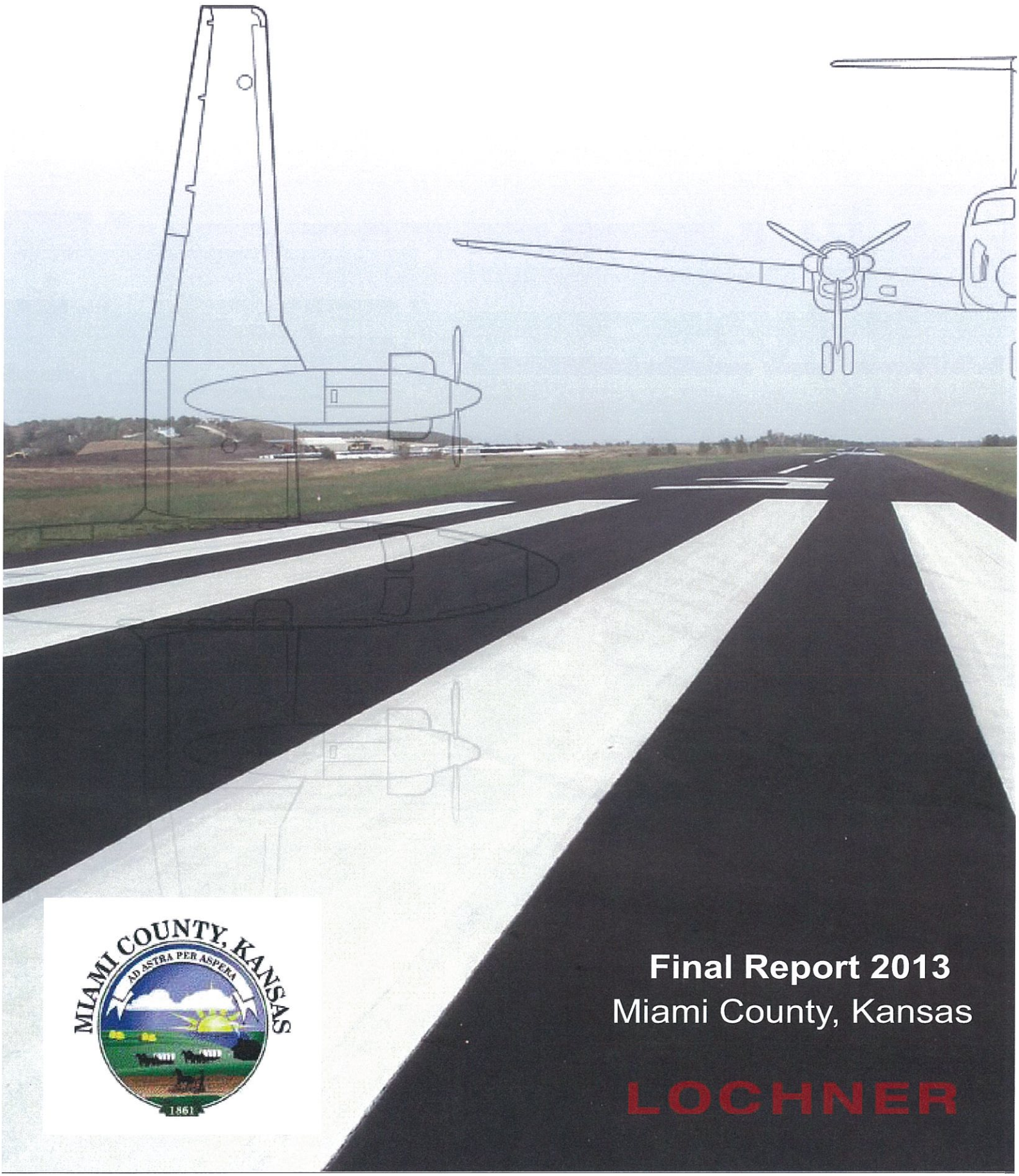
Miami County Airport (K81)
Master Plan Update



Final Report 2013
Miami County, Kansas

LOCHNER

Miami County Airport (K81)

Master Plan Update

Final Report 2013

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K81

Miami County Airport
Airport Master Plan Update

CHAPTER ONE

AIRPORT INVENTORY

Chapter One
Airport Inventory

The inventory is the first step in a master plan update and is the basis for the development of forecasts and facility requirements. This chapter is a basic systematic review of the airport to determine the physical, operational, and functional characteristics of past and present aviation factors and operational demand at the Miami County Airport (K81).

AIRPORT CHARACTERISTICS

Airport Ownership and Management

The Miami County Airport is owned by Miami County, Kansas. The county is responsible for operating the airport in agreement with FAA grant assurances, and employs a part-time airport manager. The airport manager reports to the county and is responsible for the day to day operations and administrative duties.

Airport Location and Access

K81 is located approximately three miles southwest of the City of Paola, north of the City of Osawatomie, on West 327th Street via Highway 169. The City of Paola, Kansas is located in Miami County, situated in eastern Kansas, just southwest of Kansas City. U.S. Highway 169 provides the primary access to West 327th Street. It extends from Tulsa, Oklahoma north through Kansas, and eventually transitions into Highway 7, which connects to Interstate Highway 35. The Miami County Airport is accessed from West 327th Street by a single airport access road, Airport Road. **Exhibit 1.1** illustrates the general location of K81.

Airport Services

The Miami County Airport provides several services to pilots. Among those services are Self-Serve 24-hour 100LL fuel, major airframe and power plant repairs, and hangar and tie-down rental. The terminal building is primarily unattended, but service can be requested by calling (913) 755-2345.

On-Airport Businesses

Other than the services provided by the airport, a few businesses are based at the airport. The businesses include We B Smokin' BBQ Restaurant, Deason Aircraft Services, and Aircraft Refinishing Company. Not all of the businesses based at the airport are aviation related, but all attract business to the airport.

Current Airport Activity

The Miami County Airport has 20 based aircraft, all of which are single-engine aircraft. Based on the latest FAA 5010 inspection reports, K81 experiences approximately 10,000 annual operations total. Of those 10,000 operations, approximately 6,200 operations are local, 3,700 operations are itinerant, and 100 are military operations.

Airport Role

The role assigned to an airport identifies the type of operations that exist at the airport, where it fits into the airport system, and how it serves its community, region, state, and nation. The role of Miami County is identified by two sources; the FAA National Plan of Integrated Airport Systems (NPIAS), and the Kansas State Airport System Plan (KASP).

The FAA National Plan of Integrated Airport Systems 2011-2015 (NPIAS) identifies K81 as a general aviation (GA) airport facility. The GA role is given to communities that do not receive scheduled commercial service or meet the criteria for classification as a commercial service airport, but have enough activity and at least 10 based aircraft. There are approximately 2,560 GA airports in the country contributing 34 percent of the nation's GA fleet. These airports are important to the nation's aviation fleet, especially to rural areas where commercial airlines are not easily accessible.

In the 2009 Kansas State Airport System Plan (KASP), Miami County Airport is considered a Community Airport. The definition of a Community Airport in Kansas is one that serves a supplemental role in local economies, primarily serving smaller business, recreational, and personal flying. This role is expected to continue throughout the planning period. **Exhibit 1.2** shows Community and Basic airports included in the KASP.

Exhibit 1.1
Airport Location

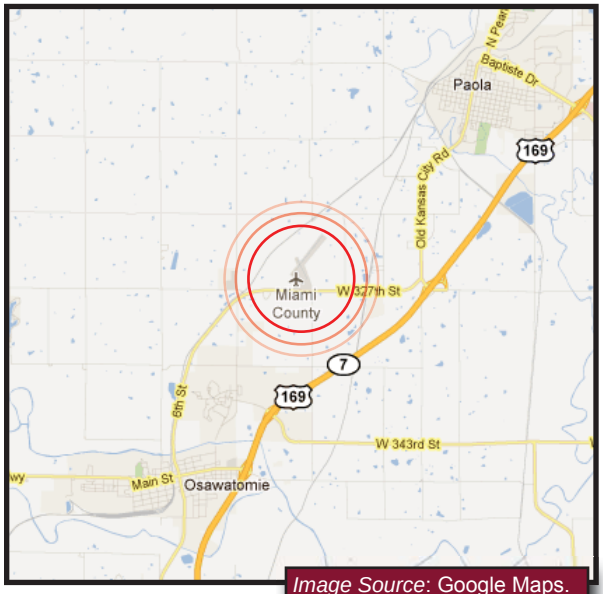


Image Source: Google Maps.

Exhibit 1.2
KASP Airport Roles

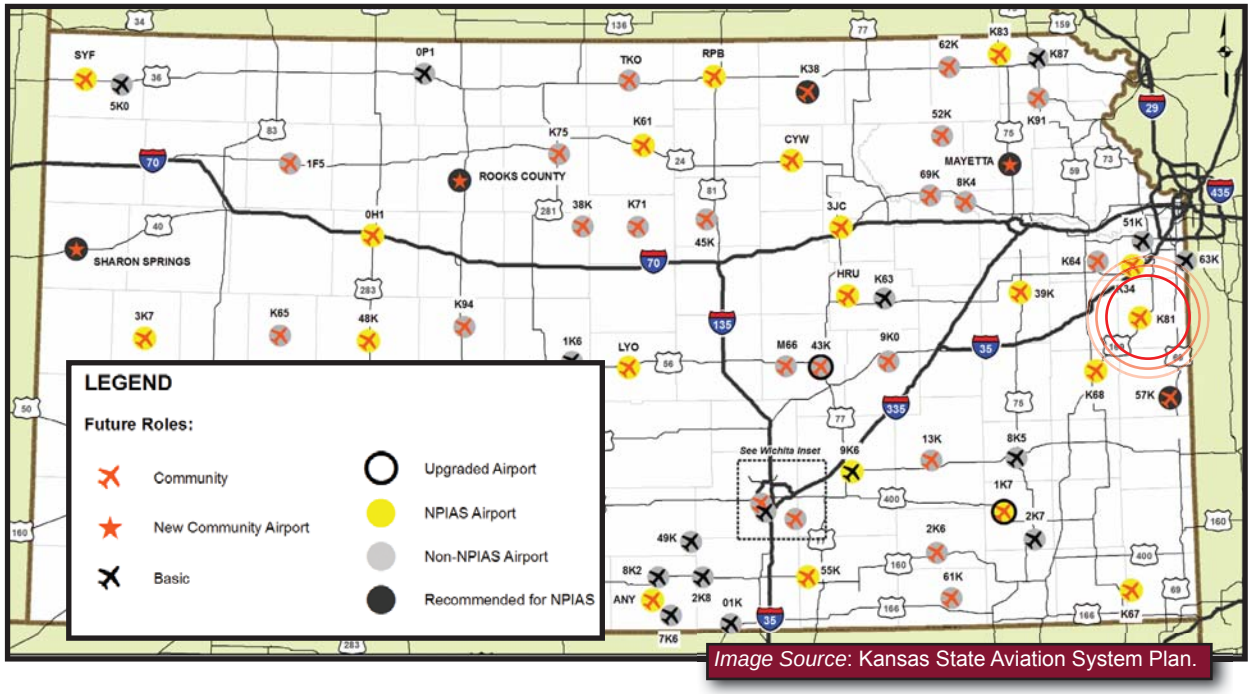


Image Source: Kansas State Aviation System Plan.

Miami County Airport - 1991
Image Source: US Geological Survey.

Based on application of airport design criteria from FAA Advisory Circular 50/5300-13, Change #17, Airport Design, the Airport has an Airport Reference Code (ARC) of B-I. The ARC is a coding system used to relate airport design criteria to the operational and physical characteristics of the aircraft intended to operate at the airport. The ARC has two components: 1) aircraft approach category, which relates to aircraft approach speeds and is grouped into five categories (A thru E); and 2) airport design group which relates to the aircraft wingspan and is grouped into six categories (I thru VI).

Airport History

The history of the Miami County Airport begins in 1947, when a group of interested citizens desired a local airport in the period after World War II. With the assistance of the Civil Aeronautics Administration (precursor to the Federal Aviation Administration), an airport site was selected, and the CAA suggested an airport layout plan including two runways. At that time, the airport was a joint effort of the cities Osawatomie and Paola, and was named the Osawatomie/Paola Airport.

In 1949, an initial federal grant for $86,750 was obtained, with the cities' shares being $58,750. This money was used for clearing and grubbing of the site, grading and drainage for the development of NW/SE and NE/SW landing strips, installing a segmented circle marker, constructing the administration building and sewer system, constructing the access road, and fencing.

Another federal grant for land acquisition was approved in 1951. This grant amounted to $22,147.25, with the cities' shares being $11,073.63. The land acquired totaled 126.75 acres.

Since the 1950s, the airport continued to develop as interest in aviation grew. Runway 3-21 was paved and hangars were built, and in 1990 an airport master plan was funded through a federal grant. As part of this master plan, the airport name was changed to Miami County Airport.

In 1999, the airport received an FAA grant to reconstruct Runway 3-21, including runway lights, Precision Approach Path Indicators (PAPI), Runway End Identifier Lights (REIL), and a road relocation to move the runway to the north. The airport has also completed extensive land acquisition to protect the runway and accommodate future growth.

Airfield Configuration and Facilities

Exhibit 1.3 shows the existing airport configuration at K81. **Table 1.1** details the major airfield facilities and equipment along with a corresponding assessment of physical conditions based on the airport site inspection (June 2011).

Exhibit 1.3
Airfield Configuration

Image Source: Google Earth.

View of the Runway 3 End
Image Source: Lochner.

GENERAL AIRFIELD INFORMATION

The Miami County Airport consists of approximately 246.57 acres and is owned by Miami County, Kansas in Fee Simple Title. The published airport elevation is 940 feet mean sea level with an airport reference point (ARP) coordinate of 38° 32' 25.27" North Latitude and 94° 55' 11.79" West Longitude. The current magnetic declination for the airport is 2° 37' east changing by 0° 7' west per year (National Geophysical Data Center, 2010).

Runway System

The runway system at Miami County is composed of one paved runway and a turf runway, Runway 3-21 and Turf Crosswind Runway 15-33. Runway 3-21 measures 3,400' x 60', is constructed of asphalt, and has a weight bearing capacity of 12,500 lbs for Single Wheel Gear (SWG) aircraft. The true bearing of the runway is 38.09° and it is marked as a non-precision runway. The runway and runway markings are in good condition.

The Turf Crosswind Runway 15-33 measures 3,300' x 120' and is intended for small aircraft only. The true bearing of the runway is approximately 152.86° and the threshold is marked by orange cones. The runway and markers are in good condition.

Taxiway System

A taxiway system provides safe transition for aircraft to move from the aircraft apron and hangar areas to runways. The taxiway system at K81 consists of connector taxiways to the runway system and hangar areas.

On the west side of the aircraft parking apron there is a taxiway connector measuring approximately 320' x 25' connecting the apron to the Runway 3 end, as well as a corresponding 35 foot wide taxiway leading to a 10-unit T-hangar and box hangars.

On the east side of the aircraft parking apron is another taxiway connector measuring 15 feet wide, leading to another 10-unit T-hangar as well as a 5-unit T-hangar and two box hangars. On the Runway 21 End, there is a taxiway turnaround for aircraft landing on Runway 3, or for pilots to use for preflight operations. This turnaround measures approximately 75' x 75' and is accessed by a 25 foot wide taxiway connector.

The taxiways and taxilanes are constructed of asphalt or concrete and are overall in fair to good condition.

Runway Threshold Lighting at K81.
Image Source: Lochner.

Airfield Lighting

Airport lighting is used to define the pavement edges and runway thresholds during nighttime, low light, or low visibility situations. There are two primary areas on the airport where lighting is installed: the runway and taxiway.

Runway Lighting

The lighting on the runway consists of edge lighting, threshold lighting, runway end identifier lights, and visual approach aids all mounted on frangible mounts. The primary runway has Medium Intensity Runway Lighting (MIRL) and Runway End Identifier Lights (REILS) on both runway ends that are controlled by the pilot. Turf Crosswind Runway 15-33 is a visual runway, only accessible for daytime operations. Therefore, Runway 15-33 does not currently have any runway lighting.

Visual approach aids assist the pilot in finding the appropriate, safe approach path to the runway threshold. Both ends of 3-21 have Precision Approach Path Indicators (PAPI4-L) on the left side of either end. Currently the PAPIs run 24 hours and are controlled by the pilot. As a basic visual turf runway, 15-33 does not currently have any visual approach aids.

Taxiway Lighting

The taxiway connectors to the Runway 3 End and Runway 21 turnaround are lighted by blue Medium Intensity Taxiway Lights (MITL) mounted on frangible stakes that line the edges of the taxiway. Taxiways leading to hangars areas are currently unlighted. The taxiway lights are in good condition.

There is currently no airfield signage at K81.

Source: FAA Advisory Circular, 150/5340-18F

Airfield Signage

These signs are used to provide information and directions for the runways and taxiways. The Miami County Airport does not currently utilize signs to mark taxiways or entrances to runways.

Taxiway leading from east hangar area to apron and runway system.
Image Source: Lochner.

Airport Beacon

The beacon is tower-mounted near a T-hangar in the eastern hangar area, just south of the aircraft parking apron. The existing beacon is a two color (white/green) light that shines laterally from the airport during nighttime or during conditions when the visibility is below visual flight minimums. The beacon is in good working condition.

Wind Indicators

Wind indicators are used to help pilots identify the direction of the wind while landing or taking off. K81 has one pole mounted, lighted wind cone and segmented circle on the airfield located just north of the terminal area. The wind cone is in good condition.

Weather Reporting

An Automated Weather Observation System (AWOS) is a suite of sensors that measure, collect, and disseminate weather data to help meteorologists, pilots, and flight dispatchers prepare and monitor weather forecasts, plan flight routes, and provide necessary information for correct takeoffs and landings. The Miami County Airport does not currently have an AWOS on the airport. Pilots are recommended to use the ASOS, as similar weather observation system, at the New Century AirCenter Airport (IXD) through radio communications in the airplane at 135.325 or over any phone line at (913-780-6987).

Table 1.1 details the major airfield facilities and equipment along with a corresponding assessment of physical conditions based on the airport site inspection.

Table 1.1
Existing Airfield Facilities and Condition

Airfield Item	Description and Size	Condition
Runway Facilities and Equipment		
Runway 3-21		
Surface	3,400' x 60'; 12,500 lbs SWG; Asphalt	*Good*
True Runway Bearing	38.09º True Bearing	*N/A*
Edge Lighting	Medium Intensity Runway Lighting (MIRL)	*Good*
Threshold Lighting/Markers	Threshold lighting, REILs	*Good*
Visual Approach Aids	PAPI 4-L	*Good*
Runway 15-33		
Surface	3,300' x 120'; Turf	*Good*
True Runway Bearing	152.86º True Bearing	*N/A*
Edge Lighting	None	*N/A*
Threshold Lighting/Markers	Cones	*Good*
Visual Approach Aids	None	*N/A*
Taxiway Facilities and Equipment		
Taxiway System	Terminal Area, Connectors; Concrete/Asphalt	*Good/Fair*
Taxiway Lighting	Medium Intensity Taxiway Lighting (MITL)	*Good*
Taxiway Marking	Centerline	*Good*
Additional Airfield Items		
Airport Rotating Beacon	Mounted on Tower	*Good*
Primary Wind Indicator	North of Apron (Terminal side)	*Good*
Weather Reporting	None	*N/A*

Good: stable during the early portion of the planning period, with no immediate attention required;
Fair: requires some initial repair to remain stable;
Poor: requires replacement or reconstruction within the immediate future

Source: Lochner Airport Site Visit.

TERMINAL AREA FACILITIES

The terminal area at K81 is located directly south of the airfield between Runway 3 and 33 Ends. The terminal area and land side facilities are comprised of the terminal building, T-hangars, box hangars, fuel facilities, aircraft parking and tie-downs, and commercial use areas.

Terminal Building

The terminal building at the Miami County Airport is currently occupied by the restaurant, We Be Smokin' BBQ, but does include a separate room for flight planning or shelter. Including the restaurant and pilot lounge, the terminal building measures approximately 35' x 80'. Overall the terminal building is in good condition.

Aircraft Hangars

Overall there are eight hangars at K81, consisting of three multi-unit T-hangars and five box hangars.

T-Hangars

There are a total of three multi-unit T-hangars in the terminal area, located in both east and west hangar areas. These hangar areas are separated by Airport Road and accessible to aircraft by taxiway connectors from the aircraft parking apron. In the west terminal area there is a 10-unit T-hangar measuring approximately 325' x 35'. In the east terminal area there is a 10-unit T-hangar measuring approximately 345' x 35', and a 5-unit T-hangar measuring approximately 160' x 35'. All together the airport has 25 T-hangar units that offer about 29,000 square feet of space for based aircraft.

Box Hangars

There are currently five box hangars located at K81. All of the box hangars at the airport are privately owned. Three of the box hangars are located in the western hangar area, with another two box hangars in the eastern area. The hangars range in size from small, medium, to large, and overall provide approximately 22,450 square feet of storage for aircraft.

Aircraft Parking Apron/Tie-Downs

Aircraft parking aprons are used to park and "tie-down" based and transient aircraft, and are used for fueling operations. The aircraft parking apron at K81 (290' x 190') can accommodate 17 based or transient planes

Miami County's Terminal Area. Image Source: Google Earth.

for tie-down. The apron is constructed of concrete and is in good condition.

Aviation Fuel Dispensing/Storage

The airport fueling storage and dispensing system is owned and operated by the airport. The fueling storage system consists of the following:

Fuel Tanks and Pump System

The Miami County Airport offers 100LL Avgas to airport patrons. The airport has a self-serve fuel pump connected to two fuel tanks with approximately 11,000 gallons of capacity combined. The airport patron

Miami County's Terminal Building. Image Source: Lochner.

uses the credit card reader to make the fuel purchase available 24 hours. The self-serve fuel pump and fuel tanks are located on the southern side of the aircraft parking apron, just east of the terminal building and restaurant.

Ground Access and Parking

Primary access to the airport is provided by Airport Road via West 327th Street. The Miami County Airport is less than two miles from U.S. Highway 169. Airport Road provides direct access to the airport terminal, restaurant, airport parking, and hangar areas for airport users.

The auto parking area at the terminal building provides parking for 35 vehicles. The parking lot measures approximately 170' x 140' and is constructed of asphalt and is in good condition. The existing terminal area (landside) facilities available at the airport are listed in **Table 1.2**.

Fueling facilities at Miami County. Image Source: Lochner.

Table 1.2
Existing Terminal Area Facilities and Condition

Item	Physical Characteristics and Size	Condition
Apron	Concrete with tie-down anchors. 190' x 290' (6,100 S.Y.)	Good
Fuel	100LL – Storage tanks 2 Tanks – 11,000 Gallons Total	Good
Auto Parking	Asphalt Apron	Good
Terminal Building	Single story, brick construction 2,800 S.F.	Good

Hangars					
Owner/Lessee	Hangar Type	Building Number	Aircraft Capacity	Size (S.F.)	Condition
County	T-Hangar	1	10	35' x 325' (11,375 S.F.)	Good
County	T-Hangar	2	10	35' x 345' (12,075 S.F.)	Good
County	T-Hangar	3	5	35' x 160' (5,600 S.F.)	Good
Private	Box Hangar	4	3	50' x 70' (3,500 S.F.)	Good
Private	Box Hangar	5	3	70' x 80' (5,600 S.F.)	Good
Private	Box Hangar	6	5	60' x 160' (9,600 S.F.)	Good
Private	Box Hangar	7	1	35' x 50' (1,750 S.F.)	Good
Private	Box Hangar	8	2	40' x 50' (2,000 S.F.)	Good

Note: Aircraft capacity is estimated based on building size; actual capacity may vary depending on internal layout of the hangars.

Note: The Building Number correlates to the Terminal Area Drawing in the Airport Layout Plan.

Source: Lochner Airport Site Visit.

Terminal Area Lighting

Terminal area lighting is important for nighttime operational safety and security. The terminal building is well lit with lights mounted on all sides of the building and on poles to illuminate auto and aircraft parking. Lighting is similar around hangars, providing illumination to hangar lessees accessing their storage units after dark. The terminal area lighting is in good condition.

Airport Utilities

Most of the airport utilities are supplied through the county and are maintained by airport expenses and revenues. The current utilities and services are sufficient for existing needs and operational levels. **Table 1.3** lists the service providers for each utility at the airport.

Table 1.3
Airport Utilities and Service Providers

Utility/Service	Provider
Water	Miami County
Electricity	KCPL
Gas	Propane Tank
Sewer	Septic
Fire Protection	Miami County
Airport Snow Removal	Miami County

Source: Lochner Airport Site Visit.

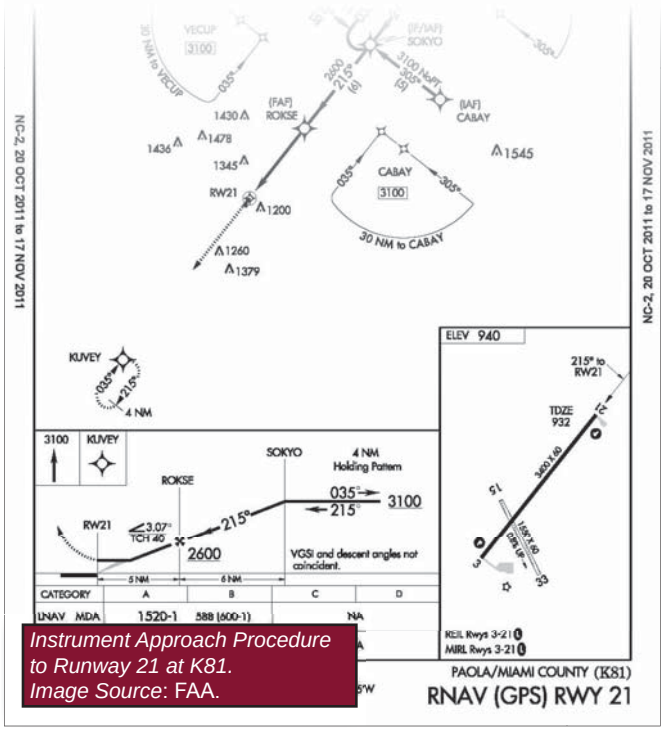
AIRSPACE SYSTEM AND NAVIGATIONAL AIDS

The airspace system consists of airports, navigational aid facilities (NAVAIDS), and direct airways. Typically, NAVAIDs are located at or near an airport and provide point-to-point reference throughout the national airspace system by either ground or satellite based facilities interfacing with airborne equipment and instrumentation. The Airspace System is a dynamic system that changes along with the current technological advances. The aviation industry is witnessing a steady move away from a ground-based system to a satellite based system that relies on the geographical positioning system (GPS) satellites for navigation. This system is capable of providing instrument approaches to airports that do not have vertical and/or lateral guidance to the airport or runway. **Exhibit 1.4** shows the airspace system surrounding the Miami County Airport.

Auto Parking at Miami County.
Image Source: Lochner; Google Earth.

Navigation Aids/Airport Instrument Approaches

The Miami County Airport has a GPS Lateral Navigation (LNAV) approach to both Runway 3 and Runway 21 Ends. The availability of a non-precision approaches increases airport capacity, access, and overall safety and reliability. **Table 1.4** provides information regarding published instrument approaches at the airport.



Instrument Approach Procedure to Runway 21 at K81.
Image Source: FAA.

Table 1.4
Runway 3-21 Airport Instrument Approaches

Runway/Airport Approach	Approach Type	Runway Visibility Minimums (Aircraft Category)	Lowest Minimum Descent Altitude (MDA)
Runway 3 RNAV (GPS)	LNAV MDA	Category A & B Category C Category D	1,640' MSL (708' AGL) & 1 - Mile N/A N/A
	Circling	Category A & B Category C Category D	1,640' MSL (700' AGL) & 1 - Mile N/A N/A
Runway 21 RNAV (GPS)	LNAV MDA	Category A & B Category C Category D	1,520' MSL (588' AGL) & 1 – Mile N/A N/A
	Circling	Category A & B Category C Category D	1,580' MSL (640' AGL) & 1 - Mile N/A N/A

GPS – Global Positioning System
MSL – Mean Sea Level
AGL – Above Ground Level
MDA – Minimum Descent Altitude
RNAV – Area Navigation
LNAV – Lateral Navigation
N/A – Not Available

Source: U.S. Terminal Procedures-North Central (NC-3).

LOCAL AIRPORTS AND AIRSPACE CHARACTERISTICS

The airport service area is created in an effort to determine the influence a particular airport and its facilities has on the surrounding community and/or region. The service area is an assessment of the subject airport in relation to: the role of the surrounding airports; an evaluation of available facilities, equipment, and services; the relative distance to population centers; and programmed expansion projects. In other words, this service area is used to gain understanding of which needs are being met and which are not. Since each airport has varying degrees of influence on the local community, judgments are made in accordance with the affect one airport has over another. It should be noted that the demand for aviation facilities does not necessarily conform to political or geographical boundaries.

Table 1.5 lists information regarding the role, facilities, and services offered at the nearest public-use general aviation and commercial service airports located within a 25 Nautical Mile (NM) radius of K81.

Airport Property and Vicinity Land Use Characteristics

The Miami County Airport is located on 246.57 acres and owned by Miami County in fee simple title. These 246.57 acres include the airfield and some agricultural land. Active row-crop farming is not currently conducted within the airport's property.

The important considerations regarding the types of land use and zoning on and adjacent to an airport include: aircraft noise, natural and man-made obstructions to flight, and incompatible development encroaching upon the airport and runway protection zones (RPZ).

Land in the immediate airport area is used for agricultural, industrial, and light residential purposes. There is a light industrial area to the north and light residential areas on all sides of the airport, and crops are grown on surrounding properties.

To protect the airspace surrounding the airport, in June 2012, the Miami County Board of Commissioners

Table 1.5
Area Public-Use Airport Facilities

Airport Name Airport Sponsor/Distance From Airport (NM)	Airport Role	Runway Characteristics	Aircraft/ Operations	Airport Services
Miami County Airport (K81) Paola, KS	GA	3-21; 3,400' x 60' (P, L) 15-33; 1,550' x 60' (T)	19 10,000	F, Tie, Hgr, Instr, R, NPI
Ottawa Municipal Airport (OWI) Ottawa, KS – 15.6 W	GA	17-35; 4,500' x 75' (P, L) 13-31; 1,785' x 95' (T)	41 7,160	F, Hgr, Tie, Gld, Sales, Surv, NPI
Gardner Municipal Airport (K34) Gardner, KS – 16.1 N	GA	8-26; 2,960' x 39' (P, L) 17-35; 3,373' x 90' (T, L) 3-21; 2,154' x 80' (T)	71 26,000	F, Maint, Tie, Gld, Instr, Rntl, Tow, NPI
New Century Aircenter (IXD) Olathe, KS – 17.5 N	GA	18-36; 7,339' x 150' (P, L) 4-22; 5,123' x 100' (P, L)	130 44,998	F, Maint, Ox, Hgr, Tie, Avncs, Chtr, Instr, Rntl, Sales, Surv, PIR
Johnson County Executive Airport (OJC) Olathe, KS – 20.3 NE	GA	18-36; 4,098' x 75' (P, L)	141 53,326	F, Maint, Ox, Hgr, Tie, Amb, Avncs, Chtr, Instr, Rntl, Sales, Survey, NPI
Garnett Municipal Airport (K68) Garnett, KS – 21 SW	GA	1-19; 2,660' x 45' (P, L)	11 11,060	F, Maint, Tie, Agri, Instr
Vinland Valley Aerodrome (K64) Baldwin City, KS – 21.7 NW	Private	16-34; 3,030' x 80' (T, L)	20 800	F, Tie, Instr, Rntl
Hillside Airport (63K) Stilwell, KS – 22.3 NE	Private	17-35; 2,000' x 56' (T)	11 2,000	Tie
Cedar Airport (51K) Olathe, KS – 23.5 N	Private	17-35; 2,440' x 75' (T)	4 3,300	Tie
Total Activity	**448 aircraft** 158,644 operations			

(P) – Paved runway surface; **(T)** – Turf or gravel runway surface; **(L)** – Lighted pilot controlled runway

GA – General Aviation Airport – designed to serve all small single-engine and twin engine aircraft < 12,500 lbs.

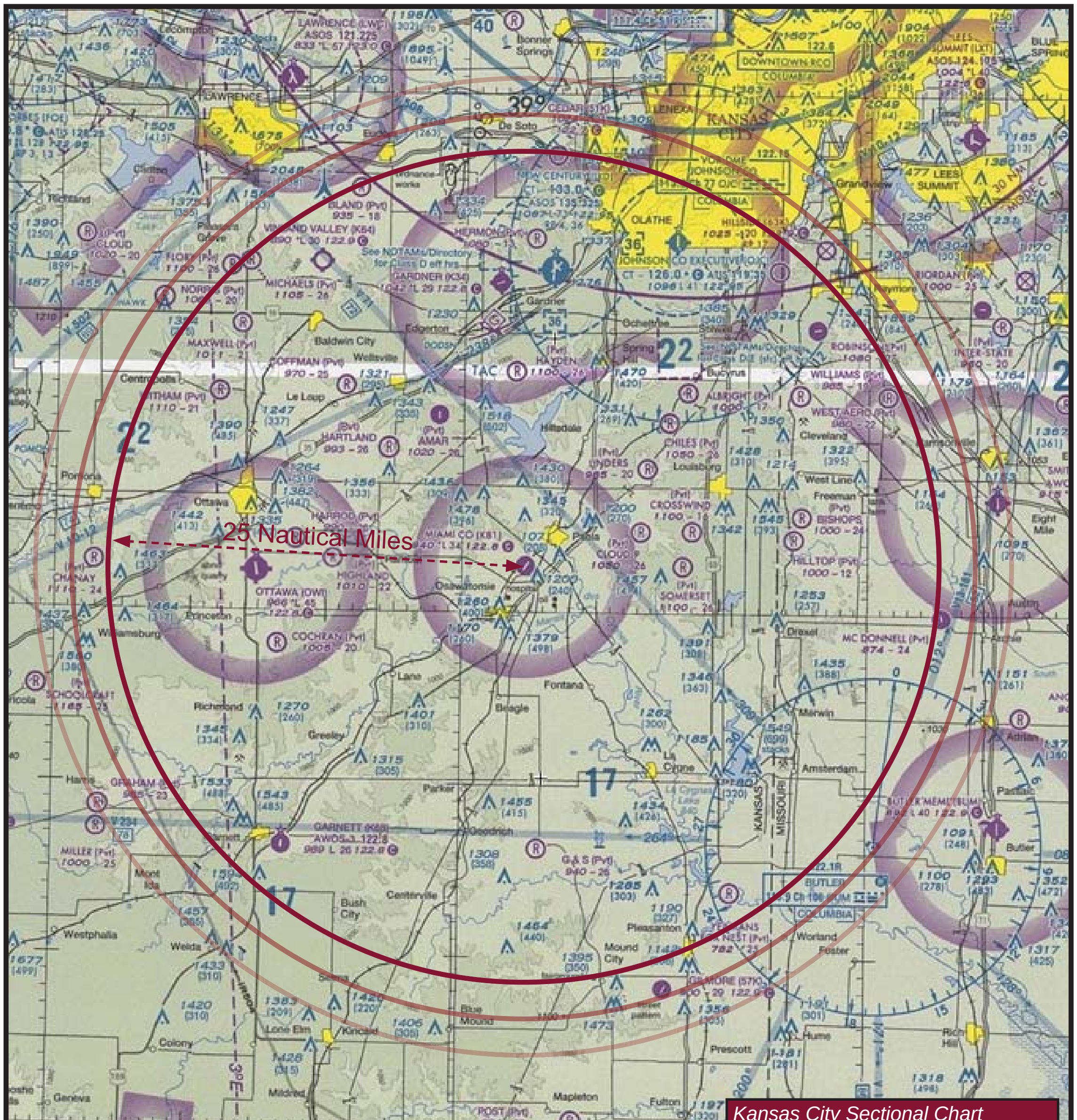
Private – Privately owned/open to public

PIR: Precision Instrument Approach
NPI: Non-precision Instrument Approach
Tie: Tie-downs
R: Repair
Chtr: Charter
Instr: Instruction
Rntl: Aircraft rental
Hgr: Hangar
F: Fuel

Source: NOAA/FAA Kansas City Sectional Aeronautical Chart.

enacted height and hazard regulations based on provisions of FAR Part 77, *Objects Affecting Navigable Airspace*, which regulates and restricts the height of structures and objects of natural growth in the vicinity of K81.

Exhibit 1.4
Regional Airspace Structure



Kansas City Sectional Chart
Image Source: SkyVector; Lochner.

GENERAL AVIATION ACTIVITY

General Aviation Function and Role

The FAA recognizes three broad categories of aviation: 1) general aviation, 2) certificated air carrier, and 3) military. The Miami County Airport is considered to be a general aviation (GA) airport. General aviation includes all civilian aircraft other than the certified air carriers, and represents the largest component of the national air transportation system, including 95 percent of all airport landing facilities and total civilian aircraft fleet utilization (hours flown).

Current Airport Activity

Activity at the Miami County Airport includes:

- ✈ Corporate Business
- ✈ Personal Business
- ✈ Recreational/Pleasure Flying
- ✈ Flight Instruction, Training, and Promotion

Based Aircraft and Annual Operations

The historic number of based aircraft, registered aircraft, and annual operations (local and itinerant) were obtained from the FAA Terminal Area Forecasts and FAA 5010 Airport Inspection Form for K81 and are shown in **Table 1.6**. Although these are estimates of airport activity, it does provide a base point for further analysis. We could reasonably expect that, as based aircraft increases in the future, operational levels will increase proportionally. The following observations were identified as part of the inventory of historical and existing airport activity levels.

Based Aircraft and Operations Summary

Since the year 2000, the number of based aircraft at K81 has decreased overall from 23 based aircraft in 2000 to 20 based aircraft. Airport operations have increased since 2000 from 6,480 total operations to 10,000 total operations.

Critical Aircraft

The airport reference code (ARC) designation is normally used to establish minimum safety standards with respect to the performance and characteristics of the critical aircraft using the airport. This particular aircraft, as determined with respect to approach speed and wingspan, is the largest within a design category of airplanes, or family of aircraft, that conduct at least 500 itinerant operations (combination of landings and takeoffs) per year. This critical aircraft for the Miami County Airport was chosen since it is the largest aircraft operating at the airport meeting the operational criterion. **Table 1.7** identifies the existing critical aircraft as the Beechcraft B58 Baron, which is an ARC B-I aircraft. The Beechcraft Baron was chosen because it is the largest, fastest aircraft that operates at the airport at the prescribed measures.

Table 1.6
Operational Activity Summary

Year	Based Aircraft	Single Engine	Multi Engine	Jet	Helicopter	Local Operations*	Itinerant Operations*	Total Estimated Annual Operations
2000	23	22	1	0	0	4,000 (62%)	2,480 (38%)	6,480
2001	23	22	1	0	0	4,000 (62%)	2,480 (38%)	6,480
2002	23	22	1	0	0	4,000 (62%)	2,450 (38%)	6,450
2003	23	22	1	0	0	4,000 (62%)	2,480 (38%)	6,480
2004	23	22	1	0	0	4,000 (62%)	2,480 (38%)	6,480
2005	23	22	1	0	0	4,000 (62%)	2,450 (38%)	6,450
2006	23	22	1	0	0	4,000 (62%)	2,450 (38%)	6,450
2007	22	22	0	0	0	6,200 (62%)	3,800 (38%)	10,000
2008	20	20	0	0	0	6,200 (62%)	3,800 (38%)	10,000
2009	20	20	0	0	0	6,200 (62%)	3,800 (38%)	10,000
2010	20	20	0	0	0	6,200 (62%)	3,800 (38%)	10,000
Existing	**20**	**20**	**0**	**0**	**0**	**6,200 (62%)**	**3,800 (38%)**	**10,000**

Based Aircraft – An actively registered general aviation airplane stationed at a select airport.

Aircraft Operation – An aircraft operation is defined as one take off or landing. Aircraft operations are identified as either local or itinerant. Local operations consist of those within 20-mile radius of the airport vicinity and itinerant operations include all other operations, having a terminus of flight from another airport at least 20 miles away.

Ultra-light aircraft and gliders are not included in total based aircraft.

Source: FAA Terminal Area Forecasts.

Table 1.7
Critical Aircraft Information, Beechcraft B58 “Baron” (ARC B-I)

Characteristic	Specifications/ Performance
Wing Span	37 ft. 10 in.
Length	29 ft. 10 in.
Height	9 ft. 9 in.
Seating (Crew + Pax)	1 + 4/5
Maximum Takeoff Weight (MTOW)	5,500 lb.
Normal Approach Speed	95 knots
Takeoff Field Length*	2,300 feet
Landing Distance**	1,300 feet
Max. Range Performance***	888 NM

(*) MTOW, sea level, standard temperature.
(**) Max. landing weight, sea level, standard temperature, 95 KIAS.
(***) VFR reserves; 1 pilot + 4 passengers).

Source: Hawker Beechcraft, Wichita, Kansas.

WIND ANALYSIS

Local wind patterns were collected and analyzed to determine the impacts of all-weather and instrument meteorological conditions (IMC) on the existing runway configuration. Yearly wind observations were obtained from the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), as reported hourly in Olathe, Kansas during the period from 1997 to 2008. Combined, the recorded wind data included 83,143 all-weather and 5,958 IMC observations.

For planning standards, the desirable overall wind coverage is 95 percent for an airport and is computed based on the crosswind component not exceeding 10.5-knots for airport reference code (ARC) A-I and B-I category aircraft, 13.0-knots for ARC A-II to B-II aircraft, and 16.0 knots for ARC A-III, B-III and C-I to D-III general aviation aircraft. By design, a small aircraft (weighing less than 12,500 pounds) is recommended to be able to operate approximately 95 percent of a given period without experiencing a crosswind component greater than 10.5-knots.

All Weather Wind Conditions

Table 1.8 illustrates the percent of all-weather wind coverage for the 10.5, 13.0, and 16.0-knot wind velocities. The runways provide 98.17 percent wind coverage at 10.5-knots for ARC A-I and B-I aircraft; 99.49 percent wind coverage at 13.0 knots for A-II and B-II aircraft; and 99.87 percent wind coverage for ARC C-I to D-III aircraft. Based on the prevailing wind patterns and wind coverage provided by the two runways, the existing runways are adequate in providing proper crosswind coverage.

IMC Wind Conditions

Table 1.8 also illustrates the percent wind coverage during IMC conditions. The runways at Miami County provide 97.53 and 99.35 percent wind coverage during IMC conditions for Category A and B aircraft at 10.5 and 13.0 knots, respectively. The airport also provides 99.82 percent wind coverage for ARC C-I to D-III aircraft at 16.0 knots.

Strong Wind Conditions

Table 1.8 notes strong wind characteristics during all-weather conditions at K81. Approximately 31 percent of all weather wind observations occur as strong winds that exceed 10.5 knots. During IMC conditions, approximately 38 percent of IMC wind observations occur as strong winds.

Exhibit 1.5 illustrates the airport's wind rose which depicts the predominant wind directions and velocities occurring at the Miami County Airport during all-weather conditions.

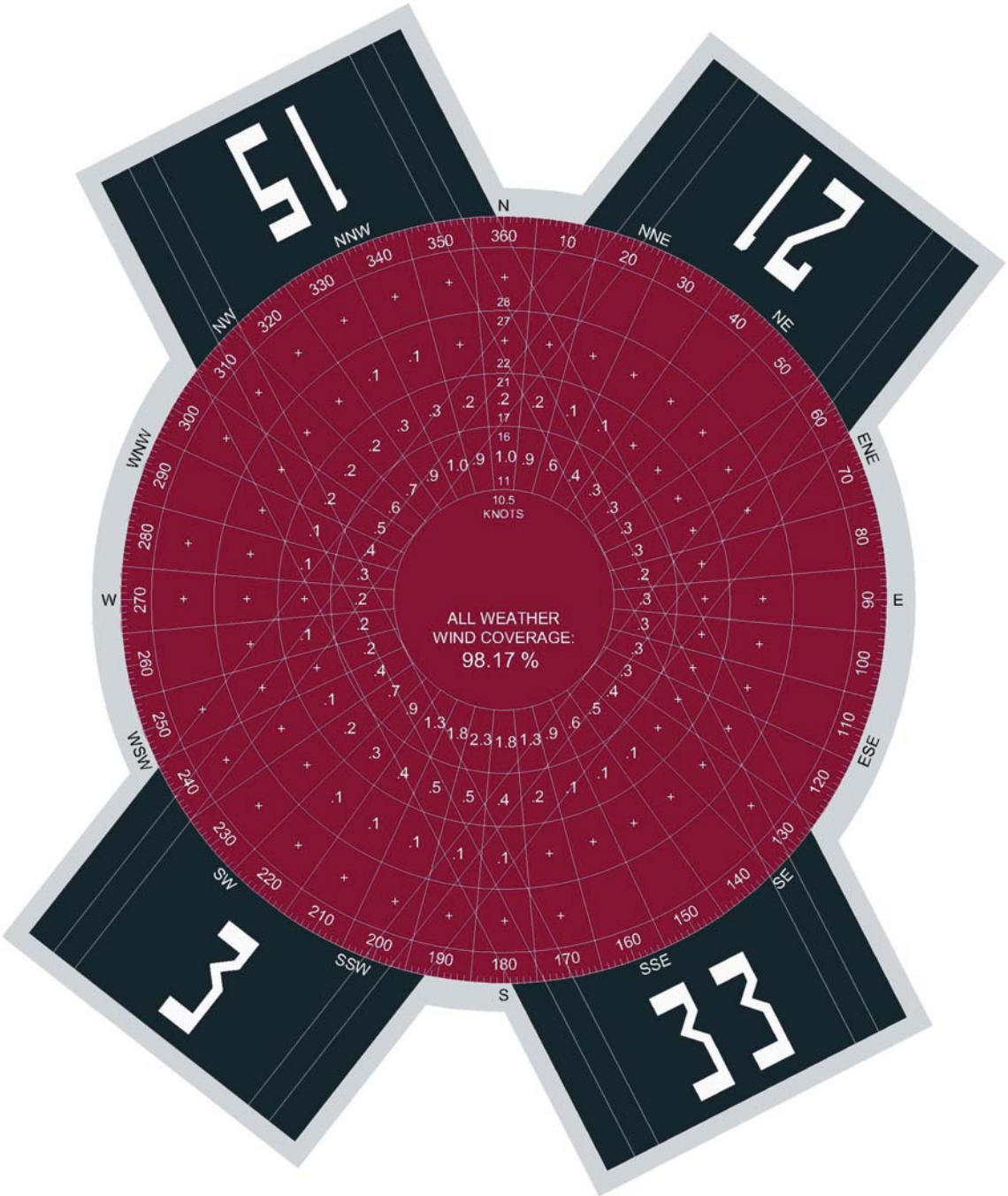
Table 1.8
Runway All-Weather and IFR Wind Coverage

Runway Alignment	True Bearing	Crosswind Component Wind Speed & Corresponding ARC	Percent All-Weather Wind Coverage	Percent IMC Wind Coverage
Runway 3-21	38.09º	10.5 knots (A-I and B-I) 13.0 knots (A-II and B-II) 16.0 knots (A-III; B-III, C-I to D-III)	87.89% 93.43% 97.80%	83.09% 90.68% 96.85%
Runway 15-33	152.86º	10.5 knots (A-I and B-I) 13.0 knots (A-II and B-II) 16.0 knots (A-III; B-III, C-I to D-III)	89.56% 94.63% 98.25%	88.33% 94.15% 98.43%
Combined Runway Wind Coverage		**10.5 knots (A-I and B-I) 13.0 knots (A-II and B-II) 16.0 knots (A-III; B-III, C-I to D-III)**	**98.17% 99.49% 99.87%**	**97.53 % 99.35% 99.82%**
Total Calm and Light Winds (0-10.5 Knots) Total Strong Winds (Greater Than 10.5 Knots)			68.88% 31.12%	61.61% 38.39%

ARC - Airport Reference Code
IMC – Instrument Meteorological Conditions

Source: NOAA, NCDC, Asheville, NC; Olathe, KS Observations (1997-2008)

Exhibit 1.5
All Weather Wind Rose



Source: NOAA, NCDC, Asheville, NC; Olathe, KS Observations (1997-2008).

SOCIO-ECONOMIC INFORMATION

Socio-economic factors provide baseline information that may be used in forecasting aviation activity including the projected levels of based aircraft and annual operations. The demographic characteristics of an airport's service area, including population, employment, economic base, and per capita income, to a large extent, help determine demand for aviation services.

Population and Housing

Miami County is one of 105 counties in Kansas and its estimated population in 2010 consisted of 32,787 residents ranked it 19th in the state. **Table 1.9** shows population trends for the City of Paola, Miami County, and the State of Kansas from 1990-2020.

Table 1.9
Population Trends

Year	City of Paola	Miami County Population	State of Kansas Population	City of Paola as % of Miami County	Miami County as a % of Kansas
1990	4,698	23,466	2,467,845	20.02%	0.95%
2000	5,011	28,351	2,688,418	17.67%	1.05%
2010	5,602	32,787	2,853,118	17.09%	1.15%
2020	6,193**	37,223**	2,890,566*	16.64%	1.29%

*Populations estimated by the U.S. Census Bureau

**Future population projections estimated using trend line analysis.

Source: U.S. Census Bureau; www.cenus.gov.

Age Characteristics

Refer to **Table 1.10** which illustrates recent U.S. Census age characteristics for Miami County and the City of Paola. The median age for Miami County was 39.5 years and approximately 50.6 percent of the population was female and 49.4 percent male. Paola's median age for its citizens was 35.5 years while approximately 53.4 percent of the city population was female and the remaining 46.6 percent was male. The largest age group for the city was under 18 years, and the largest for the county was also under 18 years, which totaled 28.4 percent and 27.9 percent, respectively.

Table 1.10
Age Characteristics

Age Group	Paola	Miami County
Under 18 years	28.4%	27.9%
18 to 24 years	8.0%	5.5%
25 to 44 years	23.3%	24.5%
45 to 64 years	21.3%	28.9%
65 and older	21.4%	13.2%

Source: U.S. Census Bureau, www.cenus.gov

Per Capita and Median Household Income

Per Capita Income (PCI) and Median Household Income (MHI) are widely used indicators for gauging the economic performance of local economies. PCI serves as an indicator of the economic well-being of a community being defined as the total personal income of all people in an area, divided by the total number of people. MHI, on the other hand, includes the income of the householder and all other persons 15 years and older in the household, whether related to the householder or not, and represents the value in the middle when all incomes in a given geographical area are arranged highest to lowest. **Table 1.11** illustrates the PCI and MHI for the state, county and city since 1990.

Miami County's 2010 PCI was approximately 104 percent of the state average and recent trends (1990-2010) indicate an average annual growth of approximately 10.6 percent. Between 1990 and 2010, Miami County's MHI increased approximately 105 percent, or approximately 10.2 percent annually.

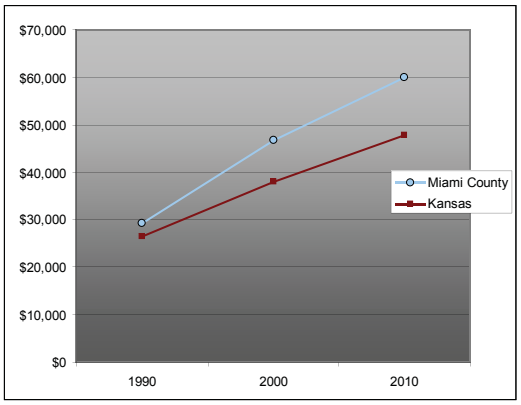
Labor Force

Table 1.12 illustrates the labor force for Miami County from 2000 to 2010. From 2000 to 2010, Miami County experienced an increase in the workforce by approximately 11.6 percent, during which time the number of unemployed persons increased by approximately 52.2 percent. As of 2010, the unemployment rate for Miami County was 3.3 percent.

Table 1.11
Per Capita and Median Household Income

Place Name/ Variable	1990	2000	2010	Percent Change 1990-Present
Per Capita Income (PCI)				
Paola	$11,729	$22191	$23,719	102.2%
Miami County	$12,563	$21,408	$26,520	111.1%
State of Kansas	$12,989	$19,936	$25,522	96.5%
Median Household Income (MHI)				
Paola	$23,902	$37,285	$52,379	119.1%
Miami County	$29,259	$46,665	$59,888	104.7%
State of Kansas	$26,362	$37,934	$47,709	80.9%

Source: U.S. Census Bureau; www.census.gov.



Per Capita Income for Miami County and the State of Kansas, 1990-2010.
Source: U.S. Census Bureau

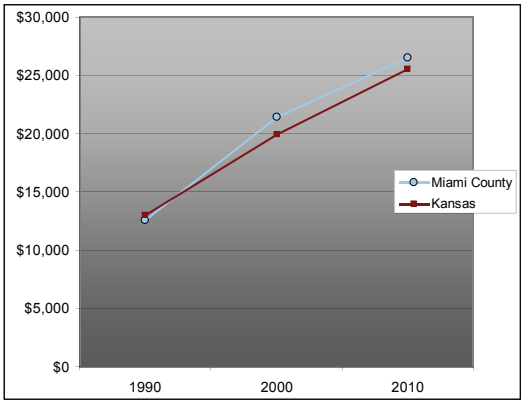
Industry Sectors

According to the U.S. Census Bureau, Miami County's top three primary industry sectors are manufacturing; education, construction; and retail trade. Combined, these three sectors employ nearly 7,333 residents. **Table 1.13** illustrates the 2010 industry sector participation for Miami County.

Table 1.12
Miami County Labor Force, 2000-2010

Subject	Miami County		
	2000	2010	Percent Change
Person ≥ 16 Years	21,369	23,499	9.1%
In Labor Force	14,787	16,732	11.6%
Civilian Labor Force	14,771	16,732	11.7%
Employed	14,403	15,962	9.8%
Unemployed	368	770	52.2%
Armed Forces	16	0	(100%)
Not in Labor Pool	6,582	6,767	2.7%

Source: U.S. Census Bureau; www.census.gov.



Median Household Income for Miami County and the State of Kansas, 1990-2010.
Source: U.S. Census Bureau

Table 1.13
Miami County Industry Characteristics

Industry	Employment
Agriculture, Forestry, Fishing and Hunting, and Mining	407
Construction	**2,127**
Manufacturing	1,528
Wholesale Trade	603
Retail Trade	**2,071**
Transportation and Warehousing, and Utilities	858
Information	494
Finance, Insurance, Real Estate, and Rental and Leasing	993
Professional, Scientific, Management, Administrative, and Waste Management Services	1,311
Educational, Health and Social Services	**3,135**
Arts, Entertainment, Recreation, Accommodation and Food Services	924
Other Services (Except Public Administration)	849
Public Administration	662
Total Sector Activity	15,962

Source: U.S. Census Bureau; www.census.gov.

Income Distribution

Table 1.14 displays the distribution of household income for the City of Paola, Miami County, the State of Kansas, and the nation. Using income as a gauge for aviation activity, it is assumed that an income of greater than $50,000 is capable of supporting general aviation flying. Accordingly, 60 percent of Miami County households have incomes greater than $50,000.

SUMMARY

As previously mentioned, the airport inventory establishes the foundation for the remaining elements of the master plan update. Aviation demand forecasts, facility requirements, alternatives analysis, development plan and costs, and an environmental overview are among these elements of the master plan update and will be addressed in the following chapters of this study.

Table 1.14
Household Income Distribution

Locale	< $15,000	$15,000 – $24,999	$25,000 - $34,999	$35,000 - $49,999	$50,000 - $74,999	$75,000 +	Percent > $50,000
City of Paola	12.0%	8.8%	8.6%	16.1%	34.9%	19.5%	54.4%
Miami County*	8.7%	7.5%	9.7%	14.0%	24.2%	35.8%	60.0%
State of Kansas	12.5%	11.6%	11.8%	15.7%	19.6%	29.0%	48.6%
United States	13.0%	10.8%	10.6%	14.3%	18.7%	32.6%	51.3%

Source: U.S. Census Bureau (Census 2000) Note: Household Income based on 1999 levels

*In 2008 inflation-based dollars

Source: U.S. Census Bureau; www.census.gov.

K81

Miami County Airport
Airport Master Plan Update

CHAPTER TWO

AVIATION DEMAND FORECASTS

Chapter Two
Aviation Demand Forecasts

INTRODUCTION

The aviation demand forecast chapter provides insight to the future needs of capital development and investment in the facilities at the airport. To assist in determining these needs, forecasts of projected facility growth and increases in airport activity are generated using sound historical information. The basis of this information comes from the airport, government agencies, and from local, regional, and national economies. These forecasts are the foundation for determining the type, extent, size, location, timing, and financial feasibility of capital development. Consequently, demand forecasts influence virtually all remaining phases of the airport planning process.

Forecasting aviation activity is achieved not only by applying statistical measures and extrapolating past trends, but also by using professional judgment and experience, and having a general understanding of the local market forces influencing the activity at the airport. Socio-economic data from the region surrounding the airport is used to show progress and growth in the area, and how that growth relates to airport activity.

Forecasts of aviation demand have been prepared and are presented in this chapter to assist Miami County in the evaluation of the performance-based needs of the Miami County Airport during the next 20 years. The forecasts are organized in the following manner including based aircraft, annual operations, local versus itinerant operational activity, annual instrument approach demand, and the ultimate critical aircraft.

DATA SOURCES

The demand forecasting process is initiated by obtaining recorded data pertinent to the operation and administration of the airport. When necessary, this information is supplemented with historical trends which evolve from a thorough examination of records, statistics, historic data and planning documents relative to the airport. For instance, data sources used to generate the demand forecasts for K81 include the FAA Aerospace Forecasts, Fiscal Years 2011-2031; FAA Form 5010-1, Airport Master Record data inspection forms; Miami County socio-economic characteristics interpreted from U.S. Census Bureau data; and the FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS).

CONDITIONS AND ASSUMPTIONS

Before demand activity is projected at an airport, several conditions and assumptions considered to impact the basis or foundation of the demand projections are prepared. These conditions and assumptions are discussed in the following passages. These discussions involve a wide range of physical, operational, socioeconomic, and industry-related topics and are not necessarily listed in any order of priority.

- Miami County Socioeconomic Conditions - General aviation operations and based aircraft are more directly tied to local economic conditions than any other segment of the aviation industry. Population trends also play a role in determining airport activity. Given this fact, the forecast of general aviation demand at K81 will reflect historic county socioeconomic trends. In particular, since 1990, the county population has increased approximately 1.7 percent annually, resulting in a 28.4 percent population increase to total approximately 32,787 county residents in 2010. **Per Capita Income (PCI)** and **Median Household Income (MHI)** are widely used indicators for gauging the economic performance of local communities as well. As the population has increased, Miami County's PCI levels have also increased 3.8 percent annually ($12,563-$26,520) from 1990-2010 and the county's MHI has increased approximately 3.6 percent annually ($29,259-$59,888) from 1990-2010. Given this information, the total based aircraft projections were supported by analyses which compared and correlated population, PCI and MHI to based aircraft estimates. In this model, the continued economic growth would contribute to the total based aircraft at the facility growing by approximately three percent annually throughout the 20-year planning period.

- National and Global Economic Climate – In the calendar year 2008, there were many national and global economic events or factors that have affected local short term projections of aviation demand. Some of these factors included volatility in fuel prices, significant layoffs by most aircraft manufacturers, flat sales in general aviation aircraft, and reduced demand for business and very light jets (VLJs). There has also been an overall downturn in the global economy. In aviation, this can be seen in system-wide reductions in commercial air travel and air carrier scheduling by an estimated 10 percent. While there has been an overall downturn in the national and global economy, not all local communities have been affected. The recent downturn in the national and global economies does not currently, and is not expected, to have a significant influence on the Miami County Airport or its 20-year aviation demand forecasts – particularly within the 0-5 year planning period.

  While a national and global economic recession is evident, it is important to remember that it is not necessarily as significant at all micro-economic levels. Miami County, Kansas is one example of this. The county has shown continued growth decade after decade, at a faster rate than the state of Kansas as a whole. While the Miami County Airport has shown a decline in fuel sales in the past five years, the airport has continued to maintain a hangar waiting list with at least 30 aircraft owners waiting to base their aircraft there. When the airport constructed its most recent 5-unit T-hangar in 2010**,** the units were filled immediately and the airport hangar units remain full. This hangar occupation and growth can be interpreted as growth in activity.

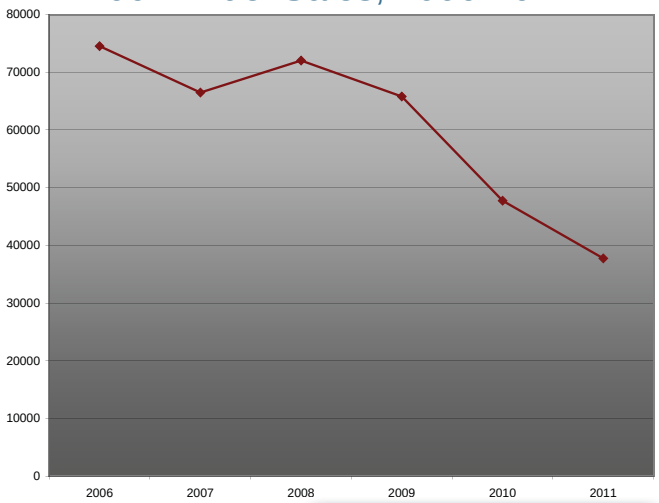
  The national economic volatility was more evident in Miami's 100LL sales. In contrast to local socio-economic and hangar growth, 100LL fuel sales have declined at an average rate of 12.7 percent annually over the 5-year period. The cost of fuel, as it did nation-wide across all forms of transportation, had a direct impact on the volume of sales at K81. However, during the peak months of activity at the airport, fuel sales have remained close to the average amounts over the 5-year period. The 100LL fuel sales are depicted in **Exhibit 2.1**.

- Airport Role – The Miami County Airport is expected to remain a general aviation (GA) airport facility accommodating small single-engine and light multi-engine aircraft weighing 12,500 pounds or less and also larger turbo-prop and jet aircraft weighing more than 12,500 pounds but less than 60,000 pounds. The airport has substantial levels of business travel, along with recreational operations and agricultural services, and is expected to continue supporting these types of activity.

- Based Aircraft Fleet Mix – On average, the based aircraft fleet mix at K81 mostly consists of single-engine piston airplanes. Since 1990 an average of 96 percent of the based aircraft fleet has been single-engine aircraft, and 4 percent of the fleet has been multi-engine aircraft. Since 1990, there has been no record of a jet or helicopter based at the airport.

- FAA Aerospace Forecasts – The FAA conducts aerospace forecasts for our entire nation's aviation system, showing the projected growth to the year 2031. The FAA Aerospace Forecasts include projected annual growth rates for various aircraft in General Aviation. For piston aircraft, the FAA anticipates a total annual growth rate of approximately 0.2 percent for the period of 2010-2031. Meanwhile multi-engine turbine aircraft are expected to grow 1.4 percent annually on average and turbo jet aircraft growing approximately 4.2 percent annually in the same time period (2010-2031). Overall, turbine aircraft are expected to grow at an average annual rate of 3.1 percent from 2010-2031. The FAA Aerospace Forecasts can be applied to K81, attributing an average annual growth rate of 0.2 percent for the fleet mix at the Miami County Airport.

Exhibit 2.1
100LL Fuel Sales, 2006-2011



Source: Miami County Airport, Fuel Sales (gallons)

DEMAND FORECAST APPROACH

The development of the demand forecasts for K81 were generated by conducting a series of analytical, statistical, arithmetic, and judgmental processes. These analytical and statistical processes compare mathematical relationships to analyze historic data and define their relationship to the operational parameters (i.e. aircraft operations per based aircraft) at the airport. The following discussion offers explanations of three methodologies that were used as part of the process to generate demand forecasts for Miami County's airport.

Regression Analysis

The regression model projects the forecast of aviation demand parameters (dependent variable) on the basis of one or more external factors or indicators (independent variable(s)). Historic values for both variables are analyzed and compared to determine the mathematical relationship and the degree of correlation between the independent and dependent variables. This relationship is then used to forecast the dependent variable with a projection of the independent variable. Elements of aviation such as based aircraft and annual operations are dependent variables. County population, per capita income, and median household income were utilized as independent variables for the airport study.

Linear Trend Analysis and Extrapolation

Among the simplest and most familiar forecasting techniques, linear trend analysis is one of the most frequently used models in the industry. Simply put, historic data is projected into the future providing an estimate of the aviation demand throughout the planning period. The basic assumption of the linear trend line method is that historic levels of aviation activity will continue to exert a similar influence on future demand levels. As broad and presumptive as this method might be, it is often a reliable benchmark against which other forecasting models may be compared.

Judgment and Professional Experience

Following the completion of the demand forecast analysis by utilizing several statistical methodologies, judgment or professional experience is applied to the forecast projections. Intangible factors such as specific information regarding the airport, operating environment, industry trends or local area economic or socio-economic information generally are taken into account when formulating a judgmental or professional opinion in arriving at a preferred forecast.

GENERAL AVIATION FORECASTS

As discussed in the airport inventory, the FAA recognizes three broad categories of aviation which include general aviation, certificated air carrier, and military. General Aviation is defined as all aviation activity except that of air carriers certified in accordance with FAR Part 121, 123, 127, 125 and 135, excluding military aircraft. The following sections of the demand forecasts will specifically concentrate on the activity generated by the airport's total based aircraft fleet including annual operations, local versus itinerant operational activity, annual instrument approach (AIA) flight activity, and aircraft fleet mix estimates.

BASED AIRCRAFT DEMAND

Preferred Forecast

In accordance with the principle that shows based general aviation aircraft are directly tied to local economic conditions, the projected total based aircraft for K81 will coincide with historic and future Miami County PCI and MHI levels and the FAA projected growth for the fleet mix at K81. Given this, the total based aircraft figures will increase at a rate of approximately two (2.0) percent annually and result in the addition of eight (8) aircraft to total 28 fixed wing aircraft.

Table 2.1
Total Based Aircraft, 2013-2033

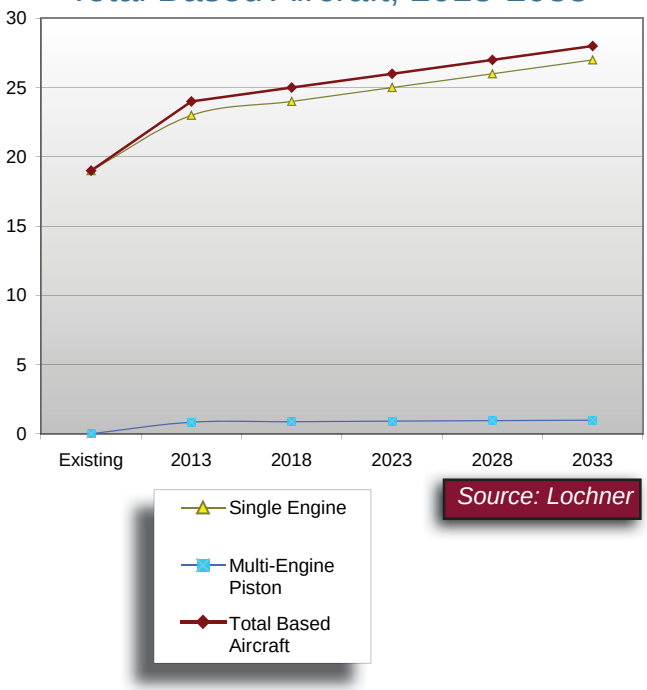
Year	Total Based Aircraft	Single Engine	Multi-Engine Piston	Multi-Engine Turbine	Jet
Existing	**20**	20	0	0	0
2013	**24**	23	1	0	0
2018	**25**	24	1	0	0
2023	**26**	25	1	0	0
2028	**27**	26	1	0	0
2033	**28**	27	1	0	0

Source: Lochner

"The total based aircraft figures will increase at a rate of approximately two (2.0) percent annually and result in the addition of eight (8) aircraft to total 28 fixed wing aircraft."

Table 2.1 and **Exhibit 2.2** summarize the forecast of total based aircraft for the Miami County Airport. The single engine fleet is expected to increase from 20 existing units to 27 units totaling an additional seven airplanes in 2033. The multi-engine piston fleet is expected to increase at a slower rate adding one aircraft in the 20-year planning period. Overall K81 is expected to increase its based aircraft by eight airplanes in 2033.

Exhibit 2.2
Total Based Aircraft, 2013-2033



Source: Lochner

ANNUAL OPERATIONAL DEMAND

Annual operations for K81 were estimated by observing principles contained within FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS) and applying known Operations Per Based Aircraft (OPBA). For non-towered airports, Order 5090.3C recommends that 250 operations per based aircraft should be used for small general aviation airports, 350 operations for busier general aviation airports with more itinerant traffic, 450 operations for busy reliever airports, and 750 operations in unusual circumstances at airports with a large number of itinerant operations. Based on observations by airport managment, current 5010 airport inspections, and the recommendations from NPIAS, approximately 500 OPBA were used to estimate ultimate operational activity given the recent level of operations at the airport.

Most generally, there is a direct relationship between based aircraft and annual operations. Because based aircraft and annual operations have historically followed similar trends and growth rates, this analysis will compare the two and draw conclusions as to the potential estimated activity at the facility. The relationship between the two, known as operations per based aircraft (OPBA), will be examined whereby the estimated increase in activity - total aircraft operations - will be calculated and established. **Table 2.2** and **Exhibit 2.3** summarize the forecast of annual operations for K81 throughout the 20-year planning period.

Table 2.2
Annual Operations, 2013-2033

Year	Total Based Aircraft	OPBA	Projected Annual Operations	Local Operations	Itinerant/ Transient Operations
Existing	**20**	500	**10,000**	6,900 (62%)	3,800 (38%)
2013	**24**	500	**12,000**	7,400 (62%)	4,600 (38%)
2018	**25**	500	**12,500**	7,700 (62%)	4,800 (38%)
2023	**26**	500	**13,000**	8,100 (62%)	4,900 (38%)
2028	**27**	500	**13,500**	8,400 (62%)	5,100 (38%)
2033	**28**	500	**14,000**	8,700 (62%)	5,300 (38%)

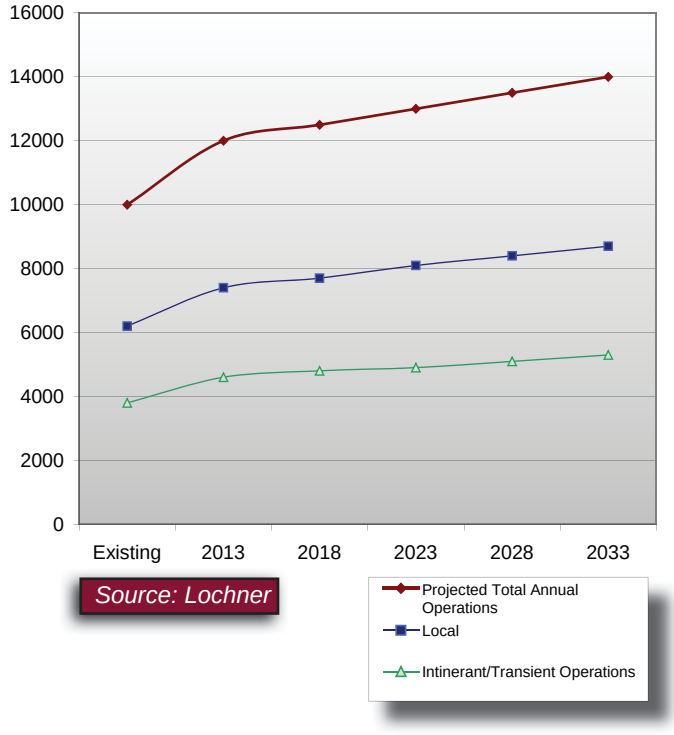
Note: Figures rounded to the nearest hundred for planning purposes.
Source: Lochner

"The total based aircraft figures will increase at a rate of approximately two (2.0) percent annually and result in the addition of eight (8) aircraft to total 28 fixed wing aircraft."

Local versus Itinerant Operations

Table 2.2 also summarizes the share of local versus itinerant operations conducted at K81. Historically, the relationship between local versus itinerant operations for the airport has been approximately 62 percent local and 38 percent itinerant in nature. Currently at the airport, approximately 62 percent are local operations, while 38 percent are itinerant. In the future, local operations are expected to dominate itinerant operations, continuing the trend. From 2013-2033 the local operations are expected to grow 0.8 percent annually, representing approximately 62 percent of total operations. The itinerant/transient operations are expected to grow at an annual rate of 0.7 percent, representing 38 percent of all operations. The relationship of local versus itinerant operations is expected to be maintained throughout the planning period.

Exhibit 2.3
Annual Operations, 2013-2033



Source: Lochner

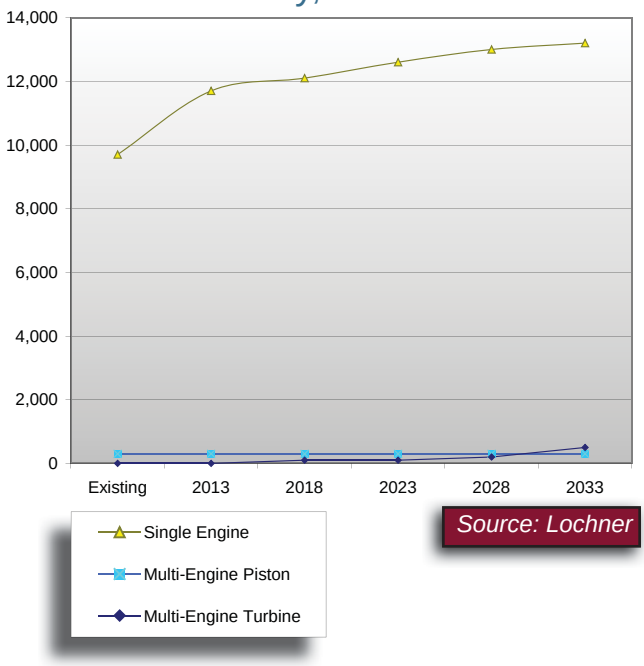
OPERATIONAL FLEET MIX DEMAND

Given the close correlation of based aircraft to annual operational activity, just as with determining the projected annual operational forecasts based on OPBA, the relationship of both based airplanes and operations can be evaluated to determine an ultimate level of activity (operations) conducted by a particular aircraft category. The projected operational mix by aircraft category was determined by examining the existing and historical based aircraft fleet mix ratios.

Since 1990 an average of 96 percent of the based aircraft fleet has been single-engine aircraft and 4 percent of the fleet has been multi-engine aircraft. This fleet mix is expected to continue throughout the 20-year planning period, with the exception of the possibility of a based turbine aircraft in the long term phase.

To determine the operational fleet mix over the 20-year planning period, the observed operational mix was correlated with the current fleet mix figures to create a more accurate representation of the activity. This method indicates that single engine aircraft would actually comprise 96 percent of the current total annual operations at 9,700 operations and multi-engine piston aircraft would represent approximately four percent. This method was utilized to project the operational mix at K81 throughout the planning period as indicated in **Table 2.3** and as depicted in **Exhibit 2.4**.

Exhibit 2.4
Operational Fleet Mix Summary, 2013-2033



Source: Lochner

Ultimately, single engine aircraft are expected to contribute approximately 13,200 total operations or roughly 94 percent of the annual activity at the airport. Multi-engine piston aircraft are expected to contribute approximately two percent of the operational activity or 300 annual operations, while multi-engine turbine aircraft are expected to hold approximately four percent of the operations by the end of the 20-year planning period.

Table 2.3
Operational Fleet Mix Summary, 2013-2033

Year	Total Annual Operations	Single Engine	Multi-Engine Piston	Multi-Engine Turbine	
				Turbo-Prop	Business Jet
Existing	**10,000**	9,700	300	0	0
2013	**12,000**	11,700	300	0	0
2018	**12,500**	12,100	300	100	0
2023	**13,000**	12,600	300	100	0
2028	**13,500**	13,000	300	200	0
2033	**14,000**	13,200	300	500	0

Note: Fleet mix percentages rounded to the nearest hundred.

Note: Refer to the *Conditions and Assumptions* section for fleet mix methodology and percentage of operations.

Source: Lochner

ANNUAL INSTRUMENT APPROACH DEMAND

Forecasts of annual instrument approach (AIA) operations are generated to provide guidance in determining requirements for navigational aid (NAVAID) equipment. Based on the volume of this type of operation, the type and timing of possible future NAVAIDs can be determined. While instrument approaches to Miami County Airport do not assume a significant level of total annual operations, the instrument capabilities are a highly valued aspect of the airport.

The AIA forecast is reflective of the existing and projected total itinerant operations at the airport and is compared with the percentage of instrument rated pilots, as well as the percent of instrument flight conditions in the area to arrive at a total annual instrument approach estimate. **Table 2.4** summarizes the forecast of AIAs for K81 during the 20-year planning period.

During the 20-year planning period, instrument approaches are projected to increase overall following the trend demonstrated by based aircraft and operational growth. In 2013, The Miami County Airport is projected to experience approximately 171 Annual Instrument Approaches, and ultimately experience 199 AIAs in 2033. The AIA operations are expected to remain at about 1.5 percent of total annual operations through the 20-year planning period.

Table 2.4
Annual Instrument Approaches, 2013-2033

Forecast Year	Total Annual Ops.	Total Itinerant Ops.	Percent IFR Pilots	Percent IMC Conditions	Actual AIA Operations (% of Total Operations)
Existing	**10,000**	3,800	55.03%	7.2%	151 (1.5%)
2013	**12,000**	4,560	52.21%	7.2%	171 (1.4%)
2018	**12,500**	4,750	53.08%	7.2%	182 (1.5%)
2023	**13,000**	4,940	53.50%	7.2%	190 (1.5%)
2028	**13,500**	5,130	53.11%	7.2%	196 (1.5%)
2033	**14,000**	5,320	51.96%	7.2%	199 (1.4%)

Note: Figures rounded to the nearest whole number or hundred for planning purposes.

Source: Lochner

PEAKING CHARACTERISTICS

The traffic demands imposed on an airport exhibit variations based on an annual, monthly, daily, and hourly basis. These fluctuations result in periods of activity, known as peaks, which place the greatest amount of demand on airport facilities to accommodate aircraft and passengers. As the need for aviation services increases so, too, does the demand for individual facilities to accommodate peak periods of aviation-related activity. Peak periods must be considered when determining future facilities so that airfield and terminal area components are effectively utilized in order to accommodate projected demand.

The airport peaking characteristics analysis will forecast peak period demand for aircraft operations, as well as passenger activity at K81, taking into account normal periods of airport activity. This analysis is organized into peak month/average day and peak hour passenger estimates for the short (0-5 year), intermediate (6-10 year) and long-term (11-20 year) phases throughout the 20-year airport development period.

Peak Month/Average Day (PMAD) Demand

Historical operational activity at Miami County was evaluated to identify trends of the average day of the peak month. According to fuel sales and observed operations, peak operations for K81 would typically fall in the months of July through September. During the peak months, airports can have peak hour operations as high as 12 to 20 percent of total daily operations.

Because there is year round demand for business travel, minimal flight training, and high amounts of

recreational flying activity; it is assumed that approximately 1,400 current operations, or nearly 12 percent of the total activity, occur during the peak months. This peak hour operational trend is expected to continue throughout the 20-year planning period.

To arrive at the average day of peak month (Design Day) operational total, the PMAD activity was divided by the number of days in the peak month (30). Peak Hour operational projections are the result of the Design Day compared to the ratio of activity occurring during the peak month. **Table 2.5** summarizes the PMAD operational estimates for the Miami County Airport.

Table 2.5
PMAD Operational Demand, 2013-2033

Peaking Elements	2013	2018	2023	2028	2033
Annual Operational Demand	12000	12500	13000	13500	14000
Peak Month (PMAD) Operations	1400	1500	1600	1600	1700
Design Day (PMAD) Operations	48	50	54	54	56
Peak Hour Operations	6	6	6	6	7

Note: Figures rounded to the nearest whole number, ten or hundred for planning purposes.

Source: Lochner

Peak month operations at K81 are projected to increase from approximately 1,400 to nearly 1,700 monthly operations in 2033. In 2013, K81 is expected to experience approximately 48 design day operations. This activity level translates into 6 operations during peak hour periods, or about 3 departures per peak hour. The airport is expected to experience as many as 56 design day operations and 7 peak hour operations totaling about 4 departures per peak hour. Ultimately, operational peaking characteristics will have the most influence on apron area needs and the number of tie-down spaces to accommodate peak hourly demand at the facility.

Peak Hourly Passenger Activity

It is important to have adequate space allowances for terminal building facilities and passenger circulation. Planning for these facilities requires hourly volumes consistent with the average daily baseline of activity at an airport. Peak hourly passenger activity forecasts are generated by determining peak monthly passenger activity based on accurate enplanement estimates. Enplanement information is not typically recorded at airports such as Miami County, so assumptions were made as to what the reasonable level of passenger traffic would be during peak periods of operational activity. **Table 2.6** summarizes the peak hour passenger activity estimates for K81 throughout the planning period.

To determine the peak hourly activity, it was assumed that peak hour passenger activity would be similar to that of the PMAD activity, or approximately 12 percent of average day activity. However, considering the nature of activity, many coming to visit the based restaurant at the airport, it was assumed that at least a pilot and passenger would be on board the aircraft approximately half of the time, resulting in an increase to the peak hour passengers by 50 percent. In terms of passenger and operational activity, as airport activity increases, the peak of activity tends to spread out throughout the day. This shows that as aircraft operations increase so, too, does the level of passenger traffic. Absent historic passenger activity, the projected peak hour passenger totals are expected to reflect design day or PMAD operational trends at the facility. In 2013, K81 is expected to experience approximately 9 peak hour passengers. Ultimately, the airport is anticipated to accommodate 10 peak hour passengers during normal operating conditions.

Table 2.6
Peak Hour Passenger Demand, 2013-2033

Peaking Elements	2013	2018	2023	2028	2033
Annual Operational Demand	12000	12500	13000	13500	14000
Peak Month Demand	1400	1500	1600	1600	1700
Design Day Demand	48	50	54	54	56
Peak Hour Passengers	9	9	10	10	10

Note: Figures rounded to the nearest tenth or hundred for planning purposes.

Source: Lochner

ULTIMATE CRITICAL AIRCRAFT

Critical Aircraft

The critical aircraft is the largest airplane within a composite family of aircraft conducting at least 500 itinerant operations (combination of 250 takeoffs and landings) per year at the airport. The critical aircraft is evaluated with respect to size, speed, and weight, and is important for determining airport design and safety area standards, as well as structural and equipment needs for the airfield and terminal area facilities. **Table 2.7** provides information regarding the future critical aircraft for Miami County. The King Air 200 is considered to be the ultimate aircraft at the airport, and has an Airport Reference Code (ARC) of B-II. Small jets and turbine aircraft like the King Air 200 already utilize the airport, but not at significant levels. Given the county's rapid and continued economic growth, and the airport's continued growth in airport activity, it is expected that larger aircraft with longer ranges will be utilizing the airport to conduct business in the county and surrounding areas. The King Air 200 was chosen because it already utilizes the airport, and is common aircraft for business in the region.

Table 2.7
Critical Aircraft Information— Beechcraft King Air 200 (ARC B-II)

Characteristic	Specifications/ Performance
Wing Span	54 ft. 6 in.
Length	43 ft. 9 in.
Height	15 ft. 0 in.
Seating (Crew + Pax)	2 + 5/7
Maximum Takeoff Weight (MTOW)	12,500 lb.
Normal Approach Speed	103 knots
Takeoff Field Length*	2,579 feet
Landing Distance**	2,845 feet
Max. Range Performance***	1,974 NM

(*) MTOW, sea level, standard temperature.
(**) Max. landing weight, sea level, standard temperature, 125 KIAS.
(***) 5 passengers and reserves.

Source: Hawker Beechcraft, Wichita, Kansas; Burns & McDonnell, Aircraft Characteristics, 8th Edition.

DEMAND FORECAST SUMMARY

The Miami County Airport is expected to have an increase in based aircraft by 8 units in the 20-year planning period, with a growth rate of 2.0 percent per year. Annual operations are also expected to increase in the 20-year period from the current level of approximately 10,000 operations to approximately 14,000 operations in 2033. Local operations will represent approximately 62 percent of total operations and itinerant totaling 38 percent throughout the 20 year planning period. By 2033, local operations will likely reach an approximate 8,700 operations. By the end of the 20-year planning period, K81 is expected to have approximately 199 Annual Instrument Approach operations.

The peak months of operations at the airport are expected to remain in the months of July through September. Peak hours of operations at K81 are likely to represent approximately 12 percent of total operations, or 6 operations during peak hours in 2013 and 7 operations during peak hours in 2033. Peak hourly passenger activity is expected to grow at a similar rate from approximately 9 peak hour passengers in 2013 to 10 peak hour passengers in 2033.

Table 2.8 summarizes various demand forecast elements of the projected activity at the Miami County Airport throughout the 20-year planning period.

Table 2.8
Demand Forecast Summary, 2013-2033

Forecast Element	Existing	2013	2018	2023	2028	2033
Based Aircraft						
Single-Engine Aircraft (A-I)	20	23	24	25	26	27
Multi Engine Piston Aircraft (A-I)	0	1	1	1	1	1
Multi-Engine Turbine Aircraft (B-II)	0	0	0	0	0	0
Business Jet Aircraft (B-II/C-II)	0	0	0	0	0	0
Total Based Aircraft	20	24	25	26	27	28
Annual Operations						
Local Operations	6,200	7,400	7,700	8,100	8,400	8,700
Itinerant Operations	3,700	4,500	4,700	4,800	5,000	5,200
Military Operations	100	100	100	100	100	100
Total Annual Operations	10,000	12,000	12,500	13,000	13,500	14,000
Annual Instrument Approaches						
Total Annual Operations	10,000	12,000	12,500	13,000	13,500	14,000
Itinerant/Transient Operations	3,800	4,600	4,800	4,900	5,100	5,300
Percent IFR Pilots	55.03%	52.2%	53.1%	53.5%	53.1%	51.9%
Percent IMC Conditions	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%
Actual AIA Operations	151	171	182	190	196	199
PMAD Operational Demand						
Annual Operational Demand	10,000	12000	12500	13000	13500	14000
Peak Month (PMAD) Operations	1,200	1400	1500	1600	1600	1700
Design Day (PMAD) Operations	40	48	50	54	54	56
Peak Hour Operations	5	6	6	6	6	7
Peak Hour Passenger Demand						
Annual Operational Demand	10,000	12000	12500	13000	13500	14000
Peak Month Demand	1,200	1400	1500	1600	1600	1700
Design Day Demand	40	48	50	54	54	56
Peak Hour Passengers	7	9	9	10	10	10

Source: Lochner

The demand forecasts, combined with the inventory data, will be used to identify the 20-year facility requirements for the Miami County Airport. The next chapter, Airport Facility Requirements, identifies the types and extent of airfield and terminal area facilities needed to adequately accommodate the demand levels identified in this chapter.

CHAPTER THREE

AIRPORT FACILITY REQUIREMENTS

Chapter Three
Airport Facility Requirements

INTRODUCTION

This chapter identifies the airfield and terminal area facilities needs in long and short range planning throughout the 20 year planning period. Facility needs have been identified based on the accumulation of inventory information, forecast aviation demand, and peak period activity analyses; and planned in accordance with FAA airport design criteria. This chapter is essentially our recommendation to the airport for future development in accordance with demand expectations. The recommendations in this chapter are not required actions for the airport.

AIRFIELD AND AIRSPACE REQUIREMENTS

The determination of airfield and airspace requirements includes an assessment of the airport's ability to accommodate projected activity levels, analysis of its compliance with design and safety standards, and a determination of design standards for new facilities or the improvement of existing facilities. Airfield and airspace components include runway requirements, such as dimensional criteria, length, width and pavement strength; taxiway requirements, markings, lighting; Instrument Approach Procedures (IAP) and facilities; and weather reporting needs.

Primary Runway Requirements

Existing and future runway needs will be examined with respect to dimensional criteria, orientation, length, width and pavement strength. Ultimate primary runway requirements for Miami County were prepared pursuant to FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, Change 18 and FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*.

Primary Runway Designation

The primary runway at an airport is the runway that is considered to have the highest amount of operations. This typically would be the runway that can accommodate the greatest variance of weather and wind conditions. The Miami County Airport currently has two runways, Runway 3-21 and Turf Crosswind

View of Runway 13-31.
Image Source: Lochner.

Runway 15-33. Runway 3-21 achieves 87.89% wind coverage, is the largest runway at 3,400 feet long by 60 feet wide, and is an all weather runway. **Therefore, Runway 3-21 is considered the existing and ultimate primary runway.**

Dimensional Criteria

The existing Airport Reference Code (ARC) for K81 is B-I which is expected to accommodate aircraft weighing less than 12,500 pounds. The primary runway is currently rated at 12,500 pounds single-wheel gear (SWG). The ultimate critical aircraft for Miami County is a Beechcraft King Air 200 (ARC B-II). **Therefore, it is recommended that the dimensional criteria for K81 be capable of safely accommodating small airplanes with fewer than 10 passenger seats with a maximum certificated takeoff weight of 12,500 pounds or less, or ARC B-II. Table 3.1** illustrates the dimensional standards for the primary runway required for future ARC B-II classification.

Length

The determination of runway length requirements for general aviation airports such as K81 is typically derived from FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*. AC 150/5325-4B provides guidance for determining runway lengths for small airplanes with fewer than 10 passenger seats weighing 12,500 pounds or less. Runway length requirements may also be influenced by referencing the specific needs of the critical aircraft operating at the airport.

Runway lengths for small airplanes with fewer than 10 passenger seats consider performance curves of aircraft including maximum takeoff and landing weights, headwind components, optimal flap settings for normal operations, as well as elevation above mean sea level and mean maximum daily temperature for the airport. **Considering the ultimate critical aircraft identified for K81, FAA AC 150/5325-4B, Figure 2-1 recommends the ultimate primary runway to have a usable length of 4,000 feet.**

Table 3.2 illustrates the runway length requirements for aircraft operating at K81 taking into consideration varying operational variables.

Table 3.1
Ultimate Primary Runway Dimensional Standards

Runway Item	Ultimate Runway Standards (Ft.) ARC B-II	
Runway Width	75	
Runway Safety Area (RSA): RSA width RSA length beyond runway end	 150 300	
Object Free Area (OFA): OFA width OFA length beyond runway end	 500 300	
Obstacle Free Zone (OFZ): ROFZ width ROFZ length beyond runway end	 250 200	
	Approach Visibility Minimums	
	Not Lower than 1-Mile	3/4 Mile
Runway Protection Zone (RPZ): Inner width Outer width Length	 500 700 1,000	 1,000 1,510 1,700
Runway to Parallel Taxiway CL Runway CL to Aircraft Parking Runway to Taxiway Hold Line	240 250 200	240 250 200

Runway Safety Area (RSA): The RSA is a two-dimensional surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of undershoot, overshoot or excursion from the runway.
Object Free Area (OFA): The OFA is a two-dimensional area on the ground centered on the runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for those that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.
Runway Obstacle Free Zone (ROFZ): The OFZ is the airspace below 150 feet above the established airport elevation and centered on the runway centerline that is required to be clear of all objects, except for frangible visual post mounted NAVAIDS expressly located in the OFZ by function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches.
Runway Protection Zone (RPZ): The purpose of the RPZ is to enhance the protection of people and property on the ground, and to prevent obstructions to aircraft. The RPZ is a two-dimensional trapezoid area beginning 200 feet beyond the paved runway end, and extends along the runway centerline. The RPZ size is determined by the aircraft approach category of airplanes expected to utilize the airport, as well as the type of instrument approach or minimum visibility to the runway ends. The FAA recommends that airport sponsor own the RPZ property in fee simple, and that the RPZ be clear of any non-aeronautical structure of public assembly or object that would interfere with the arrival and departure of aircraft.

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

Table 3.2
Runway Length Requirements Summary

Airport and Runway Data	Variable	
Airport Elevation (mean sea level - MSL)	940 feet	
Mean Daily Maximum Temperature of the Hottest Month	89.8 F	
Existing Critical Aircraft	Beechcraft Barron B58	
Ultimate Critical Aircraft	Beechcraft King Air 200	
Runway Lengths for Small Airplanes with Fewer than 10 Passenger Seats Weighing 12,500 lbs. or Less	**Existing Length (Feet)**	**B-II**
Runway 3-21	3,400	4,000
Runway Lengths for Airplanes w/ MTOW Less than 12,500 lbs.	**Existing Length (Feet)**	**A-I (95% of Fleet)**
Crosswind Runway 15-33	2,572	3,300
Turf Crosswind Runway 15-33 - Small Airplanes Only	--	1,800

GA- General Aviation
MTOW- Maximum Takeoff Weight

Source: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design, Figure 2-1, Small Airplanes with Fewer than 10 Passenger Seats; Figure 2-2, Small Airplanes Having 10 or More Passenger Seats.*

Width

The required runway width is a function of approach visibility minimums and the facility's Airport Reference Code (ARC). The ARC is a combination of the critical airplane's approach category (approach speed) and airplane design group (wingspan). Currently the primary runway at K81 has a standard width of 60 feet, the recommended width for an ARC B-I runway. The future Airport Reference Code for Runway 3-21 is ARC B-II. A B-II runway is expected to have a width of 75 feet. **The ultimate primary runway is recommended to accommodate B-II aircraft, expanding to a width of 75 feet.**

Wind Coverage

The orientation of a runway is foremost determined by the prevailing winds in the region and oriented for an acceptable crosswind component for the design aircraft. For planning purposes, the primary runway is expected to have at least 95 percent coverage for A-I and B-I aircraft with a crosswind component of 10.5 knots, 13.0 knots for A-II and B-II, and 16.0 knots for ARC A-III, B-III and C-I to D-III general aviation aircraft. If the primary runway does not meet these criteria, the FAA recommends a crosswind runway to be available. Runway 3-21 at K81 achieves 87.89 percent coverage for all weather wind conditions at 10.5

knots. Turf Crosswind Runway 15-33 achieves 89.56 percent coverage for the same conditions. Together the runway system at K81 provides 98.17 percent wind coverage for all weather conditions at 10.5 knots. While the combined wind coverage at Miami County meets the FAA's preferred 95 percent, the crosswind runway is not an all-weather runway. **Because the primary runway does not achieve 95 percent coverage at 10.5 knots alone, the Miami County should consider to reconstruct the crosswind runway as a paved, all-weather runway capable of accommodating aircraft in wet conditions.**

Pavement Design Strength

The required pavement design strength is an estimate based on average levels of activity and is expressed in terms of aircraft landing gear type and geometry (i.e., load distribution). The pavement design strength is not the maximum allowable weight; limited operations by aircraft heavier than the critical aircraft may be permissible.

The ultimate critical aircraft at the Miami County Airport, the Beechcraft King Air 200, has a MTOW of 12,500 pounds. Runway 3-21's current weight bearing capacity is 12,500 pounds Single Wheel Gear (SWG). **It is recommended that in the future, the airport be capable of a pavement design strength of 12,500 pounds SWG and 30,000 Dual Wheel Gear (DWG) during the 20-year planning period.**

Crosswind Runway Requirements

Existing and future runway needs will be examined with respect to dimensional criteria, orientation, length, width and pavement strength. Ultimate crosswind runway requirements for Miami County were prepared pursuant to FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, Change 18 and FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*.

Dimensional Criteria

The existing Airport Reference Code (ARC) for K81 is B-I which is expected to accommodate aircraft weighing 12,500 pounds or less. The ultimate critical aircraft for Miami County is a Beechcraft King Air 200 (ARC B-II). However, Turf Crosswind Runway 15-33 is an A-I (Small Aircraft Only) runway, designed to accommodate small aircraft weighing less than 12,500 pounds (SWG). The existing runway does not have sufficient length to accommodate B-I aircraft, or even many in the A-I category. **In the long range, it is recommended to consider that Turf Crosswind**

Table 3.3
Ultimate Crosswind Runway Dimensional Standards

FAA Design Standards Runway Item	ARC A-I (Ft.)	Turf
Runway Width	60	120
Runway Safety Area (RSA):		
RSA width	120	120
RSA length beyond runway end	240	240
Object Free Area (OFA):		
OFA width	400	250
OFA length beyond runway end	240	240
Obstacle Free Zone (OFZ):		
ROFZ width	250	250
ROFZ length beyond runway end	200	200
Runway Protection Zone (RPZ):		
Inner width	500	250
Outer width	700	450
Length	1000	1000
Runway to Parallel Taxiway CL	240	150
Runway CL to Aircraft Parking	200	125
Runway to Taxiway Hold Line	200	125

Runway Safety Area (RSA): The RSA is a two-dimensional surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of undershoot, overshoot or excursion from the runway.
Object Free Area (OFA): The OFA is a two-dimensional area on the ground centered on the runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for those that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.
Runway Obstacle Free Zone (ROFZ): The OFZ is the airspace below 150 feet above the established airport elevation and centered on the runway centerline that is required to be clear of all objects, except for frangible visual post mounted NAVAIDS expressly located in the OFZ by function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches.
Runway Protection Zone (RPZ): The purpose of the RPZ is to enhance the protection of people and property on the ground, and to prevent obstructions to aircraft. The RPZ is a two-dimensional trapezoid area beginning 200 feet beyond the paved runway end, and extends along the runway centerline. The RPZ size is determined by the aircraft approach category of airplanes expected to utilize the airport, as well as the type of instrument approach or minimum visibility to the runway ends. The FAA recommends that airport sponsor own the RPZ property in fee simple, and that the RPZ be clear of any non-aeronautical structure of public assembly or object that would interfere with the arrival and departure of aircraft.

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

Runway 15-33 be capable of accommodating A-I small airplanes with approach speeds of 50 knots or more with maximum certificated takeoff weight of 12,500 pounds or less. Table 3.3 illustrates the dimensional standards for the crosswind runway required for future ARC A-I classification.

Length

As previously mentioned, the determination of runway length requirements for general aviation airports such as K81 is typically derived from FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*. AC 150/5325-4B also provides guidance for determining runway lengths for small airplanes (12,500 lbs and less) with fewer than 10 passenger seats. **According to FAA AC 150/5325-4B, it is recommended that a Paved Crosswind Runway 15-33 have a usable length of 3,300 feet.** Following the same Advisory Circular, the runway length may be determined by applying the recommended runway length from airplane flight manuals for the airplanes to be accommodated by the runway. The primary user of a turf runway is a small single-engine aircraft like the Cessna 172 Skyhawk. At the Miami County Airport, the runway distance needed to clear a 50 foot obstacle would be approximately 1,800 feet. **Therefore, should it be elected to maintain Turf Crosswind Runway 15-33 as a turf surface, a distance of 1,800 feet is recommended to accommodate small aircraft.**

Width

The required runway width is a function of approach visibility minimums and the facility's ARC. The ARC is a combination of the critical airplane's approach category (approach speed) and airplane design group (wingspan). Turf Crosswind Runway 15-33 has a current width of 120 feet. By definition of ARC A-I, a runway width of 60 feet would be sufficient for a paved surface. However, the FAA Central Region Airports Division has released guidance on the design of turf runways. According to the guidance, Unpaved (Turf) Runways Criteria, the width of the turf runway should correspond to the width of the Runway Safety Area (RSA). At K81, this would be 120 feet wide. The airport already maintains the RSA for Turf Crosswind Runway 15-33, though the Airport 5010 Inspection does not reflect this. **It is recommended that the airport update the runway width for the Airport/Facility Directory, and maintain Turf Crosswind Runway 15-33 at 120 feet wide in the short range planning term.**

Ultimately the Miami County Airport is recommended to achieve 95 percent wind coverage utilizing two all weather paved runways. **Should Turf Runway 15-33 be paved, it is recommended to design the runway to 60 feet wide according to ARC A-I standards.**

View of Turf Crosswind Runway 15-33. Image Source: Lochner.

Taxiway leading to Runway 3
Image Source: Lochner.

Design Strength
As previously mentioned, the required pavement design strength is an estimate based on average levels of activity and is expressed in terms of aircraft landing gear type and geometry (i.e., load distribution). The pavement design strength is not the maximum allowable weight; limited operations by aircraft heavier than the critical aircraft may be permissible. Turf Crosswind Runway 15-33's current weight bearing capacity is for small aircraft only weighing less than 12,500 pounds Single Wheel Gear (SWG). **Should it be paved, it is recommended that the crosswind runway obtain a pavement design strength of 12,500 pounds SWG or less with the construction of a paved runway.**

Taxiway Requirements

The taxiway system exists expressly to serve as a defined path to accommodate the movement of aircraft to and from the runway, as well as to serve as a transit system between the airside and terminal area. This section will evaluate the capability of the future taxiway system at K81 to accommodate ultimate demand activity.

Miami County's taxiway system was previously described in Chapter One, *Airport Inventory*. Parallel taxiways generally help alleviate traffic congestion issues, lower runway incursion risk, and can also provide lower instrument approach minimums. The Miami County Airport does not currently have a taxiway serving the Runway 21 end or Runway 15 end. In order to reach these runway ends, aircraft must taxi down the runway, temporarily restricting the runway for use by other aircraft landing or taking off. This currently causes lines to form that can extend to the aircraft parking apron and creates unsafe operating conditions. **It is recommended to construct a parallel taxiway for Runway 3-21 in the short-term planning period (0-5 years), and for the ultimate Crosswind Runway 15-33 within the 20-year planning period following a potential reconstruction to an all-weather runway.**

Based on projected operational demand, the ultimate recommended taxiway width is 35 feet for Airplane Design Group (ADG) II aircraft, while the runway centerline to taxiway centerline separation distance is recommended to be 240 feet for a parallel taxiway on the primary runway, and the same distance for the crosswind runway.

K81 Terminal Building
Image Source: Lochner.

TERMINAL AREA REQUIREMENTS

Terminal area facility components are comprised of the passenger terminal building, auto parking, aircraft hangars, aircraft parking apron, as well as support facilities including fuel storage capabilities.

Terminal Building

The terminal building acts as the junction between air and ground transportation for passengers and pilots. It should safely and efficiently allow the transference of passengers and their baggage, and accommodate pilots with information and resources to help ensure safe operations. Any future expansion of the terminal building should weigh the potential benefit with associated costs, and should consider the allowable funding levels.

The terminal building at K81 is discussed in Chapter One, *Terminal Area Facilities*. The recommended terminal building functional areas including square footage and parking facilities were determined by referring to FAA Advisory Circular (AC) 150/5360-13, *Planning and Design for Airport Terminal Facilities*, as well as FAA AC 150/5390-9, *Planning and Design of Terminal Facilities at Non-Hub Locations*. **Table 3.4** summarizes the ultimate terminal building spatial requirements for K81 throughout the 20-year planning period.

While the terminal building measures approximately 35′ x 80′, the based restaurant utilizes most of that space. A single room in the terminal building is reserved for aviation purposes, and it measures approximately 20′ x 20′.

In the first half of the long-term development period (2023-2033), the terminal building at Miami County Airport is expected to have a 500 square foot deficit in terminal building space. By 2033, there is expected to be a deficit of 700 square feet. The existing terminal building is in good condition and has optimal location. **It is recommended to expand the terminal building or construct a new building to meet both aviation and restaurant demand during the 20-year planning period.**

Table 3.4
Terminal Building Requirements, 2013-2033

Operational Activity/Factors	2013	2018	2023	2028	2033
Annual Operational Demand (Operations)	12,000	12,500	13,000	13,500	14,000
Peak Month (PMAD)Operations	1,400	1,500	1,600	1,600	1,700
Design Day Operations	48	50	54	54	56
Peak Hour Passengers	6	6	6	6	7
Square Feet/Peak Hour Passenger	150 sq. ft.				
Terminal Bldg. Spatial Needs (sq. ft.)	900	900	900	900	1,100
Existing Terminal Building Size*	400 sq. ft.				
Terminal Building Surplus/(Deficit) (sq. ft.)	(500)	(500)	(500)	(500)	(700)

Note: Figures rounded to the nearest hundred for planning purposes.
Note: Peak month and peak hour passenger activity is based on peaking characteristics that are assumed to be 12 percent of the annual activity for K81.
*Existing square footage includes only the pilot lounge/briefing room. Most of the terminal building is occupied by a restaurant.

Source: Lochner; FAA AC 150/5360-13 and FAA AC 150/5390-9.

Auto Parking

The existing auto parking facilities at K81 are described in Chapter One, *Terminal Area Facilities*. Public auto parking space requirements are based on FAA AC 150/5360-13, *Planning and Design for Airport Terminal Facilities*. In determining the future auto parking needs, 1.5 spaces are allotted per peak hour passenger and 350 square feet per parking space, including maneuvering area, is provided. **Table 3.5** summarizes the ultimate auto parking needs during normal airport operating conditions.

In 2033, the Miami County Airport is expected to have demand for 11 parking spaces. By 2033 there is expected to be a surplus of approximately 19,900 square feet of parking space. The parking lot at K81 also accommodates customers at the based restaurant and is recommended to contiune such support. **It is recommended that the airport maintain its current auto parking area, and provide at least 11 parking spaces for airport users.**

Aircraft Hangars

The hangar facilities at the Miami County Airport were discussed in Chapter One, *Airport Inventory*. Hangar storage requirements will include a determination of a recommended number of future hangar spaces and spatial requirements for T-hangars and box hangars.

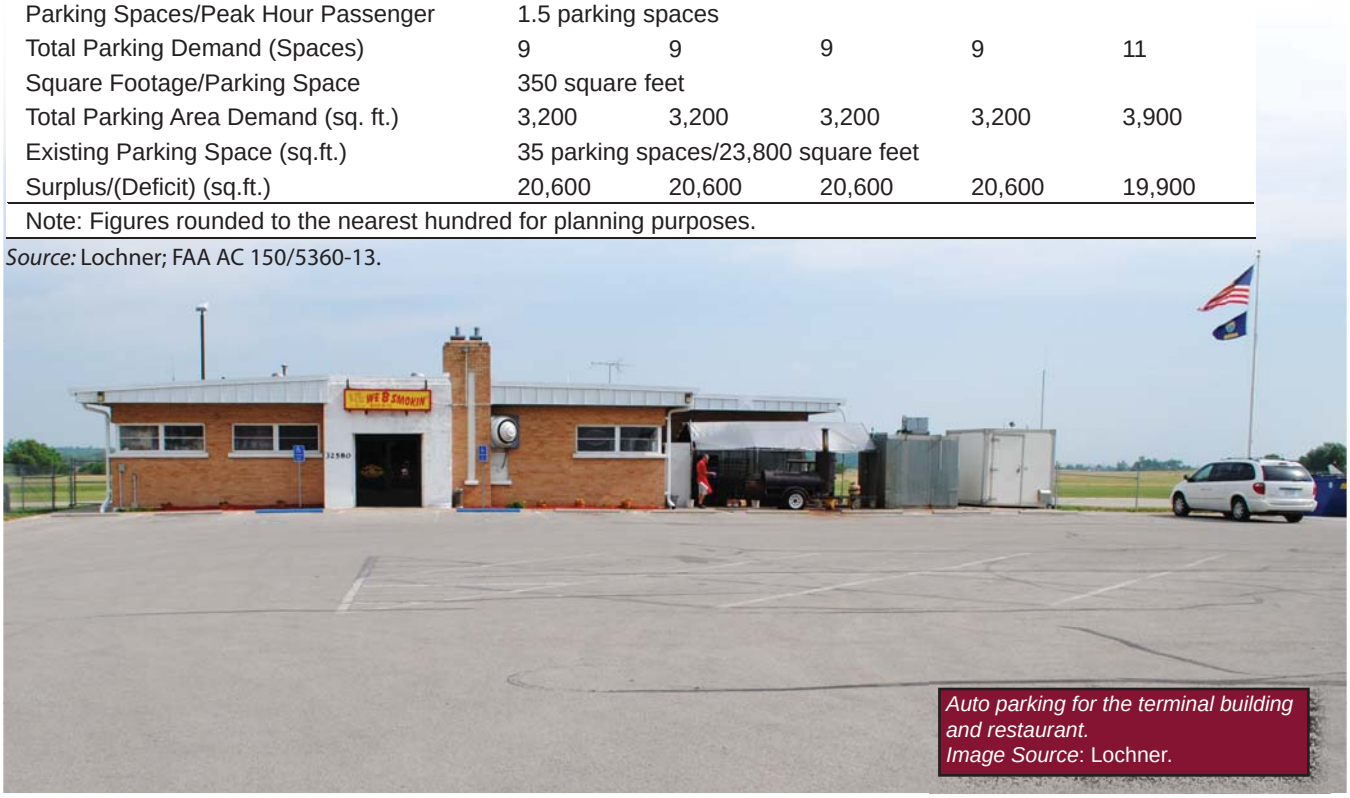
The K81 demand forecasts projected 43 based aircraft including 41 single-engine and 2 twin-piston airplanes in 2033. Therefore, it is recommended that ultimately the airport accommodate hangar storage space for 43 airplanes, or an additional 18 aircraft beyond the current 25 based airplanes. Of these aircraft, approximately 80 percent will be presumably stored in T-hangars, while the remaining 20 percent are projected to be stored in box hangars. This ratio may change in the future as demand is met at the airport.

Table 3.5
Daily Auto Parking Requirements, 2013-2033

Operational Activity/Factors	2013	2018	2023	2028	2033
Peak Hour Passengers	6	6	6	6	7
Parking Spaces/Peak Hour Passenger	1.5 parking spaces				
Total Parking Demand (Spaces)	9	9	9	9	11
Square Footage/Parking Space	350 square feet				
Total Parking Area Demand (sq. ft.)	3,200	3,200	3,200	3,200	3,900
Existing Parking Space (sq.ft.)	35 parking spaces/23,800 square feet				
Surplus/(Deficit) (sq.ft.)	20,600	20,600	20,600	20,600	19,900

Note: Figures rounded to the nearest hundred for planning purposes.

Source: Lochner; FAA AC 150/5360-13.



Auto parking for the terminal building and restaurant.
Image Source: Lochner.

T-Hangars

In determining the ultimate T-hangar storage requirements for K81, it was assumed that 90 percent of the based single and multi-engine piston powered aircraft (18) would be provided enclosed T-hangar space in the future. However, this assumption may differ from actual future hangar arrangements. Generally, single and multi-engine aircraft require approximately 1,250 square feet of space.

By 2033, it is recommended that an additional 2,500 square feet and 2 T-hangar storage units be developed in an effort to accommodate projected demands in addition to the airport's current T-hangar facilities. Ultimately, K81 is expected to host 32 T-hangar storage spaces totaling 31,600 square feet of space. Table 3.6 summarizes the T-hangar storage requirements throughout the planning period.

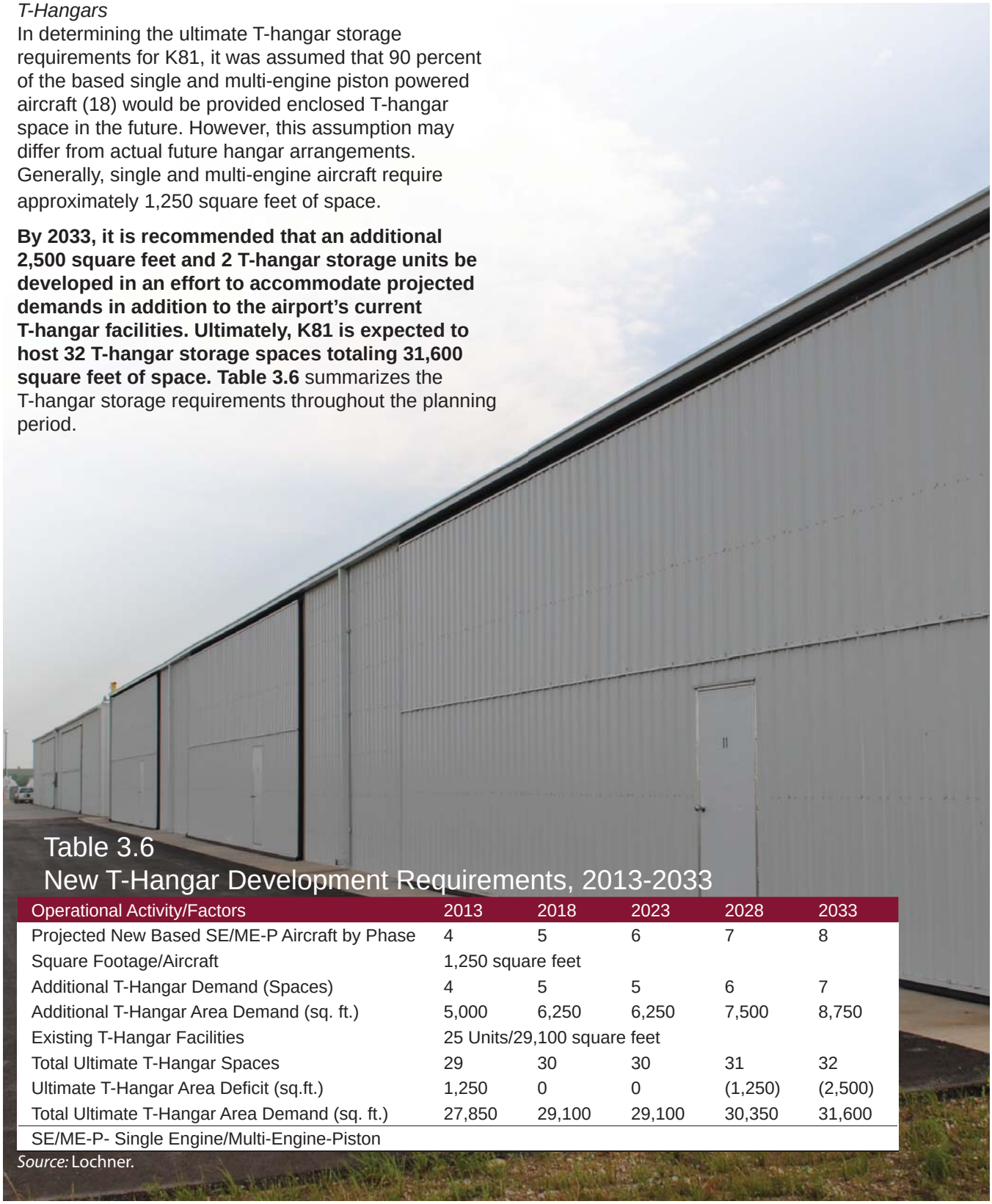


Table 3.6
New T-Hangar Development Requirements, 2013-2033

Operational Activity/Factors	2013	2018	2023	2028	2033
Projected New Based SE/ME-P Aircraft by Phase	4	5	6	7	8
Square Footage/Aircraft	1,250 square feet				
Additional T-Hangar Demand (Spaces)	4	5	5	6	7
Additional T-Hangar Area Demand (sq. ft.)	5,000	6,250	6,250	7,500	8,750
Existing T-Hangar Facilities	25 Units/29,100 square feet				
Total Ultimate T-Hangar Spaces	29	30	30	31	32
Ultimate T-Hangar Area Deficit (sq.ft.)	1,250	0	0	(1,250)	(2,500)
Total Ultimate T-Hangar Area Demand (sq. ft.)	27,850	29,100	29,100	30,350	31,600
SE/ME-P- Single Engine/Multi-Engine-Piston					

Source: Lochner.

Box Hangars

In determining the ultimate box hangar storage requirements for Miami County, it was assumed that the remaining 10 percent of based aircraft would prefer private box hangars. Again, this assumption may differ from actual future hangar arrangements. Generally, a well equipped box hangar for smaller aircraft totals approximately 3,000 square feet of space and/or measures 50' x 60'. **Table 3.7** summarizes the box hangar storage requirements for K81 throughout the planning period.

By 2033, it is recommended that 3,000 square feet and one new box hangar be developed in an effort to accommodate projected demands in addition to the airport's current box hangar facilities. Ultimately, K81 is expected to have demand for 6 box hangar units totaling approximately 25,450 square feet of space.

The total demand for hangar storage capacity for Miami County in 2033, including T-hangars and box hangars, is expected to total approximately 57,100 square feet and accommodate 28 airplanes depending on the configuration and location of aircraft storage.

Table 3.7
New Box Hangar Development Requirements, 2013-2033

Operational Activity/Factors	2013	2018	2023	2028	2033
Projected New Based SE/ME-P Aircraft by Phase	4	5	6	7	8
Square Footage/Aircraft	3,000 square feet (50' x 60')				
Box Hangar Demand (Spaces)	0	0	1	1	1
Box Hangar Area Demand (sq. ft.)	0	0	3,000	3,000	3,000
Existing Box Hangar Facilities	5 Units/22,450 square feet				
Total Ultimate Box Hangar Spaces	5	5	6	6	6
Total Ultimate Box Hangar Area (sq. ft.)	22,450	22,450	25,450	25,450	25,450
SE/ME-P- Single Engine/Multi-Engine-Piston					

Source: Lochner.

Box hangars located in the eastern hangar area at K81.
Image Source: Lochner.

The aircraft parking apron at K81.
Image Source: Lochner.

Apron Areas and Tie-Downs

The apron areas and tie-downs and corresponding square footage estimates were discussed in Chapter One, *Terminal Area Facilities*. The apron area requirements for K81 include spatial needs for based aircraft, as well as apron areas utilized for transient aircraft. Apron area spatial requirements for based single and multi-engine piston aircraft require approximately 755 square yards of apron area taking into account taxilane dimensions for Airplane Design Group (ADG) I aircraft (wingspan up to but not including 49 feet) and 10 feet clearance between wingtips. Additionally, per planning guidelines, approximately five percent of the based ADG I aircraft will be provided with apron space for storage equaling approximately 755 square yards of apron area per ADG I aircraft tie-down space. **Table 3.8** summarizes the based aircraft apron area requirements for the Miami County Airport.

Transient aircraft apron and tie-down space demands were calculated by relying on the airport's historic and projected design day operational activity. For single and multi-engine ADG I aircraft (wingspan up to but not including 49 feet), 755 square yards of apron will be provided. Multi engine turbo-prop and business jet ADG II aircraft (wingspan of 49 feet up to but not including 79 feet) will be afforded approximately 1,075 square yards of apron space per aircraft plus 10 feet of clearance between wingtips. **Table 3.8** also summarizes the transient aircraft apron calculations for K81 throughout the planning period.

Future apron area and tie-down space demand for local and transient aircraft in 2033 is expected to be approximately 3,500 square yards (31,500 square feet) and will include 8 tie-down spaces. **It is recommended that K81 maintain their existing apron throughout the 20-year planning period.**

Table 3.8
Apron Area/Tie-Down Requirements, 2013-2033

Item/Facility	2013	2018	2023	2028	2033
Based Aircraft Apron Area/Tie-Down Demand					
Projected New Based SE/ME-P Aircraft by Phase	4	5	6	7	8
Total Based SE/ME-P Aircraft	24	25	26	27	28
5% of Total Based SE/ME-P Aircraft	1	1	1	1	1
Square Yardage/Aircraft	755 square yards				
Total Based Turbine/Jet Aircraft	0	0	0	0	0
ADG II Based Tie-Down Demand (Spaces)	0	0	0	0	0
Square Yardage/Aircraft	1,075 square yards				
Based Aircraft Tie-Down Demand (Spaces)	1	1	1	1	1
Based Aircraft Apron Area Demand (sq. yd.)	800	800	800	800	800
Transient Aircraft Apron Area/Tie-Down Demand					
Annual Transient Demand (Operations)	4,600	4,800	4,900	5,100	5,300
Peak Month Transient Operations	600	600	600	600	600
Design Day (PMAD) Operations	20	20	20	20	20
Peak Day Arrivals	2	2	2	2	2
Peak Hour Transient Demand (Tie-Downs)*	2	2	2	2	2
Transient Apron Area Demand (sq. yd.)	1,900	1,900	1,900	1,900	1,900
ADG I (wingspan up to but not including 49 feet) Transient Aircraft Apron/Tie-Down Demand					
ADG I Transient Tie-Down Space Demand	1	1	1	1	1
Square Yardage/Aircraft	755 square yards				
ADG I Transient Tie-Down Demand (Spaces)	1	1	1	1	1
ADG I Transient Apron Area Demand (sq. yd.)	800	800	800	800	800
ADG II (wingspan of 49 feet up to but not including 79 feet) Transient Aircraft Apron/Tie-Down Demand					
ADG II Transient Tie-Down Space Demand	1	1	1	1	1
Square Yardage/Aircraft	1,075 square yards				
ADG II Transient Tie-Down Demand (Spaces)	1	1	1	1	1
ADG II Transient Apron Area Demand (sq. yd.)	1,100	1,100	1,100	1,100	1,100
Existing Tie-Down Facilities (Spaces)	17 tie-downs				
Existing Apron Facilities (sq. yd.)	6,100 square yards				
Tie-Down Space Surplus/(Deficit)	14	14	14	14	14
Apron Area Surplus/(Deficit) (sq. yd.)	3,400	3,400	3,400	3,400	3,400

Note: Facility demand estimates rounded to the nearest hundred for planning purposes.
Note: Peak month transient operational activity is assumed to be 12 percent of the annual itinerant activity for K81.
(*) During approximate hours of airport operation, or 12 hours per day.
SE/ME-P- Single Engine/Multi-Engine-Piston
PMAD- Peak Month/Average Day

Source: Lochner.

Fuel Farm at K81.
Image Source: Lochner.

Fuel Storage

Miami County's fueling capabilities were discussed in Chapter One, *Support Facilities*. Fuel flowage estimates in the past year (2010) indicate the airport dispensed approximately 47,724 gallons of 100LL fuel throughout the year. **Table 3.9** summarizes peak fueling levels for 100LL as well as recommended fuel reserves throughout the planning period.

Projected fuel flowage and recommended reserves for 100LL were determined by applying anticipated local growth rates of based aircraft to the base case fuel flowage figures. Fuel demand is expected to increase at a rate of two percent (2.0) throughout the period which is reflective of overall airport operational and piston powered airplane fleet growth estimates.

As a result of the fuel storage needs analysis, K81 is recommended to have no less than 920 gallons of 100LL fuel, in 2033, on hand to accommodate potential peak hour operational activity throughout the 20-year planning period. Once peak day fuel demand, plus reserves, reaches 50 percent capacity, consideration should be given to increasing fuel storage capacity. Taking into account existing fuel storage and peak month fueling activity, the fuel farm is adequate to meet the short-term and long range fueling demands. **The existing fuel storage capacity should be maintained throughout the 20-year planning period.**

Table 3.9

Fuel Storage Requirements, 2013-2033

Fuel Flowage/Factors	2013	2018	2023	2028	2033
100LL Fuel Flowage					
Annual Fueling Demand-100LL (Gal.)	39,300	43,400	47,900	52,900	58,400
Peak Monthly Fueling Demand-100LL (Gal.)	4,700	5,200	5,800	6,400	7,000
Peak Day 100LL Flowage (Gal.)	160	170	190	210	230
Fuel Demand + Reserves (Gal.)*	**640**	**680**	**760**	**840**	**920**
Existing 100LL Storage Capacity	11,000 gallons				

Note: Figures rounded to the nearest ten or hundred for planning purposes.
Note: Peak month fueling demand is assumed to be 12 percent of the annual fueling activity for K81.
(*) Recommended fuel reserves equal Peak Day plus three days.

Source: Airport Fuel Flow Estimates; Lochner Fuel Flowage Extrapolation and Projections.

Airspace Requirements

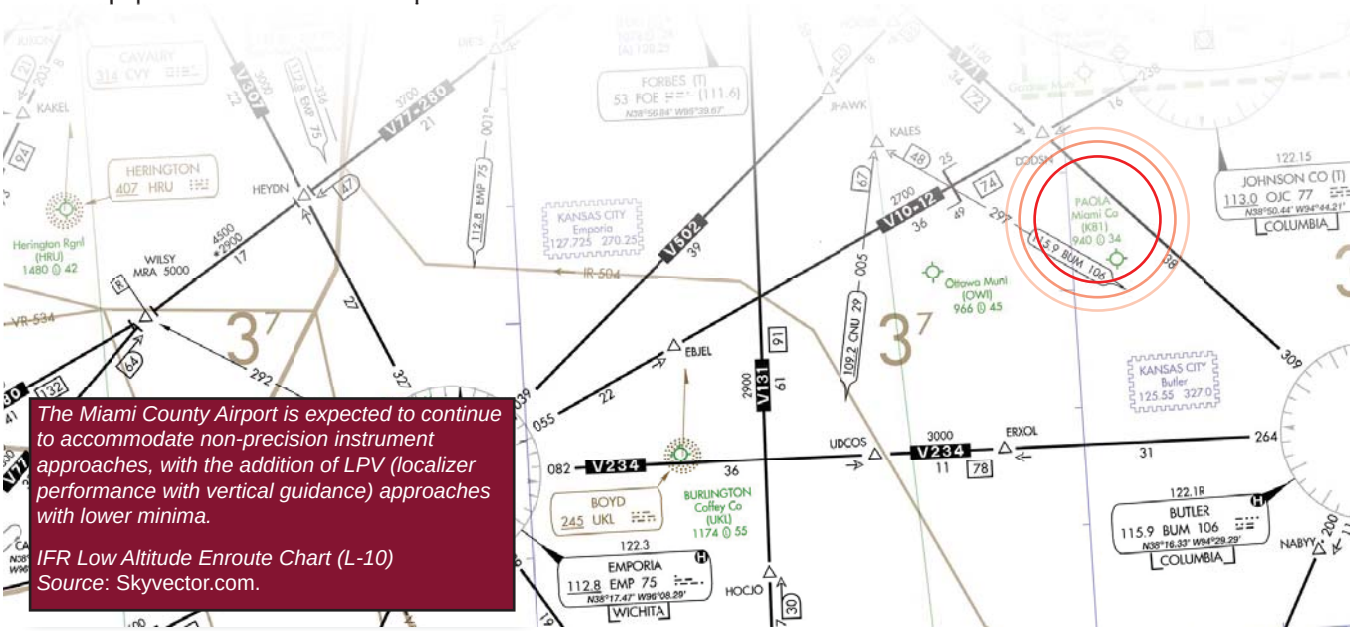
Exhibit 3.1 depicts typical FAR Part 77 imaginary airspace surfaces including the primary surface, horizontal surface, transitional surfaces and approach surfaces. Most importantly, the approach surface is a three-dimensional trapezoidal shaped imaginary surface beyond each runway end having a defined slope. The three slopes for an approach are 20:1, 34:1 and 50:1. The purpose of the approach surface is to provide proper clearance over structures and objects beyond the runway threshold for the safe approach and landing of aircraft based on a specified approach path. Currently, K81 features 20:1 approach slopes in conjunction with non-precision Instrument Approach Procedures (IAPs) to both ends of Runway 3-21. Turf Crosswind Runway 15-33 features 20:1 visual approach slopes to either end. With a King Air 200 (ARC B-II) as the ultimate critical aircraft at K81, the airport's Airport Reference Code will be changing, expanding some of these surfaces. Once Runway 3-21 is expanded to 4,400' x 75', the airport will obtain an ARC B-II rating, and with it 34:1 approach slopes are recommended to protect the airport.

Airport Instrument Approaches

The instrument procedures were introduced in Chapter One, *Airport Inventory*. The Miami County Airport currently has GPS (Global Positioning System) approaches to both ends of Runway 3-21. These procedures rely on a network of satellites that provide accurate spatial location without the need for ground based equipment located at the airport. The national trend of instrument approaches is moving away from ground based instrument procedures such as Very High Frequency Omnidirectional Radio-range with Distance Measuring Equipment (VOR/DME) and Non-Directional Beacon (NDB) approach procedures. Instead, the FAA is supporting these low-maintenance GPS approaches that do not require ground based equipment. Of the different types of GPS approaches, the most capable types are those that provide Lateral and Vertical Navigation (LNAV/VNAV) and Localizer Performance with Vertical Guidance (LPV). **Ultimately, K81 is recommended to maintain their GPS approaches, and consider expanding their LNAV approaches to support VNAV/LPV.**

Approach Visibility Minimums

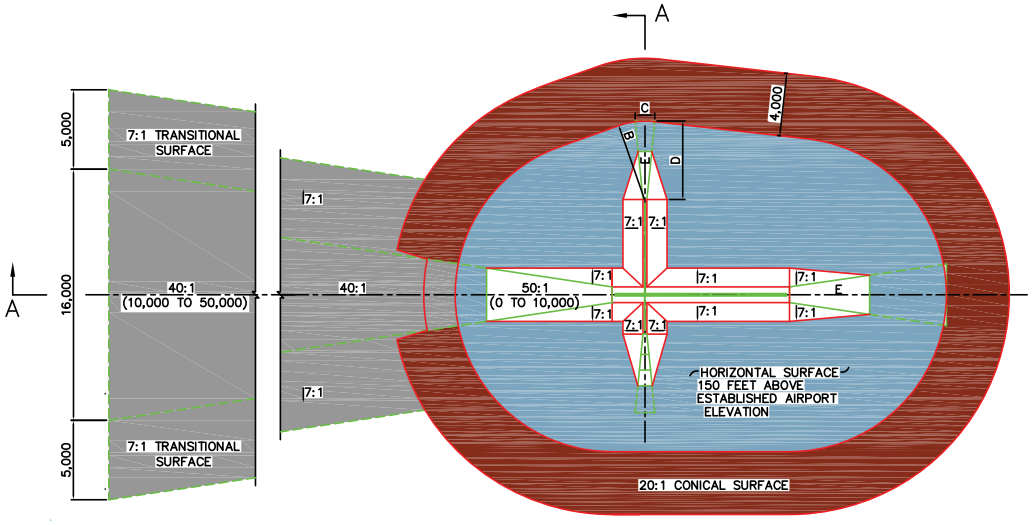
Currently at K81, the lowest instrument approach visibility minimums for IAPs are above 1 statute mile. To lower the visibility minimums an airport can install Approach Lighting Systems (ALS), construct a parallel taxiway, increase runway length, and re-mark the runway with precision runway markings. At the Miami County Airport, it is recommended to re-evaluate approach visibility minimums with the expansion of Runway 3-21 and the construction of a parallel taxiway. **Approach visibility minimums of 3/4 statute mile are recommended for K81 in the 20-year planning period.**



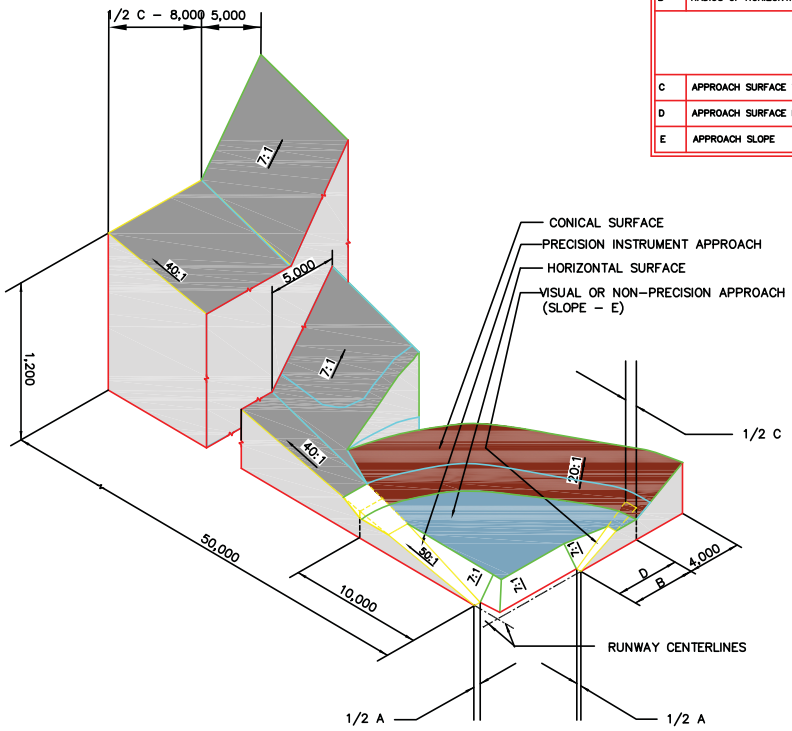
The Miami County Airport is expected to continue to accommodate non-precision instrument approaches, with the addition of LPV (localizer performance with vertical guidance) approaches with lower minima.

IFR Low Altitude Enroute Chart (L-10)
Source: Skyvector.com.

Exhibit 3.1
Part 77 Imaginary Airspace Surfaces



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	A C	A D	
A	WIDTH OF PRIMARY SURFACE & APPROACH SURFACE AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	A C	A D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*



Source: FAR Part 77, Objects Affecting Navigable Airspace.

IMC Wind Analysis

Developing a more precise instrument approach procedure can be costly, especially if the airport is pursuing the installation of an ALS. Therefore it is important to note which runway end is optimal for a more developed instrument approach. The preferred runway end for a more precise IAP is determined by analyzing the Instrument Meteorological Conditions (IMC) wind rose. **Exhibit 3.2** depicts the IMC Wind Rose for the Miami County Airport.

The IMC wind rose for K81 indicates that during instrument conditions the wind blows predominantly from the north. According to the wind analysis in Chapter One, *Airport Inventory*, this southerly wind would be present approximately seven percent of the time at the Miami County Airport. Also noted in the wind analysis, during IMC weather Runway 3-21 achieves 83.09 percent wind coverage at wind speeds of 10.5 knots and Turf Crosswind Runway 15-33 achieves 88.33 percent. Observing runway alignment alone, Runway 33 would be the best suited runway end for a more sophisticated instrument approach. **However, considering surrounding land use and existing airport facilities, Runway 3 is determined to be the best suited runway end to develop a more accommodating instrument approach.**

Markings, Lighting and Weather Reporting

Airfield Markings

Airfield markings were previously described in Chapter One, *Airport Inventory*. **Runway 3-21 is recommended to be marked as a non-precision instrument (NPI) runway. Turf Crosswind Runway 15-33 is recommended to be maintained as a visual basic runway.** Taxiways, taxilanes and apron areas are recommended to be marked in accordance with FAA AC 150/ 5340-1J, *Standards for Airport Markings*.

Airfield Lighting

Airfield lighting at the Miami County Airport was described in Chapter One, *Airfield Facilities*. This section will offer additional information and explanation regarding lighting systems utilized at the airport.

Runway and Taxiway Lighting

It is recommended that K81 follow the guidelines provided by FAA Advisory Circular 150/5340-30C, *Design and Installation Details for Airport Visual Aids,* when installing new runway lighting systems. K81 currently has Medium Intensity Runway Lighting (MIRL) installed on Runway 3-21. **The MIRL on Runway 3-21 should be maintained throughout the 20-year planning period. It is also recommended to maintain the Medium Intensity Taxiway Lighting on the taxiway system, and maintain Turf Crosswind Runway 15-33 as a visual daytime only runway.**

Visual Guidance Indicators

Precision Approach Path Indicators (PAPI) emit a sequence of colored light beams providing continuous visual descent guidance information along the desired final approach descent path (normally at 3 degrees for 3 nautical miles during daytime, and up to 5 nautical miles at night) to the runway touchdown point. **The PAPI-4L systems for Runway 3-21 thresholds are recommended to be maintained throughout the planning period. With the construction of Turf Crosswind Runway 15-33 as a paved runway, it is recommended to install PAPI-4L systems to both runway ends.**

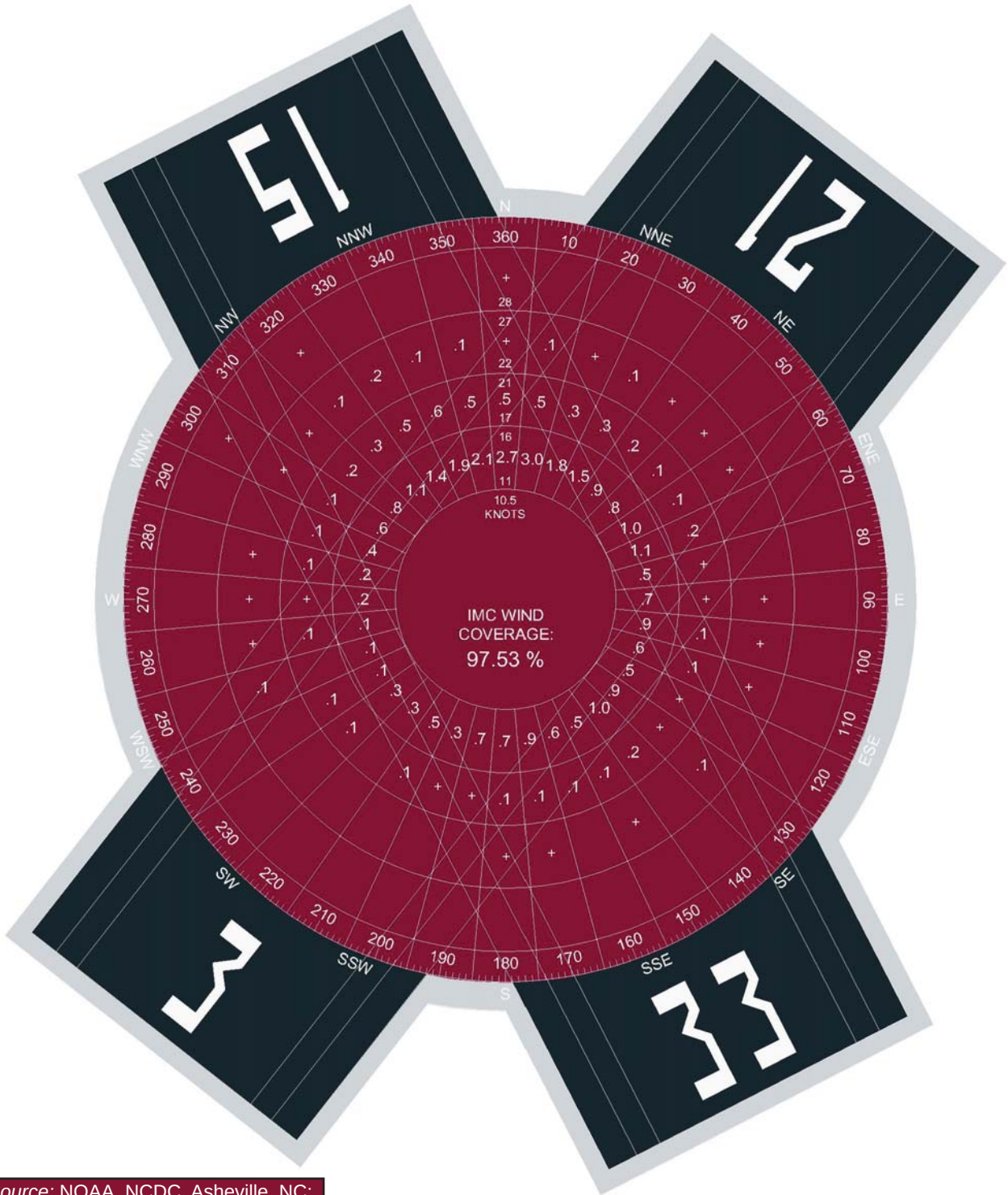
Approach Lighting System

To achieve very low approach minimums, an Approach Lighting System (ALS) would be required to be installed at the airport. Examples of ALS include Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR), Simplified Short-Approach Light System with Runway Alignment Indicator Lights (SSALR), or an Approach Light System with Sequenced Flashing Lights (ALSF). These lighting systems can cost hundreds of thousands of dollars, and are often funded by the FAA through a special application process. The airport should only pursue the acquisition of such systems once there is a local need and the runway system at the airport has developed to at least ARC B-II standards. A GPS LPV approach can achieve visibility minimums as low as 1/2 statute mile. **The Miami County Airport is recommended to maintain their current runway lighting system.**

Airport Beacon

As discussed in *Airport Inventory*, *General Airfield Information*, the airport beacon provides visual airport identification and location during night-time operations, as well as during inclement weather conditions. **It is**

Exhibit 3.2
IMC Wind Rose



Source: NOAA, NCDC, Asheville, NC; Olathe, KS Observations (1997-2008).

recommended that the current airport beacon be maintained in its current location.

Weather Reporting System

Common weather reporting systems at airports are usually either an AWOS (Automated Weather Observation System) or ASOS (Automated Surface Observing System). An AWOS is a suite of sensors which measures, collects and disseminates weather data on a minute-to-minute basis to assist pilots with monitoring weather conditions and flight planning. An AWOS measures weather parameters such as wind speed and direction, temperature and dew point, visibility, cloud ceilings and types, precipitation and barometric pressure, and provides the airport identifier and time of observation. As mentioned in Chapter One, *Airport Inventory*, the Miami County Airport currently does not have an AWOS or ASOS based at the airport. A weather reporting system greatly improves a pilot's situational awareness when either arriving or departing an airport. An AWOS can also be used by local meteorologists, emergency personnel, and individuals to decipher local weather conditions. Having a weather reporting system based at the airport can also improve instrument approaches to the airfield. **The Miami County Airport is recommended to install an AWOS on the airfield in the short range to improve safety and weather awareness.**

Table 3.10
Airfield/Airspace Facility Requirements Summary, 2013-2033

Facility Type	Recommendations
Airfield Dimensional Criteria	
Runway System	Expand to ARC B-II design standards (3-21) Maintain ARC A-I design standards (15-33)
Runway Dimensions (Length)	
Runway 3-21	Construct to 4,000'
Runway 15-33	Construct to 3,300'
Taxiway Requirements	
Parallel Taxiways	Construct full parallel taxiway for Runway 3-21 Construct full parallel taxiway for Runway 15-33
Taxiway System	Maintain or expand to 35 foot width
Marking Requirements	
Runway 3-21	Mark as a non-precision instrument runway
Lighting Requirements	
Runway 15-33 Taxiway system	Install MIRL Install MITL for parallel taxiways
Airspace Requirements	
Weather Reporting System	Install AWOS
Terminal Area Requirements	
Terminal Building T-Hangars Box Hangars	Expand by 700 square feet Construct two (2) T-hangar units (2,500 square feet) Construct one box hangar (3,000 square feet)

ARC- Airport Reference Code; MIRL- Medium Intensity Runway Lighting; MITL- Medium Intensity Taxiway Lighting.

Source: Lochner.

AIRFIELD AND AIRSPACE FACILITY REQUIREMENTS SUMMARY

Table 3.10 summarizes the airfield/airspace facility requirements for K81. Items identified within **Table 3.10** are those that require upgrade or expansion according to design criteria and are based on projected aviation demand. Airfield items not requiring upgrade or are adequate to accommodate estimated activity levels are not identified in the table.

OTHER FACILITY REQUIREMENTS

Other facility requirements are those associated with recommended requirements designed to enhance the airport's level of environmental compliance and/or improvements dedicated to aviation safety or non-aeronautical uses such as future industrial, commercial or potential revenue support areas.

Airport Property and Land Use

Airport property was discussed in Chapter One, *Airport Inventory*. Miami County currently owns 246.57 acres of property surrounding the airport. The land use on this property is compatible with aviation including aeronautical and light commercial usage. The county owns or has easements for all appropriate safety areas, runway protections zones, and most land up to the Building Restriction Lines (BRL). **It is recommended that the county continue ownership and control of this property in the best interest of protecting the airspace of the airport. In cases where property within the BRL is not controlled, it is recommended to purchase an easement to protect the airport.**

FACILITY REQUIREMENTS SUMMARY

The facility requirements chapter identifies the improvements needed at the airport based on the inventory and forecasts. As previously mentioned, the recommendations made in this chapter were determined in consideration of those forecasts and are not required actions. A few of the major improvements identified are:

- A full parallel taxiway should be constructed for Runway 3-21, at a width of 35 feet. In the future, a full parallel taxiway should be constructed for Runway 15-33 after it is reconstructed as an all-weather paved runway.
- Extend Runway 3-21 length to 4,000 feet to accommodate small airplanes having 10 or more passenger seats (ARC B-II).
- Construct Runway 15-33 as a paved all-weather runway measuring 3,300' x 60' to accommodate 95 percent of small airplanes with fewer than 10 passenger seats (ARC A-I).
- Future runway and taxiway developments for Runway 3-21 should adhere to ARC B-II design standards, accommodating aircraft from 12,500 lbs. up to 60,000 lbs. Turf Crosswind Runway 15-33 should be reconstructed to accommodate A-I aircraft, and to support aircraft 12,500 lbs. (SWG) or less.
- Install an Automated Weather Observation System (AWOS) to improve situational awareness and instrument approach procedures (IAPs).
- Expand or reconstruct the terminal building to accommodate an additional 700 square feet of space for aviation purposes.
- Provide hangar space for two (2) T-hangar units and one box hangar.

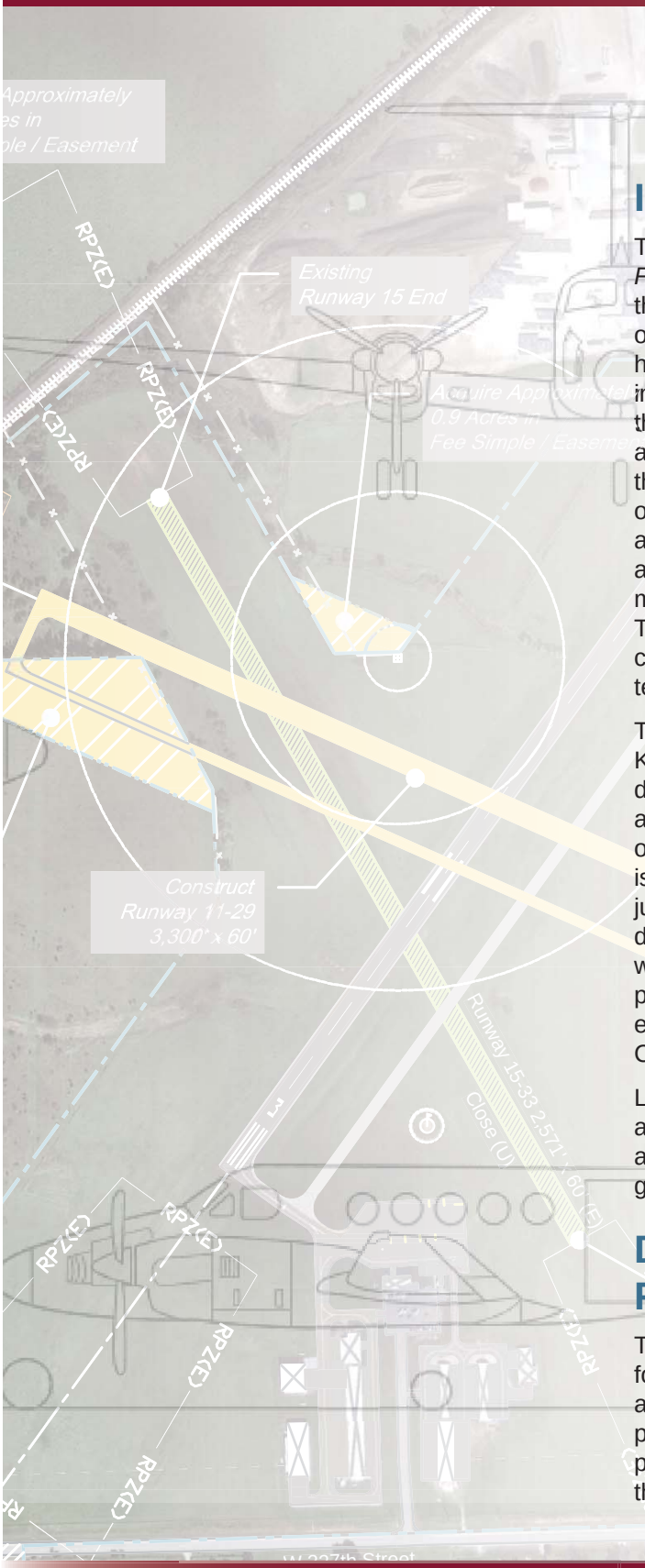
K81

Miami County Airport
Airport Master Plan Update

CHAPTER FOUR

AIRPORT ALTERNATIVES ANALYSIS

Chapter Four
Airport Alternatives Analysis



INTRODUCTION

The previous section of the master plan update, *Airport Facility Requirements*, was completed to determine the airside, landside, and support facility needs of Miami County throughout the 20-year planning horizon. The *Airport Alternatives Analysis* chapter is intended to identify those development alternatives that will allow K81 to accommodate projected aircraft and aviation demand activity. In addition, the focus of this chapter is to evaluate the merits and deficiencies of potential capital development for landside and airside alternatives proposed for the airport. The airside development alternatives analysis will examine multiple runway and taxiway expansion alternatives. The terminal area development alternatives include concepts for the development of hangars and a terminal building.

The capital development alternatives proposed for K81 are intended to serve as the formulation of a development concept rather than the presentation of a final design recommendation. While the assessment of runway and terminal area development alternatives is based on economical, operational and practical judgment, the most favorable airfield and terminal area development option should be the one most compatible with the County's goals and objectives regarding planning initiatives, as well as social, political and environmental considerations pertaining to the Miami County area.

Lastly, the preferred development alternative, based on a judgmental assessment of all factors involved with airport expansion, should be the alternative having the greatest potential for implementation.

DEVELOPMENT ALTERNATIVES FORMULATION

The airfield and terminal area development concepts for K81 resulted from examining the demand forecasts, as well as the facility needs required to accommodate projected aviation activity throughout the planning period. Additionally, the goals and objectives of the County and the Airport Advisory Board were

considered. These goals pertain to terminal area improvements and runway expansion alternatives that are intended to better accommodate Miami County's based aircraft fleet and airport users.

Miami County and the Airport Advisory Board were presented with a total of ten alternative development options. Each element of development included 'no action' options. There were three alternatives for the Runway 3-21 expansion element, three alternatives for the terminal layout element, and four alternatives for the Crosswind Runway 15-33 expansion element. **Ultimately, based on various social, political, environmental and operational considerations, the County and Board elected to pursue an extension of Runway 3-21 to 4,000 feet, an expansion of the terminal area to the east, and a long-term redevelopment of the Crosswind Runway 15-33.**

'NO ACTION' ALTERNATIVES

The 'No Action' Alternative essentially involves maintaining the existing airport element in its current condition while not intending to make further developments or expansions based on project demand at the facility. At the Miami County Airport, 'no action' may be chosen for any of the elements identified for alternatives analysis. If the sponsor chooses 'no action' for any element, it would be assumed that during the 20-year planning period that element would not be developed.

The demand forecasts for Miami County indicate that the airport will experience growth in approximately eight new based aircraft and total 14,000 annual operations by the end of the planning period in 2033. A portion of that increase will include growth in turbine aircraft using the airport, specifically the King Air 200. This demand will have an influence on the need for taxiway expansion, runway expansion, and hangar space.

Given its role within the Kansas state system of airports as a Community Airport, the Miami County Airport primarily serves a supplemental role in local economies; primarily serving smaller business, recreational, and personal flying. Serving this role, the airport looks to increase its capability in accommodating business and medical aircraft by further improving its airfield and terminal area facilities. This will be done by expanding Runway 3-21 dimensions to 4,000' x 75', and constructing a parallel taxiway.

When considering terminal area needs throughout the planning period, the airport is anticipating a need for expansion in hangar space and terminal building space. The airport is recommended to have a total of approximately 57,100 square feet of hangar space to accommodate 28 total aircraft, a need for 1,100 square feet of terminal building space, 3,900 square feet (11 spaces) for auto parking, and 3,500 square yards of pavement for the apron area (eight tie-downs with maneuvering area).

Considering these reasons and issues with safety, operations, and funding; 'no action' alternatives are not considered reasonable alternatives for the primary runway and terminal area while the airport has support from Miami County and the community to invest in its future.

DESIGN CONSIDERATIONS

Expanding the existing airport site involves investing in the current facilities and expanding the airfield and terminal area facilities to accommodate the projected 20-year operational and based aircraft demand found in Chapter Two, *Aviation Demand Forecasts*.

The airport development alternatives were evaluated by the Airport Advisory Board for further consideration. They present a broad range of expansion options and are discussed in the following segments. The airport expansion alternatives are those which are viewed as the most viable development options to serve future demand at K81.

Airport Expansion Considerations

In evaluating the feasibility of expanding the current airport site, several airfield and terminal area and/or landside considerations are key to determining the need and practicality to expanding the K81 airport site.

Pertinent airfield considerations for K81 include:

- Desire to better serve more airport users and larger aircraft with more accommodating airport facilities.
- Meeting new FAA Airport Design AC 150/5325-4B requirements for runway length in consideration of the Ultimate Critical Aircraft.
- Parallel taxiways to improve traffic flow and safety around the runway system.

Pertinent terminal area/landside considerations for K81 include:

- ✈ Expanding the terminal area on existing airport property.
- ✈ Expanding T-hangars and box hangars to meet forecasted demand.

PRIMARY RUNWAY EXPANSION ALTERNATIVES

Both the Primary Runway 3-21 and Turf Crosswind Runway 15-33 were considered in the alternatives analysis at Miami County.

Three runway expansion alternatives were created for the Primary Runway 3-21 and four development alternatives were created for the crosswind runway, all in an effort to accommodate facility needs identified in Chapter Three, *Airport Facility Requirements*. The following discussion highlights the critical elements of each development alternative as presented to Miami County and the Airport Advisory Board.

Primary Runway Alternative 'A'

In this alternative, Runway 3-21 is extended 600 feet to the northeast, the runway is widened to 75 feet, and a full parallel taxiway is constructed. This alternative may require the acquisition of approximately 0.3 acre of land to protect the Runway Protection Zone (RPZ), though it is likely contained within the right-of-way of W. 319th Street. Alternative 'A' would meet the FAA length requirements for aircraft weighing 12,500 pounds or less with fewer than 10 passengers, expanding the Airport Reference Code (ARC) for the runway from B-I to B-II design standards. **This alternative was determined to be the most viable option.**

Primary Runway Alternative 'B'

In Alternative 'B', Runway 3-21 is extended 1,000 feet to the northeast, the runway is widened to 75 feet, and a full parallel taxiway is constructed. With the additional length, the RPZ is pushed farther across W 319th Street, requiring approximately 3.8 acres to be acquired in fee simple, including a residence. This alternative would accommodate ARC B-II aircraft, including small airplanes with 10 passengers.

While the additional runway length Primary Runway Alternative 'B' provides may prove useful to a few Miami County Airport users, the ultimate critical aircraft for the airport is configured for fewer than 10 passengers, not needing the additional length. Additionally, Miami County has already purchased land for the airport to build a 4,000-foot runway. Extending the runway to 4,400 feet would require additional land acquisition and home relocation - a situation the County chooses to avoid when possible. **Primary Runway Alternative 'B' was determined to be unnecessary and not a viable option for K81.**

Primary Runway Alternative 'C'

This alternative considers developing an Instrument Approach Procedure (IAP) to the Runway 3 end with visibility minimum as low as 3/4 mile. This development would expand the RPZ from the existing dimensions of 500' x 1,000' x 700' to ultimate dimensions of 1,000' x 1,700' x 1,510'. This expansion of the RPZ would require the acquisition of approximately 22 acres of land in fee simple including multiple residences. Primary Runway Alternative 'C' also depicts an Approach Lighting System (ALS) with Sequenced Flashing Lights (MASLF) to improve the IAP minimums.

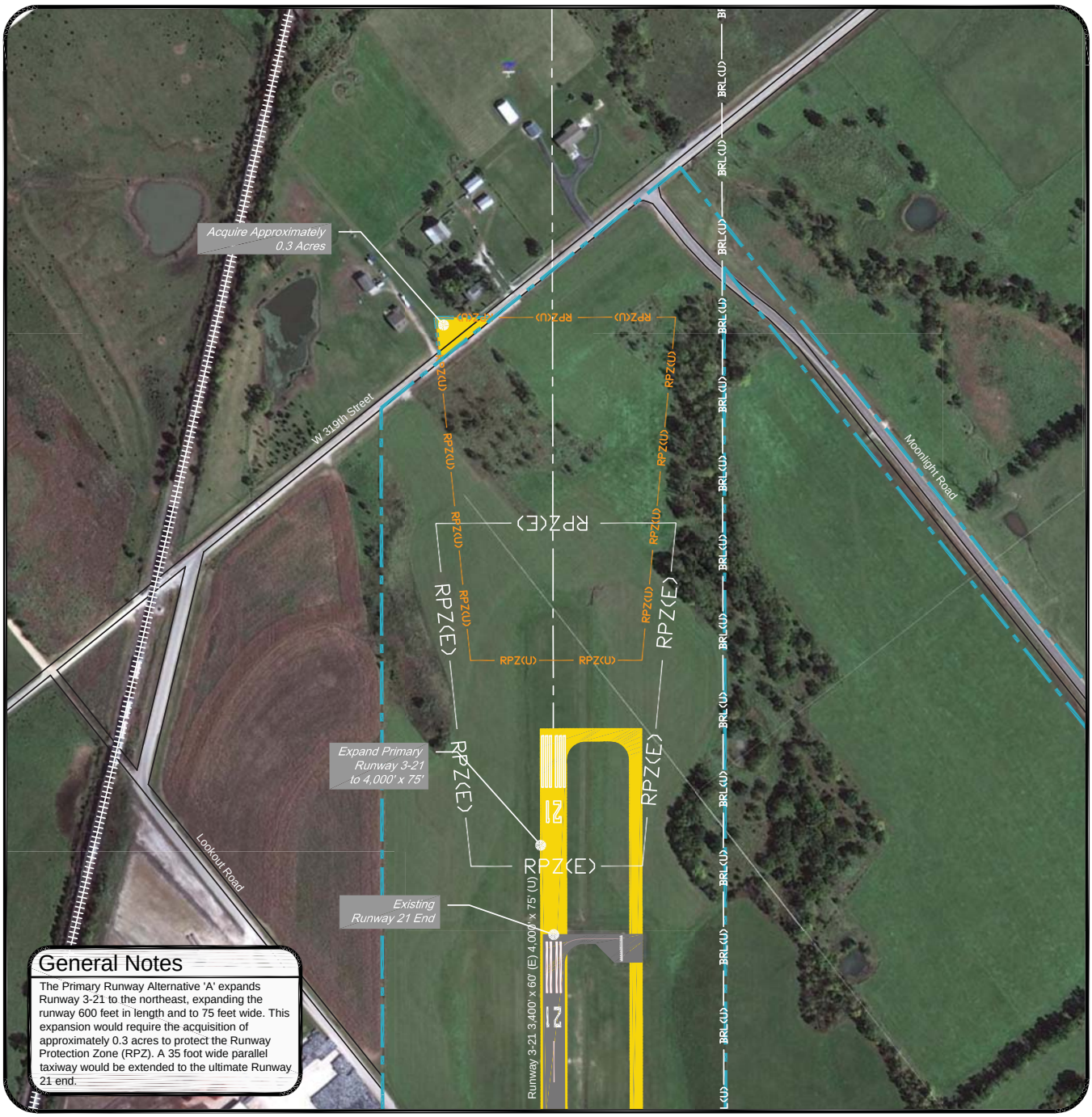
This alternative was not selected as a viable option for the airport. The cost of developing the IAP exceeds the need and demand for lower minimums at the airport. With sufficient alternative airports in the area for aviators to utilize in poor weather conditions, Alternative 'C' was determined to be too costly.

The Preferred Primary Runway Alternative

Citing various operational, political, environmental, financial, aviation needs and funding realities within the Miami County and Northeast Kansas region, the County and the Airport Advisory Board chose **Primary Runway Alternative 'A'** as the *preferred* development option for the runway expansion element. Accordingly, the following description provides an in-depth evaluation of pertinent elements associated with the implementation of this long-term development option.

The proposed airport expansion option and recommended ultimate airfield layout, designated **Exhibit 4.1 - Preferred Primary Runway Alternative**, involves expanding the existing taxiway system as well as extending Primary Runway 3-21 600 feet to the northeast and widening the runway to 75 feet.

Exhibit 4.1
The Preferred Primary Runway Alternative



General Notes

The Primary Runway Alternative 'A' expands Runway 3-21 to the northeast, expanding the runway 600 feet in length and to 75 feet wide. This expansion would require the acquisition of approximately 0.3 acres to protect the Runway Protection Zone (RPZ). A 35 foot wide parallel taxiway would be extended to the ultimate Runway 21 end.

Aerial Source: Google Earth, 2009

Legend

Existing Property Line -
Proposed Action -
Runway Protection Zone - RPZ(E/U)

N

The following items are attributes of the K81 preferred airfield development alternative:

- ✈ Expand Runway 3-21 northeast 600 feet and widen it to 75 feet to accommodate B-II aircraft according to FAA design requirements.
- ✈ Construct full parallel taxiway for the primary runway.
- ✈ Maintain existing non-precision Instrument Approach Procedures visibility minimums.

CROSSWIND RUNWAY ALTERNATIVES

Four development alternatives were created for the crosswind runway in an effort to accommodate facility needs identified in Chapter Three, *Airport Facility Requirements*. For the crosswind runway at K81, that includes a new 3,300' x 60' all-weather runway to accommodate ARC A-I/B-I aircraft. Additionally, it has been determined that the existing Turf Crosswind Runway 15-33 constricts terminal area growth in the existing eastern hangar area. The following discussion highlights the critical elements of each development alternative as presented to Miami County and the Airport Advisory Board.

Crosswind Runway Alternative 'A'

This alternative considers developing a paved crosswind runway at the current runway alignment of 15-33, while keeping the safety areas within existing airport property (not including the RPZs). This limits the runway length to 2,600 feet - 700 feet short of the FAA recommended length for A-I aircraft. This alternative constructs a 2,600' x 60' runway, including a full parallel taxiway to be located on the east or west side of the runway.

Should the parallel taxiway be located on the west side of the ultimate crosswind runway, the configuration of the aircraft parking area would need to be changed, and the wind cone would need to be relocated. If the parallel taxiway were located on the east side of the crosswind runway, a portion of land would need to be acquired near the Runway 15 end to protect the Taxiway Object Free Area (TOFA).

The RPZs would also expand from existing dimensions of 250' x 1,000' x 450' to 500' x 1,000' x 700' ultimately. The primary surface would also expand from 250 feet wide to 500 feet wide. This expansion would require the acquisition of approximately 18.4 acres, including one or more home relocations.

This alternative was determined to be an inviable option for the airport to pursue. The cost of the development would not justify the length achieved. Also, the existing Turf Crosswind Runway 15-33 constricts development in the terminal area; Crosswind Runway Alternative 'A' would continue this and constrain the eastern hangar area even more.

Crosswind Runway Alternative 'B'

In this alternative, a 3,300' x 60' paved Runway 15-33 with a full parallel taxiway is shown in the existing configuration at K81. At 3,300 feet long, the crosswind runway depicted in this alternative would satisfy length requirements for ARC A-I/B-I aircraft according to FAA design circulars. The RPZs would be expanded to ultimate dimensions of 500' x 1,000' x 700', and the primary surface would expand from 250 feet wide to 500 feet wide. This layout would exceed existing airport property and cause the relocation of two roads - Lookout Road and W 327th Street - as well as the acquisition of approximately 32 acres in fee simple with the relocation of multiple homes.

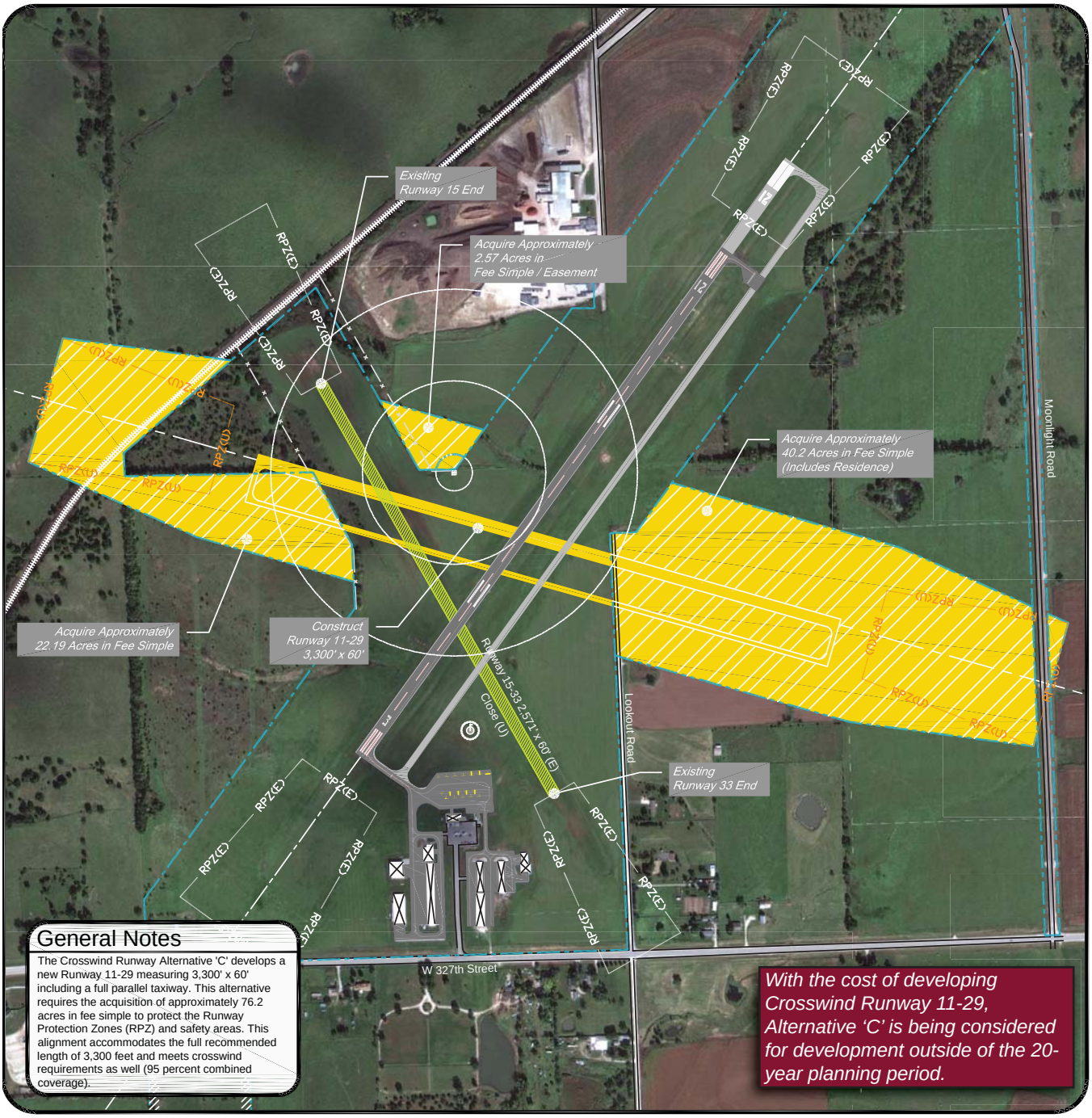
This alternative represents major cost in relocating roads and homes. There may also be a negative result in public opinion relating to the number of homes to be relocated versus the benefit of having two all-weather runways at the airport. **Miami County and the Airport Advisory Board decided Crosswind Runway Alternative 'B' was not a viable option.**

Crosswind Runway Alternative 'C'

Alternative 'C' considers closing existing Turf Crosswind Runway 15-33 and constructing a new Crosswind Runway 11-29. This runway would measure 3,300' x 60' and be aligned to minimize home relocation and road closure while achieving a combined wind coverage of 95 percent for 10.5 knot crosswinds. With an 11-29 alignment, this development would require the acquisition of approximately 76.2 acres in fee simple including the relocation of one residence and closing approximately 700 feet of Lookout Road.

Miami County and the Airport Advisory Board decided this was the most viable option for a 3,300' x 60' crosswind runway, though the cost could not be justified within the 20-year planning period. **The Airport Advisory Board elected to include Crosswind**

Exhibit 4.2
Crosswind Runway Alternative 'C'



Aerial Source: Google Earth, 2009

Legend

Existing Property Line -

Proposed Action -

Runway Protection Zone - RPZ(E/U)

N

Runway Alternative 'C' in the long-range plan outside of the 20-year planning period. Exhibit 4.2 depicts Crosswind Runway Alternative 'C' as a consideration for long-range development outside of the 20-year planning period.

Crosswind Runway Alternative 'D'

In this alternative, the concept of developing an ARC A-I/B-I paved crosswind runway is abandoned, and the existing Turf Crosswind Runway 15-33 is instead shortened to a length designed to accommodate small aircraft only (ARC A-I). Measuring 1,800' x 120', the ultimate turf crosswind runway would accommodate small single aircraft, such as the Cessna 172 Skyhawk. This alternative would also create additional space in the eastern hangar area for further hangar development.

Crosswind Runway Alternative 'D' was determined to be inviable by the Airport Advisory Board and Miami County. While terminal expansion area is needed, shortening or closing the existing turf crosswind with no other crosswind runway to utilize is not considered an option.

'No Action' Alternative

Considering the facility needs identified in Chapter Three, *Airport Facility Requirements*, a paved crosswind runway is justified at the airport. However, the reality of an all-weather crosswind runway at K81 proves too costly for the airport to sustain within the 20-year planning period. A paved crosswind runway at Miami County is also likely to have a low National Priority Rating, a system the FAA uses to determine necessary upcoming development projects at federally funded airports. A low priority rating can mean funding is difficult to obtain for a particular project. Additionally, the existing Turf Crosswind Runway 15-33 when combined with Runway 3-21 achieves greater than 95 percent wind coverage. **Considering this information, the consensus of the Airport Advisory Board and Miami County was to not pursue a paved crosswind runway, and side with a 'no action' crosswind runway alternative, keeping the existing Turf Crosswind Runway 15-33 as is.**

TERMINAL AREA ALTERNATIVES

Three terminal area expansion alternatives were created to accommodate the facility requirements identified in Chapter Three, *Airport Facility Requirements*. The facility needs identified specifically included 1,100 square feet of terminal building space, 11 auto parking spaces, 32 T-hangar spaces, six box hangars, and eight tie-down spaces. The following discussion highlights the critical elements of each development alternative as presented to Miami County.

Terminal Area Alternative 'A'

Alternative 'A' includes the expansion of T-hangars in the existing terminal area on the eastern hangar side. This alternative utilizes the existing space between the eastern hangar area and safety areas for Turf Crosswind Runway 15-33. This alternative would allow for the addition of two new 5-unit T-hangars following the existing design and separations standards for ADG-I (Airplane Design Group) aircraft. **This alternative was determined to be a viable option for the airport.**

Terminal Area Alternative 'B'

This alternative considers expanding the terminal area to a new location just east of Runway 3-21, with access from Lookout Road. This location would allow for the development of numerous box hangars, T-hangars, or an additional aircraft parking apron. This alternative also shows a relocated terminal building located in the new terminal area. While Terminal Area Alternative 'B' would accommodate the facility needs determined in Chapter Three, *Airport Facility Requirements*, it would also create a considerable distance between the existing terminal area and fueling facilities. **As with Terminal Area Alternative 'A', this alternative was determined to be a viable development option for the airport after the construction of the parallel taxiway for Runway 3-21.** Consideration of Crosswind Alternative 'C' should be kept when designing the new eastern terminal area, to avoid conflicts in safety area separation from the proposed Crosswind Runway 11-29.

Terminal Area Alternative 'C'

In this alternative, the existing eastern hangar area is expanded by shortening the Turf Crosswind Runway to 1,800' x 120', allowing hangars to develop

Exhibit 4.3
The Preferred Terminal Area Alternative

Aerial Source: Google Earth, 2009

Legend

Existing Property Line -

Proposed Action -

Runway Protection Zone - RPZ(U)

N

further east without infringing on safety areas of the runway. Ultimately it would allow for up to four additional 5-unit T-hangars and one box hangar, or an alternate configuration of the two hangar types. The development proposed in this alternative would exceed the needs determined in the *Airport Facility Requirements* chapter. This space will be needed should the actual demand for hangar space increase beyond forecasted and available storage.

Terminal Area Alternative 'C' was determined to be inviable for K81, as shortening Turf Crosswind Runway 15-33 is not an option being considered by the Airport Advisory Board and Miami County.

The Preferred Terminal Area Alternative

In consideration of discussions with Miami County and the Airport Advisory Board, the Preferred Terminal Area Alternative is similar to Terminal Area Alternatives 'A' and 'B'. This preferred alternative shows hangar development in the existing eastern hangar area, and then ultimately in the new eastern terminal area.

This alternative would allow the Miami County Airport to develop its existing terminal area, providing enough area for approximately two 5-unit T-hangars and two box hangars (60' x 60'). Once the existing eastern hangar area is fully developed, the airport has the option to expand to the new terminal area east of Runway 3-21 with landside access from Lookout Road, and airside access from the Runway 3-21 parallel taxiway to be built in the short-term planning period. The new terminal area can be configured as needed at the time of development, though as depicted supports 18 T-hangar units and six box hangars (60' x 60'). The new terminal area is designed to accommodate aircraft within the ADG-II design group, including the ultimate critical aircraft, the Beechcraft King Air 200. **Exhibit 4.3** depicts the Preferred Terminal Area Alternative.

In the future, should the County decide to develop a Crosswind Runway 11-29 as depicted in Crosswind Runway Alternative 'C', this Preferred Terminal Area Alternative would remain viable. However, it is recommended to develop the southern half of the new terminal area initially, to avoid ultimate conflicts with the proposed Crosswind Runway 11-29.

The following items are attributes of the K81 preferred terminal area development alternative:

- Expand hangar development in the existing terminal area as demand is encountered.
- Develop the new terminal area east of Runway 3-21 once the existing area is at capacity.
- Expand the existing terminal building or construct a new terminal building with at least 1,100 square feet of space for aviation purposes.

ALTERNATIVES ANALYSIS SUMMARY

The following element of the master plan update, the *Environmental Overview*, will be conducted utilizing a Categorical Exclusion Checklist (CatEx) to evaluate the appropriateness of using a CatEx for airport improvement projects to comply with the National Environmental Protection Act (NEPA). The checklist is based upon guidance in FAA Orders 1050.1E and 5050.4B, which incorporate the Council on Environmental Quality's regulations for implementing NEPA, as well as U.S. Department of Transportation environmental regulations and many other federal statutes and regulations designed to protect the nation's natural, historic, cultural, and archeological resources, etc. The information provided by sponsors and their consultants through the use of this checklist enables the FAA to evaluate compliance with NEPA and the applicable special purpose laws.

Both the airfield and terminal areas will be evaluated from an environmental standpoint by coordinating with specific federal, state and local agencies to determine any potential significant impacts posed by the preferred alternatives.

K81

Miami County Airport
Airport Master Plan Update

CHAPTER FIVE

ENVIRONMENTAL OVERVIEW

Chapter Five
Environmental Overview

INTRODUCTION

This evaluation has been prepared pursuant to Section 102 (2) of the *National Environmental Policy Act (NEPA) of 1969*, as well as Title V of the *Airport and Airway Improvement Act* of 1982, as amended. In addition, the subject matter discussed within the body of the narrative text is completed in accordance with Federal Aviation Administration (FAA) Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, and FAA Order 1050.1E, *Environmental Impact: Policies and Procedures*.

ENVIRONMENTAL IMPACT CATEGORIES

The main purpose of the environmental overview is to evaluate the potential significant environmental impacts posed by the future improvements associated with the preferred airfield and terminal area alternatives at the Miami County Airport. The preferred airfield and terminal area alternatives may require further environmental review in the form of a Categorical Exclusion (CATEX) process, Environmental Assessment (EA), or Environmental Impact Statement (EIS). As part of the master plan update, this overview will examine 18 separate environmental impact categories as they pertain to capital airport improvements and highlight potential permitting and regulatory requirements associated with the preferred alternatives. This information assists the FAA to determine the appropriate NEPA analysis for proposed airport actions.

Air Quality

Air Quality assessments for proposed federal actions are required for compliance with the *National Environmental Policy Act* (NEPA), the *Clean Air Act* and other environmental-related regulations and directives. FAA's *Air Quality Handbook*, Paragraph 2.1.2 states that "certain airports must comply with federal and state regulations which set air quality standards for certain airborne pollutants including ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide and suspended particles."

FAA Order 5050.4B, *Airport Environmental Handbook*, outlines the criteria regarding the necessity for an air quality analysis, based on existing and forecast levels of annual airport operations. The Handbook states that "no air quality analysis is needed when the proposed project is a general aviation airport with less than 180,000 operations forecast annually." Given that the forecasts identified in Chapter Two, *Aviation Demand Forecasts*, will approximate 14,000 annual operations by the end of 2033, an air quality analysis is not necessary.

Coastal Resources

Federal activities involving or affecting coastal resources are governed by the Coastal Barriers Resources Act (CBRA), the Coastal Zone Management Act (CZMA), and Executive Order 13089, Coral Reef Protection. Because the Miami County Airport and surrounding area is not located within a coastal zone managed area, further analysis is not necessary.

Noise

In general, noise exposure from operating aircraft in the airport environment is the most objectionable interference to the surrounding area. FAA Order 5050.4B indicates that a "noise analysis is needed for proposals involving Airport Reference Code (ARC) Airplane Design Group I and II aircraft on utility or transport type airports whose forecast operations in the period covered by the environmental assessment exceeds 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations." The current acceptable level of excessive noise is defined by the 65 DNL (day-night average sound level) noise contour, which is determined from a cumulative exposure of sound (time and level), measured in decibels, and averaged over a one-year time period.

By 2033, the airport is forecasted to experience 14,000 annual operations. Jet aircraft operations are not forecasted throughout the planning period. Therefore, the threshold for producing and analyzing a Noise Exposure Map (NEM), per FAA Order 5050.4B, was not required as part of this review.

Compatible Land Use

Existing and planned land uses in and around the airport were briefly discussed in Chapter 1, *Airport Inventory*. The compatibility of existing and planned uses in the vicinity of the airport is usually associated with the extent of the airport's noise impacts and airport development actions.

The existing land use surrounding the airport is used for agricultural, industrial, and light residential purposes. Based on projected aviation demand, coupled with existing and proposed land uses in the area, the Miami County Airport is expected to be compatible with current and future land uses from a noise compatibility standpoint.

To protect the airspace surrounding the airport, in June 2012, the Miami County Board of Commissioners enacted height and hazard regulations based on provisions of FAR Part 77, *Objects Affecting Navigable Airspace*, which regulates and restricts the height of structures and objects of natural growth in the vicinity of K81. These regulations area consistent with the requirements set forth in the airport's federal grant assurances to protect the airport and adjacent land from incompatible uses with normal airport operations.

Construction Impacts

Temporary environmental effects resulting from construction operations include noise of construction equipment on the site, noise and dust from delivery of materials through local roadways, creation of borrow pits and disposal of raw materials, air pollution from burning debris, and water pollution from erosion. Although environmental effects resulting from construction are of lesser magnitude than long-term impacts, they can be minimized through implementation of control measures and utilization of best management practices (BMPs). Additionally, construction operations are recommended to be conducted in accordance with FAA Advisory Circular (AC) 150/ 5370-10A, *Standards for Specifying Construction of Airports*, Item P 156-*Temporary Air and Water Pollution, Soil Erosion and Siltation Control*, as well as an established NPDES permit and SPCC program.

Department of Transportation Act, Section 4(f) and Section 6(f)

The U.S. Department of Transportation's Section 4(f) law (49 USC 303) states that federal funds may not be approved for projects that use land from a significant publicly-owned park, recreation area, wildlife or waterfowl refuge, or any significant historic site unless it is determined that there is no feasible and prudent alternative to the use of land from such properties and the action includes all possible planning to minimize harm to the property resulting from such use.

Section 6(f) of the Land and Water Conservation Fund (L&WCF) Act states that property purchased or developed with funds under the Act may not be converted to other than outdoor public recreation uses. The Act also states that land required from such properties must be replaced with property of at least equal fair market value and of reasonably equivalent usefulness and location, or be compensated through other means in consultation with the Kansas Department of Wildlife, Parks and Tourism, the agency responsible for administering L&WCF funds and other aspects of the Act.

Given the absence of Section 4(f) lands in the vicinity of the airport, the preferred development alternatives are not expected to impact any 4(f) resources in the area. Additionally, due to the lack of Section 6(f) lands adjacent to the airport, the preferred alternatives are also not expected to impact this classification of publicly-owned lands.

Farmlands

The *Farmland Protection Policy Act of 1984* (FPPA) authorizes the U.S. Department of Agriculture (USDA) to develop criteria for evaluating the potential effects of federally-funded transportation projects on the conversion of farmland to nonagricultural uses. This evaluation includes determining the adverse impacts to prime farmland, mitigating or minimizing adverse effects, and ensuring that transportation projects are compatible with local, state, and private programs aimed at preserving farmland areas.

The USDA, Natural Resources Conservation Service (NRCS), in accordance with the FPPA, was provided with Form AD-1006 that was completed in an effort to determine what impacts, if any, to prime farmland are posed by the preferred alternatives. The NRCS indicated in their evaluation that the property acquisition for the preferred alternatives does not appear to cause a loss of prime farmland of statewide importance.

Fish, Wildlife, and Plants

The U.S. Fish and Wildlife Service (USFWS), Kansas Department of Wildlife, Parks and Tourism (KDWPT) and the Kansas Biological Survey (KBS) were contacted for comments and information regarding potential impacts to the population and location of wildlife, waterfowl resources, and aquatic life in the vicinity of the airport. Included in their consideration are endangered and threatened species, which are protected by *The Endangered Species Act of 1973*, *The Migratory Bird Treaty Act (MBTA*), *The Fish and Wildlife Coordination Act of 1934,* and other various acts and amendments that play a part in protecting species that can be affected by airport development.

While no response was received from the USFWS, KDWPT and KBS provided response. Results of their review indicated no significant impacts to crucial wildlife habitats, public recreation areas, nor potential impacts to currently listed threatened or endangered species or species in need of conservation. However, the following pertinent information regarding potential impacts posed by the preferred development alternatives are as follows:

- The Kansas Natural Heritage Inventory database search resulted in no records of listed plant or animal species for the proposed development, although comprehensive surveys for rare species have not been conducted in the area. Further analysis may be required.
- The federally listed plant species Meads Milkweed could occur on untilled prairies in the county and a survey for Mead's Milkweed may be needed on any prairie tract on which airport development is proposed.
- It is not anticipated there will be any significant impact to the Smooth Earth Snake or Broadhead Skink, provided no additional tree removal is expected. Any changes to the proposed development requiring additional tree removal would need further analysis.

Further NEPA analysis for fish, wildlife, and plants would be performed as part of a future CATEX, EA, or EIS.

Floodplains

Floodplains are characterized as low lying flatlands adjoining inland and coastal waters where the possibility of flooding in any given year is approximately one percent or greater. These inland and coastal waters susceptible to flooding are most likely within the 100-year floodplain. Knowledge of floodplains in the vicinity of an airport is important in reducing the risk of flood loss, restoration and preservation of natural beneficial values of floodplains including groundwater recharge to aquaculture and forestry, and protection of human health and welfare.

According to Executive Order 11988, *Floodplains*, and the U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, all airport development actions must avoid floodplains if a practicable alternative exists. If no practicable alternative exists, actions in a floodplain must be designed to minimize adverse impact to the floodplain's natural and beneficial values. The design must also minimize the potential risks for flood-related property loss and impacts on human safety, health and welfare.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Panel No. 20121C0166C for Miami County, was researched

to determine the potential impacts of the preferred development alternatives. This review confirmed that there is no existing floodplain on airport property or within 1.6 miles from the center of the airport.

Hazardous Materials, Pollution Prevention, and Solid Waste

Regulatory law affecting airports includes the *Resource Conservation and Recovery Act of 1976* (RCRA). Through this legislation, the U.S Congress directed the EPA to develop and implement programs meant to protect human health and welfare, as well as the environment, from improper hazardous waste management practices. The RCRA is applicable to any party who transports or generates hazardous waste, as well as those parties who own or operate a facility for the storage, treatment, or disposal of hazardous wastes. Other pertinent legislation regarding this matter includes legislation that was a national campaign aimed at toxic waste cleanup efforts which included The *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), a.k.a. Superfund Act, as well as *The Superfund Amendments and Reauthorization Act of 1986* (SARA), and the *Community Environmental Response Facilitation Act of 1992.*

Hazardous wastes are those materials that can cause injury or death, or that can damage or pollute the air, land and water. Material waste might also be considered hazardous if the material exhibits any one or all of the following characteristics, including ignitibility (flammable or combustible), reactivity (rapid, violent chemical reaction with H_2O or other element), toxicity (high concentrations of heavy metals or pesticides), or corrosiveness (burns or dissolves other elements or various materials). In the event that a reportable amount of hazardous wastes are released into the environment, as established by the EPA, the County must contact the National Response Center (NRC), Washington, D.C., at 800.424.8802 and abide by proper reporting requirements and procedures. The Miami County Airport is not located in the vicinity of any Superfund site, per the Kansas Department of Health and Environment, Bureau of Environmental Remediation, Assessment and Restoration Section, Superfund and Drycleaner Remediation Unit. The preferred development alternatives are not expected to result in the creation of hazardous materials, waste, or substances.

Any household hazardous waste generated from and/or by acquired residences must be properly managed. This includes waste consistent with the operation of a business out of a home which would not be exempt and would be subject to a hazardous waste determination including management, storage and disposal per applicable regulations. Additionally, the construction of hangars is considered a commercial endeavor and requires that all waste from these operations be properly characterized for hazardous waste constituents. All hazardous waste must be managed, stored, transported and disposed of in accordance with applicable guidelines and requirements. Also, it should be noted that if during excavation activities any contaminated soil that could be classified as a hazardous waste is discovered, a spill line should be notified immediately.

In addition to many pollution and hazardous waste regulations governing the operation of an airport, the FAA is particularly concerned with sanitary landfills on or near airports. Specifically, FAA Order 5200.5, *FAA Guidance Concerning Sanitary Landfills On or Near Airports,* provides guidance with respect to the establishment, elimination, or monitoring of sanitary landfills, transfer facilities, and solid waste facilities on or in the vicinity of airports. Assessing the potential impacts of the preferred development alternatives on the generation of solid waste is necessary to determine potential available disposal capability and capacity of waste facilities in the region.

Airport development projects associated with expansion of runways and taxiways, except for construction, rarely include any direct relationship to solid waste collection facilities. Coupled with the location of the nearest landfill and/or transfer station to the airport, the preferred development alternatives will not generate excessive solid waste nor will it be adversely affected by potential wildlife hazards associated with sanitary and/or waste disposal facilities.

It should be noted that during the implementation of the preferred development alternatives, the County is recommended to dispose of waste from demolition and/or construction activities at a permitted sanitary landfill or transfer station. This waste cannot be stockpiled at an alternate site for separation at a later time. Also, should any asbestos-containing material from demolition of residential and/or commercial structures be identified, a registered asbestos contractor should be contacted to remove and properly dispose of the material.

Lastly, no waste may be buried on-site except for certified clean fill. Certified clean fill includes uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinder blocks and unpainted brick. Clean fill must not contain extruding material and/or demolition debris.

Historical, Architectural, Archeological, and Cultural Resources

The *National Historic Preservation Act of 1966* states that if any properties in or eligible for inclusion into the National Register of Historic Places are within the area of the preferred development alternatives potential environmental impact, then those impacts should be identified, direct and indirect, that could be expected to affect the cultural, historical, archeological or architectural qualities of the property.

Another piece of legislation, the *Archeological and Historic Preservation Act of 1974*, provides for the recovery, survey, and preservation of scientific, prehistoric, historical, archeological, and paleontological data where the data may be adversely affected by a federal, federally funded, or federally licensed project.

A review of the preferred development alternatives by the Kansas State Historical Society, State Historic Preservation Office, has indicated they will need additional documentation and photographs on a residence shown to be relocated as part of a future environmental review to determine eligibility of inclusion into the National Register of Historic Places.

Light Emissions and Visual Impacts

Light emissions created by the preferred development alternatives require consideration to determine whether or not runway lighting would create an annoyance to the population residing in the vicinity of the airport. The preferred airfield alternative will include the relocation of the existing runway edge and threshold lights, relocation of the Precision Approach Path Indicators (PAPIs) and installation of Runway Edge Identification Lights (REILs) to each end of Runway 3-21.

Given the lighting systems currently utilized and proposed for use at the airport, the preferred development alternatives are not expected to contribute significant light emissions. However, should these lighting systems prove to result in excess ambient light, particular adjustments and engineered solutions may be made to the systems during or after installation.

Optical baffles can be installed and angular tolerances can be made in order to channel the light emitted from the lamps, thereby reducing the likelihood of objectionable light emissions from either runway end. Any changes to visual approach aids must be approved by the FAA.

Natural Resources and Energy Supply

As part of Executive Order 13123, *Greening the Government Through Efficient Energy Management*, sustainability and renewable energy efficiencies must be examined with the development of aviation facilities and activities. The preferred development alternatives will result in a very small increase in energy demand related to the construction of airside and landside facilities. This increase in energy demand is not expected to have a measurable effect on local energy supplies and is expected to be accommodated by current utility facilities and providers.

The overall aircraft operational activity of the airport is expected to increase as a result of the implementation of the preferred development alternatives. However, the preferred development alternatives are not expected to significantly increase aircraft ground operations or movement times nor are they expected to have an appreciable effect on existing flight patterns or en route flight times. With a minimal increase in local airport activity, the surface transportation activity is expected to increase at a nominal rate as well. Motor vehicle fuel consumption is not expected to increase significantly because airport access routes are not expected to be adversely influenced by the development of the preferred development alternatives.

With regard to natural resources, with the exception of automobile gasoline and aviation fuel, the preferred development alternative is not anticipated to impact rare materials that are in short supply, nor result in demand for natural resources or energy reserves exceeding supplies. Therefore, the preferred development alternatives are not expected to significantly impact energy supplies or natural resources of the Miami County area.

Secondary (Induced Impacts)

Major development proposals often involve the potential for induced or secondary impacts on surrounding communities. Examples of secondary impacts include shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity to the

extent influenced by airport development. Because the preferred development alternatives for the Miami County Airport are not expected to be significant in any of these impact categories discussed in this chapter, induced impacts are not expected to be significant either.

Socieconomic Impacts and Environmental Justice

Examination of potential social impacts related to airport expansion generally include acquisition of property, relocation of residences or businesses, alteration of surface transportation routes, disruption to established communities, and alteration of planned development.

The preferred airfield development alternative involves acquisition of approximately 0.3 acre in fee for protection of the Runway Protection Zone at the Runway 21 end. The land to be acquired consists of open field adjacent to residential structures. Given that land is expected to be acquired with state and/or federal funding grants, the city is recommended to abide by provisions of the *Uniform Relocation Assistance and Real Property Acquisition Policies Act*, as well as FAA Order 5100.37B, *Land Acquisition and Relocation Assistance for Airport Projects*.

Because the future airfield development alternative has minimal residential acquisition, significant social impacts are not anticipated. This assessment is further supported by the fact that the airfield expansion plan is not expected to include any road closures or realignments nor is it expected to disrupt or alter established residential or commercial developments.

In accordance with Executive Order 12988, *Federal Action to Address Environmental Justice in Minority Populations and Low Income Population* (1994) and other socioeconomic statutes, the preferred development alternative must not pose a disproportional impact on low income or minority communities in the vicinity of the airport.

It is recommended that during the completion of the future EA, the preferred development alternatives be examined to determine if the project poses a potential disproportionate effect on low income and/or minority populations. It is expected that in the course of determining the social and induced socioeconomic impacts of implementing the preferred development alternatives, significant impacts, if any, related to environmental justices will be determined.

Water Quality

The *Federal Water Pollution Control Act of 1972* (FWPCA) sought to restore the nation's navigable waterways and lakes so that they provide safe conditions to humans and wildlife. The FWPCA, as amended by the *Clean Water Act of 1977* (CWA), provided for the establishment of water quality standards, control of discharges into surface and subsurface waters, development of waste treatment management plans and practices, as well as issuance of permits for discharges and for dredged or fill material.

Coordination with the U.S. Army Corps of Engineers (USACE), the Environmental Protection Agency (EPA), and Kansas Department of Health and Environment (KDHE) is recommended prior to the construction of the preferred development airfield and terminal area improvements to evaluate their potential impact on groundwater aquifers and jurisdictional waters of the United States, including wetlands as well as tributaries, creeks or streams with national significance. Coordination with KDHE is required to address any state water quality issues prior to and during implementation of the preferred alternatives.

During the construction of the preferred development alternatives, the County will be required to complete a National Pollutant Discharge Elimination System (NPDES) Permit, as well as a Spill Prevention Control, and Countermeasure (SPCC) Program. These permits are intended to demonstrate that state, federal and local permit requirements can be met by the County. Additionally, in preventing storm water runoff and soil erosion during construction of the preferred development alternatives, exercise of Best Management Practices (BMP) are encouraged. BMPs reduce erosion, minimize sedimentation, and control non-storm water discharges in order to maintain water quality on and off the airport premises. Also, because the preferred development alternatives will involve disturbance of land greater than one acre, a land disturbance permit from KDHE will be required. The permit involves the utilization of BMPs to minimize off-site erosion into nearby waters.

Wetlands

The importance of wetlands is emphasized in Executive Order (EO) 11990, issued May 24, 1977, as well as Section 404 of the *Clean Water Act of 1977* (33 USC 1344 and 33 CFR 320-332). E.O. 11990 is implemented by DOT Order 5660.1A, *Preservation*

of the Nation's Wetlands. Wetlands are defined in E.O. 11990, *Protection of Wetlands,* as "...those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, or similar areas…" The intent of the Clean Water Act, as well as EO 11990, is to avoid short- and long-term adverse impacts associated with damaging or modifying wetlands area, as well as to avoid construction in wetlands where there is a reasonable alternative.

Correspondence was sent to the U.S. Army Corps of Engineers (USACE) on the preferred development alternatives. Their response indicates the possible presence of hydric soils and wetlands near the project sites. Therefore, before permitting can be issued by the USACE, a wetland delineation study of all possible waters located within the project area and impacts to these possible wetlands will need to be completed as part of the EA.

Wild and Scenic Rivers

The National Wild and Scenic Rivers System is defined as a classification of certain selected rivers of the U.S. Their immediate environments possess remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values. They shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.

The national inventory for the Wild and Scenic Rivers System does not list any rivers of this classification in the vicinity of the Miami County Airport and does not warrant further consideration or investigation.

Environmental Overview Summary

Table 5.1 summarizes the potential impacts and recommendations to address the environmental resource impact categories for the preferred airfield and terminal alternatives at Miami County Airport. Based on this overview, the preferred airfield and terminal area alternatives will most likely require further environmental review in the form of a Categorical Exclusion (CATEX) process, Environmental Assessment (EA), or Environmental Impact Statement (EIS) as directed by the FAA.

Table 5.1
Environmental Impact Categories Summary

Categories	Impact(s)	Mitigation
Air Quality	None	None Required
Coastal Resources	None	None Required
Noise	None	None Required
Compatible Land Use	None	None Required
Construction Impacts	Not Significant	Control Measures and Practice BMPs
Section 4(f) and Section 6(f)	None	None Required
Farmlands	Not Significant	None Required
Fish, Wildlife, and Plants	Unknown	Conduct Further Analysis
Floodplains	None	None Required
Hazardous Materials, Pollution, Waste	Not Significant	Abide by CERCLA/SARA Guidelines
Historical, Architectural, Archeological, Cultural Resources	Unknown	Conduct Further Analysis
Light Emissions and Visual Impacts	None	None Required
Natural Resources and Energy Supply	None	None Required
Secondary (Induced Impacts)	None	None Required
Socioeconomic Impacts and Environmental Justice	Not Significant	Follow URARPAPA & FAA Order 5100.37B
Water Quality	Not Significant	Complete NPDES & SPCC Plans; BMPs
Wetlands	Unknown	Conduct Further Analysis
Wild and Scenic Rivers	None	None Required

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Miami County Airport
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CHAPTER SIX

CAPITAL IMPROVEMENT PROGRAM

Chapter Six
Capital Improvement Program

INTRODUCTION

The Capital Improvement Program (CIP) for the Miami County Airport involves the compilation of a schedule of recommended development and preservation projects and their probable costs as a result of the findings in this master plan update. The development and implementation of a CIP is a constant balance of changing conditions related to funding constraints, project sequencing limitations, environmental processes, business issues, and preferences of local, state, and federal agencies. Because of these changing conditions, the CIP developed as part of this master plan update also provides the framework for completing annual updates as may be required by the FAA and various parties to ensure the success of the airport and to maintain eligibility for future funding opportunities.

PROJECT DEVELOPMENT, SCHEDULE, AND COSTS

Miami County Airport's CIP will be based on short (0-5 year), intermediate (6-10 year), and long-term (11-20 year) development requirements. The short-term planning period serves as an immediate action program which recognizes federal, state and local funding capabilities. For this reason, the 0-5 year development phase is given special attention in that projects are outlined by year due to the critical nature of the improvements and the necessary financial investments that accompany each improvement project.

The short-term improvement plan also plays a key role in formulating the CIP that is submitted to the Kansas Department of Transportation (KDOT), Division of Aviation, and the FAA. This short-term improvement plan indicates development priorities for the airport and costs to be incurred by the County. Aside from assisting with the development of the CIP, the short-term implementation plan should allow for additional capital improvement items which contribute to the overall operational safety and efficiency of the facility such as pavement maintenance and rehabilitation, as well as terminal area improvements.

The intermediate development plan consists of projects that will affect the overall geometry and layout of the facility including improvements to the airfield and terminal area. The long-range development phase is formulated in an effort to identify the ultimate role of the airport including a planning concept that will eventually accommodate the airport's future facility needs.

Decisions regarding project scheduling will evolve from numerous considerations involved with implementation of the CIP. For instance, care must be given to the amount of time and effort that will be needed to acquire land and/or develop engineering and construction design reports including plans and specifications. For this reason, the timing of particular improvement projects presented in this chapter are merely suggested planning schedules and may require some reprioritizing throughout each phase of airport development. The operational safety, demand for certain airfield and/or terminal area facilities, the economic feasibility of their development, availability of funding, project lead time, and the County's financial ability are considered prime factors in determining the timing and construction of individual projects throughout the planning period.

Cost estimates have been based on unit prices which correspond to the breadth and size of the particular project. The estimates presented were derived from engineering bid tabs taken from recent construction and planning projects similar to those recommended for the airport and are based on current dollar value without consideration being given to inflation. Absent a real or market value appraisal for property acquisition, costs associated with land acquisition are not included as part of the CIP. Lastly, the proposed cost estimates are intended to be utilized for planning purposes only and should not be considered an engineer's opinion of probable construction costs.

Table 6.1 identifies the airport's short-term improvement costs, categorized by year. Each year of Phase I includes the sum of costs of potential engineering, inspection and administrative costs for each project.

Table 6.2 summarizes improvement costs for the intermediate and long-term planning periods. Phases II (mid-term) and III (long-term) of the CIP also include the sum of potential engineering, inspection, and administrative costs for each of the development phases. The projected cost share illustrates what is typical of eligible projects being funded under current FAA grant programs.

Table 6.3 summarizes the projected costs for each planning phase. Over the next 20 years, the Miami County Airport's total cost projections, not including direct/indirect operational, maintenance and land acquisition expenses, are expected to total approximately $5.2 million. The FAA share of eligible capital improvements of the airport's 20-year CIP is anticipated to be approximately $4.7 million, while the County's share is estimated to be $520,000. Projects in Phase I represent approximately 48 percent of the total 20-year CIP. This is due in large part to current pavement preservation needs, airspace obstruction removal, and the construction of a parallel taxiway to Runway 3-21. Furthermore, these projects are currently listed within FAA's Airport Capital Improvement Program (ACIP) system and are of higher priority for being funded. Projects in Phase II and III represent development based on forecasted demand and preservation of existing facilities. **Exhibit 6.1 illustrates the phased development of the 20-year CIP.**

If demand should change based on the forecasts in this master plan update, or if financial resources necessitate a change to this project schedule, projects can simply be adjusted to the appropriate Phase and the ACIP updated with the FAA and County.

Table 6.1
Phase 1 (0-5 Year) CIP Summary

Project Description	Projected FAA Share (90%)	Projected Local Share (10%)	Projected Total Cost (100%)
Year 1			
1A Rehabilitate Runway 3-21 (3,400' x 60')	$144,000	$16,000	$160,000
2A Rehabilitate SE T-Hangar Taxilanes	$91,800	$10,200	$102,000
Year 1 Totals	$235,800	$26,200	$262,000
Year 2			
3A Design Runway 3-21 Overlay & Parallel Twy (3,400' x 35')	$157,500	$17,500	$175,000
4A Relocate Powerlines/Obstruction Removal with Environmental Evaluation	$67,500	$7,500	$75,000
Year 2 Totals	$225,000	$25,000	$250,000
Year 3			
5A Construct Runway 3-21 (3,400' x 60') Overlay & Parallel Taxiway (3,400' x 35')	$1,485,000	$165,000	$1,650,000
Year 3 Totals	$1,485,000	$165,000	$1,650,000
Year 4			
6A Design & Install AWOS A/V*	$135,000	$15,000	$150,000
7A Widen Turf Runway 15-33 to 120 feet	$45,000	$5,000	$50,000
8A Acquire Tracts 10 thru 14 (Approximately 5 acres)	Cost are Not Available for Land Acquisition Absent an Appraised Value		
Year 4 Totals	$180,000	$20,000	$200,000
Year 5			
9A Parking Lot & Airport Entrance Road Pavement Rehab.	$35,100	$3,900	$39,000
10A Rehabilitate SW Hangar Taxilanes	$67,500	$7,500	$75,000
11A Conduct Environmental Assessment	$67,500	$7,500	$75,000
Year 5 Totals	$170,100	$18,900	$189,000
Phase I (0-5 Year) Totals	**$2,295,900**	**$255,100**	**$2,551,000**

Notes:

(*) Includes acquisition of Tracts 15 and 16 (avigation easements). However, cost are not available for land/easement acquisition absent an appraised value.

1. All costs are rounded to the nearest thousand for planning purposes and are based on 2013 dollar value.

2. Cost projections are intended for planning purposes only and should not be used as actual construction cost estimates.

Source: Lochner

Table 6.2
Phase II & III CIP Summary

Project Description	Projected FAA Share (90%)	Projected Local Share (10%)	Projected Total Cost (100%)
Phase II (6-10 Year) Costs			
1B Design Runway 3-21 Expansion (4,000' x 75') and Parallel Taxiway Extension (600' x 35')	$162,000	$18,000	$180,000
2B Rehabilitate Apron (Concrete)	$90,000	$10,000	$100,000
3B Construct Runway 3-21 Expansion (4,000' x 75') and Extend Parallel Taxiway (600' x 35')*	$1,080,000	$120,000	$1,200,000
4B Design & Construct (1) Clear Span Hangar	$225,000	$25,000	$250,000
5B Expand Terminal Building to 1,100 sq. ft	$154,800	$17,200	$172,000
Phase II (6-10 Year) Totals	**$1,711,800**	**$190,200**	**$1,902,000**
Phase III (11-20 Year) Costs			
1C Rehabilitate SE Hangar Taxilanes	$91,800	$10,200	$102,000
2C Design & Construct (2) T-Hangar Units (2,500 s.f.)	$72,000	$8,000	$80,000
3C Rehabilitate Runway 3-21 & Parallel Taxiway	$265,500	$29,500	$295,000
4C Rehabilitate Apron	$90,000	$10,000	$100,000
5C Rehabilitate SW Hangar Taxilanes	$67,500	$7,500	$75,000
6C Update Airport Master Plan and ALP	$135,000	$15,000	$150,000
Phase III (11-20 Year) Totals	**$721,800**	**$80,200**	**$802,000**

Notes:

(*) Includes acquisition of Tract 9 (0.1 acre). However, cost are not available for land acquisition absent an appraised value.

1. All costs are rounded to the nearest thousand for planning purposes and are based on 2013 dollar value.

2. Cost projections are intended for planning purposes only and should not be used as actual construction cost estimates.

Source: Lochner

Table 6.3
20-Year CIP Cost Summary

Planning Period (Years)	Projected FAA Share (90%)	Projected Local Share (10%)	Projected Total Cost (100%)
Phase I (0-5 Year)	$2,295,900	$255,100	$2,551,000
Phase II (6-10 Year)	$1,711,800	$190,200	$1,902,000
Phase III (11-20 Year)	$721,800	$80,200	$802,000
Total Development Costs	**$4,729,500**	**$525,500**	**$5,255,000**

Source: Lochner

The following list of capital improvement projects coincide with Exhibit 7.1 in which the airport's CIP is presented in a phased format depicting facility expansion through 2033.

Phase I (0-5 Year) Capital Improvements
1A Rehabilitate Runway 3-21 (3,400' x 60')
2A Rehabilitate SE T-Hangar Taxilanes
3A Design Runway 3-21 Overlay & Parallel Twy (3,400' x 35')
4A Relocate Powerlines/Obstruction Removal with Environmental Evaluation
5A Construct Runway 3-21 (3,400' x 60') Overlay & Parallel Taxiway (3,400' x 35')
6A Design & Install AWOS A/V*
7A Widen Turf Runway 15-33 to 120 feet
8A Acquire Tracts 10 thru 14 (Approximately 5 acres)
9A Parking Lot & Airport Entrance Road Pavement Rehab.
10A Rehabilitate SW Hangar Taxilanes
11A Conduct Environmental Assessment
Phase II (6-10 Year) Capital Improvements
1B Design Runway 3-21 Expansion (4,000' x 75') and Parallel Taxiway Extension (600' x 35')
2B Rehabilitate Apron (Concrete)
3B Construct Runway 3-21 Expansion (4,000' x 75') and Extend Parallel Taxiway (600' x 35')**
4B Design & Construct (1) Clear Span Hangar
5B Expand Terminal Building to 1,100 sq. ft
Phase III (11-20 Year) Capital Improvements
1C Rehabilitate SE Hangar Taxilanes
2C Design & Construct (2) T-Hangar Units (2,500 s.f.)
3C Rehabilitate Runway 3-21 & Parallel Taxiway
4C Rehabilitate Apron
5C Rehabilitate SW Hangar Taxilanes
6C Update Airport Master Plan and ALP

(*) Includes acquisition of Tracts 15 and 16 (avigation easements). However, cost are not available for land/easement acquisition absent an appraised value.

(**) Includes acquisition of Tract 9 (0.1 acre). However, cost are not available for land acquisition absent an appraised value.

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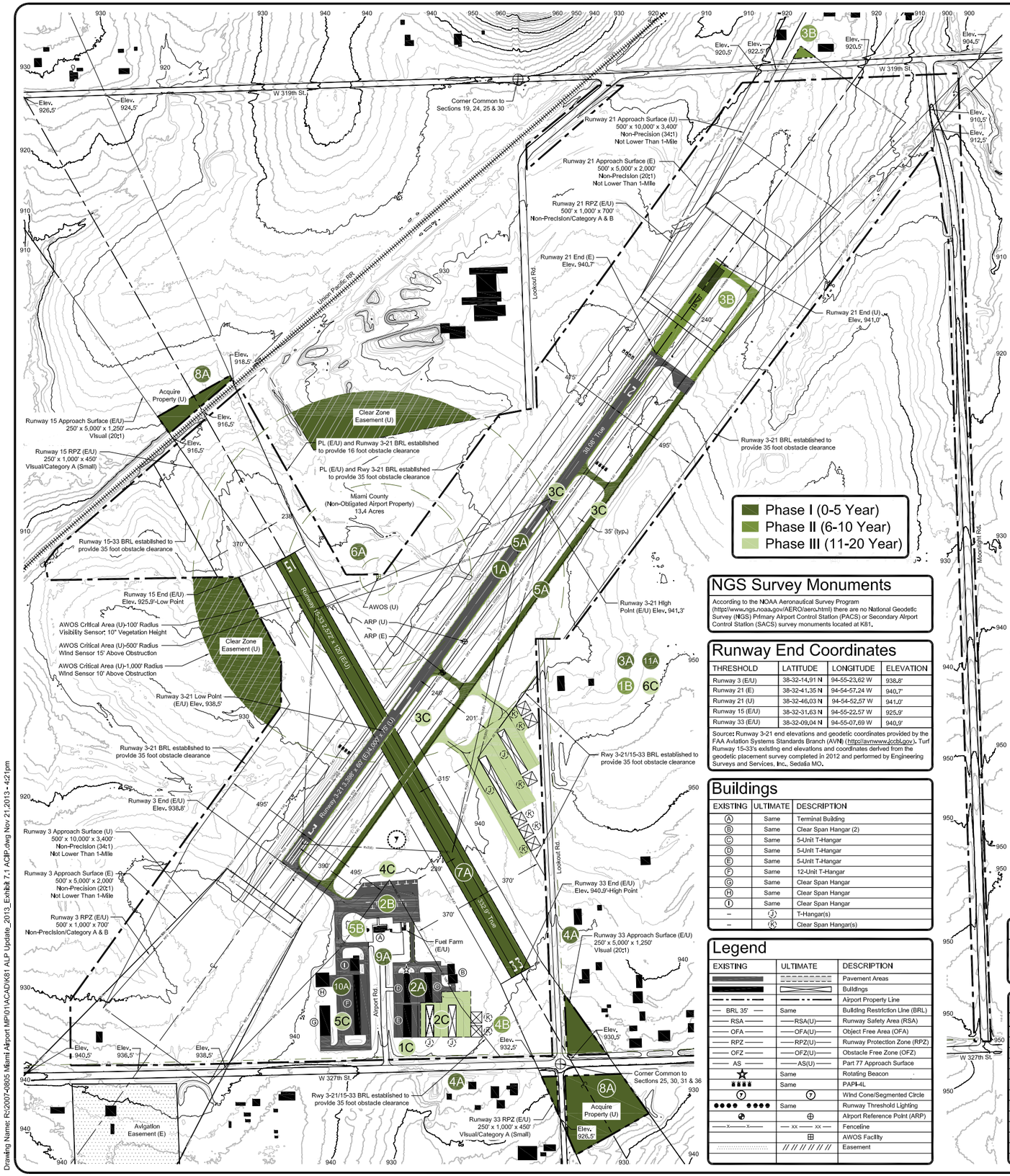


NGS Survey Monuments

According to the NOAA Aeronautical Survey Program (http://www.ngs.noaa.gov/AERO/aero.html) there are no National Geodetic Survey (NGS) Primary Airport Control Station (PACS) or Secondary Airport Control Station (SACS) survey monuments located at K81.

Runway End Coordinates

THRESHOLD	LATITUDE	LONGITUDE	ELEVATION
Runway 3 (E/U)	38-32-14.91 N	94-55-23.62 W	938.8'
Runway 21 (E)	38-32-41.35 N	94-54-57.24 W	940.7'
Runway 21 (U)	38-32-46.03 N	94-54-52.57 W	941.0'
Runway 15 (E/U)	38-32-31.63 N	94-55-22.57 W	925.9'
Runway 33 (E/U)	38-32-09.04 N	94-55-07.69 W	940.9'

Source: Runway 3-21 end elevations and geodetic coordinates provided by the FAA Aviation Systems Standards Branch (AVN) (http://avnwww.jccbi.gov/). Turf Runway 15-33's existing end elevations and coordinates derived from the geodetic placement survey completed in 2012 and performed by Engineering Surveys and Services, Inc., Sedalia MO.

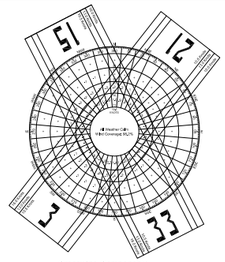
Buildings

EXISTING	ULTIMATE	DESCRIPTION
(A)	Same	Terminal Building
(B)	Same	Clear Span Hangar (2)
(C)	Same	5-Unit T-Hangar
(D)	Same	5-Unit T-Hangar
(E)	Same	5-Unit T-Hangar
(F)	Same	12-Unit T-Hangar
(G)	Same	Clear Span Hangar
(H)	Same	Clear Span Hangar
(I)	Same	Clear Span Hangar
–	(J)	T-Hangar(s)
–	(K)	Clear Span Hangar(s)

Legend

EXISTING	ULTIMATE	DESCRIPTION
		Pavement Areas
		Buildings
		Airport Property Line
BRL 35'	Same	Building Restriction Line (BRL)
RSA	RSA(U)	Runway Safety Area (RSA)
OFA	OFA(U)	Object Free Area (OFA)
RPZ	RPZ(U)	Runway Protection Zone (RPZ)
OFZ	OFZ(U)	Obstacle Free Zone (OFZ)
AS	AS(U)	Part 77 Approach Surface
	Same	Rotating Beacon
	Same	PAPI-4L
(7)	(7)	Wind Cone/Segmented Circle
	Same	Runway Threshold Lighting
		Airport Reference Point (ARP)
xx	xx	Fenceline
		AWOS Facility
		Easement

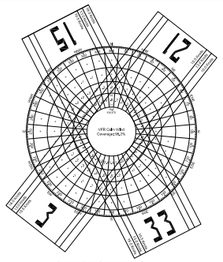
All Weather Wind Rose



Runway	Crosswind Component/ Corresponding ARC 10.5 Knots (A-I & B-I)	13.0 Knots (A-II & B-II)	16.0 Knots (A-III, B-III, C-I to D-III)
Runway 3-21	87.9%	93.4%	97.8%
Runway 15-33	89.6%	94.6%	98.3%
Combined	98.2%	99.5%	99.9%

Source: National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), Asheville, NC; Johnson County Executive Airport (OJC), Olathe, KS (2000-2009).

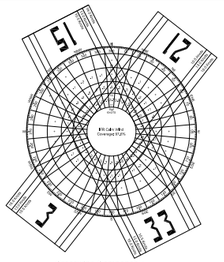
VFR Wind Rose



Runway	Crosswind Component/ Corresponding ARC 10.5 Knots (A-I & B-I)	13.0 Knots (A-II & B-II)	16.0 Knots (A-III, B-III, C-I to D-III)
Runway 3-21	88.2%	93.6%	97.9%
Runway 15-33	89.6%	94.6%	98.2%
Combined	98.2%	99.5%	99.9%

Source: National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), Asheville, NC; Johnson County Executive Airport (OJC), Olathe, KS (2000-2009).

VFR Wind Rose



Runway	Crosswind Component/ Corresponding ARC 10.5 Knots (A-I & B-I)	13.0 Knots (A-II & B-II)	16.0 Knots (A-III, B-III, C-I to D-III)
Runway 3-21	83.1%	90.7%	96.9%
Runway 15-33	88.3%	94.2%	98.4%
Combined	97.6%	99.4%	99.8%

Source: National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), Asheville, NC; Johnson County Executive Airport (OJC), Olathe, KS (2000-2009).

General Notes

1. Existing runway centerline elevations and data obtained for the two foot contours was obtained from the State of Kansas GIS Data Access and Support Center (DASC) Digital Elevation Models (DEM) prepared for the Kansas 2010 LIDAR over Atchison, Coffey, Franklin, Geary, Marshall, Miami, Osage, Leavenworth, Missouri River, Pottawatomie, Riley counties. The downloaded data is based on UTM Zone 15N coordinates on NAD83 (GRS80) horizontal datum and NAVD88 vertical datum.

2. RESERVED.

Runway Data

RUNWAY DETAILS	RUNWAY 3-21 EXISTING 3	21	RUNWAY 3-21 ULTIMATE 3	21	RUNWAY 15-33 EXISTING 15	33	RUNWAY 15-33 ULTIMATE 15	33
Airport Reference Code (ARC)	B-I		B-II		A-I (Small)		Same	
Percent (%) Wind Coverage (10.5 Knots)	87.9%				89.6%			
Runway Azimuth	38.08° True	218.1° True	Same	Same	152.9° True	332.9° True	Same	Same
Runway Dimensions	3,398' x 60'		4,000' x 75'		2,572' x 60'		2,572' x 120'	
FAR Part 77 Approach Use Type	NP	NP	Same	Same	V	V	Same	Same
Aeronautical Survey Required for Approach	NVG	NVG	VG	VG	NVG	NVG	Same	Same
Approach Visibility Minimums	1-Mile	1-Mile	Same	Same	V	V	Same	Same
Approach Slope	20:1	20:1	34:1	34:1	20:1	20:1	Same	Same
Runway Safety Area (RSA)	3,878' x 120'		4,600' x 150'		3,052' x 120'		Same	
Runway Object Free Area (OFA)	3,878' x 400'		4,600' x 500'		3,052' x 250'		Same	
Runway Obstacle Free Zone (OFZ)	3,798' x 250'		4,400' x 250'		2,972' x 250'		Same	
Runway Pavement Strength (Thousands of lbs.)	12,500 (SWG)		Same		N/A		Same	
Runway Pavement Material	Asphalt		Same		Turf		Same	
Runway Markings	NP	NP	Same	Same	None	None	Same	Same
Runway Gradient	0.1%	-0.1%	Same	Same	0.5%	-0.5%	Same	Same
Runway Lighting	MIRL		Same		None		Same	
Taxiway Lighting	MITL/Blue Reflectors		MITL		None		Same	
Taxiway Width	25'		35'		N/A		Same	
NAVAIDS	RNAV(GPS)	RNAV(GPS)	Same	Same	None	None	Same	Same
Approach Visual Aids	PAPI-4L	PAPI-4L	Same	Same	None	None	Same	Same
Touchdown Zone Elevation (TDZE)	941.1'	941.3'	Same	Same	N/A	N/A	N/A	N/A
Takeoff Run Available (TORA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Accelerate-Stop Distance Available (ASDA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Landing Distance Available (LDA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Takeoff Distance Available (TODA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SWG-Single Wheel Gear; NP-Non Precision; NVG-Non Vertical Guidance; VG-Vertical Guidance; V-Visual

Obstacle Free Zone (OFZ) Object Penetrations

There are no existing OFZ object penetrations.

Threshold Siting Surface Object Penetrations

There are no known existing TSS object penetrations.

Modifications to Design Standards

None required.

FAA Approval Stamp

Scale

300 150 0 300

Distance In Feet

North Point

TRUE NORTH — MAGNETIC NORTH

Magnetic Declination: 2° 16' 48" E (2012)
Annual Rate of Change: 0° 7.3' W

Airport Data

AIRPORT INFORMATION	EXISTING	ULTIMATE
Airport Elevation- Mean Sea Level (MSL)	943.1'	Same
Airport Reference Code (ARC)	B-I	B-II
Critical Aircraft	Beechcraft B58 Baron	Beechcraft King Air 200
Airport Reference Point (ARP)	38-32-24.80 N, 94-55-12.50 W	38-32-26.50 N, 94-55-10.85 W
Instrument Approach Procedures	RNAV(GPS)	Same
Mean Maximum Air Temperature	89.8° F	Same
Weather Reporting System	None	AWOS
Airport Electronic Aids	None	Same
NPIAS Category	General Aviation	Same
Range and Township/Sections	T17S, R23E/25, 30 and 36	T17S, R23E/19, 25, 30 and 36
FAA Site Number	06833.62	Same
County	Miami	Same
Total Acreage (Fee Simple & Easements)	242.0	256.4 (See Sheet 10 of 11)

Sponsor Approval Stamp

For Approval by:

Miami County, Kansas

Signed by: _____ Dated: _____

Shane Krull
County Administrator

ALP Revisions

NO.	DESCRIPTION	DATE	REVISED BY	APPROVED BY

LOCHNER
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P 816.363.2696 | F 816.363.0027 | www.hwlochner.com

MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

AIRPORT LAYOUT DRAWING
Exhibit 7.1- Phased Development Plan

BWR PROJECT NO. 007080500/00001/00008
AGENCY PROJECT NO. AIP No. 3-20-0063-014-2011
DRAWN BY MAW
CHECKED BY MAW
DESIGNED BY KWL/MAW
REVISIONS DATE
SUBMITTAL DATE 10/23/2013

1

SHEET 1 OF 1

Drawing Name: R:\2007-0805 Miami Airport MP\01\ACAD\K81 ALP Update_2013_Exhibit 7.1 ACP.dwg Nov 21,2013 - 4:21pm

FUNDING SOURCES

Financing the airport's 20-year CIP can be accomplished through a variety of resources by utilizing a combination of federal, state, and local funding methods. These include the FAA's Airport Improvement Program (AIP) administered locally by the FAA Central Region Airports Division; Kansas Airport Improvement Program (KAIP) administered by the Kansas Department of Transportation (KDOT) Aviation Division; as well as revenue bonds, private investments, airport revenues, and budgeted allocations from the County.

Federal Grants

Originally authorized by the Airport and Airway Improvement Act of 1982, the AIP is funded through the Airport and Airway Trust Fund that was enacted by legislation in 1970. This fund receives its funding from aviation-generated user fees including passenger and facility fees, fuel and cargo taxes. Although the AIP has been reauthorized several times and the funding formulas have been periodically revised to reflect changing national priorities, the program has essentially remained the same. The AIP provides Federal apportionment, entitlement, and discretionary funding grants to be used for eligible projects at public use airports. The Miami County Airport is eligible to participate and compete for the varying AIP funds as described below. **Table 6.4** lists eligible and ineligible improvement projects as they relate to AIP funding guidelines.

Non-Primary Entitlement Funds

Non-primary entitlement funds (NPE) are specifically for general aviation airports included within the latest published National Plan of Integrated Airports System (NPIAS) that show a justified need for airfield and terminal area improvements. Under current legislation, any fiscal year in which the total amount of system-wide apportionments from the AIP and Aviation Trust Fund exceed $3.2 billion, NPE funds in the amount of $150,000 per fiscal year, or 20 percent of the five-year NPIAS improvements, whichever is less, will be allocated to the Miami County Airport. NPE funds are available during the initial year of allocation as well as the next three fiscal years. Unused entitlement funds expire after four years unless the County obligates the funds under a grant or transfers the funds to another NPIAS airport. The AIP participation rate of non-primary entitlement funds is currently 90 percent with the remaining 10 percent of the costs to be funded through the County or local revenues and/or third party investments.

Table 6.4
Typical AIP Eligible and Ineligible Projects

Eligible Projects	Ineligible Projects
Aircraft Hangars (Non-Primary Airports)	Artwork
Airfield Drainage	Development That Exceeds FAA Standards
Airfield Lighting	Development for Exclusive Use
Airfield Signage	Improvements for Commercial Enterprises
Apron Construction/Rehabilitation	Industrial Park Development
Environmental Studies	Landscaping
Fuel Farms (Non-Primary Airports)	Maintenance Equipment and Vehicles
General Aviation Terminal Buildings	Marketing Plans
Land Acquisition	Office Equipment
Certain NAVAIDS (e.g. REILs, PAPIs)	Training
Planning Studies	Airport Operation Costs
Runway Construction/Rehabilitation	FBO Support Areas
Safety Area Improvements	
Taxiway Construction/Rehabilitation	
Weather Observation Stations (AWOS)	

Source: FAA.

Apportionment Funds

State apportionment funds are those AIP funds remaining after the deduction of the non-primary entitlement program funds. These funds are then distributed by FAA formula calculations for use in the 50 states. As an example, the fiscal year 2012 apportionment available for eligible competing projects in Kansas was approximately $3.5 million. The AIP participation rate for apportionment funds is currently 90 percent of grant eligible projects with the remaining 10 percent of the costs to be funded through the County or local revenues and/or third party investments.

Discretionary Funds

The remaining funds from AIP are then lumped into two types of discretionary funds. The first, Set-Aside Funds, are reserved for noise compatibility planning and implementing noise compatibility programs. The second type of discretionary funds includes those that are remaining after the apportionments are made and set-asides are accommodated. Of these remaining funds, 75 percent is reserved for preserving and enhancing capacity, safety, security, and carrying out noise compatibility planning and programs at primary reliever airports. The remaining 25 percent of the funds are known as remaining or pure discretionary and may be used at any NPIAS airport for any AIP eligible improvement project. The AIP participation rate for discretionary funds applicable to the Miami County Airport is currently 90 percent of grant-eligible projects with the remaining 10 percent of the costs to be funded through the County or local revenues and/or third party investments.

Kansas Airport Improvement Program

The KDOT Aviation Division administers the Kansas Airport Improvement Program (KAIP) for all public-use airports in the State of Kansas. The public-use general aviation airport development fund allows funding of $5 million annually towards planning, constructing, reconstructing or rehabilitating public-use airports in the state.

Project eligibility under the program is determined by projects deemed critical to the facility, those that address safety and preservation, developmental needs identified in the Kansas Airport System Plan (KASP), projects that can be completed within one year, and a condition that the project will not be used to leverage federal funding assistance. The KAIP participation rate for design and planning projects is 95 percent with the remaining 5 percent of the costs to be funded through the County or local revenues and/or third party investments. For all other projects eligible under the program at the airport, the KAIP provides 75 percent participation with the remaining 25 percent to be funded locally. The maximum participation of the KAIP is set at $800,000 with the exception of the following: (1) projects for construction of a new runway are eligible for a maximum of $1.6 million; and (2) projects for full-depth reconstruction of an existing runway are eligible for a maximum of $1.2 million. It should also be noted that the KAIP provides for emergency repair projects and out-of-cycle critical projects to be funded if the budget allows.

Third Party Financing

Third party financing may be appropriate in the case where the County would use a developer or tenant to finance construction projects. In this case, the third party would lease the structure for a period of years to the tenant paying the ground lease. According to the terms of the agreement, the County would receive ownership of the asset upon expiration of the lease. This method of financing preserves the County's cash to fund higher priority projects. Examples of projects that are funded in this manner include the development of T-hangars, private and/or corporate clear span and FBO/maintenance hangars. Hangars have been identified in the airport's CIP.

Bonds

A variety of bonds can be issued to support airport development projects.

General Obligation (GO) Bonds

GO Bonds are backed by the creditworthiness and taxing power of the municipality operating the airport. They usually bear low interest rates because of their high degree of security. However, state laws may limit a municipality's overall debt, and competition from other community financing requirements may preclude their use for an airport project. Some states have an exemption from the debt limitation rule for general obligation bonds because they are used for a revenue-producing improvement project.

Revenue Bonds

Revenue Bonds pledge the revenues of an airport sponsor to the repayment of debt service. These

are the most common sources of funding at larger commercial service airports. Revenue bonds are popular because they do not burden the taxpayer or affect the bonding capacity of the municipality. However, their use is limited to airports with a sufficient operating surplus to cover the debt service. Project net revenues must exceed debt service requirements by at least 1.25 times and up to 2.0 times, depending on the strength of the bond issue and the underlying assumptions with respect to the market risk for the bonds. Interest rates are dependent on the coverage ratio, but in any case will be higher than for general obligation bonds.

Special Facility Revenue Bonds

Special Facility Revenue Bonds are normally issued by the airport sponsor for the construction of a facility for a third party and backed by the revenues generated from that facility. Examples of facilities include maintenance hangars, airline reservation centers, terminal buildings, and air cargo terminals.

Industrial Development Bonds (IDB)

IDBs can be issued by states, local government, or an airport authority to fund the construction of improvements to an airport industrial park or other facilities that may attract business and increase aeronautical or non-aviation related lease revenues at the airport.

Local Funds

The remaining portion of project costs would be expected to be funded largely from local sources including airport revenues. The local share of project costs are typically derived from surplus revenue generated at the airport or with budgeted allocations from the County's general fund to the airport account. Following is a discussion on the types of the airport revenues.

County or Private Owned T-Hangar Revenue

Rental rates for T-hangars can be established based on an appraisal rate or rate per square foot. The appraisal rate formula involves appraising the value of the land at the facility. The rate would be a percentage of the appraised value of that portion of land supporting the structure sufficient to equal the appraised value and to allow debt service obligations. Conversely, a rate per square foot can be a fixed rate or tied to the value of the land appraisal. For both methods, regular appraisals are recommended so that rates can reflect the increase in the value of the land as the facility grows. Additionally, as maintenance and operational costs increase, lease agreements are recommended to include escalation clauses to recover these costs for improvements and amortization. Where the structure is owned by a private entity, the tenant is recommended to be responsible for maintenance of the structure, as well as a specific amount of land adjacent to the structure.

Clear Span Hangar Revenue

The rental rate for these facilities can be based on an appraisal rate or rate per square foot. Additionally, various hangar rental rates can be based on the structure's locational advantages on the airport and its rental rates adjusted accordingly. Escalation clauses within the lease agreements are recommended in order to recover maintenance and operational costs as well as amortization. Maintenance clauses, as discussed above, are also recommended as part of these lease agreements.

On-Airport Industrial/Commercial Business Revenue

Airport property is not to be released, transferred or sold for private, industrial or commercial uses. The County is recommended to lease land for such uses to desirable tenants in order to provide continuous income for the airport. As is common for most general

aviation airports, commercial/industrial facility charges include a fixed rate (appraisal or rate per square foot) plus a percentage of sales. Percentage of sales most generally applies to commercial business, including restaurants or aircraft maintenance providers that deal in sales, while industrial establishments, not relying on local sales for revenue, provide fixed rate fees plus operational and maintenance costs through escalation clauses as part of the lease agreement. These rate structures allow the airport to benefit from the success of the businesses located there. The businesses recoup revenues due to the airport providing the necessary facilities which enable their business to be successful. Additional improvements to the airport, as provided by the County, will only enhance each firm's business outlook. In essence, the businesses are sharing in the cost of improvements in proportion to the financial success they experience as a result of the County's investment in the airport. Maintenance clauses, as well as insurance clauses (if applicable), are also recommended as part of these lease agreements.

Businesses located at the airport now and in the future are recommended to abide by established minimum performance standards, included as part of the lease agreement, which ensure that necessary services are provided and that the quality of services adequately promotes the airport's image.

Terminal Building Lease Revenue

Current and potential FBO and aviation service providers that might occupy space in the terminal building are recommended to be charged a fixed rate (rate per square foot) plus a percentage of sales fee structure, as is common for general aviation airports. Maintenance and escalation clauses, as well as minimum performance standards, are recommended to be included as part of a lease agreement.

Landing Fee Revenue

It is permissible for the County to establish landing fees by utilizing a compensatory model of rates and charges determination. In this approach, the user (large aircraft weighing in excess of 12,500 pounds maximum gross weight) is charged based on their actual use of the facility from which they derive a benefit. A fee is levied against the user to cover the corresponding expenses to maintain and operate the facility. The rate of the landing fee is based on the aircraft operator's prorated share of occupancy or usage. This share of usage may be based on the total weight of the aircraft or annual operational activity. A landing fee for large aircraft operators might be classified under an alternative term such as a ramp fee. In the event that the aircraft operator purchases a minimum amount of fuel, the FBO may elect to waive a landing fee.

Fuel Flowage Revenue

As is common for many general aviation airports, fuel flowage revenue includes either a fixed fee per gallon of fuel dispensed or a percentage of total sales. This percentage may be quarterly, biannually or annually. An alternative method for determining an appropriate fuel royalty/flowage fee might include instituting a graduated percentage of gross fuel revenue collection method in lieu of a fixed fuel flowage fee to allow for seasonal fluctuations, economic conditions or supply and demand. As with any other commercial businesses based at the airport, fuel flowage fees are necessary because the proprietor derives a benefit from airport operation and should compensate the County accordingly.

Equipment Use Revenue

Just as landing fees are levied against aircraft for utilization of the runway facilities, so, too, should aircraft operators and airport users be charged a fee for use of airport equipment. In particular, ground power units (GPU) are often required for larger, more sophisticated aircraft that do not have an auxiliary power unit (APU) to power electrical components while the aircraft is shut down but still requires electrical power. Additionally, portable heaters used to pre-heat the aircraft during periods of cold weather before startup, as well as other items such as aircraft tugs, can be assigned specific costs for each use by aircraft operators.

Aircraft Parking/Tie-Down Revenue

A fixed fee for aircraft tie-downs is recommended to be administered on a daily, weekly, monthly and annual basis. The fixed fee may take into account the size of aircraft based on its prorated share or occupancy of the aircraft apron.

Agricultural Leases

The County should receive fair market value for agricultural uses of airport property. The County is also entitled to receive the same rate as similar farmland in the area. Lease terms are recommended to last no longer than five years. Two- to three-year terms are preferred because they allow the County to reassess

the impact of the agricultural use on airport operations and development. Upon renewal of a lease, rates should be adjusted to reflect the fair market value of the land. All agricultural leases are recommended to contain an escape clause that allows the County to terminate the lease should the land be needed for aeronautical purposes. Finally, lease rates are generally based on a fixed price per acre of land.

It must be noted that existing federal grant assurances stipulate that all revenue generated at the airport will be expended exclusively for the operating costs of the airport including maintenance and improvement projects and debt service obligations. Federal grant assurances expressly forbid revenue generated on airport property from being transferred to any other County account and/or department.

SUMMARY

This master plan document addresses the airport's current operational activity and projected operational demand over the next 20 years. To accommodate this projected demand, airfield and terminal area improvements are expected to total approximately $5.2 million. Nearly all of the projects listed in the 20-year CIP are grant eligible for federal funding and many are grant eligible for state funding assistance. However, development projects associated with hangar construction and terminal building improvements are low priority for receiving grant assistance and are typically funded locally.

The County should recognize that this document serves as a planning tool for the future development of the airport and that forecasted aviation demand will generally dictate when projects should be implemented. The findings and recommendations in this plan will either be accelerated or slowed based on demand. Therefore, it is important that the County continue to closely monitor and record activity levels at the airport in order to make timely decisions on development and be better positioned for funding these projects.

K81

Miami County Airport
Airport Master Plan Update

APPENDIX A

AIRPORT LAYOUT PLAN (ALP) DRAWINGS

Airport Layout Plan
for the
Miami County Airport (K81)
Miami County, Kansas

FAA AIP No. 3-40-0063-014-2011

Location Map (NOT TO SCALE)

Vicinity Map (NOT TO SCALE)

Index of Drawings

FAA Disclaimer

The preparation of this document may have been supported, in part, through the Airport Improvement Program financial assistance from the Federal Aviation Administration (FAA) (AIP No. 3-20-0063-014-2011) as provided under Title 49 U.S.C., Section 47104. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable or would have justification in accordance with appropriate public laws.

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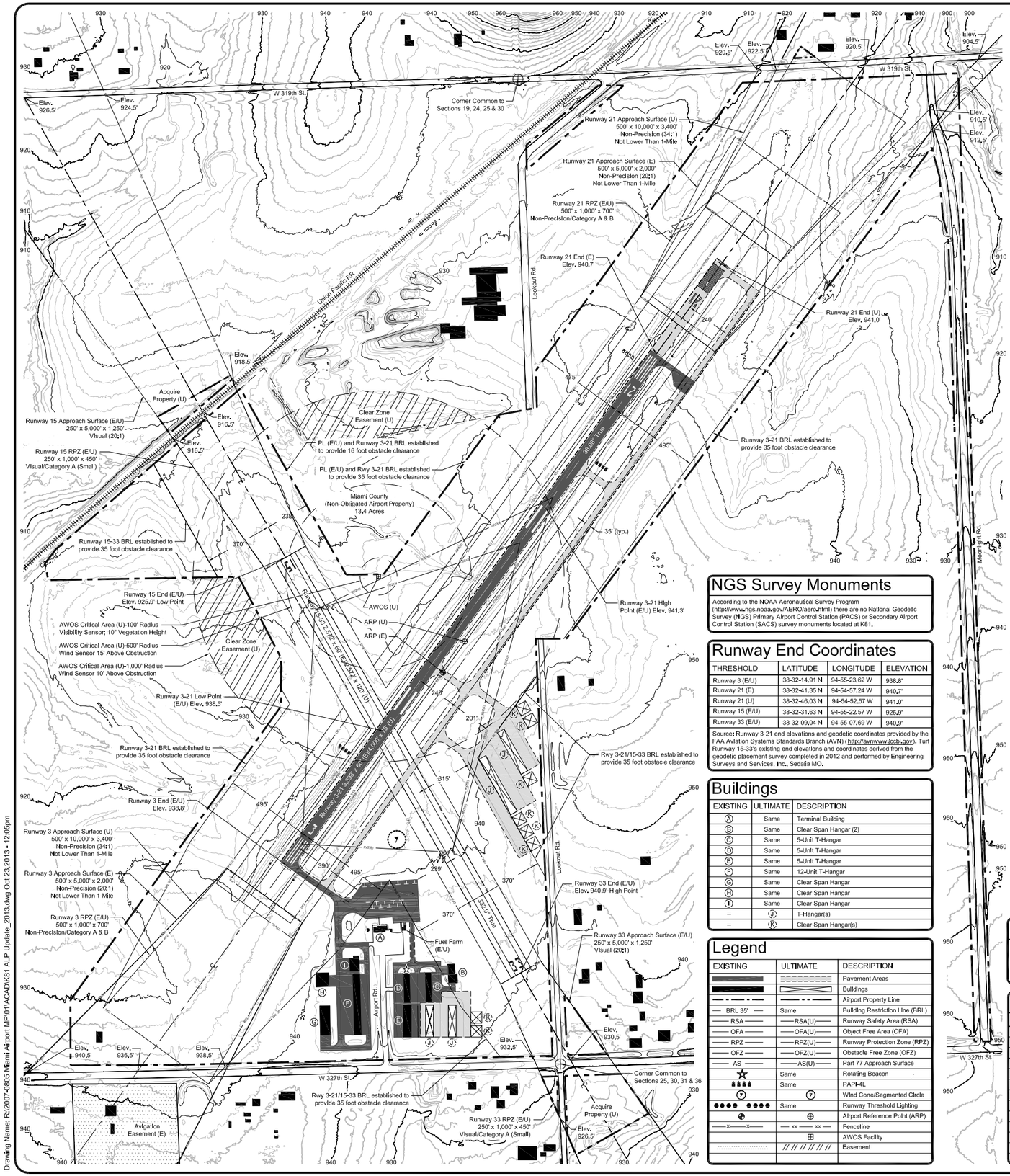
MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

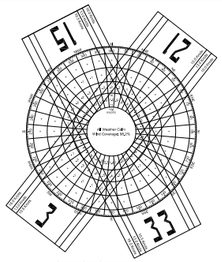
TITLE SHEET

BWR PROJECT NO.	0070805000/00001/00008
AGENCY PROJECT NO.	AIP No. 3-20-0063-014-2011
DRAWN BY	MAW
CHECKED BY	MAW
DESIGNED BY	KWL/MAW
REVISIONS	DATE
SUBMITTAL DATE	10/23/2013

1



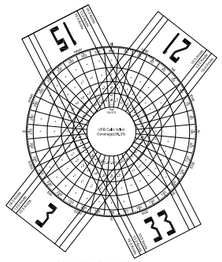
All Weather Wind Rose



Runway	Crosswind Component/ Corresponding ARC 10.5 Knots (A-I & B-I)	13.0 Knots (A-II & B-II)	16.0 Knots (A-III, B-III, C-I to D-III)
Runway 3-21	87.9%	93.4%	97.8%
Runway 15-33	89.6%	94.6%	98.3%
Combined	98.2%	99.5%	99.9%

Source: National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), Asheville, NC; Johnson County Executive Airport (OJC), Olathe, KS (2000-2009).

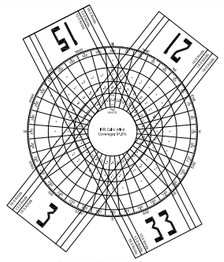
VFR Wind Rose



Runway	Crosswind Component/ Corresponding ARC 10.5 Knots (A-I & B-I)	13.0 Knots (A-II & B-II)	16.0 Knots (A-III, B-III, C-I to D-III)
Runway 3-21	88.2%	93.6%	97.9%
Runway 15-33	89.6%	94.6%	98.2%
Combined	98.2%	99.5%	99.9%

Source: National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), Asheville, NC; Johnson County Executive Airport (OJC), Olathe, KS (2000-2009).

VFR Wind Rose



Runway	Crosswind Component/ Corresponding ARC 10.5 Knots (A-I & B-I)	13.0 Knots (A-II & B-II)	16.0 Knots (A-III, B-III, C-I to D-III)
Runway 3-21	83.1%	90.7%	96.9%
Runway 15-33	88.3%	94.2%	98.4%
Combined	97.6%	99.4%	99.8%

Source: National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), Asheville, NC; Johnson County Executive Airport (OJC), Olathe, KS (2000-2009).

General Notes

1. Existing runway centerline elevations and data obtained for the two foot contours was obtained from the State of Kansas GIS Data Access and Support Center (DASC) Digital Elevation Models (DEM) prepared for the Kansas 2010 LIDAR over Atchison, Coffey, Franklin, Geary, Marshall, Miami, Osage, Leavenworth, Missouri River, Pottawatomie, Riley counties. The downloaded data is based on UTM Zone 15N coordinates on NAD83 (GRS80) horizontal datum and NAVD88 vertical datum.

2. RESERVED.

Runway Data

RUNWAY DETAILS	RUNWAY 3-21 EXISTING 3	21	ULTIMATE 3	21	RUNWAY 15-33 EXISTING 15	33	ULTIMATE 15	33
Airport Reference Code (ARC)	B-I		B-II		A-I (Small)		Same	
Percent (%) Wind Coverage (10.5 Knots)	87.9%				89.6%			
Runway Azimuth	38.08° True	218.1° True	Same	Same	152.9° True	332.9° True	Same	Same
Runway Dimensions	5,398' x 60'		4,000' x 75'		2,572' x 60'		2,572' x 120'	
FAR Part 77 Approach Use Type	NP	NP	Same	Same	V	V	Same	Same
Aeronautical Survey Required for Approach	NVG	NVG	VG	VG	NVG	NVG	Same	Same
Approach Visibility Minimums	1-Mile	1-Mile	Same	Same	V	V	Same	Same
Approach Slope	20:1	20:1	34:1	34:1	20:1	20:1	Same	Same
Runway Safety Area (RSA)	3,878' x 120'		4,600' x 150'		3,052' x 120'		Same	
Runway Object Free Area (OFA)	3,878' x 400'		4,600' x 500'		3,052' x 250'		Same	
Runway Obstacle Free Zone (OFZ)	3,798' x 250'		4,400' x 250'		2,972' x 250'		Same	
Runway Pavement Strength (Thousands of lbs.)	12,500 (SWG)		Same		N/A		Same	
Runway Pavement Material	Asphalt		Same		Turf		Same	
Runway Markings	NP	NP	Same	Same	None	None	Same	Same
Runway Gradient	0.1%	-0.1%	Same	Same	0.5%	-0.5%	Same	Same
Runway Lighting	MIRL		Same		None		Same	
Taxiway Lighting	MITL/Blue Reflectors		MITL		None		Same	
Taxiway Width	25'		35'		N/A		Same	
NAVAIDS	RNAV(GPS)	RNAV(GPS)	Same	Same	None	None	Same	Same
Approach Visual Aids	PAPI-4L	PAPI-4L	Same	Same	None	None	Same	Same
Touchdown Zone Elevation (TDZE)	941.1'	941.3'	Same	Same	N/A	N/A	N/A	N/A
Takeoff Run Available (TORA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Accelerate-Stop Distance Available (ASDA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Landing Distance Available (LDA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Takeoff Distance Available (TODA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SWG-Single Wheel Gear; NP-Non Precision; NVG-Non Vertical Guidance; VG-Vertical Guidance; V-Visual

NGS Survey Monuments

According to the NOAA Aeronautical Survey Program (http://www.ngs.noaa.gov/AERO/aero.html) there are no National Geodetic Survey (NGS) Primary Airport Control Station (PACS) or Secondary Airport Control Station (SACS) survey monuments located at K81.

Runway End Coordinates

THRESHOLD	LATITUDE	LONGITUDE	ELEVATION
Runway 3 (E/U)	38-32-14.91 N	94-55-23.62 W	938.8'
Runway 21 (E)	38-32-41.35 N	94-54-57.24 W	940.7'
Runway 21 (U)	38-32-46.03 N	94-54-52.57 W	941.0'
Runway 15 (E/U)	38-32-31.63 N	94-55-22.57 W	925.9'
Runway 33 (E/U)	38-32-09.04 N	94-55-07.69 W	940.9'

Source: Runway 3-21 end elevations and geodetic coordinates provided by the FAA Aviation Systems Standards Branch (AVN) (http://avnwww.jccbi.gov). Turf Runway 15-33's existing end elevations and coordinates derived from the geodetic placement survey completed in 2012 and performed by Engineering Surveys and Services, Inc., Sedalia MO.

Buildings

EXISTING	ULTIMATE	DESCRIPTION
(A)	Same	Terminal Building
(B)	Same	Clear Span Hangar (2)
(C)	Same	5-Unit T-Hangar
(D)	Same	5-Unit T-Hangar
(E)	Same	5-Unit T-Hangar
(F)	Same	12-Unit T-Hangar
(G)	Same	Clear Span Hangar
(H)	Same	Clear Span Hangar
(I)	Same	Clear Span Hangar
–	(J)	T-Hangar(s)
–	(K)	Clear Span Hangar(s)

Legend

EXISTING	ULTIMATE	DESCRIPTION
		Pavement Areas
		Buildings
		Airport Property Line
BRL 35'	Same	Building Restriction Line (BRL)
RSA	RSA(U)	Runway Safety Area (RSA)
OFA	OFA(U)	Object Free Area (OFA)
RPZ	RPZ(U)	Runway Protection Zone (RPZ)
OFZ	OFZ(U)	Obstacle Free Zone (OFZ)
AS	AS(U)	Part 77 Approach Surface
	Same	Rotating Beacon
	Same	PAPI-4L
		Wind Cone/Segmented Circle
	Same	Runway Threshold Lighting
		Airport Reference Point (ARP)
X X	xx xx	Fenceline
		AWOS Facility
		Easement

Scale

300 150 0 300

Distance In Feet

North Point

TRUE NORTH — MAGNETIC NORTH

Magnetic Declination: 2° 16' 48" E (2012)
Annual Rate of Change: 0° 7.3' W

Airport Data

AIRPORT INFORMATION	EXISTING	ULTIMATE
Airport Elevation- Mean Sea Level (MSL)	943.1'	Same
Airport Reference Code (ARC)	B-I	B-II
Critical Aircraft	Beechcraft B58 Baron	Beechcraft King Air 200
Airport Reference Point (ARP)	38-32-24.80 N, 94-55-12.50 W	38-32-26.50 N, 94-55-10.85 W
Instrument Approach Procedures	RNAV(GPS)	Same
Mean Maximum Air Temperature	89.8° F	Same
Weather Reporting System	None	AWOS
Airport Electronic Aids	None	Same
NPIAS Category	General Aviation	Same
Range and Township/Sections	T17S, R23E/25, 30 and 36	T17S, R23E/19, 25, 30 and 36
FAA Site Number	06833.62	Same
County	Miami	Same
Total Acreage (Fee Simple & Easements)	242.0	256.4 (See Sheet 10 of 11)

Obstacle Free Zone (OFZ) Object Penetrations

There are no existing OFZ object penetrations.

Threshold Siting Surface Object Penetrations

There are no known existing TSS object penetrations.

Modifications to Design Standards

None required.

FAA Approval Stamp

Sponsor Approval Stamp

For Approval by:

Miami County, Kansas

Signed by: _____ Dated: _____

Shane Krull
County Administrator

ALP Revisions

NO.	DESCRIPTION	DATE	REVISED BY	APPROVED BY

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MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

AIRPORT LAYOUT DRAWING

BWR PROJECT NO. 0070805000/00001/00008
AGENCY PROJECT NO. AIP No. 3-20-0063-014-2011
DRAWN BY MAW
CHECKED BY MAW
DESIGNED BY KWL/MAW

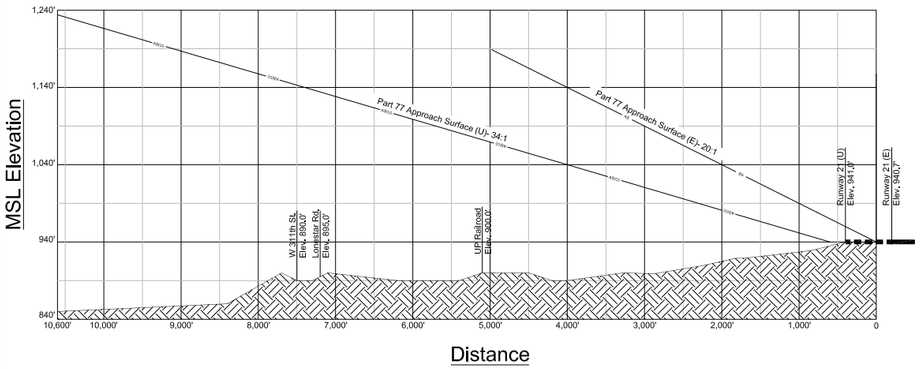
REVISIONS	DATE

SUBMITTAL DATE 10/23/2013

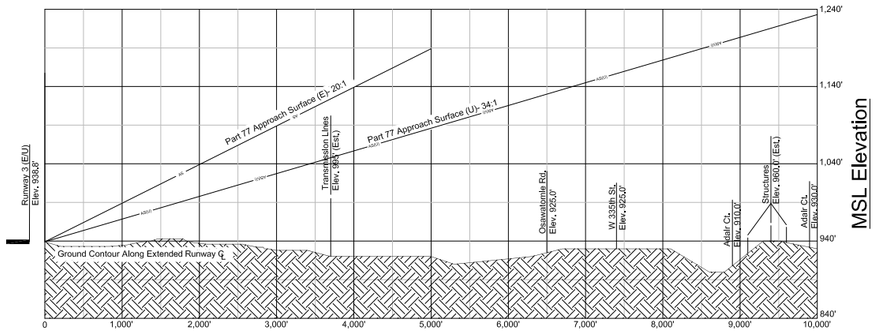
SHEET 2 OF 11

Drawing Name: R:\2007-0805 Miami Airport MP\01\ACAD\K81 ALP Update_2013.dwg Oct 23,2013 - 12:05pm

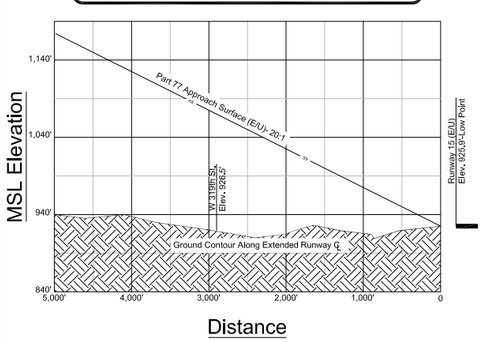
Runway 21 Approach Profile View



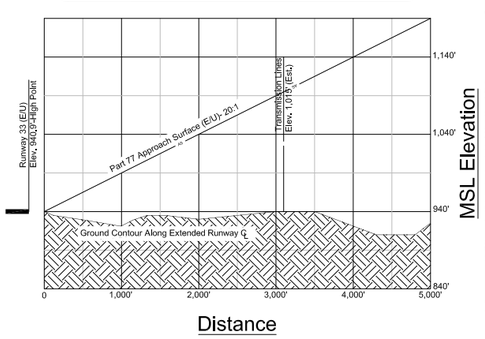
Runway 3 Approach Profile View



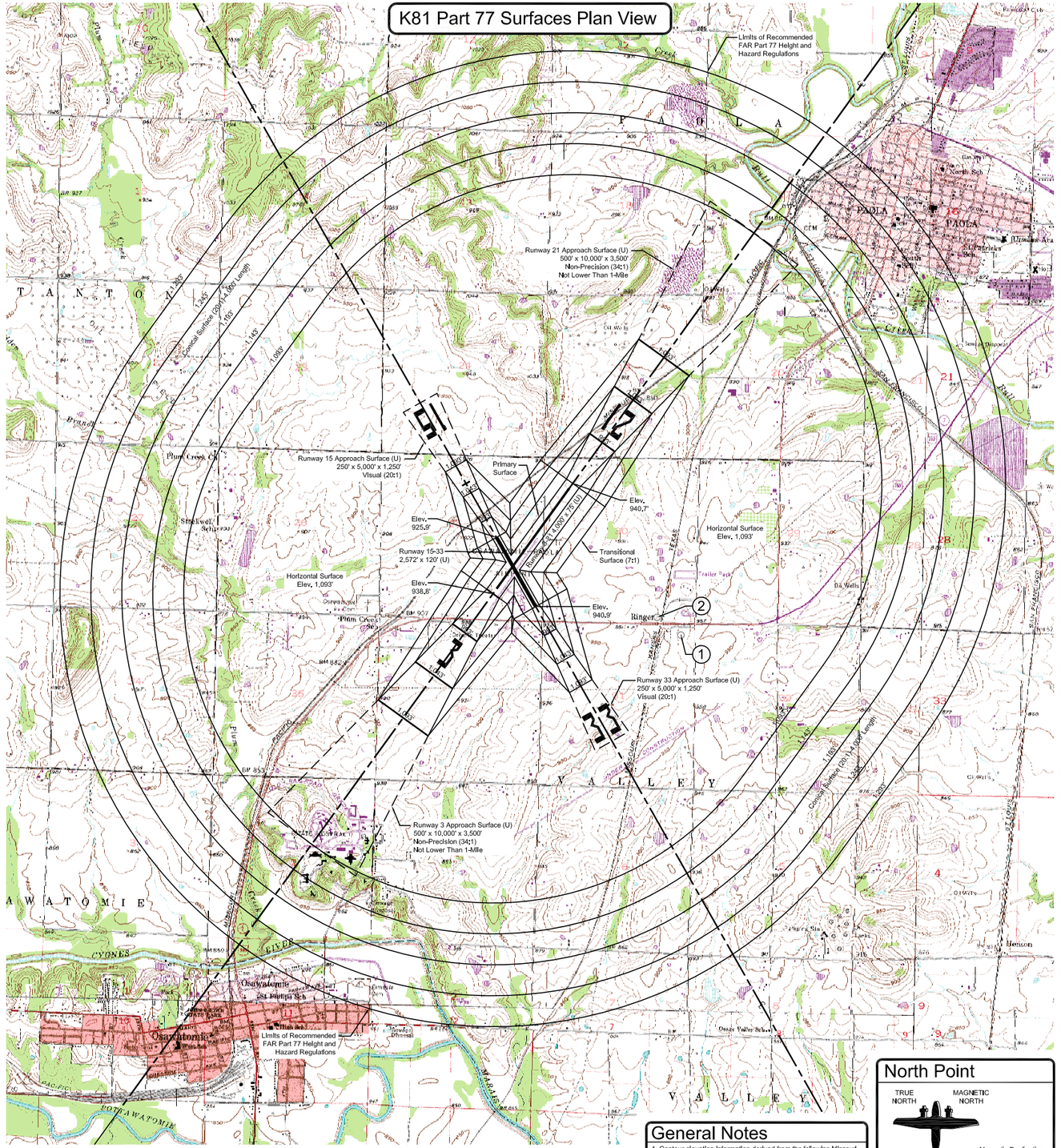
Runway 15 Approach Profile View



Runway 33 Approach Profile View



K81 Part 77 Surfaces Plan View



General Notes

1. Contour elevation information derived from the following Missouri USGS 7.5 minute topographic quadrangle maps: Paola West, Paola East, Osawatomie and Fontana, KS.

2. Per Federal Grant Assurances No. 20 and 21, In June 2012, the Miami County Board of County Commissioners enacted height and hazard regulations based on provisions of FAR Part 77, *Objects Affecting Navigable Airspace*, which regulates and restricts the height of structures and objects of natural growth in the vicinity of K81.

3. Refer to the Inner Portion of the Approach Surface Drawings for obstruction information located within the Inner 2,000 and 3,400 foot portion of the approach surfaces and beyond the RPZs for Runway 3-21. Also refer to the Inner Portion Drawings for obstructions within the Inner 2,000 feet of the approach surfaces and beyond the RPZs for Runway 15-33.

Obstruction Data Table

NO.	DESCRIPTION	STUDY NO.	LATITUDE	LONGITUDE	MSL ELEV.	AGL ELEV.	PENETRATION	SURFACE	DISPOSITION
1	Comm. Tower	2013-ACE-1236-OE	38-32-00.02 N	94-54-09.96 W	1,220'	260'	127 feet	Horizontal	None
2	Water Tower	N/A	38-32-05.19 N	94-54-18.45 W	1,110' (Est.)	150' (Est.)	17 feet (Est.)	Horizontal	TBD

North Point

TRUE NORTH — MAGNETIC NORTH

Magnetic Declination: 2° 16' 48" E (2012)
Annual Rate of Change: 0° 7.3' W

Scale

2,000 1,000 0 2,000

Distance in Feet
Horizontal Scale 1"= 1,000'
Vertical Scale 1"= 100'

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MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

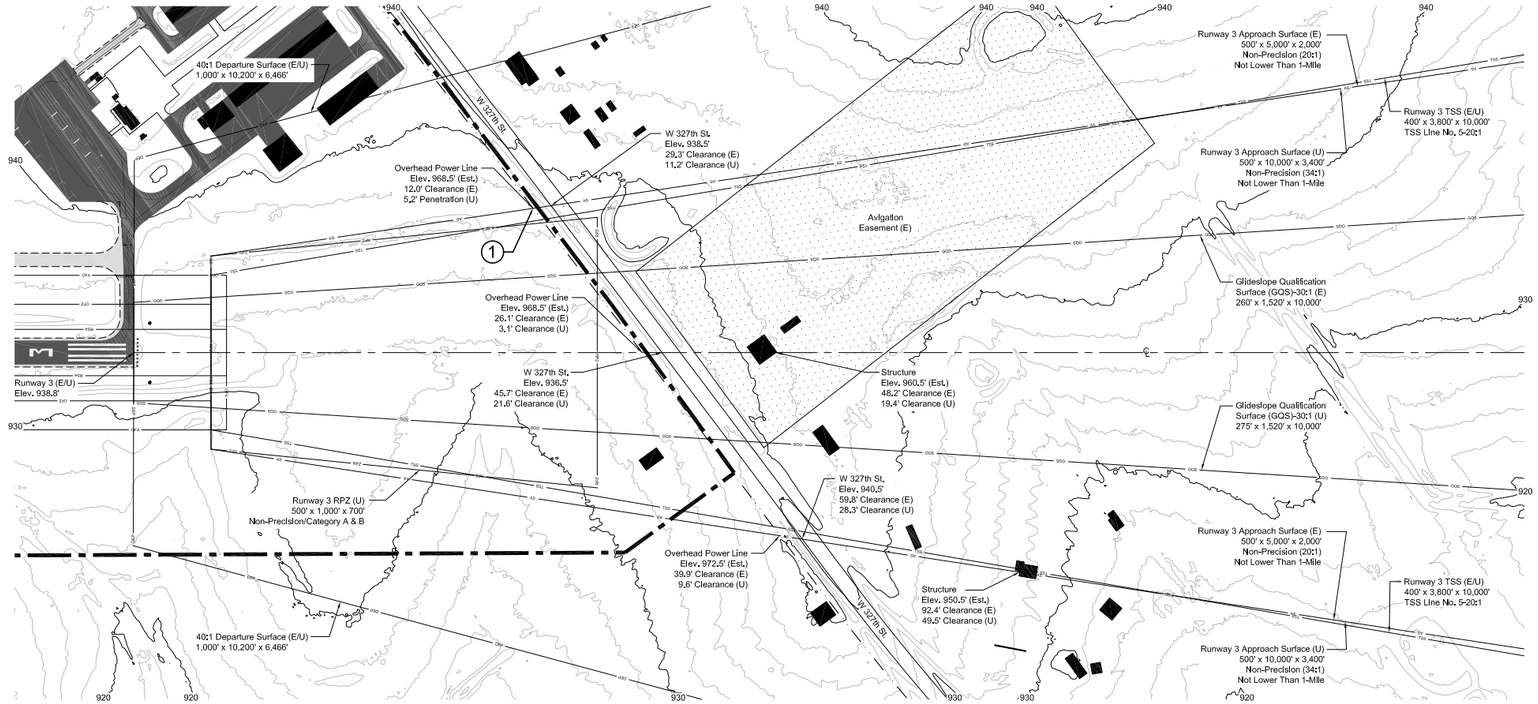
AIRSPACE DRAWING

BWR PROJECT NO. 007080500/00001/00008
AGENCY PROJECT NO. AIP No. 3-20-0063-014-2011
DRAWN BY MAW
CHECKED BY MAW
DESIGNED BY KWL/MAW
REVISIONS DATE
SUBMITTAL DATE 10/23/2013

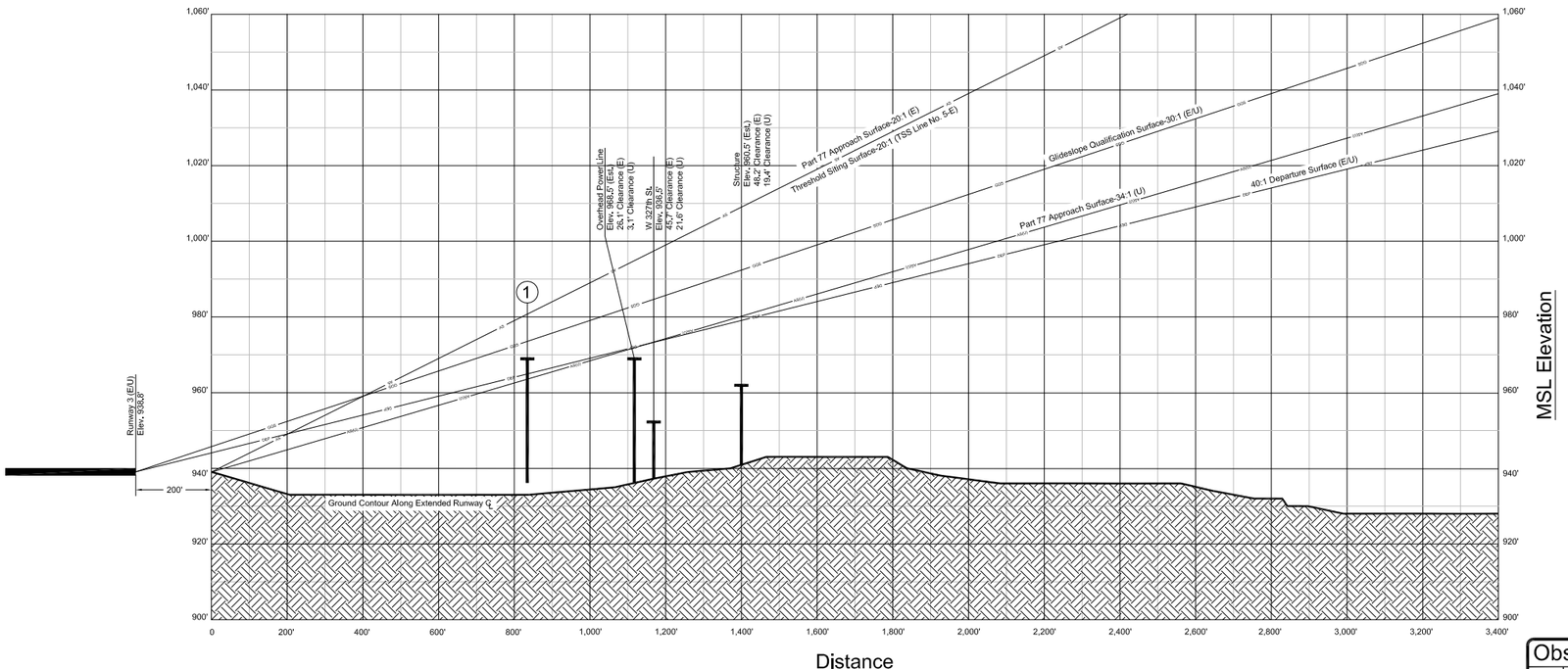
SHEET 3 OF 11

Drawing Name: R:\2007-0805 Miami Airport MP\01\ACAD\K81 ALP Update_2013.dwg Oct 22,2013 - 3:25pm

Runway 3 End Plan View



Runway 3 End Profile View



Legend

EXISTING	ULTIMATE	DESCRIPTION
		Pavement Areas
	Same	Structures
		Airport Property Line
RSA	Same	Runway Safety Area (RSA)
OFA	Same	Object Free Area (OFA)
RPZ	Same	Runway Protection Zone (RPZ)
OFZ	Same	Obstacle Free Zone (OFZ)
AS	Same	Approach Slope Surface
GQS	Same	Glideslope Qualification Surface
TSS	Same	Threshold Siting Surface
DEP	Same	40:1 Departure Surface
	Same	Runway Threshold Lighting
	Same	Runway End Indicator Lights (REIL)
		Fenceline
	Same	Traverse Way/Significant Object

North Point

Magnetic Declination:
0° 25' E (2010)
Annual Rate of Change:
0° 7' W

MAGNETIC NORTH

TRUE NORTH

Scale

200 100 0 200

Distance in Feet
Horizontal Scale 1"= 200'
Vertical Scale 1"= 20'

General Notes

1. The IPASD is a general representation of existing conditions within the inner portion of the approach slope surface pertaining to traverse ways, runway safety area dimensions, terrain relief and structure location. Any deviations from existing conditions compared to conditions detailed in this drawing are unintentional.

2. The recommended FAR Part 77 minimum adjusted approach surface clearance over a public roadway and/or state highway is 15 feet. The existing calculated clearances over W 327th St. reflect the clearance over the approximate centerline of the road at ground level plus the 15 foot penalty height.

3. Completion of a Part 77 obstruction survey is recommended to identify and mitigate potential obstructions that might exist beyond the Approach Surface and within the Transitional Surfaces at the Runway 3 threshold.

Obstruction Data Table

ITEM	DESCRIPTION	DEND	DCL	TOP ELEV.	PENETRATION	SURFACE	MITIGATION
1	Powerline	1,032 feet	373 feet R	968.5' MSL	5 feet	Approach (U)	Lower/Realign

DEND- Distance from Runway End; DCL- Distance from Runway Centerline.

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MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

RUNWAY 3 INNER PORTION OF THE APPROACH SURFACE DRAWING

BWR PROJECT NO. 007080500/00001/00008
AGENCY PROJECT NO. AIP No. 3-20-0063-014-2011
DRAWN BY MAW
CHECKED BY MAW
DESIGNED BY KWL/MAW

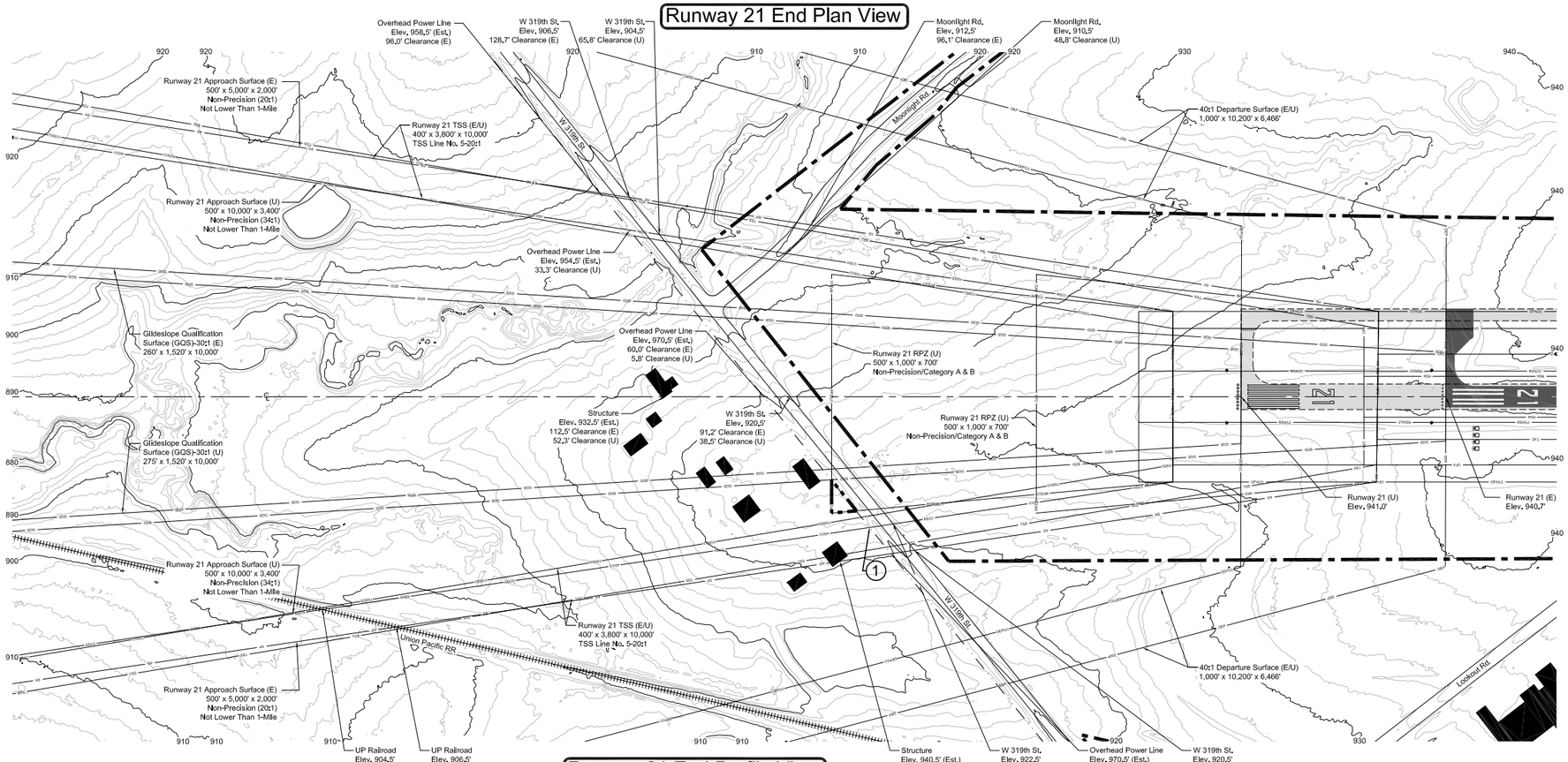
REVISIONS	DATE

SUBMITTAL DATE 10/23/2013

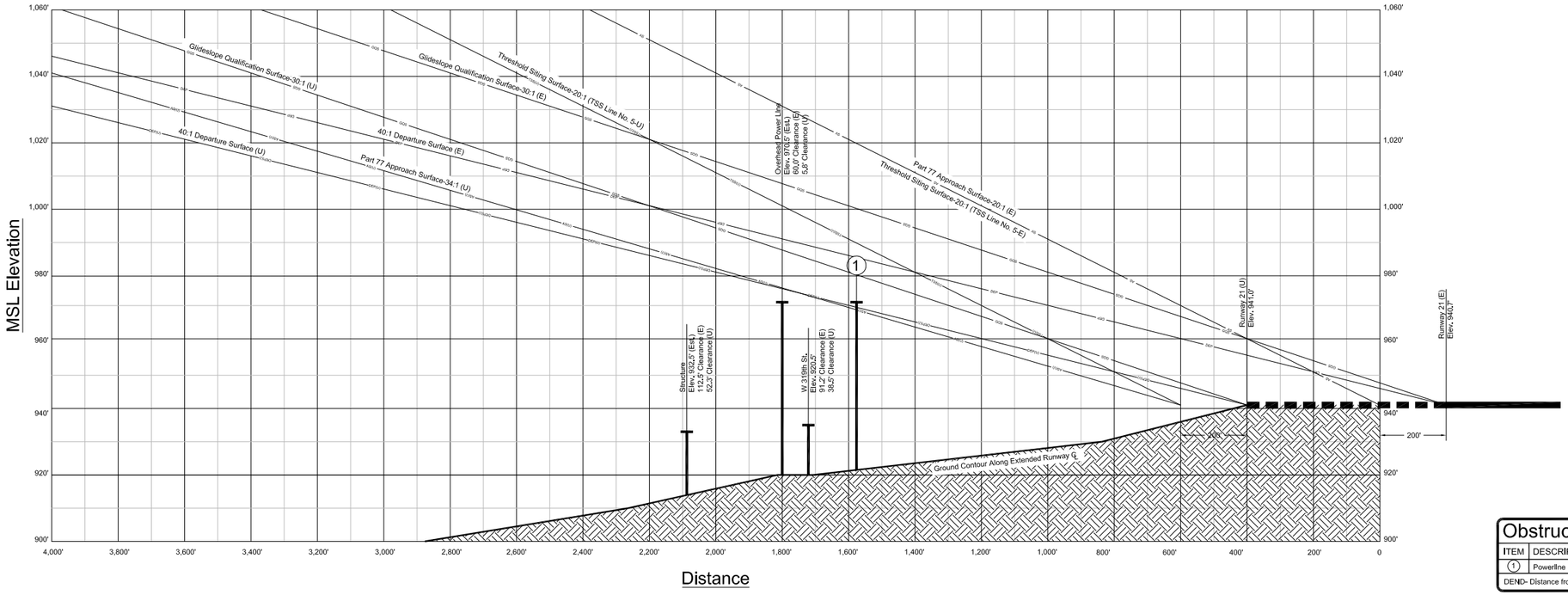
4

SHEET 4 OF 11

Runway 21 End Plan View



Runway 21 End Profile View



Legend

EXISTING	ULTIMATE	DESCRIPTION
		Pavement Areas
	Same	Structures
		Airport Property LIne
RSA	RSA (U)	Runway Safety Area (RSA)
OFA	OFA (U)	Object Free Area (OFA)
RPZ	RPZ (U)	Runway Protection Zone (RPZ)
OFZ	OFZ (U)	Obstacle Free Zone (OFZ)
AS	AS (U)	Approach Slope Surface
GQS	Same	Glideslope Qualification Surface
TSS	TSS (U)	Threshold Siting Surface
DEP	DEP (U)	40:1 Departure Surface
		Runway Threshold Lighting
		Runway End Indicator Lights (REIL)
X X	XX XX	Fenceline
	Same	Traverse Way/Significant Object

North Point

Magnetic Declination:
0° 25' E (2010)
Annual Rate of Change:
0° 7' W

MAGNETIC NORTH

TRUE NORTH

Scale

200 100 0 200

Distance in Feet
Horizontal Scale 1"= 200'
Vertical Scale 1"= 20'

General Notes

1. The IPASD is a general representation of existing conditions within the Inner portion of the approach slope surface pertaining to traverse ways, runway safety area dimensions, terrain relief and structure location. Any deviations from existing conditions compared to conditions detailed in this drawing are unintentional.

2. The recommended FAR Part 77 minimum adjusted approach surface clearance over a public roadway and/or state highway is 15 feet. The existing calculated clearances over W 319th St. and Moonlight Rd. reflect the clearance over the approximate centerline of the road at ground level plus the 15 foot penalty height.

3. The recommended FAR Part 77 minimum adjusted approach surface clearance over a railroad line is 23 feet. The existing calculated clearance over the Union Pacific Railroad reflects the clearance over the approximate centerline of the line at ground level plus the 23 foot penalty height.

4. Completion of a Part 77 obstruction survey is recommended to identify and mitigate potential obstructions that might exist beyond the Approach Surface and within the Transitional Surfaces at the Runway 21 threshold.

Obstruction Data Table

ITEM	DESCRIPTION	DEND	DCL	TOP ELEV.	PENETRATION	SURFACE	MITIGATION
(1)	Powerline	1,089 feet	383 feet R	970.5' MSL	3 feet	Approach	Lower/Realign

DEND- Distance from Runway End; DCL- Distance from Runway Centerline.

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MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

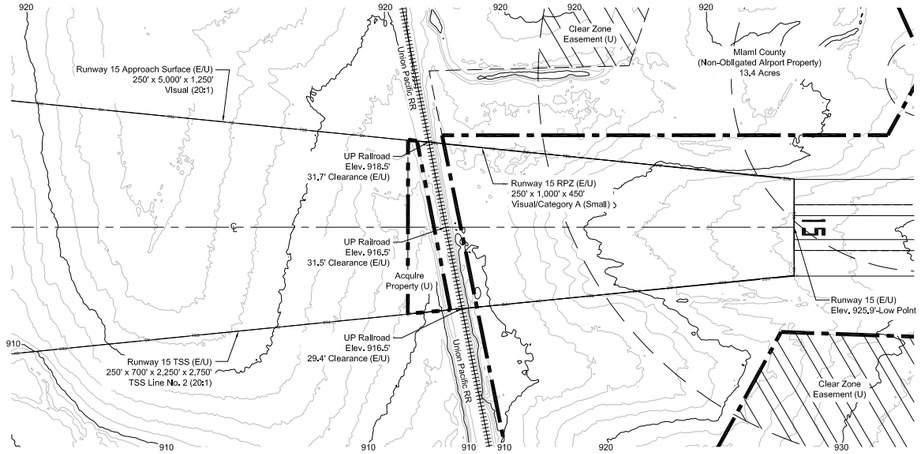
RUNWAY 21 INNER PORTION OF THE APPROACH SURFACE DRAWING

BWR PROJECT NO.	007080500/00001/00008
AGENCY PROJECT NO.	AIP No. 3-20-0063-014-2011
DRAWN BY	MAW
CHECKED BY	MAW
DESIGNED BY	KWL/MAW
REVISIONS	DATE
SUBMITTAL DATE	10/23/2013

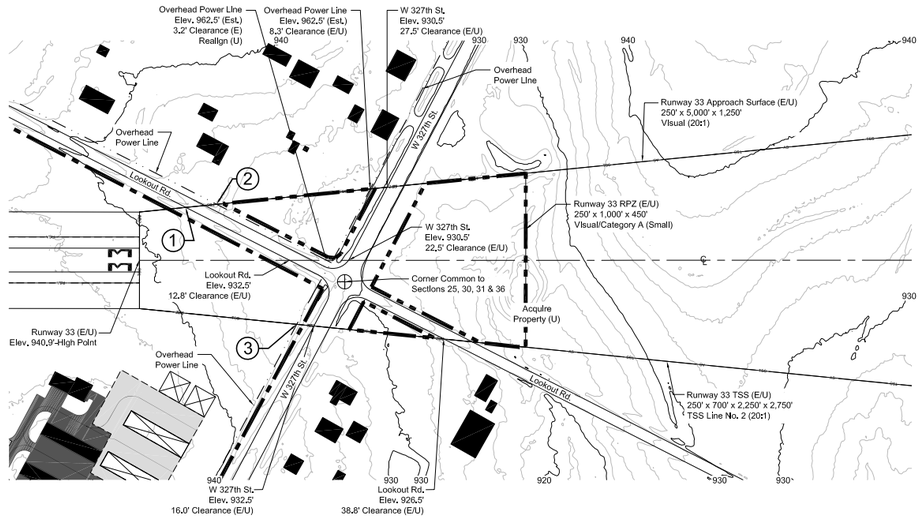
SHEET 5 OF 11

Drawing Name: R:\2007-0805 Miami Airport MP\01\ACAD\K81 ALP Update_2013.dwg Oct 22,2013 - 3:27pm

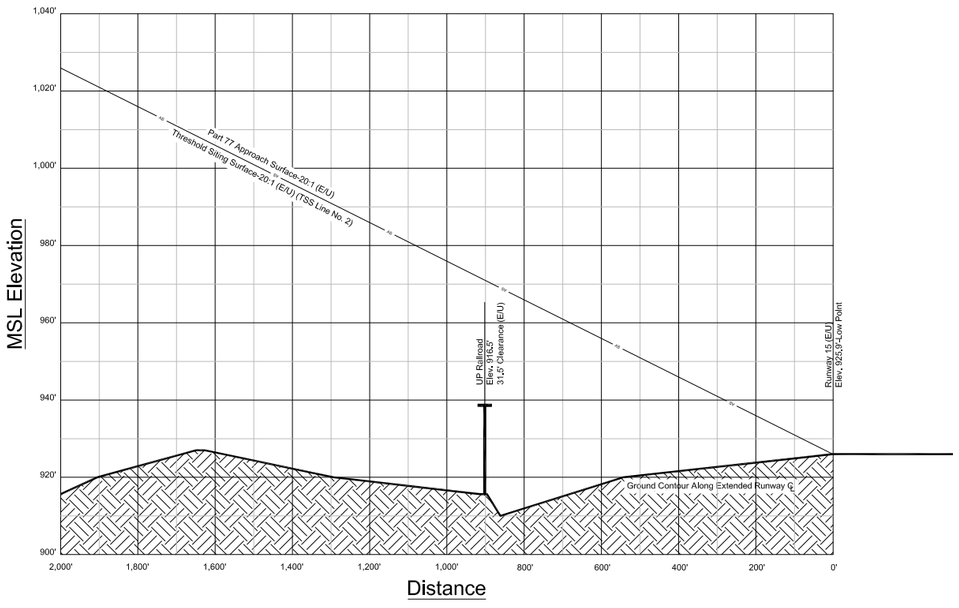
Runway 15 End Plan View



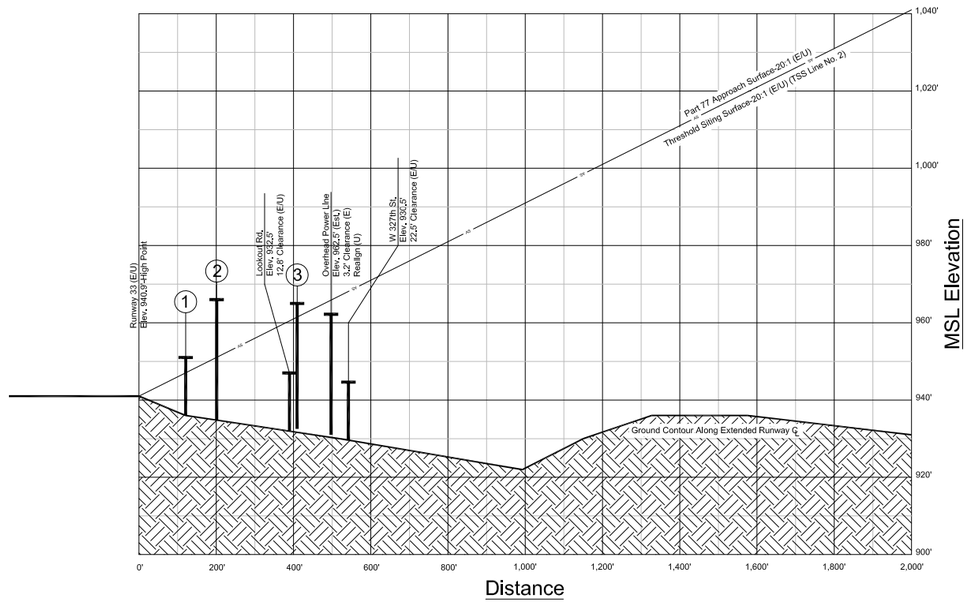
Runway 33 End Plan View



Runway 15 End Profile View



Runway 33 End Profile View



Legend

EXISTING	ULTIMATE	DESCRIPTION
		Pavement Areas
	Same	Structures
		Airport Property Line
RSA	Same	Runway Safety Area (RSA)
OFA	Same	Object Free Area (OFA)
RPZ	Same	Runway Protection Zone (RPZ)
OFZ	Same	Obstacle Free Zone (OFZ)
AS	Same	Approach Slope Surface
TSS	Same	Threshold Siting Surface
x x xx xx		Fenceline
	Same	Traverse Way/Significant Object

Obstruction Data Table

ITEM	DESCRIPTION	DEND	DCL	TOP ELEV.	PENETRATION	SURFACE	LIGHTING	MITIGATION
1	Lookout Rd.	120 feet	137 feet R	936.5' MSL	5 feet	Approach/TSS	None	Aero. Study
2	Powerline	200 feet	145 feet R	966.5' MSL	16 feet	Approach/TSS	None	Realign/Lower
3	Powerline	407 feet	166 feet L	964.5' MSL	3 feet	Approach/TSS	None	Realign/Lower

DEND- Distance from Runway End; DCL- Distance from Runway Centerline.

General Notes

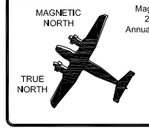
1. The IPASD is a general representation of existing conditions within the inner portion of the approach slope surface pertaining to traverse ways, runway safety area dimensions, terrain relief and structure location. Any deviations from existing conditions compared to conditions detailed in this drawing are unintentional.

2. The recommended FAR Part 77 minimum adjusted approach surface clearance over a public roadway and/or state highway is 15 feet. The existing calculated clearances over Lookout Rd. and W 327th St. reflect the clearance over the approximate centerline of the road at ground level plus the 15 foot penalty height.

3. The recommended FAR Part 77 minimum adjusted approach surface clearance over a railroad line is 23 feet. The existing calculated clearance over the Union Pacific Railroad reflects the clearance over the approximate centerline of the line at ground level plus the 23 foot penalty height.

4. Completion of a Part 77 obstruction survey is recommended to identify and mitigate potential obstructions that might exist beyond the Approach Surface and within the Transitional Surfaces at both runway thresholds.

North Point



Magnetic Declination:
2° 16' 48" E (2012)
Annual Rate of Change:
0° 7.3' W

Scale

200 100 0 200

Distance in Feet
Horizontal Scale 1"= 200'
Vertical Scale 1"= 20'

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MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

RUNWAY 15-33 INNER PORTION OF THE APPROACH SURFACE DRAWING

BWR PROJECT NO.	007080500/00001/00008
AGENCY PROJECT NO.	AIP No. 3-20-0063-014-2011
DRAWN BY	MAW
CHECKED BY	MAW
DESIGNED BY	KWL/MAW
REVISIONS	DATE
SUBMITTAL DATE	10/23/2013

SHEET 6 OF 11

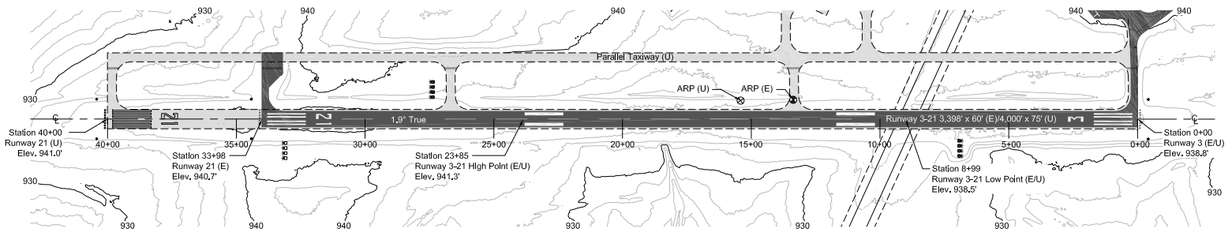
General Notes

1. Existing runway centerline elevations and data obtained for the two foot contours was obtained from the State of Kansas GIS Data Access and Support Center (DASC) Digital Elevation Models (DEM) prepared for the Kansas 2010 LiDAR over Atchison, Coffey, Franklin, Geary, Marshall, Miami, Osage, Leavenworth, Missouri River, Pottawatomie, Riley counties. The downloaded data is based on UTM Zone 15N coordinates on NAD83 (GRS80) horizontal datum and NAVD88 vertical datum.

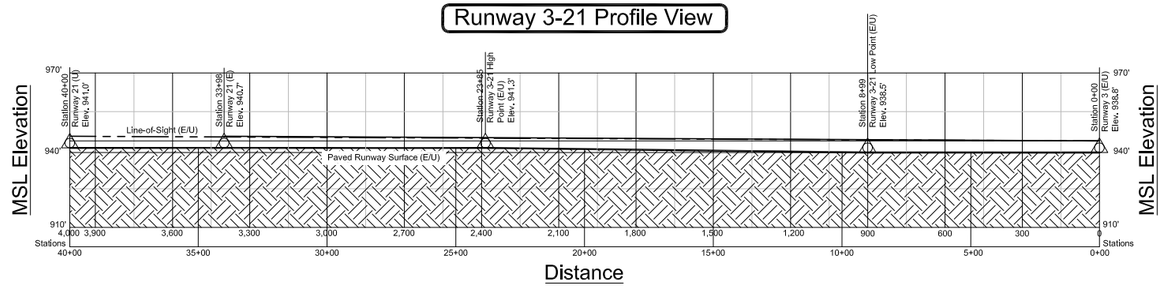
2. Runway 15-33's existing end elevations were derived from the geodetic placement survey completed in 2012 and performed by Engineering Surveys and Services, Inc., Sedalia MO.

3. The centerline profile is a general representation of existing runway conditions pertaining to grade changes, elevations and terrain contours. Any deviations from existing conditions compared to conditions detailed in this drawing are unintentional.

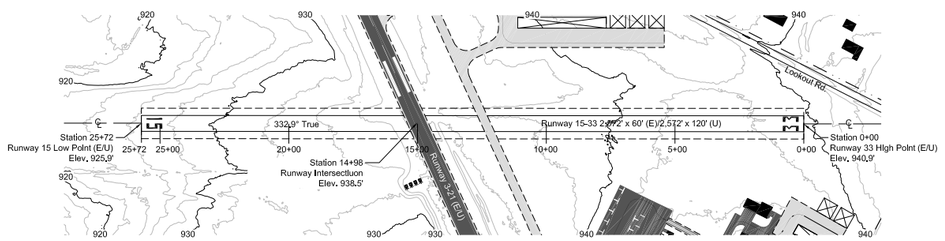
Runway 3-21 Plan View



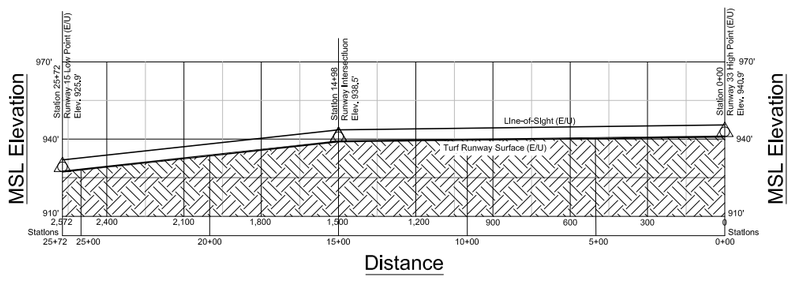
Runway 3-21 Profile View



Runway 15-33 Plan View



Runway 15-33 Profile View



North Point

Magnetic Declination:
0° 25' E (2010)
Annual Rate of Change:
0° 7' W

Scale

300 150 0 300

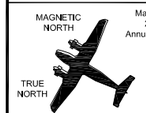
Distance In Feet
Horizontal Scale 1"= 300'
Vertical Scale 1"= 30'

Effective Gradient

Existing/Ultimate Runway Grade: 0.1%

North Point

Magnetic Declination:
2° 16' 48" E (2012)
Annual Rate of Change:
0° 7.3' W



Scale

300 150 0 300

Distance In Feet
Horizontal Scale 1"= 300'
Vertical Scale 1"= 30'

Effective Gradient

Existing/Ultimate Runway Grade: 0.5%

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MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

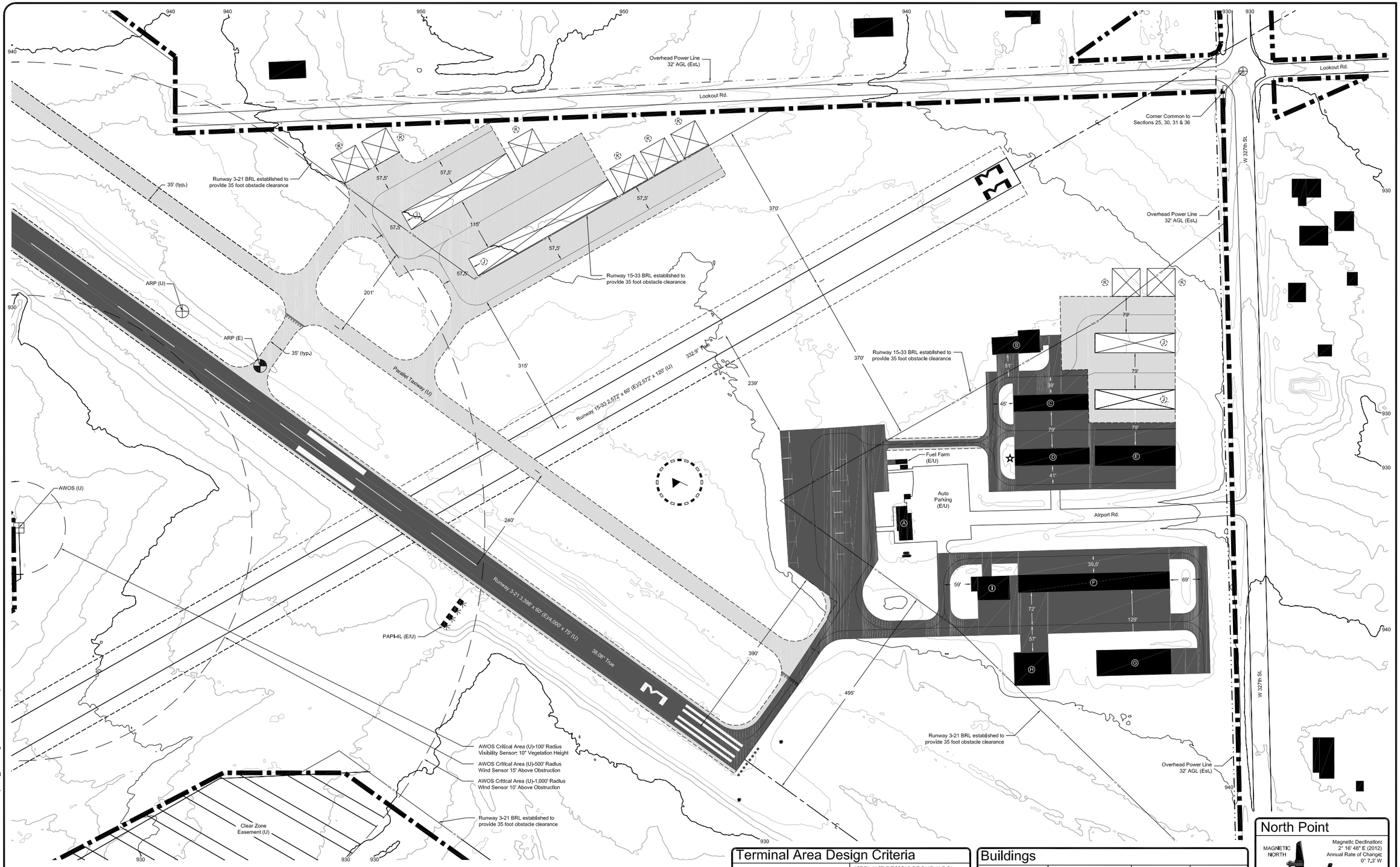
RUNWAY CENTERLINE PROFILE DRAWING

BWR PROJECT NO.
0070805000/00001/00008
AGENCY PROJECT NO.
AIP No. 3-20-0063-014-2011
DRAWN BY
MAW
CHECKED BY
MAW
DESIGNED BY
KWL/MAW
REVISIONS DATE

SUBMITTAL DATE
10/23/2013

7

SHEET 7 OF 11



Legend

EXISTING	ULTIMATE	DESCRIPTION
		Pavement Areas
		Structures
		Property Line
BRL 35'	Same	Building Restriction Line (BRL)
	Same	Rotating Beacon
x x	xx xx	Fenceline
		Lighted Wind Cone/Segmented Circle
		Airport Reference Point (ARP)

General Notes

1. The terminal area drawing is a general representation of existing conditions within the airport's terminal area complex pertaining to apron geometry, tie-down locations, dimensions, terrain relief, taxiway and taxilane location and configuration, as well as structure location. Any deviations from existing conditions compared to conditions detailed in this drawing are unintentional.

Terminal Area Design Criteria

TERMINAL AREA STANDARD	AIRPLANE DESIGN GROUP (ADG)	
	GROUP I	GROUP II
Runway ℄ to Parallel Taxiway ℄ Separation	225'	240'
Taxiway ℄ to Fixed or Movable Object	44.5'	65.5'
Taxiway ℄ to Parallel Taxiway ℄ Separation	69'	105'
Taxiway Object Free Area Width	89'	131'
Taxiway Safety Area Width	49'	79'
Taxiway Wingtip Clearance	10'	26'
Taxiway Width	25'	35'
Taxilane Object Free Area Width	79'	115'
Taxilane ℄ to Parallel Taxilane ℄ Separation	64'	97'
Taxilane ℄ to Fixed or Movable Object	39.5'	57.5'

Buildings

IDENTIFIER		DESCRIPTION	FUTURE ACTION	TOP ELEV. (MSL)
Ⓐ	Same	Terminal Building	Retain/Expand	960.8'
Ⓑ	Same	Clear Span Hangar (2)	Retain	962.6'
Ⓒ	Same	5-Unit T-Hangar	Retain	967.3'
Ⓓ	Same	5-Unit T-Hangar	Retain	967.1'
Ⓔ	Same	5-Unit T-Hangar	Retain	962.9'
Ⓕ	Same	12-Unit T-Hangar	Retain	965.7'
Ⓖ	Same	Clear Span Hangar	Retain	965.5'
Ⓗ	Same	Clear Span Hangar	Retain	970.5'
Ⓘ	Same	Clear Span Hangar	Retain	963.8'
–	Ⓙ	T-Hangar(s)	Develop	963' (Est.)
–	Ⓚ	Clear Span Hangar(s)	Develop	963' (Est.)

North Point

MAGNETIC NORTH

TRUE NORTH

Magnetic Declination:
2° 16' 48" E (2012)
Annual Rate of Change:
0° 7.3' W

Scale

100 50 0 100

Distance in Feet

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MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

TERMINAL AREA DRAWING

BWR PROJECT NO.
0070805000000001/00008

AGENCY PROJECT NO.
AIP No. 3-20-0063-014-2011

DRAWN BY
MAW

CHECKED BY
MAW

DESIGNED BY
KWL/MAW

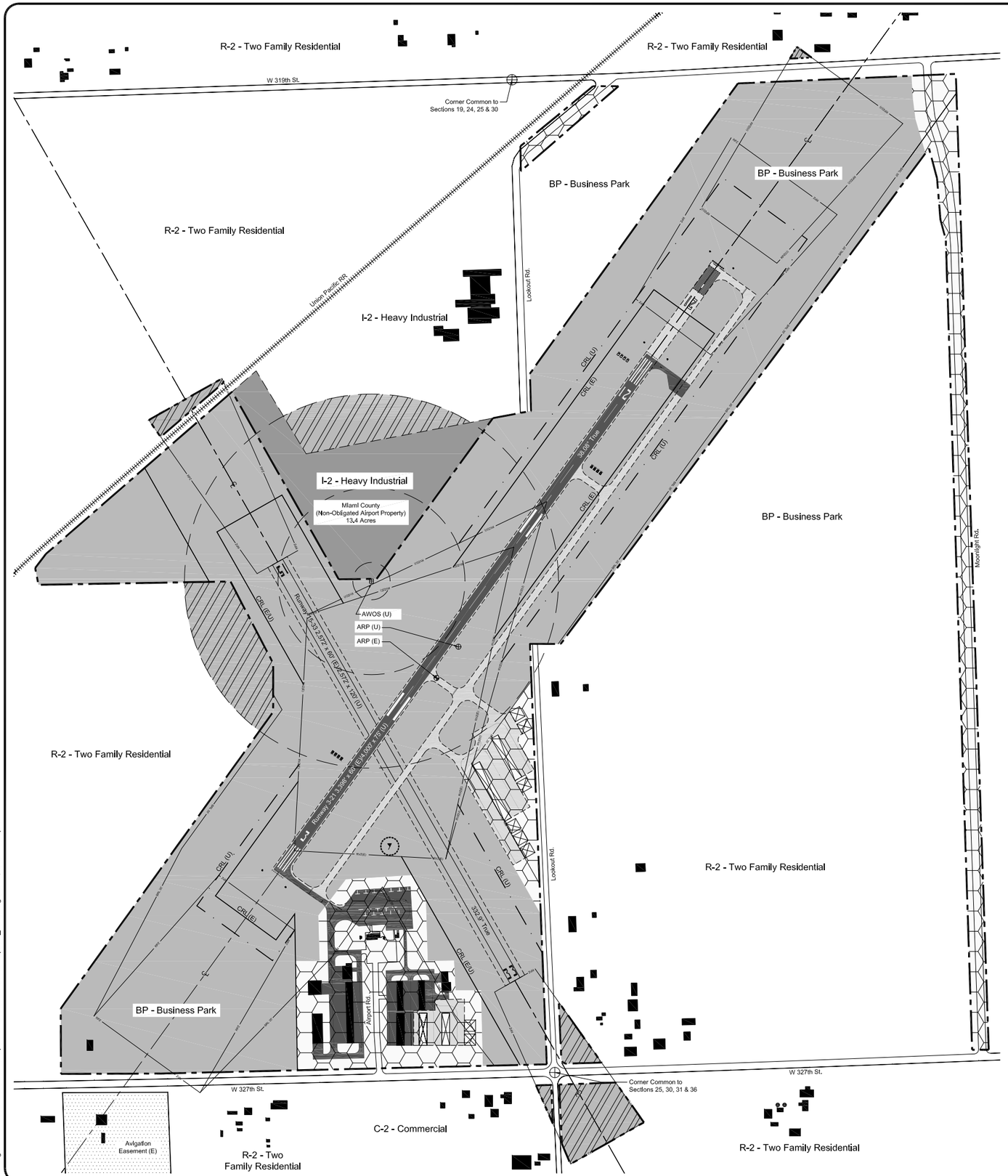
REVISIONS DATE

SUBMITTAL DATE
10/23/2013

8

SHEET 8 OF 11

Drawing Name: R:\2007-0805 Miami Airport MP\01\ACAD\K81 ALP Update_2013.dwg Oct 23,2013 - 12:06pm



Legend

EXISTING	ULTIMATE	DESCRIPTION
		Pavement Areas
		Structures
		Airport Property Line
BRL 35'	Same	Building Restriction Line (BRL)
RPZ	RPZ(U)	Runway Protection Zone (RPZ)
CRL(E)	CRL(U)	Crop Restriction Line (CRL)
	Same	Rotating Beacon
7	7	Lighted Wind Cone/Segmented Circle
		ASOS Station
		Airport Reference Point (ARP)
		Easement

Zoning/Ordinance Statement

Per Federal Grant Assurances, the Airport Sponsor will take appropriate action, including the adoption of zoning laws, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatability measures upon which federal and state funds have been expended.

General Notes

1. In June 2012 the Miami County Board of County Commissioners enacted height and hazard regulations based on provisions of FAR Part 77, *Objects Affecting Navigable Airspace*, which regulates and restricts the height of structures and objects of natural growth in the vicinity of K81.

2. Land use in the vicinity of K81 is based on the Miami County Zoning Map incorporated into zoning regulations in September 2011 by adoption and of a resolution of the Board of County Commissioners in August 2011.

3. Existing and future aviation operational activity does not rise to the threshold required to complete an ultimate noise exposure map (NEM) as recommended by the FAA. Accordingly, no significant airport/aircraft noise impacts are anticipated.

Land Use Legend

HATCH TYPE	LAND USE DESCRIPTION
	Existing Aviation Operations Area
	Ultimate Aviation Operations Area/Land Acquisition Area
	Existing/Ultimate Terminal Operations Area

Crop Restriction Line Criteria

CRL STANDARD	AIRCRAFT APPROACH CATEGORY and AIRPLANE DESIGN GROUP: CATEGORY A & B AIRCRAFT, GROUP I	GROUP II
Distance in Feet from Runway ℄ to Crop (Visual & >3/4-mile)	200'	250'
Distance in Feet from Runway End to Crop (Visual & >3/4-mile)	300'	400'
Distance in Feet from ℄ of Taxiway to Crop	45'	66'
Distance in Feet from Edge of Apron to Crop	40'	58'

North Point

TRUE NORTH

MAGNETIC NORTH

Magnetic Declination:
2° 16' 48" E (2012)
Annual Rate of Change:
0° 7.3' W

Scale

300 150 0 300

Distance in Feet

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903 East 104th Street | Suite 900 | Kansas City, Missouri 64131-3451
P 816.363.2696 | F 816.363.0027 | www.hwlochner.com

MIAMI COUNTY AIRPORT (K81)

Miami County, Kansas

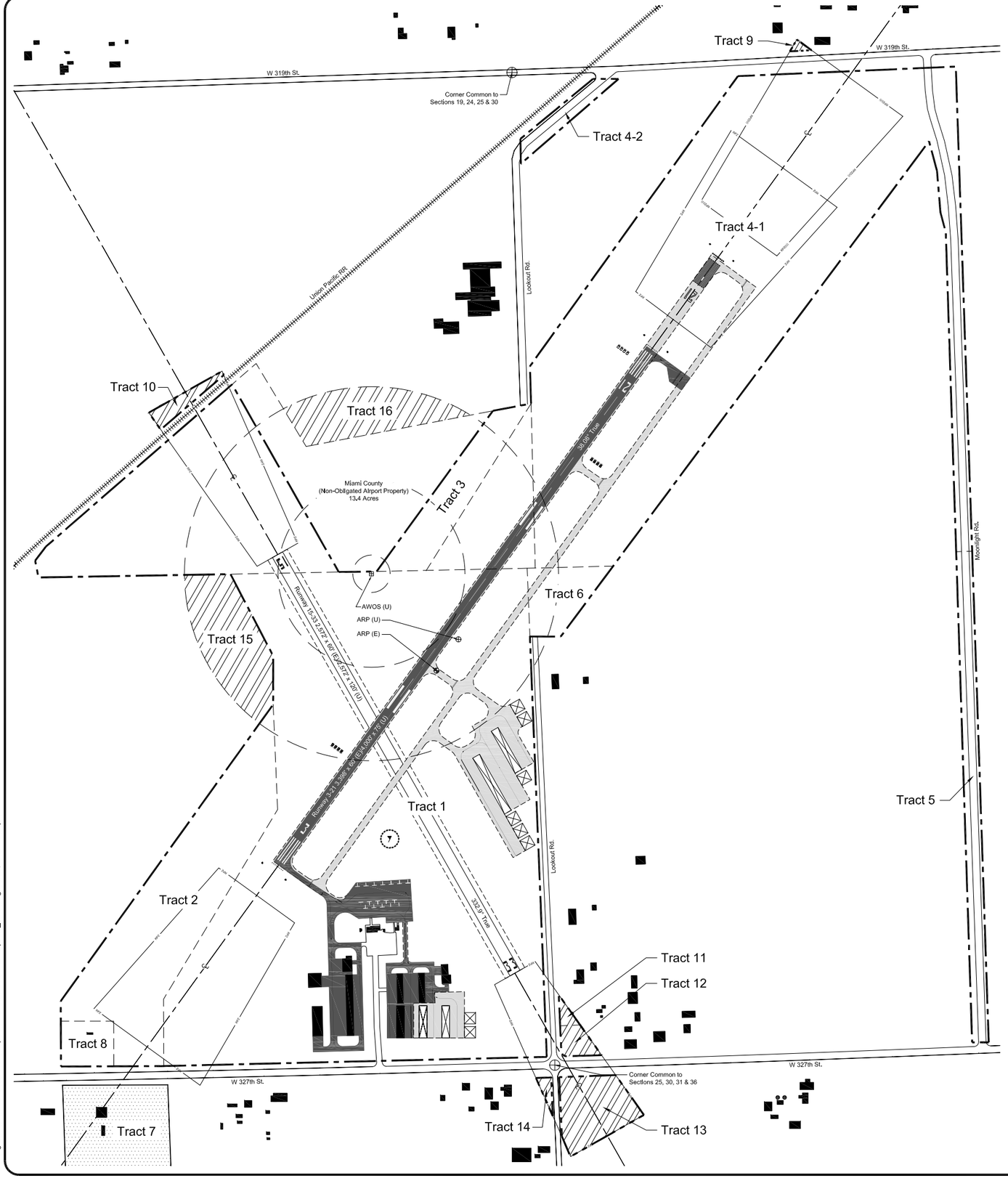
LAND USE DRAWING

BWR PROJECT NO. 007080500/00001/00008
AGENCY PROJECT NO. AIP No. 3-20-0063-014-2011
DRAWN BY MAW
CHECKED BY MAW
DESIGNED BY KWL/MAW

REVISIONS	DATE

SUBMITTAL DATE 10/23/2013

SHEET 9 OF 11



Legend

EXISTING	ULTIMATE	DESCRIPTION
		Pavement Areas
		Airport Property Line
		Same / Tract Boundaries
		Land Acquisition- Ultimate
RPZ	RPZ(U)	Runway Protection Zone (RPZ)
		Buildings
		Airport Reference Point (ARP)

General Notes

1. The property map is a general representation of the existing and ultimate property tracts including the acreage of each tract, how the airport property was acquired (i.e., Federal AIP funds, military/ government surplus, local funding, etc.), when each tract of land was acquired, and relevant information of proposed property acquisitions. The property map serves as a guide for the airport sponsor to show existing and future features (runways, RPZs, NAVAIDS, etc.) that would indicate a potential aeronautical need for property acquisition. Any deviations from existing property information compared to conditions detailed in this drawing are unintentional.

NGS Survey Monuments

According to the NOAA Aeronautical Survey Program (http://www.ngs.noaa.gov/AERO/aero.html) there are no National Geodetic Survey (NGS) Primary Airport Control Station (PACS) or Secondary Airport Control Station (SACS) survey monuments located at K81.

Scale

300 150 0 300

Distance In Feet

North Point

TRUE NORTH

MAGNETIC NORTH

Magnetic Declination: 2° 16' 48" E (2012)
Annual Rate of Change: 0° 7.3' W

Ultimate Property Data

TRACT	ACRES	CURRENT OWNER	PROPERTY INTEREST	PARCEL ID NUMBER
9	0.1	Private Ownership	Fee Simple	0611341900000003020
10	0.7	Private Ownership	Fee Simple	0611472500000001000
11	0.2	Private Ownership	Fee Simple	0611393000000009000
12	0.6	Private Ownership	Fee Simple	0611393000000006010
13	3.0	Private Ownership	Fee Simple	0611393100000003000
14	0.2	Private Ownership	Fee Simple	0611473600001001000
15	5.2	Private Ownership	Clear Zone Easement	0611472500000008000
16	4.4	Private Ownership	Clear Zone Easement	0611472500000013000
Total	14.4			

Source: K81 Exhibit 'A' Property Map dated 10/06/05 and completed by Bucher Willis & Ratliff Corp., Kansas City, MO; Miami County, KS, GIS developed by The Schneider Corporation; Miami County, KS, Assessors Office.

Existing Property Data

TRACT	ACREAGE	PROPERTY INTEREST	PROPERTY OWNER	ACQUIRED	FAA PROJECT NO.
1	123.5	Fee Simple	Miami County	January 1980	AIP 3-20-0063-02
2	17.2	Fee Simple	Miami County	May 1998	AIP 3-20-0063-02
3	4.2	Fee Simple	Miami County	November 1988	AIP 3-20-0063-02
4-1	70.7	Fee Simple	Miami County	May 1998	AIP 3-20-0063-02
4-2	1.3	Fee Simple	Miami County	May 1998	AIP 3-20-0063-02
5	4.8	Fee Simple	Miami County	May 1998	AIP 3-20-0063-02
6	2.1	Fee Simple	Miami County	May 1998	AIP 3-20-0063-02
7	16.7	Avigation Easement	Private Ownership	May 2003	AIP 3-20-0063-06
8	1.5	Fee Simple	Miami County	June 2005	AIP 3-20-0063-07
Total	242.0				

Source: K81 Exhibit 'A' Property Map dated 10/06/05 and completed by Bucher Willis & Ratliff Corp., Kansas City, MO; Miami County, KS, GIS developed by The Schneider Corporation; Miami County, KS, Assessors Office.

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MIAMI COUNTY AIRPORT (K81)

Miami County, Kansas

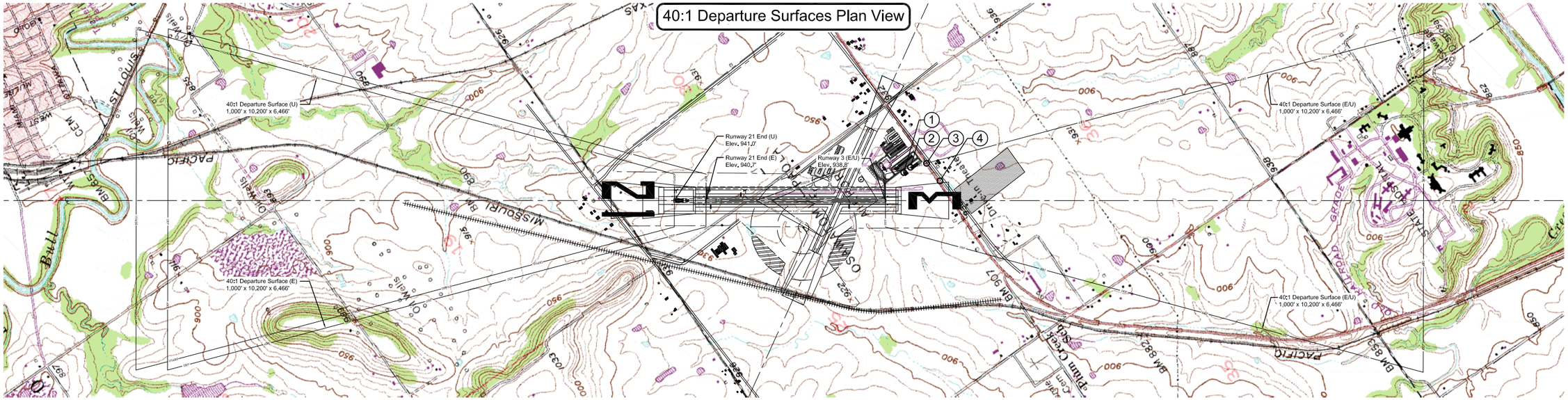
PROPERTY MAP

BWR PROJECT NO. 007080500/00001/00008
AGENCY PROJECT NO. AIP No. 3-20-0063-014-2011
DRAWN BY MAW
CHECKED BY MAW
DESIGNED BY KWL/MAW
REVISIONS DATE
SUBMITTAL DATE 10/23/2013

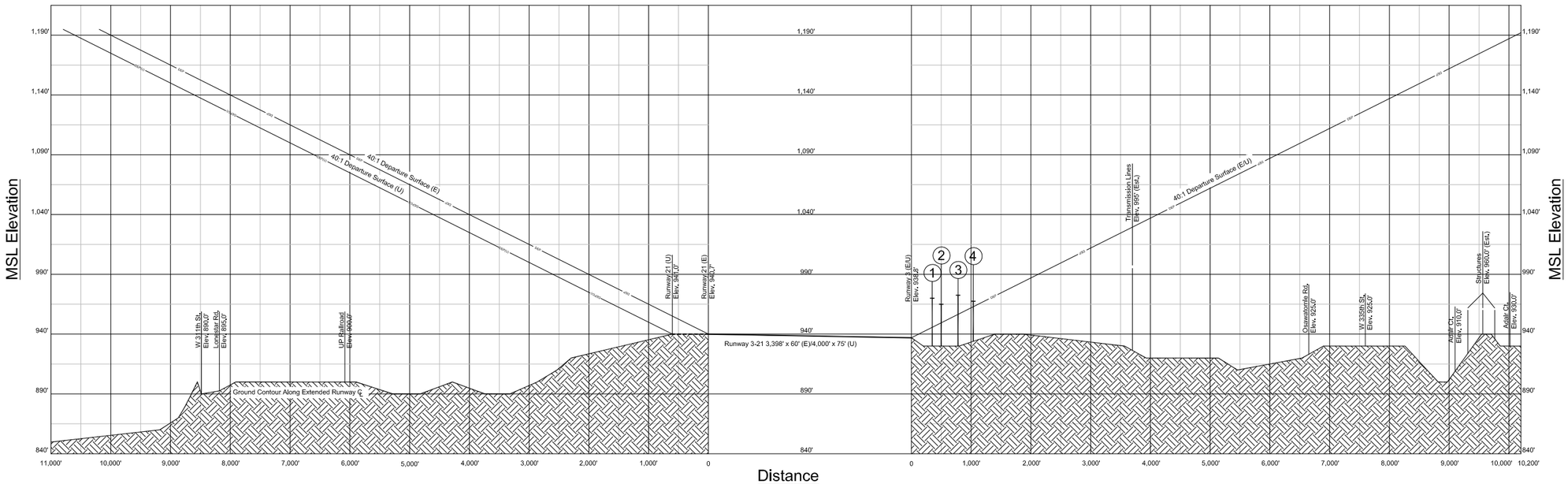
SHEET 10 OF 11

Drawing Name: R:\2007-08\05 Miami Airport MP\01\ACAD\K81 ALP Update_2013.dwg Oct 23,2013 - 12:09pm

40:1 Departure Surfaces Plan View



40:1 Departure Surface Profile View



Runway 21 Obstruction Data Table

There are no known existing Departure Surface object penetrations.

Completion of a obstruction survey is recommended to identify and mitigate potential obstructions that might exist within the runway's 40:1 Departure Surface.

Runway 3 Obstruction Data Table

ITEM	DESCRIPTION	DEND	DCL	TOP ELEV.	PENETRATION	MITIGATION
1	Hangar	333 feet	468 feet R	970.5' MSL	23 feet	TBD
2	Hangar	474 feet	588 feet R	965.5' MSL	15 feet	TBD
3	Powerline	779 feet	707 feet R	972.0' MSL	14 feet	Lower/Realign
4	Powerline	1,032 feet	373 feet R	968.5' MSL	4 feet	Lower/Realign

DEND- Distance from Runway End; DCL- Distance from Runway Centerline.

Completion of a obstruction survey is recommended to identify and mitigate potential/additional obstructions that might exist within the runway's 40:1 Departure Surface.

General Notes

1. The Departure Surface Drawing depicts the plan and profile view of the current and ultimate 40:1 departure surfaces. This drawing provides information on existing and potential obstructions to the engine-out departures for instrument procedures established for Runway 3-21. Any deviations from existing conditions compared to conditions detailed in this drawing are unintentional.

2. Departure Surface penetrations which will require one of two actions and/or mitigations including removal or lowering of the obstruction and/or raising instrument departure minimums.

North Point

Magnetic Declination:
0° 25' E (2010)
Annual Rate of Change:
0° 7' W

Legend

EXISTING	ULTIMATE	DESCRIPTION
		Airport Pavement Areas
	Same	Structures
		Airport Property Line
	Same	Significant Object

Scale

1,000 500 0 1,000

Distance In Feet
Horizontal Scale 1"= 1,000'
Vertical Scale 1"= 50'

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MIAMI COUNTY AIRPORT (K81)
Miami County, Kansas

RUNWAY 3-21
40:1 DEPARTURE SURFACE DRAWING

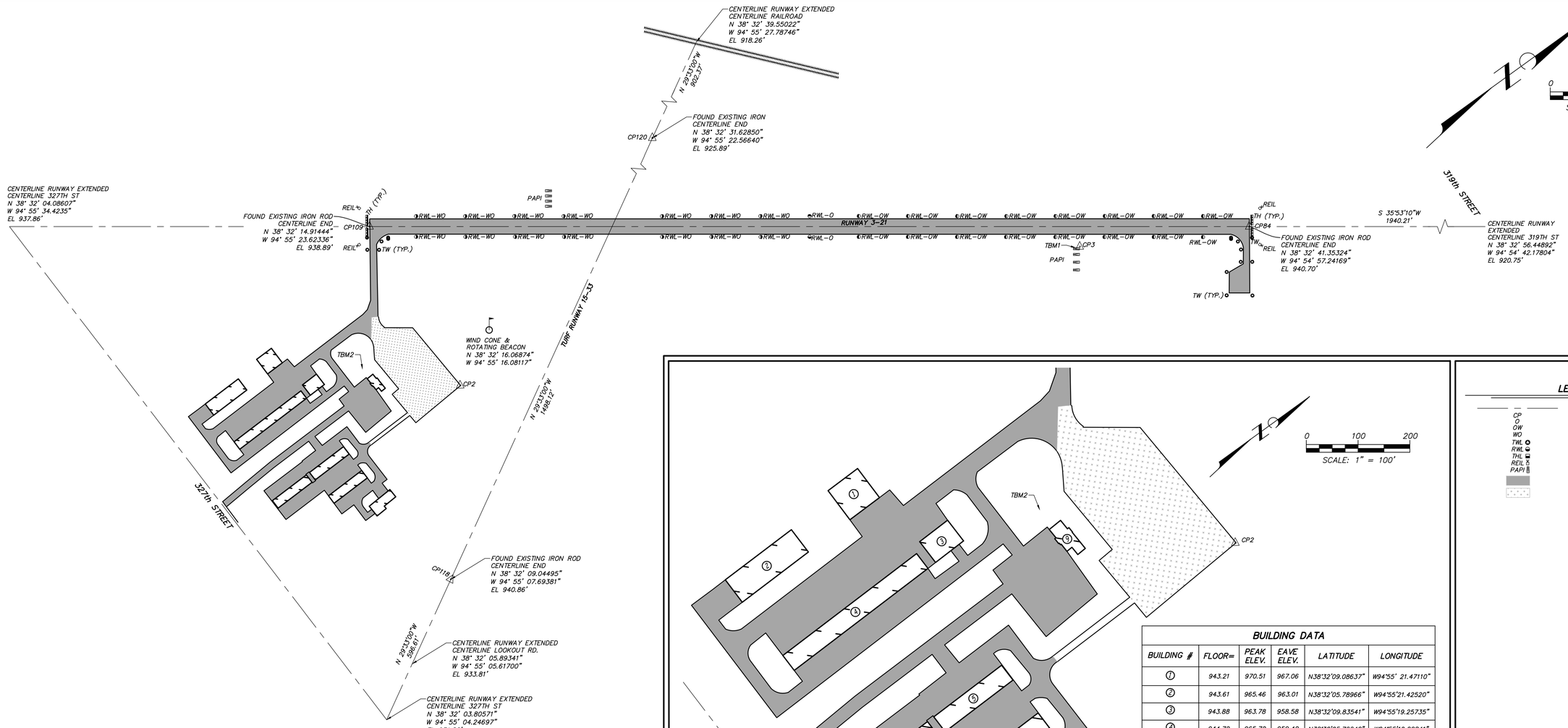
BWR PROJECT NO.
007080500/00001/00008
AGENCY PROJECT NO.
AIP No. 3-20-0063-014-2011
DRAWN BY
MAW
CHECKED BY
MAW
DESIGNED BY
KWL/MAW
REVISIONS DATE

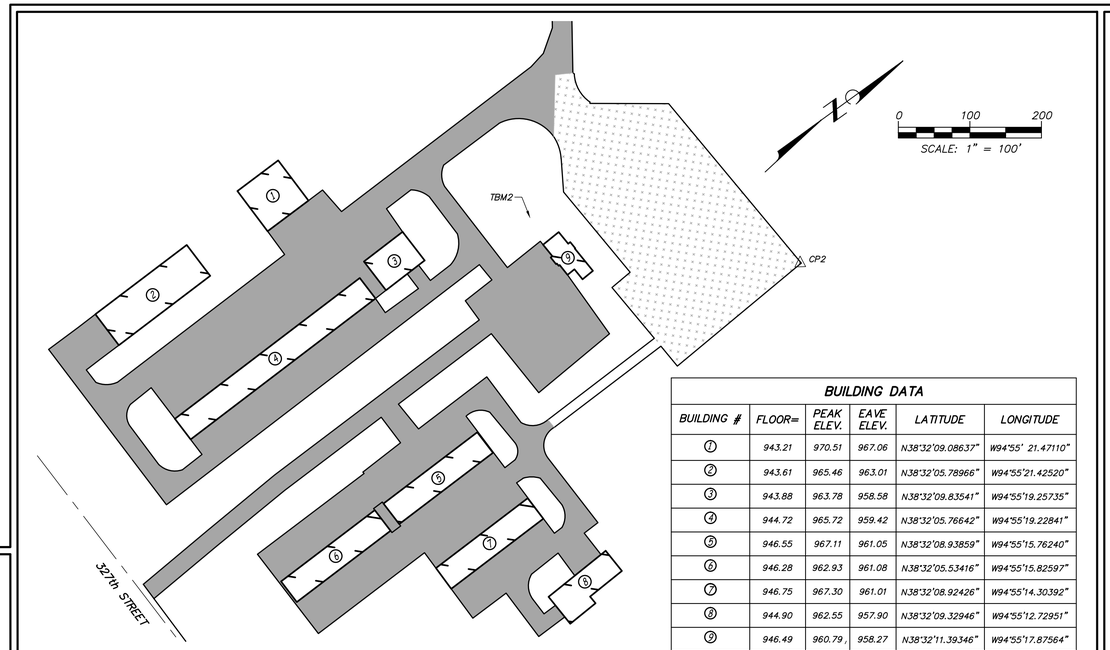
SUBMITTAL DATE
10/23/2013

SHEET **11** OF **11**

APPENDIX B

AIRPORT GEODETIC PLACEMENT SURVEY





BUILDING DATA

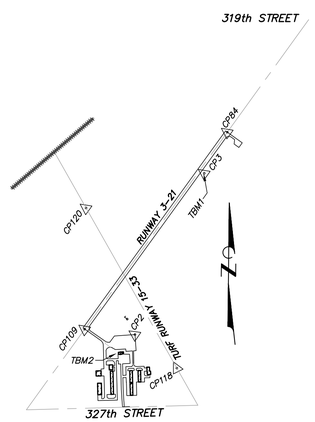
BUILDING #	FLOOR=	PEAK ELEV.	EAVE ELEV.	LATITUDE	LONGITUDE
①	943.21	970.51	967.06	N38°32'09.08637"	W94°55' 21.47110"
②	943.61	965.46	963.01	N38°32'05.78966"	W94°55'21.42520"
③	943.88	963.78	958.58	N38°32'09.83541"	W94°55'19.25735"
④	944.72	965.72	959.42	N38°32'05.76642"	W94°55'19.22841"
⑤	946.55	967.11	961.05	N38°32'08.93859"	W94°55'15.76240"
⑥	946.28	962.93	961.08	N38°32'05.53416"	W94°55'15.82597"
⑦	946.75	967.30	961.01	N38°32'08.92426"	W94°55'14.30392"
⑧	944.90	962.55	957.90	N38°32'09.32946"	W94°55'12.72951"
⑨	946.49	960.79	958.27	N38°32'11.39346"	W94°55'17.87564"

LEGEND

CL	CENTERLINE
CP	CONTROL POINT
O	ORANGE LIGHT
OW	ORANGE & WHITE LIGHT
WO	WHITE & ORANGE LIGHT
TWL	TAXI WAY LIGHTS
RWL	RUNWAY LIGHTS
THL	TAKEOFF HOLD LIGHTS
REIL	RUNWAY END IDENTIFIER LIGHT
PAPI	PRECISION APPROACH PATH INDICATOR
	ASPHALT PAVEMENT
	CONCRETE PAVEMENT

SITE LOCATION MAP

NOT TO SCALE



BENCH MARK

BM1 – DESIGNATION (PAOLA MAGNETIC RESET) – PID DF7131 – TRIANGULATION STATION DISK 0.5 MILE NORTH OF THE MIAMI AIRPORT, 182 METERS NORTHWEST OF THE UNION PACIFIC RAILROAD 25 METERS EAST OF A NORTH–SOUTH FENCE, IN THE SOUTH QUARTER OF SECTION 19.

ELEVATION=1027.16

BM2 – DESIGNATION (EE 252) – PID JE0710 – BENCH MARK DISK SET IN WEST CONCRETE HEADWALL OF A 6' X 8' CONCRETE BOX CULVERT LOCATED ABOUT 5.5 MILES SOUTH–SOUTHEAST OF PAOLA.

ELEVATION=835.95

TBM1 – (AKA 299) SET CHISELED SQUARE ON SOUTHWEST CORNER OF PAPI ON EAST SIDE OF RUNWAY.

ELEVATION=938.95'

TBM2 – (AKA 300) SET CHISELED SQUARE ON SOUTHEAST CORNER OF CONCRETE.

ELEVATION=945.15'

SURVEY CONTROL POINTS

POINT NUMBER	NORTH	EAST	ELEVATION	DESCRIPTION
CP2	2013106.14	2335906.79	941.55	DRILL HOLE
CP3	2015359.39	2336875.26	938.84	REBAR
CP84	2015935.44	2337196.11	940.71	COPPERWELD ROD
CP109	2013182.25	2335204.24	938.88	COPPERWELD ROD
CP118	2012637.48	2336491.83	940.86	REBAR
CP120	2014875.13	2335223.30	925.89	REBAR

THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT

PRELIMINARY

NOT FOR CONSTRUCTION, BIDDING, RECORDING, OR PERMIT REVIEW PURPOSES

CHRISTOPHER M. WICKERN
PROFESSIONAL LAND SURVEYOR
PLS–2000161240

GEODETIC PLACEMENT SURVEY

MIAMI COUNTY AIRPORT #0070180500

MIAMI COUNTY, KANSAS

Surveyed: CW
Drawn: BJW
Checked: CW

Engineering Surveys & Services
1775 West Main Street
Sedalia, Missouri
660 - 826 - 8618
Missouri Land Surveying Corporation # 2004004672

Revised

Scale	Date	Job	Sheet
AS SHOWN	14 June 2012	3438	1 of ?

F:\CURRENT\DRAWINGS\LOCKNER\3438\3438-TOPO.DWG 6/14/2012

APPENDIX C

ENVIRONMENTAL OVERVIEW COORDINATION LETTERS

DEPARTMENT OF THE ARMY
KANSAS CITY DISTRICT, CORPS OF ENGINEERS
635 FEDERAL BUILDING
601 E 12TH STREET
KANSAS CITY MO 64106-2824

REPLY TO
ATTENTION OF

April 17, 2012

Regulatory Branch
(NWK-2012-572)

RECEIVED
APR 18 2012

Ms. Liz McVay, R.G.
Project Manager
H.W. Lochner, Inc.
903 East 104th Street
Kansas City, Missouri 64131

Dear Ms. McVay:

This is in reply to your recent letter dated April 6, 2012, regarding initial planning for the update to the Miami County airport master plan. The project involves the possible development of additional land for runways and safety zones surrounding the existing airport site. This property is located within Section 25, Township 17 south, Range 22 east and Section 30, Township 17 south, Range 23 east, Miami County, Kansas.

The Corps of Engineers has jurisdiction over all waters of the United States. Discharges of dredged or fill material in waters of the United States, including streams and wetlands, requires authorization from the Corps under Section 404 of the Clean Water Act (Title 33 United States Code Section1344). The implementing regulation for this Act is found at Title 33 Code of Federal Regulations Parts 320-332.

The maps accompanying your letter and our review of the project site using off-site tools indicate that the project may involve work within jurisdictional waters of the U.S. Our evaluation of the project site has indicated the possible presence of hydric soils and wetlands within the project area. Hydric soils are indicators of possible wetlands on the site. A map of the partially hydric soil type found within the project area is enclosed for your reference. The placement of fill within wetlands requires notification to this office in accordance with the general conditions of any existing Nationwide Permit authorization for this type of project. Projects having impacts to wetlands or waters exceeding ½ -acre require individual standard permits rather than general permits.

The first step in proceeding with a permit evaluation with the Corps of Engineers for development of the property is to furnish our office with a delineation of all possible waters of the U.S. located within the confines of the project area. This completed report should be furnished to our office for further review and include all portions of the project site, including those not expected to be disturbed by project activities. Wetland and soil surveys should be conducted in accordance with the Corps of Engineers 1987 Wetland Delineation Manual and Regional updates.

After the delineation report has been evaluated by the Corps of Engineers, the location, extent of work, quantity and type of fill materials placed within any waters of the U.S. present on the site must be provided to determine the type of authorization needed for the proposed project. Drawings, including plan view and cross-section view of the project site are helpful in identifying the type and extent of work within jurisdictional waters. However, if the proposed improvements do not require the discharge of dredged or fill material in any waters of the United States, including wetlands, a DA permit will not be

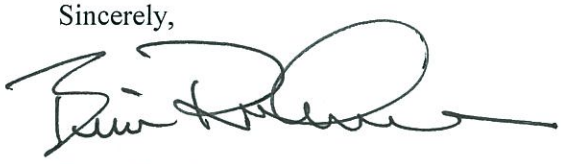
required. If a permit is required, enclosed please find a DA Permit application along with instructions on how to complete the form.

Federal regulations require that a DA permit be issued by the Corps of Engineers prior to the initiation of any construction on the portion of a proposed activity which is within the Corps' regulatory jurisdiction.

We are interested in your thoughts and opinions concerning your experience with the Kansas City District, Corps of Engineers Regulatory Program. We have placed an automated version of our Customer Service Survey form on our website at: http://per2.nwp.usace.army.mil/survey.html. At your request, we will mail a paper copy that you may complete and return to us by mail or fax.

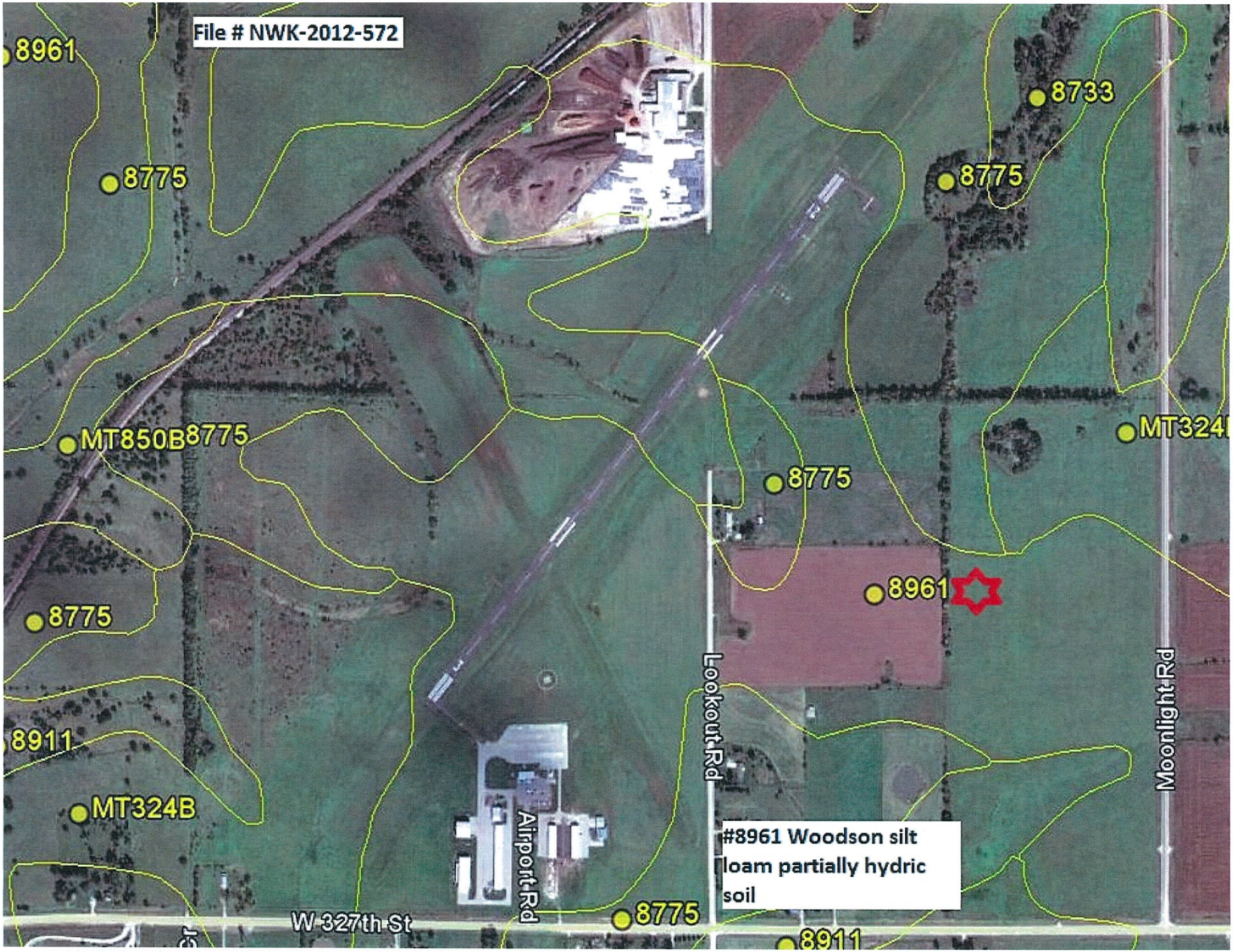
If you have any questions concerning this matter, please feel free to contact me at (816) 389-3703. Please reference application number 2012-572 in all comments or inquiries relating to this project.

Sincerely,



Brian Donahue
Project Manager

Enclosures


File # NWK-2012-572
8961
8775
8733
8775
MT850B
8775
MT324
8775
8961
8775
8911
MT324B
Airport Rd
Lookout Rd
Moonlight Rd
W 327th St
8775
8911
#8961 Woodson silt loam partially hydric soil

Instructions for Preparing a Department of the Army Permit Application

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name and the E-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, e.g., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the latitude and longitude of where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality that the site is located in.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wing walls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Description of Avoidance, Minimization, and Compensation. Provide a brief explanation describing how impacts to waters of the United States are being avoided and minimized on the project site. Also provide a brief description of how impacts to waters of the United States will be compensated for, or a brief statement explaining why compensatory mitigation should not be required for those impacts.

Block 24. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identity the authorization, if possible.

Block 25. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 26. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 27. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.**

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

(33 CFR 325)

OMB APPROVAL NO. 0710-0003
EXPIRES: 31 AUGUST 2012

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Middle - Last -	First - Middle - Last -
Company -	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address-	Address-
City - State - Zip - Country -	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ SIGNATURE OF APPLICANT _____ DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
	Address
15. LOCATION OF PROJECT	City - State- Zip-
Latitude: °N Longitude: °W	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality

Section - Township - Range -

17. DIRECTIONS TO THE SITE

18. Nature of Activity (Description of project, include all features)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? ☐ Yes ☐ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT _____ DATE _____ SIGNATURE OF AGENT _____ DATE _____

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Division of Environment
Curtis State Office Building
1000 SW Jackson St., Suite 400
Topeka, KS 66612-1367

Robert Moser, MD, Secretary

Kansas
Department of Health & Environment

Phone: 785.296.1535
Fax: 785.296.8464
www.kdheks.gov

Sam Brownback, Governor

Comments by: KDHE

Transmittal Date: May 8, 2012

This form provides notification and the opportunity for your agency to review and comments on this proposed project as required by Executive Order 12372. Review Agency, please complete Parts II and III as appropriate and return to contact person listed below. Your prompt response will be appreciated.

RETURN TO: Liz McVay, Project Manager
H.W. Lochner, Inc.
903 East 104th Street
Kansas City, MO 64131

PART I

REVIEW AGENCIES/COMMISSION

___Aging
___Agriculture
___Biological Survey
___Conservation Commission
___Corporation Commission
___Education
___Geological Survey, KS
_X_Health & Environment
___Historical Society
___Social & Rehabilitation
___State Forester
___Transportation
___Water Office, KS
___Wildlife & Parks
___Commerce

PART II **AGENCY REVIEW COMMENTS**

COMMENTS: (Attach additional sheet if necessary) Re: Miami County Airport (K-81) Miami County, KS
Lochner File Number: 007080501.
Please see the enclosed comments submitted by Scott Yankey, Bureau of Env Remediation and Don Carlson, Bureau of Water.

PART III
RECOMMENDED ACTION COMMENTS:

_X_Clearance of the project should be granted.

__Clearance of the project should not be granted.

___Clearance of the project should be delayed until the issues or questions above have been clarified.

___Request a State Process Recommendation in concurrence with the above comments.

___ Clearance of the project should not be delayed but the Applicant should (in the final application) address and clarify the question or concerns indicated above.

___Request the opportunity to review final application prior to submission to the federal funding agency.

DIVISIONS/ AGENCY/ COMMISSION

John W. Mitchell

John W. Mitchell, Director
Division of Environment

JM/df

Bureau of Environmental Remediation
Curtis State Office Building
1000 SW Jackson St., Suite 410
Topeka, KS 66612-1367

phone: 785-296-8025
fax: 785-296-4823
syankey@kdheks.gov
www.kdheks.gov

Robert Moser, MD, Secretary

Kansas
Department of Health and Environment

Sam Brownback, Governor

MEMORANDUM

TO: Donna Fisher

FROM: Scott Yankey

DATE: April 23, 2012

RE: Intergovernmental Agency Review requested by H.W. Lochner, Inc. for Improvements to the Miami County Airport near Osawatomie, Kansas

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The Kansas Department of Health and Environment (KDHE), Bureau of Environmental Remediation (BER), Assessment and Restoration Section, Superfund and Drycleaner Remediation Unit do not have known contaminated drycleaner or Superfund facilities within at least ten (10) miles of the proposed project. Therefore, contamination from known Superfund or contaminated drycleaner facilities is not anticipated to impact the proposed project.

Staff member(s) from H.W. Lochner, Inc. are welcome to come view the KDHE-BER files in accordance with the Kansas Open Records Act. If you have any questions, please contact me by telephone at (785) 296-8025 or by e-mail at syankey@kdheks.gov.

Division of Environment
Curtis State Office Building
1000 SW Jackson St., Suite 400
Topeka, KS 66612-1367

Kansas
Department of Health & Environment

Phone: 785.296.1535
Fax: 785.296.8464
www.kdheks.gov

Robert Moser, MD, Secretary

Sam Brownback, Governor

May 8, 2012

Liz McVay
Project Manager
H. W. Lochner, Inc.
903 East 104th Street, Suite 900
Kansas City, MO 64131

Re: Miami County Airport (K-81), Miami County, KS

Dear Ms. McVay:

Please see the following comments submitted by Don Carlson, Bureau of Water.

I have no objection to the proposal but offer the following comment for review and consideration:

Any construction activity which disturbs one acre or more is required to file a National Pollutant Discharge Elimination System (NPDES) permit application for stormwater runoff resulting from construction activities. The project owner (party responsible for the project) must obtain authorization from KDHE to discharge stormwater runoff associated with construction activities prior to commencing construction.
The Kansas construction stormwater general permit, a Notice of Intent (application form), a frequently asked questions file and supplemental materials are on-line on the KDHE Stormwater Program webpage at www.kdhe.state.ks.us/stormwater. Answers to questions regarding or additional information concerning construction stormwater permitting requirements can be obtained by calling 785.296.5549.

Sincerely,

Donna Fisher
Director's Office

DC/df

KSR&C No. 12-04-113

6425 SW 6th Avenue
Topeka, KS 66615

Kansas
Kansas Historical Society

phone: 785-272-8681
fax: 785-272-8682
cultural_resources@kshs.org

Sam Brownback, Governor
Jennie Chinn, Executive Director

RECEIVED
APR 23 2012

April 12, 2012

Liz McVay, R.G.
Lochner
903 East 104th Street
Suite 900
Kansas City, MO 64131

Re: Miami County Airport (K81) – Miami County; Lochner File Number: 00708501

Dear Ms. McVay:

We have reviewed the materials received April 9, 2012 regarding the above-referenced project in accordance with 36 CFR Part 800. In reviews of this nature, the SHPO determines whether a federally funded, licensed, or permitted project will adversely affect properties that are listed or determined eligible for listing in the National Register of Historic Places. According to the scope of work one residence will be relocated. We will need more information in order to determine if the residence is potentially eligible for the National Register. Please provide photographs and documentation of any building or structure that may be affected.

Thank you for giving us the opportunity to comment on this proposal. Please refer to the Kansas State Review & Compliance number (KSR&C#) listed above on any future correspondence. Please submit any comments or questions regarding this review to Kim Gant at 785-272-8681, ext. 225 or kgant@kshs.org.

Sincerely,

Jennie Chinn
State Historic Preservation Officer

Patrick Zollner
Director, Cultural Resources Division
Deputy State Historic Preservation Officer

The University of Kansas

Kansas Biological Survey

April 23, 2012

Liz McVay
H.W. Lochner, Inc.
903 East 104th Street, Suite 900
Kansas City, MO 64131

RE: Miami County Airport - Miami County, KS
Master Plan Update - Environmental Overview
Lochner File Number: 007080501

Dear Ms. McVay;

I have conducted a database search for rare species at the referenced site. The Kansas Natural Heritage Inventory database contains no records of listed plant or animal species at the site, although comprehensive surveys for rare species have not been conducted in the area. For a complete list of protected animal species known or likely to occur in Miami County please go to: http://www.kdwp.state.ks.us/news/other_services/threatened_and_endangered_species/threatened_and_endangered_species/county_lists. Please contact the Kansas Dept. of Wildlife, Parks and Tourism for information regarding designated critical habitats for protected animal species.

The federally listed plant species Mead's milkweed (*Asclepias meadii*) could occur on untilled native prairies in the county. Please determine the type of vegetation occurring on the tracts that will be acquired for the project. A survey for Mead's Milkweed may be needed on any tract on which native prairie occurs.

Please feel free to call me at 785-864-1538 if I can be of further assistance.

Sincerely,

Jennifer M. Delisle
Information Manager
Kansas Natural Heritage Inventory

Higuchi Hall • 2101 Constant Ave., Room 106 • Lawrence, KS 66047-3759
(785) 864-1500 • Fax: (785) 864-1534 • www.kbs.ku.edu

Operations Office
512 SE 25th Ave.
Pratt, KS 67124-8174

Kansas
Department of Wildlife, Parks and Tourism

Phone: (620) 672-5911
Fax: 620-672-6020
www.kdwp.state.ks.us

Robin Jennison, Secretary

Sam Brownback, Governor

June 28, 2012

Ref: D2.0100
Miami
Track: 20120470

Alex Bartlett
Lochner
903 E. 104th St, Ste. 800
Kansas City, Missouri 64131

Ref: Miami County Airport (K81)

Dear Mr. Bartlett:

We have reviewed the Miami County Airport (K81) expansions in Sections 25, and 30, Township 17 South, Range 23 East, in Miami County. The project was reviewed for potential impacts on crucial wildlife habitats, current state-listed threatened and endangered species and species in need of conservation, and Kansas Department of Wildlife, Parks, and Tourism managed areas for which this agency has administrative authority.

We note that the plan is to expand the existing runways. Based on the submitted plans and photographs, we do not anticipate any significant impact to the Smooth Earth Snake or Broadhead Skink, provided no additional tree removal is expected. If plans change that would require additional tree removal please consult KDWPT. We concede to the proposal, but recommend: to avoid impacts to existing wetlands, minimize the removal of native upland and riparian vegetation, implement standard erosion control BMP's and temporary weed-free seeding/mulching to protect water quality during construction, minimize any / all further instream construction activities particularly during general spawning dates of May 1 through July 31, and the use of native grasses and forbs to permanently revegetate all areas disturbed by construction.

Results of our review indicate there will be no significant impacts to crucial wildlife habitats; therefore, no special mitigation measures are recommended. The project will not impact any public recreational areas, nor could we document any potential impacts to currently listed threatened or endangered species or species in need of conservation. No Department of Wildlife and Parks permits or special authorizations will be needed if construction is started within one year, and no design changes are made in the project plans. Since the Department's recreational land obligations and the State's species listings periodically change, if construction has not started within one year of this date, or if design changes are made in the project plans, the project sponsor must contact this office to verify continued applicability of this assessment report. For our purposes, we consider construction started when advertisements for bids are distributed.

Thank you for the opportunity to provide these comments and recommendations.

Sincerely,

David Bender

Cc: Kraig LaRosh, Lochner

David Bender, Ecologist
Ecological Services Section

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
760 South Broadway
Salina, Kansas 67401-4604

Phone: 785-823-4500
FAX: 785-823-4540
www.ks.nrcs.usda.gov

April 27, 2012

H.W. Lochner, Inc.
ATTN: Liz McVay R. G.
903 East 104th Street, Suite 900
Kansas City, Missouri 64131

Dear Ms. McVay:

Based on the information provided in your letter received on April 20, 2012, re: **Miami County Airport (K81) – Miami County, Kansas, Master Plan Update – Environmental Overview Lochner File #: 007080501**, the Natural Resources Conservation Service (NRCS) submits the following request indicated below:

☐ The project is not subject to the Farmland Protection Policy Act as no farmland is being converted to nonagricultural use.

☒ Your request needs to be accompanied with Form AD-1006, Farmland Conversion Impact Rating (or Form NRCS-CPA-106, Farmland Conversion Impact Rating for Corridor Projects) with parts I and III filled out. Completion of the form should be for **the new construction**.

(Form AD-1006 is available at: www.nrcs.usda.gov/programs/fppa/pdf_files/AD1006.PDF and Form NRCS-CPA-106 at www.nrcs.usda.gov/Programs/fppa/pdf_files/CPA106.pdf.) Please submit the completed form(s) to me at the above address or by e-mail to susie.mcbride@ks.usda.gov.

Sincerely,

Susie

SUSIE M. McBRIDE
Soil Conservationist

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
3020 West 18th, Suite B
Emporia, Kansas 66801

Phone: 620-343-7276
FAX: 620-343-7871
www.ks.nrcs.usda.gov

June 7, 2012

Liz McVay, R.G.
Project Manager
H.W. Lochner, Inc.
903 East 104th Street
Suite 900
Kansas City, MO 64131

Re: Miami County Airport (K81)-Miami County, KS
Master Plan Update-Environmental Overview
Lochner File Number: 007080501

Dear Ms. McVay:

The Farmland Protection Policy Act (FPPA) applies to projects where federal technical or financial assistance is being requested. FPPA provides a process for determining an impact rating when important farmlands are being considered for conversion to non-agricultural uses.

Enclosed is Form AD-1006, Farmland Conversion Impact Rating, or Form NRCS-CPA-106 form corridor projects with the Natural Resources Conservation Service's (NRCS) parts completed. The originator should complete Parts VI and VII and return a completed copy to this office at the above address.

Sincerely,

CLIFFORD THORNTON
Assistance State Conservationist

Enclosure(s)

ec:
Susan M. McBride, Soil Conservationist, NRCS, Salina, Kansas
Grover Depriest, Supervisory District Conservationist, NRCS, Paola, Kansas

RECEIVED

JUN 11 2012

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 05-15-2012
Name of Project Miami County Airport Master Plan	Federal Agency Involved Federal Aviation Administration
Proposed Land Use Aviation	County and State Miami County, Kansas
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 4-6-2012 / Person Completing Form: John T. Conway

Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES [X]	NO [ ]	Acres Irrigated: 1700 / Average Farm Size: 225 Ac.
Major Crop(s): Corn, Soybeans	Farmable Land In Govt. Jurisdiction Acres: 32 % 121,153 Ac.		Amount of Farmland As Defined in FPPA Acres: 59 % 224,100 Ac.
Name of Land Evaluation System Used: LESA	Name of State or Local Site Assessment System		Date Land Evaluation Returned by NRCS: 5/31/2012

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	2.8			
B. Total Acres To Be Converted Indirectly	73.4			
C. Total Acres In Site	76.2			
PART IV *(To be completed by NRCS)* Land Evaluation Information	76.2			
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide Important or Local Important Farmland	~~<1%~~			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	<1%			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	23.2			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	75			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	15			
2. Perimeter In Non-urban Use	(10)	10			
3. Percent Of Site Being Farmed	(20)	2			
4. Protection Provided By State and Local Government	(20)	0			
5. Distance From Urban Built-up Area	(15)	15			
6. Distance To Urban Support Services	(15)	0			
7. Size Of Present Farm Unit Compared To Average	(10)	0			
8. Creation Of Non-farmable Farmland	(10)	2			
9. Availability Of Farm Support Services	(5)	5			
10. On-Farm Investments	(20)	0			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	1			
TOTAL SITE ASSESSMENT POINTS	160	50	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	~~0~~ 75	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	50	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	~~50~~ 125	0	0	0

Site Selected: A	Date Of Selection 3/13/12	Was A Local Site Assessment Used? YES [ ] NO [ ]

Reason For Selection:

Only reasonable site for future crosswind runway expansion.

Name of Federal agency representative completing this form: Kraig LaRosh, H.W. Lochner, Inc. Date: 5/15/12

(See Instructions on reverse side)

Form AD-1006 (03-02)

LOCHNER
903 East 104th Street | Suite 800
Kansas City, MO 64131-3451
800.748.8276 | www.hwlochner.com