristic). Generally speaking, aircraft approach speed applies to runways and runway-related facilities, while aircraft wingspan is primarily related to separation criteria associated with taxiways and taxilanes.

**Runway 15/33.** Runway 15/33 accommodates the majority of the small aircraft (aircraft weighing less than 12,500 pounds) traffic at the Airport and all of the large aircraft (aircraft weighing more than 12,500 pounds) traffic. It has been determined that the "Design Aircraft" for this runway is the MD-83 (a narrow body jet commercial passenger jet aircraft with a passenger seating capacity of 162). The MD-83 is currently utilized by Allegiant Air to provide scheduled passenger service at the Airport has an approach speed of 135 knots and a wingspan of 107.8 feet. This indicates that, for Runway 15/33, ARC C-III criteria will continue to be used to determine appropriate design criteria. The C-III designation is also appropriate because the Airport is heavily utilized by the business jet fleet, many of which have "C" or "D" approach speeds and the new, larger business jets (i.e., the Gulfstream V, Canadair Global Express, and the Boeing Business Jet) that have category III wingspans.

**Runway 6/24.** Only smaller general aviation aircraft (under 12,500 pounds) use this runway. The "Design Aircraft" fleet for this runway is made up of the single engine piston-driven general aviation aircraft (e.g., the Beech Bonanza, Cessna 172, etc.). The approach speeds for these aircraft are less than 121 knots and wingspans are less than 49 feet. This indicates that this runway should be designed using ARC B-I (small aircraft only) dimensional criteria.

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### Summary

*The following tables summarize the forecasts of aviation activity, which have been presented in this chapter. This information has been utilized in the following chapter to document and analyze both airside and landside facility requirements. Therefore, the forecasts of aviation activity are an important part of the information base, which will be used to develop future plans for the Airport and formulate implementation decisions relating to airport development.*

**Overall, total aircraft operations at Fort Collins-Loveland Municipal Airport are anticipated to increase over the course of the 20-year planning period.**

TABLE B12 SUMMARY OF AVIATION ACTIVITY FORECASTS, 2003-2023

Operations	2003 <sup>1</sup>	2008	2013	2018	2023
Commercial Service	348	1,292	1,492	1,728	2,004
General Aviation	101,735	123,776	131,838	140,425	149,572
Single Engine	67,871	81,073	85,695	89,872	94,828
Multi-Engine	30,493	36,143	37,838	39,881	41,282
Turboprop	264	1,362	1,714	2,247	2,991
Business Jet	3,107	5,199	6,592	8,426	10,470
Military	200	200	200	200	200
<b>TOTAL OPERATIONS</b>	<b>102,283</b>	<b>125,268</b>	<b>133,530</b>	<b>142,353</b>	<b>151,776</b>
Local Operations	39,686	47,602	49,406	51,247	53,122
Itinerant Operations	62,597	77,666	84,124	91,106	98,654
<b>Passenger Enplanements</b>	<b>11,154</b>	<b>65,726</b>	<b>78,440</b>	<b>93,614</b>	<b>111,721</b>
<b>Based Aircraft by Type</b>					
Single Engine	181	215	222	228	236
Multi-Engine	12	14	14	14	14
Turboprop	5	7	8	9	10
Business Jet	6	10	12	17	20
<b>TOTAL BASED AIRCRAFT</b>	<b>204</b>	<b>246</b>	<b>256</b>	<b>268</b>	<b>280</b>

Source: BARNARD DUNKELBERG & COMPANY. 1. Actual.

## C Capacity Analysis and Facility Requirements

*The capacity of an airfield is primarily a function of the major aircraft operating surfaces that compose the facility and the configuration of those surfaces (runways and taxiways). However, it is also related to, and considered in conjunction with, wind coverage, airspace utilization, and the availability and type of navigational aids. Capacity refers to the number of aircraft operations that a facility can accommodate on either an hourly or yearly basis. It does not refer to the size or weight of aircraft. Facility requirements are used to determine the facilities needed to meet the forecast demand related to the existing and forecast aircraft fleet. Evaluation procedures will analyze runway length, dimensional criteria, aprons, hangars, and vehicular access.*

### **Airfield Capacity Methodology**

The evaluation method used to determine the capability of the airside facilities to accommodate aviation operational demand is described in the following narrative. Evaluation of this capability is expressed in terms of potential excesses and deficiencies in capacity. The methodology used for the measurement of airfield capacity in this study is described in Federal Aviation Administration (FAA) Advisory Circular 150/5060-5, *Airport Capacity and Delay*. From this methodology, airfield capacity is defined in the following terms:

- *Hourly Capacity of Runways:* The maximum number of aircraft that can be accommodated under conditions of continuous demand during a one-hour period.

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- *Annual Service Volume:* A reasonable estimate of an airport’s annual capacity (i.e., level of annual aircraft operations that will result in an average annual aircraft delay of approximately one to four minutes).

The capacity of an airport’s airside facilities is a function of several factors. These factors include the layout of the airfield, local environmental conditions, specific characteristics of local aviation demand, and air traffic control requirements. The relationship of these factors and their cumulative impact on airfield capacity are examined in the following paragraphs.

### Airfield Layout

The arrangement and interaction of airfield components (runways, taxiways, and ramp entrances) refers to the layout or “design” of the airfield. As previously described, Fort Collins-Loveland Municipal Airport is served by two (2) runways: Runway 15/33 and Runway 6/24. Runway 15/33 is served by a full-parallel taxiway with several runway exit taxiways and connector taxiways that are designed to minimize aircraft runway occupancy time, thus increasing the capacity of the runway system.

Existing on-airport landside facilities, which include private hangars, corporate hangars, FBO hangars, aprons, and other various aviation use facilities, are located on the east side of the main runway (Runway 15/33) and south of the crosswind runway. The facilities are well-situated to take advantage of the existing taxiway system. There are also several corporate-use hangars located just off airport property, on the east end of the crosswind runway.

### Environmental Conditions

Climatological conditions specific to the location of an airport not only influence the layout of the airfield, but also impact the use of the runway system. Variations in the weather, resulting in limited cloud ceilings and reduced visibility, typically lower airfield capacity, while changes in wind direction and velocity typically dictate runway usage and also influence runway capacity.

**Ceiling and Visibility.** FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, describes three (3) categories of ceiling and visibility minimums for use in both capacity and delay calculations. Visual Flight Rules (VFR) conditions occur whenever the cloud ceiling is at least 1,000 feet above ground level and the visibility is at least three (3) statute miles. Instrument Flight Rules (IFR) conditions occur when the reported cloud ceiling is at least 500 feet, but less than 1,000 feet, and/or visibility is at least one (1) statute mile, but less

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than three (3) statute miles. Poor Visibility and Ceiling (PVC) conditions exist whenever the cloud ceiling is less than 500 feet and/or the visibility is less than one (1) statute mile.

Meteorological data from the National Climatic Data Center has been used to tabulate information at Fort Collins-Loveland Municipal Airport in more specific terms:

- *VFR conditions* - ceiling equal to or greater than 1,000 feet above ground level and visibility is equal to or greater than three (3) statute miles. These conditions occur at the Airport approximately 95.2% of the time annually.
- *VFR minimums to existing Runway 33 approach minimums (Category I ILS)* - ceiling equal to or less than 1,000 feet and/or visibility less than or equal to three (3) statute miles, but ceiling equal to or greater than 200 feet and visibility equal to or greater than ½ mile. These conditions occur at the Airport approximately 3.7% of the time annually.
- *Below Category I ILS minimums* - ceiling less than 200 feet and/or visibility less than ½ statute mile. These conditions occur at the Airport approximately 1.1% of the time annually.

**Wind Coverage.** Surface wind conditions (i.e., direction and speed) generally determine the desired alignment and configuration of the runway system. Runways, which are not oriented to take advantage of prevailing winds, will restrict the capacity of the Airport. Wind conditions affect all airplanes in varying degrees; however, the ability to land and takeoff in crosswind conditions varies according to pilot proficiency and aircraft type. Generally, the smaller the aircraft, the more it is affected by crosswind velocity.

To determine wind velocity and direction at Fort Collins-Loveland Municipal Airport, wind data to construct the all weather wind rose was obtained for the period January 1, 1994-December 31, 2003 from observations taken at the Airport (from data gathered by the National Oceanic and Atmospheric Administration, National Climatic Data Center). The allowable crosswind component is dependent upon the Airport Reference Code (ARC) for the type of aircraft that utilize the Airport on a regular basis. As previously identified, the current Airport Reference Code (ARC) for Runway 15/33 is ARC C-III.

In consideration of the ARC C-III classification, these standards specify that the 16-knot crosswind component be utilized for analysis. In addition, it is known that the Airport will



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TABLE C1 ALL WEATHER WIND COVERAGE SUMMARY

Runway Designation	10.5-Knot Crosswind Component	13-Knot Crosswind Component	16-Knot Crosswind Component
Runway 6	85.32%	87.48%	---
Runway 24	77.90%	79.79%	---
Runway 6/24	91.95%	94.67%	---
Runway 15	76.51%	77.74%	78.92%
Runway 33	77.37%	78.91%	80.36%
Runway 15/33	95.12%	97.15%	98.90%
Combined Runways	99.24%	99.55%	99.79%

**Source:** Wind analysis tabulation provided by Barnard Dunkelberg & Company utilizing the FAA Airport Design Software supplied with AC 150/5300-13, *Airport Design*. Data obtained from National Oceanic and Atmospheric Administration, National Climatic Data Center Station 72476 Fort Collins, Colorado. Period of Record: 1994-2003. It is important to note that a 5-knot tailwind component was used.  
 --- Data not available.

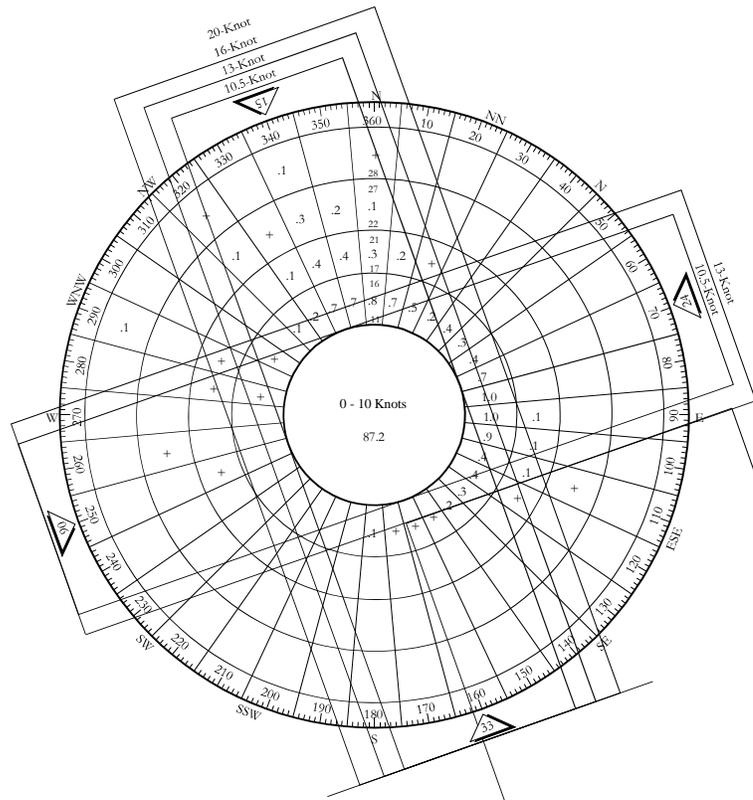
Together, the two runways provide 99.79% wind coverage for the 16-knot crosswind component, 99.55% wind coverage for the 13-knot crosswind component, and 99.24% for the 10.5-knot crosswind component. This analysis indicates that the existing runway configuration provides adequate wind coverage for the 16-knot, 13-knot, and 10.5-knot crosswind components. It can also be noted that Runway 15/33 meets the desirable wind coverage criteria (95%) without consideration of the crosswind runway. No new runways will be recommended to provide additional wind coverage.

The Airport currently has six (6) published straight-in instrument approach procedures. The approach with the lowest minimums is Runway 33 (decision height of 200 feet, visibility minimums of ½ mile). In an effort to analyze the effectiveness of these approaches, an Instrument Flight Rules (IFR) wind rose has been constructed and is presented in the following figure. Again, wind data from Fort Collins-Loveland Municipal Airport have been used in the construction of the IFR wind rose.

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**FIGURE C2**  
**IFR<sup>1</sup> WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS**

**Source:** National Oceanic and Atmospheric Administration, National Climatic Data Center Station 72476 Fort Collins, Colorado. Period of Record: 1994-2003.  
 1. Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than three statute miles, but equal to or greater than ½ mile.



The following table, Table C2, entitled *IFR WIND COVERAGE SUMMARY*, quantifies the wind coverage offered by the various runways under IFR meteorological conditions.

**TABLE C2 IFR WIND COVERAGE SUMMARY**

Runway Designation	IFR <sup>1</sup> Conditions Maximum 10.5-Knot Crosswind Component	IFR <sup>1</sup> Conditions Maximum 13-Knot Crosswind Component	IFR <sup>1</sup> Conditions Maximum 16-Knot Crosswind Component
Runway 6	92.63%	95.09%	---
Runway 24	61.46%	62.54%	---
Runway 6/24	93.45%	95.67%	---
Runway 15	77.35%	79.30%	81.39%
Runway 33	81.07%	82.71%	84.39%
Runway 15/33	94.75%	97.15%	99.46%
Combined Runways	99.72%	99.83%	99.87%

**Source:** Wind analysis tabulation provided by Barnard Dunkelberg & Company utilizing the FAA Airport Design Software supplied with AC 150/5300-13, *Airport Design*. Data obtained from National Oceanic and Atmospheric Administration, National Climatic Data Center Station 72476 Fort Collins, Colorado. Period of Record: 1994-2003. It is important to note that a 5-knot tailwind component was used.

--- Data not available.

1. Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than three statute miles, but equal to or greater than ½ mile.

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From this IFR wind coverage summary, it can be determined that, if a single runway is considered, Runway 6 or Runway 33 offers the best wind coverage, depending on the crosswind component selected. If two runways are considered, Runway 15/33 offers the best IFR wind coverage. It should also be noted that Runway 6/24 is not designed to be equipped with instrument approach capabilities. Thus, the runway's existing instrument approach capabilities provide good wind coverage during IFR conditions. The potential and benefits of the provision of improved instrument approach capabilities at the Airport are examined in the following chapters.

### Characteristics of Demand

Certain site-specific characteristics related to aviation use and aircraft fleet makeup impact the capacity of the airfield. These characteristics include aircraft mix, runway use, percent arrivals, touch-and-go operations, exit taxiways, and air traffic control rules.

As identified earlier, Runway 6/24 receives only a small amount of use and is therefore not considered in the following analysis.

**Aircraft Mix.** The capacity of a runway is dependent upon the type and size of the aircraft that use the facility. FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, categorizes aircraft into four (4) classes based on maximum certificated takeoff weight. This differs from the Airport Reference Code (ARC) defined previously, which classifies aircraft based on aircraft approach speed (A-E). For aircraft mix, aircraft Classes A and B consist of small single engine and twin-engine aircraft (both prop and jet), weighing 12,500 pounds or less, which are representative of the general aviation fleet. Classes C and D aircraft are larger jet and propeller aircraft typical of the business jet fleet, along with those aircraft used by the airline industry and the military. Fort Collins-Loveland Municipal Airport has no operations by Class D aircraft (over 300,000 pounds), nor are any expected to occur in the future. Class C aircraft operations at the Airport are primarily executive-type prop and jet general aviation aircraft. Aircraft mix is defined as the relative percentage of operations conducted by each of these four (4) classes of aircraft. The aircraft mix for Fort Collins-Loveland Municipal Airport is depicted in the following table, entitled *AIRCRAFT CLASS MIX FORECAST, 2003-2023*.

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TABLE C3 AIRCRAFT CLASS MIX FORECAST, 2003-2023

Year	VFR Conditions			IFR Conditions		
	Class A & B	Class C	Class D	Class A & B	Class C	Class D
2003 <sup>1</sup>	69%	31%	0%	64%	36%	0%
2008	68%	32%	0%	63%	37%	0%
2013	66%	34%	0%	61%	39%	0%
2018	65%	35%	0%	60%	40%	0%
2023	63%	37%	0%	58%	42%	0%

Class A - Small Single Engine, < 12,500 pounds  
Class C - 12,500 - 300,000 pounds

Class B - Small Twin-Engine, < 12,500 pounds  
Class D - > 300,000 pounds

1. Actual.

**Runway Use.** The use configuration of the runway system is defined by the number, location, and orientation of the active runway(s) and relates to the distribution and frequency of aircraft operations to those facilities. Both the prevailing winds in the region and the existing runway facility at Fort Collins-Loveland Municipal Airport combine to dictate the utilization of the existing runway system. According to airport observations, Runway 33 is the most utilized runway and is the calm-wind runway, although wind data indicates that prevailing winds only favor it slightly. It is estimated that approximately 60% of the airport's operations utilize Runway 33, and Runway 15 is used for the remaining 40%.

**Percent Arrivals.** Runway capacity is also significantly influenced by the percentage of all operations that are arrivals. Because aircraft on final approach are typically given absolute priority over departures, higher percentages of arrivals during peak periods of operations reduce the Annual Service Volume. The operations mix occurring on the runway system at Fort Collins-Loveland Municipal Airport reflects a general balance of arrivals to departures. Therefore, it was assumed in the capacity calculations that arrivals equal departures during the peak period.

**Touch-and-Go Operations.** A touch-and-go operation refers to an aircraft maneuver in which the aircraft performs a normal landing touchdown followed by an immediate takeoff without stopping or taxiing clear of the runway. These operations are normally associated with training and are included in local operations figures. Touch-and-go operations are conducted almost exclusively on Runway 15/33 at Fort Collins-Loveland Municipal Airport and comprise approximately 39% of all operations at the Airport (according to the FAA's

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Form 5010, *Airport Master Record*). By the end of the 20-year planning period, local operations are expected to decrease to approximately 35% of the total aircraft operations at the Airport.

**Exit Taxiways.** The capacity of a runway is greatly influenced by the ability of an aircraft to exit the runway as quickly and safely as possible. Therefore, the quantity and design of the exit taxiways can directly influence aircraft runway occupancy time and the capacity of the runway system. The number of exit taxiways at Fort Collins-Loveland Municipal Airport appears adequate for existing operations. However, from a capacity standpoint, some improvements might be made. The capacity analysis gives credit to only those runway exit taxiways located between 3,000 and 5,500 feet from the threshold of each runway. It appears that the capacity of the runway system may benefit from the construction of additional exit taxiways. The potential for future taxiway locations will be examined as the Airport Development Plan is formulated.

**Air Traffic Control Rules.** The FAA specifies separation criteria and operational procedures for aircraft in the vicinity of an airport contingent upon aircraft size, availability of radar, and sequencing of operations, both advisory and/or regulatory, which may be in effect at the Airport. The impact of air traffic control on runway capacity is most influenced by aircraft separation requirements dictated by the mix of aircraft utilizing the Airport. Presently, there are no special air traffic control rules in effect at Fort Collins-Loveland Municipal Airport that significantly impact operational capacity; although, it should be noted that the Airport does not have an air traffic control tower.

### **Airfield Capacity Analysis**

As previously described, the determination of capacity for Fort Collins-Loveland Municipal Airport uses the methodology described in the FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, along with the Airport Design Computer Program that accompanies AC 150/5300-13, *Airport Design*. Several assumptions are incorporated in these capacity calculations: arrivals equal departures, the percent of touch-and-go operations is between 0% and 50% of total operations, there is a full-length parallel taxiway with ample exits and no taxiway crossing problems, there are no airspace limitations, the Airport has at least one (1) runway equipped with an ILS and the necessary air traffic control facilities to carry out operations in a radar environment, IFR weather conditions occur roughly 10% of the time,

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and, approximately 80% of the time, the Airport is operated with the runway use configuration that produces the greatest hourly capacity.

It is recognized that at least one of these “ideal” assumptions is not appropriate for Fort Collins-Loveland Municipal Airport (i.e., the Airport does not have an air traffic control tower). It remains important to understand the capacity of the runway system under most optimal conditions to help determine future facility needs. Applying information generated from the analysis described, the optimized capacity for the airport’s one-runway system (the crosswind runway is not considered because of its minimal use) can be formulated in terms of the following results:

- Hourly Capacity of Runways (VFR and IFR)
- Annual Service Volume (ASV)

A single runway airport, with a fleet mix similar to Fort Collins-Loveland Municipal Airport, can have an ASV as high as 205,000 operations, with a VFR capacity of roughly 63 operations per hour, and an IFR capacity of approximately 56 operations per hour. As can be seen, this optimized Annual Service Volume is greater than the number of annual operations (179,364) forecast for the end of the planning period. However, from a long-term planning perspective, the numbers (forecast numbers are over 80% of the ASV capacity) are close enough that the construction of a significant capacity enhancement (i.e., a new parallel runway) should be considered as an alternative in the formulation of the ultimate development plan for the Airport. An airport with parallel runways and a fleet mix similar to Fort Collins-Loveland Municipal Airport can have an ASV as high as 260,000 operations.

### Ground Access Capacity

The capacity of a ground access system is a function of the maximum number of vehicles accommodated by a particular facility. At Fort Collins-Loveland Municipal Airport, this relates primarily to the roadway system capacity, which is the number of vehicles that can use a certain roadway section in a given time period.

The capacity analysis for the roadways providing access to the Airport, as well as the airport roadway system, is based on the *Highway Capacity Manual*, published by the Transportation Research Board, Special Report 209. According to this manual, it is normally preferred that roadways operate below capacity to provide reasonable flow and minimize delay to the

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vehicles using it. The manual defines different operating conditions, known as levels-of-service. The levels-of-service are functions of the volume and composition of the traffic and the speeds attained. Six (6) levels-of-service have been established, designated by the letters A-F, providing for best to worst service in terms of driver satisfaction. Level-of-service A roadways are completely unimpeded in their ability to maneuver within the traffic system. A level-of-service C (stable traffic flow and minimal delays) is generally the preferred level-of-service for an urban road system. Average hourly volumes of airport service roadways of typical facilities at levels-of-service C and D are summarized in the following table, entitled *GROUND ACCESS FACILITY VOLUME*. The various ranges given in the table make their use in defining roadway capacity analysis useful primarily for initial problem testing.

TABLE C4 **GROUND ACCESS FACILITY VOLUME**

Facility Type	Average Hourly Volume <sup>1</sup> (Vehicle/Hour/Lane) <sup>2</sup>
Main-access and feeder freeways (controlled access, no signalization)	1,000-1,600
Ramp to and from main-access freeways, single lane	900-1,200
Principal arterial (some cross streets, two-way traffic)	900-1,600
Main-access road (signalized intersections)	700-1,000
Service road	600-1,200

**Source:** Highway Capacity Manual, Transportation Research Board, *Special Report 209*, 1994.

1. Highway Levels-of-Service C and D.

2. Passenger-Car Equivalents.

The basis of the access roadway capacity assessment at a general aviation airport is on the service provided between the various aviation use areas on that airport and the regional highway system. The Airport is provided with excellent accessibility to the regional highway system by way of Frontage Road and Earhart Road, providing excellent accessibility to Interstate 25.

It is also important to note the tremendous growth occurring in corridors and areas adjacent to the Cities of Fort Collins and Loveland. At present, there is no mass transit access to the Airport; however, there is an efficient bus service, as well as several carpool organizations that operate successfully in the area. The airport's proximity to the local road system contributes to the recognition that Fort Collins-Loveland Municipal Airport is located in an area that has excellent landside accessibility.

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The information presented in the previous table would indicate that, at a level-of-service in the C to D range, the existing airport access roads have a capacity between 600 to 1,200 vehicles per hour. All indications are that this capacity is adequate to serve on-airport demand.

Unlike an airport that is dominated by commercial passenger service with a central access focus (the passenger terminal), access for a mixed use airport (general aviation and commercial passenger service) is focused on several businesses/employers distributed on various locations around airport property. Because of the magnitude of the existing and future commercial and residential development in the vicinity of Fort Collins-Loveland Municipal Airport, the aviation uses on the Airport will only be a moderate contributor to the overall quantity of traffic on the primary highway/roadway system surrounding the Airport. Thus, the analysis for Fort Collins-Loveland Municipal Airport is focused more on the quality of access to various locations on the Airport and not so much on the quantity of traffic that the system is able to carry.

Future on-airport roadway improvements will focus on providing good access to future facility development areas, along with considerations of access needs if the commercial passenger activity continues to grow at a significant pace.

### **Facility Requirements**

This section presents the analysis of requirements for airside and landside facilities necessary to meet aviation demand at Fort Collins-Loveland Municipal Airport. For those components determined to be deficient, the type and size of facilities required to meet future demand are identified. Airside facilities examined include the runways, taxiways, runway protection zones, thresholds, and navigational aids. Landside facilities include such facilities as hangars, aircraft apron areas, and airport support facilities.

This analysis uses the growth scenario set forth in the forecast of demand for establishing future development needs at the Airport. This is not intended to dismiss the possibility that, due to the unique circumstances in the region, either accelerated growth or consistently higher or lower levels of activity may occur. Aviation activity levels should be monitored for consistency with the forecasts. In the event of changes, the schedule of development should

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be adjusted to correspond to the demand for facilities rather than be set to predetermined dates of development. By doing this, over-building or under-building can be avoided.

### Airside Facilities

**Dimensional Criteria.** The FAA Advisory Circular 150/5300-13, *Airport Design*, recommends standard widths, minimum clearances, and other dimensional criteria for runways, taxiways, safety areas, aprons, and other physical airport features. Dimensions are recommended with respect to the Aircraft Approach Category and Airplane Design Group designations (the Airport Reference Code), and availability and type of approach instrumentation. Because different aircraft types utilize the two runways at Fort Collins-Loveland Municipal Airport, each has an appropriate Airport Reference Code (ARC). Existing dimensions and the corresponding design criteria applicable to Fort Collins-Loveland Municipal Airport are contained in the following tables, entitled *DIMENSIONAL STANDARDS*. One table is provided for each runway.

As identified in the tables, the facilities at Fort Collins-Loveland Municipal Airport meet or exceed most of the appropriate requirements; although, there are some deficiencies. The primary taxiway serving Runway 15/33 is currently 50 feet, which meets ARC C/D-III minimum standards. However, aircraft that have a wheelbase greater than 60 feet, (for example, the MD-80), the standard increases to 60 feet. The commercial air service provider that currently operates in and out of the Airport uses the MD-80 series aircraft exclusively. In addition, the runway width for Runway 6/24 is deficient by 20 feet. The correction of these dimensional standard deficiencies will be considered in the formulation of the development plan for the Airport.

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TABLE C5 **ARC C-III DIMENSIONAL STANDARDS – RUNWAY 15/33 (in feet)**

Item	Existing Dimension	ARC C/D -III Standards
<b>Runway 15/33</b>		
Width	100	100
Safety Area Width	500	500
Safety Area Length(beyond each runway end)	1,000	1,000
Object Free Area Width	800	800
Object Free Area Length (beyond each runway end)	1,000	1,000
Obstacle Free Zone Width	400	400
<b>Taxiway:</b>		
Width	<b>50</b>	60 <sup>1</sup>
Safety Area Width	--- <sup>2</sup>	118
Object Free Area Width	--- <sup>2</sup>	186
<b>Runway Centerline to:</b>		
Holdline	250	250
Parallel Taxiway Centerline	N/A	400
Aircraft Parking Area	650	500

**Source:** FAA Advisory Circular 150/5300-13, *Airport Design*, and actual airport conditions.

**Runway Safety Area (RSA):** An area adjacent to the runway that is cleared and graded and that has no potentially hazardous ruts, humps, depressions, or other surface variations. Under dry conditions, the safety area shall be capable of supporting aircraft rescue equipment, snow removal equipment, and the occasional passage of aircraft without causing structural damage.

**Runway Object Free Area (OFA):** A two-dimensional ground area surrounding a runway that is clear of objects protruding above the safety area edge elevation. Objects are acceptable within the OFA if the location is required for the purpose of air navigation or aircraft ground maneuvering purposes.

**Bold/Italic Numbers:** Indicate existing non-standard condition.

**N/A:** Not applicable.

--- Data not available.

1. Standard for ARC C-III is 50'; however for aircraft with a wheelbase greater than 60 (for example, the MD-80), the standard increases to 60'.
2. Not identified on existing Airport Layout Plan, but appears to meet standard.

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TABLE C6 **ARC B-I DIMENSIONAL STANDARDS – RUNWAY 6/24 (in feet)**

Item	Existing Dimension	ARC B-I (Small Aircraft Only) Standards	
<b>Runway 6/24</b>			
Width	<b>40</b>	60	
Safety Area Width	---	120	
Safety Area Length (beyond each runway end)	---	240	
Object Free Area Width	---	250	
Object Free Area Length (beyond runway end)	---	240	
Obstacle Free Zone Width	---	250	
<b>Taxiway:</b>			
Width	N/A	25	
Safety Area Width	N/A	49	
Object Free Area Width	N/A	89	
<b>Runway Centerline to:</b>			
Holdline	N/A	125	
Parallel Taxiway Centerline	N/A	150	
Aircraft Parking Area	325	125	

**Source:** FAA Advisory Circular 150/5300-13, *Airport Design*, and actual airport conditions.

**Runway Safety Area (RSA):** An area adjacent to the runway that is cleared and graded and that has no potentially hazardous ruts, humps, depressions, or other surface variations. Under dry conditions, the safety area shall be capable of supporting aircraft rescue equipment, snow removal equipment, and the occasional passage of aircraft without causing structural damage.

**Runway Object Free Area (OFA):** A two-dimensional ground area surrounding a runway that is clear of objects protruding above the safety area edge elevation. Objects are acceptable within the OFA if the location is required for the purpose of air navigation or aircraft ground maneuvering purposes.

**Bold/Italic Numbers:** Indicate existing non-standard condition.

**N/A:** Not applicable.

--- Data not available.

1. Not identified on existing Airport Layout Plan, but appears to meet standard.

**Runway Pavement Strength.** The main runway pavement at Fort Collins-Loveland Municipal Airport can currently support aircraft with gross weights of 50,000 pounds single wheel, 65,000 pounds dual-wheel, and 130,000 dual tandem wheel landing gear configuration. This is adequate to accommodate the existing aircraft fleet at the present level of use; however, if heavy aircraft like Allegiant Air’s MD-83s use the Airport more frequently, additional pavement strength may be required.

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**Airfield Capacity.** The evaluation of airfield capacity presented earlier indicates that the Airport will not exceed the capacity of the existing runway/taxiway system before the end of the planning period. The airport's optimized Annual Service Volume (ASV), in consideration of the existing runway configuration at the end of the planning period, was determined to be approximately 205,000 operations. FAA planning standards indicate that when 60% of the ASV is reached (in this case, some 123,000 operations), the Airport should start planning ways to increase capacity. When 80% of the ASV (about 164,000 operations) is reached, construction of facilities to increase capacity should be initiated.

Even before an airfield reaches capacity, it begins to experience certain amounts of delay in aircraft operations. As an airport's operations increase toward capacity, delay increases exponentially. Therefore, it is important to monitor the number of aircraft operations regularly and identify factors that may be acting as capacity constraints. This will enable airport management to react to unexpected trends before the lack of operational capacity might become a critical issue.

During 2003, aircraft operations at Fort Collins-Loveland Municipal Airport totaled approximately 102,000, which is short of the 60% ASV level. However, forecasts of aircraft operations indicate that approximately 150,000 aircraft operations could occur at the Airport by the year 2023. These forecasts indicate the Airport will reach 60% of its operational capacity before the end of the 20-year planning period. This analysis indicates that strategies to increase the capacity of the Airport should be a component of this Master Plan Update. The most productive way to increase capacity is to construct a parallel runway (aligned in the same orientation as the primary runway).

**Runway Length.** The determination of runway length requirements for Fort Collins-Loveland Municipal Airport is based on several factors. These factors include:

- ***Airport elevation;***
- ***Mean maximum daily temperature of the hottest month;***
- ***Runway gradient;***
- ***Critical aircraft type expected to use the Airport; and,***
- ***Stage length of the longest nonstop trip destination.***

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Generally, runway length requirements for design purposes at a general aviation airport like Fort Collins-Loveland Municipal Airport are premised upon the category of aircraft using the Airport. The categories are small aircraft under 12,500 pounds maximum certificated takeoff weight and large aircraft under 60,000 pounds maximum certificated takeoff weight. The general aviation large aircraft fleet includes the majority of the business jet fleet.

Runway length requirements are derived from the computer-based FAA Airport Design Software supplied in conjunction with Advisory Circular 150/5300-13, *Airport Design*. Using this software, three (3) values are entered into the computer, including the airport elevation of 5,016 feet Above Mean Sea Level (AMSL), the Mean Normal Maximum Temperature (NMT) of 85.1 degrees Fahrenheit, the length of haul 1,000 miles, and the maximum difference in runway elevation at the centerline of 43 feet. This data generates the general recommendations for runway length requirements at Fort Collins-Loveland Municipal Airport, which are provided in the following table, entitled *RUNWAY LENGTH REQUIREMENTS*. As can be seen, there are four (4) runway lengths shown for small (under 12,500 pounds) general aviation aircraft runways. Each of these provides the required length to accommodate a certain type of aircraft that will utilize the runway. The lengths range from 4,540 feet to 6,240 feet.

There are four (4) different runway lengths given for larger general aviation aircraft under 60,000 pounds. These runway lengths pertain to those general aviation aircraft, generally jet-powered, of 60,000 pounds or less maximum certificated takeoff weight. The requirements of this aircraft fleet range from 6,930 feet to 11,430 feet in length. Each of these lengths provides a runway sufficient to satisfy the operational requirements of a certain percentage of the fleet at a certain percentage of the useful load, (i.e., 75% of the fleet at 60% useful load). The useful load of an aircraft is defined as the difference between the maximum allowable structural gross weight and the operating weight empty. In other words, it is the load that can be carried by the aircraft composed of passengers, fuel, and cargo. Generally speaking, prevailing examples of such aircraft (under 60,000 pounds) include Lear Jets, Falcon Jets, Cessna Citations, Hawkers, and Canadair Challengers, among others.

In consideration of the existing commercial service being provided by the air carrier fleet, the table also illustrates the generalized runway takeoff length requirements for aircraft over 60,000 pounds (e.g., the narrow body commercial passenger service aircraft fleet) at various stage lengths. A generalized runway length of approximately 6,770 feet is required for a

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500-nautical mile (500-NM) stage length; 8,040 feet are required for a 1,000-NM stage length, while approximately 9,200 feet are required to accommodate a 1,500-NM stage length.

TABLE C7 **RUNWAY LENGTH REQUIREMENTS**

Runway Requirement	Wet Runway Takeoff Length (Feet)	Dry Runway Takeoff Length (Feet)
<i>Existing Conditions</i>		
Runway 15/33	8,500	8,500
<i>Small Aircraft<sup>1</sup> with less than 10 seats</i>		
75% of Small Aircraft	4,540	4,540
95% of Small Aircraft	6,060	6,060
100% of Small Aircraft	6,240	6,240
<i>Small Aircraft<sup>1</sup> with more than 10 seats</i>	6,240	6,240
<i>Aircraft less than 60,000 pounds</i>		
75% of fleet/60% useful load	6,930	6,930
100% of fleet/60% useful load	9,950	9,950
75% of fleet/90% useful load	9,030	9,030
100% of fleet/90% useful load	11,430	11,430
<i>Large Aircraft greater than 60,000 pounds</i>		
500/1,000/1,500 NM stage lengths	6,770/8,040 /9,200	6,770/8,040 /9,200
Specific Air Carrier Aircraft	See Discussion Below	

**Source:** FAA Advisory Circular 150/5300-13, *Airport Design*.

Lengths based on 5,016' AMSL, 85.1° F NMT, length of haul 1,000 miles, and a maximum difference in runway centerline elevation of 43'.

1. Under 12,500 pounds.

An important factor to note when considering the generalized large aircraft runway takeoff length requirements is that the actual length necessary for a runway is a function of elevation, temperature, aircraft stage length, and whether or not the runway's pavement is dry, or wet and slippery (contaminated). As temperatures change on a daily basis, the runway length requirements change accordingly (i.e., the cooler the temperature - the shorter the runway necessary; the hotter the temperature - the longer the runway necessary).

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Perhaps the most critical aspects related to runway length requirement analysis for Fort Collins-Loveland Municipal Airport are the specific needs of the existing and likely future air carrier aircraft serving the Airport. This would include the MD-83, which presently operates regularly at the Airport.

*Existing Air Carrier Aircraft and Typical Payload Restrictions.* One factor that is not expressed in the tables above, but is critical to understanding the potential benefit of a longer runway, is the typical passenger payload restrictions that are experienced by airlines currently operating at the Airport. Airline personnel indicate that, between April 1 and October 31 (a seven-month period), the loads on the 162-seat MD-83 are restricted to a maximum of 148 passengers due to takeoff runway length imposed weight restrictions (see Allegiant Air letter in Appendix). Under current operating practices, the limit as stated above represents 4,247 departing seats that cannot be sold (14 seats, ten flights per week, seven months).

Airline personnel also report that, in consideration of a 1,000-foot extension providing a runway length of 9,500 feet, the weight restrictions on their existing Las Vegas route would likely be eliminated, except for very hot days. The limitations on other potential routes (i.e., Los Angeles, San Francisco, and Seattle) would be significantly reduced.

*Runway Length Requirement Summary.* With the information provided above as background, it can be determined that the availability of a longer takeoff runway at the Airport would be of benefit to the existing aircraft fleet utilizing the Airport. From the perspective of the existing air carrier airline, a 1,000-foot extension will provide significant benefit in consideration of existing and potential routes. If the business jet fleet is considered, a 1,000-foot extension would also be beneficial, and a 1,500-foot extension appears to provide even better results (accommodating 100% of the fleet at 60% useful load). From a long-term planning perspective, the information provided above is substantial enough to provide the impetus to investigate a detailed alternative analysis related to how a runway extension of between 1,000 feet and 1,500 feet might be implemented.

**Taxiways.** Taxiways are constructed primarily to enable the movement of aircraft between the various functional areas on the Airport and the runway system. Some taxiways are necessary simply to provide access between aircraft parking aprons and runways; whereas, other taxiways become necessary to provide more efficient and safer use of the airfield. As described earlier, the parallel taxiway system serving the main runway at the Airport does not meet the standards associated with the design aircraft. Runway 15/33, with a taxiway width

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of 50 feet, meets existing ARC C-III standards; however, for those aircraft that have a wheelbase greater than 60 feet (as does the MD-80), the standard increases to 60 feet. In addition, the need for additional exit taxiways will be studied to determine if improvements might be implemented to reduce runway occupancy times for arriving aircraft.

**Runway Protection Zones (RPZs).** The function of the RPZ is to enhance the protection of people and property on the ground beyond the runway ends. This is achieved through airport control of the RPZ areas. The RPZ is trapezoidal in shape and centered about the extended runway centerline. It begins 200 feet beyond the end of the area usable for takeoff or landing. The RPZ dimensions are functions of the type of aircraft operating at the Airport and the approach visibility minimums associated with each runway end.

In consideration of the existing instrument approach minimums and the type of aircraft each runway is designed to accommodate, the following table, entitled *RUNWAY PROTECTION ZONE DIMENSIONS*, lists existing RPZ dimensional requirements, along with the requirements for improved approach capabilities.

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TABLE C8 **RUNWAY PROTECTION ZONE DIMENSIONS**

Item	Width at Runway End (feet)	Length (feet)	Width at Outer End (feet)	Airport Controls Entire RPZ
Existing RPZ Dimensional Requirements:				
Runway 15	500	1,700	1,010	no
Runway 33	1,000	2,500	1,750	no
Runway 6	250	1,000	450	yes
Runway 24	250	1,000	450	no
Required RPZ Dimensions for Various Visibility Minimums:				
Visual and Not Lower Than 1 Mile, Small Aircraft Only	250	1,000	450	---
Visual and Not Lower Than 1 Mile, Approach Categories A & B	500	1,000	700	---
Visual and Not Lower Than 1 Mile, Approach Categories C & D	500	1,700	1,010	---
Not Lower Than ¾ Mile, All Aircraft	1,000	1,700	1,510	---
Lower Than ¾ Mile, All Aircraft	1,000	2,500	1,750	---

**Source:** FAA Advisory Circular 150/5300-13, *Airport Design*.

--- Data not available.

**Electronic Landing Aids.** Electronic landing aids, including instrument approach capabilities and associated equipment, airport lighting, and weather/airspace services, were detailed in the *Inventory* chapter of this document. The Airport is currently equipped with an ILS instrument approach to Runway 33 and VOR/GPS instrument approaches serving Runway 15 and Runway 33.

Within the near future, Global Positioning System (GPS) approaches are expected to be the FAA's standard approach technology. With GPS, the cost of establishing improved instrument approaches should be significantly reduced. Because of the expected continued use of sophisticated business and corporate aircraft at Fort Collins-Loveland Municipal Airport, the ability to implement improved instrument approaches is analyzed in the next chapter.

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**Visual Landing Aids (Lights).** Presently, the primary runway, Runway 15/33, has a high intensity runway lighting system (HIRL) and the taxiway system is equipped with a medium intensity edge lighting system (MITL). Runway 33 has a medium intensity approach lighting system with runway alignment indicator lights (MALSR), as well as Precision Approach Path Indicator (PAPI) lights on the left side of the runway. Runway 15 has Visual Approach Slope Indicator (VASI) lights on the left side of the runway. Runway 6/24 has full-length runway edge reflector lights. In conjunction with the examination of improved instrument approaches described above, improved airport lighting will also need to be evaluated. The type of airport lighting will be dependent on the type of instrument approach capabilities and will be examined in the next chapter.

### Landside Facilities

Landside facilities are those facilities that are supported by the airside facilities, but are not actually part of the aircraft operating surfaces. These consist of such facilities as passenger terminal facilities, aprons, access roads, hangars, and support facilities. Following an analysis of these existing facilities, current deficiencies can be noted in terms of accommodating both existing and future needs.

**Passenger Terminal Facilities.** Potential sites for the construction of a permanent passenger terminal facility will be identified. Currently, the passenger terminal facility consists partially of a temporary portable structure. As existing commercial service increases, the need for a larger, permanent facility will be required.

Additional information with regard to potential passenger terminal facility needs has been included at the end of this chapter.

**General Aviation Aircraft Storage.** General aviation aircraft that are based at Fort Collins-Loveland Municipal Airport are stored on the east side of the Airport, in the area south of the crosswind runway. Over the course of the 20-year planning period, the number of based aircraft at the Airport is forecast to increase significantly (increasing from the existing number of 245 to approximately 340 by the year 2023). In addition, there is a known existing demand for additional indoor aircraft storage facilities. The trend of increasing general aviation aircraft size also plays a role in defining future development needs.

Perhaps the most important influence contributing the need for a comprehensive analysis of the future development needs for general aviation is the configuration of the existing

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facilities in consideration of space currently available for development. Following are several issues that will be considered in the development of a plan for the configuration of future general aviation facilities at Fort Collins-Loveland Municipal Airport:

- The existing area can accommodate additional development with expansion to the east and to the south; however, the northern portion of the existing development area will be reserved for expanded passenger terminal facilities.
- General aviation demand during the next 20 years will likely be larger than can be accommodated in the area currently available.
- The areas on either side of the crosswind runway can accommodate general aviation facilities. Additional general aviation facility development areas can be captured with land acquisition on the east side of the existing development area. Programming the integration of these parcels into the long-term development plan is key component of the overall development recommendation of this Airport Master Plan Update.

It can be noted that the issues above are both “qualitative” and “quantitative”, but each is an important facility development consideration and, thus, it is important to mention them in this facility requirement review.

*Tie-Down Storage Requirements/Based Aircraft.* Aircraft tie-downs are provided for those aircraft that do not require, or do not desire to pay the cost for, hangar storage. Because of the great value of even small, unsophisticated general aviation aircraft, most aircraft owners prefer some type of indoor storage. There will continue to be some demand for based aircraft tie-down areas; however, it is anticipated that the Airport has enough area on existing aprons to accommodate future demand.

*Tie-Down Storage Requirements/Itinerant Aircraft.* In addition to the needs of the based aircraft tie-down areas addressed in the preceding section, transient aircraft also require apron parking areas at Fort Collins-Loveland Municipal Airport. This storage is provided in the form of transient aircraft tie-down space. In calculating the area requirements for these tie-downs, an area of 400 square yards per aircraft is used. As the plan for future general aviation development is formulated, adequate space will be provided for transient aircraft parking areas, especially in those areas that cater to transient aircraft needs (i.e., FBO services).

*Hangars.* The development plan for future general aviation hangars on the east side of the Airport will focus on identifying potential parcels, in consideration of the ability to provide

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roadway and taxiway access in a manner that is efficient and secure. The number of based aircraft at the Airport is forecast to increase by almost 100 during the next 20 years; therefore, the proposed plan will accommodate indoor storage space for a minimum of 100 additional aircraft.

**Air Cargo.** At this time, air cargo is not a significant component of the activity at Fort Collins-Loveland Municipal Airport. That which does occur is not scheduled and is provided by contract carriers, operating general aviation aircraft that utilized the general aviation ramp area. It is anticipated that the demand for air cargo activity will increase nationally, regionally, and locally during the next two decades and it is recommended that future development areas be identified and reserved along the flight line to accommodate cargo transfer/handling facilities.

**Support Facility Requirements.** In addition to the facilities described above, there are several airport support facilities that have quantifiable requirements and that are vital to the efficient and safe operation of the Airport.

*Air Traffic Control Tower (ATCT).* There is no existing ATCT facility at the Airport. As a part of this Master Plan Update, potential sites for the construction of an ATCT will be identified. The siting recommendations for an ATCT will be based on the airport's ultimate runway/taxiway configuration. ATCT line-of-sight and viewing angle concerns will be important feasibility determinants.

*Aircraft Rescue and Fire Fighting (ARFF) Facility.* The Aircraft Rescue and Fire Fighting (ARFF) facility serving Fort Collins-Loveland Municipal Airport is located east of the FBO/Terminal complex, on the south side of Earhart Road. According to Code of Federal Regulations (CFR) Part 139.317, ARFF equipment and staff requirements are based upon the length of the largest air carrier aircraft that serves the Airport with an average of five (5) or more daily departures. The following table presents the ARFF Index, length criteria, and representative air carrier aircraft.

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TABLE C9 REPRESENTATIVE AIR CARRIER AIRCRAFT LENGTHS AND ARFF INDEX

ARFF Index	Length Criteria	Representative Aircraft
A	< 90 Feet	ATR-72, CRJ-200
B	90 Feet < 126 Feet	B-737, A-320, Fokker 100, ERJ-145, Avro RJ-85
C	126 Feet < 159 Feet	B-727, B-757, MD-80
D	159 Feet < 200 Feet	B-767, DC-10
E	> 200 Feet	B-747, MD-11

Source: CFR Part 139.317.

The Airport currently maintains an ARFF Index B classification, which adequately serves the existing airline operational schedule; however, if the number of airline operations using MD-83-size aircraft increase in the future, this classification may be increased. The MD-83 is actually an ARFF Index C aircraft; however, because the Airport has less than five (5) daily operations with aircraft of this length, the FAA allows a one-category step down in ARFF Index requirements.

*Fuel Storage Facility.* The airport's fuel storage facility is located adjacent to the main aircraft parking apron, north of the FBO facility, south of passenger terminal. The site is provided with easy access for delivery trucks from Earhart Road, and has good access for aircraft fueling trucks to the airfield via a gated entrance leading to the aircraft parking apron. The size of the existing site provides the capacity to accommodate expansion needs that can reasonably be anticipated during the next 20 years; however, development considerations related to the passenger terminal and general aviation, along with landside access and parking, will likely dictate the need to relocate the fuel storage tanks.

*Service Roads.* An additional important consideration at Fort Collins-Loveland Municipal Airport is programming for the appropriate location of a service road system that will accommodate the need for maintenance, emergency, security, and fueling vehicles to access all areas on airport property without the need to drive on public roads or the taxiway/runway surfaces. An adequate service road system is a great asset in minimizing the potential for runway incursions by ground vehicles. A comprehensive perimeter/service road proposal is programmed as part of the development plan proposal in later chapters.

### Summary

The information provided in this chapter, along with the information provided in an additional section, entitled *Passenger Terminal Facility Requirements*, provides the basis for understanding what facility improvements at the Airport might help in the effort to efficiently and safely accommodate future demands. Following are the major improvement considerations that are indicated in the *Facility Requirements* chapter:

- **Using FAA criteria, the main runway alignment (Runway 15/33) provides adequate crosswind coverage for even small aircraft, without consideration to the crosswind runway (Runway 6/24). Consideration will be given to the benefits and costs of continuing to operate Runway 6/24 as a runway or changing it to be used exclusively as a taxiway.**
- **The capacity of the airport's existing runway system is adequate to accommodate forecast aircraft operational through the end of the 20-year planning period; however, it may be within 80% of the activity level where unacceptable delay can be anticipated. Strategies to increase the airport's capacity are explored in later sections of this document. The only way to significantly increase the airport's capacity is with the addition of a parallel runway.**
- **If commercial passenger service activity increases at the Airport, the on-airport entrance road will need to be improved. Regional access roadway issues are also important considerations (i.e., the routing of passengers from the terminal parking area to the Interstate), and airport access should be coordinated with regional mass transit efforts (i.e., rail, bus, etc.).**
- **The extension of the main runway will be important to appropriately accommodate commercial passenger service aircraft and business jets.**
- **The precision instrument landing approach from the south (to Runway 33) will be maintained, and improved instrument approach capabilities from the north (to Runway 15) will be considered in the formulation of the development plan for the Airport.**
- **The next step in the process is to formulate facility requirements for the passenger terminal in consideration of forecast demand.**
- **Additional area will be needed to accommodate future general aviation storage facilities, maintenance, and FBO facilities. The areas on either side of the crosswind runway can accommodate general aviation facilities. Additional general aviation facility development area can be captured with land acquisition on the east side of the existing development area. Programming the integration of these parcels into the long-term development plan is a key component of the overall development recommendation of this Airport Master Plan Update.**

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- **Land acquisitions for airport facility development and for land use compatibility are also being analyzed and will be discussed during meetings with the Study Committee that will focus on preliminary development alternatives and facility needs.**

It is important to note that the recommendations in this Master Plan Update are provided to best understand what facilities improvements might be needed at the Airport, and where those facilities might best be placed. In other words, the Master Plan Update provides recommendations on how various parcels of the Airport might best be developed, in consideration of potential demand and community/environmental influences. One of the basic assumptions for a master plan, for a complex facility like an airport, is that if a future improvement is identified on the recommended development plan; it will only be built if there is actual demand, if the project is financially feasible, and if environment impacts are insignificant.

In summary, the facility needs information provided in this chapter are used to develop alternatives for the configuration of airport facilities in the future.

### **Passenger Terminal Facilities Planning Criteria**

Terminal facility requirements for an airport are a function of the specific and unique characteristics of that airport. These include the design levels of passenger and aircraft activity; the number and type of aircraft serving the airport; the operating requirements of the airlines; and, local factors such as the proportions of leisure vs. business travelers, locally originating passengers, etc.

Unlike airfield facilities, the capacity of each element of a terminal facility can vary depending on the level of crowding and/or processing time, which is considered acceptable. A passenger traveling on business may be less tolerant of congestion or delay than a passenger traveling for pleasure. In many cases, the degree of acceptability itself may also vary, depending on the configuration of the terminal space and the level of amenity provided. Thus, the “capacity” of a terminal can vary significantly.

The size of the terminal building can vary greatly based upon the method of operation of the terminal. For the initial type of activity at Fort Collins-Loveland Municipal Airport, it is assumed that there will be only one commercial operation at a time. That is to say that there would probably be an arrival of an aircraft, followed by a departure of the same aircraft

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within a 30 to 60 minute window. If two operations were to be concurrent, the size of the terminal building would vary significantly. Secondly, the time prior to departure that those passengers are allowed to process through security will affect the size of the holdroom, public seating areas prior to security, and the need and size of restrooms before and after security. The forecasts of aviation activity allow for the inclusion of a second carrier in the out years, and this consideration has been a factor in programming for facilities that could be affected by having a second airline operating at the airport.

The approach taken in developing terminal facilities requirements for Fort Collins-Loveland Municipal Airport was based upon the projected peak hour passenger loads. Allegiant Air currently operates MD-83 aircraft with a seating capacity of 162 passengers and operates with a Boarding Load Factor (BLF) of 71%, increasing to 74% over the forecast period. This would result in a peak hour passenger load of 119 passengers (162 multiplied by 74%).

The following is a description of the major functional areas of the terminal building and an approximate size range for each function.

### Airline Ticket Counter (ATO Counter)

ATO positions are typically based on the number of peak hour enplaning passengers, as well as the time distribution of passengers arriving at the terminal. Typically, the amount of agents required to check-in a single narrow body aircraft is in the four to five person range. It is recommended that a minimum of five counters be provided in the initial build out.

Most domestic carriers can use a 6-foot double counter, plus a shared 30-foot bag well for an average of 4.25 feet per agent. There are also breaks in the ATO counter to allow personnel access to individual ATO office areas and end counters, typically without bag wells. This increases the average ATO counter length, for planning, to approximately 5.5 linear feet per position. This results in a need for approximately 25 to 30 feet of ticket counter length. Circulation space is required behind the ticket counter areas; the industry standard dimension is typically 10 feet from face of counter to back wall. This results in a need for approximately 300 square feet of space for check-in counters.

If a second carrier operated at the Airport and shared the ticket counters, there would be no change in size; though, if they required their own counters, the amount of area required would double.

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### Airline Offices

Airline Offices include the ATO offices and other airline administrative spaces. The ATO offices are usually located immediately behind, or adjacent to, the ATO counter to provide support functions for the ticket agents. In most airports, these offices typically are 25 to 30 feet deep along the length of the counter. For the operations of Allegiant Air, it is assumed that the office space requirements would be minimal. For the purpose of this master plan update, it is assumed that a 12-foot space behind the check-in counters would be sufficient. The amount of offices and location of the ATO, operations areas, etc. is dependent on individual airline requirements, preferences, and space availability. It is assumed that there will be a need for approximately 300 to 500 square feet of space.

If a second carrier operated at the Airport, the amount of area required would double.

### Baggage Claim Area

For a typical narrow body aircraft (e.g., the MD-83) and the peak-hour passenger loads assumed, a typical flat-plate baggage claim device providing approximately 140 to 180 linear feet of claim area would be required. The baggage claim device has a series of zones surrounding it that makes up the required area. In most cases, the first three feet of the area in front of the baggage claim device are considered active claim zone; the next five feet are considered the passive claim zone. The next 10 feet are considered to be circulation space around the claim device. Given a basic configuration for a baggage claim device, the minimum typical dimensions for the baggage claim area would be roughly 40 feet by 50 feet. This results in a need for approximately 2,000 to 3,000 square feet of baggage area per device.

A second carrier would not affect the amount of space required for baggage claim.

### Baggage Claim Off-Load

These areas include the portion of a flat-plate, direct-feed claim unit (upon which the bags are placed, or the feed conveyor for a remote-fed claim unit), the adjacent baggage train lane and work area, and a by-pass lane for baggage trains. The program area would provide adequate space for the off-loading and by-pass lanes for a baggage train of two to three carts. This area is typically outside the exterior area of the terminal building. If this area is required to be enclosed, it would add additional area to the building total.

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A second carrier would not affect the amount of space required for baggage claim off-load.

### Baggage Make-Up

Baggage make-up includes the make-up units (if provided), the cart loading areas, and baggage tug/cart (baggage train) maneuvering lanes. Typically, this area is directly behind the ticket counters and ATOs, and is approximately 30 to 40 feet deep. This results in a need for approximately 900 to 1,200 square feet of baggage make-up area.

### Baggage Service Offices

Baggage service offices are typically required only by airlines with sufficient activity to warrant staffing. Other airlines will use baggage lock-up areas to store late or unclaimed baggage. At Fort Collins-Loveland Municipal Airport, it is assumed that no such area would be required at this time, and any misplaced baggage could be accommodated within the airlines office space.

### Concessions

Given the type of passenger activity at the Airport, and the duration of the flights, the existing terminal concession services are minimal in nature. This results in a need for approximately 200 square feet of concession area. If concessions in the secure holding area prove to be sustainable and financially feasible, additional square footage will be needed (amount of space in the secure hold area will be dependent on the type of services offered, which could range from vending machines to a separate seating area for food and cocktails).

### Holdroom Area

Passenger holdroom area requirements are determined by taking the peak hour passenger loads and multiplying against industry standards for space requirements. For a typical airport, a narrow body aircraft (e.g., the MD-83) will require 1,800 to 2,000 square feet of area. This assumption takes into consideration the factor that a number of the passengers will be either in the concession areas or in the restrooms at any one time. The type of concession services within the holding area, which proves to be sustainable, may increase the size of the required facility; therefore, it is recommend that a slightly larger than normal holdroom area be developed. This results in a need for approximately 2,400 square feet of holdroom area.

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### Rental Car Counters

Rental car facilities in a passenger terminal include the counter, along with an office area behind the counter, and 10 feet of queuing area in front of the counter. The dimension for the total area should be approximately 10 feet by 30 feet (approximately 300 square feet). For space programming purposes, each rental car company servicing the Airport with counter space in the terminal should be allocated approximately 300 square feet.

### Ticket Lobby

The ticket lobby includes ticket counter (ATO) queuing area and cross circulation. The ticket lobby should provide enough area to accommodate the expected traffic load over an expected arrival time at the Airport starting 90 minutes before departure. The ticket lobby should be a minimum of 30 to 35 feet deep along the length of the ticket counters.

If Electronic Trace Detection (ETD) activity occurs in the ticket lobby prior to the check-in process, an additional 10-foot zone is recommended to be added to the ticket lobby depth to accommodate the ETD equipment and some additional passenger queuing in front of the ticket counter. This results in a need for an approximate 1,000 to 1,300 square foot area.

If a second carrier could share the ticket counter space, this area would not be affected; if they required their own ticket counters, this would increase the area by 60 to 80%.

### Public Seating

Public seating areas include general waiting areas near the ticket lobby, baggage claim areas, and concessions. These are typically in non-secure areas of the terminal, but a large proportion of the area should be in close proximity to concessions, regardless of concession location.

Most airports provide seating for 15% of the peak hour enplaned passengers and their visitors, plus visitors for the deplaning passengers at 15 square feet per person. This results in a need for approximately 300 to 400 square feet.

### Restrooms

Dependent on the number of security screening checkpoints, and the time before departure that passengers are allowed to proceed through security, there will likely continue to be a need for restrooms in the secure holding area. As the line increases at security screening,

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passengers on the secure side of the terminal are often reluctant to exit security to use the restroom. This also influences the real throughput rate of the security-screening checkpoint. It would be our recommendation to continue to provide restrooms pre- and post- security. Restrooms should have at least as many toilets for women as toilets and/or urinals for men. In some jurisdictions, new building codes are mandating 25 to 50% more fixtures for women than for men. These ratios are appropriate for airports when the passenger-gender mix approaches 50% female.

In addition to handicapped access toilets, sinks and urinals, it is recommended in transportation facilities such as airports that family/companion care restrooms be provided. These unisex restrooms allow an elderly or disabled person to be accompanied into a restroom by another person who assists the disabled person. Overall, this results in a need for approximately 600 to 1,000 square feet.

### Security Screening Checkpoint (SSCP)

With the changes in security inspection procedures, processing rates have been reduced at most airports. Even if not fully staffed, the second lane is needed in the event of equipment failure.

The TSA has mandated a new Security Screening Checkpoint (SSCP) single lane configuration, which is approximately 15 to 18 feet wide and 40 feet long. To this inspection area, a 15-foot deep queuing area has been added. Thus, the overall SSCP has an 18-foot by 55-foot footprint. This results in a need for approximately 1,000 square feet.

### General Public Circulation

Other public circulation includes all of the corridors, vertical circulation elements, and other architectural spaces that tie the public functional elements of the terminal together. The program area is typically based on 20% of these functional areas. The areas include baggage claim, baggage service offices, holdrooms, concessions, and other public areas. The percentage is a first approximation and will vary with the terminal configuration. The split between secure and non-secure (public) circulation is also a function of the terminal concept. Dependent of terminal configuration, this results in a need for approximately 1,200 to 1,800 square feet.

The following areas are described, but do not have specific areas assigned to them.

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### Airport Administration

There has now been an allowance made for Airport Administration space within the terminal building. If it were to be included, the amount of area would be determined based upon the size of the staff and their needs.

### Airline Operations

Operations include all of the apron level support spaces for aircraft servicing, as well as aircraft crew-related support spaces. The demand for operations areas is a function of the size and types of aircraft being operated and individual airline operating policies. At this point, because needs can vary significantly on how much space may be required for this function, airline operations space within the terminal building has not been programmed.

### Baggage Service Offices

Baggage service offices are typically required only by airlines with sufficient activity to warrant staffing. Other airlines will use baggage lock-up areas to store late or unclaimed baggage. At Fort Collins-Loveland Municipal Airport, it is assumed that no such area would be required at this time and any misplaced baggage could be accommodated within the airlines office space.

### Checked Baggage Screening

Because of the Aviation and Transportation Security Act, all checked baggage would be subject to screening for explosives. In order to meet the statutory deadline of 12/31/02, the TSA has relied on ETD (explosive trace detection) units located in terminal lobbies. While low in capital cost, this type of equipment has a slow processing rate and is manpower intensive. For the long term, the industry consensus is that for all but the smallest airports, some type of higher speed in-line equipment will be necessary. Many of the current in-line explosive detection systems (EDS) cannot handle oversized bags such as skis and golf clubs.

Whether Fort Collins-Loveland Municipal Airport will eventually have an in-line installation is unknown at this time. For planning purposes, it has been assumed that an ETD-based lobby system will be used for the near future. To accommodate this, a ten-foot deep baggage inspection zone has been added to the ticket lobby area (see *Ticket Lobby* section below). If in-line equipment is integrated into the baggage make-up system, an area for one CTX-5500 sized EDS unit plus the necessary feed and take-away conveyors would be needed. Any ETD or hand searching of baggage would also be assumed to occur in this area.

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### Transportation Security Administration

An unknown at this time is the amount and location of support space to be requested by TSA. This could include offices and employee lockers other than the search room and supervisor's office located at the passenger-screening checkpoint. As far as we know, the TSA has not issued any formal requests for Fort Collins-Loveland Municipal Airport, and has not published any national guidelines or standards for support space.

### Mechanical/Electrical/Utility

Utilities areas typically make up approximately 10 to 12% of the total enclosed functional areas of the terminal. If the mechanical equipment is located on the exterior or on the roof of the building, this percentage can be reduced.

### Structure/Non-Net Areas

Non-net areas are added to the recommended facility requirements to provide a better estimate of the total gross building area. Typically this is 3 to 5% of the enclosed building area.

### Automobile Parking

The existing terminal parking area can accommodate approximately 362 automobiles. FAA planning guidelines indicate that for non-hub airports, one parking space should be provided for each 500 to 700 annual enplaned passengers. This planning guideline indicates that the current passenger parking area has adequate capacity to accommodate demand throughout the forecast planning period. This planning guideline does not, however, always adequately identify specific local needs. Local observations indicate that the terminal parking area is often more than ½ full during peak periods. Given this observation, and the relationship to current enplanement quantities, it is recommended that an area capable of accommodating approximately 600 parked automobiles be reserved to serve the passenger terminal.

### **Conclusion – Passenger Terminal Facility Planning**

Given the programmable facility needs described above, the reserve for a basic terminal building at Fort Collins-Loveland Municipal Airport should probably be in the 10,000 to 12,000 square foot range. The inclusion of a second carrier that could share the ticket counter facilities would not add significantly to the size of the terminal building. If the second carrier would require his or her own ticket counter/operations space, the increase in space would probably be in the 1,500 to 3,000 square foot range. The anticipated size is independent upon certain functions, which may or may not be included. These functions include significant airline operations and office space, TSA office/employee break area requirements, and Airport Administration Space. These areas would be in addition to the listed areas. In contrast, in the design of a new building, significant consideration should be given to long-term flexibility of the facility. Minimizing the number of interior columns and exterior solid structural walls will improve the ability to make future modifications.

For Fort Collins-Loveland Municipal Airport, it will be critical for the passenger terminal building to be conceived as a facility that is adaptive and multi-purpose in nature, to meet other important space demands including: public and private meeting spaces, airport administrative offices, large private aircraft charter operators, potential general aviation terminal and passenger security screening requirements, and miscellaneous FBO needs, to name a few. Flexibility in space planning should be key consideration to the development of this building.

## D Concepts, Alternatives, and Development Plan

*The purpose of this chapter is to present the development alternatives and development recommendations for Fort Collins-Loveland Municipal Airport in terms of concepts and reasoning. This chapter provides a description of the various factors and influences, which will form the basis for the airport's long-term development program.*

*In concert with the role of the Airport and the community input received from the Study Committee and during public meetings, some basic assumptions have been established, which are intended to direct the development of the Airport.*

**Assumption One.** The Airport will be developed and operated in a manner that is consistent with local ordinances and codes, federal and state statutes, federal grant assurances, and Federal Aviation Administration (FAA) regulations.

**Assumption Two.** This assumption recognizes the role of the Airport. The Airport will continue to serve as a facility that accommodates general aviation activity, along with commercial passenger service activity and a small amount of military activity.

**Assumption Three.** This assumption relates to the size and type of aircraft that utilize the Airport and the resulting setback and safety criteria used as the basis for the layout of airport facilities.

**Runway 15/33.** It has been determined that the "Design Aircraft" for this runway is the MD-83 (a narrow body commercial passenger jet aircraft with a maximum passenger seating capacity of 162). The MD-83 is currently utilized by Allegiant Air to provide scheduled passenger service at the Airport. The MD-83 has an approach speed of 135

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knots and a wingspan of 107.8 feet. This indicates that for Runway 15/33, the ARC C/D-III criteria will continue to be used to determine appropriate design criteria. The C-III designation is also appropriate because the Airport is heavily utilized by the business jet fleet, many of which have “C” or “D” approach speed and the new, larger business jets (i.e., the Gulfstream G-V, Canadair Global Express, and the Boeing Business Jet) which have category III wingspans.

**Runway 6/24.** Only smaller general aviation aircraft (under 12,500 pounds) use this runway. The “Design Aircraft” fleet for this runway is made up of the single engine piston-driven general aviation aircraft (e.g., the Beech Bonanza, Cessna 172, etc.). The approach speeds for these aircraft are less than 121 knots with wingspans of less than 49 feet. This indicates that this runway should be designed using ARC B-I (small aircraft only) dimensional criteria.

**Assumption Four.** The fourth assumption relates to the need for the Airport to accommodate aircraft operations with great reliability and safety. This indicates that the airport’s runway system should be developed with instrument approach guidance capabilities and adequate runway length to accommodate the forecast operations as safely as possible under most weather conditions.

**Assumption Five.** Because landside development area at any airport is typically always at a premium, the fifth assumption is that the plan for future airport development should strive to make most efficient use of the available area for aviation-related activities, including general aviation facilities and passenger terminal facilities. Aviation use areas should be developed to be compatible with surrounding land uses.

**Assumption Six.** The sixth assumption focuses on the relationship of the Airport to off-airport land uses and the compatible and complimentary development of each. To the maximum extent possible, future facilities will be designed to enhance the compatibility of the operation of the Airport with the environs.

**Assumption Seven.** A crosswind runway will be maintained at the Airport. Improvements to a crosswind runway will be identified in the capital improvement project listing section of the document; however, it is realized that the funding for crosswind runway improvements is a low priority with the FAA for Airport Improvement Program funds. The runway will continue to serve and be improved as a taxiway.

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### Goals for Development

Accompanying these assumptions are several goals, which have been established for purposes of directing the master plan and establishing continuity in the future for airport development. These goals take into account several categorical considerations relating to the needs of the Airport both in the short-term and long-term, including safety, noise, capital improvements, land use compatibility, financial and economic conditions, public interest and investment, and community recognition and awareness.

These goals are preliminary and are intended to stimulate discussion. After receiving input from the public and local government representatives, the goals will be used to guide the formulation of recommendations for this Master Plan Update (MPU):

- **Provide effective direction for the future development of Fort Collins-Loveland Municipal Airport through the preparation of a rational, reasonable, and implementable plan.**
- **The Cities of Fort Collins and Loveland are committed to the development of a safe, reliable, and high quality airport. “High quality” in this instance is intended to prescribe the *right sizing* of proposed development to effectively meet the needs of the community and its visitors in a manner that is in concert with surrounding development, while also addressing environmental concerns.**
- **Analyze and recommend the operational requirements of the existing commercial passenger service aircraft fleet, and investigate the potential benefits of a runway extension.**
- **The instrument approach capabilities associated with Runway 15/33 should be maximized, including consideration of new and emerging navigational aid technology such as a Wide Area Augmentation System (WAAS).**
- **For operational safety and efficiency benefits, potential sites for the development of an Air Traffic Control Tower (ATCT) should be identified as a component of this MPU.**
- **Plan and develop the Airport to be environmentally compatible with the community, and minimize environmental impacts on both airport property and non-airport property that are affected or potentially affected by airport operations.**
- **Promote and capitalize on opportunities that will allow the Airport to enhance its financial self-sufficiency to the maximum extent possible, consistent with the airport’s inherent aviation purpose.**

### Airside Development Concepts and Alternatives

#### Introduction

Because all other airport functions relate to and revolve around the basic runway/ taxiway layout, airside development alternatives must first be carefully examined and evaluated. Specific airside considerations for this Airport include taxiway layout, runway length, and instrument approach capabilities. In the effort to identify the “best” layout of future facilities at the Airport, three (3) airside development alternative components have been analyzed. These components are:

- **The placement of a potential runway extension for the main runway.**
- **The configuration of the crosswind runway.**
- **The placement of a future parallel runway.**

Following a review of the airside development alternatives, recommendations for landside development considerations are presented. This chapter culminates with a presentation of an overall long-term development concept for the layout of future airport facilities.

#### Main Runway Development Considerations and Alternatives

##### **ALTERNATIVE ONE - Maintain the Existing Runway Configuration**

- **The airport’s main runway (Runway 15/33) will be maintained at its existing length of 8,500 feet, and the crosswind runway (Runway 6/24) will be maintained at its existing length of 2,273 feet.**
- **To accommodate the FAA’s design criteria for the critical aircraft using the main runway (Allegiant Air’s MD-83), Runway 15/33 will be programmed to be increased from 100 feet wide to 150 feet wide. The FAA’s criterion for the minimum width of a runway serving only small aircraft (i.e., the crosswind runway) is 60 feet. The existing width of the crosswind runway is 40 feet and will be programmed for a width of 60 feet in the future.**
- **Airfield pavements, runways, taxiways, and aircraft parking ramps are to be strengthened to accommodate the needs of the current aircraft fleet.**
- **The parallel taxiway on the east side of Runway 15/33 will be maintained and will be widened from 50 feet to 60 feet.**
- **Runway 6/24 will continue to be maintained and utilized as a crosswind runway for the smaller general aviation aircraft. It will also continue to be utilized as a taxiway serving the hangar development area east of airport property.**

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- **The precision instrument approach capabilities to the south end of the runway (Runway 33) will be maintained with minimums of 200 feet AGL (above ground level) ceiling and ½ mile visibility. This Instrument Landing System (ILS) approach provides both horizontal and vertical guidance to pilots landing on Runway 33. Presently, the VOR and GPS non-precision instrument approach capabilities associated with the north end of the runway (Runway 15) are limited to a cloud ceiling of approximately 400 feet AGL and 1 mile visibility minimum non-precision approaches. A non-precision approach provides only horizontal guidance to pilots. The potential to improve the approach capabilities to Runway 15 will be explored.**

The primary on-ground physical feature associated with the improved approach is the increased size of the Runway Protection Zone (RPZ). The options for the RPZs for Runway 15 associated with an improved approach are indicated on the following illustration. If possible, the area within the RPZ should be owned by the Airport and it should remain clear of development, if possible. Specifically, residential development and places of public gathering should be excluded from the RPZ.

From a runway development standpoint, this alternative represents a do-nothing alternative.

### ***Positive Qualities of Alternative One***

- Minimizes new construction and capital improvement expenses.
- Minimizes need to control additional land. The only additional land that is required with this alternative is associated with the main runway's north Runway Protection Zone.

### ***Negative Qualities of Alternative One***

- Does not provide for additional runway length needed by Allegiant Air (see letter in Appendix), various charter aircraft, and some of the large business jet aircraft to operate consistently with a full load of passengers, fuel, and luggage.

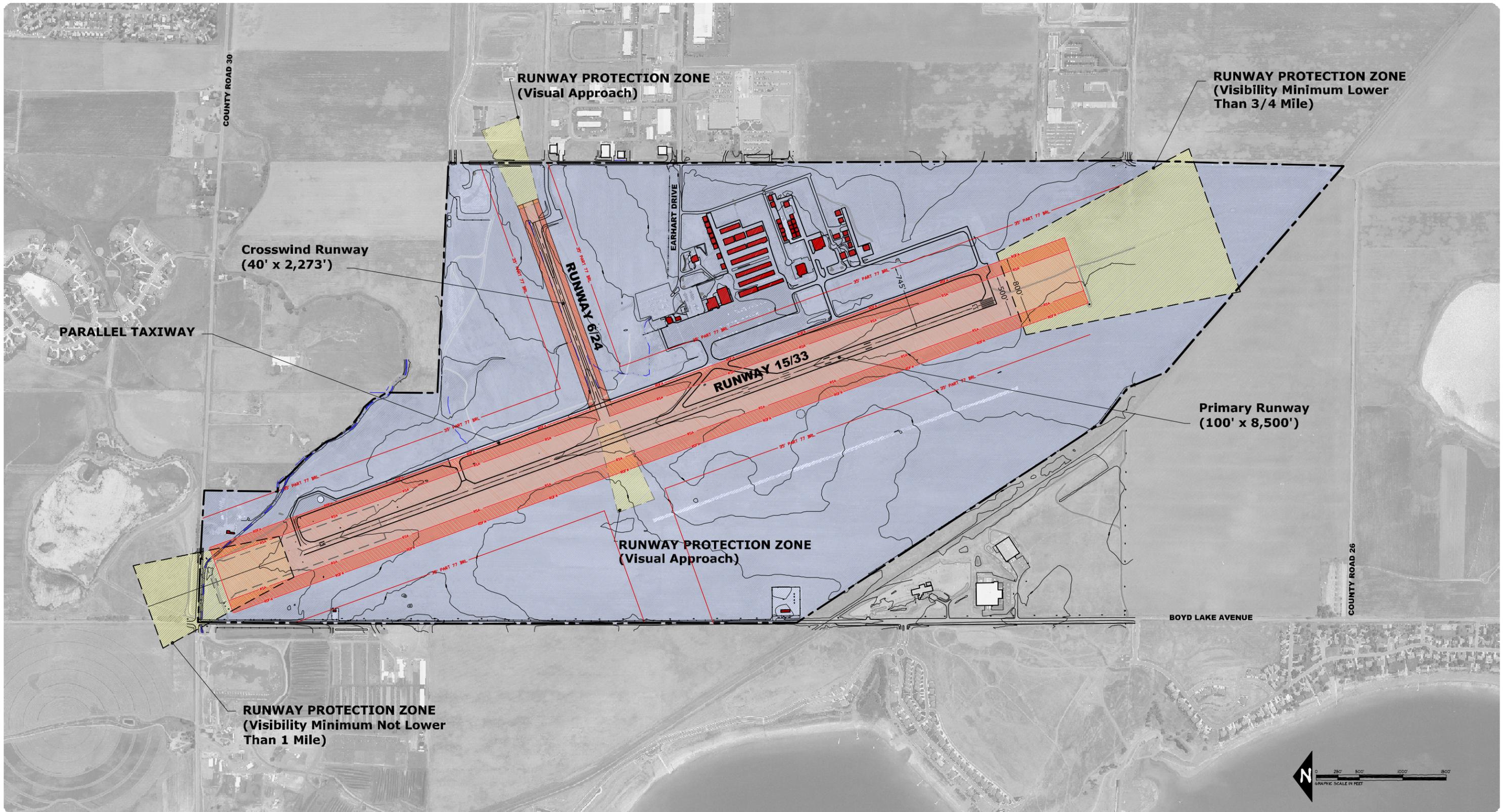


Figure D1 **Alternative One: Maintain the Existing Runway Configuration**

**Note: Airfield Pavements (Runways, Taxiways, and Aprons) To Be Strengthened**

- Runway Protection Zone
- Runway Safety Area
- Runway Object Free Area
- Building Restriction Line

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### **ALTERNATIVE TWO - Extend Runway 15/33 1,000 Feet to the South**

As with Alternative One, this alternative provides recommendations for increased width and pavement strength for both runways, the increased width of the parallel taxiway serving Runway 15/33, and the need to investigate the potential to improve the instrument approach capabilities to the north end of the runway.

- **The airport's main runway will be increased in length to 9,500 feet with a 1,000-foot extension to the south.**

#### **Positive Qualities of Alternative Two**

- Provides the runway length necessary for the existing airline aircraft and others (charters and large corporate aircraft) to operate without significant weight penalties.

#### **Negative Qualities of Alternative Two**

- The south RPZ would be moved 1,000 feet to the south, restricting land uses in those areas of the RPZ that are off airport property.

#### **Major Cost Considerations for Alternative Two**

- Construction of 1,000-foot extension of runway, along with associated parallel taxiway.
- To maintain FAA line-of-sight requirements, the extended runway end will be higher in elevation than the existing runway end. The new runway end will be approximately eight (8) feet higher than existing grade.
- Relocate the existing Approach Lighting System and the existing Glide Slope antennae (the relocation of the Glide Slope antenna will be required whether or not the runway is extended to the south (its existing location is too close to the runway to meet current FAA criteria).

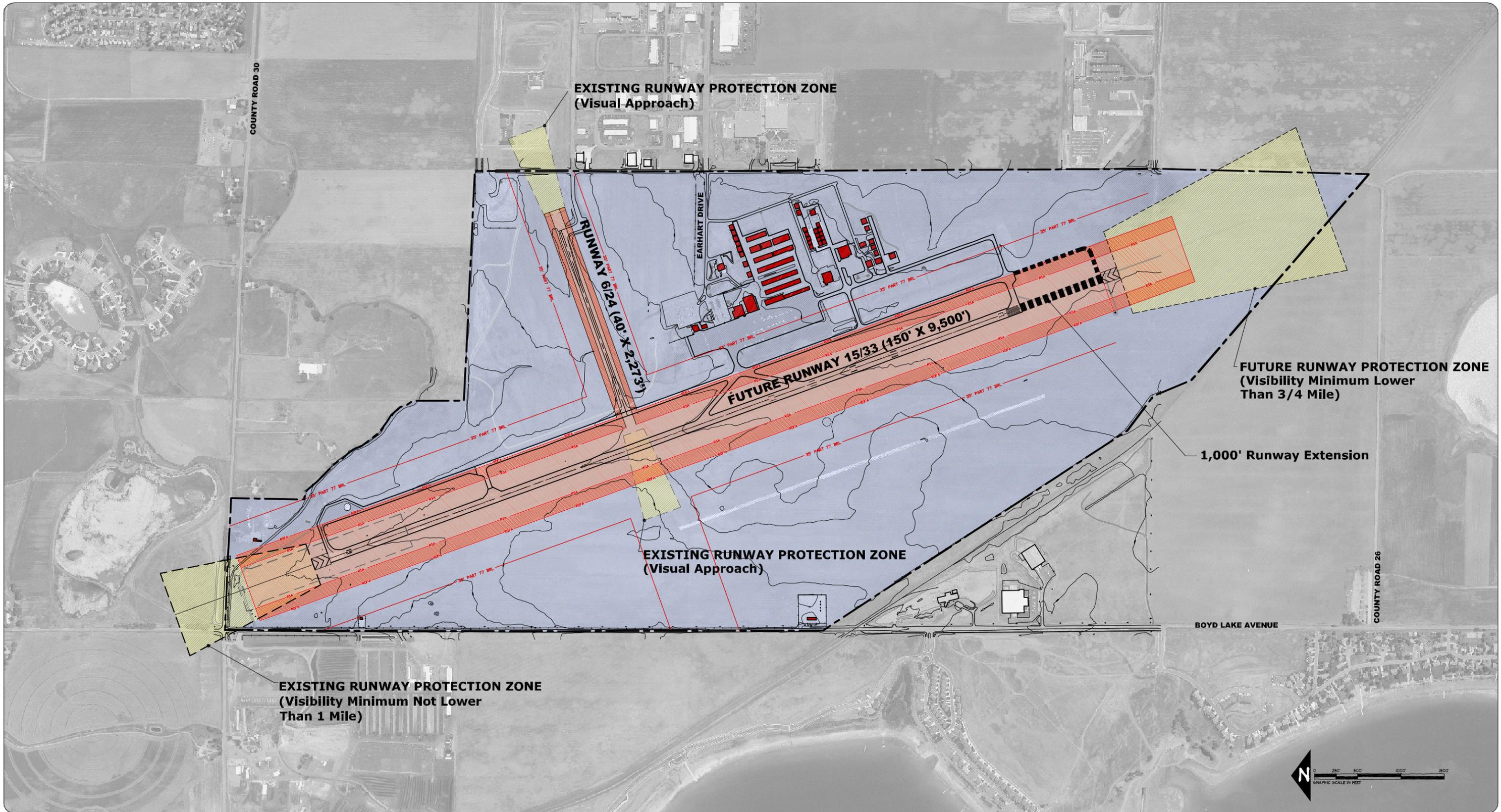


Figure D2 **Alternative Two: Extend Runway 15/33 1,000' to the South**

DECLARED DISTANCES				
	TORA FUTURE	TODA FUTURE	ASDA FUTURE	LDA FUTURE
RW 15	9,500'	9,500'	9,500'	9,500'
RW 33	9,500'	9,500'	9,500'	9,500'

- Runway Protection Zone
- Runway Safety Area
- Runway Object Free Area
- Building Restriction Line

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### **ALTERNATIVE THREE - *Extend Runway 15/33 800 Feet to the North***

As with Alternative One, recommendations for increased width and pavement strength for both runways, the increased width of the parallel taxiway serving Runway 15/33, and the need to investigate the potential to improve the instrument approach capabilities to the north end of the runway are included with this alternative.

- **The airport’s main runway (Runway 15/33) will be increased in length to 9,300 feet with an 800-foot extension to the north [the maximum extension possible**
- **Without requiring the existing localized antenna to be moved (necessitating the closure of County Road 30, which is considered to be impractical)]. It is important to note that the maximum extension to the north, without the requirement to relocate the localizer antennae, is likely to be less than 800 feet. Additional input from the FAA will be required if this alternative is carried forward as a development proposal.**

#### ***Positive Qualities of Alternative Three***

- Provides additional runway length.

#### ***Negative Qualities of Alternative Three***

- Does not provide the runway length necessary to fully accommodate the existing air carrier aircraft without weight penalties during warm weather conditions.
- Because the FAA specified Runway Safety Area and Runway Object Free Area couldn’t be provided beyond the end of the extended pavement, its use will be restricted depending on the direction and type (landing or takeoff) of aircraft operation. The following illustration notes the preliminary assessment of the declared distances associated with this alternative (box at lower left corner). The four (4) components associated with declared distances are:

**TORA** – *takeoff run available*

**TODA** – *takeoff distance available*

**ASDA** – *accelerate-stop distance available*

**LDA** – *landing distance available*

It should be noted that FAA guidance states, “*The use of declared distances for airport design shall be limited to cases of existing constrained airports where it is impractical to provide the runway safety area, the runway object free area, or the runway protection zone in accordance with the design standards.*”

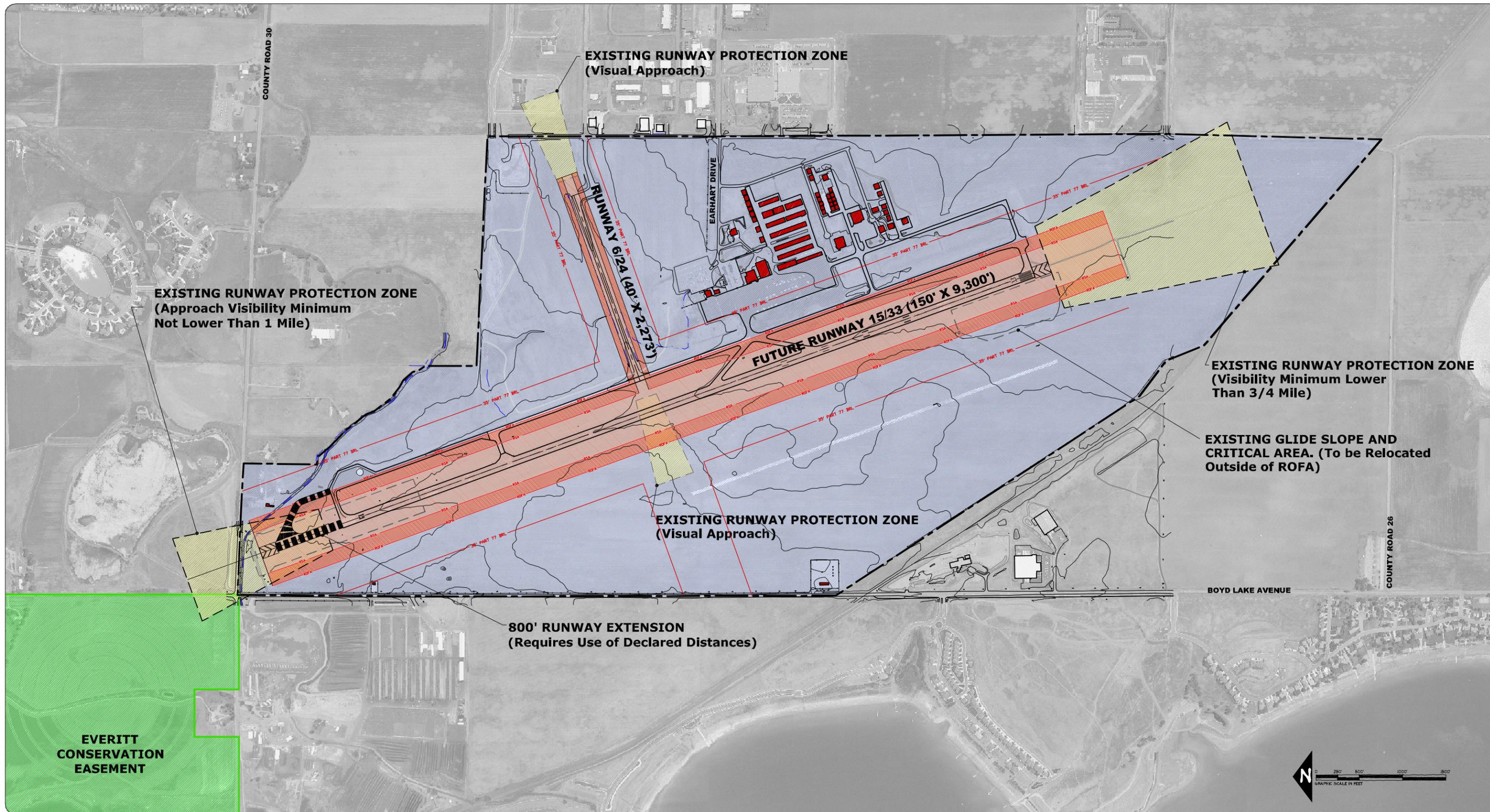


Figure D3 **Alternative Three: Extend Runway 15/33 800' to the North**

	DECLARED DISTANCES			
	TORA FUTURE	TODA FUTURE	ASDA FUTURE	LDA FUTURE
RW 15	9,300'	9,300'	9,300'	8,500' (1)
RW 33	9,000' (2)	9,000' (2)	8,500'	8,500'

(1) BECAUSE LANDING LENGTH IS NOT A CRITICAL ISSUE, NEW PAVEMENT WILL NOT BE DECLARED AS USABLE FOR LANDING TO THE SOUTH.  
 (2) NEW FAA CRITERIA BEING FORMULATED, ADDITIONAL ANALYSIS REQUIRED.

- Runway Protection Zone
- Runway Safety Area
- Runway Object Free Area
- Building Restriction Line

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### **Major Cost Considerations for Alternative Three**

- Construction of an 800-foot extension of runway, along with the associated parallel taxiway (see comparative cost estimates in Appendix).

### **ALTERNATIVE FOUR - Extend Runway 15/33 500 Feet to the North and 500 Feet to the South**

As with Alternative One, recommendations for increased width for both runways and the need to investigate the potential to improve the instrument approach capabilities to the north end of the runway are included in this alternative.

- **The airport's main runway (Runway 15/33) will be increased in length to 9,500 feet with a 500-foot extension to the north and a 500-foot extension to the south. To avoid the need to relocate the Localizer Antennae and County Road 30, this alternative designates that the northern runway extension would utilize declared distances and would primarily be used for departures to the south. This will allow for the construction of the northern extension pavement without extending the object clearing and grading standards specified by the FAA, thus not requiring the relocation of the antennae or the roadway.**

### **Positive Qualities of Alternative Four**

- Provides the runway length necessary for the existing airline aircraft to operate year-round without significant weight restrictions when departing to the south.

### **Negative Qualities of Alternative Four**

- When departing to the north (Runway 33), and in consideration of the Accelerate Stop Distance Available (ASDA), the departure runway length will be 9,000 feet, which is 500 feet short of the 9,500 feet that would allow the current airline to operate year round without significant payload restrictions. Runway 33 is the most utilized runway and is the calm-wind preferred runway. It is estimated that approximately 60% of the airport's operations utilize Runway 33, and Runway 15 is used for the remaining 40%.
- The south runway protection zone (RPZ) would be moved outwards by 500 feet, which would result in restricted land uses in those areas of the RPZ that are off airport property.

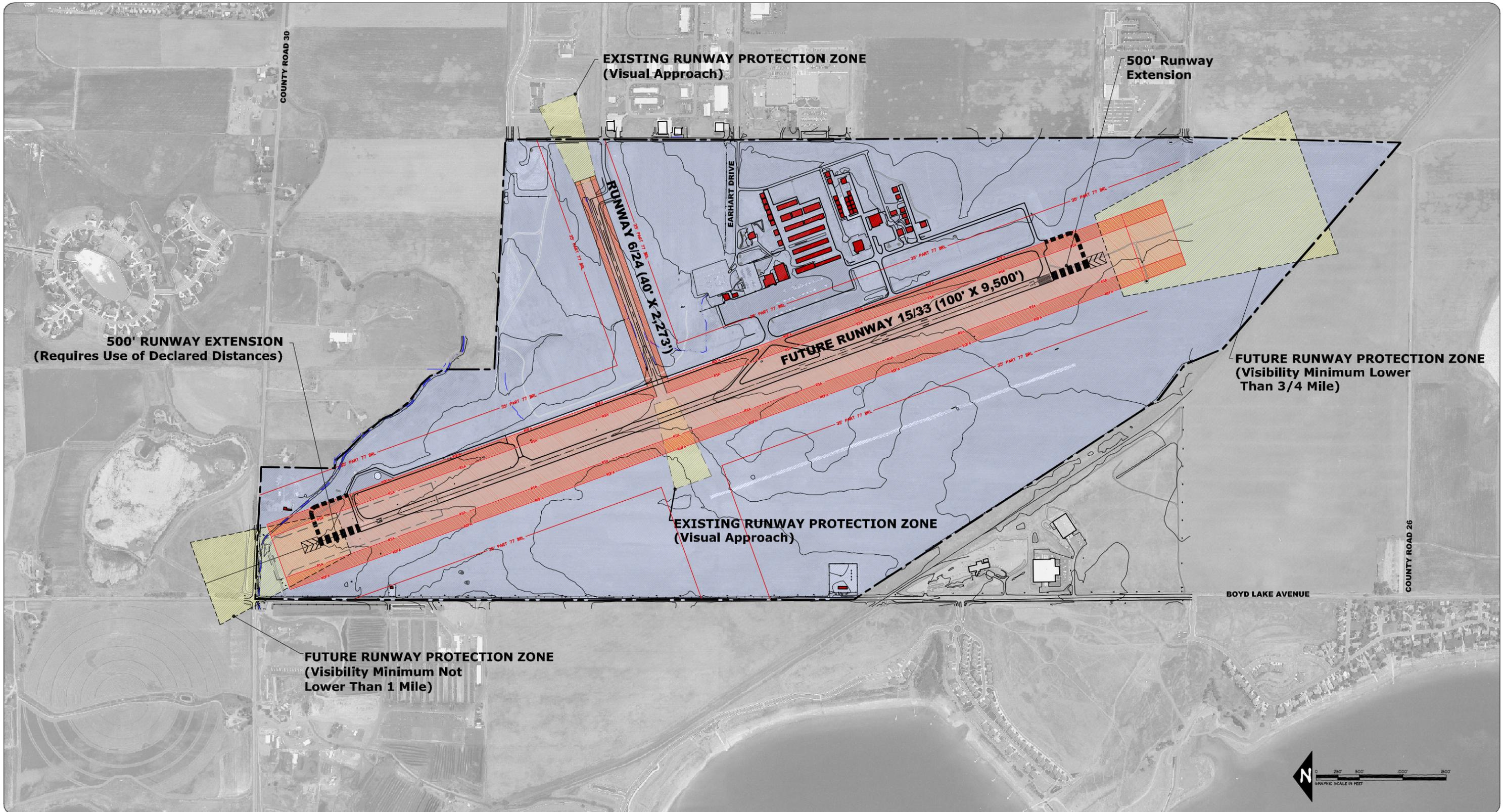


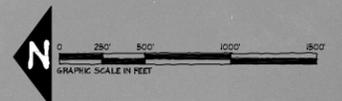
Figure D4 **Alternative Four: Extend Runway 15/33 (500' to the North and 500' to the South)**

DECLARED DISTANCES				
	TORA FUTURE	TODA FUTURE	ASDA FUTURE	LDA FUTURE
RW 15	9,500'	9,500'	9,500'	9,000' (1)
RW 33	9,500'	9,500'	9,000'	9,000'

(1) BECAUSE LANDING LENGTH IS NOT A CRITICAL ISSUE, NEW PAVEMENT WILL NOT BE DECLARED AS USABLE FOR LANDING TO THE SOUTH.

- Runway Protection Zone
- Runway Safety Area
- Runway Object Free Area
- Building Restriction Line

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### **Major Cost Considerations for Alternative Four**

- Construction of 1,000-foot extension of runway (500 feet on each end of the runway), along with an associated parallel taxiway (see comparative cost estimates in Appendix).
- To maintain FAA line-of-sight requirements and runway gradient requirements, the extended runway end on the north will be slightly higher in elevation than the existing grade (by approximately two feet). The extended end on the south will be approximately six (6) feet higher in elevation than the existing grade at the end of the new runway pavement.

### **ALTERNATIVE FIVE - Extend Runway 15/33 1,000 Feet to the South**

*(Extended pavement will not be used for landings to the north).*

As with Alternative One, this alternative provides recommendations for increased width and pavement strength for both runways, the increased width of the parallel taxiway serving Runway 15/33, and the need to investigate the potential to improve the instrument approach capabilities to the north end of the runway.

- **The airport's main runway will be increased in length to 9,500 feet with a 1,000-foot extension to the south.**

### **Positive Qualities of Alternative Five**

- Provides the runway length necessary for the existing airline aircraft and others (charters and large corporate aircraft) to operate without significant weight penalties.

### **Negative Qualities of Alternative Five**

- To avoid extension of the south RPZ onto areas that are not controlled by the Airport, the use of the extended runway will be restricted (the extended portion of the runway will not be utilized for landings to the north).

### **Major Cost Considerations for Alternative Five**

- Construction of 1,000-foot extension of runway, along with associated parallel taxiway.

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- To maintain FAA line-of-sight requirements, the extended runway end will be higher in elevation than the existing runway end. The new runway end will be approximately eight (8) feet higher than existing grade.
- Reconstruct the existing Approach Lighting System (it will need to be an in-pavement system in the area of the extended runway) and relocate the existing Glide Slope antennae (the relocation of the Glide Slope antenna will be required whether or not the runway is extended to the south - its existing location is too close to the runway to meet current FAA criteria).

### **Conclusion - Main Runway Development Alternatives**

In consideration of the ability to achieve the runway length needs in the most efficient and implementable manner, with minimal off-airport land use impacts, *Alternative Five - Extend Runway 15/33 1,000 Feet to the South and Use Declared Distances to Minimize Approach RPZ's Extension Onto Non-Airport Property* is recommended.

### **Conclusion - Crosswind Runway Development Alternatives**

The general aviation pilots at Fort Collins-Loveland Municipal Airport have indicated strongly that a crosswind runway is a critical component of the airport's airside facilities. In consideration of input received and in recognition of the fact that federal matching funds for the extension, relocation, or improvement of the crosswind runway are not likely to be forthcoming for the foreseeable future, the retention of the existing runway alignment and length appears to represent the most appropriate master planning recommendation. Runway 6/24 will continue to operate in its present configuration, while recognizing the need for improvements (increased width and the potential for a parallel taxiway). These improvements will only be constructed when, and if, appropriate funding becomes available.

### **Other Runway Considerations**

There are two other master planning considerations that relate to the configuration of the airport's future runway system.

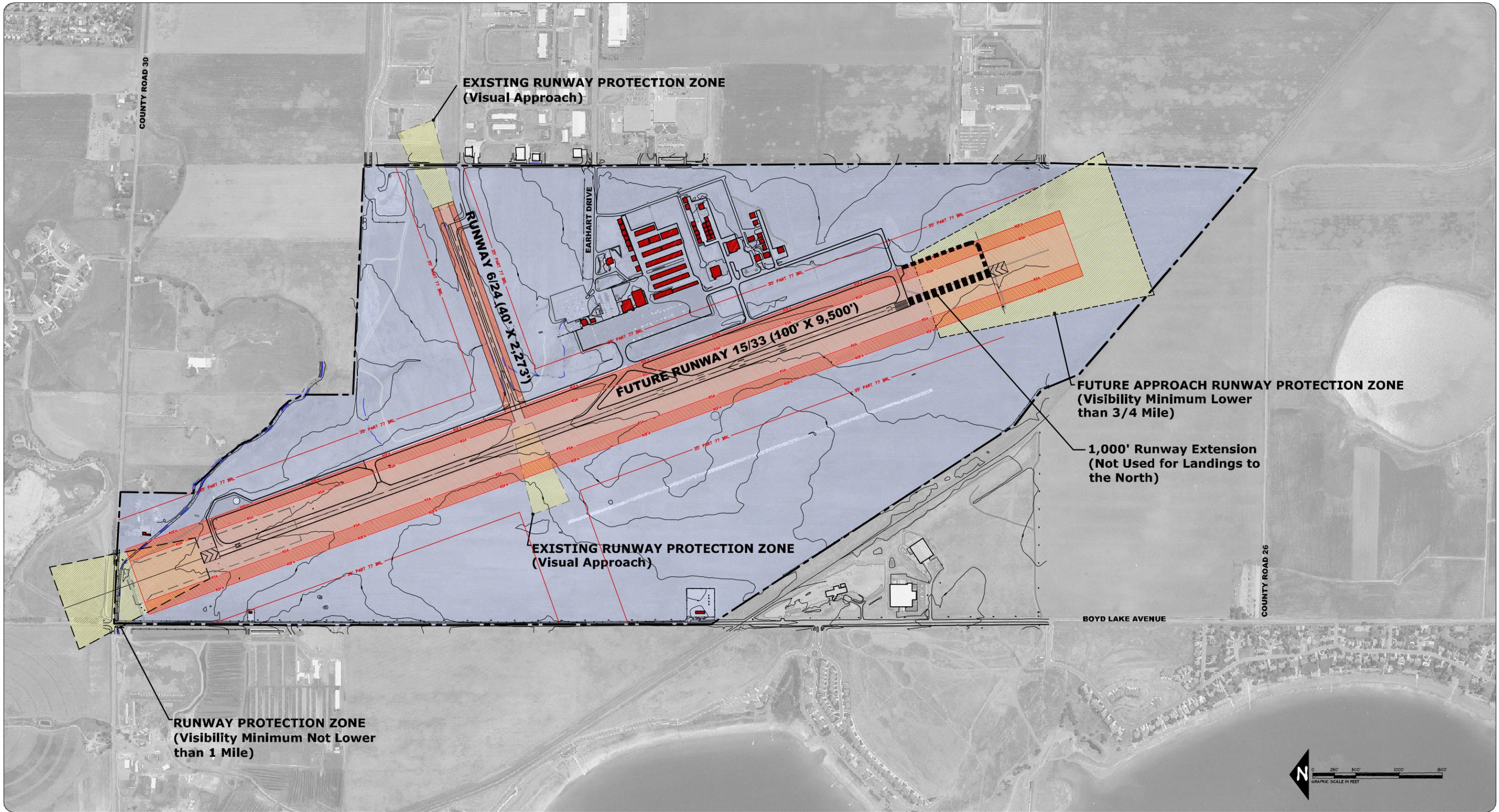


Figure D5 **Alternative Five: Extend Runway 15/33 1,000' to the South and Use Declared Distances to Minimize Approach RPZ's Extension onto Non-Airport Property**

DECLARED DISTANCES				
	TORA FUTURE	TODA FUTURE	ASDA FUTURE	LDA FUTURE
RW 15	9,500'	9,500'	9,500'	9,500'
RW 33	9,500'	9,500'	9,500'	8,500'

- Runway Protection Zone
- Runway Safety Area
- Runway Object Free Area
- Building Restriction Line

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### Future Parallel Runway

Fort Collins-Loveland Municipal Airport is a busy general aviation/commercial passenger service airport. The capacity of the airside facilities as they exist now is adequate to accommodate the number of existing landings and takeoffs without significant delay. Without an extraordinary increase in the number of aircraft operations in the near future, the airside system's capacity is also adequate to accommodate the forecast use for many years into the future, perhaps even beyond the 20-year planning horizon of this Master Plan Update. That being said, from a long-term planning perspective, not showing a future parallel runway at the Airport would be shortsighted.

A parallel runway is the only way to significantly increase the capacity of the airport's airside facilities. The future parallel runway has been shown in past planning documents for the Airport as being located 700 feet west of Runway 15/33. Analysis indicates that this location is appropriate from a planning standpoint, and is the minimum separation distance allowed by FAA criteria for parallel runways. The new parallel runway would have visual approaches only and would be developed to accommodate regular use by aircraft up to the size of small/medium business jets. As shown on the following illustration, entitled *RUNWAY DEVELOPMENT CONSIDERATION – FUTURE PARALLEL RUNWAY*, the parallel runway can be approximately 6,700 feet in length without extending the runway protection zones beyond existing airport property or impacting additional areas with off-airport land use planning considerations (i.e., expanded Critical Zone areas).

Another influence with regard to the construction of a parallel runway is the need for the provision of an alternative landing area when the main runway is closed for maintenance, snow removal, reconstruction, or emergency.

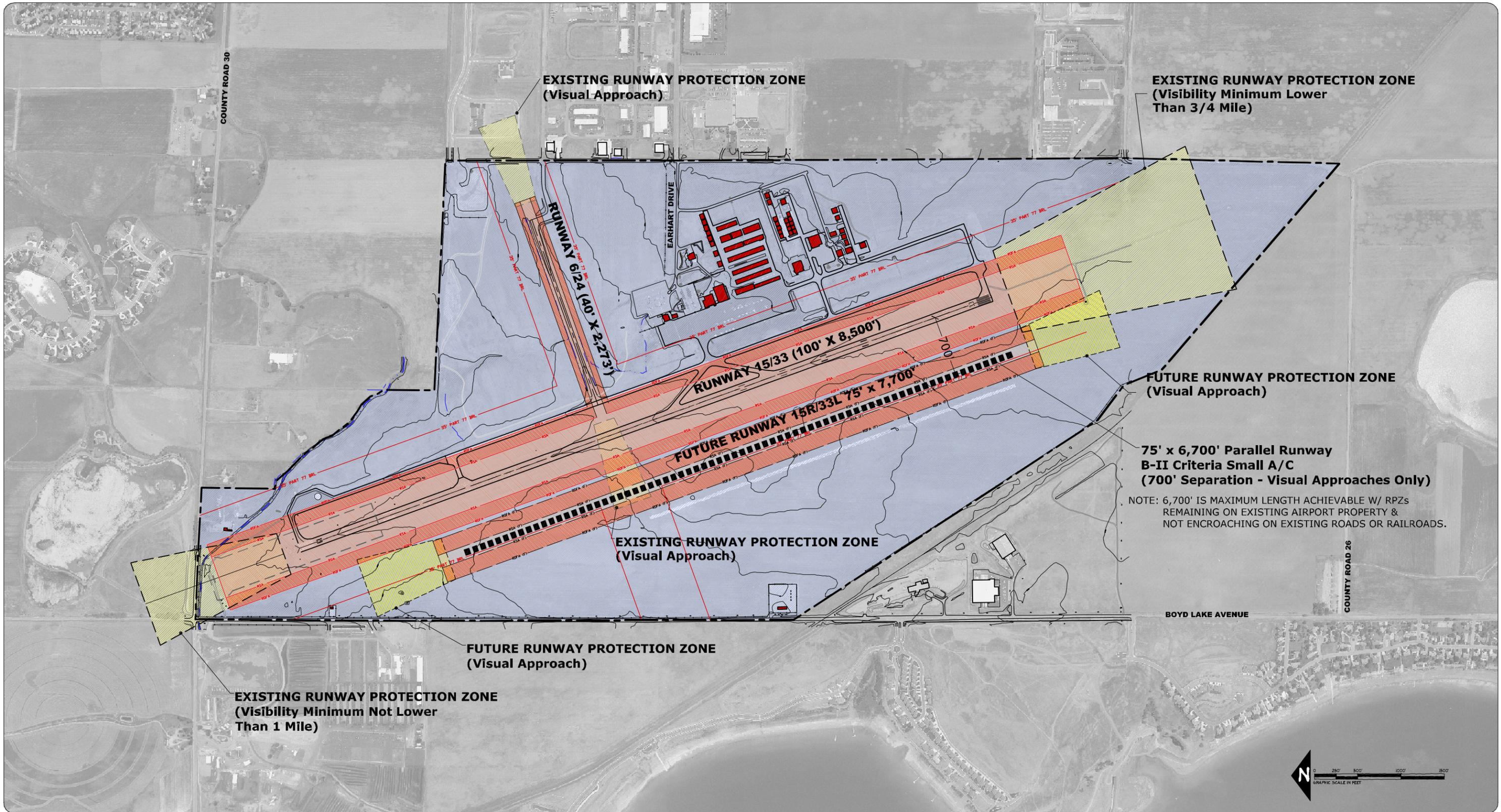


Figure D6 Runway Development Consideration - Future Parallel Runway

- Runway Protection Zone
- Runway Safety Area
- Runway Object Free Area
- Building Restriction Line

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### Landside Development Concepts

With the framework of the airport's ultimate airside development identified in a preliminary manner (the main runway will remain in its existing position and landside development recommendations will not be affected by the extension of the runway; the crosswind runway will be maintained in its existing location and at its existing length), the placement of landside facilities can now be analyzed. In general, landside facilities consist of terminal area development, aircraft parking aprons, support facility development, hangar development areas, and airport access. The overall objective of landside development planning at the Airport is the provision of facilities, which are conveniently located and accessible to the community and which accommodate the specific requirements of airport users. The illustration, entitled *EXISTING RUNWAY CONFIGURATION WITH DEVELOPABLE PROPERTY*, provides an idea of the areas that are reserved for airside facilities (runways, taxiways, and safety setbacks). Revisions to this illustration will be needed when areas for future runway facilities are determined.

As identified in the previous chapters, there is current demand for improved passenger terminal facilities and a need for additional general aviation aircraft storage hangars and tie-down spaces. In addition, an Air Traffic Control Tower (ATCT) for the Airport will likely be programmed for construction during the next few years. Development alternatives and concepts for these major factors are provided below. Following input from stakeholders, city staffs, the FAA, and the public on major landside elements, more factors that are detailed will be addressed. The detailed factors include such items as roadway access, automobile parking, fuel storage facilities, conceptual layout of future hangars, security fencing and gates, aircraft parking aprons, utilities, etc. Following the discussion on passenger terminal facilities and general aviation facilities (including commercial uses such as aircraft modification and repair, fixed base operators, etc.), a conceptual land use plan is presented for the Airport.

### Passenger Terminal Facilities

In most cases, if an airport is utilized for commercial passenger service activity, consideration for the placement of passenger terminal facilities will be a high priority in any planning study. This priority consideration is important because the passenger terminal facility is utilized by a great number of travelers who are unfamiliar with the Airport (many have never visited before). Therefore, the location of the passenger terminal facilities should facilitate easy landside access, with a minimum opportunity for wrong turns. Fortunately, the existing passenger terminal facilities at the Airport are appropriately located to provide easy landside access and it is recommended that they remain in this location for the future. The

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area to the northwest of the existing terminal building and parking should be reserved for continued passenger terminal development. In addition, because of its strategic location just to the south of the passenger terminal buildings, the existing fuel storage facility should be relocated.

For general planning purposes, the passenger terminal building should be conceived as a facility that is adaptive and multi-purpose in nature to meet other important space demands including: public and private meeting spaces, airport administrative offices, large private aircraft charter operators, potential general aviation terminal and passenger security screening requirements, and miscellaneous FBO needs, to name a few. Flexibility in space planning should be a key consideration to the development of this building.

Allegiant Air shares the attitude of the City of Fort Collins and the City of Loveland that a basic goal for the commercial passenger activity at the Airport is to provide adequate facilities to insure a pleasant experience for the travelers, but not overbuild to the point that costs are dramatically increased. This attitude also serves to protect the Cities from over investing in terminal infrastructure in the uncertain airline business atmosphere that is being experienced on a national basis. As discussed previously, from a long-term planning perspective, the passenger terminal building at the Airport could need to be as large as 15,000 square feet in the future. Additionally, an automobile parking area to accommodate as many as 600 automobiles should be set aside (the existing parking area accommodates 362 automobiles).

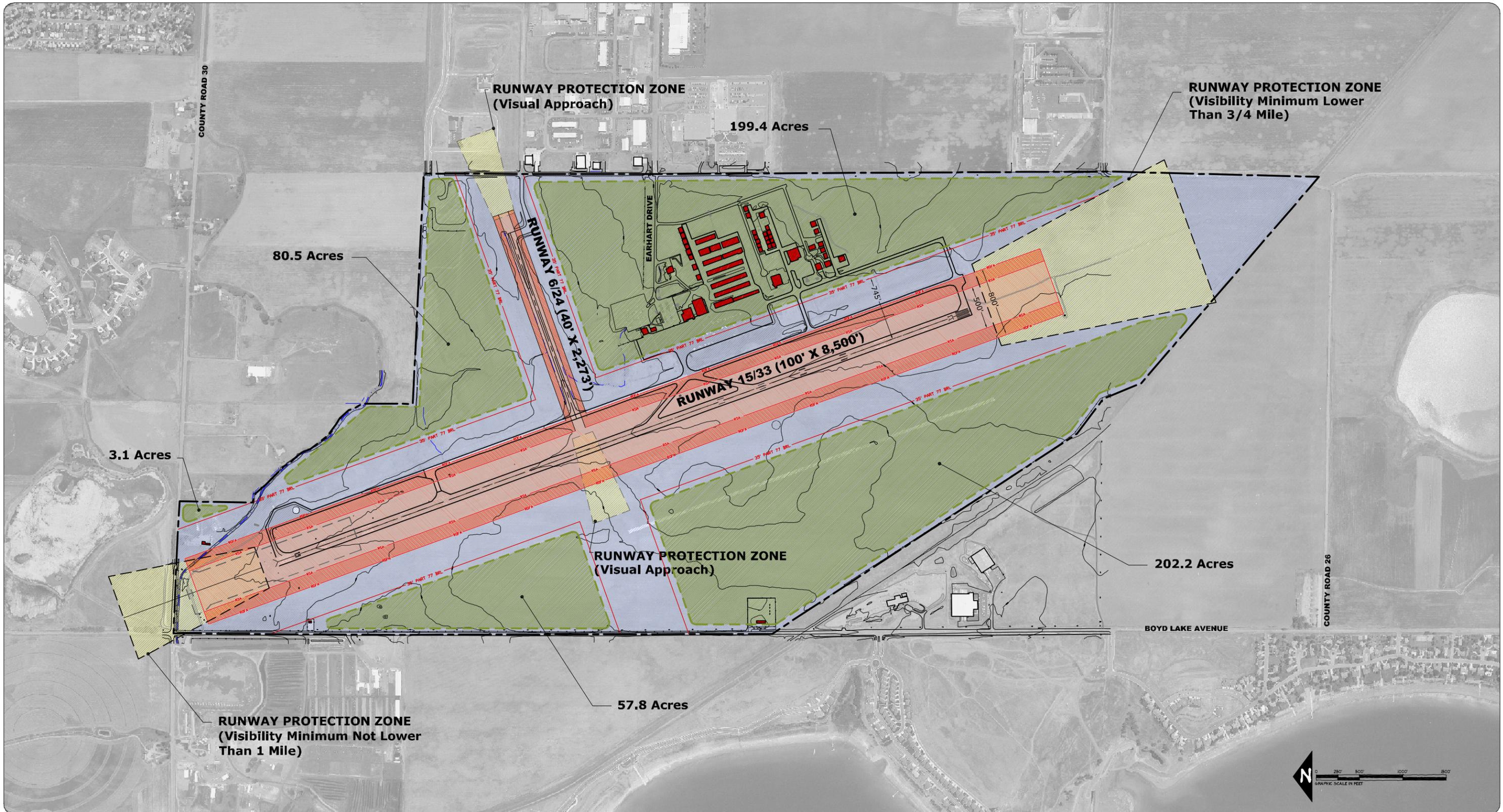


Figure D7 Existing Runway Configuration with Developable Property

- Runway Protection Zone
- Runway Safety Area
- Runway Object Free Area
- Building Restriction Line
- Existing On-Airport Developable Area

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### General Aviation Facilities

Another significant landside development issue that has been identified is development area for general aviation storage facilities (hangars). These facilities can range from T-hangars that house aircraft in individual walled-in units that are contained in a larger structure, to large conventional hangars. T-hangars are capable of housing one (1) or two (2) general aviation aircraft, executive or corporate hangars are capable of housing one or more business jet aircraft, and large “gang storage” conventional hangars can house a number of aircraft under one roof without the separating partitions that characterize a T-hanger structure. The Master Plan Update will provide a detailed layout of facilities to provide space for these various hangar types, but will also strive to provide flexibility so that the type of hangar built can be in response to actual demand.

Aviation Forecasts (developed earlier in this Master Plan Update) indicate that areas should be reserved for the storage of approximately 100 additional general aviation aircraft. Initially, future facilities should be developed in the existing general aviation development area (southeast quadrant of airport property). As demand increases, the area north of Earhart Road, east of the passenger terminal building, will be utilized for General Aviation facilities. In addition, the area east of the main runway and north of the crosswind runway is available for aviation use structures, including general aviation facilities.

In addition to general aviation storage facilities, space must also be reserved for commercial general aviation activity. These commercial activities include aircraft modification facilities, fixed based operations facilities, aircraft maintenance/repair facilities, etc. Due to the nature of these commercial activities, their location should be adjacent to the main apron and they must be provided with good landside access.

The following illustration, entitled *ON-AIRPORT LAND USE PLAN*, provides a graphic description of the conceptual layout of future land uses on the Airport.

### New Air Traffic Control Tower

One of the special tasks programmed as a part of this master planning effort is to identify potential sites for a new air traffic control tower (ATCT). The siting requirements for an ATCT facility are stringent with regard to sight lines to the aircraft operating surfaces, height of structure, and direction of view. Because of this, there are only a limited number of appropriate sites available. The following illustration, entitled *POTENTIAL LOCATIONS -*

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*FUTURE AIR TRAFFIC CONTROL TOWER*, indicates the alternative sites identified. The illustration identifies the potential sites, along with an approximate eye-level elevation and height above grade. All of these sites meet the requirements associated with minimum viewing angles to airfield pavements and height of structures that do not conflict with FAA airspace obstruction criteria; however, in consideration of aircraft operating patterns and the ability to view all runway and taxiway surfaces without interference from existing structures, Site B appears to be the preferred location.

### Land Acquisition Considerations

As can be noted on the previous illustration, entitled *EXISTING RUNWAY CONFIGURATION WITH DEVELOPABLE PROPERTY*, the airport's facilities are located on a limited amount of land. To help ensure land use compatibility, approach protection and to provide additional development area for aviation/airport support facilities, several parcels adjacent to airport property are being considered for acquisition. The parcels being considered are illustrated on the following map, entitled *PROPERTY ACQUISITION CONSIDERATIONS*. Additional input is being solicited from local governments, state and federal agencies, and the public regarding prioritizing the elements of this land acquisition program.

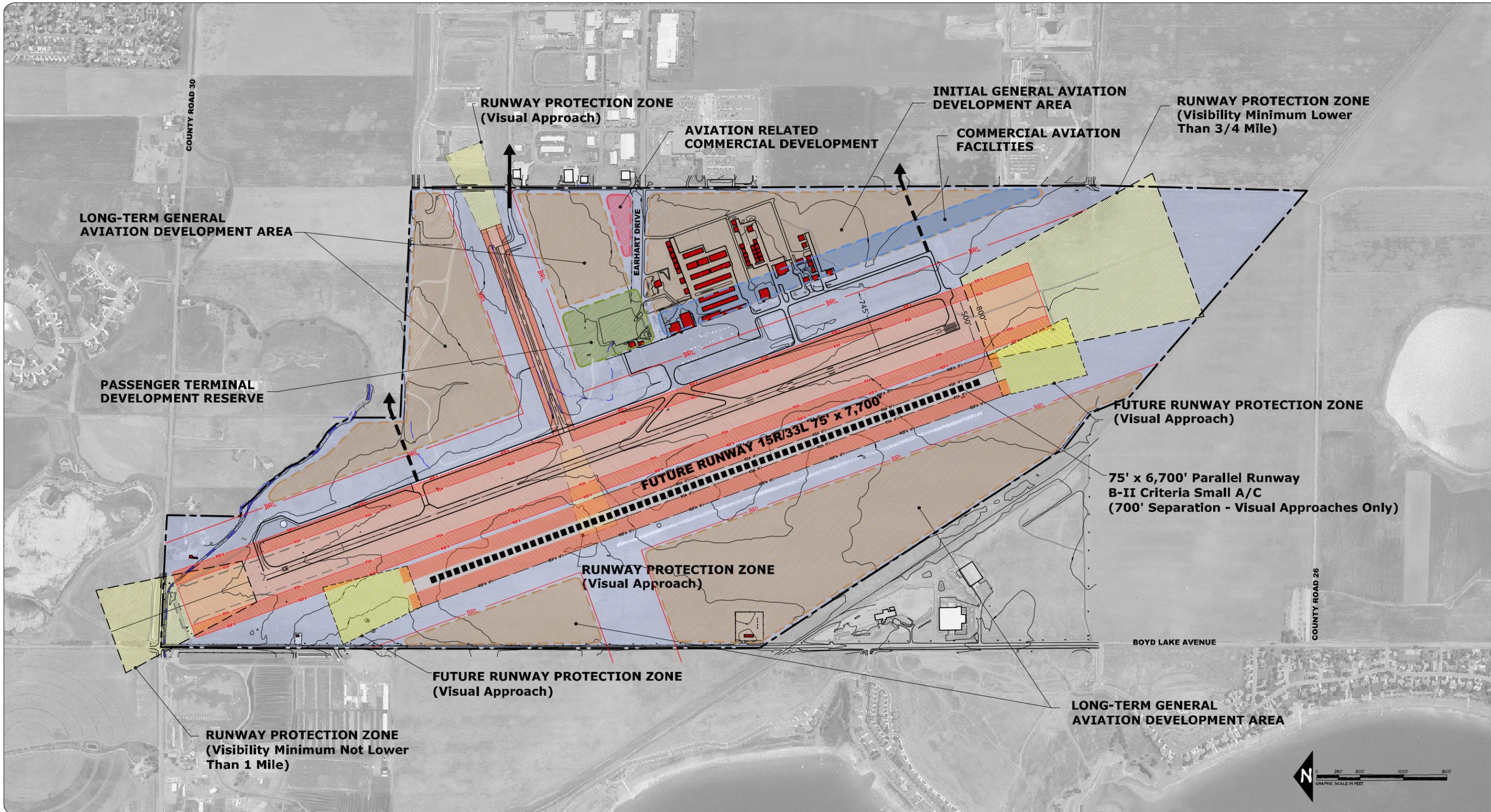


Figure D8 On-Airport Land Use Plan

- ↑ Potential Taxiway Access
- ↑ Existing Taxiway Access

- Runway Protection Zone
- Runway Safety Area
- Runway Object Free Area
- BRL Building Restriction Line

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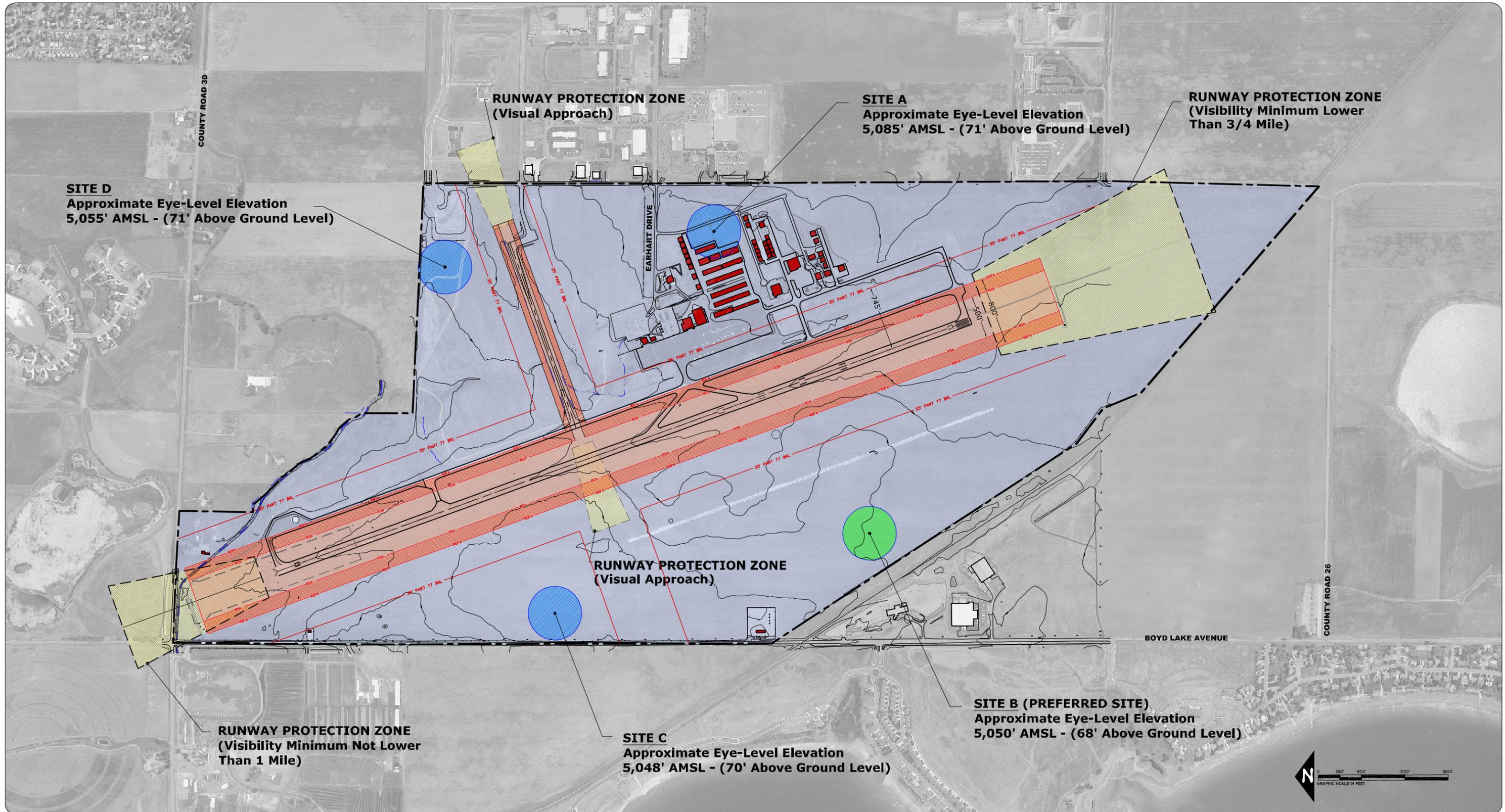


Figure D9 Potential Locations - Future Air Traffic Control Tower

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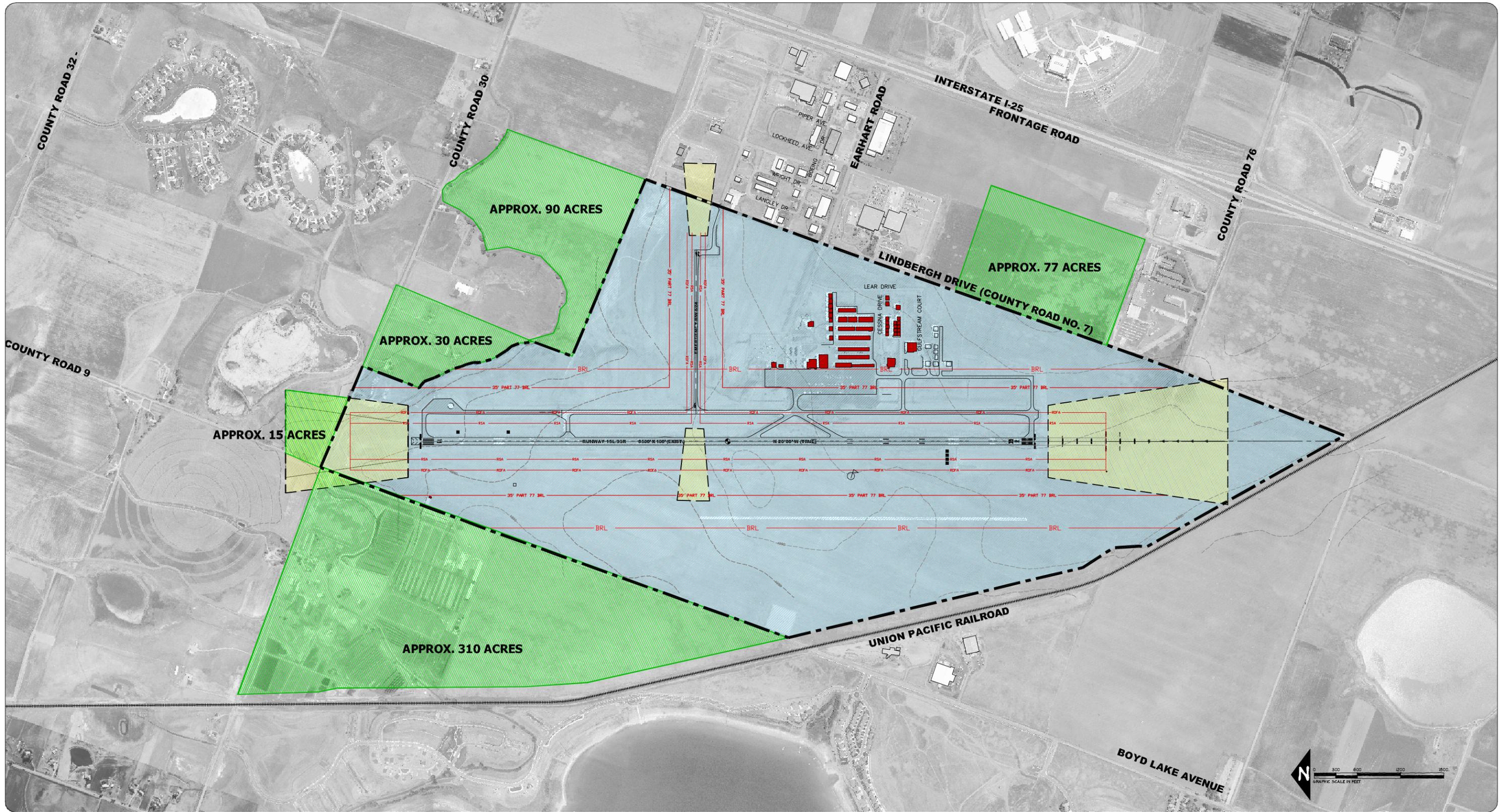


Figure D10 Property Acquisition Considerations

 Acquisition Considerations

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### **Conceptual Development Plan**

In consideration of the alternatives, considerations, concepts, and conclusions provided in this chapter, the following illustration, entitled *CONCEPTUAL DEVELOPMENT PLAN*, has been prepared. This “concept plan” has been used as a basis to investigate and formulate the more detailed planning elements contained in the following chapters.

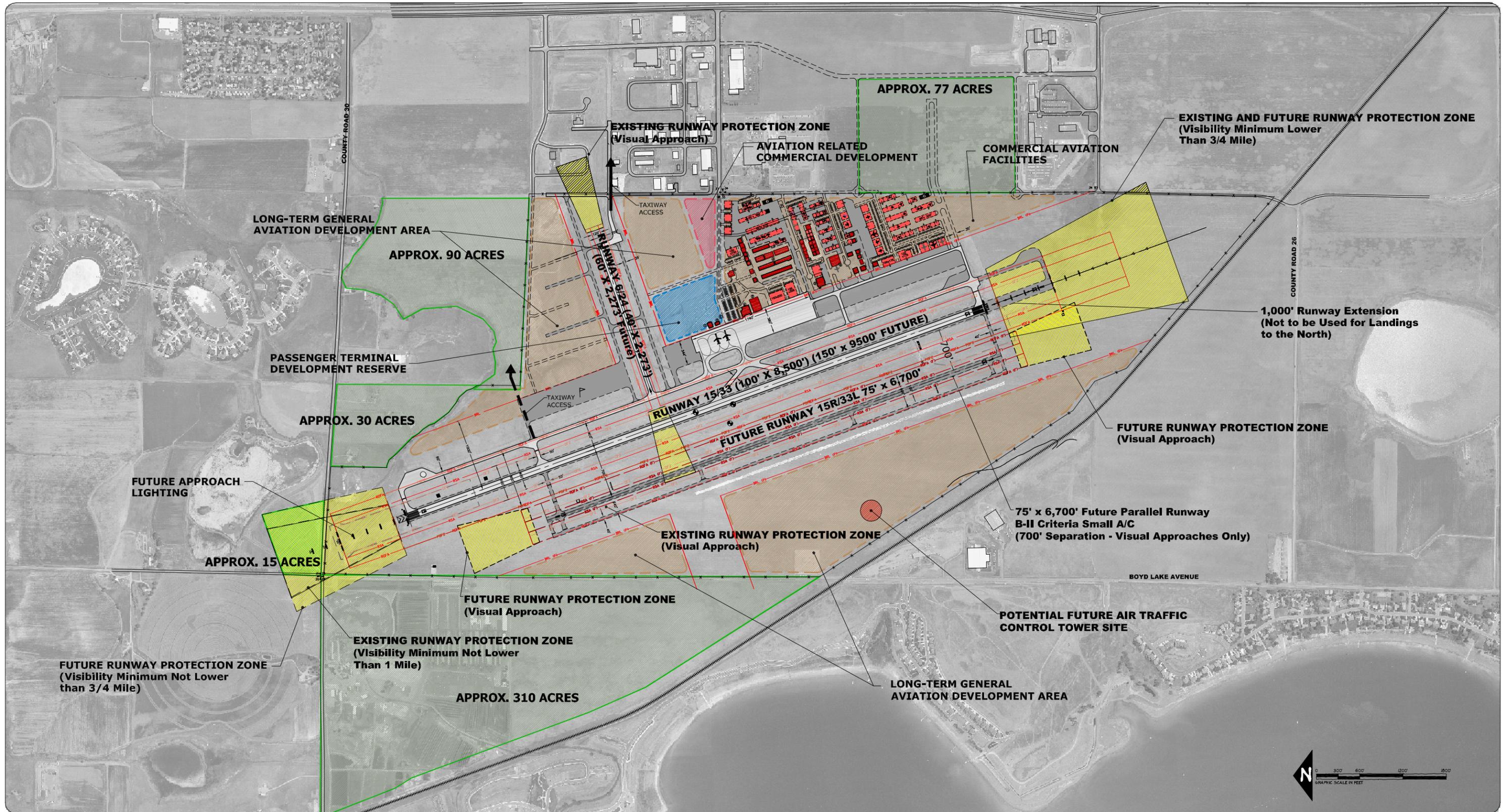


Figure D11 Conceptual Development Plan

- Runway Protection Zone
- Aviation Development Area (On Existing Airport Property)
- Acquisition Considerations (For Aviation Development and/or Approach Protection)
- Future Airport Structure
- Existing Building on Existing Property
- Runway Protection Zone
- Runway Safety Area (RSA)

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## **E** Environmental Overview

*The following narrative presents an analysis and inventory of environmental information gathered through correspondence with various state and federal agencies. The purpose is to provide preliminary information concerning environmental resources in an effort to define and identify critical resources that would need to be addressed in the preparation of an Environmental Assessment for the proposed airport development.*

**Alternatives involving the future configuration of the Airport have been reviewed in previous chapters. The primary changes proposed in the airport layout include the extension of the main runway, Runway 15/33, by 1,000 feet to the south for a total runway length of 9,500 feet, construction of a new parallel runway to the west of Runway 15/33, and the expansion and development of new private and commercial aviation facilities.**

### **Existing Conditions**

Fort Collins-Loveland Municipal Airport is located on the high plains in north-central Colorado in Larimer County, west of Interstate 25 on the eastern perimeter of the City of Loveland and approximately ten miles south of the City of Fort Collins.

The Airport Reference Point (ARP) is located at Latitude 40° 27 06.578" N and Longitude 105° 00' 40.808" W. The Airport has an elevation of 5,016 feet above mean sea level (AMSL) and consists of approximately 1,065 acres. The climate of Fort Collins and Loveland is characterized as moderate with fair weather summers and cold, wet winters. The average annual temperature is 48.5° F and the average annual precipitation equals approximately 15 inches of rain and 51 inches of snowfall. The average summer temperature is 69° F and the average maximum temperature is 86° F. The average winter temperature is 30° F and the

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average minimum temperature is 14.5° F. Mean annual temperature ranges from 71° F to 28° F.

Existing land use within the airport environs is rapidly evolving with a variety of land use types. The area east of the Airport (between the Airport and the Interstate) is primarily commercial and industrial. South of the Airport, commercial development predominates. To the west of the Airport, future land use proposals are primarily commercial in nature, with residential development along the east side of Boyd Lake. To the north of the Airport, agriculture use (much of which is protected by conservation easement) is predominate. Further to the north, on the west and north sides of Fossil Creek Reservoir, residential uses are more prevalent. Land use planning recommendations are contained in the *LAND USE PLANS* section of the following chapter entitled *Airport Plans*.

Larimer County had a population of approximately 253,137 in 2000, which compares to a population of 118,651 for the City of Fort Collins and 50,607 for the City of Loveland. Over 50% of the land within Larimer County is publicly owned, with the majority being located in Roosevelt National Forest and Rocky Mountain National Park. The City of Loveland police department and sheriff's offices provide crime protection to the area, with airport fire protection being provided by the facility's Index B ARFF facility. The nearest landfill is located approximately eleven miles northwest of the Airport, along South Taft Hill Road.

Surface transportation access to the Airport from US Interstate 25 (I-25) is provided by a single airport entrance road (Earhart Road). Additional vehicular access is provided to general aviation facilities, located south of the general aviation apron, by an internal access road (Lear Drive) extending southward from Earhart Road. The east side of the Airport is currently accessed from Earhart Road via Lindbergh Drive (County Road No. 7).

The primary native vegetation includes fir, pine, spruce, oak, aspen, birch, and alder in the higher forested elevations of Larimer County. Cottonwood, willow, maple, juniper, woody shrubs, and grasses are found at the lower elevations.

It is generally possible to associate various wildlife species with dominant plant types, although wildlife species are usually not confined to one specific area, and the influences of man have sharply curtailed the historic ranges of most native species. Large animal species that are generally found in the area surrounding the Airport include elk, pronghorn,

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antelope, coyotes, moose, bobcats, black bears, bighorn sheep, mountain lions, and mule deer. Smaller wildlife species include jack rabbits, cottontail rabbits, chipmunks, badgers, beavers, pika, prairie dogs, muskrats, ermine, gophers, raccoons, red foxes, mink, deer mouse, silver-haired bats, striped skunks, and fox squirrels. Common bird species include the Canada goose, turkey vultures, sparrows, grackles, starlings, swallows, mallards, hawks, great horned owls, warblers, blackbirds, and great blue herons. Upland, game birds such as the band-tailed pigeon, blue grouse, ring-necked pheasant, white-tailed ptarmigan, and wild turkey can also be found near the Airport.

### Environmental Analysis

#### Noise

In predicting the approximate noise impacts that could occur from the development of Fort Collins-Loveland Municipal Airport, several assumptions were made to determine the number of operations, type of aircraft, and the airport configuration that would be most reasonable to model for the 2003 base year, and for the end of the planning period, year 2023. If land use development is strictly controlled within these contours, then most noise-related land use problems should be alleviated before they develop. The two sets of total operations, defined by aircraft type, that were used as a basis for generating the noise contours are shown in the following table, entitled *EXISTING AND FUTURE OPERATIONS BY AIRCRAFT TYPE, 2003 & 2023*.

TABLE E1 **EXISTING AND FUTURE OPERATIONS BY AIRCRAFT TYPE, 2003 & 2023**

<b>Operations by Type</b>	<b>2003<sup>1</sup></b>	<b>2023</b>
<i>Commercial Service</i>	348	2,004
<i>General Aviation</i>	101,735	149,572
Single Engine Piston	67,871	94,828
Multi-Engine Piston	30,493	41,282
Turboprop	264	2,991
Business Jet	3,107	10,470
<i>Military</i>	200	200
Various Aircraft	200	200
<b>TOTAL ANNUAL OPERATIONS</b>	<b>102,283</b>	<b>151,776</b>

**Source:** BARNARD DUNKELBERG & COMPANY.

1. Actual.

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**Day-Night Sound Level.** Noise is generally defined as unwanted sound and, as such, the determination of acceptable levels is subjective. The day-night sound level (DNL) methodology is used to determine both the noise levels resulting from existing conditions and the potential noise levels expected to occur with the proposed project. The basic unit in the computation of DNL is the Sound Exposure Level (SEL). SEL is computed by adding the dB(A) level for each second of a noise event above a certain threshold. For example, a noise monitor located in a quiet residential area [40 dB(A)] receives the sound impulses of an approaching aircraft and records the highest dB(A) reading for each second of the event as the aircraft approaches and departs the site. Each of these one-second readings is then added logarithmically to compute the SEL.

The computation of DNL involves the addition, weighting, and averaging of each SEL to achieve the DNL level in a particular location. The SEL of any single noise event occurring between the hours of 10:00 p.m. and 7:00 a.m. is automatically weighted by adding ten dB(A) to the SEL to account for the assumed additional irritation perceived during that time period. All SELs are then averaged over a given time period (day, week, or year) to achieve a level characteristic of the total noise environment. Very simply, a DNL level for a specified area over a given time is approximately equal to the average dB(A) level that has the same sound level as the intermittent noise events. Thus, a DNL 65 level describes an area as having a constant noise level of 65 dB(A), which is the approximate average of single noise events even though the area would experience noise events much higher than 65 dB(A) and periods of quiet.

The main advantage of DNL is that it provides a common measure for a variety of differing noise environments. The same DNL level can describe both an area with very few high level noise events and an area with many low level events. DNL is thus constructed because it has been found that the total noise energy in an area predicts community response.

DNL levels are usually depicted as grid cells or contours. Grid cells are squares of land of a specific size that are entirely characterized by a noise level. Contours are interpolations of noise levels based on the centroid of a grid cell and drawn to connect all points of similar level. Contours appear similar to topographical contours and form concentric “footprints” about a noise source. These footprints of DNL contours drawn about an airport are used to predict community response to the noise from aircraft using that airport.

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**Computer Modeling.** The DNL noise contours were generated using the Integrated Noise Model (INM) Version 6.0c, specifically developed by the Federal Aviation Administration (FAA) to plot noise contours for airports. The original version was released in 1977. The program is provided with standard aircraft noise and performance data that can be tailored to the characteristics of individual airports.

The INM program requires the input of the physical and operational characteristics of the Airport. Physical characteristics include runway coordinates, airport altitude, and temperature. Operational characteristics include aircraft mix, flight tracks, and approach profiles. Optional data that is contained within the model includes departure profiles, approach parameters, and aircraft noise curves. All of these options were incorporated in order to model the noise environment at Fort Collins-Loveland Municipal Airport.

**Land Use Compatibility Matrix.** As specified in federal recommendations (Federal Aviation Regulation Part 150), the Land Use Compatibility Matrix, presented on the following page, indicates those land uses that are compatible within certain DNL noise contours. However, it should be recognized that this is only a guideline and that each community can develop their own matrix. The City of Loveland has developed a land use matrix that is in the *Appendix* and is discussed in the *LAND USE PLAN* section contained in the following *Airport Plans* chapter.

The following Part 150 Matrix identifies land uses as being compatible, incompatible, or compatible if sound attenuated. The Matrix can act as a guide to the cities and county for land use planning and control. It must be remembered that the DNL noise contours do not delineate areas that are either free from excessive noise or areas that will be subjected to excessive noise. In other words, it cannot be expected that a person living on one side of a DNL noise contour will have a markedly different reaction than a person living nearby, but on the other side. What can be expected is that the general aggregate community response to noise within the DNL 65 noise contour, for example, will be less than the public response from the DNL 70 noise contour.

This study generated the 55, 60, 65, and 70 DNL noise contours to determine land use impacts. The 55 DNL noise contour contains area significantly beyond where the FAA recognizes land use incompatibilities related to noise. Many local government entities, such as the City of Loveland, use the 55 DNL noise contour in land use planning. The area between the 60 and 65 DNL noise contours is an area within which most land uses are

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compatible, but is an area where single event noise complaints are often received. The area between the 65 and 70 DNL noise contours is an area of significant noise exposure where many types of land uses are normally unacceptable and where land use compatibility controls are recommended. Finally, the area inside the 70 DNL noise contour identifies land uses that are subjected to a significant level of noise, and the sensitivity of various uses to noise is increased.

**2003 Noise Impacts.** Using the existing 2003 aircraft operation counts and types previously presented in Table E1, noise contours were generated and are presented in Figure E2, entitled *EXISTING NOISE CONTOURS (2003)*. The 70 DNL noise contour encompasses approximately 137 acres, the 65 DNL noise contour encompasses approximately 247 acres, the 60 DNL noise contour encompasses approximately 591 acres, and the 55 DNL noise contour encompasses approximately 1,622 acres. The 70 and 65 DNL noise contours are both contained entirely on airport property, while the 60 DNL noise contour has approximately 490 acres and the 55 DNL noise contour has approximately 726 acres contained on airport property.

**2023 Noise Impacts.** The 2023 aircraft operation counts and types presented in Table E1 were used to generate the noise contours that are illustrated in Figure E3, entitled *FUTURE NOISE CONTOURS (2023)*. In comparison, the 2023 noise contours are slightly larger than the 2003 contours. The future 70 DNL noise contour encompasses approximately 186 acres, the 65 DNL noise contour encompasses approximately 338 acres, the 60 DNL noise contour encompasses approximately 850 acres, and the 55 DNL noise contour encompasses approximately 2,322 acres. As with the 2003 contours, the 70 and 65 DNL noise contours are contained within the existing airport boundary; however, approximately 245 acres of the 60 DNL noise contour and approximately 1,517 acres of the 55 DNL noise contour extend off airport property. There are very few existing noise sensitive land uses contained within any of the existing noise contours. There are four rural residential units located within the existing 55 DNL noise contour on the north end of the airport, and the Medical Center of the Rockies hospital, which is currently under construction, is located adjacent to I-25 within the southern end of the 55 DNL noise contour.

LAND USE	YEARLY DAY-NIGHT NOISE LEVEL (DNL) IN DECIBELS					
	BELOW 65	65-70	70-75	75-80	80-85	OVER 85
<b>RESIDENTIAL</b>						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
<b>PUBLIC USE</b>						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
<b>COMMERCIAL USE</b>						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
<b>MANUFACTURING AND PRODUCTION</b>						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing resource production and extraction	Y	Y	Y	Y	Y	Y
<b>RECREATIONAL</b>						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheatres	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to NOTES.

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

TABLE KEY	
SLUCM	Standard Land Use Coding Manual.
Y(Yes)	Land Use and related structures compatible without restrictions.
N(No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30 or 35	Land Use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of the structure.

NOTES	
(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an NLR of 20 dB; thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.	(4) Measures to achieve an NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
(2) Measures to achieve an NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.	(5) Land use compatible provided that special sound reinforcement systems are installed.
(3) Measures to achieve an NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.	(6) Residential buildings require an NLR of 25 dB.
	(7) Residential buildings require an NLR of 30 dB.
	(8) Residential buildings not permitted.

Figure E1 Federal Aviation Regulation Part 150 Land Use Compatibility Matrix

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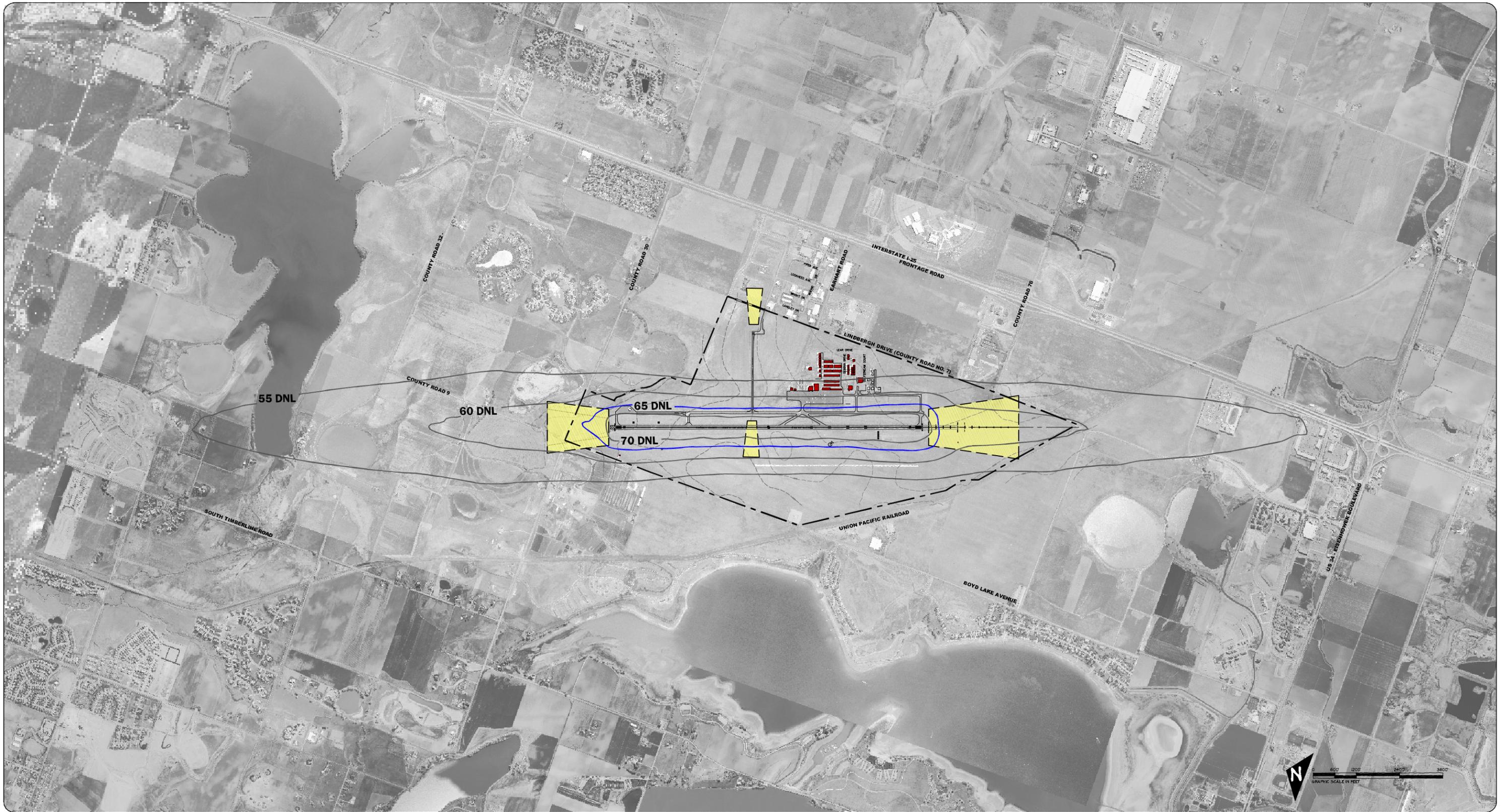


Figure E2 Existing Noise Contours (2003)

- - — Airport Property Line
- 55 DNL — Noise Contours
- Runway Protection Zones

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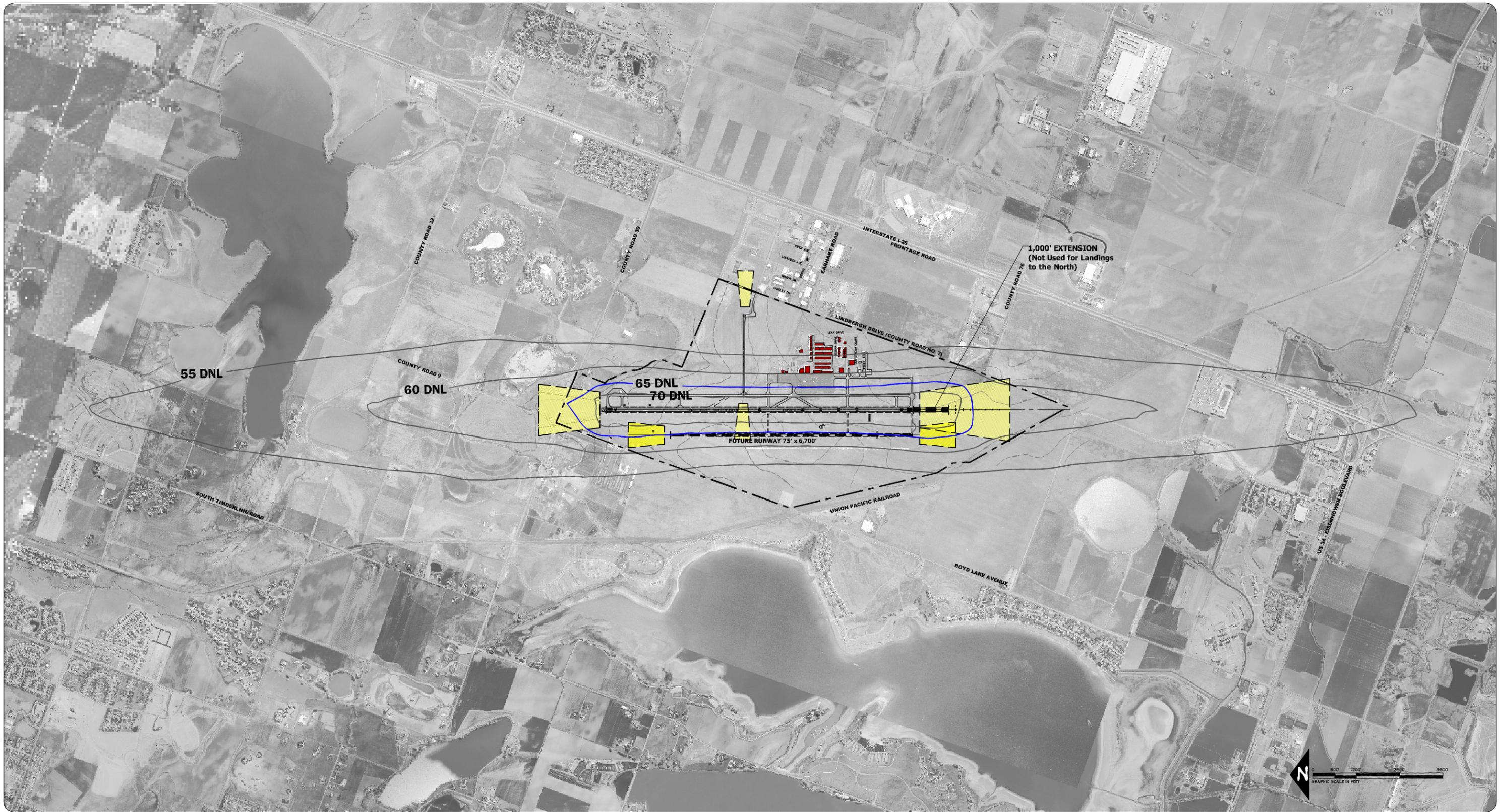


Figure E3 Future Noise Contours (2023)

-  Airport Property Line
-  55 DNL Noise Contours
-  Runway Protection Zones

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Nationally, the aircraft fleet, particularly the jet fleet, is becoming quieter. The majority of the business jet aircraft that produce the greatest noise levels will, by age, be removed from service during the 20-year planning period on which this study is based. In addition, the National Business Aviation Association (NBAA) has passed a voluntary resolution to eliminate the operation of all Stage 1 business jets by the year 2005, and all newly manufactured business jets comply with Stage 3 noise reduction criteria. As can be seen from the previous illustrations, the larger future 2023 noise contours are dictated by a projected increase in air carrier and business jet activity at the Airport throughout the 20-year planning period.

**Airport Environs Land Use Planning.** Noise impacts are significant components in establishing sensible land use planning practices within the environs of the Airport, in many cases encompassing a greater area than those covered by other considerations. Therefore, detailed land use planning practices and mechanisms are appropriate and should be employed in terms of establishing a proper and realistic set of land use recommendations for the airport environs. A detailed description of the recommended environs land use planning guidelines for the Airport is presented in the next chapter of this document. These practices can ensure longevity of growth in aviation activity beyond that programmed in this Master Plan Update for Fort Collins-Loveland Municipal Airport. Land use planning recommendations with regard to noise are further discussed in the *LAND USE PLANS* section of the *Airport Plans* chapter.

### Air and Water Quality

The proposed airport development outlined in this Master Plan Update is not expected to have a significant impact on the long-term quality of the air and water in the vicinity of the Airport. The forecast 2023 annual operations (i.e., 151,776) and passengers (i.e., 111,721) are well below the threshold (180,000 general aviation operations and 1.3 million passengers, according to FAA Order 5050.4A) required to do an air quality analysis.

According to the Office of Air Quality Planning and Standards (OAQPS) within the US Environmental Protection Agency (EPA), Larimer County is in attainment for federal health-based air quality standards known as the National Ambient Air Quality Standards (NAAQS). A non-attainment area is defined as a locality where air pollution levels persistently exceed the NAAQS. The EPA normally makes this designation only after air quality standards have been exceeded for several consecutive years. The Colorado Department of Public Health

## MASTER PLAN UPDATE

and Environment indicated that a “General Conformity Analysis” will be required by the EPA and the FAA prior to airport expansion.

During construction of airport improvements, short-term air quality impacts may be expected from heavy equipment pollutant emissions, fugitive dust resulting from the movement of earth for cut and fill, any open burning that may occur on the Airport, and the operation of concrete batch plants. Compliance with all local, state, and federal air quality regulations will be required of all contractors.

The most significant hydrological features in the area are the Nelson Reservoir, located approximately ¼-mile north of the Airport, and Boyd Lake, which is located approximately ¾-mile west of the Airport. Airport development is not expected to impact the quality of either of these two water resources. Any construction projects requiring earthwork will result in some erosion and sedimentation. However, the contractors will be required to follow guidelines outlined in the Federal Aviation Administration’s Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports*, which is the FAA’s guidance to airport sponsors concerning protection of the environment during construction. Final plans and specifications for any project will incorporate the provisions of AC 150/5370-10A to ensure minimal impact due to erosion, air pollution, sanitary waste, and the use of chemicals. Additionally, a National Pollutant Discharge Elimination System (NPDES) permit will likely be required for construction projects.

### Historical, Architectural, Archaeological, and Cultural Resources

The Colorado Historical Society has been contacted regarding properties documented within the project area that meet the criteria for listing on the National Register of Historic Places. This agency has determined that the Loudon Ditch segment and the Parker-Wyndham House/Rigdan Farmhouse/English Farmhouse are located near the airport development area (see letter from the Colorado Historical Society in the *Appendix*). The Society recommends the National Environmental Policy Act (NEPA) studies be coordinated with the Section 106 of the National Historic Preservation Act.

### Threatened or Endangered Species

The Endangered Species Act, as amended, requires each federal agency to insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species. The US Fish and Wildlife Service has

## MASTER PLAN UPDATE

provided a listing of all federally-listed threatened and endangered species and candidate species that may occur within the environs of the Airport (see letter from the Fish and Wildlife Service in the *Appendix*). These species include five birds, three mammals, two fish, one amphibian, and three plants.

Prior to implementation of a significant airport improvement project, a biological assessment will need to be performed to determine if any of the above mentioned species occur at, or in, the vicinity of the impacted area and, if any critical habitat of such species will be impacted. Should a biological assessment determine any impacts to such species or habitat, then appropriate mitigation measures will be coordinated with the US Fish and Wildlife Service and the Colorado Division of Wildlife.

### Wetlands

Wetlands are basically defined as areas inundated by surface or groundwater with a frequency sufficient to support vegetation or aquatic life requiring saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, sloughs, river overflows, mud flats, and natural ponds. Wetlands also include estuarine areas, tidal overflows, shallow lakes and ponds with emergent vegetation, and wetland ecosystems, including those areas that affect, or are affected by, the wetland itself (e.g., adjacent uplands or regions upstream and downstream).

The US Army Corps of Engineers has been contacted regarding the presence of any wetlands that may be impacted by airport development. According to this agency, a review of the USGS 7.5-minute quadrangle maps was conducted, and there does not appear to be any waters of the US located within the future development areas of the Airport. Additionally, the Department of the Army indicates that a permit from the Department of the Army “will not be required for the project” (see letter from the Department of the Army in the *Appendix*).

### Wild and Scenic Rivers

According to a listing of Wild and Scenic Rivers compiled by the National Park Service-National Wild and Scenic Rivers System, there are no wild and scenic rivers located within the vicinity of Fort Collins-Loveland Municipal Airport; therefore, there will not be any impacts to this nationally significant river resource as a result of the proposed airport development.

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### Section 4(f) Property

Section 4(f) of the Department of Transportation Act (recodified at 49 USC, Subtitle I, Section 303) provides that no publicly owned park, recreation area, wildlife or waterfowl refuge, or land of a historic site that is of national, state, or local significance will be used, acquired, or affected by programs or projects requiring federal assistance for implementation. It is anticipated that the improvements recommended in this Master Plan Update will not impact such properties. Additionally, the Colorado Natural Areas Program indicated, in a telephone discussion, that no impacts are anticipated to such properties.

Any proposed park or recreation improvements in the vicinity of the Airport will be required to be coordinated with airport staff and the Federal Aviation Administration and will be developed in a manner that is compatible with the Airport.

### Environmental Justice

There are no projects proposed by this Airport Master Plan Update that will disproportionately affect any one racial or economic group of people living within the vicinity of the Airport.

### Hazardous Substances and Wastes

No hazardous substances and/or wastes will be generated from any development proposed by this Airport Master Plan Update. However, construction activities can generate hazardous wastes, and some construction materials constitute hazardous substances. These include fuel, oil, lubricants, paints, solvents, concrete-curing compounds, fertilizers, herbicides, and pesticides. Proper practices can be implemented to prevent or minimize the potential for these hazardous substances to be released into the environment and are included below.

Chemicals, petroleum-based products, and waste materials, including solid and liquid waste, should be stored in areas specifically designed to prevent discharge into storm water runoff. Areas used for storage of toxic materials should be designed with full enclosure in mind, such as the establishment of a dike around the perimeter of the storage area.

Construction equipment maintenance should be performed in a designated area and control measures, such as drip pans to contain petroleum products, should be implemented. Spills should be cleaned up immediately and disposed of properly.

## MASTER PLAN UPDATE

### Farmland

Information regarding the occurrence of any prime and unique farmland on, or in, the vicinity of the Airport was requested from the District Conservationist with the Natural Resources Conservation Service (NRCS). According to the Larimer County District Conservationist, there is evidence of prime farmland soil, if irrigated, within the project area. Additionally, “Farmland of local importance” exists in the north and northwestern corner of airport property (see letter from the Colorado Natural Resources Conservation Service in the *Appendix*); however, the soils located in the airport expansion areas have soils classified as “Prime Farmland if irrigated,” but are not anticipated to undergo irrigation. Therefore, it is not expected that airport development, as depicted in the Airport Master Plan Update, will have an impact on prime farmland within Larimer County.

In addition, according to data obtained from the United States Department of Agriculture Natural Resources Conservation Service State Soil Geographic (STATSGO) Data Base, there are nine primary soils located in the vicinity of the Airport. These include: *Ulm*, a clay loam with slopes ranging from 0-5%; *Weld*, a silt loam with slopes ranging from 0-3%; *Wiley*, a silt loam with slopes ranging from 3-5%; *Weldt*, a clay loam with slopes ranging from 0-6%; *Kim*, a loam with slopes ranging from 3-9%; *Longmont*, a clay soil with slopes ranging from 0-3%; *Midway*, a clay loam with slopes ranging from 5-25%; *Nunn*, a clay loam with slopes ranging from 1-3%; and, *Renohill*, a clay loam with slopes ranging from 0-9%.

### Wildlife Management

*Wildlife Management at Airports*, a document that has been jointly published by the Federal Aviation Administration (FAA) and the US Department of Agriculture Wildlife Services (USDA), provides that all FAR Part 139 certificated airports are required to conduct an Ecological Study, also referred to as a Wildlife Hazard Assessment (WHA), when specific wildlife events occur at, or in, the vicinity of the Airport. These events include:

- **An air carrier aircraft experiences multiple bird strikes or engine ingestion.**
- **An air carrier aircraft experiences a damaging collision with wildlife other than birds.**
- **Wildlife of a size or in numbers capable of causing either of the previous events is observed to have access to any airport flight pattern or aircraft movement area.**

Fort Collins-Loveland Municipal Airport has not yet experienced the aforementioned events, and therefore has not been required to conduct a WHA. Following the completion of a WHA, the FAA must determine whether or not a Wildlife Hazard Management Plan

## MASTER PLAN UPDATE

(WHMP) is needed for an airport. The goal of an airport WHMP is to minimize wildlife populations, on and around the airport, which pose a threat to aviation safety or to structures and human health. If federally-listed or proposed endangered or threatened species or designated or proposed critical habitats are present, the airport operator must also have a Biological Assessment prepared.

The USDA/Wildlife Services has made a site visit to the Airport and provided a letter (see *Appendix*) that concludes the Initial Consultation phase of their involvement. Based on the site visit and FAA regulations, the USDA recommends that the Airport should consider conducting a WHA. The WHA is to be based on a year-long survey of wildlife that is conducted by trained and qualified wildlife damage biologists. The FAA's certification safety inspector (see letter in the *Appendix*) has also indicated the need for the WHA to be prepared, along with recognizing the need for ongoing control measures for coyotes, prairie dogs, cottontail rabbits, and geese. The FAA also specified the need for improved wildlife/security fencing. All of these projects have been incorporated in the capital improvement project listing that is a component of this Master Plan Update.

### Other Environmental Issues

Three other environmental issues have been identified by the Study Committee that should be noted:

- 1) **Asbestos:** With regard to airport improvements, asbestos issues could surface during the demolition of buildings or lighting vaults (i.e., pipe insulation, fireproofing materials, ceiling tiles, caulking, old lighting, etc.); during the remodel of the baggage claim area (fire proofing materials, insulation, etc.); and, during the removal of old Sewer Pipe.
- 2) **MBTA (Migratory Bird Treaty Act):** There are many migratory birds that are protected, especially during the nesting season. Bird/Nest surveys are advisable so that there is a document that says they were completed, identifies any such birds, and notes when their nests can be disturbed (this could have an effect on the construction schedule).

## MASTER PLAN UPDATE

- 3) **Purchasing of new land:** A Phase I Site Assessment consistent with ASTM 1527-05 or EPA’s “All Appropriate Inquiry” rule must be completed prior to each acquisition so that both cities can take full advantage of the liability defenses (i.e., Innocent Land Owner, Bona fide Prospective Purchaser, or Contiguous Property Owner) in CERCLA (Comprehensive Environmental Response Compensation and Liability Act).

### Future Environmental Documentation

On a project-specific basis, each improvement specified in this Master Plan Update that receives federal matching funds requires environmental clearance before an allocation of funds can be assigned. The environmental documentation required to receive the clearance differs with the complexity of the project and can vary from a Categorical Exclusion for very simple projects to a full Environmental Impact Statement for very complex projects (e.g., a new airport). Part of the reason to prepare this *Environmental Overview* chapter for a Master Plan Update is to uncover any significant environment concerns that might greatly influence the ability to implement one or more of the recommended improvement projects. No significant environmental concerns have been identified for any of the improvements that are recommended in this Airport Master Plan Update. The other aspect is to gain an understanding of the projects that will likely require the preparation of a more complex environmental analysis document so that the preparation of that document can be factored into the Capital Improvement Program for the Airport. The runway extension will likely require a significant environmental document (an Environmental Assessment), which has been included in the capital funding plan provided in a later chapter of this document.

## F Airport Plans

*The plan for the future development of Fort Collins-Loveland Municipal Airport has evolved from an analysis of many considerations. Among these are: aviation demand forecasts; facility requirements; aircraft operational characteristics; environmental considerations; along with the assumptions and goals formulated in the initial stages of the planning process. The development alternatives that were presented in the previous chapters provided the Study Committee and City officials with a variety of options for future facility improvements. Following a careful assessment of the potential benefits and impacts of each alternative, a comprehensive airport development recommendation has been formulated.*

**Previous chapters have established and quantified the future development needs of the Airport. In this chapter, the various elements of the selected plan are categorically reviewed in an outline and an FAA specified graphic format. A brief written description of the individual elements, represented in the set of Airport Plans for Fort Collins-Loveland Municipal Airport, is accompanied by a graphic description presented in the form of the Airport Layout Plan, the Airspace Plans, the Approach Profiles and Inner Approach Surface Drawings, the Terminal Area Plan, the Land Use Drawings, and the Property Map.**

### **Airport Layout Plan**

The Airport Layout Plan (ALP), which illustrates both airside and landside facilities, is a graphic depiction of the existing and ultimate airport facilities that will be required to enable the Airport to properly accommodate the forecast future demand. In addition, the ALP provides detailed information on both airport and runway design criteria, which is necessary to define relationships with applicable standards.

## MASTER PLAN UPDATE

The following illustration, entitled *AIRPORT LAYOUT PLAN*, and the following paragraphs describe the major components of the future Airport Development Plan.

### Runway System

The development recommendations for Runway 15/33 (15L/33R following the construction of the future parallel runway), Runway 6/24, and future Runway 15R/33L are presented in the following text.

**Dimensions:** Runway 15/33 serves the Airport as the primary runway and is 8,500 feet in length and 100 feet in width. Runway 6/24 serves the Airport as the crosswind runway and is utilized exclusively by small general aviation aircraft. It is 2,273 feet in length and 40 feet in width. In the future, Runway 15/33 is programmed to be extended 1,000 feet to the south and widened to 150 feet. The extended portion of the runway will not be used for landings to the north (a declared distances displaced threshold will be used to keep an RPZ on airport property, to the extent possible). Runway 6/24 will be widened to 60 feet, but will maintain its existing length. A new parallel runway (Runway 15R/33L) is also planned to be constructed west of Runway 15/33, with a length of 6,700 feet and a width of 75 feet.

**Pavement:** The existing gross weight bearing capacities of Runway 15/33 are 50,000 pounds single wheel, 65,000 pounds dual-wheel, and 130,000 pounds dual tandem wheel main landing gear configuration. This will be upgraded to 90,000 pounds single wheel, 130,000 pounds dual-wheel, and 180,000 pounds dual tandem wheel, when the runway receives an asphalt overlay. The pavement strength for Runway 6/24 will be maintained with a 12,500-pound bearing capacity for single-wheel configured aircraft. Future Runway 15R/33L will be constructed with a single-wheel pavement strength of 30,000 pounds.

**ARC Dimensional Criteria:** As explained in previous chapters, ARC C-III design criteria have been utilized for Runway 15/33, Runway 6/24 utilizes ARC B-I (small aircraft only), and Runway 15R/33L is planned to utilize ARC B-II design standards.

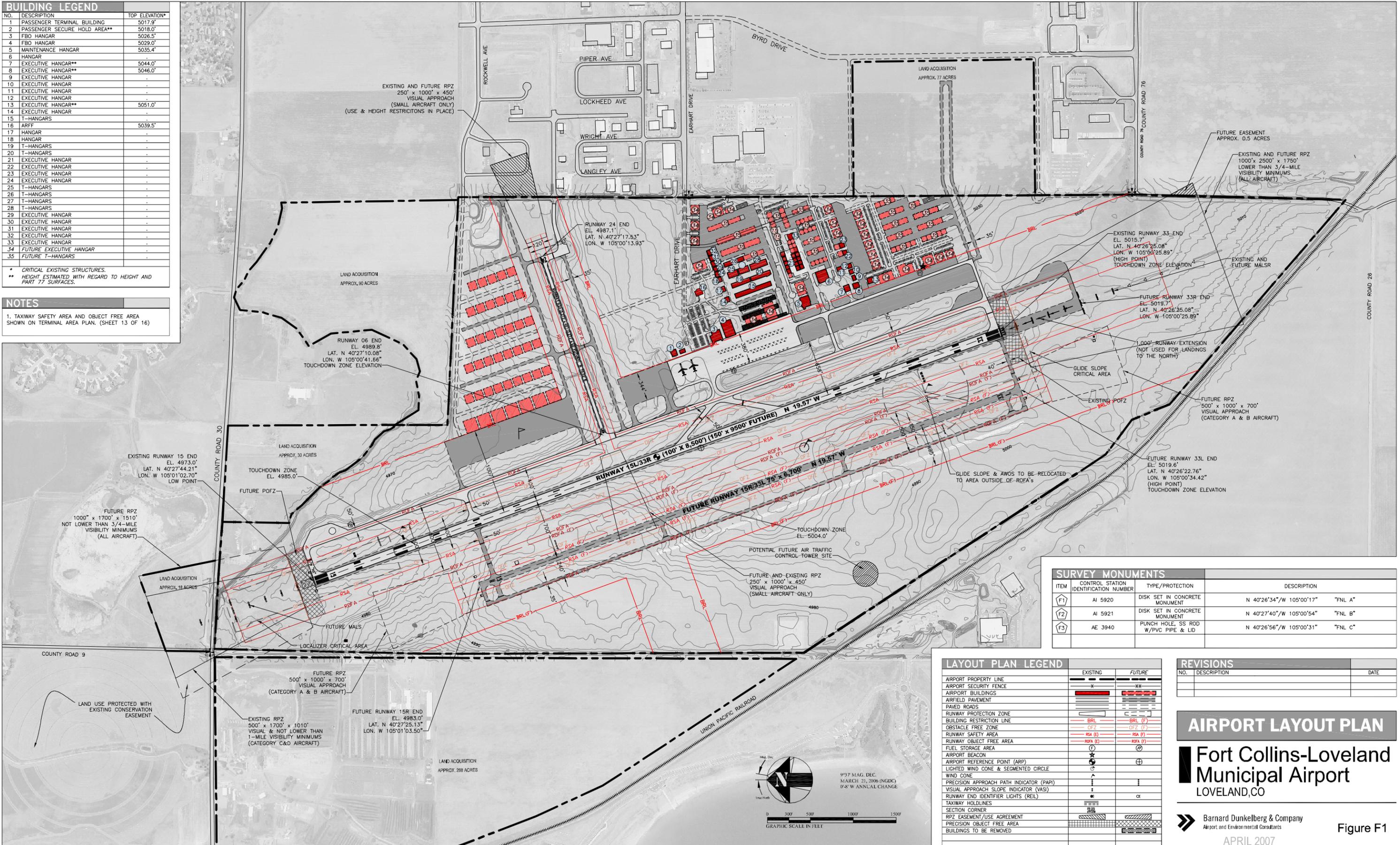
**Instrument Approaches:** The existing GPS and VOR non-precision approach capabilities for Runway 15 and ILS, NDB, GPS and VOR precision approach to Runway 33 will be maintained. It is also recommended that the visibility minimums for Runway 33 be maintained at ½-mile and that the ability to implement precision instrument approach capabilities (not lower than ¾-mile visibility minimum) be protected for Runway 15.

BUILDING LEGEND		
NO.	DESCRIPTION	TOP ELEVATION*
1	PASSENGER TERMINAL BUILDING	5017.9'
2	PASSENGER SECURE HOLD AREA**	5018.0'
3	FBO HANGAR	5026.5'
4	FBO HANGAR	5029.0'
5	MAINTENANCE HANGAR	5035.4'
6	HANGAR	-
7	EXECUTIVE HANGAR**	5044.0'
8	EXECUTIVE HANGAR**	5046.0'
9	EXECUTIVE HANGAR	-
10	EXECUTIVE HANGAR	-
11	EXECUTIVE HANGAR	-
12	EXECUTIVE HANGAR	-
13	EXECUTIVE HANGAR**	5051.0'
14	EXECUTIVE HANGAR	-
15	T-HANGARS	-
16	ARFF	5039.5'
17	HANGAR	-
18	HANGAR	-
19	T-HANGARS	-
20	T-HANGARS	-
21	EXECUTIVE HANGAR	-
22	EXECUTIVE HANGAR	-
23	EXECUTIVE HANGAR	-
24	EXECUTIVE HANGAR	-
25	T-HANGARS	-
26	T-HANGARS	-
27	T-HANGARS	-
28	T-HANGARS	-
29	EXECUTIVE HANGAR	-
30	EXECUTIVE HANGAR	-
31	EXECUTIVE HANGAR	-
32	EXECUTIVE HANGAR	-
33	EXECUTIVE HANGAR	-
34	FUTURE EXECUTIVE HANGAR	-
35	FUTURE T-HANGARS	-

\* CRITICAL EXISTING STRUCTURES.  
\*\* HEIGHT ESTIMATED WITH REGARD TO HEIGHT AND PART 77 SURFACES.

**NOTES**

1. TAXIWAY SAFETY AREA AND OBJECT FREE AREA SHOWN ON TERMINAL AREA PLAN. (SHEET 13 OF 16)



SURVEY MONUMENTS			
ITEM	CONTROL STATION IDENTIFICATION NUMBER	TYPE/PROTECTION	DESCRIPTION
F1	AI 5920	DISK SET IN CONCRETE MONUMENT	N 40°26'34"/W 105°00'17" "FNL A"
F2	AI 5921	DISK SET IN CONCRETE MONUMENT	N 40°27'40"/W 105°00'54" "FNL B"
F3	AE 3940	PUNCH HOLE, SS ROD W/PVC PIPE & LID	N 40°26'56"/W 105°00'31" "FNL C"

LAYOUT PLAN LEGEND		
	EXISTING	FUTURE
AIRPORT PROPERTY LINE	---	---
AIRPORT SECURITY FENCE	---	---
AIRPORT BUILDINGS	█	█
AIRFIELD PAVEMENT	▨	▨
PAVED ROADS	▩	▩
RUNWAY PROTECTION ZONE	▬	▬
BUILDING RESTRICTION LINE	▬	▬
OBSTACLE FREE ZONE	▬	▬
RUNWAY SAFETY AREA	▬	▬
RUNWAY OBJECT FREE AREA	▬	▬
FUEL STORAGE AREA	⊙	⊙
AIRPORT BEACON	⊙	⊙
AIRPORT REFERENCE POINT (ARP)	⊙	⊙
LIGHTED WIND CONE & SEGMENTED CIRCLE	⊙	⊙
WIND CONE	⊙	⊙
PRECISION APPROACH PATH INDICATOR (PAPI)	⊙	⊙
VISUAL APPROACH SLOPE INDICATOR (VASI)	⊙	⊙
RUNWAY END IDENTIFIER LIGHTS (REIL)	⊙	⊙
TAXIWAY HOLDLINES	▬	▬
SECTION CORNER	▬	▬
RPZ EASEMENT/USE AGREEMENT	▬	▬
PRECISION OBJECT FREE AREA	▬	▬
BUILDINGS TO BE REMOVED	▬	▬

REVISIONS		
NO.	DESCRIPTION	DATE

# AIRPORT LAYOUT PLAN

## Fort Collins-Loveland Municipal Airport

LOVELAND, CO

Barnard Dunkelberg & Company  
Airport and Environmental Consultants

APRIL 2007

Figure F1

## MASTER PLAN UPDATE

**Runway Lighting:** Maintain Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) to serve Runway 33. To support improved instrument approach capabilities ( $\frac{3}{4}$ -mile visibility minimum) for Runway 15, a Medium Intensity Approach Lighting System (MALS) is indicated on the ALP. It is also recommended that the Visual Approach Slope Indicator (VASI) serving Runway 15 should be upgraded to Precision Approach Path Indicators (PAPIs) in the future (programmed for the summer of 2006). The Runway End Identifier Lights (REILs) on Runway 15, the PAPI on Runway 33, and the High Intensity Runway Lights (HIRLs) marking the edges of Runway 15/33 will be maintained. Runway 6/24 is currently equipped with full-length runway edge reflector lights, which are planned to be maintained as well. It should also be noted that the airfield light control system will be replaced in 2006, along with the REILS serving Runway 15.

### Taxiway System

The primary taxiway improvement recommended is the extension of the parallel taxiway (Taxiway "A") serving Runway 15/33. It will be extended 1,000 feet south from its present position (400 feet to the east of Runway 15/33) to provide a full-length parallel taxiway system for the extended Runway 15/33. The taxiway will also maintain 400 feet of separation between the runway and taxiway centerlines. Additionally, it is recommended that a full-length parallel taxiway system serve the west side of future Runway 15R/33L. In addition, to facilitate aviation development on the east side of the Airport, north of Earhart Road, parallel taxiways are recommended on both sides of Runway 6/24. The Medium Intensity Taxiway Lighting System serving Taxiway "A" will be replaced in 2006.

Other development recommendations for the taxiway system include:

**Pavement Width:** Future pavement widths should match existing taxiway widths (50 feet for taxiways serving large aircraft use areas along Runway 15/33, 40 feet for taxiways along Runway 15R/33L, and 35 feet for taxiways serving only small aircraft use areas).

**Pavement Strength:** Maintain existing gross weight bearing capacities commensurate with the associated runway.

**Taxiway Lighting:** All taxiways should continue to have edge lighting systems using Medium Intensity Taxiway Lights (MITLs).

**Taxiways Serving Hangar Development Areas:** In addition to the parallel taxiway system

## MASTER PLAN UPDATE

improvements that are cited above, new taxiways will be constructed as needed to serve future aviation use facilities. A conceptual layout of these “access” taxiways is shown to the extent possible on the ALP.

### Property Acquisition

Several parcels of land are recommended for acquisition. These include:

- **Approximately 15 acres of land for Runway Protection Zone associated with Runway 15.**
- **Approximately 34 acres of land northeast of the approach end of Runway 15. This land is recommended for acquisition for aviation use and land use compatibility.**
- **Approximately 90 acres on the north side of Runway 6/24, between County Road 30 on the north and the airport property line immediately north of Runway 6/24. This land will be utilized for long-term aviation development and for land use compatibility.**
- **Approximately 77 acres on the east side of Lindbergh Drive and south of Earhart Road. This land will be utilized for aviation development and for land use compatibility.**
- **Approximately 296 acres west of Runway 15 and Runway 15R approach thresholds. This land is recommended for acquisition for approach protection, for future aviation development, and for land use compatibility.**

### Landside Development

The ALP also allocates various development areas for landside facilities. It is recognized that the development of these areas will only occur when actual demand for additional facilities occurs (demand driven); therefore, the layout of hangars and other landside facilities on the ALP should be considered as conceptual. Illustrations and accompanying discussion of the proposed landside development are detailed in the *TERMINAL AREA PLAN* section described in later pages of this chapter.

### Airspace Plan

The Airspace Plan for the Airport is based upon Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*. In order to protect the airport’s airspace and approaches from hazards that could affect the safe and efficient operation of aircraft, federal criteria contained in the FAR Part 77 document have been established to provide guidance in

## MASTER PLAN UPDATE

controlling the height of objects in the vicinity of the Airport. FAR Part 77 criteria specify a set of imaginary surfaces which, when penetrated, designate an object as being an obstruction.

The Airspace Plan, which is illustrated in the following figures, provides plan and profile views that depict these criteria as they specifically relate to Fort Collins-Loveland Municipal Airport. The plan is based on the ultimate planned runway lengths, along with the ultimate planned approaches to each runway end. Therefore, it is based on larger-than-utility airport criteria with precision instrument approaches to Runway 33 and Runway 15; and visual approaches to Runways 6, 24, 15R, and 33L.

For Fort Collins-Loveland Municipal Airport, a request for airspace review (FAA Form 7460) must be filed with the FAA by the project proponent when it involves circumstances such as:

- Any construction over 200 feet in height above the ground level of its site.
- Any construction of greater height than an imaginary surface extending outward and upward at 100 to 1 for a horizontal distance or 20,000 feet from the nearest point on the main runway.
- Any construction on the Airport.
- Construction in an instrument approach area, when requested by the FAA.

### Inner Portion of the Approach Surface Plans

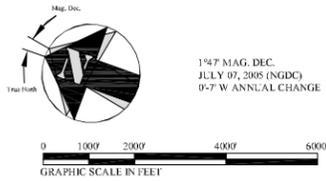
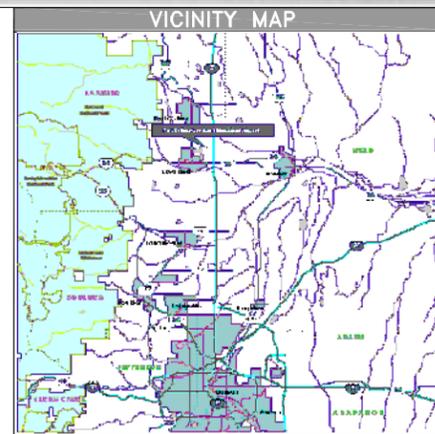
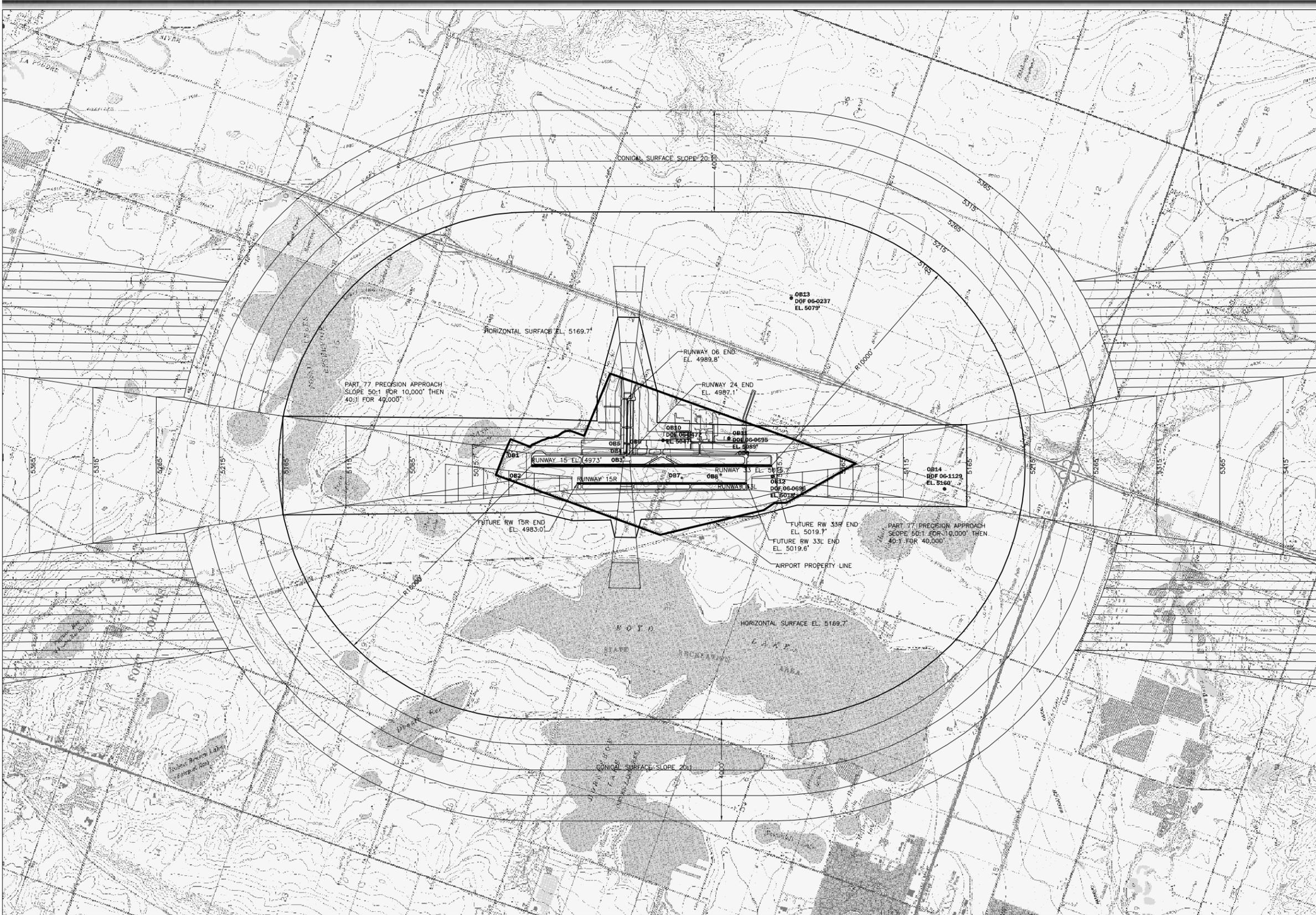
To provide a more detailed view of the inner portions of the Part 77 imaginary approach surfaces and the Runway Protection Zone (RPZ) areas, the following drawings are provided. An RPZ is trapezoidal in shape, centered about the extended runway centerline, and typically begins 200 feet beyond the end of the runway. The RPZs are safety areas within which it is desirable to clear all objects (although some uses are normally acceptable). The size of the RPZ is contingent upon the approach category of the design aircraft and the visibility minimums associated with the type of approach (visual and not lower than one mile, not lower than  $\frac{3}{4}$ - mile, and lower than  $\frac{3}{4}$ - mile). As noted in previous sections, the existing Runway 15 RPZ dimension (i.e., 1,000' x 1,700' x 1,510') is to be enlarged in conjunction with the proposed  $\frac{3}{4}$ -mile approach visibility minimum upgrade. The Runway 33 RPZ will be maintained to accommodate the existing and ultimate planned precision approaches with approach visibility minimums of no less than  $\frac{1}{2}$ -mile. The Runway 6/24 RPZ will be maintained to accommodate the existing and ultimate planned visual approaches.

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Additionally, the future Runway 15R/33L is planned to accommodate visual approaches.

Generally speaking, the airport sponsor, as either fee simple acquisition or as an easement, should control the RPZs (fee simple ownership is recommended). If an easement is purchased, it is a purchase of the air rights over the ground, including the ability to control the height of objects and land use on the property. It is recognized that the Airport will need to acquire additional property to control the balance of the existing Runway 15 RPZs.

The Inner Portion of the Approach Surface Drawings, which are also provided in the following illustrations, provides large-scale drawings with both plan and profile delineations. They are intended to facilitate identification of the roadways, utility lines, railroads, structures, and other possible obstructions that may lie within the confines of the inner approach surface area associated with each runway end. The illustrations also depict the approach clearance requirements specified by threshold siting criteria. As with the *AIRSPACE PLAN*, the *INNER PORTION OF THE APPROACH SURFACE DRAWINGS* is based on the ultimate planned runway length, along with the ultimate planned instrument approach capabilities associated with each runway.



OBSTRUCTIONS					
NO.	DESCRIPTION	ELEVATION	PENETRATION	SURFACE	DISPOSITION
OB1	TREE	5025'	30'	RW 15 APPROACH	TO BE TRIMMED
OB2	POLE	4995'	3'	RW 15 APPROACH	TO BE LOWERED
OB3	GROUND	4988'	1'	RW 6/24 PRIMARY	TO BE GRADED
OB4	GROUND	4991'	4'	RW 6/24 PRIMARY	TO BE GRADED
OB5	GROUND	4988'	2'	RW 6/24 PRIMARY	TO BE GRADED
OB6	GROUND	4987'	1'	RW 6/24 PRIMARY	TO BE GRADED
OB7	OL ON LTD WSK	5023'	18'	RW 15 PRIMARY	TO REMAIN
OB8	OL ON GS	5043'	31'	RW 15 PRIMARY	TO REMAIN
OB9	GROUND	5018'	2'	RW 15 PRIMARY	TO BE GRADED
OB10	FLOODLIGHT POLE	5047'	-18'	RW 33 INNER TRANS	TO REMAIN
OB11	ROD OL BEACON	5089'	-1'	RW 33 INNER TRANS	TO REMAIN
OB12	ROD ON BLDG	5018'	-38'	RW 33 INNER TRANS	TO REMAIN
OB13	T-L TOWER	5079'	-90'	HORIZ SURFACE	TO REMAIN
OB14	CRANE	5160'	10'	RW 33 APPROACH	TO BE LOWERED

- NOTES**
- HEIGHT HAZARD, AIRCRAFT NOISE AND TRAFFIC PATTERNS CONSIDERED IN FORMULATION OF AIRPORT INFLUENCE AREA MAP AND INCORPORATED INTO CITY OF LOVELAND LAND USE PLAN.
  - THE PREPARATION OF THIS PLAN 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, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS PLAN 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.

REVISIONS		
NO.	DESCRIPTION	DATE

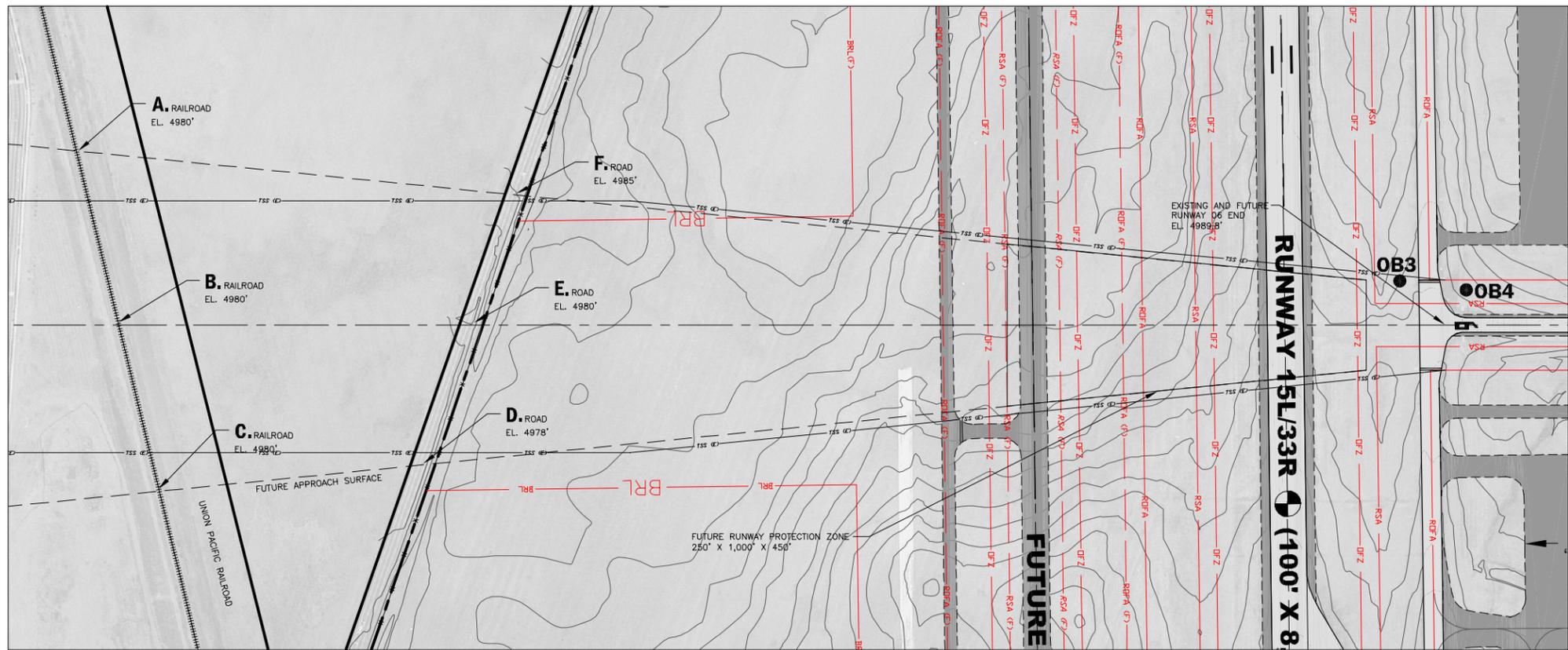
**AIRSPACE DRAWING - PLAN VIEW**  
(PART 77 SURFACES)

**Fort Collins-Loveland Municipal Airport**  
LOVELAND, CO



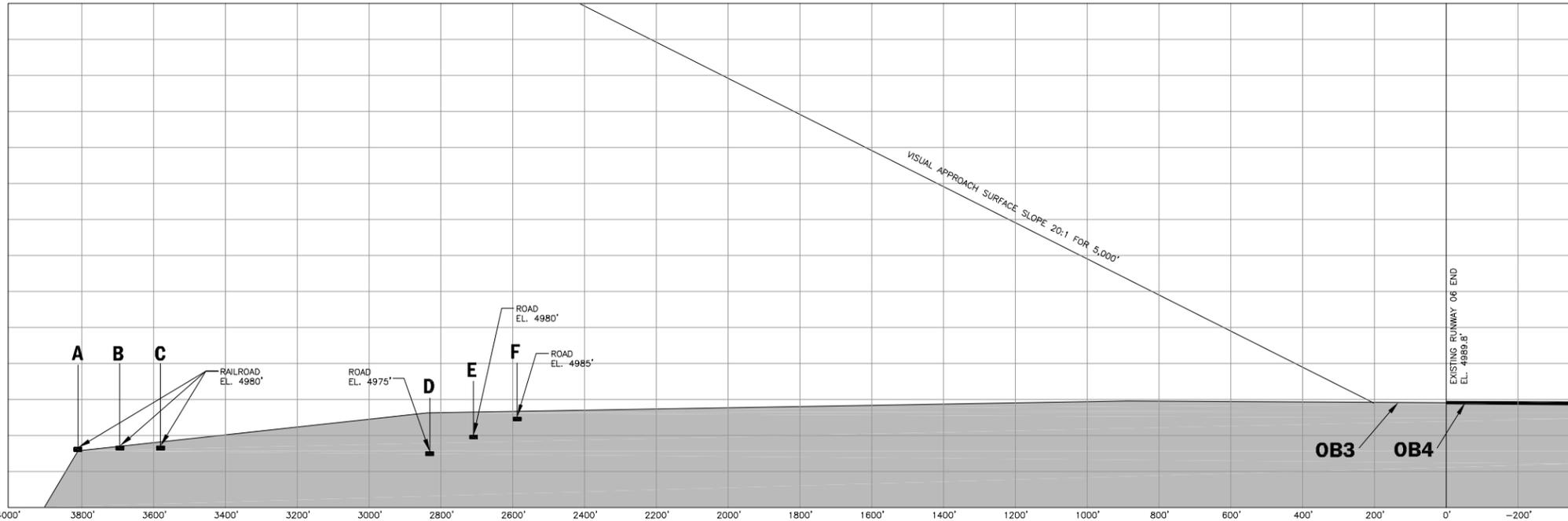






**RUNWAY 06 PLAN**  
1" = 200' HORIZONTALLY

TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE PART 77 APPROACH SURFACE



**RUNWAY 06 PROFILE**  
1" = 200' HORIZONTALLY  
1" = 20' VERTICALLY

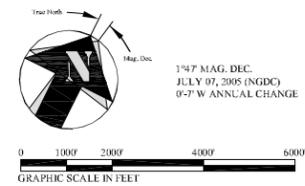
OBSTRUCTIONS					
NO.	DESCRIPTION	ELEVATION	PENETRATION	APPROACH SURFACE	DISPOSITION
OB3	GROUND	4988'	1'	RW 6/24	TO BE GRADED
OB4	GROUND	4991'	4'	RW 6/24	TO BE GRADED

**NOTES**

- HEIGHT HAZARD, AIRCRAFT NOISE AND TRAFFIC PATTERNS CONSIDERED IN FORMULATION OF AIRPORT INFLUENCE AREA MAP AND INCORPORATED INTO CITY OF LOVELAND LAND USE PLAN.
- THE PREPARATION OF THIS PLAN 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, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS PLAN 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.

RUNWAY DATA		
	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS	VISUAL	VISUAL
FAR PART 77 APPROACH SLOPE	20:1/20:1	SAME
RUNWAY WIDTH X LENGTH	40' x 2273'	60' x 2273'
RUNWAY PAVEMENT TYPE	ASPHALT	SAME
TAXIWAY PAVEMENT TYPE	ASPHALT	SAME
PAVEMENT STRENGTH (IN 1000 LBS.)	12.55	SAME
RUNWAY LIGHTING	REFLECTORS	SAME
EFFECTIVE RUNWAY GRADIENT %	.007	SAME
MAXIMUM GRADE WITHIN RUNWAY LENGTH %	0.1	SAME
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME
RUNWAY MARKING	BSC-G	SAME
VISUAL APPROACH AIDS	NONE	SAME
INSTRUMENT APPROACH AIDS	NONE	SAME
AIRPORT REFERENCE CODE	B-1 (SMALL)	SAME
CRITICAL AIRCRAFT	BEECH BARON 58	SAME
	WINGSPAN 37.8'	
	APPROACH SPEED 96 Kts.	
	MAX T/O WEIGHT 5,500 Lbs.	
RUNWAY SAFETY AREA (RSA) WIDTH	120'	SAME
RSA LENGTH BEYOND STOP END	240'/240'	SAME
RUNWAY OBJECT FREE AREA (OFA) WIDTH	250'	SAME
OFA LENGTH BEYOND STOP END	240'/240'	SAME
OBSTACLE FREE ZONE (OFZ) WIDTH	250'	SAME
OFZ LENGTH BEYOND STOP END	200'	SAME
RUNWAY CENTERLINE TO HOLD LINE	125'	SAME
RUNWAY END COORDINATES	LAT. N 40°27'10.08" ; LONG. W 108°00'41.86"	SAME
NGS 405 01/03 (NAD 83)		
	LAT. N 40°27'17.53" ; LONG. W 108°00'13.93"	SAME
RUNWAY ELEVATIONS	END 4989.8'/4987.1'	SAME
NGS 405 01/03 (NAVD 88)	HIGH POINT 4989.8'	SAME
	LOW POINT 4987.1'	SAME
	TOUCHDOWN ZONE ELEVATION 4989.8'/4988.2'	SAME

NOTES:  
1.) NO THRESHOLD SITING SURFACE PENETRATIONS, SEE SHEETS 6-11 FOR GRAPHIC DEPICTION.  
2.) NO. OFZ PENETRATIONS.



AIRPORT DATA		
	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	5015.7'	5019.7'
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAVD 83)	LAT. N 40°27'10.08" ; LONG. W 108°00'41.86"	LAT. N 40°27'17.53" ; LONG. W 108°00'13.93"
AIRPORT REFERENCE CODE	C-III	SAME
NPAS CATEGORY	PCS	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	85°F (JULY)	SAME
TAXIWAY LIGHTING	MITL	SAME
TAXIWAY MARKING	CL	SAME
AIRPORT & TERMINAL NAVAIDS	NDB,VOR,ILS	SAME

LAYOUT PLAN LEGEND		
	EXISTING	FUTURE
AIRPORT PROPERTY LINE	---	---
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS	█	█
AIRFIELD PAVEMENT	▨	▨
PAVED ROADS	▩	▩
RUNWAY PROTECTION ZONE	▨	▨
BUILDING RESTRICTION LINE	---	---
OBSTACLE FREE ZONE	---	---
RUNWAY SAFETY AREA	---	---
RUNWAY OBJECT FREE AREA	---	---
FUEL STORAGE AREA	○	○
AIRPORT BEACON	★	★
AIRPORT REFERENCE POINT (ARP)	⊙	⊙
LIGHTED WIND CONE & SEGMENTED CIRCLE	⊙	⊙
WIND CONE	↑	↑
PRECISION APPROACH PATH INDICATOR (PAPI)	⋮	⋮
VISUAL APPROACH SLOPE INDICATOR (VASI)	⋮	⋮
RUNWAY END IDENTIFIER LIGHTS (REIL)	⋮	⋮
TAXIWAY HOLDLINES	⊢	⊢
SECTION CORNER	⊠	⊠
RPZ EASEMENT/USE AGREEMENT	▨	▨
PRECISION OBJECT FREE AREA	▨	▨
BUILDINGS TO BE REMOVED	▨	▨

REVISIONS		
NO.	DESCRIPTION	DATE

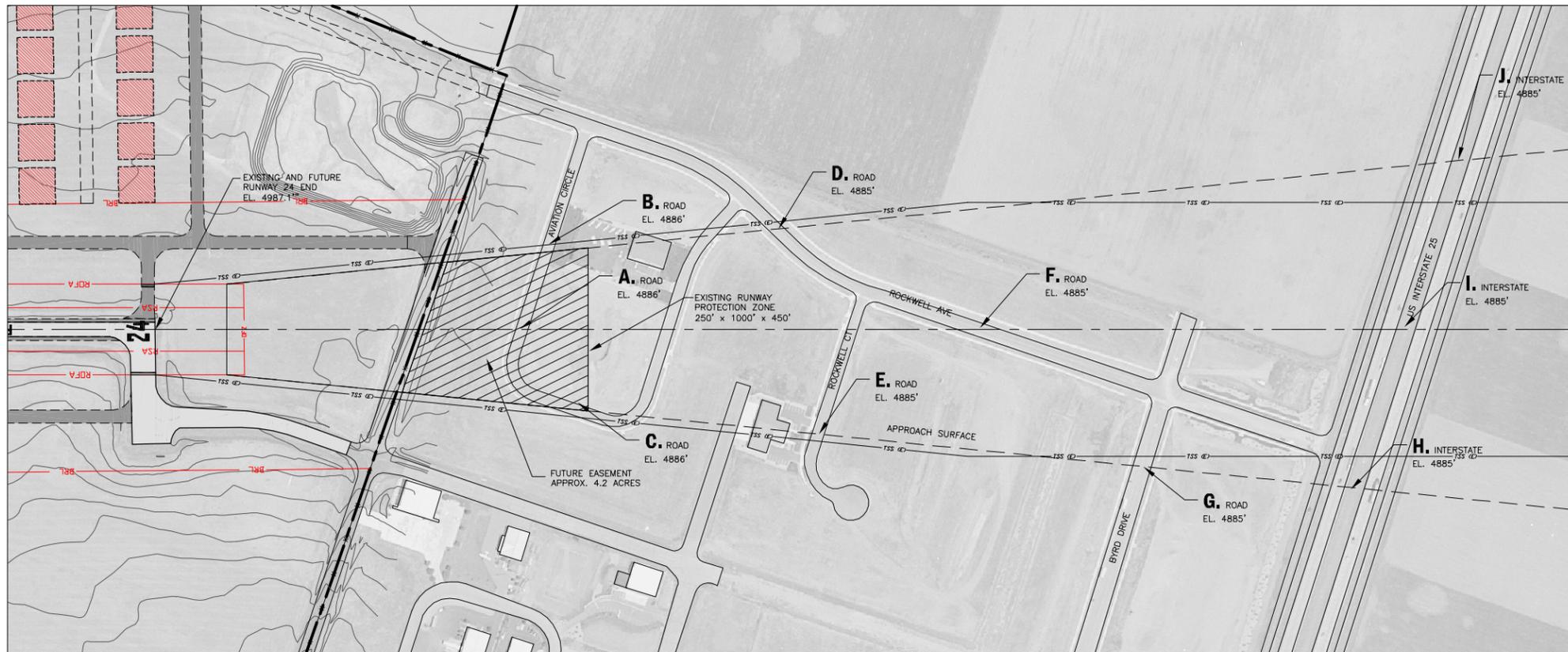
**INNER APPROACH DRAWING - RW 6**

**Fort Collins-Loveland Municipal Airport**  
LOVELAND, CO

**Barnard Dunkelberg & Company**  
Airport and Environmental Consultants

Figure F6

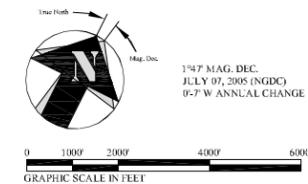
APRIL 2007



**RUNWAY 24 PLAN**  
1" = 200' HORIZONTALLY

RUNWAY DATA	RUNWAY 6/24	
	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS	VISUAL	VISUAL
FAR PART 77 APPROACH SLOPE	20:1/20:1	SAME
RUNWAY WIDTH X LENGTH	40' x 2273'	60' x 2273'
RUNWAY PAVEMENT TYPE	ASPHALT	SAME
TAXIWAY PAVEMENT TYPE	ASPHALT	SAME
PAVEMENT STRENGTH (IN 1000 LBS.)	12.5S	SAME
RUNWAY LIGHTING	REFLECTORS	SAME
EFFECTIVE RUNWAY GRADIENT %	.007	SAME
MAXIMUM GRADE WITHIN RUNWAY LENGTH %	0.1	SAME
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME
RUNWAY MARKING	BSC-G	SAME
VISUAL APPROACH AIDS	NONE	SAME
INSTRUMENT APPROACH AIDS	NONE	SAME
AIRPORT REFERENCE CODE	B-1 (SMALL)	SAME
CRITICAL AIRCRAFT	BEECH BARON 58	SAME
WINGSPAN	37.8'	
APPROACH SPEED	98 Kts.	
MAX T/O WEIGHT	5,500 Lbs.	
RUNWAY SAFETY AREA (RSA) WIDTH	120'	SAME
RSA LENGTH BEYOND STOP END	240'/240'	SAME
RUNWAY OBJECT FREE AREA (OFA) WIDTH	250'	SAME
OFA LENGTH BEYOND STOP END	240'/240'	SAME
OBSTACLE FREE ZONE (OFZ) WIDTH	250'	SAME
OFZ LENGTH BEYOND STOP END	200'	SAME
RUNWAY CENTERLINE TO HOLD LINE	125'	SAME
RUNWAY END COORDINATES	LAT. N 40°27'10.08"	SAME
NGS 405 01/03 (NAD 83)	LON. W 105°00'41.665"	
	LAT. N 40°27'17.53"	SAME
	LON. W 105°00'41.665"	
RUNWAY ELEVATIONS	END 4989.8'/4987.1'	SAME
NGS 405 01/03 (NAVD 88)	HIGH POINT 4989.8'	SAME
	LOW POINT 4987.1'	SAME
	TOUCHDOWN ZONE ELEVATION 4989.8'/4988.2'	SAME

NOTES:  
1.) NO THRESHOLD SITING SURFACE PENETRATIONS, SEE SHEETS 6-11 FOR GRAPHIC DEPICTION.  
2.) NO. OFZ PENETRATIONS.



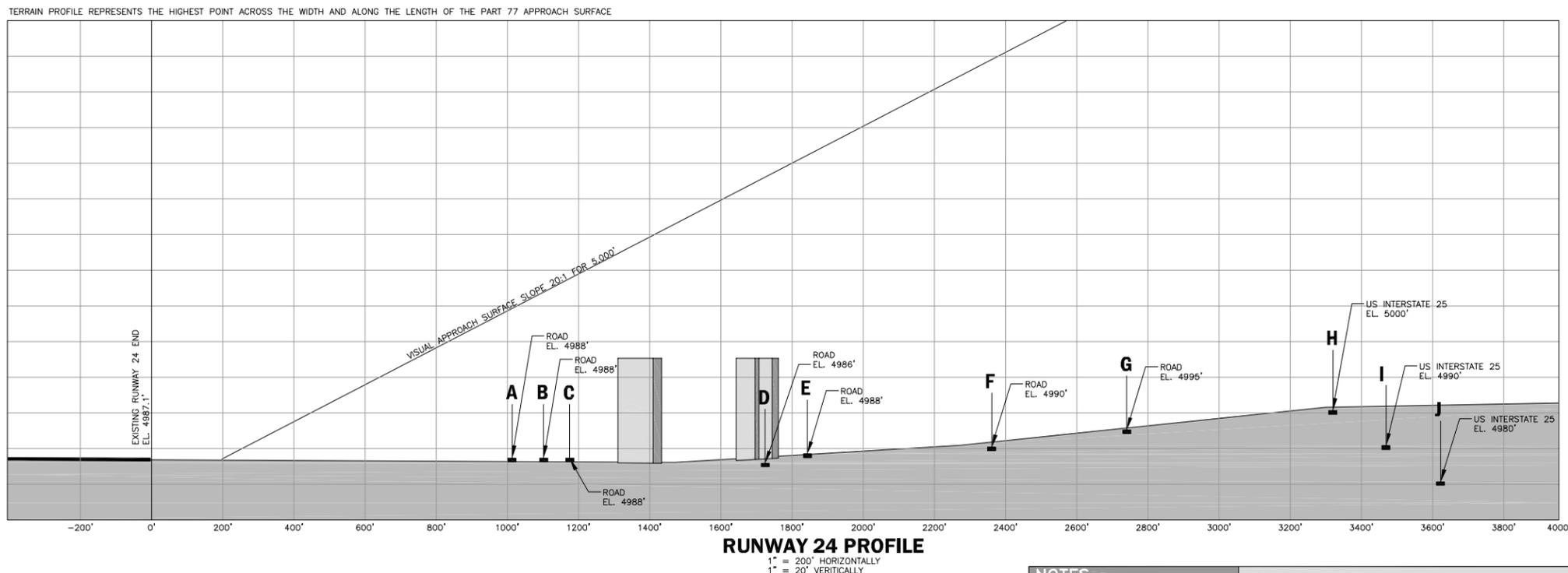
AIRPORT DATA	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	5015.7'	5019.7'
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAD 83)	LAT. N 40°27'10.08"	LAT. N 40°27'17.53"
AIRPORT REFERENCE CODE	C-III	SAME
TAPAS CATEGORY	PCS	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	85°F (JULY)	SAME
TAXIWAY LIGHTING	MITL	SAME
TAXIWAY MARKING	CL	SAME
AIRPORT & TERMINAL NAVAIDS	NDB,VOR,ILS	SAME

LAYOUT PLAN LEGEND	EXISTING	FUTURE
AIRPORT PROPERTY LINE	---	---
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS	█	█
AIRFIELD PAVEMENT	▨	▨
PAVED ROADS	▨	▨
RUNWAY PROTECTION ZONE	▨	▨
BUILDING RESTRICTION LINE	▨	▨
OBSTACLE FREE ZONE	▨	▨
RUNWAY SAFETY AREA	▨	▨
RUNWAY OBJECT FREE AREA	▨	▨
FUEL STORAGE AREA	○	○
AIRPORT BEACON	★	★
AIRPORT REFERENCE POINT (ARP)	⊙	⊙
LIGHTED WIND CONE & SEGMENTED CIRCLE	⊙	⊙
WIND CONE	⊙	⊙
PRECISION APPROACH PATH INDICATOR (PAPI)	⊙	⊙
VISUAL APPROACH SLOPE INDICATOR (VASI)	⊙	⊙
RUNWAY END IDENTIFIER LIGHTS (REIL)	⊙	⊙
TAXIWAY HOLDLINES	▨	▨
SECTION CORNER	⊙	⊙
RPZ EASEMENT/USE AGREEMENT	▨	▨
PRECISION OBJECT FREE AREA	▨	▨
BUILDINGS TO BE REMOVED	▨	▨

REVISIONS	NO.	DESCRIPTION	DATE

**INNER APPROACH DRAWING - RW 24**  
**Fort Collins-Loveland Municipal Airport**  
LOVELAND, CO

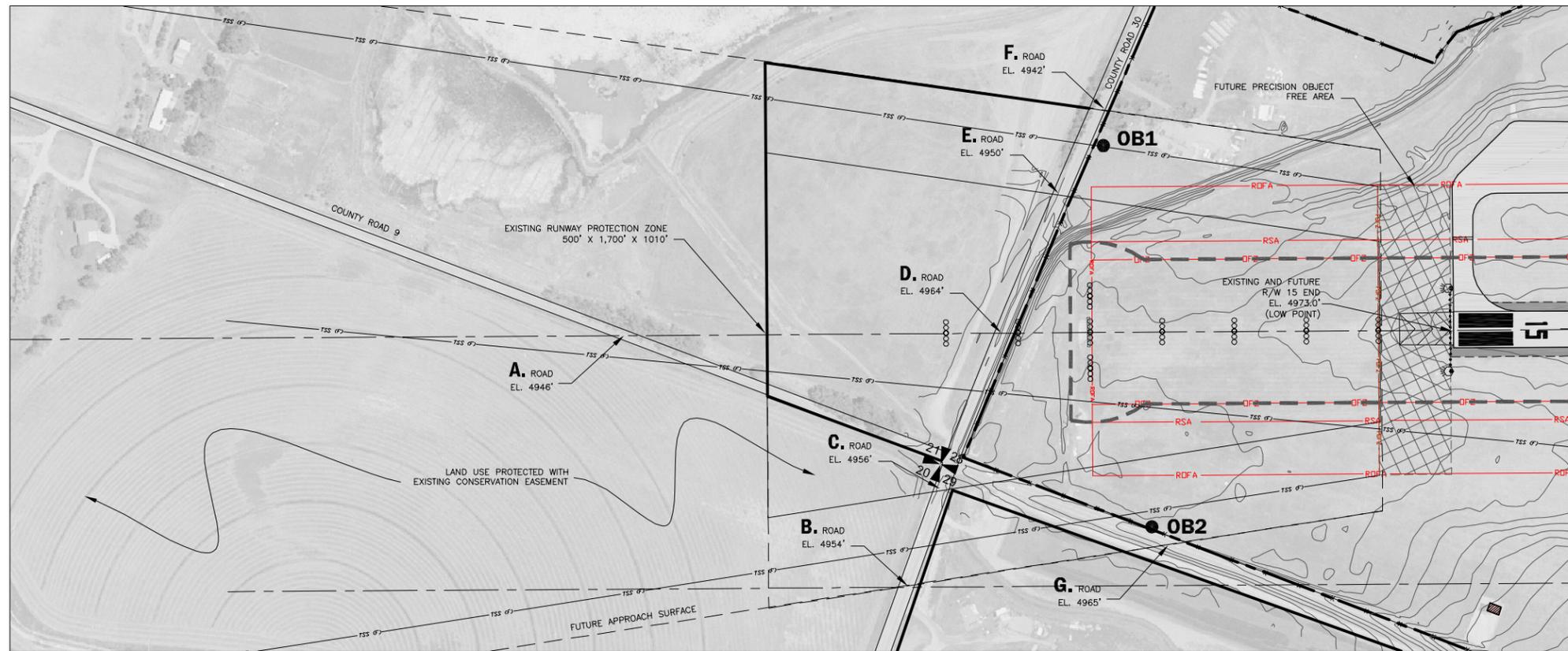
**Barnard Dunkelberg & Company**  
Airport and Environmental Consultants  
APRIL 2007  
Figure F7



**RUNWAY 24 PROFILE**  
1" = 200' HORIZONTALLY  
1" = 20' VERTICALLY

OBSTRUCTIONS	NO.	DESCRIPTION	ELEVATION	PENETRATION	APPROACH SURFACE	DISPOSITION
		NONE IDENTIFIED FOR THIS AREA				

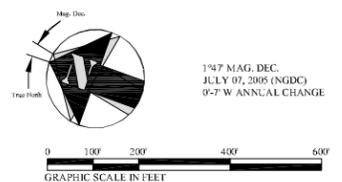
**NOTES**  
1.) HEIGHT HAZARD, AIRCRAFT NOISE AND TRAFFIC PATTERNS CONSIDERED IN FORMULATION OF AIRPORT INFLUENCE AREA MAP AND INCORPORATED INTO CITY OF LOVELAND LAND USE PLAN.  
2.) THE PREPARATION OF THIS PLAN WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS PLAN 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.



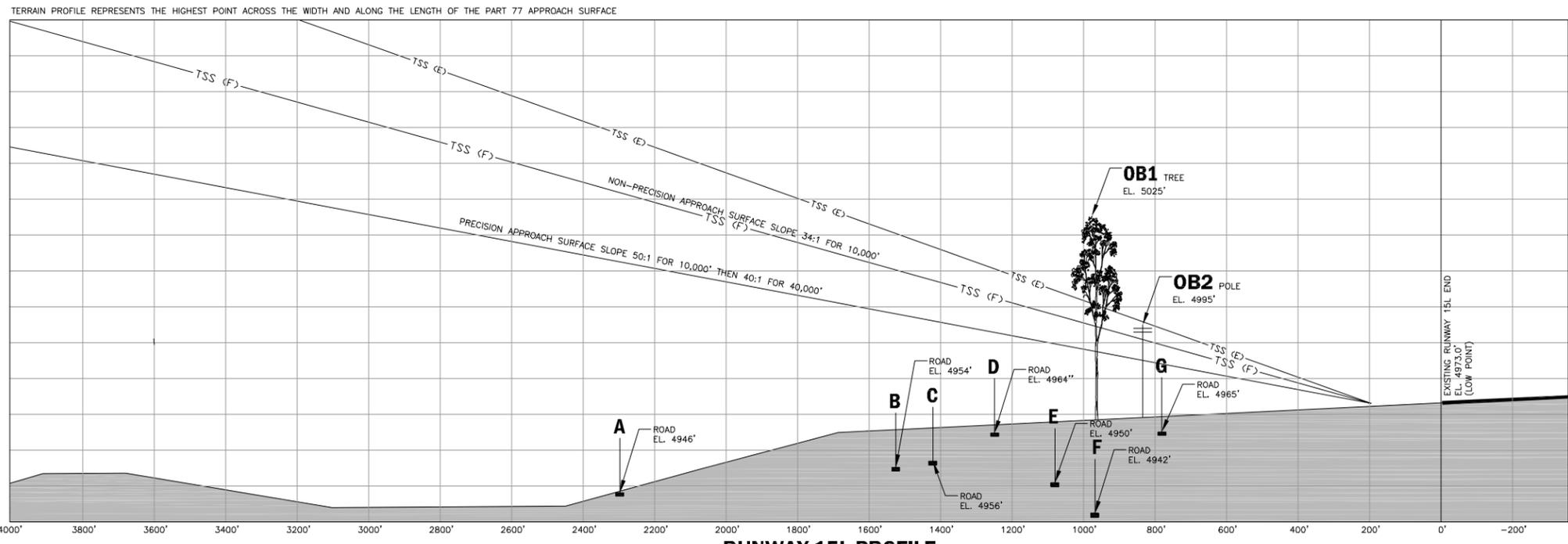
**RUNWAY 15L PLAN**  
1" = 200' HORIZONTALLY

	RUNWAY DATA		
	EXISTING	FUTURE	RUNWAY 15R/33L
APPROACH VISIBILITY MINIMUMS	1-MILE/1/2-MILE	3/4-MILE/1/2-MILE	VISUAL
FAR PART 77 APPROACH SLOPE	34:1/50:1	50:1/50:1	30:1/20:1
RUNWAY WIDTH X LENGTH	100' x 8500'	150' x 9500'	75' x 6700'
RUNWAY PAVEMENT TYPE	ASPHALT	SAME	ASPHALT
TAXIWAY PAVEMENT TYPE	SAME	SAME	ASPHALT
PAVEMENT STRENGTH (IN 1000 LBS.)	50S, 6SD, 130T	90S, 130T, 180T	30S
RUNWAY LIGHTING	REIL, HRL, MALS, R	REIL, HRL, MALS, MALS	MIRL
EFFECTIVE RUNWAY GRADIENT %	.005	SAME	.005
MAXIMUM GRADE WITHIN RUNWAY LENGTH %	0.5	SAME	0.5
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME	CRITERIA MET
RUNWAY MARKING	PIR	SAME	BSC
VISUAL APPROACH AIDS	VASI, PAPI	PAPI	PAPI
INSTRUMENT APPROACH AIDS	ILS, GPS, VOR, DME	ILS, GPS, VOR, DME	NONE
AIRPORT REFERENCE CODE	C-III	SAME	B-II
CRITICAL AIRCRAFT	MD-80	SAME	BREX SUPER KING AIR E200
WINGSPAN	107.8'		54.5'
APPROACH SPEED	135 Kts.		103 Kts.
MAX T/O WEIGHT	160,000 Lbs.		12,500 Lbs.
LENGTH OF HAUL			
RUNWAY SAFETY AREA (RSA) WIDTH	500'	SAME	150'
RSA LENGTH BEYOND STOP END	1000'/1000'	SAME	300'/300'
RUNWAY OBJECT FREE AREA (OFA) WIDTH	800'	SAME	500'
OFA LENGTH BEYOND STOP END	1000'/1000'	SAME	300'/300'
OBSTACLE FREE ZONE (OFZ) WIDTH	400'	SAME	250'
OFZ LENGTH BEYOND STOP END	200'	SAME	200'
RUNWAY CENTERLINE TO HOLD LINE	250'	SAME	250'
RUNWAY END COORDINATES	LAT. N 40°27'44.21" NGS 405 01/03 (NAD 83) LONG. W 105°00'25.89"	SAME	LAT. N 40°27'28.13" LONG. W 105°01'03.50" LAT. N 40°26'25.08" LONG. W 105°00'25.89"
RUNWAY ELEVATIONS			
END	4973.0'/5015.7'	4973.0'/5019.7'	4983.0'/5019.6'
DISPLACED THRESHOLD ELEVATION	-	5015.7'	-
NGS 405 01/03 (NAVD 88) HIGH POINT	5015.7'	5019.7'	5019.6'
LOW POINT	4973.0'	SAME	4983.0'
TOUCHDOWN ZONE ELEVATION	4985.2'/5015.7'	4985.2'/5019.7'	5006.0'/5019.6'

NOTES:  
1.) NO EXISTING THRESHOLD SITING SURFACE PENETRATIONS, SEE SHEETS 6-11 FOR GRAPHIC DEPICTION.  
2.) NO. OFZ PENETRATIONS.



AIRPORT DATA		
	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	5015.7'	5019.7'
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAVD 83)	LAT. N 40°27'44.21" LONG. W 105°00'25.89"	LAT. N 40°27'28.13" LONG. W 105°01'03.50"
AIRPORT REFERENCE CODE	C-III	SAME
TAPIAS CATEGORY	PCS	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	85°F (JULY)	SAME
TAXIWAY LIGHTING	MIL	SAME
TAXIWAY MARKING	CL	SAME
AIRPORT & TERMINAL NAVAIDS	NDB, VOR, ILS	SAME



**RUNWAY 15L PROFILE**  
1" = 200' HORIZONTALLY  
1" = 20' VERTICALLY

**NOTES**  
1.) HEIGHT HAZARD, AIRCRAFT NOISE AND TRAFFIC PATTERNS CONSIDERED IN FORMULATION OF AIRPORT INFLUENCE AREA MAP AND INCORPORATED INTO CITY OF LOVELAND LAND USE PLAN.  
2.) THE PREPARATION OF THIS PLAN 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, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS PLAN 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.

OBSTRUCTIONS					
NO.	DESCRIPTION	ELEVATION	PENETRATION	APPROACH SURFACE	DISPOSITION
OB1	TREE	5025'	30'	RW 15 APPROACH	TO BE TRIMMED
OB2	POLE	4995'	3'	RW 15 APPROACH	TO BE LOWERED

LAYOUT PLAN LEGEND		
	EXISTING	FUTURE
AIRPORT PROPERTY LINE	---	---
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS	■	■
AIRFIELD PAVEMENT	▨	▨
PAVED ROADS	▨	▨
RUNWAY PROTECTION ZONE	▨	▨
BUILDING RESTRICTION LINE	BRIL (E)	BRIL (F)
OBSTACLE FREE ZONE	OFZ (E)	OFZ (F)
RUNWAY SAFETY AREA	RSA (E)	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA (E)	ROFA (F)
FUEL STORAGE AREA	⊙	⊙
AIRPORT BEACON	★	★
AIRPORT REFERENCE POINT (ARP)	⊕	⊕
LIGHTED WIND CONE & SEGMENTED CIRCLE	⊙	⊙
WIND CONE	⊙	⊙
PRECISION APPROACH PATH INDICATOR (PAPI)	⊙	⊙
VISUAL APPROACH SLOPE INDICATOR (VASI)	⊙	⊙
RUNWAY END IDENTIFIER LIGHTS (REIL)	⊙	⊙
TAXIWAY HOLDLINES	⊙	⊙
SECTION CORNER	⊙	⊙
RPZ EASEMENT/USE AGREEMENT	▨	▨
PRECISION OBJECT FREE AREA	▨	▨
BUILDINGS TO BE REMOVED	▨	▨

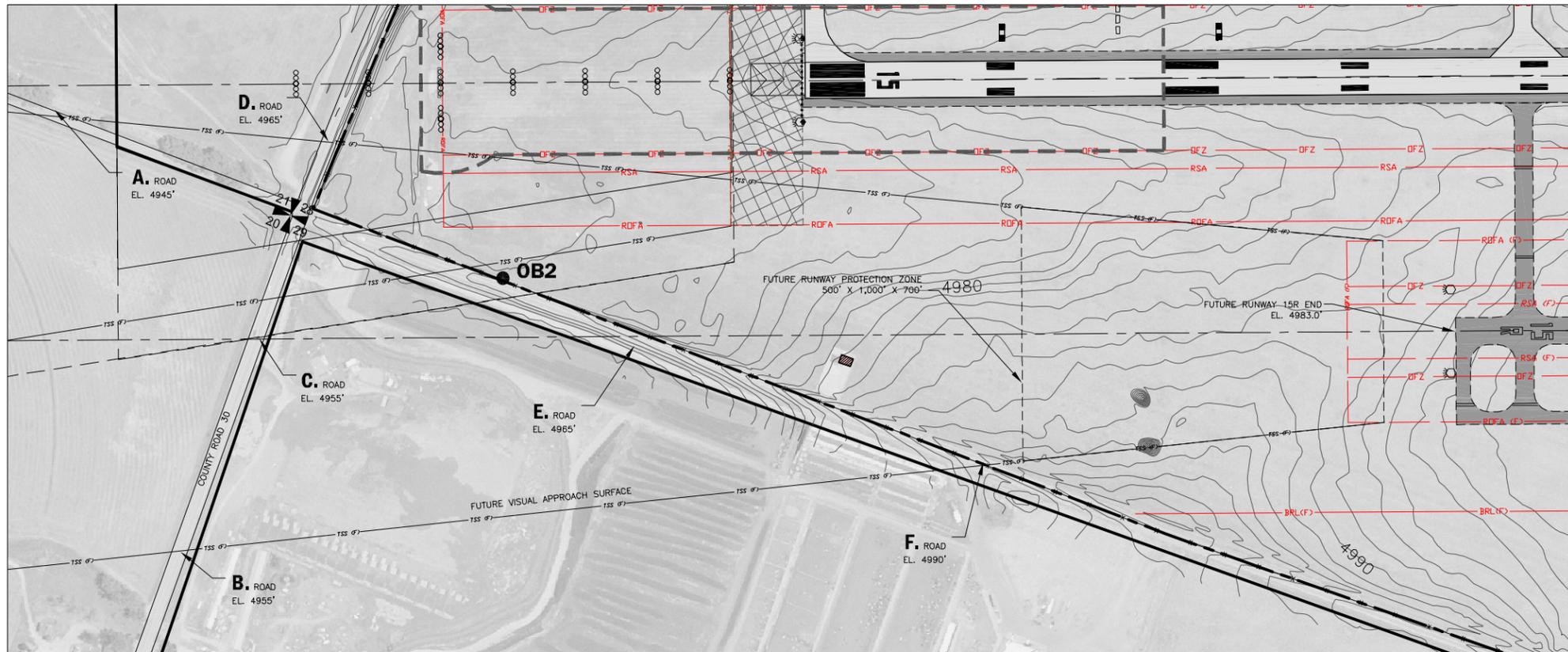
REVISIONS		
NO.	DESCRIPTION	DATE

**INNER APPROACH DRAWING - RW 15L**  
**Fort Collins-Loveland Municipal Airport**  
LOVELAND, CO

**Barnard Dunkelberg & Company**  
Airport and Environmental Consultants  
APRIL 2007

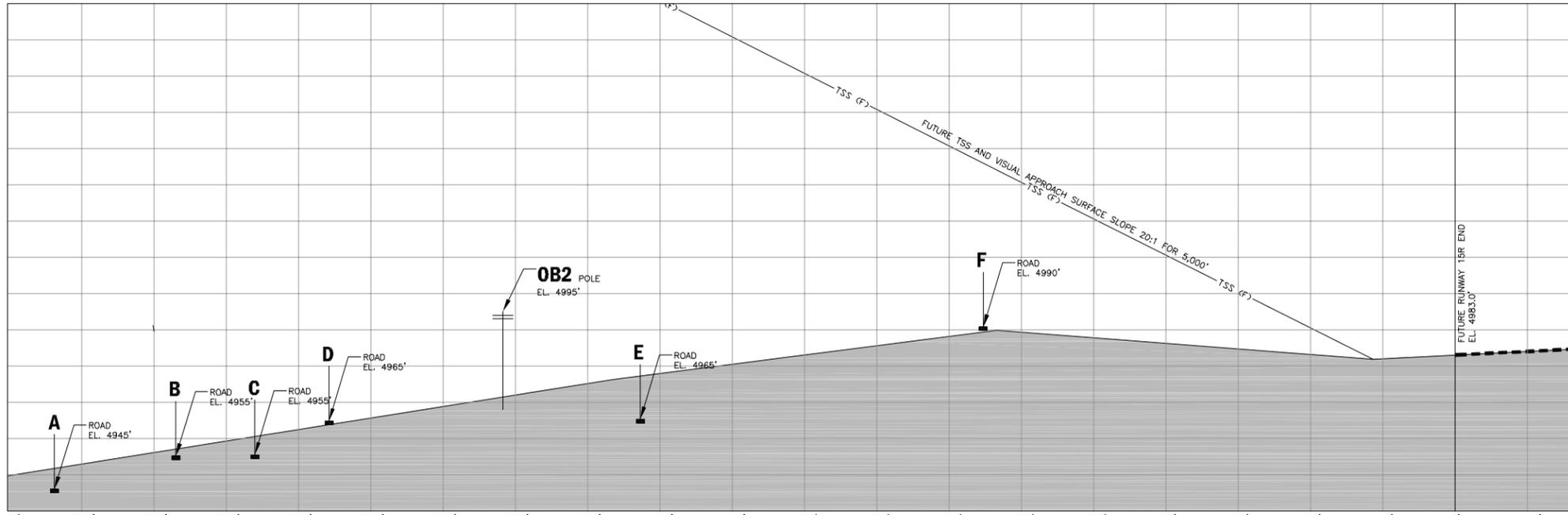
Figure F8





**RUNWAY 15R PLAN**  
1" = 200' HORIZONTALLY

TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE PART 77 APPROACH SURFACE



**RUNWAY 15R PROFILE**  
1" = 200' HORIZONTALLY  
1" = 20' VERTICALLY

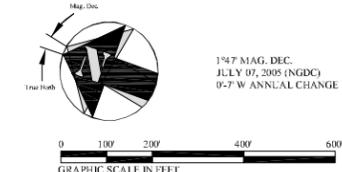
OBSTRUCTIONS					
NO.	DESCRIPTION	ELEVATION	PENETRATION	APPROACH SURFACE	DISPOSITION
OB2	POLE	4995'	3'	RW 15	TO BE LOWERED

**NOTES**

1.) HEIGHT HAZARD, AIRCRAFT NOISE AND TRAFFIC PATTERNS CONSIDERED IN FORMULATION OF AIRPORT INFLUENCE AREA MAP AND INCORPORATED INTO CITY OF LOVELAND LAND USE PLAN.

2.) THE PREPARATION OF THIS PLAN 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, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS PLAN 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.

RUNWAY DATA	
APPROACH VISIBILITY MINIMUMS	RUNWAY 15R/33L FUTURE VISUAL
FAR PART 77 APPROACH SLOPE	20:1/20:1
RUNWAY WIDTH X LENGTH	75' X 6700'
RUNWAY PAVEMENT TYPE	ASPHALT
TAXIWAY PAVEMENT TYPE	ASPHALT
PAVEMENT STRENGTH (IN 1000 LBS.)	305
RUNWAY LIGHTING	MIRL
EFFECTIVE RUNWAY GRADIENT %	.025
MAXIMUM GRADE WITHIN RUNWAY LENGTH %	0.5
RUNWAY LINE-OF-SITE	CRITERIA MET
RUNWAY MARKING	BSC
VISUAL APPROACH AIDS	PAPI
INSTRUMENT APPROACH AIDS	NONE
AIRPORT REFERENCE CODE	B-II
CRITICAL AIRCRAFT	B737 SUPER JET AIR 800
WINGSPAN	54.5
APPROACH SPEED	103 Kts.
MAX T/O WEIGHT	12,500 Lbs.
LENGTH OF HAUL	
RUNWAY SAFETY AREA (RSA) WIDTH	150'
RSA LENGTH BEYOND STOP END	300'/300'
RUNWAY OBJECT FREE AREA (OFA) WIDTH	500'
OFA LENGTH BEYOND STOP END	300'/300'
OBSTACLE FREE ZONE (OFZ) WIDTH	250'
OFZ LENGTH BEYOND STOP END	200'
RUNWAY CENTERLINE TO HOLD LINE	250'
RUNWAY END COORDINATES	LAT. N 40°27'28.11" LONG. W 105°01'03.50"
	LAT. N 40°28'22.76" LONG. W 105°00'34.42"
RUNWAY ELEVATIONS	END 4983.0'/5019.6'
DISPLACED THRESHOLD ELEVATION	-
NGS 405 01/03 (NAVD 88) HIGH POINT	5019.6'
LOW POINT	4983.0'
TOUCHDOWN ZONE ELEVATION	5006.0'/5019.6'
NOTES:	
1.) NO THRESHOLD SITING SURFACE PENETRATIONS, SEE SHEETS 6-11 FOR GRAPHIC DEPICTION.	
2.) NO. OFZ PENETRATIONS.	



AIRPORT DATA		
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	EXISTING	FUTURE
	5015.7'	5019.7'
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAVD 88)	EXISTING	FUTURE
	LAT. N 40°27'28.11" LONG. W 105°01'03.50"	LAT. N 40°27'28.11" LONG. W 105°01'03.50"
AIRPORT REFERENCE CODE	C-III	SAME
NPAS CATEGORY	PCS	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	85F (JULY)	SAME
TAXIWAY LIGHTING	MIL	SAME
TAXIWAY MARKING	CL	SAME
AIRPORT & TERMINAL NAVAIDS	NDB,VOR,ILS	SAME

LAYOUT PLAN LEGEND		
AIRPORT PROPERTY LINE	EXISTING	FUTURE
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS	[Symbol]	[Symbol]
AIRFIELD PAVEMENT	[Symbol]	[Symbol]
PAVED ROADS	[Symbol]	[Symbol]
RUNWAY PROTECTION ZONE	[Symbol]	[Symbol]
BUILDING RESTRICTION LINE	BRL (E)	BRL (F)
OBSTACLE FREE ZONE	OFZ (E)	OFZ (F)
RUNWAY SAFETY AREA	RSA (E)	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA (E)	ROFA (F)
FUEL STORAGE AREA	[Symbol]	[Symbol]
AIRPORT BEACON	[Symbol]	[Symbol]
AIRPORT REFERENCE POINT (ARP)	[Symbol]	[Symbol]
LIGHTED WIND CONE & SEGMENTED CIRCLE	[Symbol]	[Symbol]
WIND CONE	[Symbol]	[Symbol]
PRECISION APPROACH PATH INDICATOR (PAPI)	[Symbol]	[Symbol]
VISUAL APPROACH SLOPE INDICATOR (VASI)	[Symbol]	[Symbol]
RUNWAY END IDENTIFIER LIGHTS (REIL)	[Symbol]	[Symbol]
TAXIWAY HOLDLINES	[Symbol]	[Symbol]
SECTION CORNER	[Symbol]	[Symbol]
RPZ EASEMENT/USE AGREEMENT	[Symbol]	[Symbol]
PRECISION OBJECT FREE AREA	[Symbol]	[Symbol]
BUILDINGS TO BE REMOVED	[Symbol]	[Symbol]

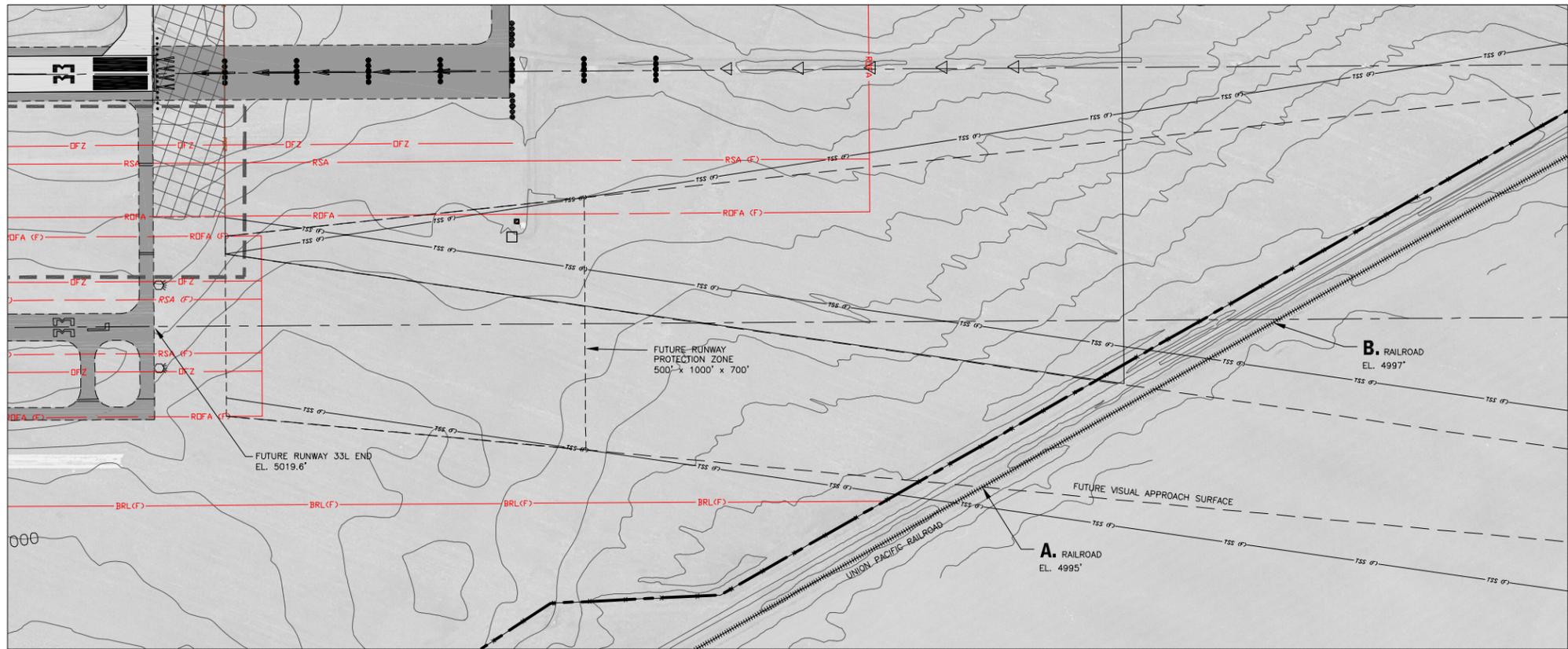
REVISIONS		
NO.	DESCRIPTION	DATE

**INNER APPROACH DRAWING - RW 15R**

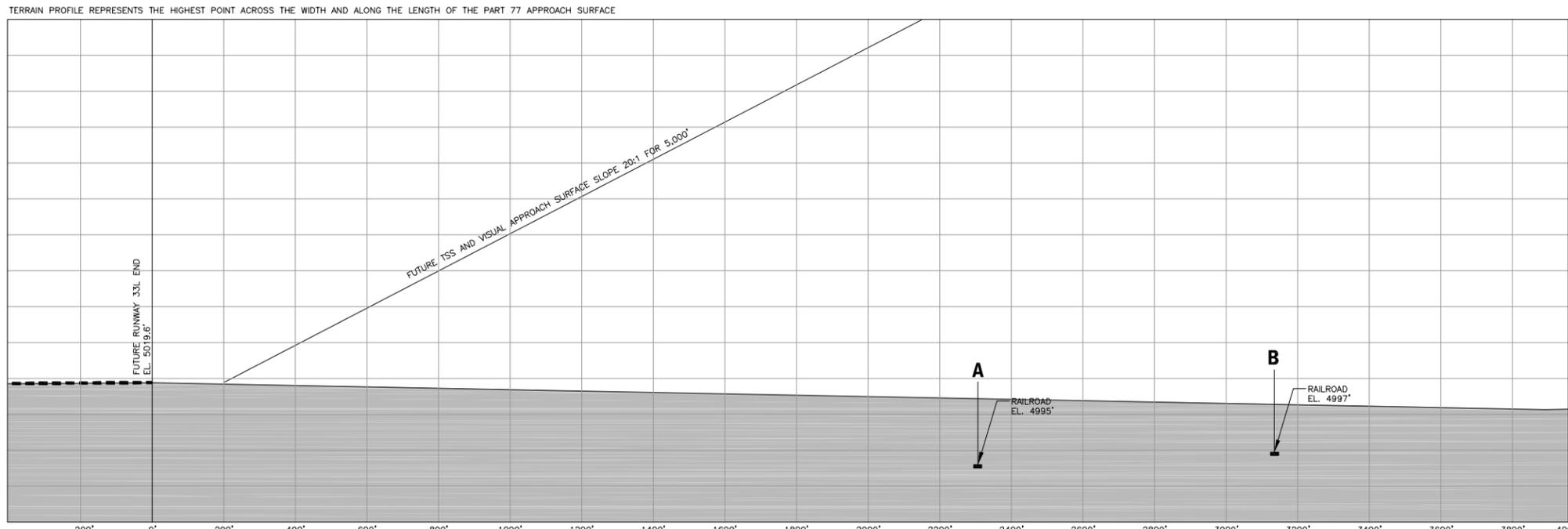
**Fort Collins-Loveland Municipal Airport**  
LOVELAND, CO

**Barnard Dunkelberg & Company**  
Airport and Environmental Consultants

Figure F10  
APRIL 2007



**RUNWAY 33L PLAN**  
1" = 200' HORIZONTALLY



**RUNWAY 33L PROFILE**  
1" = 200' HORIZONTALLY  
1" = 20' VERTICALLY

**NOTES**

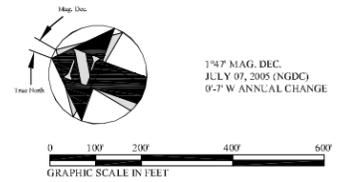
- HEIGHT HAZARD, AIRCRAFT NOISE AND TRAFFIC PATTERNS CONSIDERED IN FORMULATION OF AIRPORT INFLUENCE AREA MAP AND INCORPORATED INTO CITY OF LOVELAND LAND USE PLAN.
- THE PREPARATION OF THIS PLAN WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS PLAN 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.

OBSTRUCTIONS					
NO.	DESCRIPTION	ELEVATION	PENETRATION	APPROACH SURFACE	DISPOSITION
NONE IDENTIFIED FOR THIS AREA					

	RUNWAY DATA		
	EXISTING	FUTURE	FUTURE
APPROACH VISIBILITY MINIMUMS	1-MILE/1/2-MILE	3/4-MILE/1/2-MILE	VISUAL
FAR PART 77 APPROACH SLOPE	34:1/50:1	50:1/50:1	20:1/20:1
RUNWAY WIDTH X LENGTH	100' x 8500'	150' x 9500'	75' x 6700'
RUNWAY PAVEMENT TYPE	ASPHALT	SAME	ASPHALT
TAXIWAY PAVEMENT TYPE	ASPHALT	SAME	ASPHALT
PAVEMENT STRENGTH (IN 1000 LBS.)	50S, 650, 130T	90S, 1300, 180T	30S
RUNWAY LIGHTING	REIL,HRL,MALS	REIL,HRL,MALS,MALS	MIRL
EFFECTIVE RUNWAY GRADIENT %	.005	SAME	.005
MAXIMUM GRADE WITHIN RUNWAY LENGTH %	0.5	SAME	0.5
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME	CRITERIA MET
RUNWAY MARKING	PIR	SAME	BSC
VISUAL APPROACH AIDS	VASI,PAPI	PAPI	PAPI
INSTRUMENT APPROACH AIDS	ILS,GPS,VOR,DME	ILS,GPS,VOR,DME	NONE
AIRPORT REFERENCE CODE	C-III	SAME	B-II
CRITICAL AIRCRAFT	MD-80	SAME	BECH SUPER KING #R 8200
WINGSPAN	107.8'	SAME	54.5'
APPROACH SPEED	135 Kts.	SAME	103 Kts.
MAX T/O WEIGHT	160,000 Lbs.	SAME	12,500 Lbs.
LENGTH OF HAUL			
RUNWAY SAFETY AREA (RSA) WIDTH	500'	SAME	150'
RSA LENGTH BEYOND STOP END	1000'/1000'	SAME	300'/300'
RUNWAY OBJECT FREE AREA (OFA) WIDTH	800'	SAME	500'
OFA LENGTH BEYOND STOP END	1000'/1000'	SAME	300'/300'
OBSTACLE FREE ZONE (OFZ) WIDTH	400'	SAME	250'
OFZ LENGTH BEYOND STOP END	200'	SAME	200'
RUNWAY CENTERLINE TO HOLD LINE	250'	SAME	250'
RUNWAY END COORDINATES	LAT. N 40°27'44.21" LON. W 105°01'03.50"	SAME	LAT. N 40°27'28.13" LON. W 105°01'03.50"
NGS 405 01/03 (NAD 83)	LAT. N 40°28'25.08" LON. W 105°00'25.89"	LAT. N 40°28'25.08" LON. W 105°00'25.89"	LAT. N 40°28'25.76" LON. W 105°00'34.48"
RUNWAY ELEVATIONS	END 4973.0'/5015.7'	4973.0'/5019.7'	4983.0'/5019.6'
DISPLACED THRESHOLD ELEVATION	-	5015.7'	-
NGS 405 01/03 (NAVD 88)	HIGH POINT 5015.7'	5019.7'	5019.6'
LOW POINT	4973.0'	SAME	4983.0'
TOUCHDOWN ZONE ELEVATION	4985.2'/5015.7'	4985.2'/5019.7'	5006.0'/5019.6'

**NOTES:**

- NO THRESHOLD SITING SURFACE PENETRATIONS, SEE SHEETS 6-11 FOR GRAPHIC DEPICTION.
- NO. OFZ PENETRATIONS.



AIRPORT DATA		
	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	5015.7'	5019.7'
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAD 83)	LAT. N 40°28'25.08" LON. W 105°00'25.89"	LAT. N 40°28'25.08" LON. W 105°00'25.89"
AIRPORT REFERENCE CODE	C-III	SAME
NPAS CATEGORY	PCS	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	85°F (JULY)	SAME
TAXIWAY LIGHTING	MIL	SAME
TAXIWAY MARKING	CL	SAME
AIRPORT & TERMINAL NAVAIDS	NDB,VOR,ILS	SAME

LAYOUT PLAN LEGEND		
	EXISTING	FUTURE
AIRPORT PROPERTY LINE	---	---
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS	■	■
AIRFIELD PAVEMENT	▨	▨
PAVED ROADS	▩	▩
RUNWAY PROTECTION ZONE	▬	▬
BUILDING RESTRICTION LINE	▬	▬
OBSTACLE FREE ZONE	▬	▬
RUNWAY SAFETY AREA	▬	▬
RUNWAY OBJECT FREE AREA	▬	▬
FUEL STORAGE AREA	(F)	(F)
AIRPORT BEACON	★	★
AIRPORT REFERENCE POINT (ARP)	⊕	⊕
LIGHTED WIND CONE & SEGMENTED CIRCLE	⊙	⊙
WIND CONE	⬆	⬆
PRECISION APPROACH PATH INDICATOR (PAPI)	⋮	⋮
VISUAL APPROACH SLOPE INDICATOR (VASI)	⋮	⋮
RUNWAY END IDENTIFIER LIGHTS (REIL)	⋮	⋮
TAXIWAY HOLDLINES	⋮	⋮
SECTION CORNER	⊙	⊙
RPZ EASEMENT/USE AGREEMENT	▨	▨
PRECISION OBJECT FREE AREA	▨	▨
BUILDINGS TO BE REMOVED	▨	▨

REVISIONS		
NO.	DESCRIPTION	DATE

**INNER APPROACH DRAWING - RW 33L**

**Fort Collins-Loveland Municipal Airport**  
LOVELAND, CO

**Barnard Dunkelberg & Company**  
Airport and Environmental Consultants  
APRIL 2007

Figure F11

## MASTER PLAN UPDATE

### Terminal Area Plan

The Terminal Area Plan provides a detailed drawing of the more intensely developed portions of the Airport. This development area has also been depicted on the previously presented *AIRPORT LAYOUT PLAN*.

### Passenger Terminal Facilities

Adequate space, consisting of approximately 13 acres, has been reserved in the vicinity of the existing terminal complex to accommodate the long-term expansion of the passenger terminal building, automobile parking facilities, and other passenger terminal support facilities. In addition, there is adequate area to the north of the existing terminal apron to have room for projected needs for commercial passenger service aircraft parking. Forecasts of the amount of activity at the Airport for the next 20 years indicate that this set-aside is adequate in size to accommodate needed passenger terminal facilities.

### General Aviation Facilities

Programmed improvements for general aviation facilities at the Airport are also critical components of the master planning effort for the Airport. General aviation facilities at the Airport need to be improved to accommodate existing and forecast activity.

One integral component of the general aviation facilities provided by an airfield is aircraft storage facilities (i.e., T-hangars, executive hangars, and tie-downs). As discussed in the *Forecasts of Aviation Activity* chapter of this report, Fort Collins-Loveland Municipal Airport is currently home to approximately 204 aircraft; however, this number is forecast to increase to 280 by the end of the planning period. In addition, there is recognition that there is significant unmet existing demand for storage hangars and hangars to be utilized for general aviation storage facilities and for general aviation and commercial services. Therefore, to accommodate these needs in an organized and comprehensive manner, the development plan for the Airport as illustrated on the *AIRPORT LAYOUT PLAN* and the *TERMINAL AREA PLAN* provides space for significantly more hangars than just the 76 additional aircraft forecast to be based at the Airport over the next 20 years. Hangar facilities will only be constructed as demand requires, but would include a variety of hangar types ranging in style from T-hangars and smaller executive hangars to larger corporate hangars.

## MASTER PLAN UPDATE

General aviation facility development needs can be accommodated in the existing development area (south of Earhart Drive and east of Runway 15/33) for the majority of the 20-year planning period. The Terminal Area Plan provides a schematic layout of facilities in this area, with a focus on the provision of taxiway and roadway access to each development parcel. The landside access to this site will need to be carefully designed to allow automobile access and parking in the areas adjacent to the new hangars, without allowing unrestricted access to the apron/taxiway system. The west side of this area (adjacent to the main aircraft parking apron) will be reserved for commercial use facilities (FBOs, aircraft repair facilities, etc.).

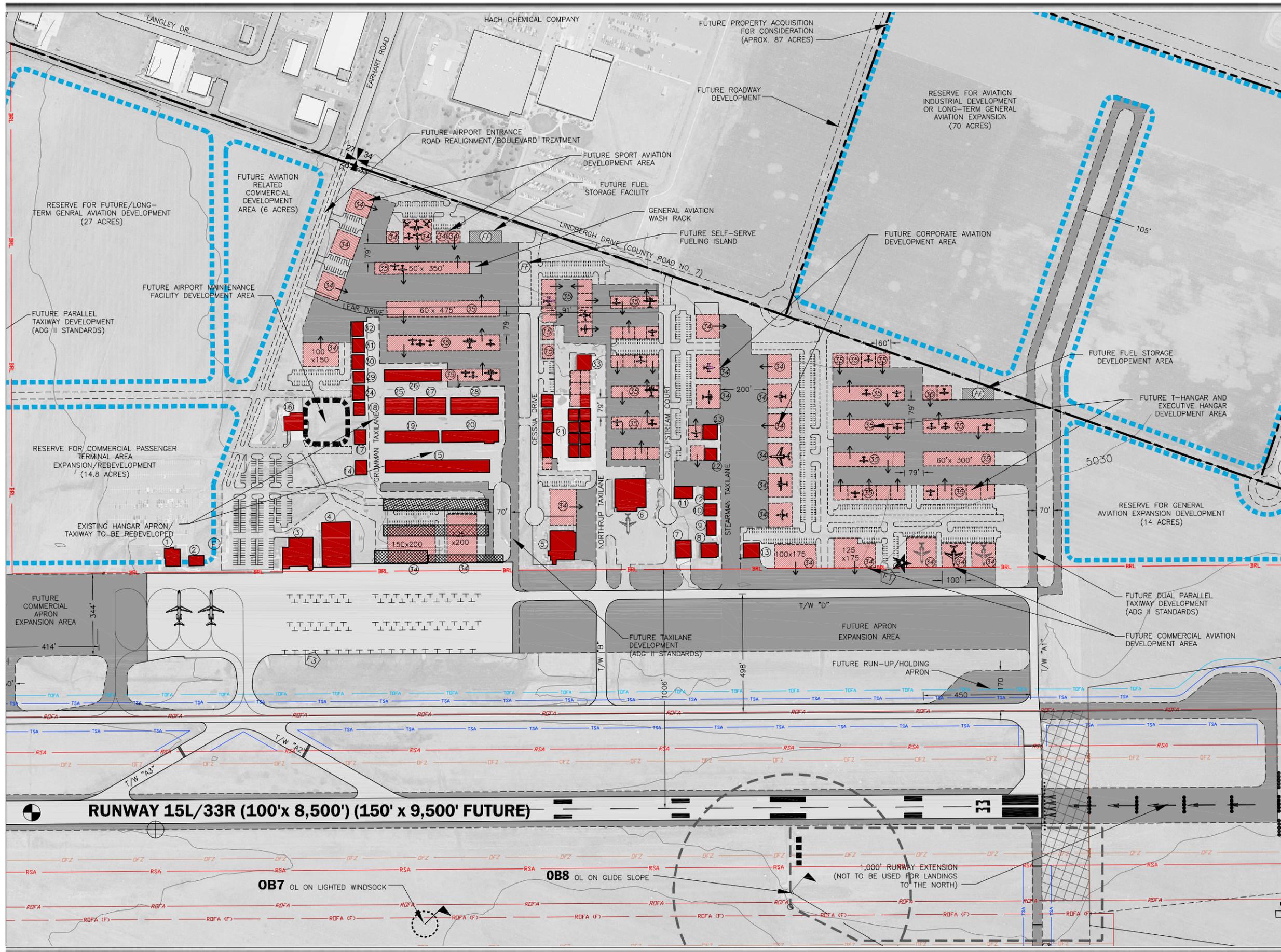
In the longer-term, additional aviation use facilities are programmed for construction on the north and south sides of the crosswind runway, and on the west side of the new parallel runway.

### Airport Vehicular Access

Currently, the main airport access road is Earhart Road, which extends from the Interstate 25 Frontage Road on the east and the passenger terminal and FBO parking areas on the west. In addition, Lear Drive, Cessna Drive, and Gulfstream Court provide on-airport access within the existing general aviation development area.

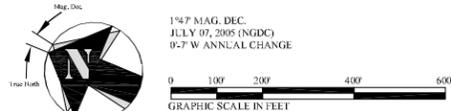
Future roadway plans include improvements to Earhart Road where it enters airport property. In addition, Lear Drive is programmed to be closed, which will open up an additional development area for general aviation. Following the closure of Lear Drive, Lindbergh Drive will be improved and extended to provide access to Cessna Drive, Gulfstream Court, and other on-airport roads serving the existing and future general aviation development area east of Runway 15/33 and south of Earhart Road.

In the longer-term, access to the aviation development area on the south side of the crosswind runway will be provided from Earhart Road, while the area on the north side of the crosswind can be provided by the extension of the existing roadway on the north side of the Industrial Airpark.



BUILDING LEGEND		
NO.	DESCRIPTION	TOP ELEVATION*
1	PASSENGER TERMINAL BUILDING	5017.9'
2	PASSENGER SECURE HOLD AREA**	5018.0'
3	FBO HANGAR	5026.5'
4	FBO HANGAR	5029.0'
5	MAINTENANCE HANGAR	5035.4'
6	HANGAR	-
7	EXECUTIVE HANGAR**	5044.0'
8	EXECUTIVE HANGAR**	5046.0'
9	EXECUTIVE HANGAR	-
10	EXECUTIVE HANGAR	-
11	EXECUTIVE HANGAR	-
12	EXECUTIVE HANGAR**	-
13	EXECUTIVE HANGAR**	5051.0'
14	EXECUTIVE HANGAR	-
15	T-HANGARS	-
16	ARFF	5039.5'
17	HANGAR	-
18	HANGAR	-
19	T-HANGARS	-
20	T-HANGARS	-
21	EXECUTIVE HANGAR	-
22	EXECUTIVE HANGAR	-
23	EXECUTIVE HANGAR	-
24	EXECUTIVE HANGAR	-
25	T-HANGARS	-
26	T-HANGARS	-
27	T-HANGARS	-
28	T-HANGARS	-
29	EXECUTIVE HANGAR	-
30	EXECUTIVE HANGAR	-
31	EXECUTIVE HANGAR	-
32	EXECUTIVE HANGAR	-
33	EXECUTIVE HANGAR	-
34	FUTURE EXECUTIVE HANGAR	-
35	FUTURE T-HANGARS	-

\* CRITICAL EXISTING STRUCTURES.  
 \*\* HEIGHT ESTIMATED WITH REGARD TO HEIGHT AND PART 77 SURFACES.



LAYOUT PLAN LEGEND		
	EXISTING	FUTURE
AIRPORT PROPERTY LINE	---	---
AIRPORT SECURITY FENCE	---	---
AIRPORT BUILDINGS	█	█
AIRFIELD PAVEMENT	▨	▨
PAVED ROADS	▩	▩
RUNWAY PROTECTION ZONE	---	---
BUILDING RESTRICTION LINE	---	---
OBSTACLE FREE ZONE	---	---
RUNWAY SAFETY AREA	---	---
RUNWAY OBJECT FREE AREA	---	---
FUEL STORAGE AREA	---	---
AIRPORT BEACON	●	●
AIRPORT REFERENCE POINT (ARP)	○	○
LIGHTED WIND CONE & SEGMENTED CIRCLE	---	---
WIND CONE	---	---
PRECISION APPROACH PATH INDICATOR (PAPI)	---	---
VISUAL APPROACH SLOPE INDICATOR (VASI)	---	---
RUNWAY END IDENTIFIER LIGHTS (REIL)	---	---
TAXIWAY HOLDLINES	---	---
SECTION CORNER	---	---
RPZ EASEMENT/USE AGREEMENT	---	---
PRECISION OBJECT FREE AREA	---	---
BUILDINGS TO BE REMOVED	---	---
TAXIWAY OBJECT FREE AREA	---	---
TAXIWAY SAFETY AREA	---	---

- NOTES**
1. This drawing reflects current planning standards applicable to Fort Collins/Loveland Municipal Airport to the greatest extent possible. This drawing should not be used as a standard for planning or design.
  2. All coordinate data is NAD83/NAVD88.
  3. No threshold siting surface penetrations.
  4. The preparation of this plan 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, as amended. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan 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.

REVISIONS		
NO.	DESCRIPTION	DATE

## TERMINAL AREA PLAN

### Fort Collins-Loveland Municipal Airport

LOVELAND, CO

**Barnard Dunkelberg & Company**  
 Airport and Environmental Consultants

APRIL 2007

Figure F12

## MASTER PLAN UPDATE

The ALP illustrates that the airport's main access point to the passenger terminal will remain close to its current location; however, the entrance layout and vehicle parking area are programmed for improvements. The existing layout will not be drastically changed, but efficiency of the existing vehicle circulation and parking layout will be enhanced.

Another issue that is addressed with a proposed development plan is the security of access to all aviation use areas. The conceptual plan that is illustrated is designed to be easily fenced and gated to facilitate access security (i.e., keeping the general public from accessing the aircraft movement areas).

### Aviation Support Facilities

**Aircraft Rescue and Firefighting Facility (ARFF).** At present, Index B ARFF facilities and equipment are provided at the Airport as required to serve the existing type and number of air carrier and commuter aircraft operations. In consideration of the commercial service operations forecast, the Airport could be an Index C facility in the future. Land is reserved in the vicinity of the existing fire station to upgrade the ARFF facility, perhaps in conjunction with the construction of an airport maintenance/snow removal equipment building.

**Fuel Storage Facility.** The existing fuel storage facility is located on the south side of the passenger terminal, north of the FBO parking area. Although this facility is in a good location with regard to access for landside and airside fuel trucks, it is also a key parcel that might be better utilized in consideration of terminal and FBO activities. In addition, there are safety/security concerns related to the location of the existing fuel storage area and its close proximity to the Passenger Terminal building. The *TERMINAL AREA PLAN* identifies a future location for fuel storage that will have good landside and airside truck access, but will be on a less critical/less visible site. The identified new site is at the intersection of Cessna Drive and Lindbergh Drive, on the east side of airport property. It is also recommended that a Spill Prevention Control and Counter (SPCC) measures plan be maintained and updated as necessary for the airport's fueling operations, and that the future construction and operation of all fuel storage facilities maintain compliance with specified airport rules and regulations, applicable uniform Building Code Standards, fire codes, and recommendations of the National Fire Protection Association.

**Airport Traffic Control Tower (ATCT).** To accommodate the long-term planning objectives for the Airport, a future site for the development of an ATCT has been identified. As described in previous chapters, this Master Plan Update identified four possible locations on the

## MASTER PLAN UPDATE

airfield. The preferred site is located in the southwest quadrant of airport property, west of future Runway 15R/33L. It should be noted that, following the identification of a need for an air traffic control tower by the FAA, the actual site for construction will be the subject of a formal site selection study. In addition, the level of federal funding for the construction and operation of an ATCT at Fort Collins-Loveland Municipal Airport will be dependent on the types and quantity of aviation activity at the Airport and the preparation of a cost-benefit analysis. At the present time, the cost-benefit ratio for the operation of an ATCT at the Airport appears to be favorable for the federal government to pay the majority of the operational and staffing expenses. There has been no determination related to the question of the feasibility of receipt of federal funds for the construction of such a facility.

### Land Use Drawings

The following figures, entitled *ON-AIRPORT LAND USE DRAWING* and the *LAND USE MAP/AIRPORT INFLUENCE AREA*, depict existing and recommended use of all land within the ultimate airport property line, along with land use planning considerations for areas in the vicinity of the Airport.

The purpose of the *ON-AIRPORT LAND USE DRAWING* is to provide airport management with a plan for the use of lease revenue-producing areas on the Airport, in consideration of FAA specified safety setbacks and object clearing standards.

The purpose of the *LAND USE MAP/AIRPORT INFLUENCE AREA* is to illustrate land use planning criteria that has been implemented by the City of Loveland through its Comprehensive Plan for the area around the Airport. Larimer County utilizes similar criteria for the unincorporated areas near the Airport and has done an excellent job of maintaining compatible land uses near the Airport through land use zoning. To facilitate ease of regulation and enforceability, it is anticipated that the City of Loveland will incorporate the Airport Influence Area land use planning criteria into its land use zoning ordinance and that the City of Fort Collins will consider the use of the criteria in future land use planning considerations. Presently, only small areas of land within the city limit boundary of the City of Fort Collins are touched by the Airport Influence Area generated by the Master Plan. It should be noted that the noise contours and aircraft traffic patterns have been updated in consideration of current conditions, technologies, and federal guidance (including the recommended noise metric) from the information that has previously been utilized by the City of Loveland in its Comprehensive Plan; however, they have not changed

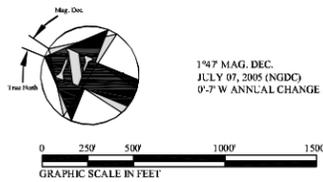
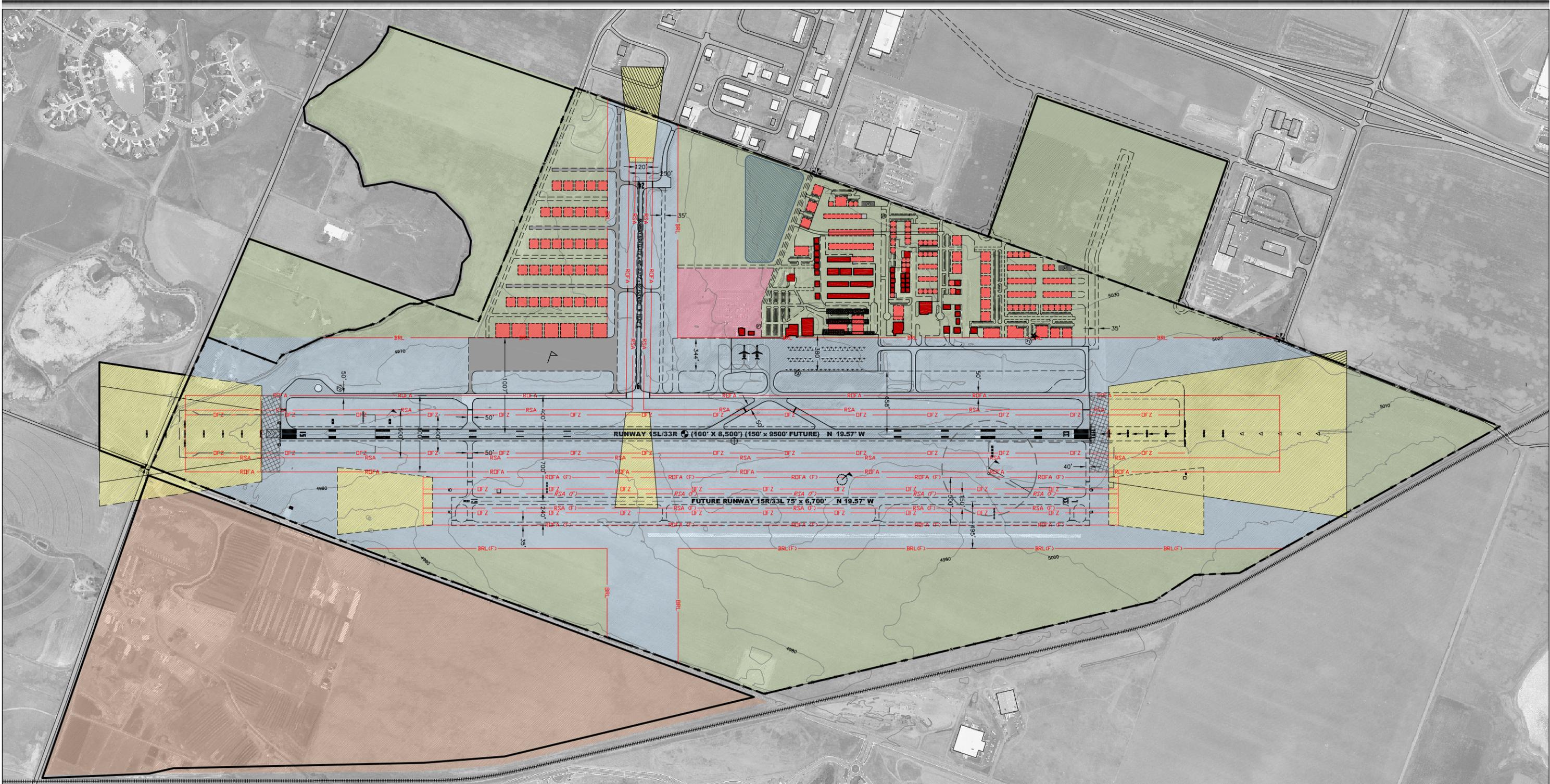
## MASTER PLAN UPDATE

significantly in shape or size.

The *LAND USE MAP/AIRPORT INFLUENCE AREA* is utilized by the City of Loveland in conjunction with a set of Airport Philosophy Statements, including a Land Use Schedule matrix, which are presented in the *Appendix*, to designate the types of land use that are recommended in the vicinity of the Airport. The City of Loveland's Airport Philosophy Statements and Map were developed in consideration of guidance provided in Colorado State House Bill 1041, *Model Land Use Regulations*.

### **Airport Property Map**

The *AIRPORT PROPERTY MAP*, which is presented in the following illustration, indicates how various tracts of land within the airport boundaries were acquired (e.g., federal funds, surplus property, local funds, etc.). The purpose of the *AIRPORT PROPERTY MAP* is to provide information for analyzing the current and future aeronautical use of land acquired with federal funds.



1"=47' MAG. DEC.  
JULY 07, 2005 (NGDC)  
0.7" W ANNUAL CHANGE

- Aircraft Movement Reserve**
- Aviation-Use Development Areas**
- Runway Protection Zone**
- Passenger Terminal Facilities Reserve**
- Airport Support Facilities (No Taxiway Access)**
- Approach Protection, Land Use Compatibility, Airport Support**

REVISIONS		
NO.	DESCRIPTION	DATE

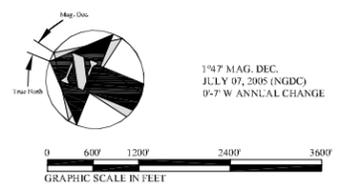
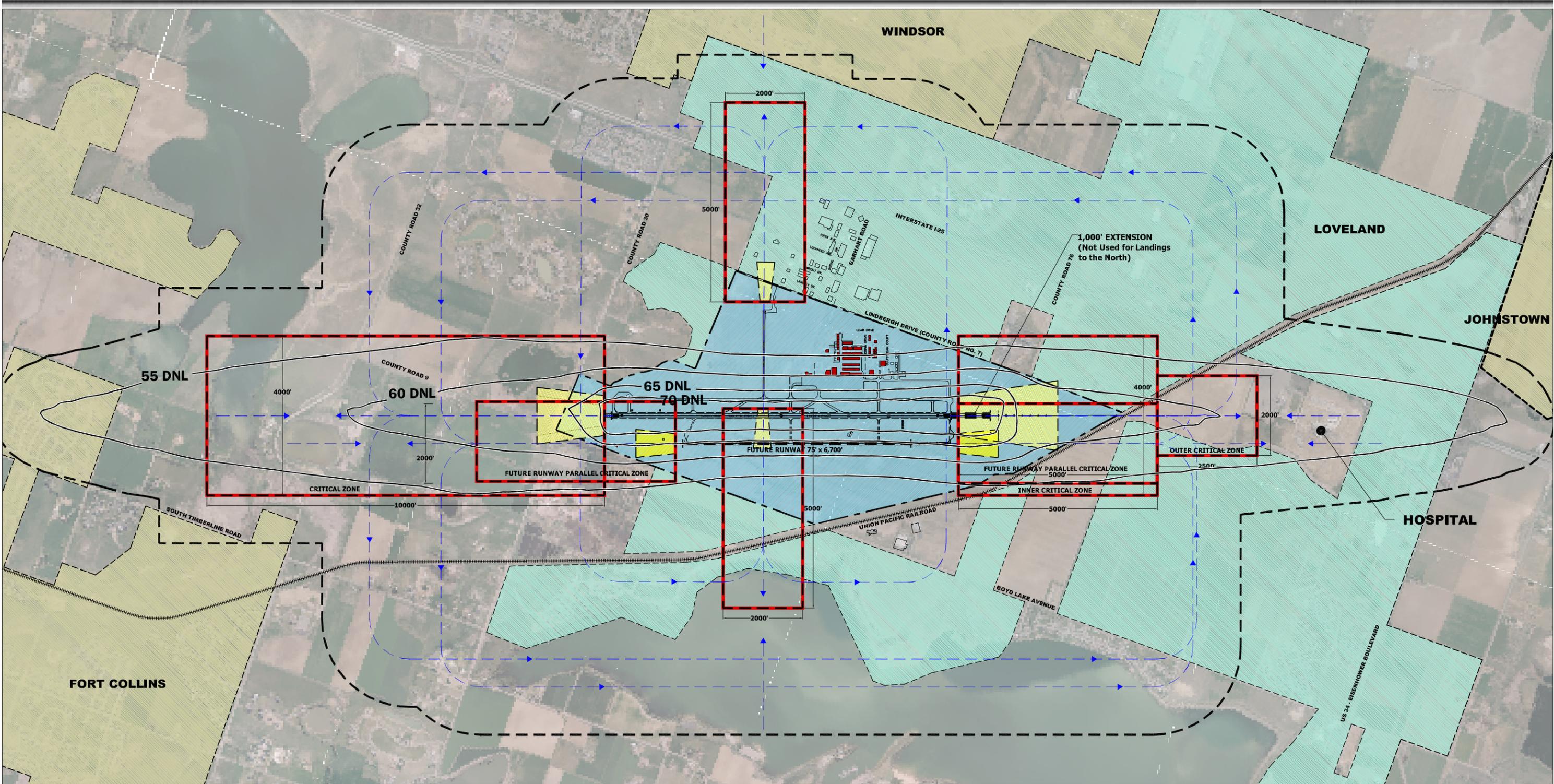
**ON-AIRPORT LAND USE DRAWING**

**Fort Collins-Loveland  
Municipal Airport**  
LOVELAND, CO

**Barnard Dunkelberg & Company**  
Airport and Environmental Consultants

APRIL 2007

Figure F13



1"=7 MAG. DEC.  
JULY 07, 2005 (NGDC)  
0-7 W ANNUAL CHANGE

- Future Noise Contours (2023)** (Formulated 2005)
- Critical Zones**
- Aircraft Traffic Patterns**
- Airport Influence Area**
- Airport Property Line**
- City Limit Line**
- Runway Protection Zone**

REVISIONS		
NO.	DESCRIPTION	DATE

**NOTES**

1. HEIGHT HAZARD, AIRCRAFT NOISE AND TRAFFIC PATTERNS CONSIDERED IN FORMULATION OF THE AIRPORT INFLUENCE AREA AND INCORPORATED INTO CITY OF LOVELAND LAND USE PLAN. THIS MAP HAS ALSO BEEN INCORPORATED INTO THAT LAND USE PLAN.

SEE CITY OF LOVELAND COMPREHENSIVE MASTER PLAN SECTION 4.6 AIRPORT AND SURROUNDING AREAS FOR DETAILED DESCRIPTION OF ACCEPTABLE LAND USES WITHIN VARIOUS ZONES.

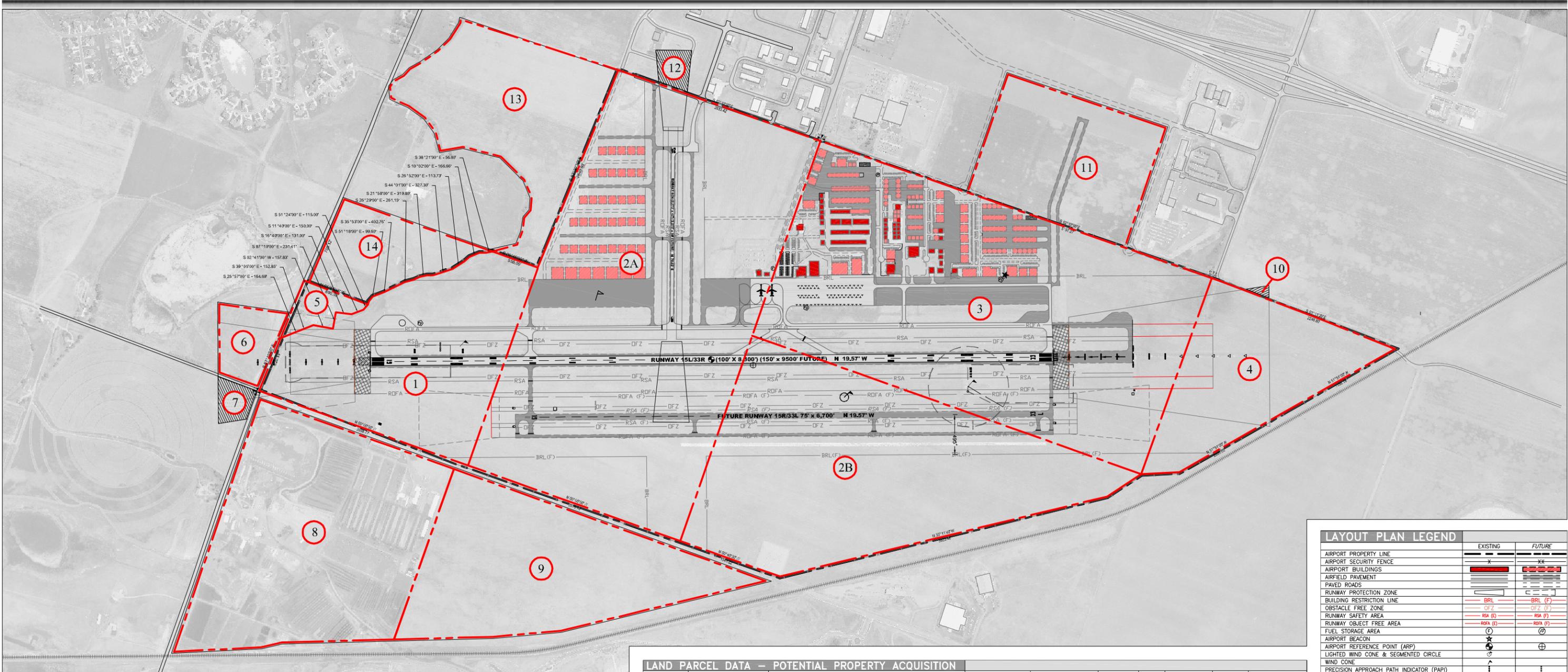
**LAND USE MAP/  
AIRPORT INFLUENCE AREA**

**Fort Collins-Loveland  
Municipal Airport**  
LOVELAND, CO

**Barnard Dunkelberg & Company**  
Airport and Environmental Consultants

APRIL 2007

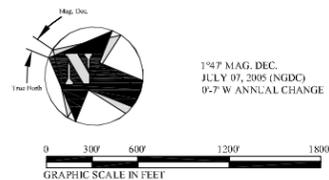
Figure F14



REFERENCE NO.	LARIMER COUNTY PARCEL NO.	GRANTOR	GRANTEE	INTERESTS	PURPOSE	ACREAGE	BOOK & PAGE/RECEPTION NO.	DATE OF RECORDING	PROJECT NO.
1	8633006902/TR B	RUTH A. GEESEN	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	119.36	NO. 856748 BOOK 1232 PAGE 595	1/2/1964	AIP 9-05-038-01
2A	8633006902/TR B	RUTH A. GEESEN	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	335.00	NO. 856748 BOOK 1232 PAGE 595	1/2/1964	AIP 9-05-038-01
2B	8633006901/TR A	CARL A. WILSON	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	220.96	NO. 857101 BOOK 1233 PAGE 316	1/8/1964	AIP 9-05-038-01
3	8633006902/TR B	RUTH A. GEESEN	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	307.22	NO. 856748 BOOK 1232 PAGE 595	1/2/1964	AIP 9-05-038-01
4	8633006902/TR B	RUTH A. GEESEN	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	82.25	NO. 856748 BOOK 1232 PAGE 595	1/2/1964	AIP 9-05-038-01
5	8628000910	RAY W. HEIN FAMILY TRUST LARIMER COUNTY PUBLIC TRUSTEE LARIMER COUNTY TREASURER ALICE HEIN MCCURRY MID VALLEY MORTGAGE CORP. CONNIE E. MUNIZ RICHARD MUNIZ PLATTE VALLEY MORTGAGE CORP.	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	8.08	NO. 92003739	1/23/1992	AIP 3-08-0023-02

Source: Larimer County Assessor's Office Records and 1993 Fort Collins - Loveland Municipal Airport. Exhibit "A" Prepared by Isbill Associates Inc.

Note: Since 1985, Larimer County, CO, has replaced Book and Page numbers with Reception Numbers.



REFERENCE NO.	LARIMER COUNTY PARCEL NO.	GRANTOR	GRANTEE	INTERESTS	PURPOSE	ACREAGE	BOOK & PAGE/RECEPTION NO.	DATE OF RECORDING	PROJECT NO.
6	8621000008	JEFFREY M. DONALDSON	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	15.41	---	---	TO BE ACQUIRED
8	8629000001 8629000008 8629000009 8629000010 8629000012 8629000011	DUO DAIRY LTD, AARON/SYLVA DICKINSON & MICHAEL DICKINSON ANDREW D. DICKINSON & ROBERT A/KAREN DICKINSON MICHAEL B. DICKINSON MICHAEL B. DICKINSON MICHAEL B. DICKINSON Greeley-Loveland Irrigation Co.	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	176.0	---	---	TO BE ACQUIRED
9	8629000001 8629000002 8629000001 8629000002	SHARP POINT PROPERTIES, LLC	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	134.0	---	---	TO BE ACQUIRED
10	8503219001	CIP 401 INVESTMENTS, LLC	CITY OF FORT COLLINS CITY OF LOVELAND	EASMENT	APPROACH PROTECTION	0.5	---	---	TO BE ACQUIRED
11	8503219001 8634206001	ROCKY MOUNTAIN AIRPORT INVESTMENTS, LLC RICHARD H/DIANE B VANDERMEER	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	77.0	---	---	TO BE ACQUIRED
13	8628000502	CROSSROADS TECH CENTER, LLC	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	90.0	---	---	TO BE ACQUIRED
14	8628000003 8628000006 8628000012	GORDON S. KOLACNY WILLIAM F. BATES, JR. REVOCABLE TRUST WILLIAM F. BATES & ETHEL L. BATES REVOCABLE TRUST	CITY OF FORT COLLINS CITY OF LOVELAND	FEE SIMPLE	AERONAUTICAL	30.0	---	---	TO BE ACQUIRED

REFERENCE NO.	LARIMER COUNTY PARCEL NO.	OWNER	GRANTEE	INTERESTS	PURPOSE	ACREAGE	BOOK & PAGE/RECEPTION NO.	DATE OF RECORDING	PROJECT NO.
7	8620410001	AARON J. DICKINSON & SYLVIA M. DICKINSON FAMILY TRUST		EXISTING CONSERVATION EASMENT	APPROACH PROTECTION	4.59	---	---	NONE
12	8627333001 8627328003 8627328002 8627328004 8627329002 8627329007 8627336001 8627337001	LOVELAND-FORT COLLINS INDUSTRIAL PARK TAXIWAY USERS ASSOC, INC SCION INDUSTRIES, LLC & LIMERICK PARTNERSHIP, LLC BRAYDEN AUTOMATION CORP & FLIGHTLINE 6230, LLC BOHEMIAN REAL ESTATE, II, LLC SCOTT AND ASSOC., LLC SCOTT AND ASSOC., LLC MATRIX INVESTMENT CORP. SOLSBURY HILL, LLC & SOLSBURY HILL LAND COMPANY, LLC		EXISTING USE/HEIGHT RESTRICTIONS	APPROACH PROTECTION	4.33	---	---	NONE

Source: Larimer County Assessor Property Records Inquiry Website.

LAYOUT PLAN LEGEND		
	EXISTING	FUTURE
AIRPORT PROPERTY LINE	---	---
AIRPORT SECURITY FENCE	---	---
AIRPORT BUILDINGS	---	---
AIRFIELD PAVEMENT	---	---
PAVED ROADS	---	---
RUNWAY PROTECTION ZONE	---	---
BUILDING RESTRICTION LINE	---	---
OBSTACLE FREE ZONE	---	---
RUNWAY SAFETY AREA	---	---
RUNWAY OBJECT FREE AREA	---	---
FUEL STORAGE AREA	---	---
AIRPORT BEACON	---	---
AIRPORT REFERENCE POINT (ARP)	---	---
LIGHTED WIND CONE & SEGMENTED CIRCLE	---	---
WIND CONE	---	---
PRECISION APPROACH PATH INDICATOR (PAPI)	---	---
VISUAL APPROACH SLOPE INDICATOR (VASI)	---	---
RUNWAY END IDENTIFIER LIGHTS (REIL)	---	---
TAXIWAY HOLDLINES	---	---
SECTION CORNER	---	---
RPZ EASEMENT/USE AGREEMENT	---	---
BUILDINGS TO BE REMOVED	---	---

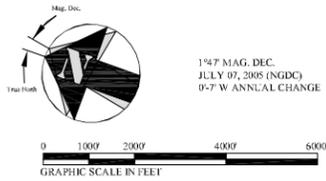
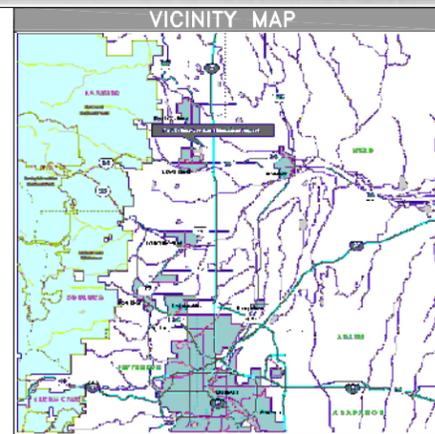
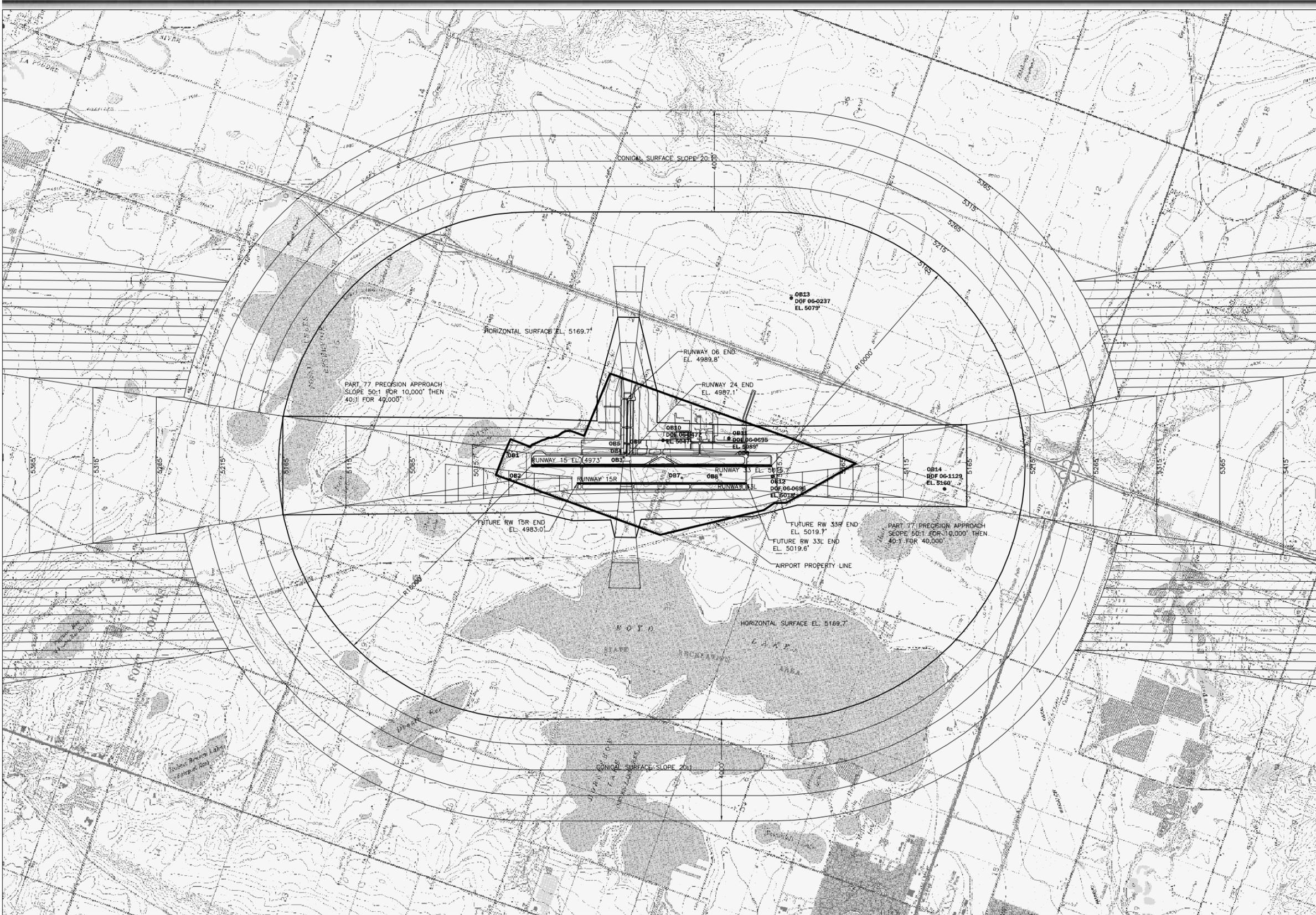
REVISIONS		
NO.	DESCRIPTION	DATE

**AIRPORT PROPERTY MAP**  
**"EXHIBIT A"**

**Fort Collins-Loveland**  
**Municipal Airport**  
LOVELAND, CO

**Barnard Dunkelberg & Company**  
Airport and Environmental Consultants  
JULY 2007

Figure F15



OBSTRUCTIONS					
NO.	DESCRIPTION	ELEVATION	PENETRATION	SURFACE	DISPOSITION
OB1	TREE	5025'	30'	RW 15 APPROACH	TO BE TRIMMED
OB2	POLE	4995'	3'	RW 15 APPROACH	TO BE LOWERED
OB3	GROUND	4988'	1'	RW 6/24 PRIMARY	TO BE GRADED
OB4	GROUND	4991'	4'	RW 6/24 PRIMARY	TO BE GRADED
OB5	GROUND	4988'	2'	RW 6/24 PRIMARY	TO BE GRADED
OB6	GROUND	4987'	1'	RW 6/24 PRIMARY	TO BE GRADED
OB7	OL ON LTD WSK	5023'	18'	RW 15 PRIMARY	TO REMAIN
OB8	OL ON GS	5043'	31'	RW 15 PRIMARY	TO REMAIN
OB9	GROUND	5018'	2'	RW 15 PRIMARY	TO BE GRADED
OB10	FLOODLIGHT POLE	5047'	-18'	RW 33 INNER TRANS	TO REMAIN
OB11	ROD OL BEACON	5089'	-1'	RW 33 INNER TRANS	TO REMAIN
OB12	ROD ON BLDG	5018'	-38'	RW 33 INNER TRANS	TO REMAIN
OB13	T-L TOWER	5079'	-90'	HORIZ SURFACE	TO REMAIN
OB14	CRANE	5160'	10'	RW 33 APPROACH	TO BE LOWERED

- NOTES**
- HEIGHT HAZARD, AIRCRAFT NOISE AND TRAFFIC PATTERNS CONSIDERED IN FORMULATION OF AIRPORT INFLUENCE AREA MAP AND INCORPORATED INTO CITY OF LOVELAND LAND USE PLAN.
  - THE PREPARATION OF THIS PLAN 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, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS PLAN 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.

REVISIONS		
NO.	DESCRIPTION	DATE

**AIRSPACE DRAWING - PLAN VIEW**  
(PART 77 SURFACES)

**Fort Collins-Loveland Municipal Airport**  
LOVELAND, CO

## **G** Development Program and Needs Assessment

*The long-term development program or Capital Improvement Program (CIP)/Needs Assessment for Fort Collins-Loveland Municipal Airport is intended to establish a strategy to fund airport improvements and maximize the potential to receive federal and state matching funds, while also establishing a financially prudent plan for improvement funding on a local level. This programming effort is a critical component of the Master Plan for the Federal Aviation Administration (FAA), the Colorado Division of Aeronautics, and the local sponsors (the City of Fort Collins and the City of Loveland). From the FAA's perspective (keeping in mind that the FAA funded over 90% of the cost to prepare the Master Plan), the CIP provides a detailed listing of projects and costs that is critical for their use in establishing priorities and budgeting expenditures at this airport when compared with the needs of other airports. From the local sponsor's perspective, the CIP identifies improvement needs and allows budgeting/financial decisions to be made with a comprehensive understanding of financial implications. The overall concept is to maximize the opportunities to receive federal and state matching funds, within the context of and in recognition of the amount of local funds that are available for capital needs. Although the CIP will be used for programming by the FAA, there is no financial commitment for the federal government or the sponsor to provide funding for the CIP. If federal matching funds are unavailable for a certain project during the specified time frame, the project will almost certainly be unaffordable using only local money and the improvement project will not go forward until appropriate funding is available.*

## MASTER PLAN UPDATE

**The basic structure of the Development Program/CIP is established in the chapter, with a detailed financial analysis being provided in the next chapter (entitled *Financial Implementation Analysis*).**

**The potential improvements necessary to accommodate the future needs at Fort Collins-Loveland Municipal Airport have been placed into three (3) phases: Phase I (0-6 years), Phase II (6-11 years), and Phase III (11-20 years). The suggested program for the phasing of these projects is provide in Tables G1, G2, and G3. The proposed improvements are illustrated graphically by time period on the *PHASING PLAN* (see Figure G1). In addition, Table G4 has been provided to list projects that may be needed; however, the demand for these projects will likely be beyond the 20-year planning period of this Master Plan Update.**

### **Implementation Schedule and Project List**

Using the documentation previously presented regarding anticipated facility demands, along with preliminary engineering analysis focusing on pavement rehabilitation needs, a list of capital improvement projects has been assembled. The projects for the first six (6) years are listed in priority order by year. In the second and third phases (years 6-20), the projects are listed without year designators. Fort Collins-Loveland Municipal Airport's proposed phased capital improvement program, entitled *DEVELOPMENT PLAN PROJECT COSTS*, is presented as Tables G1, G2, and G3 of this chapter. It is anticipated that the project phasing will invariably be altered as local and federal priorities evolve over the coming months and years.

The details of the Development Program (including a capital improvement project list, project cost estimates, a finalized phasing list, and a financial feasibility analysis) have been formulated in consideration of comments received from City staff, the FAA, the Colorado Division of Aeronautics, and the Study Committee.

### **Cost Estimates**

Cost estimates for individual projects, based on current costs, have been prepared for the improvement projects that have been identified as potentially being needed during the 20-year planning period. The improvement costs listed are escalated to include an inflation factor. These estimates are intended to be used for planning purposes only and should not be construed as construction cost estimates, which can only be compiled following the preparation of detailed engineering design documents.

## MASTER PLAN UPDATE

Table G1  
**PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS**  
*Fort Collins-Loveland Municipal Airport Master Plan Update*

Project Description	Note	Total Escalated Costs	Recommended Financing Method				
			Federal Entitlement (a)	Federal Discretion (b)	PFC (c)	State (d)	Local/ Other (e)
<b>2006 Projects</b>							
A.1	Construct commercial apron expansion	\$1,300,300	\$1,000,000	\$235,300		\$32,500	\$32,500
A.2	Fog seal & markings- RW 15/33	\$181,522			\$181,522		
A.3	Taxiway rehabilitation & widening, including south run-up area & larger fillers	\$4,090,000		\$3,885,500		\$102,250	\$102,250
A.4	Replace airfield lighting control	\$9,780			\$9,780		
A.5	Pavement maintenance, striping & Strategic Plan	\$144,075				\$115,250	\$28,825
<b>Sub-Total/2006 Projects</b>		<b>\$5,725,677</b>	<b>\$1,000,000</b>	<b>\$4,120,800</b>	<b>\$191,302</b>	<b>\$250,000</b>	<b>\$163,575</b>
<b>2007 Projects</b>							
A.6	Construct GA storage hangars NE of future Taxiway E, including utilities & public restrooms	\$0					
A.7	Construct Taxiway E & drainage	\$957,900	\$910,004		\$23,948	\$23,948	
A.8	Rehab existing taxilanes in hangar area south of ARFF, fix drainage; no rehab within 15' of existing hangars	\$360,500	\$89,995	\$221,550	\$46,705	\$2,250	
A.9	Land acquisition - 30 acres NE of RW 15 threshold	\$1,545,000		\$1,545,000			
A.10	Pavement maintenance	\$279,750			\$55,948	\$223,802	
A.11	Stormwater drainage improvements - 54" RCP culvert under Loudon Ditch, excavate & install structure at existing Pond 1	\$695,000					\$695,000
<b>Sub-Total/2007 Projects</b>		<b>\$3,838,150</b>	<b>\$999,999</b>	<b>\$1,766,550</b>	<b>\$126,601</b>	<b>\$250,000</b>	<b>\$695,000</b>

Notes

- (a) Federal Entitlement - FAA Airport Improvement Program (AIP) Entitlement Grants
- (b) Federal Discretion - Projects that are eligible for FAA Airport Improvement Program (AIP) Discretionary Grants
- (c) PFC - Passenger Facility Charge Proceeds
- (d) State - Colorado Division of Aeronautics, Discretionary Aviation Grants
- (e) Local - Airport Net Revenues, Cash Reserves, Other City Funding, Unfunded
- (f) Private or Revenue Financing

Cost estimates, based upon 2005 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

## MASTER PLAN UPDATE

Table G1 (Continued)  
**PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS**  
*Fort Collins-Loveland Municipal Airport Master Plan Update*

Project Description	Note	Total Escalated Costs	Recommended Financing Method				
			Federal Entitlement (a)	Federal Discretion (b)	PFC (c)	State (d)	Local/ Other (e)
<b>2008 Projects</b>							
A.12 Extend Lindbergh Ave. to south, connect to Cessna St. & Northrup St., close Lear St.		\$1,331,941					\$1,331,941
A.13 Rehab & strengthen RW 15/33 with connector taxiways inside RSA; replace runway edge light fixtures & transformers on existing base cans		\$5,900,000	\$1,000,000	\$4,605,000	\$147,500	\$147,500	
A.14 Rehab auto parking in front of terminal, install pay parking system (Phase I)		\$153,831					\$153,831
A.15 Pavement maintenance		\$128,125				\$102,500	\$25,625
A.16 Construct apron & hangars for GA storage hangars	(f)	\$0					
<b>Sub-Total/2008 Projects</b>		<b>\$7,513,897</b>	<b>\$1,000,000</b>	<b>\$4,605,000</b>	<b>\$147,500</b>	<b>\$250,000</b>	<b>\$1,511,397</b>
<b>2009 Projects</b>							
A.17 Environmental Assessment for runway extension		\$318,270		\$302,356	\$7,957	\$7,957	
A.18 Rehab intersection of Lindbergh Ave. & Earhart Rd., overlay Earhart Rd. to terminal		\$307,644					\$307,644
A.19 Wildlife Hazard Assessment		\$187,228		\$177,867	\$9,361		
A.20 Rehab auto parking in front of terminal (Phase II)		\$158,445					\$158,445
A.21 Construct SE taxiway to serve airport development to SE		\$1,052,632	\$1,000,000		\$26,316	\$26,316	
A.22 Asphalt seal coat/stripe Taxiway A		\$269,660			\$53,933	\$215,727	
A.23 SE GA development - apron, taxilanes & other infrastructure	(f)						
<b>Sub-Total/2009 Projects</b>		<b>\$2,293,879</b>	<b>\$1,000,000</b>	<b>\$480,223</b>	<b>\$97,567</b>	<b>\$250,000</b>	<b>\$466,089</b>

**Notes**

- (a) Federal Entitlement - FAA Airport Improvement Program (AIP) Entitlement Grants
- (b) Federal Discretion - Projects that are eligible for FAA Airport Improvement Program (AIP) Discretionary Grants
- (c) PFC - Passenger Facility Charge Proceeds
- (d) State - Colorado Division of Aeronautics, Discretionary Aviation Grants
- (e) Local - Airport Net Revenues, Cash Reserves, Other City Funding, Unfunded
- (f) Private or Revenue Financing

Cost estimates, based upon 2005 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

## MASTER PLAN UPDATE

Table G1 (Continued)  
**PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS**  
*Fort Collins-Loveland Municipal Airport Master Plan Update*

Project Description	Note	Total Escalated Costs	Recommended Financing Method				
			Federal Entitlement (a)	Federal Discretion (b)	PFC (c)	State (d)	Local/ Other (e)
<b>2010 Projects</b>							
A.24 Rehab FBO free public parking		\$131,300					\$131,300
A.25 Install east perimeter fencing - from Earhart Rd. to NE property corner & from Lindbergh Ave. round-about to SE property corner		\$238,703	\$202,090		\$5,050	\$31,563	
A.26 Construct security fencing & install gates #4 and #5 off of Cessna St. & Northrup St.		\$180,250	\$106,313		\$50,053	\$23,884	
A.27 Construct hangars in SE area	(f)	\$0					
A.28 Construct Air Traffic Control Tower	(g)	\$5,500,000		see note (g)			
A.29 Expand commercial apron (Phase II) & connector to Taxiway A		\$2,411,886	\$290,086	\$2,015,710	\$53,045	\$53,045	
A.30 Rehab GA apron (north half)		\$1,458,738	\$401,511	\$984,291	\$36,468	\$36,468	
<b>Sub-Total/2010 Projects</b>		<b>\$9,920,877</b>	<b>\$1,000,000</b>	<b>\$3,000,001</b>	<b>\$144,616</b>	<b>\$144,960</b>	<b>\$131,300</b>
<b>2011 Projects</b>							
A.31 RW 15/33 extension - 1,000' to the south		\$5,920,176	\$1,000,000	\$4,624,176	\$148,000	\$148,000	
A.32 Relocate detention pond to final location - utilize structure under Loudon Ditch		\$492,691					\$492,691
A.33 Asphalt seal coat/stripe Runway 15/33		\$127,500			\$25,500	\$102,000	
<b>Sub-Total/2011 Projects</b>		<b>\$6,540,367</b>	<b>\$1,000,000</b>	<b>\$4,624,176</b>	<b>\$173,500</b>	<b>\$250,000</b>	<b>\$492,691</b>
<b>Total Phase I (2006-2011)</b>		<b>\$35,832,847</b>	<b>\$5,999,999</b>	<b>\$18,596,750</b>	<b>\$881,086</b>	<b>\$1,394,960</b>	<b>\$3,460,052</b>

**Notes**

- (a) Federal Entitlement - FAA Airport Improvement Program (AIP) Entitlement Grants
- (b) Federal Discretion - Projects that are eligible for FAA Airport Improvement Program (AIP) Discretionary Grants
- (c) PFC - Passenger Facility Charge Proceeds
- (d) State - Colorado Division of Aeronautics, Discretionary Aviation Grants
- (e) Local - Airport Net Revenues, Cash Reserves, Other City Funding, Unfunded
- (f) Private or Revenue Financing
- (g) 100% funded by FAA Facilities and Equipment

Cost estimates, based upon 2005 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

## MASTER PLAN UPDATE

Table G2  
**PHASE II (6-11 YEARS) DEVELOPMENT PLAN PROJECT COSTS**  
*Fort Collins-Loveland Municipal Airport Master Plan Update*

Project Description	Note	Total Escalated Costs	Recommended Financing Method				
			Federal Entitlement (a)	Federal Discretion (b)	PFC (c)	State (d)	Local/ Other (e)
B.1 Purchase & install backup generator for airfield electrical vault		\$58,350			\$23,229	\$35,121	
B.2 Purchase snow blower equipment		\$491,727	\$467,141			\$12,293	\$12,293
B.3 Rehab Taxiway B & Taxiway D		\$900,407	\$532,859	\$117,548		\$250,000	
B.4 Construct snow removal equipment building with ops & maintenance		\$3,744,557	\$2,000,000		\$617,301	\$93,614	\$1,033,642
B.5 Construct ARFF building		\$2,246,734	\$1,000,000	\$1,134,398		\$56,168	\$56,168
B.6 Replace fuel storage facility to coincide with FBO lease renewal	(f)	\$0					
B.7 Improvements to airport entrance, with landscaping & signage		\$624,093					\$624,093
B.8 Rehab GA apron (south half)		\$1,791,271	\$1,000,000	\$746,490		\$44,781	
B.9 Lindbergh Ave. - upgrade to City standards, extend & connect to other roads		\$499,274					\$499,274
B.10 Rehab FBO public auto parking lot		\$149,782				\$74,891	\$74,891
B.11 Construct west perimeter security fence along railroad		\$424,383		\$413,774		\$10,609	
B.12 Replace segmented circle		\$62,409		\$60,849		\$1,560	
B.13 Replace ARFF vehicle		\$936,139		\$912,736		\$23,403	
B.14 Terminal replacement		\$2,496,371		\$2,470,086		\$26,285	
B.15 Construct GA storage hangars, with access roadways, parking & utilities	(f)	\$0					
B.16 Land acquisition - east side, 77 acres		\$2,402,757		\$2,402,757			
B.17 Land acquisition - west side (Phase I), 134 acres		\$4,181,422		\$4,181,422			
B.18 Land acquisition - west side (Phase II), 176 acres		\$5,492,017		\$5,492,017			
<b>Total Phase II (2012-2016)</b>		<b>\$26,501,693</b>	<b>\$5,000,000</b>	<b>\$17,932,077</b>	<b>\$640,530</b>	<b>\$628,725</b>	<b>\$2,300,361</b>

Notes

- (a) Federal Entitlement - FAA Airport Improvement Program (AIP) Entitlement Grants
- (b) Federal Discretion - Projects that are eligible for FAA Airport Improvement Program (AIP) Discretionary Grants
- (c) PFC - Passenger Facility Charge Proceeds
- (d) State - Colorado Division of Aeronautics, Discretionary Aviation Grants
- (e) Local - Airport Net Revenues, Cash Reserves, Other City Funding, Unfunded
- (f) Private or Revenue Financing

Cost estimates, based upon 2005 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

## MASTER PLAN UPDATE

Table G3  
**PHASE III (11-20 YEARS) DEVELOPMENT PLAN PROJECT COSTS**  
*Fort Collins-Loveland Municipal Airport Master Plan Update*

Project Description	Note	Total Escalated Costs	Recommended Financing Method				Local/ Other (e)
			Federal Entitlement (a)	Federal Discretion (b)	PFC (c)	State (d)	
C.1 Expand GA apron to south (Phase I)		\$2,259,222	\$1,000,000	\$1,202,741		\$56,481	
C.2 Expand commercial apron (Phase III)		\$2,566,114		\$2,437,808	\$64,153	\$64,153	
C.3 Expand GA apron to the south - north - middle (Phase II)		\$3,228,432		\$2,147,721		\$80,711	
C.4 Expand GA apron to the south - south - middle (Phase III)		\$3,531,508	\$1,000,000	\$2,531,508			
C.5 Construct additional fuel storage facility (f)		\$0					
C.6 Snow removal maintenance equipment		\$624,093		\$624,093			
C.7 Expand GA apron to the south - south - middle (Phase III)		\$4,407,977	\$2,000,000	\$2,047,778	\$250,000	\$110,199	
C.8 Expand commercial apron (Phase IV) & add connector to Taxiway A		\$8,664,792	\$2,000,000	\$6,231,552	\$216,620	\$216,620	
C.9 Expand GA apron to the south (Phase IV)		\$9,753,733		\$9,253,733		\$500,000	
C.10 Finish perimeter fencing & gates		\$778,984			\$778,984		
C.11 Construct SE apron		\$7,549,863		\$7,549,863			
C.12 Construct drainage improvements along RW 6/24 parallel taxiways		\$701,085					\$701,085
C.13 Reconstruct RW 15L/33R high-speed exit taxiways		\$7,495,677	\$2,407,972	\$4,587,705		\$500,000	
C.14 Snow removal maintenance equipment		\$0					
C.15 Construct new RW 15R/33L & parallel taxiway with connectors		\$26,469,438		\$26,469,438			
C.16 Construct Ponds 4 & 5		\$623,187	\$592,027		\$15,580	\$15,580	
<b>Total Phase III (2017-2026)</b>		<b>\$78,654,105</b>	<b>\$8,999,999</b>	<b>\$65,083,940</b>	<b>\$1,325,337</b>	<b>\$1,543,744</b>	<b>\$701,085</b>
<b>GRAND TOTALS</b>		<b>\$140,988,645</b>	<b>\$19,999,998</b>	<b>\$101,612,767</b>	<b>\$2,846,953</b>	<b>\$3,567,429</b>	<b>\$6,461,498</b>

Notes

- (a) Federal Entitlement - FAA Airport Improvement Program (AIP) Entitlement Grants
- (b) Federal Discretion - Projects that are eligible for FAA Airport Improvement Program (AIP) Discretionary Grants
- (c) PFC - Passenger Facility Charge Proceeds
- (d) State - Colorado Division of Aeronautics, Discretionary Aviation Grants
- (e) Local - Airport Net Revenues, Cash Reserves, Other City Funding, Unfunded
- (f) Private or Revenue Financing

Cost estimates, based upon 2005 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

## MASTER PLAN UPDATE

Table G4

### OTHER POTENTIAL PROJECTS DEVELOPMENT PLAN PROJECT COSTS

*Fort Collins-Loveland Municipal Airport Master Plan Update*

Project Description	Note	Total Escalated Costs	Recommended Financing Method				Local/ Other (e)
			Federal Entitlement (a)	Federal Discretion (b)	PFC (c)	State (d)	
D.1 Rehab & widen RW 6/24 to 60'		\$6,454,114	\$2,000,000	\$4,131,408	\$161,353	\$161,353	
D.2 Rehab & widen RW 15/33 to 150'		\$29,876,144		\$28,382,337			\$1,493,807
D.3 North GA apron expansion		\$13,829,829		\$13,138,337			\$691,492
D.4 Construct SE taxiway		\$12,154,265		\$11,546,552			\$607,713
D.5 Construct RW 6/24 south parallel TW		\$6,315,431	\$2,000,000	\$3,495,278	\$136,191	\$500,000	\$183,962
D.6 Construct RW 6/24 north parallel TW		\$11,279,528		\$10,244,116		\$496,248	\$539,164
<b>Total/Other Potential Projects</b>		<b>\$79,909,311</b>	<b>\$4,000,000</b>	<b>\$70,938,028</b>	<b>\$297,544</b>	<b>\$1,157,601</b>	<b>\$3,516,138</b>

Notes

- (a) Federal Entitlement - FAA Airport Improvement Program (AIP) Entitlement Grants
- (b) Federal Discretion - Projects that are eligible for FAA Airport Improvement Program (AIP) Discretionary Grants
- (c) PFC - Passenger Facility Charge Proceeds
- (d) State - Colorado Division of Aeronautics, Discretionary Aviation Grants
- (e) Local - Airport Net Revenues, Cash Reserves, Other City Funding, Unfunded
- (f) Private or Revenue Financing

Cost estimates, based upon 2005 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

## MASTER PLAN UPDATE

### Phase I Funding Breakdown Detail

Although the tables above provide an adequate amount of detail for long range planning purposes by providing a breakdown of projects and associated “eligible” funding sources, additional information should be conveyed in the short-term to highlight any potentially unfunded or under funded capital costs. The following table, entitled *PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS WITH ADDITIONAL DETAIL*, provides this information.

### Capital Improvement Program (CIP)

To assist in preparation of the FAA’s effort to provide grant funding to the most needed projects, airport staff keeps, on file and up to date with the FAA, an Airport Capital Improvements Program (ACIP), which is similar in format to the tables presented above. The purpose of the proposed project list, phasing, and costs is to provide a progressive projection of capital needs, which can then be utilized in local and federal financial programming. It is realized that as soon as this long-range planning document is published, the project list starts to be out of date and; therefore, it will always differ to some degree with the airport’s six-year CIP on file with the FAA.

### Phasing Plan

To supplement the information provided by the project list and project cost estimates, two illustrations have been prepared. These graphics, entitled *PHASE I PROJECTS* and *PHASE III/III PROJECTS*, indicate the suggested phasing for the proposed improvement projects throughout the 20-year planning period.

The plans represent a suggested schedule and variance from it may be necessary, especially during the latter time periods. Attention has been given to the first six (6) years because the projects outlined in this time frame include many critical improvements. The demand for certain facilities, especially in the latter time frame, and the economic feasibility of their development are to be the prime factors influencing the timing of individual project construction. Care must be taken to provide for adequate lead-time for detailed planning and construction of facilities in order to meet aviation demands. It is also important to minimize the disruptive scheduling, where a portion of the facility may become inoperative due to construction, and to prevent extra costs resulting from improper project scheduling.

MASTER PLAN UPDATE

Table G5  
**PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS (DETAILED)**  
*Fort Collins-Loveland Municipal Airport Master Plan Update*

Project Description	Note	Total Escalated Costs	Recommended Financing Method							
			Federal Entitlement (a)	Federal Discretion (b)	Federal Unfunded (c)	PFC (d)	State (e)	Airport Revenue Funded (f)	Local Match Unfunded (g)	Other Local Funding (h)
<b>2006 Projects</b>										
A.1 Construct commercial apron expansion		\$1,300,300	\$1,000,000		\$235,300		\$181,522	\$32,500		\$32,500
A.2 Fog seal & markings - RW 15/33		\$181,522								
A.3 Taxiway rehabilitation & widening, including south run-up area & larger fillers		\$4,090,000		\$3,300,000	\$585,500		\$9,780	\$102,250		\$102,250
A.4 Replace airfield lighting control		\$9,780								
A.5 Pavement maintenance, striping & Strategic Plan		\$144,075						\$115,250		\$28,825
<b>Sub-Total/2006 Projects</b>		<b>\$5,725,677</b>	<b>\$1,000,000</b>	<b>\$3,300,000</b>	<b>\$820,800</b>	<b>\$191,302</b>	<b>\$250,000</b>	<b>\$163,575</b>	<b>\$0</b>	<b>\$0</b>
<b>2007 Projects</b>										
A.6 Construct GA storage hangars NE of future Taxiway E, including utilities & public restrooms	(i)	\$0								
A.7 Construct Taxiway E & drainage		\$957,900	\$910,004				\$23,948	\$23,948		
A.8 Rehab existing taxiways in hangar area south of ARRP, fix drainages; no rehab within 15' of existing hangars		\$360,500	\$89,995		\$221,550		\$46,705	\$46,705		
A.9 Land acquisition - 30 acres NE of RW 15 threshold		\$1,545,000			\$1,545,000		\$55,948	\$223,862		\$695,000
A.10 Pavement maintenance		\$279,750								
A.11 Stormwater drainage improvements - 54" RCP culvert under Loudon Ditch, excavate & install structure at existing Pond 1		\$695,000								
<b>Sub-Total/2007 Projects</b>		<b>\$3,838,150</b>	<b>\$999,999</b>	<b>\$0</b>	<b>\$1,766,550</b>	<b>\$126,601</b>	<b>\$250,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$695,000</b>

Notes

- (a) Federal Entitlement - FAA Airport Improvement Program (AIP) Entitlement Grants
- (b) Federal Discretion - FAA Airport Improvement Program (AIP) Discretionary Grants
- (c) Federal Unfunded
- (d) PFC - Passenger Facility Charge Proceeds
- (e) State - Colorado Division of Aeronautics, Discretionary Aviation Grants
- (f) Local - Airport Net Revenues, Cash Reserves
- (g) Local Match - Unfunded
- (h) Local - Other Unfunded
- (i) Private or Revenue Financing

Cost estimates, based upon 2005 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

MASTER PLAN UPDATE

Table G5 (Continued)  
 PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS (DETAILED)  
 Fort Collins-Loveland Municipal Airport Master Plan Update

Project Description	Note	Total Escalated Costs	Recommended Financing Method						Other Local Funding (i)
			Federal Entitlement (a)	Federal Discretion (b)	PPC (c)	State (f)	Airport Revenue Funded (g)	Local Match Unfunded (h)	
<b>2008 Projects</b>									
A.12 Extend Lindbergh Ave. to south, connect to Cessna St. & Northrup St., close Lear St. (City of Loveland H & T Estimate - Minor Collector)		\$1,331,941							\$1,531,941
A.13 Rehab & strengthen RW 15/33 with connector taxiways inside RSA; replace runway edge light fixtures & transformers on existing base cans		\$5,900,000	\$1,000,000	\$3,000,000	\$1,605,000	\$147,500	\$147,500		
A.14 Rehab auto parking in front of terminal, install pay parking system (Phase I)		\$153,831							\$153,831
A.15 Pavement maintenance		\$128,125					\$102,500	\$25,625	
A.16 Construct apron & hangars for G.A storage hangars	(i)	\$0							
<b>Sub-Total/2008 Projects</b>		<b>\$7,513,897</b>	<b>\$1,000,000</b>	<b>\$3,000,000</b>	<b>\$1,605,000</b>	<b>\$147,500</b>	<b>\$250,000</b>	<b>\$25,625</b>	<b>\$0</b>
<b>2009 Projects</b>									
A.17 Environmental Assessment for runway extension		\$318,270			\$302,356	\$7,957	\$7,957		
A.18 Rehab intersection of Lindbergh Ave. & Earhart Rd., overlay Earhart Rd. to terminal (City of Loveland H & T Estimate)		\$307,644			\$177,867	\$9,361			\$307,644
A.19 Wildlife Hazard Assessment		\$187,228							
A.20 Rehab auto parking in front of terminal (Phase II)		\$156,445							\$156,445
A.21 Construct SE taxiway to serve airport development to SE		\$1,052,632	\$1,000,000			\$26,316	\$26,316		
A.22 Asphalt seal coat/stripe Taxiway A		\$269,660				\$33,933	\$215,727		
A.23 SE G.A development - apron, taxilanes, & other infrastructure	(i)								
<b>Sub-Total/2009 Projects</b>		<b>\$2,293,879</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$480,223</b>	<b>\$97,567</b>	<b>\$250,000</b>	<b>\$0</b>	<b>\$466,089</b>

Notes

- (a) Federal Entitlement - FAA Airport Improvement Program (AIP) Entitlement Grants
  - (b) Federal Discretion - FAA Airport Improvement Program (AIP) Discretionary Grants
  - (c) Federal Unfunded
  - (d) PFC - Passenger Facility Charge Proceeds
  - (e) State - Colorado Division of Aeronautics, Discretionary Aviation Grants
  - (f) Local - Airport Net Revenues, Cash Reserves
  - (g) Local Match - Unfunded
  - (h) Local - Other Unfunded
  - (i) Private or Revenue Financing
- Cost estimates, based upon 2005 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

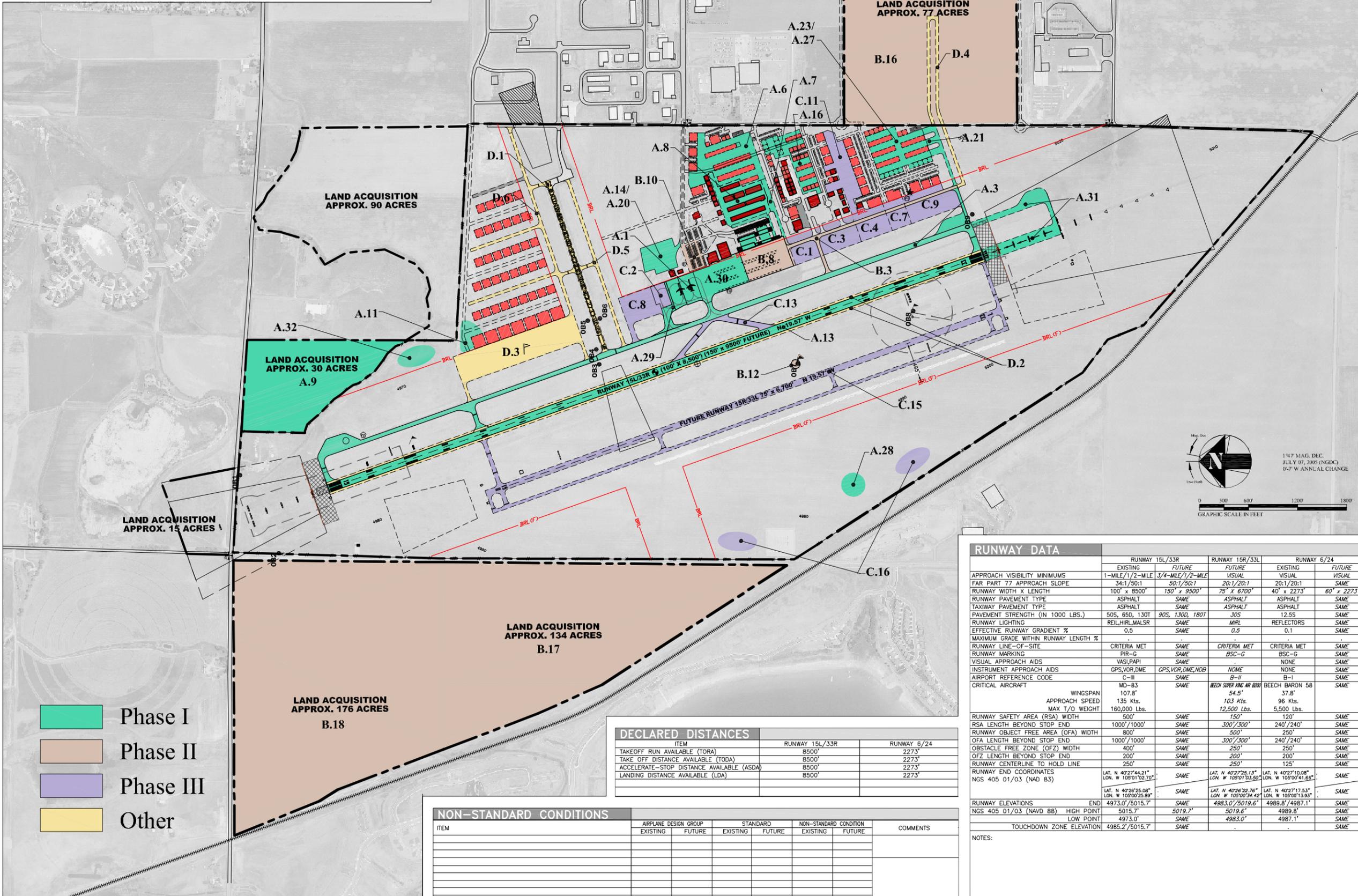
MASTER PLAN UPDATE

Table G5 (Continued)  
 PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS (DETAILED)  
 Fort Collins-Loveland Municipal Airport Master Plan Update

Project Description	Note	Total Escalated Costs	Recommended Financing Method								
			Federal Entitlement (a)	Federal Discretion (b)	Federal Unfunded (c)	PFC (e)	State (f)	Airport Revenue Funded (g)	Local Match Unfunded (h)	Other Local Funding (i)	
<b>2010 Projects</b>											
A.24 Rehab FBO free public parking (City of Loveland II & I Estimate)		\$131,300									\$131,300
A.25 Install east perimeter fencing - from Parhart Rd. to NE property corner & from Lindbergh Ave. round-about to SE property corner		\$238,703	\$202,090		\$5,050	\$31,563					
A.26 Construct security fencing & install gates #4 and #5 off of Cessna St. & Northrup St.		\$180,250	\$106,313		\$50,053	\$23,884					
A.27 Construct hangars in SE area	(i)	\$0									
A.28 Construct Air Traffic Control Tower	(j)	\$5,500,000		\$5,500,000							
A.29 Expand commercial apron (Phase II) & connector to Taxiway A		\$2,411,886	\$200,086	\$2,015,710	\$53,045	\$53,045					
A.30 Rehab GA apron (north half)		\$1,498,738	\$401,511	\$984,291	\$36,468	\$36,468					
<b>Sub-Total/2010 Projects</b>		<b>\$9,920,877</b>	<b>\$1,000,000</b>	<b>\$3,000,001</b>	<b>\$144,616</b>	<b>\$144,960</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$131,300</b>
<b>2011 Projects</b>											
A.31 RW 15/33 extension - 1,000' to the south		\$5,920,176	\$1,000,000		\$4,624,176	\$148,000					
A.32 Relocate detention pond to final location - utilize structure under Loudon Ditch		\$492,691			\$25,500	\$102,000					\$492,691
A.33 Asphalt seal coat/ stripe Runway 15/33		\$127,500									
<b>Sub-Total/2011 Projects</b>		<b>\$6,540,367</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$4,624,176</b>	<b>\$173,500</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$492,691</b>
<b>Total Phase I (2006-2011)</b>		<b>\$35,832,847</b>	<b>\$5,999,999</b>	<b>\$9,300,001</b>	<b>\$14,796,749</b>	<b>\$881,086</b>	<b>\$1,394,960</b>	<b>\$189,200</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,270,852</b>

Notes  
 (a) Federal Entitlement - FAA Airport Improvement Program (AIP) Entitlement Grants  
 (b) Federal Discretion - FAA Airport Improvement Program (AIP) Discretionary Grants  
 (c) Federal Unfunded  
 (d) PFC - Passenger Facility Charge Proceeds  
 (e) State - Colorado Division of Aeronautics, Discretionary Aviation Grants  
 (f) Local - Airport Net Revenues, Cash Reserves  
 (g) Local Match - Unfunded  
 (h) Local - Other Unfunded  
 (i) Private or Revenue Financing  
 (j) 100% Funded by FAA Facilities and Equipment  
 Cost estimates, based upon 2005 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

SURVEY MONUMENTS		
ITEM	PID	DESCRIPTION
M1		
M2		
M3		
M4		

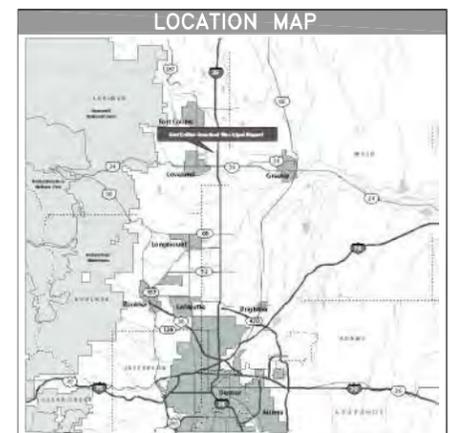


DECLARED DISTANCES		
ITEM	RUNWAY 15L/33R	RUNWAY 6/24
TAKEOFF RUN AVAILABLE (TORA)	8500'	2273'
TAKE OFF DISTANCE AVAILABLE (TODA)	8500'	2273'
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)	8500'	2273'
LANDING DISTANCE AVAILABLE (LDA)	8500'	2273'

NON-STANDARD CONDITIONS							
ITEM	AIRPLANE DESIGN GROUP		STANDARD		NON-STANDARD CONDITION		COMMENTS
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	

	RUNWAY 15L/33R		RUNWAY 15R/33L		RUNWAY 6/24	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS	1-MILE/1/2-MILE	3/4-MILE/1/2-MILE	VISUAL	VISUAL	VISUAL	VISUAL
FAIR PART 77 APPROACH SLOPE	34:1/50:1	50:1/50:1	20:1/20:1	20:1/20:1	SAME	SAME
RUNWAY WIDTH X LENGTH	100' x 8500'	150' x 8500'	75' x 6700'	40' x 2273'	60' x 2273'	60' x 2273'
RUNWAY PAVEMENT TYPE	ASPHALT	ASPHALT	ASPHALT	ASPHALT	ASPHALT	ASPHALT
TAXIWAY PAVEMENT TYPE	ASPHALT	ASPHALT	ASPHALT	ASPHALT	ASPHALT	ASPHALT
PAVEMENT STRENGTH (IN 1000 LBS.)	50S, 65D, 130T	90S, 130D, 180T	30S	12.5S	SAME	SAME
RUNWAY LIGHTING	REIL,HIRL,MALSR	SAME	MIRL	REFLECTORS	SAME	SAME
EFFECTIVE RUNWAY GRADIENT %	0.5	SAME	0.5	0.1	SAME	SAME
MAXIMUM GRADE WITHIN RUNWAY LENGTH %						
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME	CRITERIA MET	CRITERIA MET	SAME	SAME
RUNWAY MARKING	PIR-G	SAME	BSC-G	BSC-G	SAME	SAME
VISUAL APPROACH AIDS	VASI,PAPI	SAME	NONE	NONE	SAME	SAME
INSTRUMENT APPROACH AIDS	GPS,VOR,DME	GPS,VOR,DME,NDB	NONE	NONE	SAME	SAME
AIRPORT REFERENCE CODE	C-III	SAME	B-III	B-III	SAME	SAME
CRITICAL AIRCRAFT	MD-83	SAME	BECH SUPER KING AIR 8000	BEECH BARON 58	SAME	SAME
WINGSPAN	107.8'	107.8'	54.5'	37.8'	SAME	SAME
APPROACH SPEED	135 Kts.	135 Kts.	103 Kts.	96 Kts.	SAME	SAME
MAX T/O WEIGHT	160,000 Lbs.	160,000 Lbs.	12,500 Lbs.	5,500 Lbs.	SAME	SAME
RUNWAY SAFETY AREA (RSA) WIDTH	500'	SAME	150'	120'	SAME	SAME
RSA LENGTH BEYOND STOP END	1000'/1000'	SAME	300'/300'	240'/240'	SAME	SAME
RUNWAY OBJECT FREE AREA (OFA) WIDTH	800'	SAME	500'	250'	SAME	SAME
OFA LENGTH BEYOND STOP END	1000'/1000'	SAME	300'/300'	240'/240'	SAME	SAME
OBSTACLE FREE ZONE (OFZ) WIDTH	400'	SAME	250'	250'	SAME	SAME
OFZ LENGTH BEYOND STOP END	200'	SAME	200'	200'	SAME	SAME
RUNWAY CENTERLINE TO HOLD LINE	250'	SAME	250'	125'	SAME	SAME
RUNWAY END COORDINATES	LAT. N 40°27'44.21" LONG. W 105°01'03.70"	SAME	LAT. N 40°27'25.13" LONG. W 105°01'03.50"	LAT. N 40°27'10.08" LONG. W 105°01'04.86"	SAME	SAME
RUNWAY ELEVATIONS	END HIGH POINT 5015.7' LOW POINT 4973.0'	SAME	END HIGH POINT 5019.6' LOW POINT 4983.0'	END HIGH POINT 4989.8' LOW POINT 4987.1'	SAME	SAME
TOUCHDOWN ZONE ELEVATION	4985.2'/5015.7'	SAME	4983.0'	4987.1'	SAME	SAME

NOTES:



BUILDING LEGEND		
NO.	DESCRIPTION	TOP ELEVATION
1	PASSENGER TERMINAL BUILDING	
2	PASSENGER WAITING AREA	
3	T-HANGARS	
4	AIRCRAFT FIRE RESCUE	
5	EXECUTIVE HANGARS	

AIRPORT DATA		
	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	5015.7'	SAME
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAVD 83)	LAT. N 40°26'58.98" LONG. W 105°01'04.41"	SAME
AIRPORT REFERENCE CODE	C-III	SAME
NPIAS CATEGORY	PCS	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	85°F (JULY)	SAME
TAXIWAY LIGHTING	MIL	SAME
TAXIWAY MARKING	CL	SAME
AIRPORT & TERMINAL NAVAIDS	NDB,VOR,ILS	SAME

LAYOUT PLAN LEGEND		
	EXISTING	FUTURE
AIRPORT PROPERTY LINE	---	---
AIRPORT SECURITY FENCE	---	---
AIRPORT BUILDINGS	█	█
AIRFIELD PAVEMENT	▨	▨
PAVED ROADS	▨	▨
RUNWAY PROTECTION ZONE	---	---
BUILDING RESTRICTION LINE	---	---
OBSTACLE FREE ZONE	---	---
RUNWAY SAFETY AREA	---	---
RUNWAY OBJECT FREE AREA	---	---
FUEL STORAGE AREA	---	---
AIRPORT BEACON	○	○
LIGHTED WIND CONE & SEGMENTED CIRCLE	○	○
WIND CONE	○	○
PRECISION APPROACH PATH INDICATOR (PAPI)	---	---
VISUAL APPROACH SLOPE INDICATOR (VASI)	---	---
RUNWAY END IDENTIFIER LIGHTS (REIL)	---	---
TAXIWAY HOLDLINES	---	---
SECTION CORNER	---	---
TAXIWAY OBJECT FREE AREA	---	---
TAXIWAY SAFETY AREA	---	---
PRECISION OBSTACLE FREE ZONE	---	---

REVISIONS		
NO.	DESCRIPTION	DATE

SPONSOR APPROVAL	
CITY OF LOVELAND	DATE

# PHASING PLAN

## Fort Collins-Loveland Municipal Airport

LOVELAND, CO

Barnard Dunkelberg & Company  
Airport and Environmental Consultants

Figure G1

### Financial Plan and Implementation Strategy

Funding sources for the capital improvement program depend on many factors, including Airport Improvement Program (AIP) project eligibility, the ultimate type and use of facilities to be developed, debt capacity of the Airport, the availability of other financing sources, and the priorities for scheduling project completion. For planning purposes, assumptions were made related to the funding source of each capital improvement. The projects costs provided in the Development Plan Project Costs tables are identified with likely funding sources.

### Sources of Capital Funding

Following is a short description of capital improvement funding sources to provide background and context when reviewing the previously presented *DEVELOPMENT PLAN PROJECT COST* tables. For a more complete description, please refer to the next chapter, entitled *Financial Implementation Analysis*.

**AIP Entitlement Grants.** The Airport Improvement Program (AIP) provides passenger and cargo entitlement grants for eligible airport projects. Entitlement funding that airports receive is based on a formula using the airport's passenger enplanements and cargo weight, which is reported two (2) years prior to the current grant year with a minimum amount for primary commercial service airports (i.e., the AIR-21 legislation enacted in April 2000 provides that a minimum of \$1,000,000 per year be allocated to each primary airport commercial service airport). Currently, Fort Collins-Loveland Municipal Airport receives the minimum of \$1.0 million annually in entitlement funds, based upon having over 10,000 annual passenger enplanements.

**AIP Discretionary Grants.** The FAA also provides discretionary grants on a 95/5 basis to airports similar to Fort Collins-Loveland Municipal Airport. This source of funding is over and above entitlement funding, and is provided to airports for projects that have a high federal priority for enhancing safety, security, and capacity of the Airport, and would be difficult to fund otherwise. The dollar amounts of individual grants vary and can be significant in comparison to entitlement funding. Discretionary grants are awarded at the FAA's sole prerogative. Discretionary grant applications are evaluated based on need, the FAA's project priority ranking system, and the FAA's assessment of a project's significance within the national airport and airway system.

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**Passenger Facility Charges (PFC).** The Aviation Safety and Capacity Act of 1990 contained provisions for airports to levy passenger facility charges (PFC) of up to \$3 per enplaned passenger for the purpose of funding qualified airport enhancement projects. The proceeds from PFCs are eligible to be used for AIP eligible projects and for certain additional projects that preserve or enhance capacity, safety, or security; mitigate the effects of aircraft noise; or, enhance airline competition. PFCs may also be used to pay debt service on bonds and other indebtedness incurred to carry out eligible projects. AIR-21 legislation, enacted in April 2000, enabled the ability to raise PFC collection rates up to \$4.50 per enplaned passenger.

**FAA Regional Airport Plan.** The Regional Airport Plan (RAP) provides a link between national/regional objectives, the FAA Airports Division's five-year plan, and specific decisions associated with the preparation of the Airport Division's Airport Capital Improvement Plan (ACIP) at focus airports (commercial service, certificated, and GA airports with over 75 based aircraft). *The focus of the Regional Airport Plan (RAP) is on discretionary funding allocated to all discretionary categories within the Northwest Mountain Region.* Since 1997, the Northwest Mountain Region's total AIP has averaged approximately ten percent (10%) of the national funds available, and the region's discretionary funding averaged approximately 14% of available national discretionary funding. To provide reasonable assurance of needed support, spread over several years, a list of Airport Capital Improvement Projects (ACIP) is maintained in the RAP. Many projects that require major funding expenditures have benefited from the RAP programming approach. The RAP is an important planning tool used by the Region's Airports Division as the best possible estimate of the potential availability of funding and the Region's best forecast of the airport improvement work it can support financially.

From the Cities' perspective, having a well organized and comprehensive CIP (like the one developed in this Master Plan) is critical in order to appropriately represent local airport needs for inclusion in the Regional Airport Plan.

**FAA Facilities & Equipment Funds.** Within the FAA's budget appropriation, money is available in the Facilities & Equipment (F&E) Fund to purchase navigational aids and air safety-related technical equipment, including Air Traffic Control Towers (ATCTs), for use at commercial service airports in the national airport system. Each F&E development project is evaluated independently through a cost/benefit analysis to determine funding eligibility and priority ranking. The qualified projects are totally funded (i.e., 100%) by the FAA, with the remaining projects likely being AIP or PFC eligible. In addition, the Airport will apply for NAVAID maintenance funding through the F&E program for those facilities that are not F&E

## MASTER PLAN UPDATE

funded. It is possible that some of the proposed navigational aid-related development projects for Fort Collins-Loveland Municipal Airport would qualify for F&E funding, if available.

**Colorado Division of Aeronautics.** The Colorado Department of Transportation Division of Aeronautics provides Discretionary Aviation Grants for airport project from a portion of the state sales tax collected on aviation fuel. For AIP projects, state grant awards for up to 50% of an airport's local match requirement are allowed. For projects without a federal grant, sponsors may receive up to 50% funding of the total cost of an approved project. In general, State Division of Aeronautics grants are limited to about \$250,000 per year per airport.

**Private Third-Party Financing.** Many airports use private third party financing when the planned improvements will be primarily used by a private business or other organization. Such projects are not ordinarily eligible for federal funding. Projects of this kind typically include hangars, FBO facilities, fuel storage, exclusive aircraft parking aprons, industrial aviation use facilities, non-aviation office/commercial/industrial developments, and various other projects. Private development proposals are considered on a case-by-case basis. Often, airport funds for infrastructure, preliminary site work, and site access are required to facilitate privately developed projects on airport property.

**Airport Revenues.** The Airport generates revenue through the facility leases, commercial aviation fees, airline fees, fuel fees, etc. At many airports, generating the necessary cash flow to balance the operations and maintenance can be a difficult task. A review of the financial documentation for Fort Collins-Loveland Municipal Airport indicates that the Airport is not at this point operationally self-supporting. It receives \$60,000 annually from the City of Loveland and \$60,000 from the City of Fort Collins to assist with operating expenses.

Generation of money to adequately fund capital costs associated with the operation of an airport is often a significant challenge. Many smaller airports rely on supplemental money from municipal general funds to assist with funding major projects. However, it must be realized that the City of Fort Collins and the City of Loveland general funds carry the burden of all other City departments, and they will likely not be in the financial position to provide the type of monetary assistance necessary to fund the airport's capital needs identified in this Master Plan. Careful planning will be required to ensure that the airport's capital needs are met with the scarce dollars that are available.

## MASTER PLAN UPDATE

The revenue generating potentials for the Airport will be an on-going subject of discussion for the local sponsors in coming years. Rates and charges will be evaluated on a periodic basis, with the ultimate goal being airport financial self-sufficiency for both operating and capital funding needs.

### **Summary – Master Plan Capital Improvement Program Financial Implications**

If aviation demands continue to indicate that improvements are needed, and if the proposed improvements prove to be environmentally acceptable, the capital improvement financial implications discussed above are likely to be acceptable for the FAA and the Cities. However, it must be recognized that this is only a programming analysis and not a commitment on the part of the Sponsor or the FAA. If the cost of an improvement project is not financially feasible, it will not be instigated.

To further refine the financial implications involved with the long-term development program and the implementation schedule, the next chapter entitled *Financial Implementation Analysis*, provides a detailed analysis the CIP and funding strategies.

## H Financial Implementation Analysis

*The purpose of this analysis is to evaluate Fort Collins-Loveland Municipal Airport's capability to fund the Master Plan Capital Improvement Program (CIP) and finance operations during the Phase I, Phase II, and Phase III planning periods of the capital program. Results of the evaluation are presented in a detailed Financial Implementation Plan that provides a basis for matching the amounts and timing of estimated capital costs with projected capital funding sources. Detailed tables of projections for the capital program, operating expenses, operating revenues, and cash flow are provided in support of the Financial Plan Summary, which presents the results of this evaluation.*

### **Overall Approach**

Our overall approach for development of the Financial Implementation Plan included the following steps:

- Gathering and reviewing key airport documents related to historical financial results, capital improvement plans, operating budgets, regulatory requirements, and airport policies.
- Interviewing key airport management personnel to gain an understanding of the existing operating and financial environment and overall financial management philosophy.
- Reviewing the aviation traffic forecast previously developed in the Master Plan. The passenger enplanement forecast provided in Chapter B of the Master Plan Update projected enplanements to grow from about 11,000 in 2003 to

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112,000 by 2023. For purposes of conducting the Financial Implementation Analysis, a significantly reduced forecast was adopted to reflect a much more conservative financial approach. The reduced forecast assumed that 33,000 enplanements

- would be achieved in 2005 and would grow at a two percent (2%) annual rate thereafter through the end of the 21-year planning period in 2026.
- Reviewing the Master Plan CIP, cost estimates, and development schedule anticipated for the planning period and projecting the overall financial requirements for the program.
- Determining and analyzing the sources and timing of capital funds available to meet the financial requirements for funding the capital program.
- Analyzing historical and budgeted operating expenses, developing operations and maintenance expense assumptions, reviewing assumptions with airport management, and projecting future operating costs for the planning period.
- Analyzing historical and budgeted operating revenues, developing operating revenue assumptions, reviewing assumptions with airport management, and projecting future operating revenues for the planning period.
- Completing results of the analysis and evaluation in a Financial Plan Summary that provides conclusions regarding the financial practicality of the planned capital program.

### Sources of Capital Funding

The development of the Master Plan CIP is anticipated to be funded from several sources. These sources include federal grants, FAA Facilities & Equipment (F&E) funding, passenger facility charges (PFCs), state aviation grants, capital funding from the Cities of Fort Collins and Loveland (the airport's public agency sponsors), other unidentified funding, and net operating revenues/cash reserves. Each of these sources of funds is described in the following section.

**FAA Airport Improvement Program Grants.** The Airport receives grants from the Federal Aviation Administration (FAA) to finance the eligible costs of certain capital improvements. These federal grants are allocated to commercial passenger service airports through the

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Airport Improvement Program (AIP). AIP grants include entitlement grants, which are allocated among airports by a formula that is driven by enplanements, and discretionary grants that are awarded in accordance with FAA guidelines. Under the AIP re-authorization legislation enacted in 2002 and 2005, the Airport is projected to receive entitlements of \$1 million per year (the minimum) from 2006 through 2026, based on the reduced forecast of passenger enplanements. Non-hub airports (those with annual enplanements up to about 322,000) can accumulate up to four (4) years of unspent entitlements before the award is revoked.

The approval of AIP discretionary funding is based on a project eligibility ranking method the FAA uses to award grants, at their discretion, based on a project's priority and importance to the national airport and airway system. During the Phase I period through 2011, the Financial Plan projects discretionary grant awards totaling \$9.3 million to the Airport to support runway, taxiway, and aircraft apron pavement projects that the FAA has programmed for Fort Collins-Loveland Municipal Airport in its five-year CIP. It is reasonable to assume that the Airport will receive additional discretionary funding later during the planning period for higher priority, eligible projects, such as aircraft apron and ARFF building improvements. It was assumed that an additional \$10.5 million in discretionary grants would be provided during Phases II and III of the planning period.

**FAA Facilities & Equipment Funds.** Within the FAA's budget appropriation, money is available in the Facilities & Equipment (F&E) Fund to purchase navigational aids and air safety-related technical equipment for use at commercial service airports in the national airport system. The analysis assumes such funding will be available to fund an Air Traffic Control Tower (ATCT) planned during Phase I at a cost of \$5.5 million. If F&E funds are not provided by the FAA, implementation of this project will need to be delayed.

**Passenger Facility Charges.** The Aviation Safety and Capacity Expansion Act of 1990 established the authority for commercial service airports to apply to the FAA for imposing and using a Passenger Facility Charge (PFC) of up to \$3.00 per enplaned passenger. With the passage of AIR-21 in June 2000, airports were permitted to apply for an increase in the PFC collection amount from \$3.00 per eligible enplaned passenger to \$4.50. The proceeds from PFCs are eligible to be used for AIP eligible projects and for certain additional projects that preserve or enhance capacity, safety, or security; mitigate the effects of aircraft noise; or, enhance airline competition. PFCs may also be used to pay debt service on bonds (including principal, interest, and issue costs) and other indebtedness incurred to carry out eligible

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projects. In addition to funding future planned projects, the legislation permits airports to collect PFCs to reimburse the eligible costs of projects that began on or after November 5, 1990.

Since 1993, Fort Collins-Loveland Municipal Airport has submitted four PFC applications that were approved by the FAA. Application #4 is currently in effect with a total collection authority of \$315,329 and a charge expiration date of approximately November 2007. A portion of this collection authority will be applied to projects listed in the Master Plan CIP.

The implementation analysis assumes that the Airport will submit additional PFC applications and amendments, as required, to ensure that the collection of PFC revenues continues beyond the anticipated expiration date during the planning period. PFC revenues are assumed to be used for numerous projects identified in the Master Plan CIP throughout the planning period.

**State Division of Aeronautics Grants.** The Colorado Department of Transportation Division of Aeronautics provides Discretionary Aviation Grants for airport projects from a portion of the state sales tax collected on aviation fuel. Grants are approved for projects including those that are AIP eligible, aviation pavement maintenance projects, and various other airport projects. For AIP eligible projects, state grant awards for up to 50% of an airport's local match requirement are allowed. Non-Revenue producing projects that are not AIP eligible (but are still eligible for state funding) may also receive up to 80% funding (with a 20% local match) for the total cost of approved projects. In general, a limit of about \$250,000 per year in state grants is awarded to Colorado airports supported by the Division. The Master Plan CIP includes several projects during the planning period that are assumed to be partially funded from State Aeronautics Grants.

**Cities' Potential Capital Funding.** The Master Plan CIP includes two (2) projects in Phase I with a total estimated cost of about \$1.2 million and one (1) project in Phase III with a cost of \$701,000 that are all related to stormwater drainage improvements. The Financial Plan assumes that the Cities of Fort Collins and Loveland (sponsors of the Airport referred to in this analysis as the "Cities") will provide funding for these projects. This source of capital funding has been preliminarily discussed with the Cities, but has not been committed or confirmed.

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**Other Funding.** The traditional funding sources described in previous paragraphs of this section are insufficient to finance a significant number of projects programmed for development during all three (3) phases of the planning period. A substantial lack of traditional funding is projected for all three (3) phases. Consequently, non-traditional funding sources will be needed to implement project costs of about \$11.4 million in Phase I, \$18.4 million in Phase II, and \$56.4 million in Phase III. This non-traditional funding need has not been specified and represents a total capital shortfall of \$86.2 million throughout the 21-year planning period. If other funding sources cannot be identified and obtained in the time frames needed, the associated projects will have to be delayed until such funding can be identified. This source has been referenced in the Financial Plan as “Other Funding”.

**Net Operating Revenues/Cash Reserves.** Currently, the Airport has limited cash reserves and annual net operating revenues (including \$120,000 in annual support provided by the Cities) to provide significant funding for development of the Master Plan CIP throughout the planning period. The Financial Plan assumes a restricted application of these sources to capital projects, to ensure that positive year-end cash balances are maintained.

### **Financial Analysis and Implementation Plan for the Master Plan Capital Improvement Program**

This section, along with the tables presented at the end of the chapter, provides the analysis and results of evaluating the financial reasonableness of implementing the Master Plan Capital Improvement Program during the planning period from 2006 through 2026.

**Estimated Project Costs and Development Schedule.** The estimated project costs and development schedule are derived from previous results of the Master Plan development analysis. The program for capital expansion and improvement projects is projected for the Phase I planning period from the years ending 2006 through 2011, for the Phase II period from the years ending 2012 through 2016, and for the Phase III period from the years ending 2017 through 2026. For each of these planning periods, Table H.1 at the end of the chapter presents the estimated timing and costs of the identified projects included in the capital program. As shown in Table H.1, the total estimated cost of capital projects is \$108,646,256 in 2005 dollars. The estimated costs for projects scheduled during the period 2007 through 2026 are adjusted by an assumed three percent (3%) rate of annual inflation. The resulting total escalated costs are \$140,988,647. Exhibit H.1 below presents a summary of Table H.1 and provides a comparison of 2005 base year costs with escalated costs adjusted for inflation for each of the planning periods.

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### EXHIBIT H.1 SUMMARY OF BASE YEAR AND ESCALATED COSTS FOR THE CAPITAL PROGRAM

Planning Periods	2005 Base Year Costs	Escalated Costs
Phase I Projects (2006-2011)	\$34,841,115	\$35,832,847
Phase II Projects (2012-2016)	21,375,100	26,501,695
Phase III Projects (2017-2026)	52,430,041	78,654,105
<b>Total Project Costs</b>	<b>\$108,646,256</b>	<b>\$140,988,647</b>

**Source:** Leibowitz & Horton AMC Analysis.

Note: Addition errors are due to rounding of calculated amounts.

**Sources and Uses of Capital Funding.** As discussed in previous sections of this analysis, a variety of sources is available for funding capital improvements at the Airport. The funding structure of the capital program depends on many factors, including project eligibility for the various funding sources, the ultimate type and use of facilities to be developed, the amounts and timing of funds availability, and the priorities for scheduling project completion. For planning purposes, assumptions were made related to the funding source of each capital improvement. The detailed capital funding analysis is provided in Table H.2 at the end of the chapter. A summary of the capital plan with escalated project cost estimates and funding sources is presented in Exhibit H.2, which follows.

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### EXHIBIT H.2 SUMMARY OF SOURCES AND USES OF CAPITAL FUNDING

<b>Sources of Capital Funding (2006 to 2026):</b>	
AIP Entitlement Grants	\$21,000,000
AIP Discretionary Grants	19,805,465
FAA Facilities & Equipment Funds	5,500,000
Passenger Facility Charges	2,846,952
State Division of Aeronautics Grants	3,567,430
Cities' Potential Capital Funding	1,888,777
Other Funding	86,178,530
Net Operating Revenues/Cash Reserves	201,493
<b>Total Sources of Capital Funding</b>	<b>\$140,988,647</b>
<b>Uses of Capital Funding:</b>	
Phase I Projects (2006 to 2011)	\$35,832,847
Phase II Projects (2012 to 2016)	26,501,695
Phase III Projects (2017 to 2026)	78,654,105
<b>Total Project Costs</b>	<b>\$140,988,647</b>

**Source:** Leibowitz & Horton AMC Analysis.

**Note:** Addition errors are due to rounding of calculated amounts.

**Projected Operations and Maintenance Expenses.** Operations and maintenance expense projections for the Phase I (2006-2011), Phase II (2012-2016), and Phase III (2017-2026) planning periods are based on the airport's current budget, the anticipated impacts of inflation, aviation traffic increases and the recent experience of other similarly sized airports. Beginning in 2007, Personal Services expenses are assumed to grow at a four percent (4%) annual rate; Utility expenses are assumed to grow at a five percent (5%) annual rate; and, all other expense categories are assumed to grow at a three percent (3%) annual rate. Descriptions of the projected expenses include the following categories:

- **Personal Services** - This category includes full-time and part-time salaries, overtime pay, accrued vacation expense, payroll taxes, health insurance, pension and retirement benefits, unemployment insurance and workers' compensation insurance.

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- **Supplies** - This category includes expenses for office supplies, office furniture and equipment, computer supplies and software, food, motor oil and lubricants, tires and tubes, repair parts, maintenance tools, building and paint supplies, electrical parts, botanical supplies and other operating supplies.
- **Purchased Services** - This category includes expenses for postage, printing, general liability insurance, membership fees and dues, advertising, storm drainage fees, professional fees, terminal building maintenance, repairs and maintenance, travel, meetings and other services.
- **Utilities** - This category includes expenses for electricity, water, gas, sewer and telephone services.
- **Fixed Charges** (Excluding Depreciation) - This category includes property insurance, building, vehicle, equipment and other rentals and T-hangar assessments.
- **City Charges** - This expense category includes transfers to the City of Loveland General Fund and Internal Services Fund for the administrative support and other services the City provides to the Airport.
- **Minor Capital Outlays** - This category includes expenditures for minor capital outlays (such as minor tool and equipment purchases) rather than major capital expenditures.

The projection of operations and maintenance expenses is provided in Table H.3 at the end of the chapter. As shown in the table, total expenses are expected to grow from \$538,370 budgeted for 2006 to \$653,279 projected for 2011 with a total of \$3,597,690 during the six-year Phase I period. During the five-year Phase II period, expenses are projected to total \$3,617,258 and during the ten-year Phase III period, expenses are projected to total \$9,378,548. The overall growth rate of expenses during the projection period is 3.6% per year.

Table H.3 also provides a comparison of the airport's total operating expenses per enplaned passenger versus the industry average for non-hub airports. The airport's operating expenses per enplaned passenger are projected to grow from \$15.99 budgeted for 2006 to \$21.79 by the end of the 21-year planning period. During the same period, the industry average for non-hub airports grows from \$23.47 in 2006 to \$39.96 during Phase III (Source: AAAE 2002-2003 Survey of Airport Rates and Charges with inflation adjustments after 2003).

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This shows that operating expenses at the Airport are significantly below those of other similarly sized airports and are projected to remain lower throughout the 21-year projection period. This comparison implies that the Airport is projected to operate 32% to 45% more cost efficiently than other airports of similar size and operation.

**Projected Operating Revenues.** Operating revenue projections for the Phase I (2006 to 2011), the Phase II (2012 to 2016) and the Phase III (2017 to 2026) planning periods are based on the airport's current budget, the anticipated impacts of inflation, aviation traffic increases (based on the reduced enplanement forecast described in the Overall Approach section of this chapter) and the recent experience of other similarly sized airports. Annual growth assumptions from 2007 through 2026 for the revenue categories that follow are provided below.

### Airline Revenues

- **Landing Fees** - Projections are initially based on the 2006 budget. Beginning in 2007, fees are assumed to grow with a three percent (3%) annual inflation rate plus increases in aircraft landed weight using annual growth at ½ the rate of the Master Plan reduced forecast of passenger enplanements. This approach reflects the airlines' practice of managing increased load factors before additional flights are provided.
- **ARFF Standby Fees** - Projections are based on the budget for 2006 with three percent (3%) annual inflation growth thereafter.
- **Terminal Use Fees** - Projections are based on the budget for 2006 with three percent (3%) annual inflation growth thereafter.

### Non-Airline Revenues

- **Fuel Flowage Fees** - Based on the 2006 budget with growth at a three percent (3%) annual inflation rate plus increases in aircraft landed weight using annual growth at ½ the rate of the Master Plan reduced forecast of passenger enplanements.
- **State Aircraft Fuel Tax** - Based on the 2006 budget and three percent (3%) annual inflation plus ½ the annual rate of reduced forecast enplanement growth.
- **FBO Rent** - Based on the 2006 budget with three percent (3%) annual inflation thereafter.
- **T-Hangar Rental** - Based on the 2006 budget with three percent (3%) annual inflation growth thereafter.

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- **Land Lease Income** - Based on the 2006 budget with three percent (3%) annual inflation growth thereafter.
- **Rental Car Concession Fees** - Based on the 2006 budget and three percent (3%) annual inflation plus the annual rate of reduced forecast enplanement growth.
- **Terminal Concessions** - Based on the 2006 budget and three percent (3%) annual inflation plus the annual rate of reduced forecast enplanement growth.
- **Public Automobile Parking Revenues** - Based on the 2006 budget and three percent (3%) annual inflation plus the annual rate of reduced forecast enplanement growth.
- **Airport Commissions** - Based on the 2006 budget and three percent (3%) annual inflation plus the annual rate of reduced forecast enplanement growth.
- **Other Terminal Rent** - Based on the 2006 budget and three percent (3%) annual inflation.
- **Interest Income** - Based on the 2006 budget and fixed thereafter.
- **Miscellaneous Revenues** - Based on the 2006 budget and three percent (3%) annual inflation.

The projection of operating revenues is provided in Table H.4 at the end of the chapter. As shown in the table, revenues derived from airlines are expected to grow from \$48,060 budgeted for 2006 to \$56,957 projected for 2011 with a total of \$314,433 during the six-year Phase I period. During the five-year Phase II period, airline revenues are projected to total \$315,800 and during the ten-year Phase III period, these revenues are projected to total \$819,322. Revenues derived from non-airline sources are expected to grow from \$445,300 budgeted for 2006 to \$536,506 projected for 2011 with a total of \$2,938,204 during the six-year Phase I period. During the five-year Phase II period, non-airline revenues are projected to total \$3,007,445 and during the ten-year Phase III period, these revenues are projected to total \$8,040,350. Total airport revenues are expected to grow from \$493,360 budgeted for 2006 to \$593,463 projected for 2011 with a total of \$3,252,636 during the six-year Phase I period. During the five-year Phase II period, revenues are projected to total \$3,323,246 and during the ten-year Phase III period, revenues are projected to total \$8,859,672. During the 21-year planning period, the overall annual growth rate for total airport revenues is 3.8%.

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Table H.4 also provides a comparison of the airport's airline cost per enplaned passenger versus the industry average for non-hub airports. The airline cost per enplaned passenger (airline fees and rentals divided by enplaned passengers) is a measure airlines use to compare their cost of operations among the airports they serve. The airport's airline cost per enplaned passenger is projected to grow from \$1.43 in 2006 to \$1.90 by the end of the 21-year planning period. During the same period, the industry average for non-hub airports grows from \$6.21 in 2006 to \$10.56 by the end of Phase III (Source: AAAE 2002-2003 Survey of Airport Rates and Charges with inflation adjustments after 2003). This result shows that current airline rates and charges at the Airport are substantially below industry averages and are projected to remain so throughout the planning period. For most non-hub airports this comparison would indicate a need to consider significant increases in airline rates. However, the Airport's only current commercial passenger service consists of scheduled charter flights to Las Vegas that are provided by Allegiant Airlines. This service began in 2003 after the airport lost virtually all its commercial passenger service to Denver in 1997. The current service has provided substantial financial benefits for the Airport that includes the availability of \$1 million per year in AIP entitlement funds as well as PFC revenues that are collected from eligible enplaned passengers. Even a very large increase in airline rates would result in only minimal additional revenues compared with the level of AIP and PFC funding that is provided due to the annual activity of at least 10,000 commercial passengers. Significant rate increases could jeopardize the presence of the airport's current service. Consequently, only very moderate annual rate increase are recommended and projected for the Financial Plan.

Table H.4 also provides a comparison of the airport's total operating revenue per enplaned passenger versus the industry average for non-hub airports. The airport's operating revenue per enplaned passenger is projected to grow from \$14.66 budgeted for 2006 to \$20.90 during the 21-year planning period. During the same period, the industry average for non-hub airports grew from \$17.82 in 2006 to \$30.34 by the end of Phase III (Source: AAAE 2002-2003 Survey of Airport Rates and Charges with adjustments for inflation after 2003). This comparison shows that total airport revenues range from about 18% to 31% below those of other similarly sized airports during the planning period. This shortfall is caused primarily by low revenues derived from airline sources. Total non-airline revenues appear to reflect reasonably competitive levels. The Limited Rates and Charges Review (to be conducted as part of the Master Plan Update) will provide a more detailed analysis of non-airline rates.

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**Financial Plan Summary.** The Financial Plan Summary presented in Table H.5 at the end of the chapter includes projection totals for operating revenues, operating expenses, capital expenditures, capital funding, and cash flow that result from the projections previously presented.

In previous sections of this analysis, Table H.1 provided a practical approach for scheduling capital expenditures to match the availability of capital financing. Table H.2 provided a practical approach for matching specific capital funding sources with each of the scheduled projects. Based on the assumptions underlying the Financial Implementation Plan summarized in Table H.5, implementation of the Master Plan CIP is financially possible, subject to the availability of AIP discretionary grant awards, FAA F&E funding for the ATCT, and acquisition of the currently unidentified Other Funding described in the analysis. The reasonableness of funding the capital program can be characterized by the level of identified funding (not from Other Funds) indicated in each phase of the program as shown in Table H.2. In Phase I, 68% of the funding sources are identified. In Phase II, 31% of the funding are identified. In Phase III, only 28% are identified.

Key assumptions supporting the financial plan relate to the availability and timeliness of the funding sources that have been indicated. Continuation of the AIP entitlement program at authorized funding levels is essential. Funding levels enacted with AIR-21 in June 2000 resulted in a doubling of entitlement grants from previous years with the provision that Congress continue to appropriate at least \$3.2 billion in AIP funds annually. If future appropriations fall below \$3.2 billion, entitlement grants will revert to the pre-2000 levels. Receiving AIP discretionary grants of about \$9.3 million during Phase I, \$1.8 million during Phase II, and \$8.7 million during Phase III as indicated in Table H.2 is key to the financial feasibility of implementing these projects. Without this level of discretionary funding, these projects are not feasible and would have to be delayed or cancelled unless another source of funds could be acquired. Receiving \$5.5 million in FAA F&E funds is essential for implementing the ATCT project during Phase I.

As discussed in previous sections of this analysis, a substantial amount of capital funding for numerous projects in the Master Plan CIP, particularly in Phases II and III, has not been identified during all three (3) phases of the planning period. Other Funding requirements include \$11.4 million in Phase I, \$18.4 million in Phase II, and \$56.4 million in Phase III. Implementation of these projects will not be financially feasible without significant, non-traditional sources of funding.

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Additionally, the Financial Implementation Plan relies on achievement of the Master Plan forecast of aviation activity. Actual aviation traffic may temporarily vary from the projected levels of activity without a significant adverse impact on the capital program. If decreased traffic levels occur and persist, implementation of all the proposed projects may not be financially feasible. It should also be noted, however, that if the forecast activity levels are not met, then a number of the planned capital improvements may not be necessary.

### **Financial Plan Tables**

Tables H.1 through H.5, which present the detailed financial analysis for implementation of the Master Plan CIP, are provided on the following pages.

FORT COLLINS-LOVELAND MUNICIPAL AIRPORT

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Table H.1

Master Plan Capital Improvement Program and Needs Assessment  
Estimated Project Costs and Development Schedule

27-Mar-06

Capital Project Description	2005 Base Year Costs	Estimated Project Costs and Development Schedule										
		Phase I							Phase II 2012-2016	Phase III 2017-2026	Total Escalated Costs	
		2006	2007	2008	2009	2010	2011	Total				
<b>Phase I Projects (2006-2011)</b>												
A.1 Construct commercial apron expansion	\$1,300,300	\$1,300,300							\$1,300,300			\$1,300,300
A.2 Fog seal & markings - RW 15/33	181,522	181,522						181,522				181,522
A.3 Taxiway rehabilitation and widening, including south run-up area and larger fillets	4,090,000	4,090,000						4,090,000				4,090,000
A.4 Replace airfield lighting control system	9,780	9,780						9,780				9,780
A.5 Pavement Maintenance, Striping and Strategic Plan	144,075	144,075						144,075				144,075
<b>Totals for 2006</b>	<b>\$5,725,677</b>	<b>\$5,725,677</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$5,725,677</b>	<b>\$0</b>	<b>\$0</b>	<b>\$5,725,677</b>	
A.6 Construct GA storage hangars northeast of future Taxiway E, including utilities, public restrooms	\$0	\$0						\$0				\$0
A.7 Construct Taxiway E and drainage	930,000	957,900						957,900				957,900
A.8 Rehab existing taxilanes in hangar area south of ARFF #9 building, fix drainage; No rehab within 15' of existing hangars	350,000	360,500						360,500				360,500
A.9 Land acquisition - 30 acres NE of RW 15 threshold	1,500,000	1,545,000						1,545,000				1,545,000
A.10 Pavement Maintenance	279,750	279,750						279,750				279,750
A.11 Stormwater drainage improvements - 54" RCP culvert under Loudon Ditch, excavate and install structure at existing Pond 1	695,000	695,000						695,000				695,000
<b>Totals for 2007</b>	<b>\$3,754,750</b>	<b>\$3,838,150</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,838,150</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,838,150</b>	
A.12 Extend Lindbergh Avenue south connect to Cessna St and Northrup St, close Lear St (City of Loveland estimate)	\$1,331,941			\$1,331,941				\$1,331,941				\$1,331,941
A.13 Rehab and strengthen R/W 15/33 with connector taxiways inside RSA; replace runway edge light fixtures and transformers on existing base cans	5,900,000			5,900,000				5,900,000				5,900,000
A.14 Rehab auto parking in front of terminal, install pay parking system - Phase 1	145,000			153,831				153,831				153,831
A.15 Pavement Maintenance	128,125			128,125				128,125				128,125
A.16 Construct apron and hangars for GA storage hangars	0			0				0				0
<b>Totals for 2008</b>	<b>\$7,505,066</b>	<b>\$0</b>	<b>\$0</b>	<b>\$7,513,897</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$7,513,897</b>	<b>\$0</b>	<b>\$0</b>	<b>\$7,513,897</b>	
A.17 Environmental Assessment for runway extension	\$300,000				\$318,270			\$318,270				\$318,270
A.18 Rehab intersection of Lindbergh and Earhart, overlay Earhart to terminal (City of Loveland est)	307,644				307,644			307,644				307,644
A.19 Wildlife hazard assesment	150,000				187,228			187,228				187,228
A.20 Rehab auto parking in front of terminal (Phase 2)	145,000				158,445			158,445				158,445
A.21 Construct SE taxiway to serve airport development to SE	1,052,632				1,052,632			1,052,632				1,052,632
A.22 Asphalt Seal Coat/Stripe Taxiway A	269,660				269,660			269,660				269,660
A.23 SE GA development - apron, taxilanes & other infrastructure	0				0			0				0
<b>Totals for 2009</b>	<b>\$2,224,936</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,293,879</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,293,879</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,293,879</b>	
A.24 Rehab FBO free public parking (City of Loveland est)	\$131,300					\$131,300		\$131,300				\$131,300
A.25 Install east perimeter fencing from Earhart Rd to NE property corner and from Lindbergh round-about to SE property corner	225,000					238,703		238,703				238,703
A.26 Construct security fencing & install gates #4 and #5 off of Cessna and Northrup	175,000					180,250		180,250				180,250
A.27 Construct hangars in SE development area	0					0		0				0
A.28 Construct Air Traffic Control Tower	5,500,000					5,500,000		5,500,000				5,500,000
A.29 Expand commercial apron (Phase 2) & connector to Taxiway A	2,411,886					2,411,886		2,411,886				2,411,886
A.30 Rehab GA apron (north half)	1,375,000					1,458,738		1,458,738				1,458,738
<b>Totals for 2010</b>	<b>\$9,818,186</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$9,920,877</b>	<b>\$0</b>	<b>\$9,920,877</b>	<b>\$0</b>	<b>\$0</b>	<b>\$9,920,877</b>	
A.31 Runway 15/33 extension - 1,000' to south	\$5,260,000						\$5,920,176	\$5,920,176				\$5,920,176
A.32 Relocate detention pond to final location - utilize structure under Loudon Ditch	425,000						492,691	492,691				492,691
A.33 Asphalt seal coat/strip runway 15/33	127,500						127,500	127,500				127,500
<b>Totals for 2011</b>	<b>\$5,812,500</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$6,540,367</b>	<b>\$6,540,367</b>	<b>\$0</b>	<b>\$0</b>	<b>\$6,540,367</b>	
<b>Total Phase I Projects</b>	<b>\$34,841,115</b>	<b>\$5,725,677</b>	<b>\$3,838,150</b>	<b>\$7,513,897</b>	<b>\$2,293,879</b>	<b>\$9,920,877</b>	<b>\$6,540,367</b>	<b>\$35,832,847</b>	<b>\$0</b>	<b>\$0</b>	<b>\$35,832,847</b>	

FORT COLLINS-LOVELAND MUNICIPAL AIRPORT

Master Plan Capital Improvement Program and Needs Assessment  
Estimated Project Costs and Development Schedule

27-Mar-06

Capital Project Description	2005 Base Year Costs	Estimated Project Costs and Development Schedule										
		Phase I							Phase II	Phase III	Total	
		2006	2007	2008	2009	2010	2011	Total	2012-2016	2017-2026	Escalated Costs	
<b>Phase II Projects (2012-2016)</b>												
B.1	Purchase and install backup generator for airfield electrical vault	\$55,000							\$0	\$58,350		\$58,350
B.2	Purchase snow blower equipment	450,000							0	491,727		491,727
B.3	Rehab Taxiway D and Taxiway B	800,000							0	900,407		900,407
B.4	Constuct snow removal equipment building	3,000,000							0	3,744,557		3,744,557
B.5	Construct ARFF building	1,800,000							0	2,246,734		2,246,734
B.6	Replace fuel storage facility to coincide w/FBO lease renewal	0							0	0		0
B.7	Improvements to airport entrance, with landscaping and signage	500,000							0	624,093		624,093
B.8	Rehab GA apron (south half)	1,435,100							0	1,791,271		1,791,271
B.9	Lindberg Avenue, upgrade to City standards, extend and connect to other roads	400,000							0	499,274		499,274
B.10	Rehab FBO Public Auto Parking Lot	120,000							0	149,782		149,782
B.11	Construct west perimeter security fence along railroad	340,000							0	424,383		424,383
B.12	Replace segmented circle	50,000							0	62,409		62,409
B.13	Replace ARFF Vehicle	750,000							0	936,139		936,139
B.14	Terminal replacement	2,000,000							0	2,496,371		2,496,371
B.15	Construct GA storage hangars with access roadways, parking and utilities	0							0	0		0
B.16	Land acquisition east side - 77 acres	1,925,000							0	2,402,757		2,402,757
B.17	Land acquisition west side Phase I - 134 acres	3,350,000							0	4,181,422		4,181,422
B.18	Land acquisition west side Phase II - 176 acres	4,400,000							0	5,492,017		5,492,017
Total Phase II Projects		\$21,375,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$26,501,695	\$0	\$26,501,695

FORT COLLINS-LOVELAND MUNICIPAL AIRPORT

Master Plan Capital Improvement Program and Needs Assessment  
Estimated Project Costs and Development Schedule

27-Mar-06

Capital Project Description	2005 Base Year Costs	Estimated Project Costs and Development Schedule									
		Phase I							Phase II 2012-2016	Phase III 2017-2026	Total Escalated Costs
		2006	2007	2008	2009	2010	2011	Total			
<b>Phase III Projects (2017-2026)</b>											
C.1 Expand GA apron to south (Phase 1)	\$1,810,005								\$0	\$2,259,222	\$2,259,222
C.2 Expand commercial apron (Phase 3)	2,055,875								0	2,566,114	2,566,114
C.3 Expand GA apron to south - north- middle (Phase 2)	2,586,500								0	3,228,432	3,228,432
C.4 Expand GA apron to south - south- middle (Phase 3)	2,829,313								0	3,531,508	3,531,508
C.5 Construct additional fuel storage facility	0								0	0	0
C.6 Snow removal maintenance equipment	500,000								0	624,093	624,093
C.7 Expand GA apron to south - south- middle (Phase 3)	2,829,313								0	4,407,977	4,407,977
C.8 Expand commercial apron (Phase 4) & add connector to Taxiway A	5,561,600								0	8,664,792	8,664,792
C.9 Expand GA apron to south (Phase 4)	6,260,550								0	9,753,733	9,753,733
C.10 Finish perimeter fencing and gates	500,000								0	778,984	778,984
C.11 Construct SE apron	4,845,970								0	7,549,863	7,549,863
C.12 Construct drainage improvements along RW 6/24 parallel taxiways	450,000								0	701,085	701,085
C.13 Reconstruct RW 15L/33R high-speed exit taxiways	4,811,190								0	7,495,677	7,495,677
C.14 Snow removal maintenance equipment	0								0	0	0
C.15 Construct new R/W 15R/33L & parallel T/W with connectors	16,989,725								0	26,469,438	26,469,438
C.16 Construct ponds 4 and 5	400,000								0	623,187	623,187
<b>Total Phase III Projects</b>	<b>\$52,430,041</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$78,654,105</b>	<b>\$78,654,105</b>
<b>Total Project Costs</b>	<b>\$108,646,256</b>	<b>\$5,725,677</b>	<b>\$3,838,150</b>	<b>\$7,513,897</b>	<b>\$2,293,879</b>	<b>\$9,920,877</b>	<b>\$6,540,367</b>	<b>\$35,832,847</b>	<b>\$26,501,695</b>	<b>\$78,654,105</b>	<b>\$140,988,647</b>

FORT COLLINS-LOVELAND MUNICIPAL AIRPORT

FNLMP2.123

Table H.2

Master Plan Capital Improvement Program and Needs Assessment  
Projected Capital Funding Sources

27-Mar-06

Capital Improvement Projects	Total Escalated Costs	AIP Entitlement Funding	AIP Discretionary Funding	Total AIP Funding	FAA F & E Funds	Passenger Facility Charges	State Aero Division Grants	Cities' Potential Capital Funding	Other Funding	Airport Net Revenues/ Cash Reserves	Total Funding
<b>Phase I Projects (2006-2008)</b>											
A.1 Construct commercial apron expansion	\$1,300,300	\$1,000,000		\$1,000,000			\$32,500		\$235,300	\$32,500	\$1,300,300
A.2 Fog seal & markings - RW 15/33	181,522			0		181,522					181,522
A.3 Taxiway rehabilitation and widening, including south run-up area and larger fillets	4,090,000		3,300,000	3,300,000			102,250		585,500	102,250	4,090,000
A.4 Replace airfield lighting control system	9,780			0		9,780					9,780
A.5 Pavement Maintenance, Striping and Strategic Plan	144,075			0			115,250			28,825	144,075
<b>Totals for 2006</b>	<b>\$5,725,677</b>	<b>\$1,000,000</b>	<b>\$3,300,000</b>	<b>\$4,300,000</b>	<b>\$0</b>	<b>\$191,302</b>	<b>\$250,000</b>	<b>\$0</b>	<b>\$820,800</b>	<b>\$163,575</b>	<b>\$5,725,677</b>
A.6 Construct GA storage hangars northeast of future Taxiway E, including utilities, public restrooms	\$0			\$0							\$0
A.7 Construct Taxiway E and drainage	957,900	910,005		910,005		23,948	23,948			0	957,900
A.8 Rehab existing taxilanes in hangar area south of ARFF #9 building, fix drainage; No rehab within 15' of existing hangars	360,500	89,995		89,995		46,705	2,250		221,550	0	360,500
A.9 Land acquisition - 30 acres NE of RW 15 threshold	1,545,000			0					1,545,000	0	1,545,000
A.10 Pavement Maintenance	279,750			0		55,948	223,802				279,750
A.11 Stormwater drainage improvements - 54" RCP culvert under Loudon Ditch, excavate and install structure at existing Pond 1	695,000			0				695,000			695,000
<b>Totals for 2007</b>	<b>\$3,838,150</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$126,601</b>	<b>\$250,000</b>	<b>\$695,000</b>	<b>\$1,766,550</b>	<b>\$0</b>	<b>\$3,838,150</b>
A.12 Extend Lindbergh Avenue south connect to Cessna St and Northrup St, close Lear St (City of Loveland estimate)	1,331,941			\$0					\$1,331,941		\$1,331,941
A.13 Rehab and strengthen R/W 15/33 with connector taxiways inside RSA; replace runway edge light fixtures and transformers on existing base cans	5,900,000	1,000,000	3,000,000	4,000,000		147,500	147,500		1,605,000		5,900,000
A.14 Rehab auto parking in front of terminal, install pay parking system - Phase 1	153,831			0					153,831	0	153,831
A.15 Pavement Maintenance	128,125			0			102,500			25,625	128,125
A.16 Construct apron and hangars for GA storage hangars	0			0							0
<b>Totals for 2008</b>	<b>\$7,513,897</b>	<b>\$1,000,000</b>	<b>\$3,000,000</b>	<b>\$4,000,000</b>	<b>\$0</b>	<b>\$147,500</b>	<b>\$250,000</b>	<b>\$0</b>	<b>\$3,090,772</b>	<b>\$25,625</b>	<b>\$7,513,897</b>

FORT COLLINS-LOVELAND MUNICIPAL AIRPORT

Master Plan Capital Improvement Program and Needs Assessment  
Projected Capital Funding Sources

27-Mar-06

Capital Improvement Projects	Total Escalated Costs	AIP Entitlement Funding	AIP Discretionary Funding	Total AIP Funding	FAA F & E Funds	Passenger Facility Charges	State Aero Division Grants	Cities' Potential Capital Funding	Other Funding	Airport Net Revenues/ Cash Reserves	Total Funding
<b>Phase I Projects - Continued (2009-2011)</b>											
A.17 Environmental Assessment for runway extension	318,270			\$0		\$7,957	\$7,957		\$302,356		\$318,270
A.18 Rehab intersection of Lindbergh and Earhart, overlay Earhart to terminal (City of Loveland est)	307,644			0					307,644		307,644
A.19 Wildlife hazard assesment	187,228			0		9,361			177,867		187,228
A.20 Rehab auto parking in front of terminal (Phase 2)	158,445			0					158,445	0	158,445
A.21 Construct SE taxiway to serve airport development to SE	1,052,632	1,000,000		1,000,000		26,316	26,316			0	1,052,632
A.22 Asphalt Seal Coat/Stripe Taxiway A	269,660			0		53,933	215,727			0	269,660
A.23 SE GA development - apron, taxilanes & other infrastructure	0			0							0
<b>Totals for 2009</b>	<b>\$2,293,879</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$97,567</b>	<b>\$250,000</b>	<b>\$0</b>	<b>\$946,312</b>	<b>\$0</b>	<b>\$2,293,879</b>
A.24 Rehab FBO free public parking (City of Loveland est)	131,300			\$0					\$131,300		\$131,300
A.25 Install east perimeter fencing from Earhart Rd to NE property corner and from Lindbergh round-about to SE property corner	238,703	202,090		202,090		5,050	31,563				238,703
A.26 Construct security fencing & install gates #4 and #5 off of Cessna and Northrup	180,250	106,313		106,313		50,053	23,884				180,250
A.27 Construct hangars in SE development area	0			0							0
A.28 Construct Air Traffic Control Tower	5,500,000			0	5,500,000						5,500,000
A.29 Expand commercial arpon (Phase 2) & connector to Taxiway A	2,411,886	290,086	2,015,710	2,305,796		53,045	53,045				2,411,886
A.30 Rehab GA apron (north half)	1,458,738	401,511	984,290	1,385,801		36,468	36,468				1,458,738
<b>Totals for 2010</b>	<b>\$9,920,877</b>	<b>\$1,000,000</b>	<b>\$3,000,000</b>	<b>\$4,000,000</b>	<b>\$5,500,000</b>	<b>\$144,616</b>	<b>\$144,960</b>	<b>\$0</b>	<b>\$131,300</b>	<b>\$0</b>	<b>\$9,920,877</b>
A.31 Runway 15/33 extension - 1,000' to south	5,920,176	\$1,000,000		\$1,000,000		\$148,000	\$148,000		\$4,624,176		\$5,920,176
A.32 Relocate detention pond to final location - utilize structure under Loudon Ditch	492,691			0				492,691			492,691
A.33 Asphalt seal coat/stripe runway 15/33	127,500			0		25,500	102,000				127,500
<b>Totals for 2011</b>	<b>\$6,540,367</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$1,000,000</b>	<b>\$0</b>	<b>\$173,500</b>	<b>\$250,000</b>	<b>\$492,691</b>	<b>\$4,624,176</b>	<b>\$0</b>	<b>\$6,540,367</b>
<b>Total Phase I Projects</b>	<b>\$35,832,847</b>	<b>\$6,000,000</b>	<b>\$9,300,000</b>	<b>\$15,300,000</b>	<b>\$5,500,000</b>	<b>\$881,086</b>	<b>\$1,394,960</b>	<b>\$1,187,691</b>	<b>\$11,379,910</b>	<b>\$189,200</b>	<b>\$35,832,847</b>

FORT COLLINS-LOVELAND MUNICIPAL AIRPORT

Master Plan Capital Improvement Program and Needs Assessment  
Projected Capital Funding Sources

27-Mar-06

Capital Improvement Projects	Total Escalated Costs	AIP Entitlement Funding	AIP Discretionary Funding	Total AIP Funding	FAA F & E Funds	Passenger Facility Charges	State Aero Division Grants	Cities' Potential Capital Funding	Other Funding	Airport Net Revenues/ Cash Reserves	Total Funding
<b>Phase II Projects (2012-2016)</b>											
B.1 Purchase and install backup generator for airfield electrical vault	\$58,350			\$0		\$23,229	\$35,121		\$0	\$0	\$58,350
B.2 Purchase snow blower equipment	491,727	467,141		467,141			12,293			12,293	491,727
B.3 Rehab Taxiway D and Taxiway B	900,407	532,859		532,859			250,000		117,548		900,407
B.4 Constuct snow removal equipment building	3,744,557	2,000,000		2,000,000		617,301	93,614		1,033,642		3,744,557
B.5 Construct ARFF building	2,246,734	1,000,000	1,134,397	2,134,397			56,168		56,168	0	2,246,734
B.6 Replace fuel storage facility to coincide w/FBO lease renewal	0			0							0
B.7 Improvements to airport entrance, with landscaping and signage	624,093			0					624,093	0	624,093
B.8 Rehab GA apron (south half)	1,791,271	1,000,000	701,708	1,701,708			44,782		44,782	0	1,791,271
B.9 Lindberg Avenue, upgrade to City standards, extend and connect to other roads	499,274			0					499,274	0	499,274
B.10 Rehab FBO Public Auto Parking Lot	149,782			0			74,891		74,891	0	149,782
B.11 Construct west perimeter security fence along railroad	424,383			0			10,610		413,774	0	424,383
B.12 Replace segmented circle	62,409			0			1,560		60,849	0	62,409
B.13 Replace ARFF Vehicle	936,139			0			23,403		912,736	0	936,139
B.14 Terminal replacement	2,496,371			0			26,285		2,470,086	0	2,496,371
B.15 Construct GA storage hangars with access roadways, parking and utilities	0			0							0
B.16 Land acquisition east side - 77 acres	2,402,757			0					2,402,757	0	2,402,757
B.17 Land acquisition west side Phase I - 134 acres	4,181,422		0	0					4,181,422	0	4,181,422
B.18 Land acquisition west side Phase II - 176 acres	5,492,017			0					5,492,017	0	5,492,017
<b>Total Phase II Projects</b>	<b>\$26,501,695</b>	<b>\$5,000,000</b>	<b>\$1,836,105</b>	<b>\$6,836,105</b>	<b>\$0</b>	<b>\$640,530</b>	<b>\$628,727</b>	<b>\$0</b>	<b>\$18,384,039</b>	<b>\$12,293</b>	<b>\$26,501,695</b>

FORT COLLINS-LOVELAND MUNICIPAL AIRPORT

Master Plan Capital Improvement Program and Needs Assessment  
Projected Capital Funding Sources

27-Mar-06

		Total Escalated Costs	AIP Entitlement Funding	AIP Discretionary Funding	Total AIP Funding	FAA F & E Funds	Passenger Facility Charges	State Aero Division Grants	Cities' Potential Capital Funding	Other Funding	Airport Net Revenues/ Cash Reserves	Total Funding
<b>Capital Improvement Projects</b>												
<b>Phase III Projects (2017-2026)</b>												
C.1	Expand GA apron to south (Phase 1)	\$2,259,222	\$1,000,000		\$1,000,000			\$56,481		\$1,202,741		\$2,259,222
C.2	Expand commercial apron (Phase 3)	2,566,114		2,437,808	2,437,808		64,153	64,153				2,566,114
C.3	Expand GA apron to south - north- middle (Phase 2)	3,228,432	1,000,000		1,000,000			80,711		2,147,721		3,228,432
C.4	Expand GA apron to south - south- middle (Phase 3)	3,531,508	1,000,000		1,000,000					2,531,508		3,531,508
C.5	Construct additional fuel storage facility	0			0							0
C.6	Snow removal maintenance equipment	624,093			0					624,093		624,093
C.7	Expand GA apron to south - south- middle (Phase 3)	4,407,977	2,000,000		2,000,000		250,000	110,199		2,047,778		4,407,977
C.8	Expand commercial apron (Phase 4) & add connector to Taxiway A	8,664,792	2,000,000	6,231,552	8,231,552		216,620	216,620				8,664,792
C.9	Expand GA apron to south (Phase 4)	9,753,733			0			500,000		9,253,733		9,753,733
C.10	Finish perimeter fencing and gates	778,984			0		778,984					778,984
C.11	Construct SE apron	7,549,863			0					7,549,863		7,549,863
C.12	Construct drainage improvements along RW 6/24 parallel taxiways	701,085			0				701,085			701,085
C.13	Reconstruct RW 15L/33R high-speed exit taxiways	7,495,677	2,407,972		2,407,972			500,000		4,587,705		7,495,677
C.14	Snow removal maintenance equipment	0			0							0
C.15	Construct new R/W 15R/33L & parallel T/W with connectors	26,469,438			0					26,469,438		26,469,438
C.16	Construct ponds 4 and 5	623,187	592,028		592,028		15,580	15,580				623,187
Total Phase III Projects		\$78,654,105	\$10,000,000	\$8,669,360	\$18,669,360	\$0	\$1,325,336	\$1,543,743	\$701,085	\$56,414,581	\$0	\$78,654,105
Total Project Costs		\$140,988,647	\$21,000,000	\$19,805,465	\$40,805,466	\$5,500,000	\$2,846,952	\$3,567,430	\$1,888,777	\$86,178,530	\$201,493	\$140,988,647

**FORT COLLINS-LOVELAND MUNICIPAL AIRPORT**

FNLMP2.123

Table H.3

**Master Plan Capital Improvement Program and Needs Assessment  
Actual, Estimated, Budgeted and Projected Operations & Maintenance Expenses**

27-Mar-06

Operations & Maintenance Expenses	Actual 2003	Actual 2004	Estimated 2005	Phase I							Phase II Projected 2012-2016	Phase III Projected 2017-2026
				Budgeted 2006	Projected					Total		
					2007	2008	2009	2010	2011			
Personal Services	\$237,052	\$247,482	\$254,060	\$262,340	\$272,834	\$283,747	\$295,097	\$306,901	\$319,177	\$1,740,095	\$1,797,915	\$4,848,791
Annual Growth Rate	-	4.4%	2.7%	3.3%	4.0%	4.0%	4.0%	4.0%	4.0%	3.9%	4.0%	4.0%
Supplies	13,032	16,111	17,500	21,000	21,630	22,279	22,947	23,636	24,345	135,837	133,127	333,242
Annual Growth Rate	-	23.6%	8.6%	20.0%	3.0%	3.0%	3.0%	3.0%	3.0%	5.7%	3.0%	3.0%
Purchased Services	185,378	285,189	560,900	156,360	161,051	165,882	170,859	175,985	181,264	1,011,401	991,226	2,481,228
Annual Growth Rate	-	53.8%	96.7%	-72.1%	3.0%	3.0%	3.0%	3.0%	3.0%	-17.2%	3.0%	3.0%
Utilities	15,455	20,818	24,300	24,300	25,515	26,791	28,130	29,537	31,014	165,286	179,938	522,753
Annual Growth Rate	-	34.7%	16.7%	0.0%	5.0%	5.0%	5.0%	5.0%	5.0%	4.1%	5.0%	5.0%
Fixed Charges (Excluding Depreciation)	44,759	59,816	69,540	50,920	52,448	54,021	55,642	57,311	59,030	329,371	322,802	808,034
Annual Growth Rate	-	33.6%	16.3%	-26.8%	3.0%	3.0%	3.0%	3.0%	3.0%	-2.7%	3.0%	3.0%
Total Operations & Maintenance Expenses	\$495,676	\$629,416	\$926,300	\$514,920	\$533,477	\$552,720	\$572,675	\$593,369	\$614,829	\$3,381,990	\$3,425,008	\$8,994,048
Annual Growth Rate	-	27.0%	47.2%	-44.4%	3.6%	3.6%	3.6%	3.6%	11.2%	-6.6%	3.6%	3.7%
City Charges	23,450	23,450	23,450	23,450	23,450	23,450	23,450	23,450	23,450	140,700	117,250	234,500
Minor Capital Outlays	0	15,000	15,000	0	15,000	15,000	15,000	15,000	15,000	75,000	75,000	150,000
Total Operations & Maintenance Expenses, City Charges and Minor Capital Outlays	\$519,126	\$667,866	\$964,750	\$538,370	\$571,927	\$591,170	\$611,125	\$631,819	\$653,279	\$3,597,690	\$3,617,258	\$9,378,548
Annual Growth Rate	-	28.7%	44.5%	-44.2%	6.2%	3.4%	3.4%	3.4%	10.5%	-6.3%	3.4%	3.5%
Operating Expenses Per Enplaned Passenger:										AVG	AVG	AVG
Fort Collins-Loveland Municipal	\$46.54	\$20.92	\$29.23	\$15.99	\$16.66	\$16.88	\$17.11	\$17.34	\$17.58	\$16.94	\$18.34	\$20.47
Non-Hub Industry Average	\$21.48	\$22.12	\$22.79	\$23.47	\$24.17	\$24.90	\$25.65	\$26.42	\$25.65	\$25.04	\$28.05	\$35.11

**FORT COLLINS-LOVELAND MUNICIPAL AIRPORT**

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Table H.4

**Master Plan Capital Improvement Program and Needs Assessment  
Actual, Estimated, Budgeted and Projected Operating Revenues**

27-Mar-06

Operating Revenues	Actual	Actual	Estimated	Phase I						Phase II	Phase III	
	2003	2004	2005	Budgeted	Projected					2012-2016	2017-2026	
				2006	2007	2008	2009	2010	2011			Total
<b>Airline Revenues</b>												
Landing Fees	\$8,949	\$22,812	\$20,000	\$21,000	\$21,846	\$22,727	\$23,643	\$24,595	\$25,587	\$139,398	\$144,257	\$389,915
ARFF Standby Fees	0	15,150	14,000	14,000	14,420	14,853	15,298	15,757	16,230	90,558	88,751	222,162
Terminal Use Fees	600	2,110	8,190	13,060	13,452	13,855	14,271	14,699	15,140	84,477	82,792	207,245
<b>Total Airline Revenues</b>	<b>\$9,549</b>	<b>\$40,072</b>	<b>\$42,190</b>	<b>\$48,060</b>	<b>\$49,718</b>	<b>\$51,435</b>	<b>\$53,212</b>	<b>\$55,052</b>	<b>\$56,957</b>	<b>\$314,433</b>	<b>\$315,800</b>	<b>\$819,322</b>
Annual Growth Rate	-	319.6%	5.3%	13.9%	3.5%	3.5%	3.5%	3.5%	10.7%	5.1%	3.5%	3.5%
Airline Cost Per Enplaned Passenger:										AVG	AVG	AVG
Fort Collins-Loveland Municipal	\$0.86	\$1.26	\$1.28	\$1.43	\$1.45	\$1.47	\$1.49	\$1.51	\$1.53	\$1.48	\$1.60	\$1.79
Non-Hub Industry Average	\$5.68	\$5.85	\$6.02	\$6.21	\$6.39	\$6.58	\$6.78	\$6.98	\$6.78	\$6.62	\$7.42	\$9.28
<b>Non-Airline Revenues</b>												
Fuel Flowage Fees	\$49,498	\$78,589	\$75,000	\$83,000	\$86,345	\$89,825	\$93,445	\$97,210	\$101,128	\$550,952	\$570,157	\$1,541,094
State Aircraft Fuel Tax	33,128	26,741	40,000	38,000	39,531	41,125	42,782	44,506	46,300	252,243	261,036	705,561
FBO Rent	85,505	54,497	59,500	66,760	68,763	70,826	72,950	75,139	77,393	431,831	423,217	1,059,394
T-Hangar Rental	66,003	59,410	58,000	58,000	59,740	61,532	63,378	65,280	67,238	375,168	367,684	920,384
Land Lease Income	57,324	52,552	75,000	68,000	70,040	72,141	74,305	76,535	78,831	439,852	431,078	1,079,071
Rental Car Concession Fees	180	0	8,000	4,000	4,202	4,415	4,638	4,873	5,120	27,249	29,757	86,835
Terminal Concessions	121	11,943	3,000	1,500	1,576	1,656	1,739	1,827	1,920	10,218	11,159	32,563
Parking Revenues	29,875	100,166	90,000	100,000	105,060	110,376	115,961	121,829	127,993	681,219	743,921	2,170,880
Airport Commissions	11,779	11,999	11,000	12,000	12,607	13,245	13,915	14,619	15,359	81,746	89,271	260,506
Advertising Concession Fees	0	0	0	0	0	0	0	0	0	0	0	0
Other Terminal Rent	0	2,800	4,810	5,940	6,118	6,302	6,491	6,686	6,886	38,422	37,656	94,260
Interest Income	5,025	3,496	6,690	6,600	6,600	6,600	6,600	6,600	6,600	39,600	33,000	66,000
Miscellaneous Revenue	2,814	2,598	6,500	1,500	1,545	1,591	1,639	1,688	1,739	9,703	9,509	23,803
<b>Total Non-Airline Revenues</b>	<b>\$341,252</b>	<b>\$404,791</b>	<b>\$437,500</b>	<b>\$445,300</b>	<b>\$462,128</b>	<b>\$479,633</b>	<b>\$497,845</b>	<b>\$516,792</b>	<b>\$536,506</b>	<b>\$2,938,204</b>	<b>\$3,007,445</b>	<b>\$8,040,350</b>
Annual Growth Rate	-	18.6%	8.1%	1.8%	3.8%	3.8%	3.8%	3.8%	11.9%	3.5%	3.8%	3.9%
<b>Total Revenues</b>	<b>\$350,801</b>	<b>\$444,863</b>	<b>\$479,690</b>	<b>\$493,360</b>	<b>\$511,846</b>	<b>\$531,068</b>	<b>\$551,056</b>	<b>\$571,844</b>	<b>\$593,463</b>	<b>\$3,252,636</b>	<b>\$3,323,246</b>	<b>\$8,859,672</b>
Annual Growth Rate	-	26.8%	7.8%	2.8%	3.7%	3.8%	3.8%	3.8%	11.7%	3.6%	3.8%	3.9%
Operating Revenues Per Enplaned Passenger:										AVG	AVG	AVG
Fort Collins-Loveland Municipal	\$31.45	\$13.93	\$14.54	\$14.66	\$14.91	\$15.16	\$15.43	\$15.70	\$15.97	\$15.32	\$16.85	\$19.33
Non-Hub Industry Average	\$16.31	\$16.80	\$17.30	\$17.82	\$18.36	\$18.91	\$19.48	\$20.06	\$19.48	\$19.02	\$21.30	\$26.66

**FORT COLLINS-LOVELAND MUNICIPAL AIRPORT**

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Table H.5

**Master Plan Capital Improvement Program and Needs Assessment  
Financial Plan Summary  
Budgeted and Projected Net Revenues, Capital Funding and Capital Expenditures**

27-Mar-06

Operating and Capital Cash Flow	Phase I						Total	Phase II Projected 2012-2016	Phase III Projected 2017-2026
	Budgeted	Projected							
	2006	2007	2008	2009	2010	2011			
<b>Operating Cash Flow</b>									
Revenues:									
Airline Revenues	\$48,060	\$49,718	\$51,435	\$53,212	\$55,052	\$56,957	\$314,433	\$315,800	\$819,322
Non-Airline Revenues	445,300	462,128	479,633	497,845	516,792	536,506	2,938,204	3,007,445	8,040,350
<b>Total Revenues</b>	<b>\$493,360</b>	<b>\$511,846</b>	<b>\$531,068</b>	<b>\$551,056</b>	<b>\$571,844</b>	<b>\$593,463</b>	<b>\$3,252,636</b>	<b>\$3,323,246</b>	<b>\$8,859,672</b>
Expenses:									
Operations & Maintenance Expenses	\$514,920	\$533,477	\$552,720	\$572,675	\$593,369	\$614,829	\$3,381,990	\$3,425,008	\$8,994,048
Other Expenses	23,450	38,450	38,450	38,450	38,450	38,450	215,700	192,250	384,500
<b>Total Expenses</b>	<b>\$538,370</b>	<b>\$571,927</b>	<b>\$591,170</b>	<b>\$611,125</b>	<b>\$631,819</b>	<b>\$653,279</b>	<b>\$3,597,690</b>	<b>\$3,617,258</b>	<b>\$9,378,548</b>
Projected Operating Net Revenue	(\$45,010)	(\$60,081)	(\$60,102)	(\$60,068)	(\$59,975)	(\$59,817)	(\$345,054)	(\$294,013)	(\$518,876)
Cities' Contributions	120,000	120,000	120,000	120,000	120,000	120,000	720,000	600,000	1,200,000
Operating Subsidy	0	0	0	0	0	0	0	0	0
Net Operating Cash Flow Available for Capital Expenditures	\$74,990	\$59,919	\$59,898	\$59,932	\$60,025	\$60,183	\$374,946	\$305,987	\$681,124
Beginning Cash Balance	250,000	138,908	189,006	194,893	278,755	318,090	250,000	331,179	655,319
<b>Total Airport Operating Funds Available For Capital Expenditures</b>	<b>\$324,990</b>	<b>\$198,827</b>	<b>\$248,904</b>	<b>\$254,825</b>	<b>\$338,780</b>	<b>\$378,273</b>	<b>\$624,946</b>	<b>\$637,166</b>	<b>\$1,336,443</b>
<b>Capital Cash Flow</b>									
Capital Funding Sources:									
AIP Entitlement Grants	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$6,000,000	\$5,000,000	\$10,000,000
AIP Discretionary Grants	3,300,000	0	3,000,000	0	3,000,000	0	9,300,000	1,836,105	8,669,360
FAA Facilities & Equipment Funds	0	0	0	0	5,500,000	0	5,500,000	0	0
Passenger Facility Charges (@ \$4.39)	168,795	116,779	119,115	121,497	123,927	126,406	776,519	670,976	1,399,457
State Aeronautics Division	250,000	250,000	250,000	250,000	144,960	250,000	1,394,960	628,727	1,543,743
Cities' Potential Capital Funding	0	695,000	0	0	0	492,691	1,187,691	0	701,085
Other Funding	820,800	1,766,550	3,090,772	946,312	131,300	4,624,176	11,379,910	18,384,039	56,414,581
<b>Total Capital Funding Sources</b>	<b>5,539,595</b>	<b>3,828,329</b>	<b>7,459,886</b>	<b>2,317,809</b>	<b>9,900,187</b>	<b>6,493,273</b>	<b>35,539,080</b>	<b>26,519,848</b>	<b>78,728,226</b>
<b>Total Funds Available for Capital Expenditures</b>	<b>5,864,585</b>	<b>4,027,156</b>	<b>7,708,790</b>	<b>2,572,634</b>	<b>10,238,967</b>	<b>6,871,546</b>	<b>36,164,026</b>	<b>27,157,014</b>	<b>80,064,669</b>
<b>Capital Improvement Program Expenditures</b>	<b>5,725,677</b>	<b>3,838,150</b>	<b>7,513,897</b>	<b>2,293,879</b>	<b>9,920,877</b>	<b>6,540,367</b>	<b>35,832,847</b>	<b>26,501,695</b>	<b>78,654,105</b>
<b>Ending Cash Balance</b>	<b>\$138,908</b>	<b>\$189,006</b>	<b>\$194,893</b>	<b>\$278,755</b>	<b>\$318,090</b>	<b>\$331,179</b>	<b>\$331,179</b>	<b>\$655,319</b>	<b>\$1,410,564</b>