109012

MORROW COUNTY AIRPORT

MASTER PLAN REPORT

MAY 2013

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Morrow County Airport Master Plan
Executive Summary

The Morrow County Airport is a part of the National Plan of Integrated Airport Systems (NPIAS). The Federal Aviation Administration (FAA) strongly encourages all airports within this system to have a twenty-year master plan. This master plan defines the airport development required to meet the current as well as forecast short-, intermediate-, and long-term aviation demand.

The plan objectives and goals should ensure continued high level of service, land use compatibility, preservation and use of resources and community acceptance. The purpose of this plan is to provide guidance for future aviation demand and achievable goals and determine the need for future development of the airport.

Over the course of this study public involvement during various stages of the planning process and environmental considerations prior to making irreversible decisions collectively guided the study.

During the past 50 years of its existence the airport served general aviation for business, agricultural and private aircraft owners. The historic activities revealed that the airports activities peaked in 1994 with 23 based aircraft and 17,000 annual operations and then declined to its present 19 based aircraft generating 12,000 annual operations. The projected activities for the 20 year planning period shows a modest recovery to 21 based aircraft and approximately 14,000 operations generated by a local and itinerant fleet mix from A-I to B-II aircraft grouping.

Public input from aircraft owners, including airport users generally indicates that the facility requirements to meet aviation demand will remain moderate. User expectations are focused on improved safety accomplished through a longer and wider runway, unobstructed approaches and improved visual and electronic navigation aids and weather information. Secondary expectations included convenient and extended vehicle access and parking, comfortable terminal facilities including fuel storage and dispensing equipment. Several potential airport development options were considered that could meet some, if not all forecasted demand and user expectations.

Among the alternatives studied was Alternative 1, a do-nothing option that would maintain existing facilities and safety requirements. Alternative 2, would upgrade existing airside and landside facilities to meet B-II aircraft minimum standards by widening the runway to 75 feet, adding weather information and visual navigation aids, including related airside and landside improvements. Alternative 3, would be similar to Alternative 2 but would include extending and widening the runway to 5,000 feet x 75 feet including improved related safety areas. Alternative 4 decommissioning and closing the airport was considered to satisfy public concern over subsidizing airport operations using local tax revenues.

Alternative 1, while in the short term fiscally prudent would not meet aviation demand in the future. Alternative 2, upgrading to B-II minimum standards would meet aviation demand and user expectation during the planning period. Alternative 3, upgrade to B-II minimum standards and extend the runway to 5,000 feet, while meeting user expectations is not currently justified by forecasted demand. Alternative 4, would not meet aviation demand nor user expectations and would not provide the anticipated revenues or meet the sponsorôs obligations.

Alternative 2 is depicted in the Airport Layout Plan as the Future condition. Alternative 3 is depicted in the Airport Layout Plan as the Ultimate condition.

Chapter 1

1. Background and Objectives

1.1 Background

The Morrow County Airport is situated southwest of Mount Gilead in Morrow County, Ohio. The airport provides access to air transportation primarily for the communities of Mount Gilead, Cardington and the surrounding rural areas.

The airport has an east-west (10/28) asphalt runway that is 3,497 feet long and 65 feet wide. The airport also has a partial length taxiway, local/itinerant apron, terminal building, conventional hangar, T-hangars, medium intensity runway lights, threshold lights, visual approach slope indicator, medium intensity taxiway lights, an airport rotating beacon, a lighted wind cone, and a vehicle parking area. These facilities are situated on the airportôs 149 acres of land.

The Morrow County Commissioners own the airport. The Morrow County Airport Authority manages and maintains the airport. Fisherôs Ag Service is the Fixed Base Operator (FBO). The FBO provides aerial agricultural spraying, major and minor aircraft frame and engine repair and a helicopter service center.

The Morrow County Airport is part of the National Plan of Integrated Airport Systems (NPIAS). The design, development, implementation and operations of NPIAS Airports are guided by the Federal Airport and Airway Improvement Act of 1982, irrespective of federal or state involvement. Federal Aviation Administration (FAA) policies strongly encourage all public and federally funded airports to have a twenty-year master plan. Since the enactment of the Airport and Airway Development Act of 1970, the FAA has prepared guiding Advisory Circulars (AC) related to the planning, design, construction and operation of airports. The Morrow County Airport Master Plan was prepared using the organization and planning process outlined in the recently published ñAirport Master Plansò, AC 150/5070-6B, including changes.

This master plan defines the type and extent of development required to meet the current as well as forecast short- (5 year), intermediate- (10 year), and long- (20 year) term aviation demand. In addition, the study assists the Morrow County Commissioners and Airport Authority in proactively maintaining and developing the airport over the next 20 years.

1.2 Goals and Objectives

A proven method of achieving the goals established in the master plan is to provide guidelines for future airport development in a financially feasible manner while reconciling aviation, intramodal transportation, environmental, and socioeconomic issues. The Federal Aviation Administration Advisory Circular 150/5070-6B ñAirport Master Plansò states that each master plan should meet the following objectives:

- Document the issues that the proposed development will address.
- Justify the proposed development through the technical, economic, and environmental investigation of concepts and alternatives.
- Provide an effective graphic presentation of the development of the airport and anticipated land uses in the vicinity of the airport.
- Establish a realistic schedule for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.
- Propose an achievable financial plan to support the implementation schedule.
- Provide sufficient project definition and detail for subsequent environmental evaluations that may be required before the project is approved.
- Present a plan that adequately addresses the issues and satisfies local, state, and Federal regulations.
- Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls, and other policies necessary to preserve the integrity of the airport and its surroundings.
- Set the stage and establish the framework for a continuing planning process. Such a process should monitor key conditions and permit changes in plan recommendations as required.

These master plan objectives and goals will provide or ensure the following:

- A high level of safety.
- A desirable level of service and convenience.
- A desirable level of land use and compatibility between the community and the airport.
- Highest efficiency in the preservation and use of resources.
- A reasonable level of accessibility.
- Area wide and community acceptance.

1.3 Purpose and Need

The purpose of the airport master plan is to provide achievable goals and guidance for future aviation demand and community expectation for airport development. The goals will meet aviation demand, will be accepted by the community, will be environmentally compatible, and will coordinate with other modes of local, state, and national transportation.
The adoption of the master plan will be the impetus for making decisions regarding the following:

- The determination of the best feasible alternative for developing airport facilities to safely serve current and future airport users.
- The consideration of development alternatives or where warranted, an alternative site.
- Land acquisition necessary for developing facilities necessary to meet the FAA design standards.
- The potential for additional land acquisition for approaches and development when needed beyond the planning period.
- The justification and timeframe for future runway, taxiway, terminal area and landside improvements. These improvements include upgrading the terminal building, corporate hangars, T-hangars, maintenance hangars, apron areas, vehicular parking, and fueling facilities.
- The recommended obstruction removal and other developments that will contribute to safer runway approaches.
- An economic impact analysis that will compile economic, socio-economic and demographic data to accurately depict the value of the airport to the affected communities.
- The development of runway safety areas to meet the required FAA standards.
- The establishment of a public information source and review program utilizing a standing committee, user survey and public hearing process.
- The determination of instrument approach minimum requirements needed to meet current and projected aviation demand and to maximize aviation safety.
- The prioritization of the improvements as they pertain to the financial capability of the Morrow County Airport, the Ohio Department of Transportation Office of Aviation and the Federal Aviation Administration.
- The determination of physical facility developments as they relate to immediate planning, short- (5 year), intermediate- (10 year), and long- (20 year) term planning, and financial costs for these improvements.

Chapter 2

2. Inventory

2.1 Existing Facilities

Photos of the existing facilities are included at the end of each section. The existing airport facilities are also shown in the 2011 aerial photo, which is reproduced in Exhibit 2-1. All Exhibits are located at the end of each chapter.

2.1.1 Airfield/Airspace

Runway

The runway is a defined rectangular surface on the airport prepared or suitable for the landing and takeoff of airplanes. The Morrow County Airport has one runway. The runway is 3,497 feet long and 65 feet wide with an east-west orientation (10/28). The entire length of the runway is usable for takeoffs and landings, making the effective runway length also 3,497 feet. The pavement is asphalt concrete. The runway was rehabilitated in 2011. A FiberSAMI interlayer was installed over the existing asphalt with a 1ò asphalt leveling course and a 1 ½ò asphalt surface course. The rehabilitation restored the profile grade crown including the pavement strength to 12,000 lb. single wheel gear. The pavement had an ODOT Pavement Condition Index (PCI) of 50 as of September 8, 2010. The recently constructed pavement is expected to have a PCI of 100. Exhibit 2-2 depicts the PCI values for the various pavement sections at the Morrow County Airport.

Wind Coverage

Initially the airport was developed using available meteorological conditions including topographic and associated economics. Environmental factors, airspace, and obstruction were secondary consideration. Wind coverage for optimum utilization of prevailing winds and runway orientation were obtained from Port Columbus wind data. During the planning and design effort for this project existing visual and instrument meteorological conditions recorded during a 10 year period at Port Columbus were used. There is no site specific wind data available for the Morrow County Airport and it was determined that the nearest available meteorological data that is similar to Morrow County Airport is Port Columbus.

The latest and best wind information is based on the Port Columbus observation station record which covers 10 consecutive years from January 1993 through December 2002. Using the available data and the existing runway 10-28 orientation it was concluded that the all weather wind coverage for 10.5 knots, 13 knots and 16 knots crosswinds are 94.14%, 96.4% and 99.6% respectively.. The calculated coverage would meet the 95% minimum requirement for a single runway. Subsequently, considerations for a crosswind runway would not be warranted.

Taxiway

A taxiway is a defined path established for the taxiing of aircraft from one part of the airport to another. Runway 10/28 has a partial length, 25 feet wide parallel taxiway located north of the runway. This taxiway, Taxiway A, is 3,060 feet long. The runway centerline to parallel taxiway separation distance is 283 feet. Three connector taxiways join Taxiway A to Runway 10/28. Taxiway A was constructed and has been subsequently rehabilitated in several different phases. The poorest section of pavement has a PCI of 72, and the best section has a PCI of 100. Exhibit 2-2 depicts these different pavement areas and relative PCI values. The section labeled TW B2 on Exhibit 2-2 has been rehabilitated in 2011. It is expected to have a PCI of 100.

Apron

Aprons are areas utilized by aircraft that provide access to the terminal facilities, an area for fueling operations, and local and transient parking and tie downs. The apron at the Morrow County Airport has an area of approximately 7,980 square yards. This asphalt concrete apron space is used for flight training, charter, maintenance, local, and itinerant aircraft. There are 11 tie-down spaces located on the apron. The aircraft parking apron is located east of the terminal building and designated for use by both fixed wing and rotary type aircraft. The apron was constructed and has been subsequently rehabilitated in two separate sections. Section A, the northern section, is approximately 332ô x 148ô (5,460 square yards). Section B, the southern section, is approximately 162ô x 140ô (2,520 square yards). Section A was last rehabilitated with an asphalt overlay in 1999 and has a PCI of 55. Section B has a PCI of 59. Exhibit 2-2 depicts these different pavement areas and relative PCI values.

Taxilanes

A taxilane is a defined path established for taxiing aircraft between taxiways and aircraft parking positions. One taxilane connects the northeast corner of the apron to the north side of the T-hangars. This taxilane is asphalt concrete and has a PCI of 80. The taxilane is approximately 345 feet long and 16 feet wide.

Lighting

The Morrow County Airport has medium intensity runway edge lighting (MIRL). In addition to the runway edge lights, threshold lights are located at each runway end. The partial length parallel taxiway has medium intensity taxiway edge lighting (MITL).

Marking

Runway 10/28 is marked with non-precision instrument markings. Taxiway A is marked with a centerline and hold bars. The runway was remarked in 2012 with the runway resurfacing project. The runway markings are in good condition.

Navigational Aids

The airport has one published instrument approach procedure. The approach is a VOR or GPS-A circling approach to Runway 28. Visibility minimums are not less than 1 mile for category A and B aircraft and 1¾ miles for category C aircraft. The decision height is 1700 (615 feet above the airport elevation) for category A aircraft and 1720 (635 feet above the airport elevation) for category A and B aircraft. Exhibit 2-3 shows the current approach plate.

Visual Approach Aids

A Visual Approach Slope Indicator (VASI) is located south of the runway at Runway 28. The VASI was installed at least thirty years ago and has been out of service for some time. The VASI should be replaced with functional equipment that is more modern. A PAPI installation project is planned for 2012.

Beacon

The airport beacon is located north of the terminal area. The beacon and its support tower are in good working condition.

Wind Cone

The lighted wind cone is located north of the runway and east of the hangars. The wind cone was installed in 2003 and is in good condition. Airport users have indicated that the location of the wind cone (proximity of trees to the north) causes it to show an inaccurate wind direction. Consideration should be given to installing a supplemental wind cone or relocating the existing wind cone.

Existing Facilities: Airfield/Airspace Photos

Runway

Taxiway

Apron

Taxilane

Lighting

Beacon

Wind Cone

VASI

2.1.2 General Aviation Facilities

Terminal Building and Conventional Hangar

The pre-engineered terminal building has approximately 8,000 square feet of gross floor area. This building was constructed in 1974. The terminal area of this building is approximately 2,000 square feet. This public space offers a pilot and passenger lobby, common area, comfort facilities, pilot briefing area and flight training activities. Portions of this terminal area were remodeled in 2007. The remaining 6,000 square feet is the conventional hangar area. This area is used for aircraft storage and maintenance. The building is in fair condition and has approximately 12-15 years of useful life remaining.

Hangars

In addition to the terminal building, there are two additional buildings on airport property. The corporate hangar was custom built in 2006 and is approximately 3,600 square feet. The building is privately owned and was constructed on land leased from the Board of Commissioners.

The airport also has a pre-engineered eight-unit T-hangar owned by the Board of Commissioners and leased to aircraft owners based at the Morrow County Airport. The T-hangar was built in 1982. The remaining service life of the T-hangar has been estimated at 15-20 years.

Fixed Base Operator

The Fixed Base Operator is Fisherôs Ag Service owned by Carl Fisher, Jr. The FBO provides fuel sales, snow removal, NOTAMs, frame and engine repair, aircraft annual inspections and agricultural spraying. The FBO is located southwest of Runway 10, on private property. This ñthrough-the-fenceò operation is connected to Runway 10 by a taxilane.

Based Aircraft

Currently there are 19 based aircraft. With approach speeds of less than 91 knots and wingspans of less than 49 feet, a majority of the based aircraft fall within the Airport Reference Code (ARC) of A-I. Two based aircraft have approach speeds between 91 knots and 121 knots and wingspans between 49 feet and 79 feet. These based aircraft fall within the ARC of B-II.

All of the based aircraft are housed in hangars at the airport.

Existing Facilities: General Aviation Facilities Photos

Terminal Building

T-Hangar Building

Corporate Hangar

2.1.3 Support Facilities

Fueling Facilities
Fuel storage and dispensing is provided by the FBO. AvGas and Jet A is available during business hours. The fuel farm is located on private property and is accessible for aircraft fueling through the mobile units on airport ground or through a taxilane connecting the public terminal with the private facility over a private ñthrough the fenceò taxilane.

Maintenance
The Morrow County Airport Authority is responsible for maintenance of the facilities at the airport. The Airport Authority contracts with the FBO for mowing and snow removal. The Airport Authority is responsible for building, hangar, pavement, lighting, NAVAID and pavement marking maintenance. The Airport Authority has contracted with Cummins Airfield Solutions for assistance with lighting and electrical equipment maintenance at the airport.

2.1.4 Access and Parking

Access
Pilots, passengers, and visitors to the Morrow County Airport gain access to the terminal building and hangars from Township Road 126. The airport access point is a two-lane road that furnishes direct access to the vehicle parking area. The airport access road is asphalt and in good condition. Less than one mile south and accessible from Township Road 126 is State Route 42. State Route 42 runs southwest to northeast through Morrow County and intersects State Route 61, which provides access to Interstate 71.

Parking
Auto parking is provided south of the terminal building. The parking area is approximately 750 square yards and provides approximately 10 parking spaces. The parking lot pavement is in good condition.

Fencing
Currently the airport does not have perimeter or security fencing.

Existing Facilities: Access and Parking Photos

Access Road

Vehicle Parking

2.1.5 Utilities

Utilities

The potable water supply is provided by Del-Co Water Company. Sanitary services are provided by the Village of Mount Gilead. The Ohio Edison Company provides electricity to the airport through a 7.2 KVA primary power service line. This service line provides 120/240 V to the airport. Columbia Gas of Ohio provides natural gas through their pipeline. A landline telephone service is provided through Century Link Company. Redbird Wireless provides an internet connection at the airport.

Drainage

Airport storm water is collected by a network of surface and subsurface drainage system and discharged into Pugh Ditch and Whetstone Creek. Whetstone Creek drains into Delaware Lake, which is part of the Ohio River drainage basin. Surface and subsurface storm water facilities are owned and maintained by the airport.

2.2 Regional Setting and Land Use

2.2.1 Regional Setting

The Morrow County Airport is located in Morrow County southwest of Mount Gilead. Morrow County is located in central Ohio and bordered on the north by Crawford and Richland Counties, on the east by Knox County, on the south by Delaware County, and the west by Marion County. Graphical representations of the location of the airport are depicted on Exhibits 2-4 through 2-7.

There are eight airports within a twenty-mile radius of the Morrow County Airport. Of these eight airports, five are included in the National Plan of Integrated Airport Systems (NPIAS). The remaining airports are local public use or private airports. The locations of such facilities in the vicinity of the Morrow County Airport are depicted in Exhibit 2-6. Notable facilities and selected characteristics of five of these airports are tabulated in Table 2-1.

Table 2-1: Characteristics of Selected Area Airports

Characteristics	Marion Municipal	Galion Municipal	Port Bucyrus-Crawford County	Knox County Regional	Delaware Municipal
Distance/ Course from 4I9	11.2 nm NW	14.88 nm N	16.43 nm NNW	18.91 nm SE	19.04 nm SSW
Ownership/ Use	Public/ Public	Public/ Public	Public/ Public	Public/ Public	Public/ Public
Runways	2	1	2	1	1
Orientation	07/25, 13/31	05/23	04/22, 09/27	10/28	10/28
Dimensions	5,000ô x 100ô 3,498ô x 100ô	3,505ô x 75ô	3,895ô x 75ô 2,900ô x 75ô	5,500ô x 100ô	5,000ô x 100ô
Runway Surface	Asphalt, Asphalt	Asphalt	Asphalt, Turf	Asphalt	Asphalt
Radio	122.800	122.800	122.800	123.050	122.700
Lighting	MIRL, MIRL	MIRL	MIRL	MIRL	MIRL
Instrument Approaches	RNAV (GPS) RW 07 RNAV (GPS) RW 13 RNAV (GPS) RW 25 LOC/DME RW 25 VOR-A	VOR/DME RNAV OR GPS RWY 05 VOR OR GPS RWY 23	VOR OR GPS RWY 22	RNAV (GPS) RWY 10 RNAV (GPS) RWY 28 VOR OR GPS-A	RNAV (GPS) RWY 10 RNAV (GPS) RWY 28 VOR RWY 28 NDB RWY 10
Covered in NPIAS	Yes	Yes	Yes	Yes	Yes

2.2.2 Land Use

The airport property consists of approximately 149 acres owned by the Morrow County Commissioners. The land use around the airport consists of rural residential and agricultural use.

The Morrow County Airportôs regional relationship to other cities and major urban areas in Ohio was developed from online research to include actual driving times and highway miles. Table 2-2 provides this information in tabular form.

Table 2-2: Regional Relationship to Major Urban Areas

City	Mileage	Estimated Driving Time
Delaware	21 miles	27 min.
Westerville/Dublin/Worthington	40 miles	50 min.
Columbus	45 miles	55 min.
Cleveland	109 miles	1 hour 58 min.
Toledo	113 miles	2 hours 16 min.
Cincinnati	152 miles	2 hours 44 min.
Source: www.google.com, June 2009		

2.3 Environmental Overview

The airport is not located within a 100 or 500-year floodplain. The airport site is located outside Zone A of the upper reach of Whetstone Creek as indicated on Flood Insurance Rate Map 39117C0140E obtained from the Federal Emergency Management Agency (FEMA). Exhibit 2-8 shows the airport location relative to the reach of Zone A.

According to the Ohio Department of Natural Resources, the Division of Natural Areas and Preserves has no records of rare or endangered species in the project area. There are no state nature preserves or scenic rivers at the site. There are no unique ecological sites, geologic features, animal assemblages, state parks, state forests or state wildlife areas within the project area.

According to the Ohio Department of Natural Resources, Environmental Services Section, there are no records of rare species or unique natural features within the proposed project area and there are no state nature preserves, state parks, wildlife areas or scenic rivers in the vicinity of the sites.

The airport is within the range of the Indiana bat, a state and federally endangered species. The habitat suitable for the Indiana bat is described in the letter from ODNR dated July 21, 2009 that can be found in the Appendix. If suitable trees occur within any area to be impacted, these trees must be conserved. If suitable habitat occurs on a project area and trees must be cut, cutting must occur between September 30 and April 1. If suitable trees must be cut during the summer months of April 2 to September 29, a net survey must be conducted in May or June prior to cutting. If no tree removal is necessary for any developments at the airport, the project would not likely impact these species.

The Ohio Department of Natural Resources has also determined that the airport is within the range of the bald eagle, a state threatened species. If trees are impacted, close to the actual date of construction, an updated status of bald eagle activity in the area must be obtained. Contact information is included in the letter from ODNR attached in the Appendix.

The airport is also within the range of the purplish copper, a state endangered butterfly. Due to the habitat used by this species, a project in this area is not likely to impact this species.

A National Wetland Inventory Map was obtained and is reproduced in part in Exhibit 2-9. This map shows the proximity of inventoried wetlands to the airport.

Noise levels, air quality and water quality are normally the most common environmental concerns when considering airport development projects. The anticipated activities will fall considerably below the threshold levels where noise levels would become a concern. Air and water quality impacts will need to be addressed when considering future airport development projects.

2.4 Socioeconomic Data

Demand for general aviation facilities is primarily based on demographic and economic characteristics of a market area. The defined study area is Morrow County. All of the based aircraft are registered by owners residing within this study area. The study area is depicted in Exhibit 2-4. This section will outline the study areaôs socioeconomic factors as they pertain to the Morrow County Airport Master Plan Study.

2.4.1 Population

The U.S. Census Bureau shows that the population in Morrow County increased steadily over the last 30 years. The population in Morrow County has increased by 48.2% from 1970 to 2000. The population of the state of Ohio has increased by 6.2% over the same period. Table 2-3 depicts this comparison of population growth. Additional statistics of the population of Morrow County are shown in Table 2-4 and Table 2-5. Exhibit 2-10 also shows the education levels and poverty levels of the population of Morrow County as they are distributed throughout Morrow County.

Table 2-3: Historical Population Trends

	1970	1980	1990	2000	% Change 1970-2000
Morrow County	21,348	26,480	27,749	31,628	48.2%
State of Ohio	10,652,017	10,797,630	10,847,115	11,353,140	6.2%
Source: Ohio Department of Development, Office of Strategic Research					

Table 2-4: Demograhpic Profile

Race	2000 U.S. Census	Percentage
White	31,235	98.8%
African-American	75	0.2%
Native American	73	0.2%
Asian	32	0.1%
Pacific Islander	0	0.0%
Other	47	0.1%
Two or More Races	166	0.5%
Total Population	31,628	100.00%
Source: Ohio Department of Development, Office of Strategic Research		

Table 2-5: Educational Attainment

Educational Attainment	Morrow Co.
No high school diploma	21.4%
High school graduate	47.3%
Some college, no degree	17.6%
Associate degree	4.3%
Bachelor's degree	6.5%
Master's degree or higher	3.0%

2.4.2 Economics

The cost of owning, maintaining and operating aircraft has increased in the past 10 years. Aviation activity is seldom likely to increase without a stable and prosperous economy. The study areaôs economic growth will depend on the ability to market goods and services to outside trading markets. Trade with other counties is a very good indicator of local economic strength. Two important economic factors in developing an economic profile are income and employment trends.

Table 2-6: Per Capita Income

	2000	2001	2002	2003	2004	2005	2006
Morrow Co.	21,725	22,228	22,727	23,698	24,438	25,185	---
State of Ohio	28,205	28,583	29,187	29,826	30,763	31,860	33,338
Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce							

Employment trends for the study area further aide in developing the current and projected state and local economy. Therefore, a stable and prosperous employment history would indicate a growth in aviation demand.

Unemployment rates for the period 1998 to 2008 are also shown in Table **2-7**. As depicted, the annual unemployment rates for Morrow County have been slightly above the average for Ohio for the past eleven years, with the exception of 2000 and 2002.

Table 2-7: Unemployment Rate

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Morrow County	5.7	5.3	3.8	5.0	5.4	6.2	6.1	6.2	5.6	5.8	7.0
State of Ohio	4.3	4.3	4.0	4.4	5.7	6.2	6.1	5.9	5.4	5.6	6.5
Source: U.S. Department of Labor, Bureau of Labor Statistics											

Table 2-8 shows the percentage of workers in several categories of vocations.

Table 2-8: Employment by Industrial Sector

Occupation		Morrow Co.
Percent distribution by occupation	Management, professional, and related occupations	22.1
	Service occupations	15.1
	Sales and office occupations	22.4
	Farming, fishing, and forestry occupations	0.9
	Construction, extraction, and maintenance occupations	14
	Production, transportation, and material moving occupations	25.5
Source: U.S. Census Bureau, 2000 Census		

2.4.3 Summary

As shown in this chapter, the population growth rate for Morrow County falls into the upper third of the growth rates for all Ohio counties. For a primarily rural county, the growth rate is outside the norm and generated by the countyôs proximity to Ohioôs growing capital city Columbus. During the last twenty years, a small percentage of Franklin and Delaware County residents found it economically and environmentally desirable to relocate their residence to Morrow County and commute to their jobs. This trend is anticipated to continue for at least the twenty year planning period. The resulting change in cultural makeup of the population will increase the demand for airport facilities and services. This will also affect the quality of services demanded, security considerations for the airport, and airside and landside requirements.

2.5 Historical Aviation Activity

2.5.1 Based Aircraft

According to the APO Terminal Area Forecast Summary Report (TAF) obtained from the FAA, based aircraft at the Morrow County Airport peaked at 23 aircraft in 1994. Since then, there has been a decline to 21 aircraft in 2008. Currently, in 2009, there are 19 based aircraft.

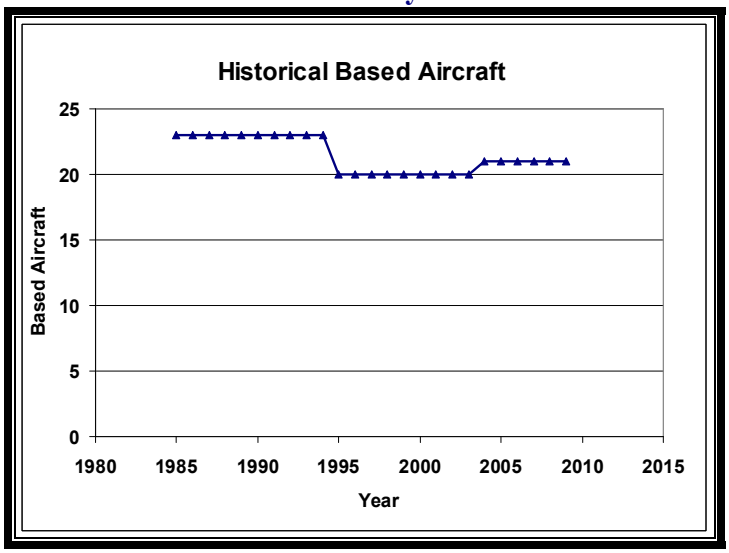
2.5.2 Operations

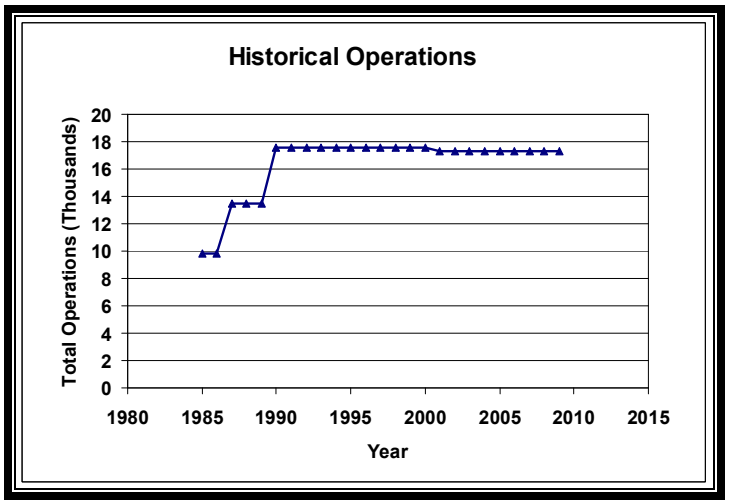
According to the TAF, operations have steadily increased since 1985. The TAF indicates that operations have leveled out at around 17,200 operations for the last several years. While the TAF is an accurate representation of activity at towered airports, the information provided is less accurate for non-towered airports. The listed operations in the TAF appear to be well above the estimated actual operations at the airport based upon observations made by the consultant while working at the airport since 1985. The latest estimated annual operations (2009) are approximately 11,500. Differences in the TAF and the master plan forecast will be further discussed in Chapter 3.

The table and graph on the following page show the historical aviation activity as recorded in the TAF.

Table 2-9: Historical Aviation Activity

Year	Based Aircraft	Operations *
1985	23	17608
1986	23	17608
1987	23	17608
1988	23	17608
1989	23	17608
1990	23	17608
1991	23	17608
1992	23	17608
1993	23	17608
1994	23	17608
1995	20	17608
1996	20	17608
1997	20	17608
1998	20	17608
1999	20	17608
2000	20	17608
2001	20	17262
2002	20	17262
2003	20	17262
2004	21	17262
2005	21	17262
2006	21	17262
2007	21	17262
2008	21	17262
Source: APO Terminal Area Forecast Summary Report		





*1 Operation = 1 take-off or landing.

2.6 Financial Data

A summary of the economic impact of the Morrow County Airport, produced by the Ohio Department of Transportation, is included in the appendix.

2.6.1 Costs/Revenues

Costs for the airport include utilities, building maintenance, facility maintenance, snow removal and the local share of capital improvements. Revenues for the airport include T-hangar rental, main hangar rental and lease payments from a GPS base station located at the terminal building.

2.6.2 Funding

Capital improvement and major maintenance on airside facilities is currently funded 95% federally and 5% locally for federally funded projects and 80% state and 20% locally for state-funded projects. While there is no guarantee that this funding ratio will continue, one can reasonably assume that federal and state taxes collected from aviation activities will be returned to public airports for future capital improvements and maintenance projects.

Currently, the Board of County Commissioners through the Airport Authority provides the local share for capital improvement projects as well as funds for maintenance and other expenses at the airport.

MAGNETIC DECLINATION
JULY 1, 2011
7°5′ WEST
ANNUAL RATE OF
CHANGE 0°3′ WEST

AERIAL PHOTOGRAPHY BY MAN MAPPING; DATE: FEB. 24, 2011	AERIAL PHOTO	0 200 400 HORIZONTAL SCALE IN FEET	MORROW COUNTY AIRPORT MOUNT GILEAD, OHIO	EXHIBIT 2-1

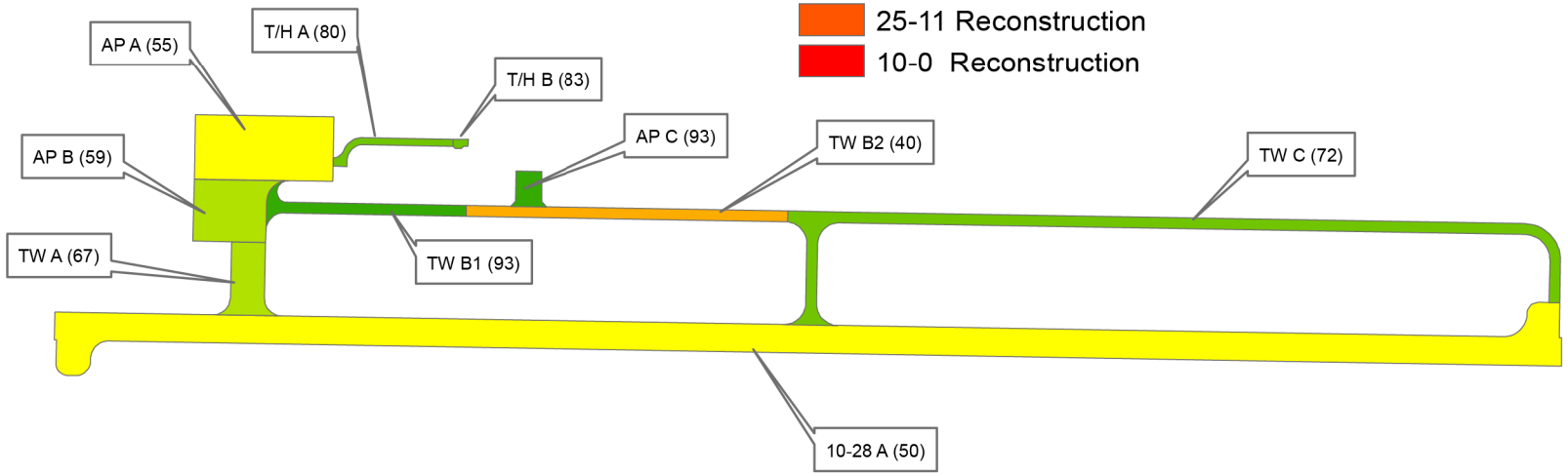
F:\2009\10901\AIRPORT\10901EXHIBIT 2-1.dgn 6/28/2012 11:17:46 AM CraigBanghart

Morrow County

Pavement Condition Index

Inspection 9/8/2010

- 100-86 Routine Maintenance
- 85-71 Preventative Maintenance
- 70-56 Corrective Maintenance/Rehabilitation
- 55-41 Rehab/Reconstruction
- 40-26 Rehab/Reconstruction
- 25-11 Reconstruction
- 10-0 Reconstruction



Ohio Department of Transportation
Office of Aviation

MORROW COUNTY AIRPORT
MOUNT GILEAD, OHIO

EXHIBIT 2-2

MOUNT GILEAD, OHIO

AL-6641 (FAA)

VOR BUD	APP CRS	Rwy Idg	N/A
109.8	304°	TDZE	N/A
		Apt Elev	1085

VOR or GPS-A

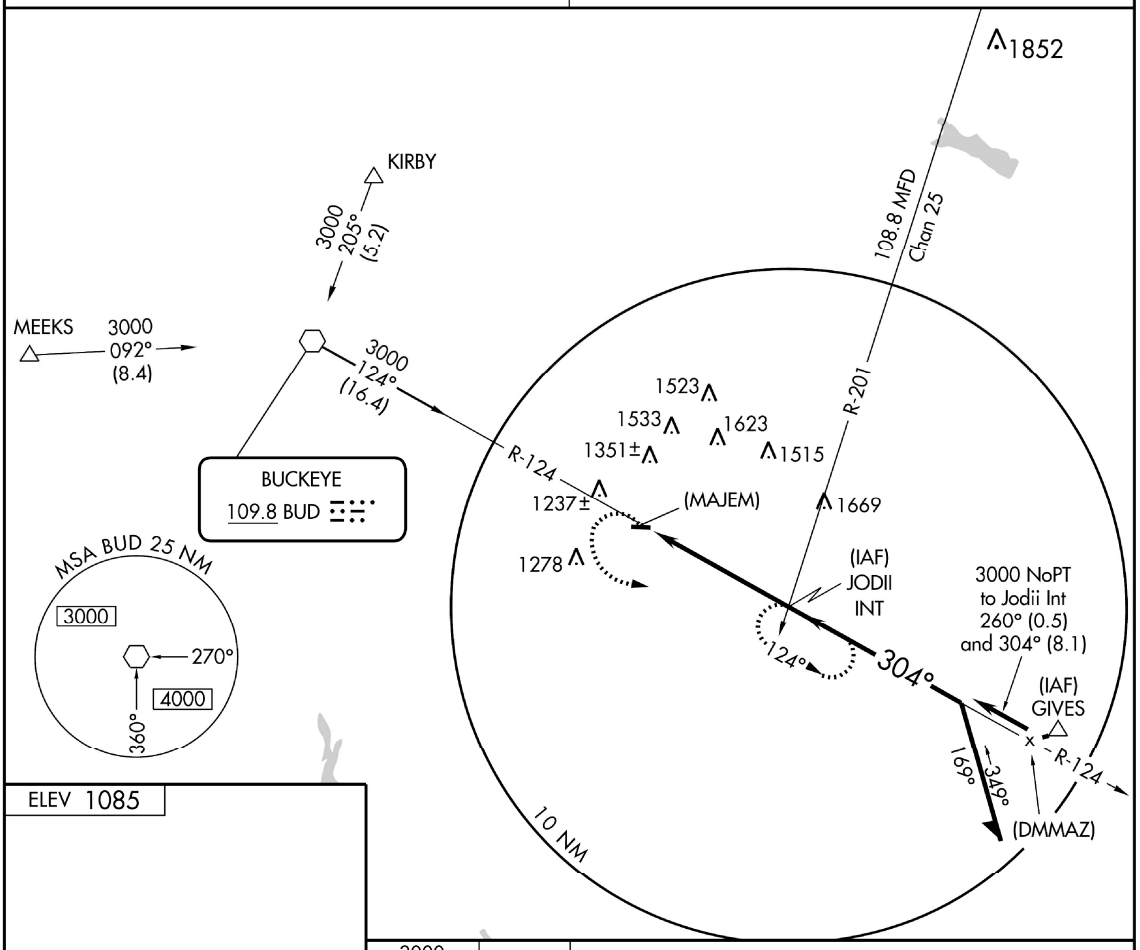
MOUNT GILEAD/MORROW COUNTY (4I9)

T Use Mansfield altimeter setting; when not avalable, use Columbus altimeter setting.
A NA

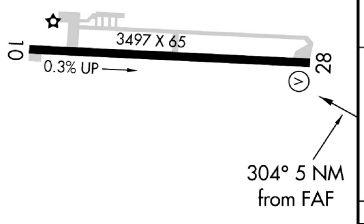
MISSED APPROACH: Climbing left turn to 3000 via BUD R-124 to JODII Int and hold.

MANSFIELD APP CON ★
124.2 390.8

UNICOM
122.8 (CTAF) L

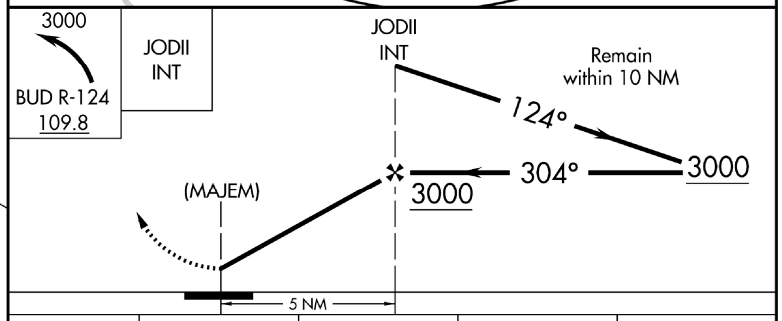


ELEV 1085



MIRL Rwy 10-28 L

FAF to MAP 5 NM					
Knots	60	90	120	150	180
Min:Sec	5:00	3:20	2:30	2:00	1:40



CATEGORY	A	B	C	D
CIRCLING	1700-1 615 (700-1)	1720-1 635 (700-1)	1720-1¾ 635 (700-1¾)	NA
COLUMBUS ALTIMETER SETTING MINIMUMS				
CIRCLING	1740-1 655 (700-1)	1760-1 675 (700-1)	1760-2 675 (700-2)	NA

MOUNT GILEAD, OHIO
Amdt 3 07354

40°31′N - 82°51′W

MOUNT GILEAD/ MORROW COUNTY (4I9)

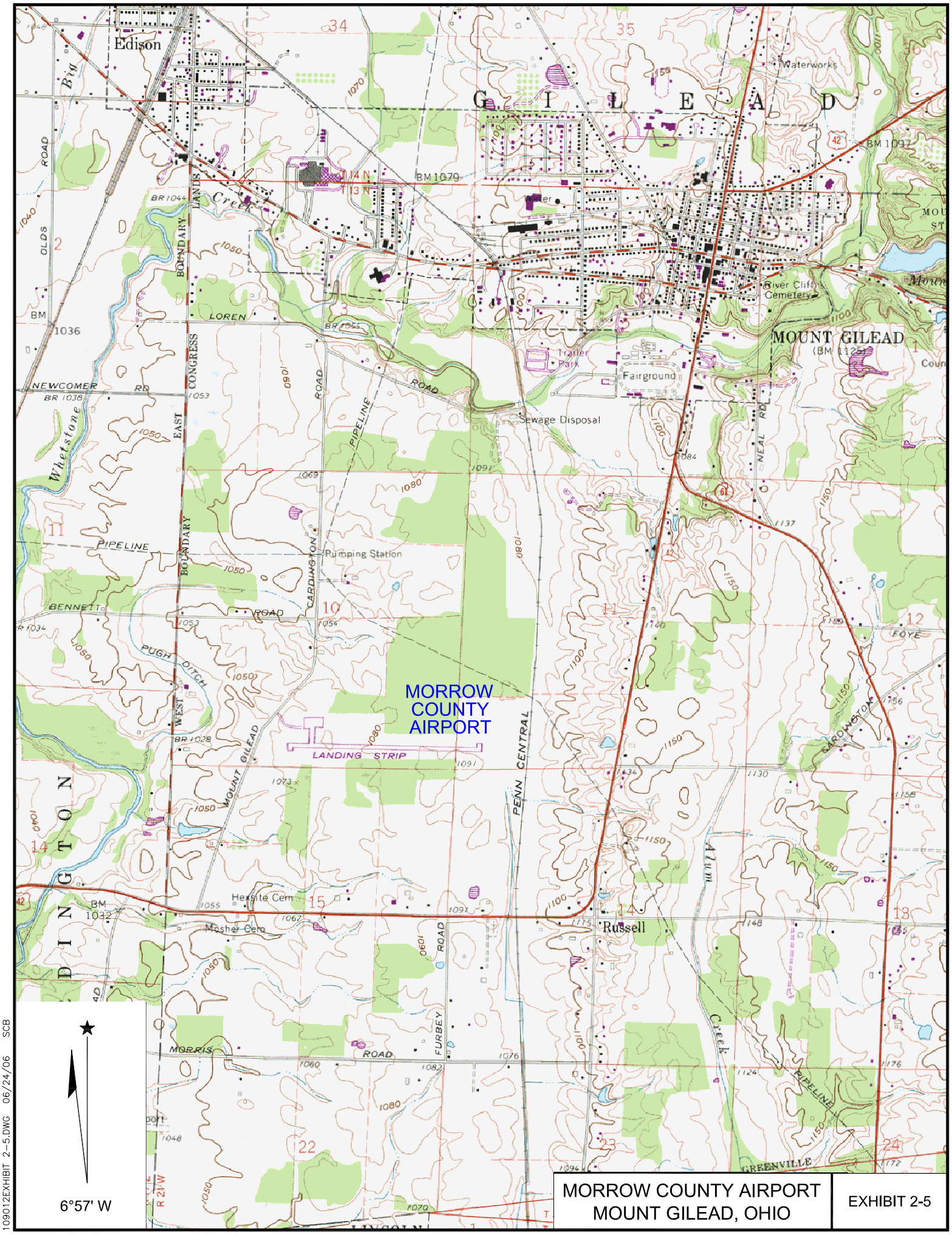
VOR or GPS-A

109012EXHIBIT 2-3.DWG 06/24/09 SCB

LOCATION MAP

MORROW COUNTY AIRPORT MOUNT GILEAD, OHIO	EXHIBIT 2-4

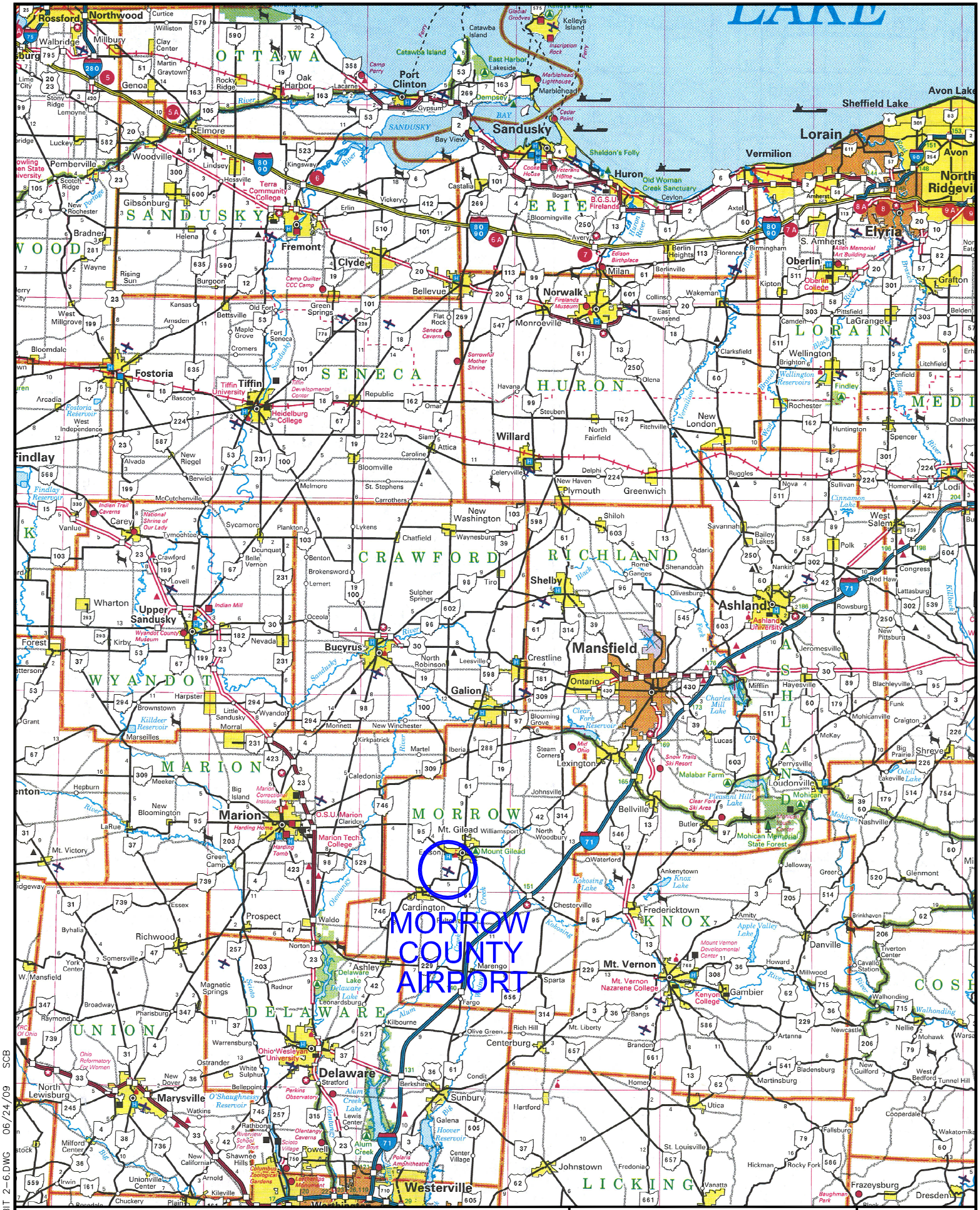
109012EXHIBIT 2-4.DWG 06/24/06 SCB



MORROW COUNTY AIRPORT
MOUNT GILEAD, OHIO

EXHIBIT 2-5

109012EXHIBIT 2-5.DWG 06/24/06 SCB

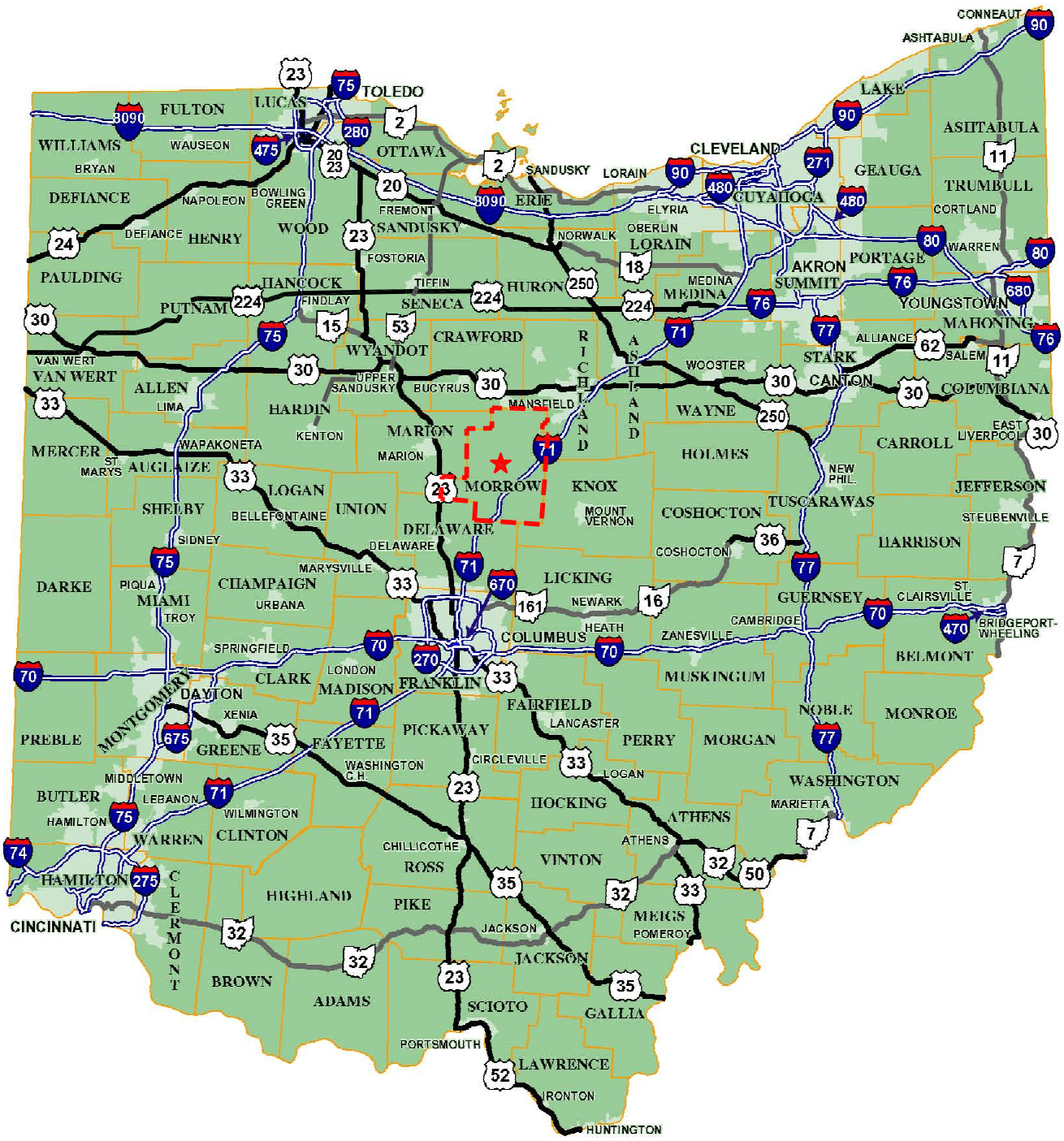


SURFACE TRANSPORTATION ACCESS

MORROW COUNTY AIRPORT
MOUNT GILEAD, OHIO

EXHIBIT 2-6

109012EXHIBIT 2--6.DWG 06/24/09 SCB



ACCESS AND LOCATION MAP

MORROW COUNTY AIRPORT MOUNT GILEAD, OHIO	EXHIBIT 2-7

109012EXHIBIT 2-7.DWG 06/24/09 SCB

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0140

FIRM

FLOOD INSURANCE RATE MAP

MORROW COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 140 OF 375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MORROW COUNTY	390868	0140	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
39117C0140E

EFFECTIVE DATE
JUNE 2, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FLOODPLAIN MAP

MORROW COUNTY AIRPORT
MOUNT GILEAD, OHIO

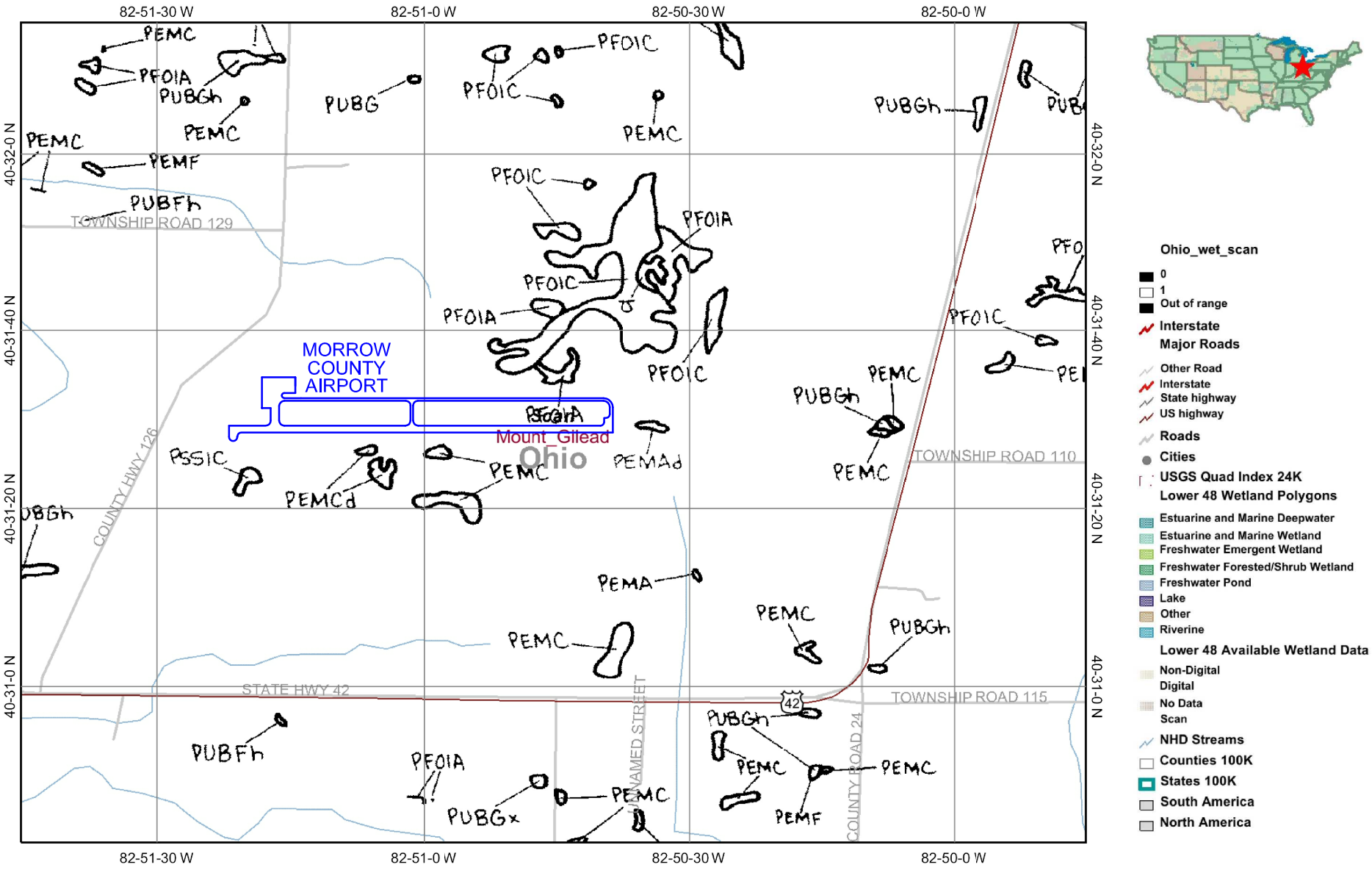
EXHIBIT 2-8

109012EXHIBIT 2-8.DWG 06/24/09 SCB

NATIONAL WETLANDS INVENTORY MAP

MORROW COUNTY AIRPORT
MOUNT GILEAD, OHIO

EXHIBIT 2-9



Ohio_wet_scan
- 0
- 1
- Out of range

Interstate
Major Roads

- Other Road
- Interstate
- State highway
- US highway

Roads
Cities
USGS Quad Index 24K
Lower 48 Wetland Polygons

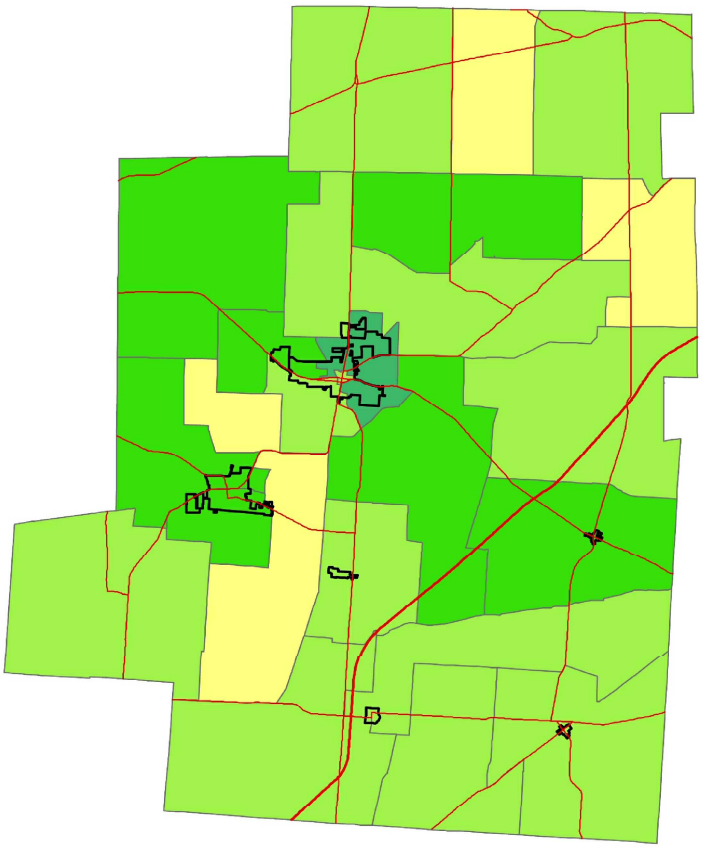
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Lower 48 Available Wetland Data

- Non-Digital
- Digital
- No Data
- Scan

NHD Streams
Counties 100K
States 100K
South America
North America

SOURCE: U.S. FISH & WILDLIFE SERVICE NATIONAL WETLANDS INVENTORY
WWW.FWS.GOV/WETLANDS JUNE 2009

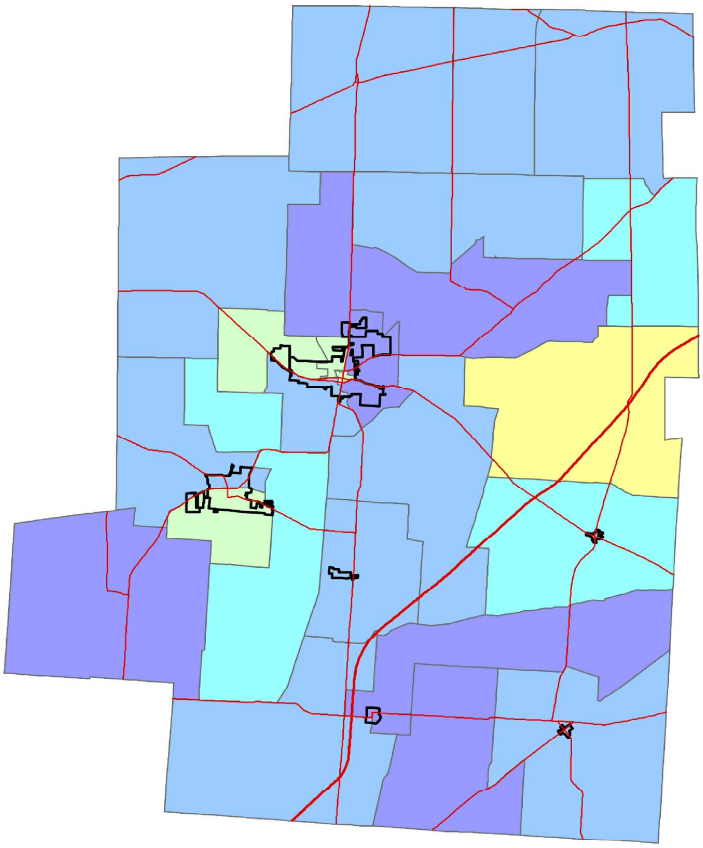


Percent of Persons 25 and Older
With a Bachelor's Degree or Greater
2000

- 0% to 5%
- 5% to 10%
- 10% to 15%
- 15% to 30%
- 30% to 50%
- 50% to 70%
- 70% to 100%

Ohio -- 21.1%
Morrow -- 9.5%

Source: Summary File 3, Census of Population and Housing, U.S. Bureau of the Census, 2000.



Percent of Persons Living In Poverty
2000

- 0% to 5%
- 5% to 10%
- 10% to 15%
- 15% to 20%
- 20% to 30%
- 30% to 50%
- 50% to 100%

Ohio -- 10.6%
Morrow -- 9.1%

Calculation based on population for whom poverty status is determined.

Source: Summary File 3, Census of Population and Housing, U.S. Bureau of the Census, 2000.

EDUCATON AND POVERTY LEVELS

MORROW COUNTY AIRPORT
MOUNT GILEAD, OHIO

EXHIBIT 2-10

109012EXHIBIT 2-10.DWG 06/24/09 SCB

Chapter 3

3. Forecasts

3.1 Forecasts Overview

It is generally recognized that estimates of activities, demand for services, cost for capital improvements including expected returns on investment, and most importantly timing of certain threshold events are the basis for effective planning. Deciding when to make capital improvements for meeting aviation demand is a critical factor for responding to demand for facilities and services and working toward making the airport financially sound and self-supporting.

Investments that are made too early because of an overly optimistic forecast of growth in activities would not result in efficient use of investment capital. Alternatively, investments made too late because of underestimating the aviation growth would result in lost revenues and, in some cases, could have a spill over effect into the economy beyond the airport.

Critical aviation activities that will affect aviation demand elements must be forecast for adequate development of a master plan. For a general aviation (GA) airport, such as the Morrow County Airport, the type of activities that will determine aviation demand will be primarily based aircraft, the mix of aircraft, aircraft operations, and the additional demand elements for special needs or purpose. The commercial and private pilot activities at the Morrow County Airport have a direct influence on the activity levels at the airport.

3.2 Aviation Activity Measures

The development of any master plan for any airport requires determination and evaluation of relevant aviation demand elements that will directly influence the type and extent of aviation activities.

Types of Activities

At small general aviation airports such as the Morrow County Airport, various activities will determine existing and new demands to develop forecasts for aircraft activity. For the purpose of this master plan, projections of two factors, based aircraft and aircraft operations, were prepared. The fleet mix and critical aircraft were also analyzed. The design hour demand was also estimated for the purpose of calculating several terminal area requirements.

Levels of Activities

For this master plan, annual activity levels will be forecast for short term (5 year), intermediate term (10 year), and long term (20 year) horizons. The estimates will be useful for planning needed improvements and budgeting expenditures to meet corresponding incremental demand for services. The base year for the master plan projections is 2009.

3.3 Available Data

3.3.1 FAA Terminal Area Forecast (TAF)

The FAA Terminal Area Forecast provides vital historic and projected information for scheduled enplanements, itinerant operations, local operations, and based aircraft. This information is presented based on the federal government calendar (October 1 through September 30). This information is furnished by 585 FAA supported towered airports and by approximately 3,000 non-towered FAA sponsored general aviation airports.

The TAF information is helpful in budgeting for airport facilities and staffing. The forecast data is also used by state and local aviation planners for determining future airport capital improvements.

Historical figures for based aircraft and aircraft operations were taken from the TAF data. This historical information is illustrated in Section 2.5 of this report. The TAF for based aircraft is shown in Exhibit 3-1. The TAF for aircraft operations is shown in Exhibit 3-2.

As stated in Chapter 2, while the TAF is an accurate representation of activity at towered airports, the information provided is less accurate for non-towered airports. The listed operations in the TAF appear to be well above the estimated actual operations at the airport based upon observations made by the consultant while working at the airport since 1985.

The TAF predicts no growth in based aircraft or operations from 2009 to 2029. This growth rate underestimates the growth for the Morrow County Airport.

3.3.2 Ohio State Airport System Plan (SASP)

The Ohio Department of Transportationôs Office of Aviation completed a state airport system plan in May of 2006. In order to assess the need for and phasing of future developments to the airports in Ohio, projections of aviation demand were made for over 150 of Ohioôs airports, including the Morrow County Airport.

Based Aircraft

Of the two different methods for predicting based aircraft levels, the SASPôs preferred method was a method that correlated based aircraft growth to population growth in the county in which each airport is located. Depending upon how quickly the countyôs population was projected to grow, the airportôs based aircraft were assumed to grow at a rate half, equal to, or twice the FAAôs active growth rate for the same period. The population growth rate for Morrow County fell into the upper third of the growth rates for all Ohio counties. This forecast of based aircraft is shown in Exhibit 3-1.

Aircraft Operations

The method used to forecast aircraft operations calculated the average operations per based aircraft at each airport. This number was then multiplied by the number of projected based aircraft

to get the projected aircraft operations. For the Morrow County Airport, an assumed factor of 900 operations per based aircraft was used. This number was derived by dividing the TAF operations by the reported number of based aircraft. Based on observations made by the consultant at the airport since 1985, 900 operations per based aircraft is an overestimation of the actual activity at the airport.

At the time the SASP was completed, the airport had reported 22 based aircraft. At the time the master plan forecasts were completed, the airport has 19 based aircraft. For this reason, the forecasts will start from different base numbers. The rate of growth can be compared. The Ohio SASP predicts a slight increase in based aircraft from 22 in 2004 to 24 in 2014. Using an estimated average of 900 annual operations per based aircraft, the Ohio SASP predicts an increase in total annual operations from 19,180 in 2004 to 21,600 in 2014. Although the number of operations is high, this rate of growth seems realistic for the Morrow County Airport.

3.3.3 User Survey

An airport user direct mail survey has been conducted. An example of this survey is included in the appendix. The survey was mailed to current users of the Morrow County Airport as well as based aircraft from surrounding airports. Surveys were also left at the airport for users to complete and return. Approximately 280 surveys were mailed and 37 were returned. Some of the results are summarized below.

Some reasons given for using other airports in the area instead of Morrow County were:

- Longer runway length at other airports
- 24 hour fuel services at other airports
- Respondents live/work/do business closer to other airports
- ILS and/or other approach procedures at other airports
- Restaurant at other airports

The most listed recommended improvements at the Morrow County Airport (in order of respondentsô priority) include:

- Fuel Facilities (24 hour fuel facilities)
- Runway/Taxiway Pavement (Improve/lengthen runway)
- Instrument Approaches (GPS and/or LPV)
- Repair Services
- Apron/Tie Downs
- Restaurant

Other recommended improvements included a courtesy car, a pilotsô lounge, a grass landing strip, a PAPI and improved restroom facilities.

The respondents reported that a majority of their flights are for recreation, with the second most reported purpose for their flights was business.

3.4 Forecast Methodology

Based Aircraft

While the TAF predicts no growth in based aircraft at Morrow County, the Ohio SASP predicts growth. The forecast method chosen for this report reflects the growth that is predicted in the Ohio SASP. Population forecasts for Morrow County and the State of Ohio were obtained from the Ohio Department of Development, Office of Strategic Research. These population forecasts are shown in Table 3-1.

Table 3-1: Projected Population

	2005	2010	2015	2020	2025	2030
Morrow County	32,730	34,410	35,380	36,890	37,580	38,650
State of Ohio	11,501,180	11,666,850	11,816,170	12,005,730	12,164,200	12,317,610
Source: Ohio Department of Development, Office of Strategic Research						

The based aircraft register revealed that all of the current based aircraft owners reside in Morrow County. The projected population growth for Morrow County is 15th highest of the 88 counties in Ohio. While the Ohio SASP and the TAF forecast shows little or no growth for the airport, a review of the existing and planned residential, commercial, and industrial development in the primary market area would require that equal consideration be given to the need for convenient access to air transportation. A judgmental annual growth factor of one percent for based aircraft would be justified. This growth rate was applied to the based aircraft. The results are shown in Table 3-2 and in Exhibit 3-1.

Aircraft Operations

Annual aircraft operations were derived from four sources:

1. The Federal Aviation Administrationôs Terminal Area Forecast (TAF)
2. The Ohio State Airports System Plan (SASP)
3. The user survey which was conducted for this master plan
4. Historical observations and periodic interviews with the Fixed Base Operations and users over the last 25 years.

As stated previously in this report, while the TAF is an accurate representation of activity at towered airports, the information provided is less accurate for non-towered airports. The listed operations in the TAF appear to be well above the estimated actual operations at the airport based upon observations made by the consultant while working at the airport since 1985.

Based upon historical observations and periodic interviews with the Fixed Base Operator and airport users, current annual general aviation operations from based aircraft is approximately 200

operations per aircraft. Itinerant operations were estimated to be approximately equal to based aircraft operations, which is an additional 200 operations per aircraft. Casual observations and service records confirm this estimate. The FBOôs annual crop spraying and agricultural service operations generate an additional 4,400 operations. The result of these estimates is a base year (2009) annual operations of 12,000. This level of operations better reflects the actual operations at the airport than the TAF and will provide a more reliable baseline to forecast future activities and aviation demand. Operations are expected to increase at the same rate as based aircraft (one percent per year) as determined above.

The appropriate forecasts are shown in Tables 3-2 and Exhibit 3-2.

Table 3-2: Based Aircraft and Operations* Forecast

Activity Level	Year	Morrow County			Projected Airport Growth	Based Aircraft	Operations*
		Projected Population	5-Year Population Growth	Annual Population Growth			
Base	**2009**	**34,074**		**1.00%**		**19**	**12000**
	2010	34,410		0.99%	1.00%	19	12120
	2011	34,604		0.56%	1.00%	19	12240
	2012	34,798		0.56%	1.00%	20	12360
	2013	34,992		0.56%	1.00%	20	12480
5- Year	**2014**	**35,186**	**3.26%**	**0.55%**	**1.00%**	**20**	**12600**
	2015	35,380		0.55%	1.00%	20	12730
	2016	35,682		0.85%	1.00%	20	12860
	2017	35,984		0.85%	1.00%	21	12990
	2018	36,286		0.84%	1.00%	21	13120
10-Year	**2019**	**36,588**	**3.98%**	**0.83%**	**1.00%**	**21**	**13250**
	2020	36,890		0.83%	1.00%	21	13380
	2021	37,028		0.37%	1.00%	21	13510
	2022	37,166		0.37%	1.00%	22	13650
	2023	37,304		0.37%	1.00%	22	13790
	2024	37,442	2.33%	0.37%	1.00%	22	13930
	2025	37,580		0.37%	1.00%	22	14070
	2026	37,794		0.57%	1.00%	23	14210
	2027	38,008		0.57%	1.00%	23	14350
	2028	38,222		0.56%	1.00%	23	14490
20-Year	**2029**	**38,436**	**2.65%**	**0.56%**	**1.00%**	**23**	**14630**

*1 Operation = 1 take-off or landing.

A comparison of the three forecasts is shown in Table 3-3 below and in Exhibits 3-1 and 3-2.

Table 3-3: Forecast Comparison

Year	TAF		Ohio SASP		Master Plan Forecast	
	Based Aircraft	Annual Operations*	Based Aircraft	Annual Operations*	Based Aircraft	Annual Operations*
2004	21	17,262	22	19,180		
2005	21	17,262				
2006	21	17,262				
2007	21	17,262				
2008	21	17,262				
2009	**21**	**17,262**	**23**	**20,700**	**19**	**12000**
2010	21	17,262			19	12120
2011	21	17,262			19	12240
2012	21	17,262			20	12360
2013	21	17,262			20	12480
2014	**21**	**17,262**	**24**	**21,600**	**20**	**12600**
2015	21	17,262			20	12730
2016	21	17,262			20	12860
2017	21	17,262			21	12990
2018	21	17,262			21	13120
2019	**21**	**17,262**			**21**	**13250**
2020	21	17,262			21	13380
2021	21	17,262			21	13510
2022	21	17,262			22	13650
2023	21	17,262			22	13790
2024	21	17,262			22	13930
2025	21	17,262			22	14070
2026	21	17,262			23	14210
2027	21	17,262			23	14350
2028	21	17,262			23	14490
2029	**21**	**17,262**			**23**	**14630**

*1 Operation = 1 take-off or landing.

The Master Plan Forecast is based on 2009 baseline data of 400 annual operations per based aircraft plus 4,400 annual crop spraying and associated agricultural operations.

Fleet Mix/Critical Aircraft

The user survey and records review indicated that the airport is mostly used by fixed wing aircraft. The airport is used occasionally by rotary wing aircraft.

Aircraft are grouped by FAA in two different ways. The first grouping is the Airplane Design Group (ADG). This categorizes aircraft based on their tail height and wingspan. The various designations are shown below in Table 3-4.

Table 3-4: Airplane Design Group (ADG)

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

Within Design Group I, there is an additional designation of ñsmall aircraft onlyò that refers to aircraft that weigh 12,500 pounds or less. The second grouping is the approach categories. This grouping is based on 1.3 times their stall speed. The aircraft approach categories are shown below in Table 3-5.

Table 3-5: Aircraft Approach Category

Approach Category	Approach Speed (knots)
A	<91
B	91-<121
C	121-<141
D	141-<166
E	>166

The combination of a letter and a number, such as A-I or B-I, comprises an Airport Reference Code (ARC). Each airport has an ARC designation that determines certain design standards. Generally, the aircraft wingspan determines separation and width related features, and the aircraft approach speed applies to runway related features. The ARC for a particular airport is set by the critical aircraft, which is the largest, most demanding aircraft that is based at the airport and/or uses the airport on a regular basis (yields more than 500 operations).

The airport facilities currently meet most of the requirements for B-I. The existing ARC is B-I. As stated in Chapter 2, two based aircraft fall within the ARC of B-II. The following chapters will explore the upgrades necessary to meet B-II standards.

3.5 Design Hour Demand

The forecast annual demand for aircraft operations, passengers, potential cargo and vehicle trips should be sufficient to identify the type of facilities needed including quantity and quality of the demand for the facilities. The consultant's more than 30 year observation of the Morrow County Airport provides a good understanding of its seasonal operations including type of trip (short haul), time of day and variation in demand.

While a considerable demand for facilities will be based on the agricultural spraying operations during the growing season, the remaining operations and subsequent demand should be based on the peak hour of the average day of the peak month. The method would provide sufficient capacity to cover at least 95% of the operational hours of the year.

The observed aircraft operations during the past 30 years were primarily of the short haul type (less than 500 miles per trip) and occurred during the day time hours of 6:00 A.M. to 8:00 P.M. Transportation and economic activity for Morrow County including Morrow County Airport appear to parallel the data provided in trip ends recorded by the State of Ohio Department of Transportation. The data indicates that approximately 85% of the daily operations occur between the hours of 6:00 A.M. to 8:00 P.M. with the peak hour operation of approximately 10% of the daily traffic occurring between 3:30 P.M. and 4:30 P.M.

Table 3-3 of Chapter 3, the preferred Based Aircraft and Operation Forecast can then be expanded to obtain the following base data operations on which the demand for facilities can be built which the facilities demand during the planning period should be based. Table 3-6 Design Hour Demad indicates the activities time frame and operational breakdown.

Table 3-6 Design Hour Demand

Activity Level	Year	Based Aircraft	Annual Operations	Peak Month Operations 15% of Annual	Peak Day Operations 7% of PM	Demand Hour Operations 10% of PD
Base	2009	19	12,000	1,800	126	13
5 Year	2014	20	12,600	1,890	132	13
10 Year	2019	21	13,250	1,988	139	14
15 Year	2024	22	14,070	2.110	148	15
20 Year	2029	23	14,630	2,195	154	15

3.6 Emerging Trend

The population growth rate for Morrow County falls into the upper third of the growth rates for all of Ohio counties. For a primarily rural county the growth rate is outside of the norm and generated by the county's proximity to Ohio's rapidly growing capital city Columbus. During the last 20 years a small percentage of Franklin and Delaware County residence found it economically and environmentally desirable to relocate their residence to Morrow County and commute to their jobs. This trend is anticipated to continue at least during the 20 year planning period. The resulting change in the cultural make up of the population will not only impact the demand for airport facilities and services by also the quality, design hour operations, security considerations along with airfield and land side requirements.

3.7 Summary

The forecast process for this airport master planning consisted of critical elements that included (in summary) the following steps:

1. Identification of aviation activities.

2. Review of available forecasts, including the FAAôs Terminal Area Forecast and the Ohio Airport Systems Plan.

3. Analyze data received from user survey.

4. Select and apply a forecasting method based on population growth.

5. Determine the willingness and capability of the owner to meet user demand.

The forecast of this report differs from the FAAôs Terminal Area Forecast by more than 10 percent in the 5-year period and more than 15 percent in the 10-year period. Normally this would be considered inconsistent with the TAF. However, according to AC 150/5070-6B Paragraph 704, Section 3 states, ñwhen the 5- or 10- year forecast is for less than 100,000 total annual operations or 100 based aircraft, the forecast does not need to be reviewed at FAA Headquartersò. The forecasts of this report do not exceed 100,000 total annual operations nor 100 based aircraft in any planning period.

The forecasts of this report predict a slight increase in both operations and based aircraft in all planning periods. As stated previously, there is no credible data available at this time that would indicate that the fleet mix would change enough to increase the ARC beyond B-II.

Morrow County Airport
Based Aircraft Forecast

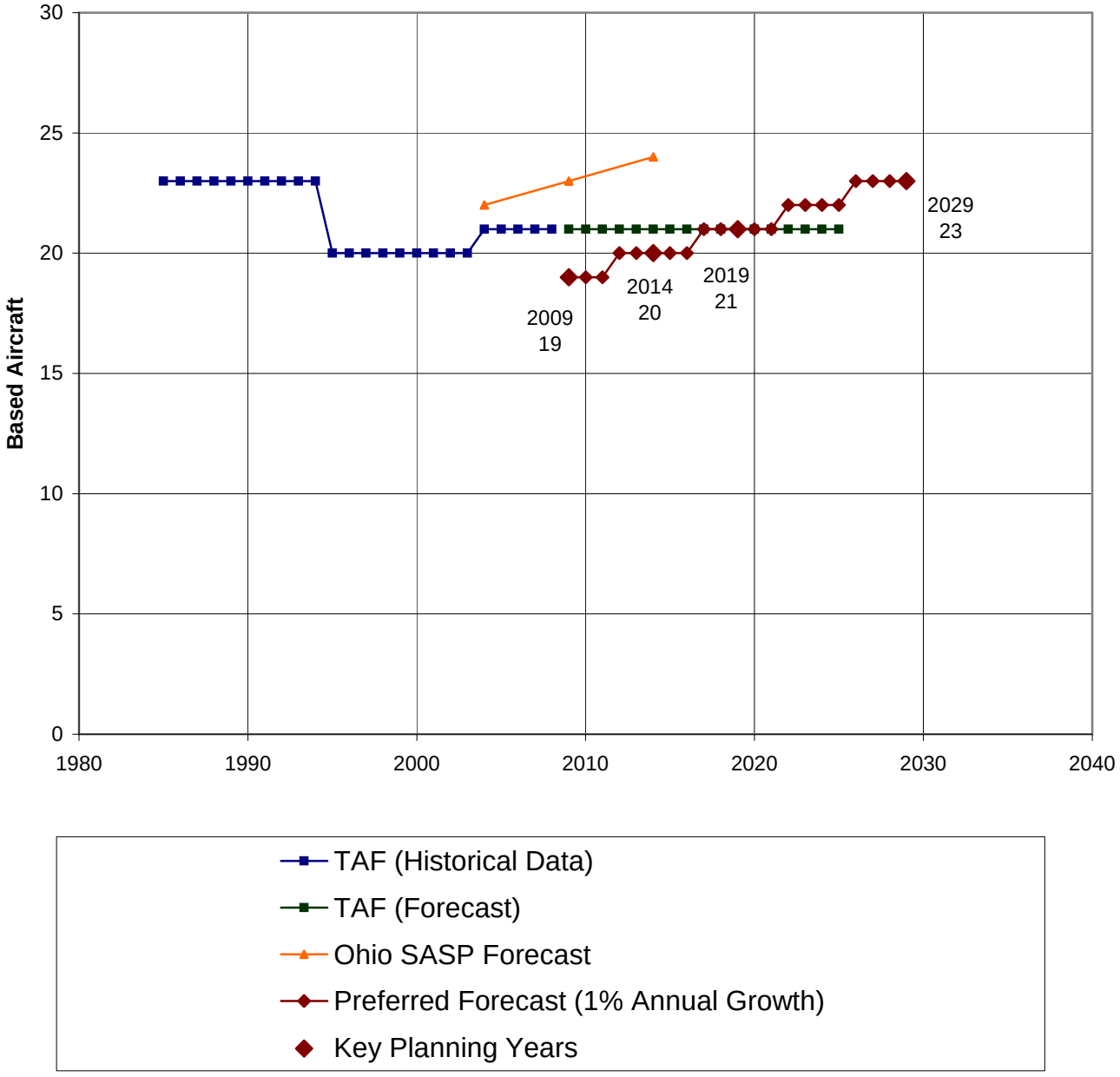
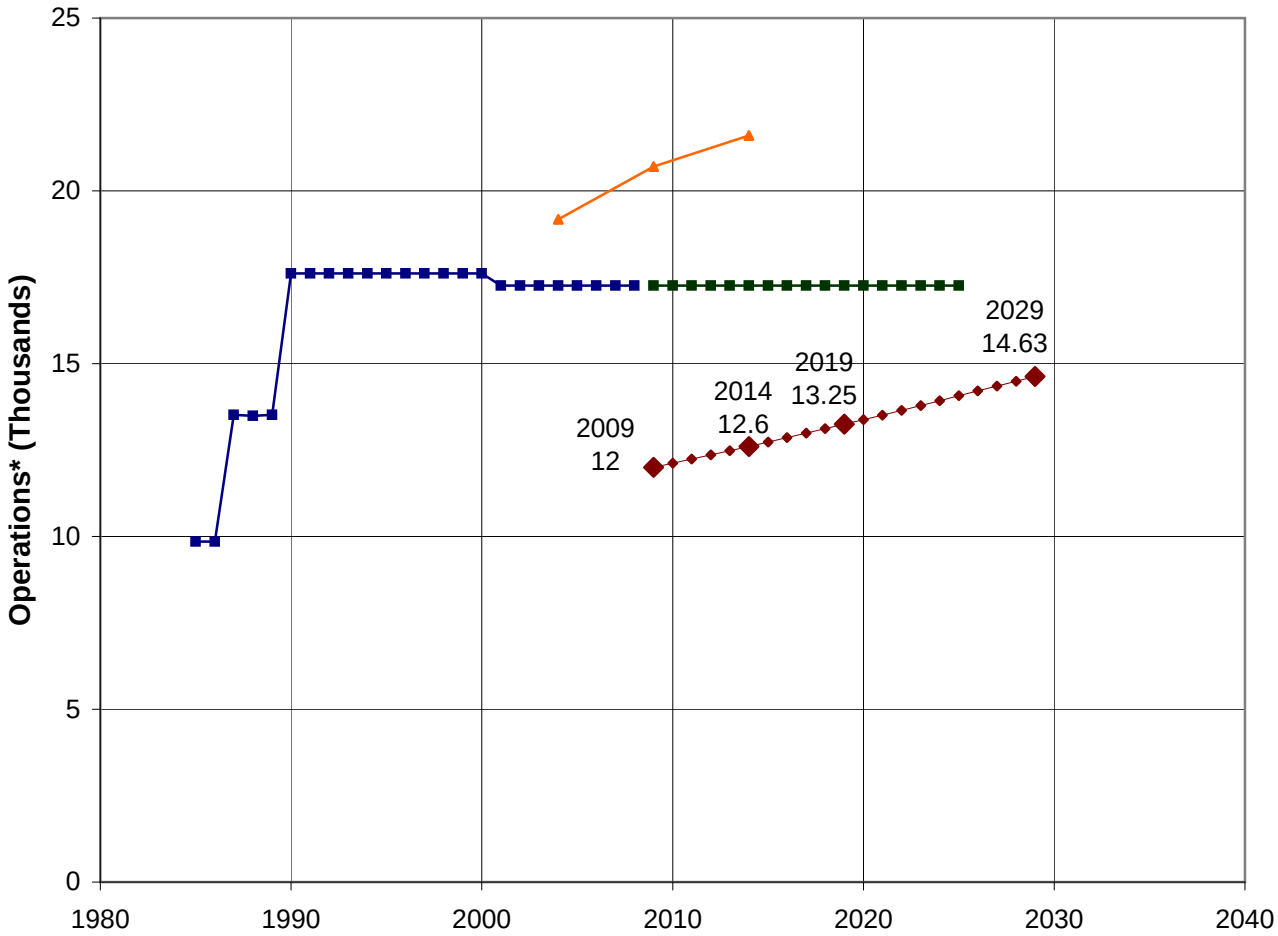


Exhibit 3-1

Morrow County Airport
Aircraft Operations* Forecast



*1 Operation = 1 take-off or landing.

Exhibit 3-2

Chapter 4

4. Facility Requirements

4.1 General

This chapter presents a description of facility requirements dictated by forecast demand and other appropriate planning criteria. Requirements for specific kinds of facilities were determined for the Morrow County Airport based upon the communityôs best interest, forecasts of aviation demand and applicable planning standards as specified in various Advisory Circulars and other publications of the FAA. Among the most frequently consulted sources was Advisory Circulars 150/5300-13, Airport Design. This chapter presents a description of facility requirements for four broad areas:

- **Airfield/Airspace Requirements**
  - Runways, Taxiways, Taxilanes, Aprons
  - Lighting, Marking, Navigational Aids

- **General Aviation Facilities**
  - Terminal Building
  - Hangars
  - Fixed Base Operator

- **Access and Parking**
  - Access
  - Parking
  - Fencing

- **Utilities**

4.2 Airfield/Airspace

The Ohio SASP classified the Morrow County Airport with and Airport Reference Code (ARC) of B-I. As stated in Chapter 3, the category B-I refers to planes with wingspans between 49ô and 79ô, tail height between 20ô and 30ô and approach speeds between 91 knots and 121 knots. The airport currently meets most of the requirements for B-I aircraft. There are currently two based aircraft with larger wingspans which fall into the category of B-II. This chapter will explore the requirements for both B-I and B-II aircraft.

The following information is also summarized in the tables at the end of this chapter.

Runway

Runway length requirements were calculated based on the FAA Advisory Circulars 150/5300-13 ñAirport Designò and 150/5325-4B ñRunway Length Requirements for Airport Designò. The

length of runway required is based on factors such as; airport elevation above mean sea level, climatic factors, nonstop trip length, and most importantly, the most demanding aircraft served by the runway.

The current length of 3497ô exceeds the length of 3320ô required to serve 95% of small (less than 12,500 pounds) airplanes with less than 10 passenger seats. In order to serve 100% of these small airplanes, 3930ô of runway would be recommended. The output from the computer program used to derive these lengths is included in the appendix. For the Morrow County Airport, serving 95% of small airplanes is sufficient. The current length of 3497ô is adequate to serve current and future demand.

Although the demand is not forecasted in this report, if there was a demand for small airplanes with 10 or more passenger seats, 4340ô of runway would be warranted. If there was a demand for large airplanes (between 12,500 pounds and 60,000 pounds), 5470ô of runway would be needed to serve 75% of these airplanes at 60% useful load. While it is likely that a larger aircraft may use the airport, the anticipated occasional operations (less than 500 annually) would not require a longer runway.

Although the current length is adequate to serve current and future forecast demand, the Airport Authorityôs strategic goal is to attract and accommodate business aircraft including business jets. In order to accommodate these aircraft, a 5,000ô runway is incorporated into the Ultimate Airport Layout Plan.

The current runway width of 65ô meets the requirement of 60ô for Airplane Design Group I. A runway shoulder of 10ô is required for ADG I runways. To upgrade to ADG II, a 75ô runway width is required. There are two options for widening the runway. Widening by 5ô on each side would not require moving the runway edge lights. Widening by 10ô on the south side only would require moving the runway edge lights located on that side to keep the lights between 2ô and 10ô from the pavement edge. The first option, widening by 5ô on each side is recommended because the runway edge lighting would not be affected and the pavement crown could be maintained.

The current runway orientation is 10-28. The runway has a wind coverage of 94.14%. This wind coverage was based on the crosswind not exceeding 10.5 knots. For wind coverage less than 95%, a crosswind runway is desirable. However, constructing a crosswind runway at the Morrow County Airport is neither feasible nor recommended. The relatively low annual operations at the airport do not warrant a crosswind runway, and the funds would not be available for such construction.

The annual service capacity of the runway is 230,000 annual operations. The forecast annual operations fall well below the threshold and would not require additional runway capacity.

Taxiway

A key component of an airfield development is the taxiway system. The taxiway system connects the terminal apron and the hangars with the runway. Taxiways should provide well-defined, safe, smooth, and efficient flow of aircraft between the terminal area and the runway. A full-length taxiway parallel to the runway is the preferred method of accomplishing this goal.

A 25ô wide taxiway is required for the ARC B-I. The existing 25ô wide partial length parallel taxiway and the existing taxiway runups and turnouts are sufficient to meet the current demand. To upgrade the ARC to B-II, a 35ô wide taxiway would be required. Similar to the runway, there are two options for the pavement widening. Widening by 5ô on each side would not require moving the taxiway edge lights. When the existing taxiway was constructed, underdrains were constructed more than 5ô away from the edge of the 25ô wide pavement to accommodate future widening. Widening by 10ô on the north or south side only would require moving the taxiway edge lights located on that side to keep the lights between 2ô and 10ô from the pavement edge, and would require reconstructing the underdrains, or as a minimum construction of new alternative additional edge drains 2ô from the new edge of pavement.

The existing runway centerline to taxiway centerline separation is 283ô. This separation exceeds the requirements for ARC B-I (225ô) and ARC B-II (240ô). The separation is adequate for the planning period.

Taxilanes providing access between the terminal areas and hangars should be constructed at least 25ô wide and up to 35ô wide where aircraft with larger than 79ô wingspan and wider undercarriage demand greater widths.

Although not forecasted for this planning period, if a full-length parallel taxiway is warranted in the future, the taxiway would need to be extended by 325ô to runway end 10. There are several options for construction. To meet B-I requirements, the taxiway extension could be constructed with a taxiway centerline to runway centerline separation of 225ô. This option is not recommended, as it would require reconstructing the taxiway for future upgrade to B-II. To meet B-II requirements, the taxiway extension could be constructed 240ô from the runway centerline. The taxiway could be constructed 25ô wide and widened later or it could be constructed 35ô wide and meet all dimensional standards for B-II. The taxiway extension could also be constructed in line with the existing taxiway, at 282ô. This location would require the most alterations of the terminal area, and offers no advantage except avoiding a slight turn as pilots taxi through the apron area. The vehicle parking area at the terminal building may need to be reconfigured or relocated to comply with taxiway safety area and object free area requirements for both the 240ô and the 282ô separation.

The taxiway pavement was given a PCI of 77. Resurfacing is recommended as a long-term improvement when needed.

Taxilanes

Taxilanes providing access between the terminal areas and hangars should be constructed at least 25ô wide and up to 35ô wide where aircraft with larger than 79ô wingspan and wider undercarriage demand greater widths.

Hazard Areas

The Object Free Area (OFA) is an area on the ground centered on a runway, taxiway or taxilane centerline that is free of objects in order to enhance safety. The existing runway, taxiways and taxilanes meet the FAA design standards for object free area widths and lengths for the ARC B-I. A runway OFA that would meet ARC B-II requirements would require additional safety grading and clearing to assure that the runway OFA is 500 feet wide and would extend 300 feet beyond each end of the runway. The required OFA dimensions are shown in the tables at the end of this chapter.

The Runway Safety Area (RSA) is the surface surrounding the runway that is suitable for decreasing the risk of damage to aircraft in the event of an undershoot, overrun, or excursion from the runway. The RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations and must be drained by grading or storm sewers to prevent water accumulation. The maximum grade allowable for a RSA is 5%. The RSA must be clear of objects except for objects that must be located in the RSA because of their function (such as runway edge lights). The meet B-I standards, the RSA is 120ô wide and extends 240ô beyond each runway end. To meet B-II standards, the RSA is 150ô wide and extends 300ô beyond each runway end. These dimensions are also shown in the tables at the end of this chapter. The existing RSA meets the B-I standards. To increase to B-II standards, additional safety grading and clearing would be required to meet the dimensional standards listed above. Unlike some other dimensional standards, RSA standards cannot be modified or waived. Airports must meet all RSA dimensions or must have an active plan to meet all requirements.

The Runway Protection Zone (RPZ) is a trapezoidal surface which begins 200ô from the physical end of the runway and that exists for the protection of people and property on the ground. It is desirable to clear all objects from the RPZ, however, some uses are permitted provided they do not attract wildlife, are outside of the Object Free Area, and do not interfere with navigational aids. The existing RPZ is 500ô x 700ô x 1,000ô (13.770 acres). The RPZ for B-II standards is also 500ô x 700ô x 1,000ô (13.770 acres). The RPZ for facilities expecting to serve all aircraft with not lower than ¾ mile visibility minimums is 1,000ôx1,510ôx1,700ô (48.978 acres). This PRZ is shown on both ends for the ultimate condition. The County currently owns or has control of all of the land within the existing RPZs in order to clear all obstructions. If the runway is lengthened, additional land acquisition would be required in order to own all of the land within the new RPZs.

The Appendix 2 Threshold Siting Surface (TSS) is an imaginary surface at each end of the runway through which no obstructions may penetrate. If obstructions penetrate this surface, there are several alternatives to mitigate the obstruction penetration. The object may be removed or lowered. The runway threshold may be displaced, which shortens the available landing distance.

The Glidepath Angle (GPA) and/or Threshold Crossing Height (TCH) could be modified, or a combination of threshold displacement and GPA/TCH increase could be accomplished. Visibility minimums could be raised. The last option is to prohibit night operations unless the obstruction is lighted or an approved Visual Glide Slope Indicator (VGSI) is used. Table A2-1 from the FAA AC 150/5300-13 was used to determine that existing runway 10-28 should be classified as a Type 3. A Type 3 runway is expected to serve large airplanes (Visual day/night); *or* instrument minimums Ó 1 statute mile (day only). For the Future Airport Layout Plan, a Type 5 runway designation is recommended. A Type 5 runway is expected to support instrument straight in night operations, serving approach category A and B aircraft only. The dimensional standards associated with a Type 3 and Type 5 runway are shown in tables at the end of this chapter.

The Federal Aviation Regulations (FAR) Part 77 Surfaces are established to identify hazards to air navigation. The FAR Part 77 Surfaces include the Primary Surface, Approach Surfaces, Transitional Surfaces, and Horizontal Surface. A depiction of these surfaces as well as their dimensions are shown on the Airport Layout Plan.

Apron

The airport currently has one apron as described in Chapter 2. The loading and unloading of passengers, baggage and cargo as well as fueling, servicing and light maintenance of the airplane takes place on the apron. Adequate depth for the apron should be preserved for maneuvering and parking of both current and future aircraft and for apron activities.

The size of the apron depends of the number of based and itinerant aircraft. The taxiway safety area and the building locations restrict the location and limits of the apron. The apron must accommodate itinerant aircraft parking, based aircraft parking, maintenance, and fueling operations. The required dimensions of the apron are calculated based on peak day operations.

Based aircraft and transient aircraft require temporary and sometimes permanent space for aircraft parking including access to terminal facilities and fueling and ground access. Tables 4.1 and 4.2 determined the total amount of itinerant and based aircraft apron requirements based on the forecast of operations from Chapter 3. The average daily operations were estimated by dividing the yearly operations by 365. Itinerant operations were estimated by assuming 200 annual itinerant operations per based aircraft. It was assumed that 50% of these itinerant operations would require tie downs. The required apron area is calculated by providing 320 square yards per aircraft expected to be tied down per day. 10% is added to the required apron area to accommodate additional square yardage for taxiing maneuvers and parking. The following table shows the calculated apron space required for itinerant aircraft operations.

Table 4.1
Itinerant Apron Requirements

Design Year	Average Daily Operations	Itinerant Operations	50% of Itinerant Aircraft		Apron Airspace Required	Adjusted Apron Space	Available Apron Space
			OPS	Tie Down			
2009	76	27	14	7	2,240 S.Y.	2,500 SY.	2,500 S.Y.
2014	80	29	15	7	2,240 S.Y.	2,500 SY.	2,500 S.Y.
2019	84	30	15	7	2,240 S.Y.	2,500 SY.	2,500 S.Y.
2024	88	32	16	8	2,560 S.Y.	2,800 SY.	2,500 S.Y.
2029	92	33	17	9	2,880 S.Y.	3,200 SY.	2,500 S.Y.

The following table shows the calculated apron space required for based aircraft and itinerant aircraft. The itinerant tie downs required are carried from the previous table. It is estimated that 10% of the based aircraft would require tie downs.

Table 4.2
Based Aircraft Apron Requirements

Design Year	Average Daily Operations	Based Aircraft	Estimated Itinerant 10% Local Aircraft	Apron Airspace Required	Adjusted Apron Space	Available Apron Space
2009	76	19	2 + 8 = 10	3,200 S.Y.	3,500 SY.	5,300 S.Y.
2014	80	20	2 + 8 = 10	3,200 S.Y.	3,500 SY.	5,300 S.Y.
2019	84	21	2 + 8 = 10	3,200 S.Y.	3,500 SY.	5,300 S.Y.
2024	88	22	2 + 9 = 11	3,520 S.Y.	3,800 SY.	5,300 S.Y.
2029	92	23	3 + 9 = 12	3,840 S.Y.	3,800 SY.	5,300 S.Y.

In conclusion, it is recommended that the apron be at least 3,800 square yards to accommodate the forecast demand. Although the existing apron meets this size requirement, less than 3,000 square yards is available for aircraft parking. The remaining space is used for taxilane and hangar apron.

Lighting

The existing runway and taxiway edge lighting is adequate for the planning period. Routine maintenance for both systems will be necessary.

Marking

After the runway received an asphalt overlay in 2011, it was marked with non-precision markings. When the runway is widened to meet B-II standards, the threshold bars should be analyzed to see if adjustments to the number of bars/widths will need to be made. To maintain the visibility of the

marking, the runway should be remarked every three to four years.

Navigational Aids

Navigational aids play an ever-increasing role in the safe and efficient use of airports by providing en route guidance and use of the airfield facilities. All-weather use of an airport is critical to business travelers in order to narrow the limits of navigational errors in horizontal and vertical separations. Business aircraft have a need to conduct their business during normal business hours. The need to conduct business activities also includes periods when low visibility and poor weather conditions will also prevent travel by aircraft to another airport.

The airportôs navigational aids are described in the Inventory section of this report. The approach plates are illustrated in Exhibit 2-3. The airport has a VOR or GPS-A approach to Runway 28. This will be adequate for the forecast activity for the planning period.

Visual Approach Aids

The Visual Approach Slope Indicator (VASI) at Runway End 28 is non-operational and should be replaced. Replacement with a Precision Approach Path Indicator (PAPI) is planned for 2012.

Runway End Identification Lights (REILs) should be installed at both runway ends to assist pilots in approaching the runway ends during periods of low visibility.

4.3 General Aviation Facilities

Airport master planning for general aviation normally includes consideration for a variety of activities and users. The activities would include corporate flights, cargo operators, business flying, flight training, private or recreational flights, agricultural applications, law enforcement, medical and emergency evacuations and fixed base operator.

During its existence, Morrow County Airport has experienced all the foregoing activities, however, in very limited modes. For the master planning at hand research shows that the primary focus should be for the agricultural applications, business flying, flight training and private activities. That is not to say that the consideration for potential other activities should not be excluded in the planning for the aircraft storage facilities, transient parking aprons, terminal facilities, navigation aids, vehicle parking and access from adjacent roads.

Hangars

It is assumed that the current method of aircraft storage using T-hangars and conventional hangars will continue. A new hangar should be planned before the demand exceeds capacity. It is recommended that a waiting list of potential based aircraft be kept. A new hangar should be built when the sponsor is confident that the hangar will be at least 80% full as soon as it is constructed.

Table 4.3
Aircraft Storage Requirements

Design Year	Based Aircraft	Single Engine	Multi Engine	Jet or Turbo	Hangar Demand	
					T-Hangar	Conventional
2009	19	19	0	0	5,700 S.Y.	340 S.Y.
2014	20	20	0	0	6,000 S.Y.	340 S.Y.
2019	21	21	0	0	6,300 S.Y.	340 S.Y.
2024	22	22	0	0	6,600 S.Y.	340 S.Y.
2029	23	23	0	0	6,900 S.Y.	340 S.Y.

Aircraft storage requirement is determined on the current use of 100% covered storage with provision of providing anticipated itinerant overnight covered storage. For single engine A-I aircraft 300 square yards were allowed and for B-I and B-II a 340 square yards allowance was used.

Terminal Building

The existing building contains approximately 8,000 square feet gross floor area on one floor. The life expectancy of the building is dependent on the intensity of upkeep. Replacement, if needed, should be done at the discretion of the sponsor. Although a new administration or terminal building is not required, it would be useful to the airport management, fixed base operation, and airport users. If a new building is erected, the minimum recommended gross floor area (not including FBO operations or leased space) is 1,600 square feet. A terminal building should have space for a public lobby/waiting area, pilot lobby/waiting/flight planning and prep area, circulation

and concession area, telephone, restrooms with provisions for the handicapped, future office space, and operations and maintenance space. Also included should be space for any businesses wishing to lease office space at the airport.

Table 4.4
Terminal Building Requirements

Design Year	Peak Hour* Operations	Pilots And Passengers	Floor Space 50 SF Recommended	Available Floor Space
2009	9	18	900 S.F.	8,000 S.F.
2014	9	18	900 S.F.	8,000 S.F
2019	9	18	900 S.F.	8,000 S.F
2024	10	20	1,000 S.F.	8,000 S.F
2029	10	20	1,000 S.F.	8,000 S.F

Terminal building floor space requirements are based on the Ashford-Wright Airport Engineering Manual recommendation of providing 50 square feet per pilot and passenger of floor space.

Fixed Base Operator

The Fixed Base Operator is Fisherôs Ag Service. The FBO is located southwest of Runway 10, on private property. This ñthrough-the-fenceò commercial operation is connected to Runway 10 by a taxilane.

4.4 Support Facilities

Fuel Facilities

Currently fuel storage and dispensing is provided by the FBO. AvGas and Jet A is available during business hours. The fuel farm is located on private property and accessible for aircraft fueling through mobile units on airport ground or through a taxilane connecting the public terminal with the private facility.

Fuel storage requirements were calculated to determine the capacity of fuel storage that should be provided if the County and Airport Authority were to provide fuel on-site. Fuel storage requirements are based on on-site observations of fueling activities for itinerant trips, touch and go operation, flight training and crop dusting operations. The estimates used 6 gallons per itinerant trip, 0.7 gallons for touch and go operations, 1 gallon per flight training operation and 6 gallons per agriculture operation. Consideration should be given for the on-site fuel availability on a 24/7 self serve basis for at least LL100 gas. Above ground tanks are recommended.

Table 4.5
Fuel Storage Requirements

Design Year	Average Daily Operations	Daily Demand (Gallons)	Weekly Demand (Gallons)	Peak Month Demand (Gallons)	Tank Capacity (Gallons)	
					Existing	Required
2009	76	99	693	2,772 (1)	0	6,000
2014	80	104	728	2,912 (1)	0	6,000
2019	84	109	763	3,052 (2)	0	6,000
2024	88	114	798	3,192 (2)	0	6,000
2029	92	120	840	3,360 (2)	0	6,000

4.5 Access and Parking

Access Road

The existing access road is asphalt pavement and in good condition. The road was used as a haul road during the runway overlay and was subsequently overlaid at the same time.

Parking

The need for automobile parking is largely dependent upon the operational level and types of activities associated with the airportôs role. Pilots, passengers, visitors and employees of the airport or businesses located at the airport will determine demand for vehicle parking. Visitors will only require short-term parking for 20 to 30 minutes. Pilots, passengers, and workers typically require 8 hours or more of parking time.

An analysis was done to determine if the current parking capacity is adequate based on the 20-year forecast demand at the airport. The requirements are as follows:

Table 4.6
Vehicle Parking Requirements

Design Year	Peak Hour Operations	Pilot Passengers Visitors	Spaces Available		Spaces Required		Deficiencies	
			No.	Area (SF)	No.	Area (SF)	No.	Area (SF)
2009	9	26	8	1,920	20	4,800	12	2,880
2014	9	26	8	1,920	20	4,800	12	2,880
2019	9	26	8	1,920	21	5,040	13	3.120
2024	10	30	8	1,920	23	5,520	15	3,600
2029	10	30	8	1,920	23	5,520	15	3,600

Vehicular parking requirement are based on anticipated peak hour operations and expected pilots, passengers, and visitors during the peak day. The common architectural standard of providing 240 square feet per vehicle was used for determining parking space requirements. Spaces available were determined by counting the parking spaces and allowing 240 square feet per vehicle not including the access configuration.

The low activities at the airport do not require curb front space for arriving and departing passengers nor for public transit door to door shuttles. The existing 18 ft. wide access road and 8 close-in vehicle parking spaces are sufficient to meet current demand. The off-site FBO also provides vehicle parking for convenient short term and long term parking to meet demand. The existing ground access and vehicle parking are adequate to meet current and forecast demand.

Fencing and Security

During the last 10 years security considerations have become a major element in planning airport facilities. Proper planning for land side and airfield development should produce safe, secure, efficient and economic designs to control unauthorized access to aircraft and facilities. The Morrow County Master Plan Review Committee and the consultant have initiated a security plan for the development of the airport. The plan would follow the guidelines of the AOPA and applicable recommendations by the Transportation Security Administration (TSA).

Ground access from Mount Gilead ï Cardington Road including the terminal and hangar access road and vehicle parking should be designed with access control and site surveillance. Similar requirements should also be considered for the terminal building, aircraft apron, T-hangars and conventional hangars. Perimeter fencing to protect the runway, taxiway and the terminal facilities from unauthorized personnel should also be considered.

The offsite fixed base operator provides crop dusting and agricultural related aerial services, including helicopter service center, major and minor frame and engine repair including other airport related services. Recently the fixed base operation was moved to an offsite location. The off-airport site is considered a "through the fence operation". While the offsite operator has adequate security provision for the landside facilities, the private taxilane access to runway end 28 should be provided with fencing and monitored access control. Access control can be accomplished in a reasonable manner. While perimeter fencing is expensive and not within the current budget, partial fencing with a pass through (open gap) gate and simple omnidirectional camera is feasible and low cost.

4.6 Utilities

Existing utilities include on-site contained water and sanitary sewer and storm sewer facilities. Electric power and communication services are furnished by public providers. The existing utilities are adequate for the planning period.

Table 4.7
Water Supply and Wastewater Requirements

Design Year	Based Aircraft	Pilots/ Passengers Employees	Demand Gallon/Day @ 20G/Person	Wastewater Disposal	
				Gallon/Day	Adjusted (+25%)
2009	19	18 + 2 = 20	400	400	500
2014	20	18 + 2 = 20	400	400	500
2019	21	18 + 2 = 20	400	400	500
2024	22	20 + 2 = 22	440	440	550
2029	23	20 + 2 = 22	440	440	550

Water supply and wastewater treatment is estimated based on the Ohio Environmental Protection Agency recommendation of providing 20 gallons per day per person for employees, passengers and pilots. For wastewater disposal a 25% above demand requirement was added to assure sufficient capacity.

4.7 Land Use

Land requirements for overall airfield development are based on several primary factors:

- Size and shape of the individual parcel to be acquired
- Airfield layout and adaptability to terrain constraints
- Geometric configuration of airside and landside facilities
- Utilization of facilities
- Federal and local planning requirements

The existing airfield property consists of approximately 149 acres. There is no available significant acreage that can be devoted to non-aeronautical uses. There is no available land for an industrial park, recreational use, agricultural or grazing leases or retail businesses. Currently, the airport has sufficient land for all required runway protection zones, runway safety areas, object free areas, and terminal area development to meet existing B-I requirements and future B-II requirements. In order to construct the runway extension of 800ô to the west, acquisition of 54 acres would be necessary. In order to construct the runway extension of 600ô to the east, acquisition of 61 acres would be necessary. An additional 28 acres along the north property line would be needed for expanded terminal facilities and airport related commercial activities. The Airport Property Map and Proposed Airport Layout Plan outline this acquisition, resulting in the ultimate airport property of approximately 291 acres.

4.8 Summary

The following improvements are necessary/recommended to maintain existing facilities and meet the safety requirements for the existing Airport Reference Code of B-I:

- Obstruction Removal
- Runway Safety Grading
- Install supplemental wind cone.
- Acquire snow removal equipment.
- Crack seal and sealcoat all airside pavement.
- Runway and taxiway marking.
- Long term: Resurface airfield pavement.

The following improvements are necessary/recommended to maintain existing facilities and meet the requirements for the future Airport Reference Code of B-II:

- Widen runway 10/28 to 3497ô x 75ô
- Widen parallel taxiway to 35ô
- Obstruction removal and runway safety grading.

The following improvements are not necessary/recommended to meet the requirements of any particular Airport Reference Code, but were identified in the Facility Requirements as recommended improvements to meet user demand and progress toward the Airport Authority and Countyôs strategic goal:

- Conduct an environmental assessment.
- Install weather reporting equipment (AWOS III).
- Acquire land for runway extension, RPZs, and approaches; approximately 54 acres at runway end 10 and 54 acres at runway end 28.
- Remove obstructions and conduct runway safety grading along extended runway ends 10 and 28.
- Extend runway 10-28 by 1,503ô x 75ô to ultimate runway length of 5,000 x 75ô. The runway extension would include taxiway extension, runway and taxiway lighting extension, and visual navigation aids (PAPI, REILôs) etc. relocating.
- Acquire land for airport development, approximately 28 acres.
- Extend partial parallel taxiway to full 3497ô x 35ô runway length.
- Extend vehicle parking area to 5,500 square feet.
- Construct T-hangar
- Improve terminal building.
- Relocate taxilane.
- Extend vehicle parking area.
- Construct terminal building.
- Construct fuel storage and dispensing facility.

Morrow County Airport (4I9)

Runway Design Standards

Item	Existing*	Future**	Ultimate**
Runway Width	60 ft ^	75 ft	75 ft
Runway Shoulder Width	10 ft	10 ft	10 ft
Runway Blast Pad Width	80 ft	95 ft	95 ft
Runway Blast Pad Length	100 ft	150 ft	150 ft
Runway Safety Area Width	120 ft	150 ft	150 ft
Runway Safety Area Length Prior to Landing Threshold	240 ft	300 ft	300 ft
Runway Safety Area Length Beyond RW End	240 ft	300 ft	300 ft
Runway Object Free Area Width	400 ft	500 ft	500 ft
Runway Object Free Area Length Beyond RW End	240 ft	300 ft	300 ft

* Runway design standards for aircraft approach category A & B visual runways with not lower than 3/4 statute mile (1,200 m) approach visibility minimums, Airplane Design Group I.

** Runway design standards for aircraft approach category A & B visual runways with not lower than 3/4 statute mile (1,200 m) approach visibility minimums, Airplane Design Group II.

^ The existing runway width is 65 ft.

Adapted from Table 3-1 from AC 150/5300-13 CHG 12.

Taxiway Dimensional Standards

Item	Existing*	Future**	Ultimate**
Taxiway Width	25 ft	35 ft	35 ft
Taxiway Edge Safety Margin	5 ft	7.5 ft	7.5 ft
Taxiway Shoulder Width	10 ft	10 ft	10 ft
Taxiway Safety Area Width	49 ft	79 ft	79 ft
Taxiway Object Free Area Width	89 ft	131 ft	131 ft
Taxilane Object Free Area Width	79 ft	115 ft	115 ft
Radius of Taxiway Turn	75 ft	75 ft	75 ft
Length of Lead-in to Fillet	50 ft	50 ft	50 ft
Fillet Radius for Tracking Centerline	60 ft	55 ft	55 ft
Fillet Radius for Judgmental Oversteering Symmetrical Widening	62.5 ft	57.5 ft	57.5 ft
Fillet Radius for Judgmental Oversteering One Side Widening	62.5 ft	57.5 ft	57.5 ft
Taxiway Wingtip Clearance	20 ft	26 ft	26 ft
Taxilane Wingtip Clearance	15 ft	18 ft	18 ft

* Runway design standards for Airplane Design Group I.
** Runway design standards for Airplane Design Group II.

Adapted from Tables 4-1, 4-2 and 4-3 from AC 150/5300-13 CHG 12.

Morrow County Airport (4I9)

Runway, Taxiway and Taxilane Separation Standards

Item	Existing *	Future**
Runway Centerline to Taxiway Centerline	225 ft ^	240 ft
Runway Centerline to Aircraft Parking Area	200 ft	250 ft
Runway Centerline to Hold Line	200 ft	200 ft
Taxiway Centerline to Fixed or Movable Object	44.5 ft	65.5 ft
Taxiway Centerline to Parallel Taxiway/Taxilane Centerline	69 ft	105 ft
Taxilane Centerline to Fixed or Movable Object	39.5 ft	57.5 ft
Taxilane Centerline to Parallel Taxilane Centerline	64 ft	97 ft

* Runway separation standards for aircraft approach category A & B visual runways and runways with not lower than 3/4 statute mile (1,200 m) approach visibility minimums, Airplane Design Group I.

** Runway separation standards for aircraft approach category A & B visual runways and runways with not lower than 3/4 statute mile (1,200 m) approach visibility minimums, Airplane Design Group II.

^The existing Runway Centerline to Taxiway Centerline separation distance is 283 ft. The existing 283 ft dista to be maintained during the planning period.

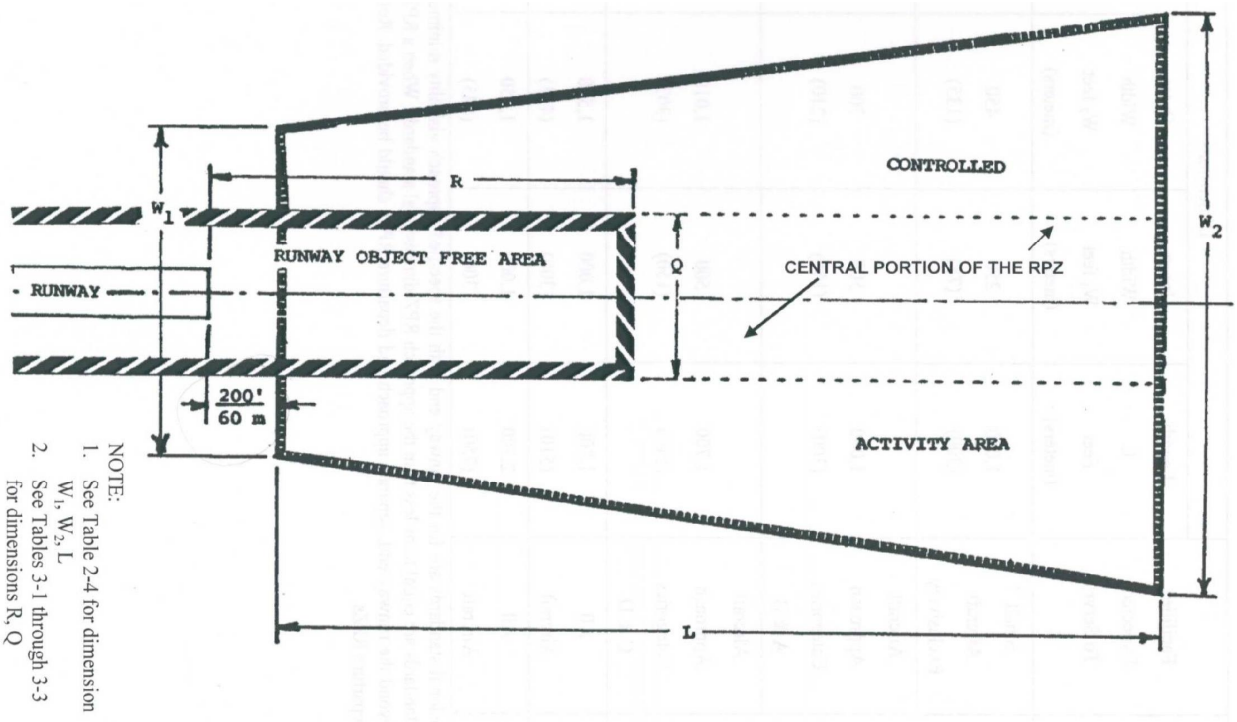
Adapted from: Tables 2-1, 2-2 and 2-3 from AC 150/5300-13 CHG 12.

Morrow County Airport (4I9)

Runway Protection Zone (RPZ) Dimensions

Dimensions (See figure this page.)	Existing*	Future*	Ultimate**
Length L	1,000 ft	1,000 ft	1,700 ft
Inner Width W1	500 ft	500 ft	1,000 ft
Outer Width W2	700 ft	700 ft	1,510 ft
RPZ Acres	13.770 acres	13.770 acres	48.978 acres

* RPZ dimensions for facilities expected to serve aircraft approach categories A & B with visual and not lower than 1 statute mile (1,600 m) approach visibility minimums.
** RPZ dimensions for facilities expected to serve all aircraft with not lower than 3/4 mil (1200 m) visibility minimums.



Adapted from Table 2-4 and Figure 2-3 from AC 150/5300-13 CHG 12.

Morrow County Airport (4I9)

Runway Obstacle Free Zone (OFZ)

Dimensions	Existing*	Future**	Ultimate**
Runway OFZ Width	400 ft	400 ft	400 ft
Ruwnay OFZ Length Beyond Each Runway End	200 ft	200 ft	200 ft
Inner-Approach OFZ Width^	N/A	N/A	N/A
Inner-Approach OFZ Length Beyond Approach Light System ^	N/A	N/A	N/A
Inner-Approach OFZ Slope from 200 Feet Beyond Threshold ^	N/A	N/A	N/A
Inner-Transitional OFZ Slope ^^	N/A	N/A	N/A

* For runways serving large airplanes.

^ Inner-Approach OFZ applies only to runways with an approach lighting system.
^^ Inner-Transitional OFZ Slope applies only to runways with lower than 3/4 statute mile (1,200 m) approach visibility minimums.

Adapted from Paragraph 306 from AC 150/5300-13 CHG 12.

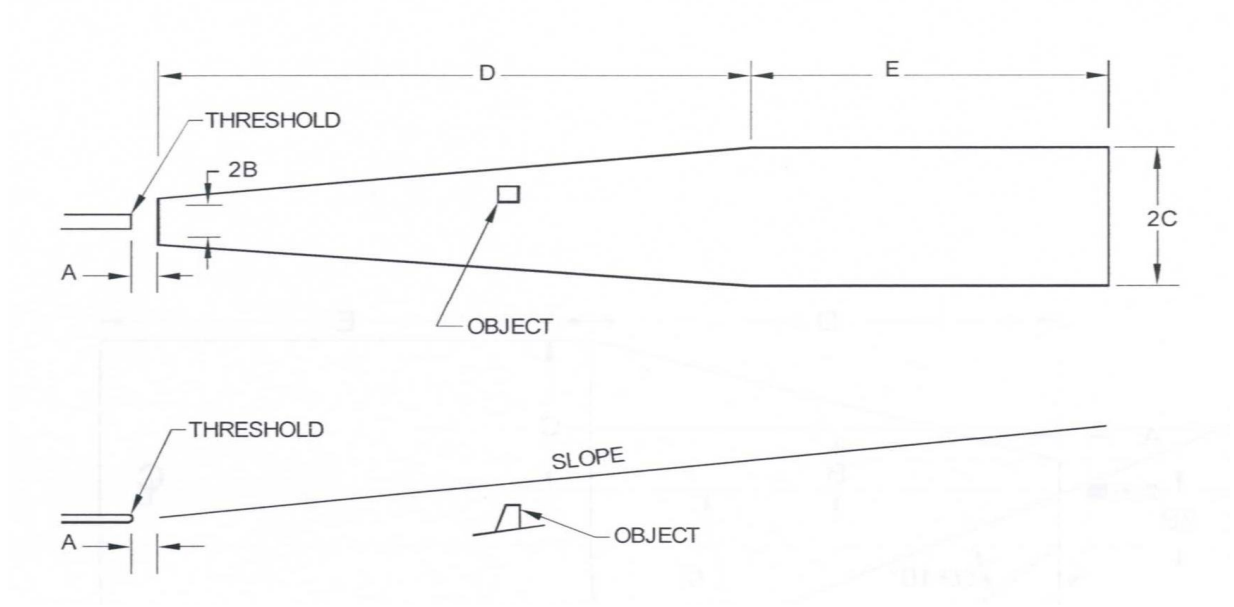
Morrow County Airport (4I9)

Approach/Departure Requirements

Dimensional Standards (See figure this page)	**Existing***	**Future****	**Ultimate****
A	0 ft	200 ft	200 ft
B	200 ft	200 ft	200 ft
C	500 ft	1,900 ft	1,900 ft
D	1,500 ft	10,000 ft	10,000 ft
E	8,500 ft	0 ft	0 ft
Slope/OCS	20:1	20:1	20:1

* Runway Type 3. Approach end of runways expected to serve large airplanes (Visual day/night); *or* instrument minimums ≥ 1 statute mile (day only).

** Runway Type 5. Approach end of runways expected to support instrument straight in night operations, serving approach category A and B aircraft only.



Adapted from Table A2-1 and Figure A2-1 from AC 150/5300-13 CHG 14 Appendix 2

Chapter 5

5. Alternative Development and Evaluation

This portion of the master plan identifies and evaluates alternative developments that would meet the airport usersô needs while at the same time also follows the strategic goal of the Morrow County Commissioners and Airport Authority for the ultimate development of the airport. The previous chapter identified critically needed facilities that would meet the forecast demand of the existing and potential users and also remain responsive to environmental, social and economic issues. The alternatives were selected from public input that focused on these issues and the impact the developments will have on the community. The alternatives thus selected will be evaluated as may be relevant with environmental impacts and aviation goals when developed within the federal guidelines, requirements and established criteria.

Chapter 1 outlined a method and directives of achieving goals and objectives for future airport developments. To refresh our memory and keep our focus on the plan objective and goals we repeat the Airport Authorityôs strategic goal to ensure the following elements are provided:

- A high level of service
- A desirable level of service and convenience
- A desirable level of land use and compatibility between the community and the airport
- Highest efficiency in the preservation and use of resources
- A reasonable level of accessibility
- Area wide and community acceptance

The foregoing goals when properly developed and implemented should provide a comprehensive process that would also result in the desirable ultimate objective and enhance or initiate the following:

- Stakeholder participation
- Land use compatibility
- Protect aviation assets from encroachment
- Consideration of fiscal issues and economic self sustainability
- Develop facilities that would encourage existing and new airport related business and expand or attract business in the county area

The analysis process will address what elements should be included or deleted from further consideration and what type and level of analysis should be used to differentiate among the alternatives. An appropriate level of public involvement will be given to establish meaningful benefits.

Several alternatives have been considered for development that would meet aviation demand for the next 20 years. When analyzing feasible alternatives, special attention was given to supporting elements that would protect the environment, maintain or enhance existing socioeconomic conditions, and be acceptable to the community.

During the development of alternatives, intuition, experience, and professional judgment were used to consider options to meet existing and forecast aviation demand. There are more than several possible ways to meet the aviation demand of the Morrow County Airport. Alternative airport developments considered ranged from ñdo nothingò to closing the airport and transferring services to nearby airports. During the evaluation process, the primary consideration has been the need to meet aviation demand during the planning period and make best use of existing facilities. Each alternative under consideration was developed by formulating improvements based upon the evaluations in the Facility Requirements chapter. Each improvement was analyzed based upon what the improvement is, how it could meet demand, and how it would impact environmental, social, and economic concerns.

The general purpose of identifying, analyzing, and recommending alternatives considered several alternatives and criteria for evaluating each alternative. Local concern focused primarily on:

- What elements should be included for the process
- What elements should be given high priorities
- What level of analysis should be used to differentiate among the alternatives.
- The criteria were thought to be important due to the Morrow County Airportôs proximity to large urban centers to the south and west. It was also thought that available land at reasonable cost would make Morrow County attractive to entrepreneurs.

In the critical analysis of the alternatives, only functional elements have been given primary importance. Primary elements that will be considered are airside needs such as runway and approaches to runway ends, taxiway, runway/taxiway and safety areas. Other primary considerations will be runway length, applicable minimum design standards including associated environmental issues. Secondary considerations were identified as terminal building, available contiguous land, airport access and issues as they evolve in the planning process. While the cost of implementation of the selected alternatives is not a primary issue, available funds for implementation and continued maintenance is a primary concern.

5.1 Alternative 1 – Existing Site, Do Nothing

5.1.1 Alternative 1 – Description

This alternative has no major improvements or modifications to the airport. Critically needed airside and landside facilities would be maintained at their current level. Facilities would only be replaced when maintenance costs outweigh replacement costs.

The following activities are included with Alternative 1:

Table 5-1: Alternative 1 Estimated Cost

Item	Estimated Cost
Short Term*	
Remove Obstructions	$40,000
Runway Safety Grading	$25,000
Install Supplemental Wind Cone	$30,000
Acquire Snow Removal Equipment	$157,000
Resurface Terminal Apron	$170,000
Crack Sealing and Seal Coating (all Airside Pavement)	$210,000
Runway and Taxiway Marking	$12,000
Total Short-Term Maintenance	**$644,000**
Long Term	
Resurface Taxilanes	$30,000
Resurface and Mark Runway and Taxiway	$650,000
Maintain Runway and Taxiway Lighting and NAVAIDs	$100,000
Total Long-Term Maintenance	**$780,000**
Total Estimated Cost Alternative 1	**$1,424,000**

*Cost does not include mowing, snow removal, building maintenance, utilities, or other miscellaneous maintenance and repair.

Only basic pavement maintenance would be performed. Over the 20-year planning period, this includes: resurfacing the runway, apron, taxiway, and taxilane, resurfacing the parking lot and access road, crack filling and seal coating the runway, apron, taxiway, and taxilane, and remarking the runway and taxiway.

This alternative, while maintaining existing facilities in a safe and efficiently operated mode, would also focus on bringing the airport in compliance with current FAA minimum standards for ARC B-I.

To make the airport compliant with current ARC B-I standards the runway end 10 would require obstruction removal. At 860 feet from runway end 10 and 310 feet left of the extended centerline trees are penetrating the approach surface. The penetrating trees reduce the approach surface from

the required 20:1 to 16:1. Restoring the approach surface to a 20:1 slope will require acquiring land or an avigation easement including removal of the obstructing trees.

5.1.2 Alternative 1 - Evaluation

Acquiring land or avigation easements for approach surface protection and removing the obstructing trees may require an environmental assessment. As a minimum, consideration must be given to the potential presence of the protected Indiana Bat and pockets of wetlands within the obstruction removal area.

Alternative 1 would not limit the possibility for upgrading the airport in the future to a ARC of B-II. However, the currently based B-II aircraft would be operating in limited airspace and insufficient runway width.

Alternative 1 would ultimately not provide for needed safety and security measures, it would not encourage on and off airport land use and the airport would not realize forecast growth or stimulate growth throughout the planning period. Alternative 1 could not respond to unforeseen changes or work toward a strategic goal that is socially and economically desirable. In the long term, the stagnation at the airport would also adversely influence the economic potential of the airport and its ability to attract and maintain new users, businesses and industries.

5.2 Alternative 2 – Existing Site, Upgrade to B-II Standards

5.2.1 Alternative 2 – Description

Alternative 2 would focus on the existing site with a vision of improving the airside and landside facilities to accommodate existing and forecast B-II aircraft.

The action would require significant infrastructure improvements to meet B-II design standards. A review of the Facility Requirement chapter shows that upgrades will be required to meet the B-II runway design standards and taxiway dimensional standards. The runway width including the taxiway pavement strength and width will also require improvement. The existing runway orientation would remain on the existing centerline alignment. Subsequently the wind coverage would not change. However the increase in the dimensional standard, specifically width and safety areas will require additional land and avigation easements.

The following development items are included with Alternative 2:

Table 5-2: Alternative 2 Estimated Cost

Item	Estimated Cost
Short Term*	
Conduct Environmental Assessment	$80,000
Acquire Land for Approaches (Approximately 3.7 acres, Parcel 13-A (Easement E-3))	$20,000
Obstruction Removal	$40,000
Runway Safety Grading	$25,000
Resurface Terminal Apron	$170,000
Crack Sealing and Sealcoating (all Airside Pavement)	$210,000
Runway and Taxiway Marking	$12,000
Acquire Snow Removal Equipment	$157,000
Install Supplemental Wind Cone	$30,000
Install Automatic Weather Observation System (AWOS III)	$200,000
Install Runway End Identification Lights (REILs)	$20,000
Install Precision Approach Path Indicator (PAPI)	$100,000
Total Short-Term	**$1,064,000**
Long Term	
Widen Runway 10/28 and widen Parallel Taxiway	$1,400,000
Extend Vehicle Parking	$30,000
Relocate T-Hangar Taxilane, 245ô x 25ô	$38,000
Install Fuel Storage and Dispensing Facility (100LL)	$125,000
Construct 10-Unit T-Hangar	$450,000
Total Long-Term	**$2,043,000**
Total Estimated Cost Alternative 2	**$3,107,000**

Runway. The existing 3,497ô x 65ô runway 10-28 would be widened to 3,497ô x 75ô. A runway width of 75ô is required for the Airport Reference Code B-II. The runway would be widened by adding 5ô of pavement to both sides of the runway. The existing runway edge lights are located 10ô from the edge of the existing pavement edge. The wider runway would then have edge lights located 5ô from the edge of the runway. This 5ô separation would meet the 2.0ô design standard minimum. The existing runway length and strength would remain for the planning period.

Taxiway. The existing 25ô partial parallel taxiway would be widened to 35ô. A taxiway width of 35ô is required for the Airport Reference Code B-II. The taxiway would be widened by adding 5ô of pavement to both sides of the taxiway. Similar to the runway, the existing taxiway edge lights are located 10ô from the existing pavement. After widening, the edge lights would be located 5ô from the edge of the taxiway. The existing taxiway length would remain for the planning period.

Runway Protection Zones. The acquisition would assure continued and enhanced protection of people and property on the ground and in the air. The Runway Protection Zone on runway approach end 10 is owned by Morrow County in fee simple. The controlled activity area permits only row crop production outside the object free area. On runway end 28 the Runway Protection Zone partially owned in fee simple and the remaining controlled activity area is under row crop production controlled through a perpetual aviation easement. It is recommended that Parcel 13 containing 3.70 acres is acquired in fee simple.

Terminal Site. The existing terminal apron of 3,800 square yards would meet the 20 year forecasted requirement for itinerant and based aircraft parking. Due to existing inadequate siting (location) and geometric layout, optimum utilization of the terminal apron cannot be achieved. A significant portion of the terminal apron is used for terminal hangar runup and taxilane. While the taxilane could be relocated to bypass the terminal apron, the terminal hangar and terminal apron runup can only be accessed over the existing terminal apron. This operation reduces the usable portion of the apron to less than 3,000 square yards or approximately 800 square yards less than the forecasted demand. Relocating the existing 25ô wide taxilane for direct access to the parallel taxiway would alleviate the deficiency. The ultimate terminal layout plan depicts the recommendations.

Chapter 4, Facility Requirements, forcasted the categorized demand for capital improvements to support aviation during the planning period.

Short term, 2014 terminal development would primarily focus on adding a self service fuel storage and dispensing system, install automated weather observation station, as well as maintaining existing terminal apron, terminal building, vehicle parking and T-hangars.

Intermediate, 2019 developments would include a 10-unit T-hangar, 4,800 s.f. of vehicle parking, fencing and securing system.

Long term, 2029 terminal development should include a new access road, expanded fuel storage and dispensing system, vehicle parking and conventional hangars including a new terminal building.

5.2.2 Alternative 2 – Evaluation

Alternative 2 includes the maintenance activities included with Alternative 1. It also includes development to upgrade the airport to meet the design standards of B-II aircraft as well as other developments to meet user demand. Alternative 2 includes improvements necessary to maintain the existing facilities as well as adapt to meet user demand and develop the airport to attract business users. Alternative 2 will be shown on the Airport Layout Plan as the Future condition.

5.3 Alternative 3 – Existing Site, Upgrade to B-II Standards and Extend Runway

5.3.1 Alternative 3 – Description

Alternative 3 would extend the runway to 4,100ô x 75ô minimum with a possible ultimate extension to 5,000ô x 75ô along with upgrading the associated airside and landside facilities to meet the design requirements for Airport Reference Code B-II. The runway widening and extension could be undertaken in two or more phases as determined by the demand of users. The most prudent options would be to widen and extend runway end 28 to support instrument straight in night operations with visibility minimum not lower than 1 mile. The final phase, when warranted, would extend the runway to its ultimate 5,000ô x 75ô build-out stage to accommodate non precision instrument approaches having visibility minimums not lower than ¾ mile. Alternative 3 was studied at public request to determine the ultimate potential for the existing airport should a need for extending the runway to 5,000ô be realized.

A runway extension to 5,000ô would make the airport more accessible to business type aircraft. The following is a table of business aircraft and their corresponding requirements:

Aircraft	ARC	Take Off Distance	Landing Distance
BEECHJET 400A/T/ T-1A JAYHAWK	C-I	4169	2960
BOMBARDIER CL-600 CHALLENGER	C-II	5700	2775
CESSNA 500 CITATION	B-I	2930	2270
CESSNA 560 CITATION V ULTRA	B-II	3180	
CESSNA 750 CITATION X	C-II	5140	3410
DASSAULT FALCON 2000	B-II	5240	5220
RAYTHEON/HAWKER 125-800	B-I	5380	4500

There are several aircraft that require around 5,000ô of runway that fall within the B-II ARC. In order to upgrade to C-II standards, the following major improvements would be necessary:

1. Widen runway to 100ô
2. Increase the taxiway centerline to runway centerline separation to 300ô from the existing 282ô. This would be accomplished by shifting the runway to the south.
3. Increase dimensions of Runway Safety Areas to 500ô wide by 1,000ô beyond both runway ends. This would require an additional 700ô of graded area at both ends of the runway.
4. Increase RPZôs to 30 acres. This would require significantly more land acquisition.
5. Other significant increases to runway and taxiway object free area dimensions, hold line locations and aircraft parking requirements.

Because of the adverse environmental and economic impacts of these improvements, Alternative 3 upgrades the airport only to meet ARC for B-II standards.

The following activities are included with Alternative 3:

Table 5-3: Alternative 3 Estimated Cost

Item	Estimated Cost
Short Term	
Conduct Environmental Assessment	$80,000
Acquire Land for Approaches Approximately 3.7 acres, Portion of Parcel 13 (Easement E-3)	$20,000
Obstruction Removal	$40,000
Runway Safety Grading	$25,000
Resurface Terminal Apron	$170,000
Crack Sealing and Seal Coating (all Airside Pavement)	$210,000
Runway and Taxiway Marking	$12,000
Acquire Snow Removal Equipment	$157,000
Install Supplemental Wind Cone	$30,000
Install Automatic Weather Observation System (AWOS III)	$200,000
Total Short Term	**$944,000**
Intermediate Term	
Update Airport Layout Plan and Conduct Environmental Assessment (with Runway Extension Justification)	$100,000
Acquire Land for Runway Extension and RPZs and Approach Protection, Parcels 13, 14, 15, 16, 17, 18, 22, 23 (61acres+-)	$1,187,000
*Extend, Widen Runway 10/28 to 4,100ô x 75ô (600ô x 75ô)	$7,813,000
Extend Vehicle Parking	$40,000
Relocate T-Hangar Taxilane, 245ô x 25ô	$50,000
Extend Medium Intensity Runway Lights	$50,000
Construct Fuel Storage and Dispensing Facility (100LL and JetA)	$250,000
Construct Runway End Identification Lights (REILs)	$20,000
Relocate Precision Approach Path Indicator (PAPI)	$40,000
Construct 10-Unit T-Hangar	$450,000
Total Intermediate Term	**$9,900,000**
Long Term (Ultimate Build-Out)	
Update Airport Layout Plan and Prepare Environmental Assessment (with Runway Extension Justification)	$100,000
Acquire Land for Runway Extension and RPZs and Approach Protection, Parcels 20,21,24,25,26,27 (54 acres +-)	$1,334,000
*Extend Runway 10/28 to 5,000ô x 75ô (900ô x 75ô)	$5,242,000
Extend Medium Intensity Runway Lights	$75,000
Relocate Runway End Identification Lights (REILs), 1 set	$20,000
Install Precision Approach Path Indicator (PAPI) RW 10	$100,000
Construct New Terminal Building	$700,000
Abandon Portion of Township Road 126	$226,432
Total Long Term (Ultimate Build-Out)	**$7,797,432**
Total Estimated Cost Alternative 3	**$18,641,432**

*Parallel taxiway widening and extension cost is included in the associated runway extension and widening costs.

Runway. Phase 1. The existing 3,497ô x 65ô runway would be widened and lengthened to 4,097ô x 75ô. The runway extension would be accomplished by extending the 28 end by 600ô. In addition to runway extension along the existing centerline approximately 1,200 feet of the existing effective profile grade should be increased from +0.28% to +1.60% to clear obstructing terrain, trees, occupied structures, roadway (SR. 42) including pole lines. The resulting grade modification would require a 1,000 feet minimum vertical curve. The 10 & 28 approach end grades would be +0.8% & -1.6 & respectively.

Runway. Phase 2. The 4,097ô x 75ô runway would be extended to 5,000ô x 75ô. The runway extension would be accomplished by extending the approach end 10 by 903ô. The action would extend runway end 10 across Township Road 126. T.R. 126 would be closed and all traffic routed onto County Road 9 over Township Road 129.

The report considered three alternatives to access the airport from the east and provide uninterrupted traffic for all origins and destinations currently using T.R. 126 by implementing one of three alternatives. Exhibits showing the alternatives are located at the end of this chapter.

Cul-de-sac and T.R. 126 Detour. The alternative would cut T.R. 126 and terminate each cut end by a cul-de-sac. Southbound traffic would be detoured onto T.R. 129 and C.R. 9 onto S.R. 42. Return or northbound traffic from S.R. 42 would be routed onto C.R. 9 and T.R. 129 back onto T.R. 126. While the alternative is the least expensive alternative it will add about 2,000 ft. in travel distance and 30 seconds additional travel time in each direction. This alternative is depicted in Exhibit 5-1.

*Partial Relocation of T.R. 126***.** Consideration has been given to relocate T.R. 126 around the runway and taxiway extension including around the runway safety area and runway protection zone. This alternative would connect T.R. 126 with C.R. 9 along the south side and north side of the extended airfield. The alternative would increase the travel distance by 2,800 ft. and the travel time by 42 seconds. The alternative requires constructing approximately 3,200 ft. of new roadway. Airport development cost would increase significantly. The attached airport development cost estimate reflects the anticipated increases. This alternative is depicted in Exhibit 5-2.

*Tunnel Enclosure of T.R. 126***.** Tunneling T.R. 126 under runway end 10 was also considered to mitigate the impact to traffic that a detour would create. The tunnel would be a minimum of 700 ft. long, 32 feet wide and provide 15 ft. headroom and underpass the runway and taxiway safety area on the existing T.R. 126 alignment. While the tunnel option would have no long term impact to vehicle traffic and the environment, additional right of way similar to the cul-de-sac option would be required. This alternative is depicted in Exhibit 5-3.

The tunnel alternative would not only result in the highest development cost but would also add significantly to the annual operating and maintenance cost. Lighting, drainage and structure maintenance, including inspection and repair would increase the annual roadway budget. The attached cost estimate reflects implementation cost and does not include annual maintenance and operating cost.

Table 5-4: Road Closure Alternatives Estimated Cost

Item	Estimated Cost
Cul-de-Sac and T.R. 126 Detour Alternative	
Land Acquisition (1.0 Acre)	$4,000
Earthwork	$11,000
Cul-de-Sac Pavement and Marking	$152,600
Surface and Subsurface Drainage	$14,000
Turfing and Erosion Control	$4,000
Total Construction	$185,600
Administration, Legal and Engineering	$40,832
TOTAL CUL-DE-SAC AND DETOUR ALTERNATIVE	**$226,432**
Partial Relocation of T.R. 126 Alternative	
Land Acquisition (1.5 Acres)	$6,000
Earthwork	$500,000
T.R. 126 Road Relocation and Marking	$1,050,000
Surface and Subsurface Drainage	$30,000
Turfing	$30,000
Total Construction	$1,616,000
Administration, Legal and Engineering	$323,200
TOTAL PATIAL RELOCATION OF T.R. 126 ALTERNATIVE	**$1,939,200**
Tunnel Enclosure of T.R. 126 Alternative	
Land Acquisition (2.0 Acres)	$8,000
Earthwork	$400,000
Tunnel 32ô Span x 15ô Prestressed Concrete Structure	$3,808,000
T.R. 126 Road Relocation Tunnel/Approx. 1,800 ft.	$540,000
Surface and Subsuface Drainage	$120,000
Turfing	$150,000
Total Tunnel Construction	$5,026,000
Administration, Legal and Engineering	$1,005,200
TOTAL TUNNEL ENCLOSURE OF T.R. 126 ALTERNATIVE	**$6,031,200**

Taxiway. Phase 1. The existing 25ô partial parallel taxiway would be widened to 35ô. A taxiway width of 35ô is required for the Airport Reference Code B-II. The taxiway would be widened by adding 5ô of pavement to both sides of the taxiway. Similar to the runway, the existing taxiway edge lights are located 10ô from the existing pavement. After widening, the edge lights would be located 5ô from the edge of the taxiway. The taxiway would also be lengthened by approximately 860ô x 35ô to meet the runway end 28.

Taxiway, Phase 2. The taxiway would be extended by approximately 1,800ô x 35ô to meet runway end 10.

Runway Safety Areas (RSA). For the Airport Reference Code B-II, the Runway Safety Area is 150ô wide and extends 300ô beyond the end of the pavement. The RSA would require additional land acquisition and grading beyond the ends of the runway in both phases.

Runway Protection Zones (RPZ). The RPZ dimensions are described in the Facility Requirements Chapter 4. The RPZôs would require additional land acquisition beyond the ends of the runway in both phases.

The extended runway 10-28 would be capable of providing approach visibility of not less than ¾ mile and support instrument approaches for straight in night operations by aircraft in the A-II & B-II Category.

Terminal Site. The need for an onsite expanded terminal site including terminal and administration building will be primarily dependent on unknown factor and developments occurring within the ñThrough The Fenceò (TTF) operations and the ownersô long term plans for the offsite operation. The purpose and need for onsite development will be a decision that airport management will be required to make after periodically evaluating the competing offsite activities. While the Airport Layout Plan indicates intermediate and long term terminal improvements, the Master Plan recommends implementing the indicated improvements only after reevaluating combined (offsite and onsite) operational and associated economic activities. The determining factors will be aviation demand and which of the two providers can take care of present and anticipated user expectations and how well the community is willing to support general aviation activity. It is unlikely that low or even moderate general aviation activities would justify providing terminal facilities from two or more providers and also meet user expectations.

5.3.2 Alternative 3 - Evaluation

Alternative 3 would require substantial land acquisition (approximately 143 acres) to make the runway and associated elements such as shoulders, runway safety areas, obstacle free zone, object free areas and approach surfaces compliant with the design standards tabulated in Chapter 4.

A cursory review of potential environmental impacts within the guidelines of the National Environmental Policy Act Order 5050.4A clearly indicates that Alternative 3 has the potential to have adverse environmental consequences. Alternative 3 includes developments that may have adverse impacts to wetlands, biotic communities, endangered and threatened species of flora and fauna, floodplains, solid waste and construction impacts. These potential impacts would require an environmental assessment.

While Alternative 3 does not appear to be justifiable or feasible at this time, it will be included on the ALP as the Ultimate condition. The requirements for a 5,000ô runway have been explored so that developments at the airport can be made with the ultimate strategic goal of the Commissioners and Airport Authority in mind.

5.4 Alternative 4- Close the Airport

5.4.1 Alternative 4 - Description

Alternative 4 would propose closing the Morrow County Airport and rely on neighboring airports to provide the necessary aviation services. The airports within the vicinity of the Morrow County Airport that could support general aviation if the airport would close are Marion County, Galion Municipal, Port Bucyrus, Knox County, and Delaware Municipal. The characteristics of these airports are described in detail in Table 2-1 in Chapter 2. All five airports have facilities equal or greater to provide the aviation demand forecast for the Morrow County Airport. Each of the airports listed on Table 2-1 has airside facilities to provide existing demand for any or all aircraft that would relocate to its site. The airports also can accommodate the based aircraft and itinerant operations generated from and to the Morrow County Airport. While the nearby airports could readily accommodate the increase in based aircraft and operations, all of the airports would be required to expand their landside facilities beyond what already has been completed or is planned for the future.

Closing the existing airport is not recommended without giving strong consideration to the Countyôs prior agreements with the United States Government including the Countyôs obligations to the public and stakeholders of the airport. The airport sponsor (Morrow County Board of Commissioners) may need to assess the risk verses the benefits in this venture.

Table 5-5: Alternative 4 Estimated Costs and Revenues

Item	Estimated Cost
Administrative Closure Management	$20,000
Appraisals, Negotiations, and Legal Expenses	$50,000
Hazard Evaluation and Survey Report	$12,000
Airfield Decommissioning	$4,000
Relocation Assistance to FBO, if eligible	*
Relocation Assistance to Based Aircraft	$22,000
Relocation Assistance to Corporate Tenants	$110,000
Mitigation Unknown Environmental Issues (Allowance Based on Hazard Evaluation	$20,000
Total Closure Expense	**$238,000**
Sale of 152 Acres of land including improvements at $4,500/per acre	**$684,000

* A reliable cost for this line item cannot be determined at this time.

** At least 90% of the proceeds of the anticipated receipts will need to be returned to the United States under the reverter clause. Sale price may increase based on the highest and best use of highest bidder.

Table 5-6: Alternative 4 Distribution of Revenues

Distribution of Funds Realized From Potential Sale of Airport

Item	Estimated Cost
Total Revenues (Land Value Only)	**$684,000
Total Expenses	$238,000
Amount Remaining for Distribution	$446,000
Federal Aviation Administration (Reverter Provision)	$401,400
Morrow County	**$44,600**

5.4.2 Alternative 4 - Evaluation

Alternative 4 would decommission the airport including all air operations and release the airport land for development. Executive Order 5190.6A of the Federal Aviation Administration Handbook dated 10/1/89 Chapter 2, Paragraph 2-2 would permit such actions. However in the event the airport obligated land is not developed for 20 years or ceases to be used for airport purposes it is subject to the reverter clause. Since all airport land has been acquired using 90% federal funds, 90% of any proceeds would be returned to the Federal Aviation Administration. The net proceed to the County could be less than $44,600. Currently there is insufficient information to determine the true cost of the Countyôs annual contribution for operating and maintaining the airport. However the anticipated savings could be significant.

Transferring all aviation activities to nearby airports and closing the Morrow County Airport was an alternative for consideration because all of the nearby airports could accommodate the additional activities. However, the Morrow County Airport also provides general aviation services to corporate and private users that require or demand local or backyard access to air transportation.

While Alternative 4 would be a feasible option for the short term, it would present disadvantages over the long term. During the short term, the primary impact would be the inconvenience to the airport users by relocating the aircraft and making longer ground trips to access other nearby airports. For any duration, decommissioning the airport and relocating services to other nearby airports would become a disadvantage to the community when competing for manufacturers and service providers. It would also not be a local advantage for providing jobs and other business or development opportunities. Closing the airport would also trigger a review, and modification or update of the Ohio State Airport System Plan.

5.5 Alternatives Analysis Summary

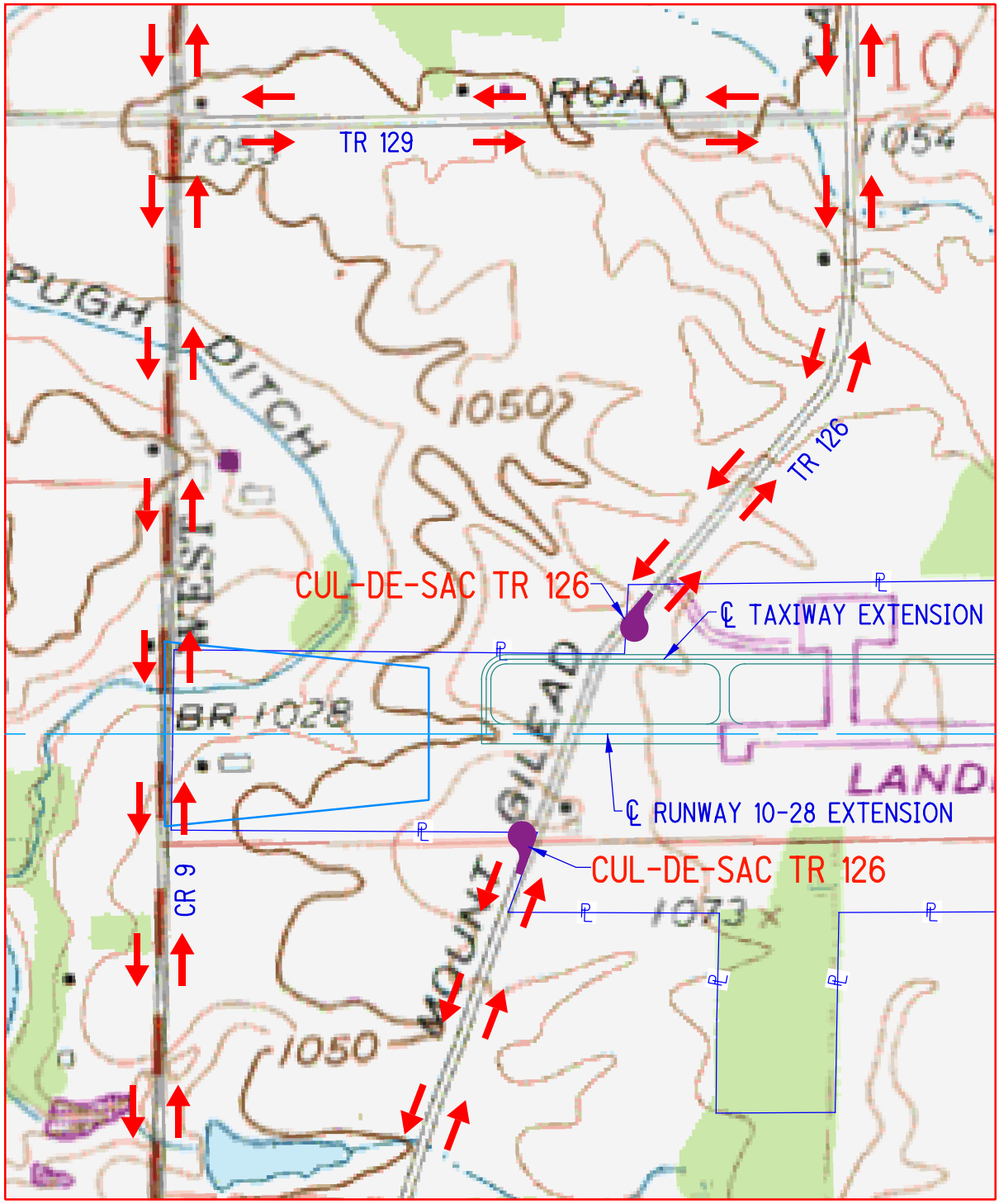
The criteria for evaluating the alternatives was derived from public issues, stakeholders and sponsor input including concerns uncovered during the alternative development process. Stakeholder and public input showed no issues with selected sites, access or capacity. Public and user concerns focused more on capability, efficiency, best planning practices including environmental and fiscal factors.

Alternative 1, ñExisting Site, Do Nothingò would maintain the airside and landside facilities in its present form and also remain compliant with applicable federal (FAA), ARC; B-I operational and safety requirements. From an operational, environmental and fiscal point of view, this option for the short term appears to be prudent.

Alternative 2, ñExisting Site, Upgrade to B-II Standardsò, for the short term (0-5 years) this option would meet the operational, environmentally and fiscally best planning and management practice. To provide and satisfy the long term demand (10-20 years) best planning practices and management would suggest that serious consideration be given during the years 6-10 for planning, construction and implementation of critical services and facilities demanded by users and stakeholders. The Airport Layout Plan illustrates the critical elements to be considered to meet future demand. From a benefit verses cost including environmental considerations this option appears most promising.

Alternative 3, ñExisting Site, Upgrade to B-II Standards and Extend Runwayò this alternative would build-out and upgrade the airport in two phases. Phase one for the short term would add 600 feet to runway end 28 and widen the runway to 75 feet and correspondingly extend and widen the parallel taxiway. Phase two for the intermediate term would extend the runway end by 903 feet including the parallel taxiway. The ultimate usable runway length would then be 5,000 feet by 75 feet. It should be noted here again that the survey and corresponding forecast discovered no demand to justify the runway extension. Although not justified at this time, this alternative is illustrated on the Airport Layout Plan as the Ultimate condition.

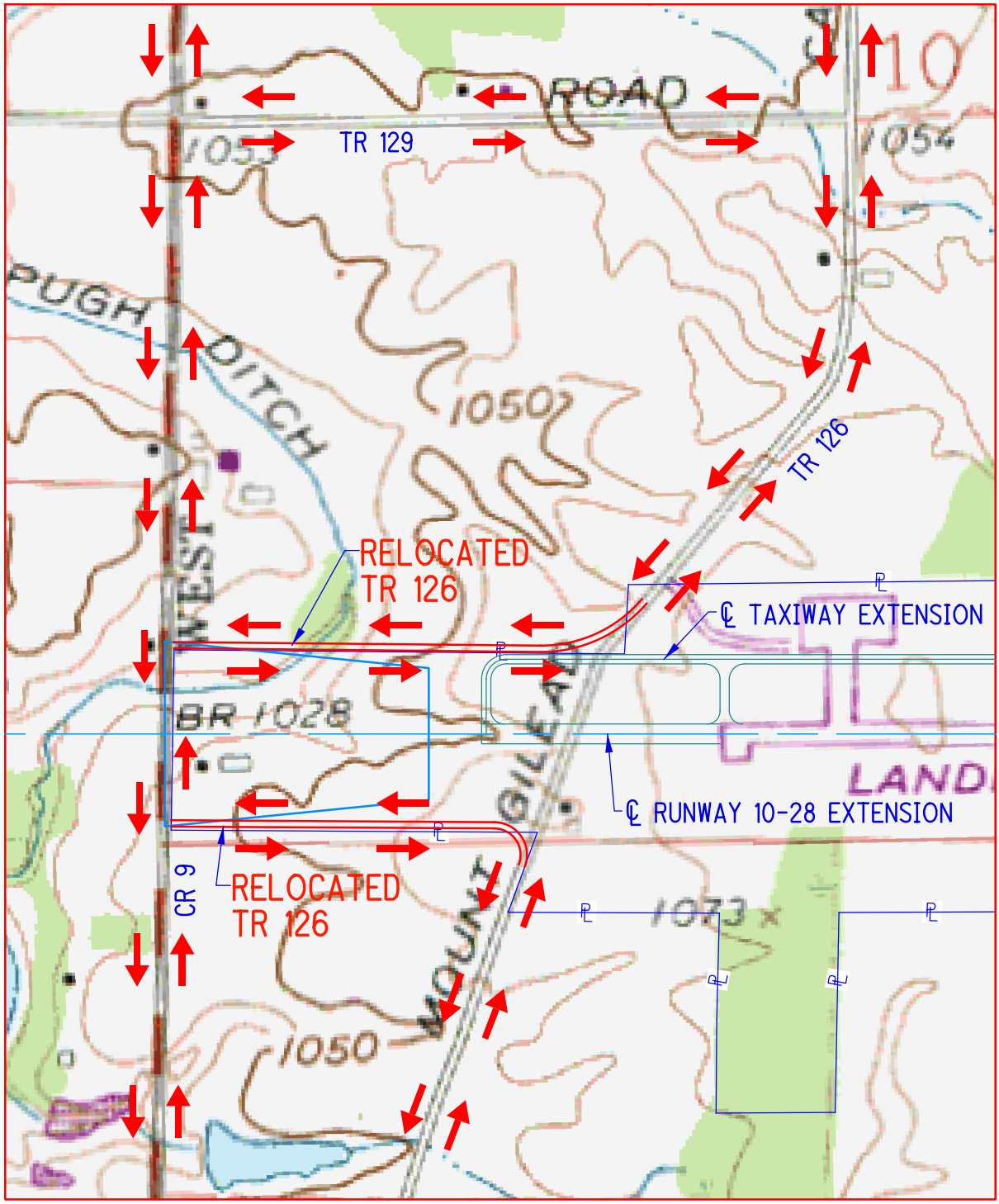
Alternative 4, ñClose the Airportò. While theoretically feasible, the action would not produce the anticipated revenues and put the Sponsors in violation of their obligation for continued operations of the airport and facilities funded through the federally sponsored Airport Capital Improvement Program. In addition of the legal obligations to the FAA, other legal issues and financial obligations to stakeholders will probably surface.



CUL-DE-SAC TR 126 DETOUR ALTERNATIVE

← TRAFFIC FLOW

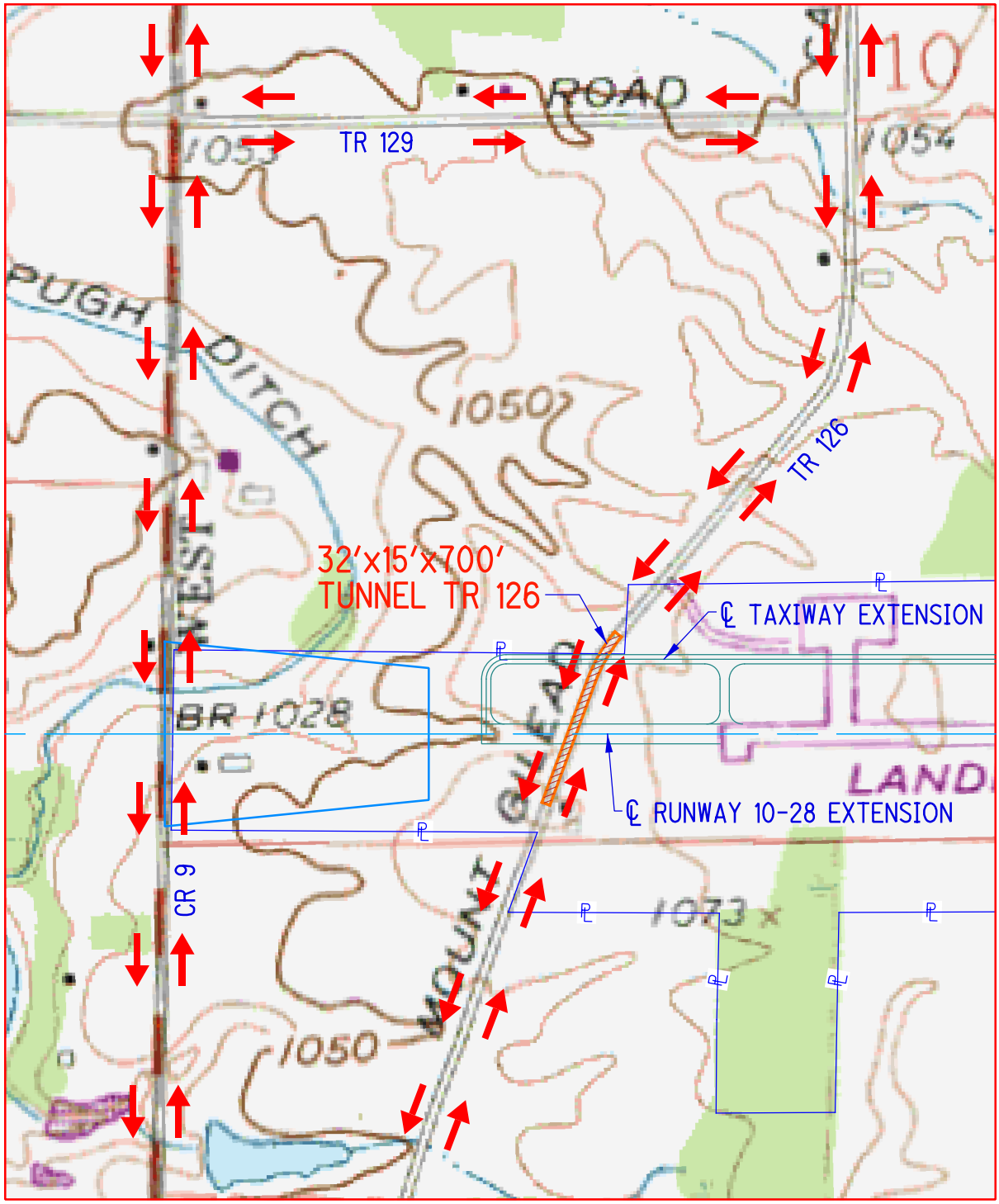
MORROW COUNTY AIRPORT MOUNT GILEAD, OHIO	EXHIBIT 5-1



RELOCATE TR 126 ALTERNATIVE

TRAFFIC FLOW

MORROW COUNTY AIRPORT MOUNT GILEAD, OHIO	EXHIBIT 5-2



TUNNEL TR 126 ALTERNATIVE

TRAFFIC FLOW

MORROW COUNTY AIRPORT MOUNT GILEAD, OHIO	EXHIBIT 5-3

Chapter 6

6. Airport Layout Plans

Airport Layout Plans (ALP) provide pictorial guidance for the phased implementation of the ultimate development of the airport. Also, Federal Aviation Administration policy requires a current ALP approved by both the airport sponsor and the FAA prior to the approval of an airport development project. The policy ensures reasonable safety, utility and efficiency of the airport.

The minimum elements of the ALP drawing set for the Morrow County Airport include the following sheets and the associated major information:

1. **Title Sheet** ï A separate sheet that contains airport identification location and vicinity maps, and State, Federal, and Sponsor Agency approvals.

2. **Airport Data Sheet** ï A sheet containing wind information, basic airport facilities, runway end coordinates, lighting and navigational aids, critical aircraft design ground dimensions, and runway and taxiway design and safety dimensions.

3. **Existing Airport Layout Plan** ï A drawing of the existing airport indicating existing airside and landside facilities, geophysical information, and dimensional information for runway and taxiway safety areas, object free areas, runway protection zones, approach-departure surfaces, marking, lighting, and threshold information.

4. **Future/Ultimate Airport Layout Plan** ï A drawing showing ultimate development of the airport from existing to 20-year build out. The information provided is similar to that in the Existing Airport Layout Plan.

5. **Airport Airspace Drawing** ï A drawing that depicts Federal Aviation Regulation (FAR) Part 77 airport protected imaginary surfaces on an applicable USGS Quad Sheet for a base map. The drawing also shows runways, terrain contours, penetrating objects and elevations, height restrictions, and obstructions to navigation including proposed and existing dispositions of those obstructions.

6. and 7. **Inner Portion of the Approach Surface Drawing** ï A drawing that shows an existing and future plan view and a profile view of the runway end, runway safety area beyond runway end, runway protection zone and approach-departure surfaces, threshold siting, terrain in approach, touch down zones, and elevations including critical terrain and obstruction information and disposition.

8. **Terminal Area Plan** ï A drawing that depicts a plan view of landside airport support facilities such as aircraft parking and fueling aprons, buildups and structure identifications with elevations, fencing and security provisions, building restrictions lines, runway, taxiway, and apron dimensional clearances, and major airport drainage facilities.

9. **Land Use Drawing** ï A drawing that indicates on a plan view airport boundaries and shows existing and future easements, land uses by category (agricultural, aeronautical, commercial, residential, etc.), political jurisdictions and public facilities such a schools, hospitals, churches, etc.

10. **Airport Property Map** ï A drawing that shows in plan view existing and proposed fee airport interests, existing and proposed easements for Part 77 protection, compatible land use, political subdivision data, and property acquisition data including grantors of properties.

The ALP is included as Exhibit 6-1 and consists of the 11 sheets described above.

Exhibit 6-1: Airport Layout Plan

AIRPORT LAYOUT PLAN

MORROW COUNTY AIRPORT (4I9)

MOUNT GILEAD, OHIO

NOVEMBER 2013

LEGEND

OBSTRUCTIONS

- 1000 FT. AND HIGHER AGL
- BELOW 1000 FT. AGL
- GROUP OBSTRUCTION
- OBSTRUCTION WITH HI-INTENSITY LIGHTS
- 2049 — ELEVATION OF THE TOP ABOVE MEAN SEA LEVEL
- (1149) — HEIGHT ABOVE GROUND
- UC — UNDER CONSTRUCTION OR REPORTED POSITION AND ELEVATION UNVERIFIED

AIRPORTS

- OTHER THAN HARD-SURFACED RUNWAYS
- HARD-SURFACED RUNWAYS 1500 FT. TO 8069 FT. IN LENGTH
- HARD-SURFACED RUNWAYS GREATER THAN 8069 FT.
- (R) PRIVATE
- MILITARY

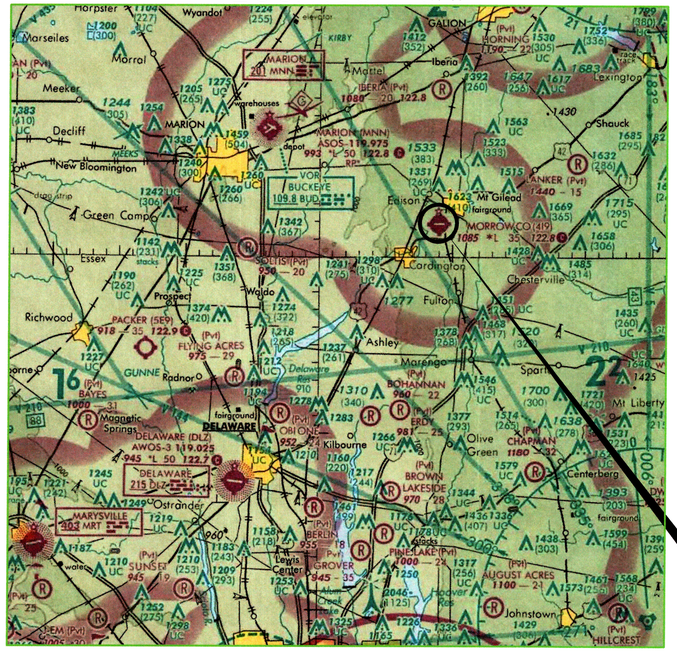
TOPOGRAPHIC INFORMATION

- 95 / T-51 — ROAD MARKERS / TOWNSHIP ROADS
- STATE AND FEDERAL HIGHWAYS
- OTHER ROADWAYS
- STREAMS
- RAILROAD

INDEX OF SHEETS

TITLE SHEET	1
AIRPORT DATA SHEET	2
EXISTING AIRPORT LAYOUT PLAN	3
FUTURE AIRPORT LAYOUT PLAN	4
ULTIMATE AIRPORT LAYOUT PLAN	5
LAND USE AND AERIAL LAYOUT PLAN	6
INNER PORTION OF THE APPROACH SURFACE RUNWAY END 10	7
INNER PORTION OF THE APPROACH SURFACE RUNWAY END 28	8
TERMINAL LAYOUT PLAN	9
FAR PART 77	10
PROPERTY MAP	11

LOCATION MAP



0 5 10 15 20 25

SCALE IN MILES

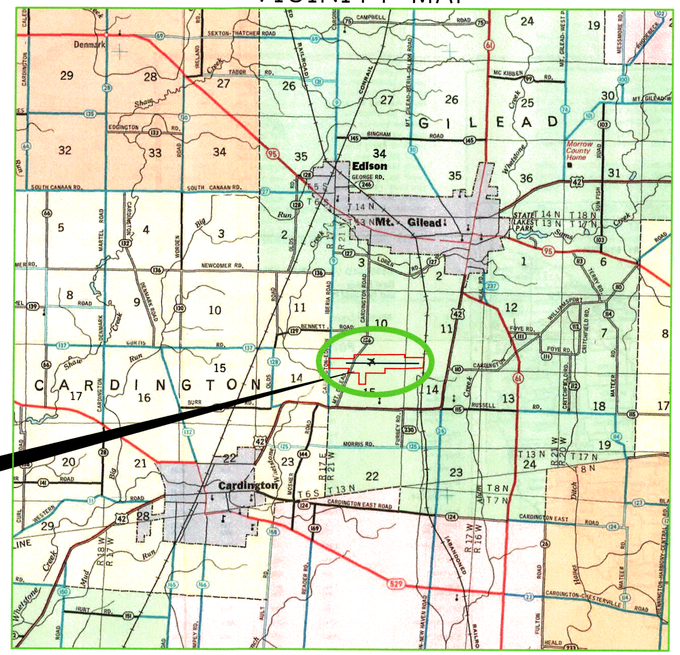
MAGNETIC NORTH — 7°5' — TRUE NORTH

MAGNETIC DECLINATION
JULY 1, 2011
7°5' WEST
ANNUAL RATE OF
CHANGE 0°3' WEST

PROJECT LOCATION

PROJECT LOCATION

VICINITY MAP



0 1 2 3

SCALE IN MILES

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF AVIATION

APPROVED: James Bryant P.E. DATE: 11/07/13

MORROW COUNTY AIRPORT AUTHORITY

APPROVED: Dave Jackson DATE: NOV 4, 2013

MORROW COUNTY COMMISIONERS

APPROVED: Tom E. Harden DATE: 11-4-13

APPROVED: Richard I. Miller DATE: Nov 4 2013

APPROVED: Tom E. Whiston DATE: 11/4/2013

U.S. Department of Transportation
Federal Aviation Administration

JAN 14 2014

Detroit Airports District Office
Metro Airport Center
11677 S. Wayne Road, Ste. 107
Romulus, MI 48174

Ms. Patricia Davies, Director of Operations
Morrow County
80 N. Walnut Street
Mt. Gilead, Ohio 43338

Dear Ms. Davies:

Morrow County Airport, Mt. Gilead, Ohio
Airport Layout Plan (ALP) Approval
Airspace Case Number 2013-AGL-4105-NRA

Enclosed is a conditionally approved copy of the Airport Layout Plan (ALP) for Morrow County Airport (4I9) dated May 2013. This letter cancels or supersedes all prior ALP approvals and is based on recognition of and adherence to the following:

This approval is not to be considered a commitment of Federal funding for the proposed development. The Federal Aviation Administration (FAA) has concurred with the proposed development for planning purposes only based on current safety, utility, and efficiency standards. Actual development should comply with approved standards applicable at the time of construction. The sponsor must provide the FAA with justification of need before seeking FAA financial participation in the development projects depicted on this ALP.

Design standard modifications have not been requested or granted as part of this ALP approval.

The existing Runway Reference Code (RRC) for Runway 10/28 is B-I. The future RRC for runway 10/28 is B-II. If the RRC changes in the future from these designations the FAA must reevaluate the ALP.

Additional guidance concerning development depicted on this ALP was provided by letter dated September 10, 2013.

Sheet 11 entitled, *Property Map* has been included for informational purposes only and does not replace the required Exhibit A for grant assurance purposes.

Our approval does not infer or imply that the land in the airport vicinity is considered compatible with airport operations. Federal requirements stipulate:

1. That all development programs be reasonably consistent with the plans of local and state planning agencies for the development in the airport vicinity.
2. That fair consideration has been given to the interest of communities near the airport.
3. That development programs provide for the protection and enhancement of the environment.

The FAA offers no objections to the proposed ultimate airspace utilization as depicted on the ALP based on considerations of safe and efficient use of airspace. The ALP has the status of "Plan on File" for the purposes of 14 CFR 77, *Obstruction Evaluations*, and 14 CFR 152, *Airport Aid Programs*. A review of the airside landing area development was conducted in accordance with 14 CFR 77, 14 CFR 152, and 14 CFR 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports* (reference Aeronautical Study Number 2013-AGL-4105-NRA). The FAA cannot prevent erection of any structure near an airport. Airport environs can only be protected through state and local zoning ordinances, building regulations, and like requirements. To avoid conflicts with future development, we recommend you utilize the ALP when preparing leases. We further recommend that you provide copies to state and local planning and zoning boards as well as county, city, and township officials. We recommend that you encourage them to adopt compatible land use criteria in and around the airport. Copies should also be distributed to Fixed Base Operators (FBO's) and airport users.

All development depicted on this ALP must comply with the National Environmental Policy Act (NEPA) of 1969, (Public Law 91-190) and have FAA environmental approval prior to construction. This applies to development even if no FAA funding is involved. Additional requirements concerning FAA NEPA approval can be found in FAA Order 5050.4B, "*National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*".

The FAA has included the proposed runway extension identified in the ultimate ALP sheet in our Obstruction Evaluation Airport Airspace Analysis (OEAAA)[1] database. This will allow the FAA, to the extent possible; to protect the airspace for this proposed development. The airport sponsor should work with the local communities and zoning boards to ensure no structure is constructed that may interfere with the planned runway development.

The Airport and Airway Improvement Act (49 USC 47107(a)(16)(D)) requires the sponsor to eliminate any adverse effects on Federal facilities, or bear all costs to relocate these facilities, that are a result of an airport change. However, if AIP eligible construction/development items adversely affect FAA facilities, the cost of relocating the facilities may be eligible under AIP.

This approval does not include a detailed evaluation of actual construction. Prior to constructing any structures on the airport (especially hangars), a notice (FAA Form 7460-1) consistent with 14 CFR Part 77 must be filed with this office. See www.oeaaa.faa.gov for additional details. This approval does not include approval for temporary construction equipment used on site during actual construction (cranes, equipment staging areas, site access routes, etc.). The FAA must review a separate construction safety-phasing plan for any project no less than 60 days prior to the beginning of construction. Each proposed construction activity identified on the ALP shall be submitted as a separate study. FAA must approve the safety-phasing plan before any construction activity can begin. The airport must take all measures necessary during construction to ensure there are no runway incursions.

If planned development, with or without aviation trust fund investments, will change the status or geometrics of runways, taxiways, aprons, or other operating airport surfaces, notice (FAA Form 7480-1) must be filed with this office consistent with 14 CFR 157.

We trust this letter provides a clear explanation of the terms and conditions of our approval. If you need further clarification, please contact this office at (734) 229-2900.

Sincerely,

John Mayfield, Jr.
Manager, Detroit Airports District Office
Enclosure (ALP)

c: Richland Engineering Limited
Ohio Department of Transportation – Office of Aviation

[1] Public Web Site Address: http://www.OEAAA.FAA.Gov

FAA APPROVAL LETTER AREA

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

ALP CHECKLIST CERTIFICATION FOR AIRSPACE REVIEW

ON BEHALF OF RICHLAND ENGINEERING LIMITED, THIS AIRPORT LAYOUT PLAN (ALP) WAS PREPARED FOR THE MORROW COUNTY AIRPORT ACCORDING TO THE APPLICABLE ADVISORY CIRCULARS, THE CURRENT VERSION OF THE GREAT LAKES REGION ALP CHECKLIST AND ACCURATELY DEPICTS THE PROPOSED USE OF AIRSPACE AT THE TIME OF SUBMITTAL. THE ALP CONFORMS WITH THE FAA DESIGN STANDARDS, EXCEPT AS NOTED.

Patrick Schuster — SIGNED

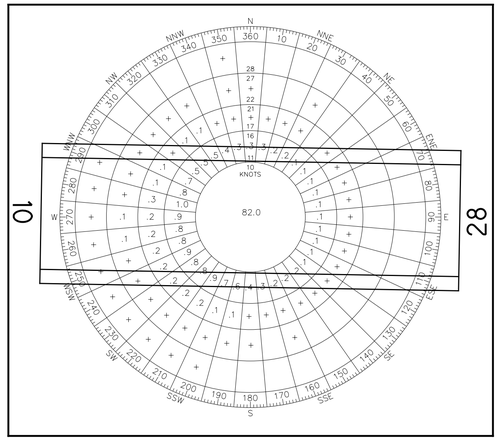
12-18-13 — DATE

NO.	REVISION	BY	APPR.	DATE

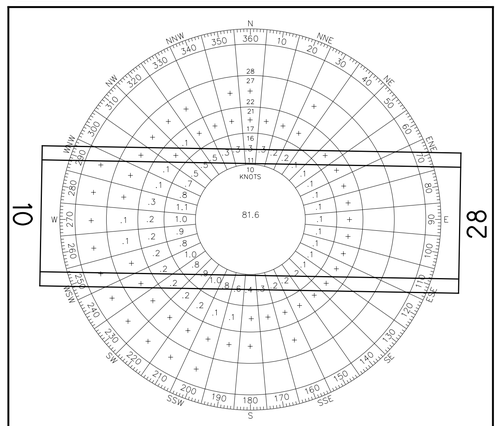
TITLE SHEET

MORROW COUNTY AIRPORT

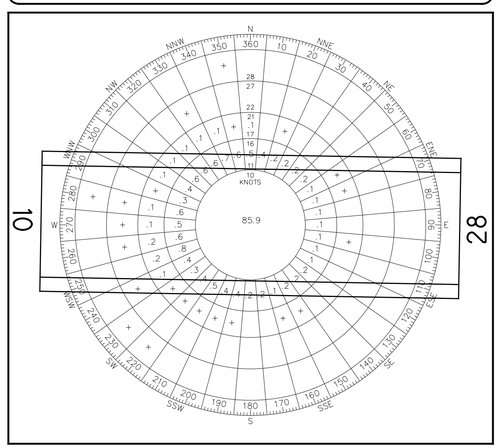
ALL WEATHER WIND ROSE



IFR WIND ROSE



VFR WIND ROSE



RUNWAY AND APPROACH DATA TABLE

RUNWAY	10	28	10	28	10	28
	EXISTING		FUTURE		ULTIMATE	
RUNWAY LENGTH	3,497	3,497	3,497	3,497	5,000	5,000
EFFECTIVE RUNWAY LENGTH DATA	3,497	3,497	3,497	3,497	5,000	5,000
LANDING LENGTH TAKEOFF LENGTH DISPLACED DISTANCE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
DECLARED DISTANCES TORA TODA ASDA LDA	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
TAXIWAY SAFETY AREA WIDTH (FT)	49	49	79	79	79	79
TAXIWAY LIGHTING	MITL	MITL	MITL	MITL	MITL	MITL
RUNWAY WIDTH	65	65	75	75	75	75
STOPWAY WIDTH	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
CLEARWAY WIDTH	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
EFFECTIVE RUNWAY GRADIENT	0.28%	-0.28%	0.28%	-0.28%	0.76%	-0.76%
PAVEMENT TYPE	ASPHALT	ASPHALT	ASPHALT	ASPHALT	ASPHALT	ASPHALT
PAVEMENT STRENGTH	12,000 LB.	12,000 LB.	12,000 LB.	12,000 LB.	37,500 LB.	37,500 LB.
AIRCRAFT GEAR	SWG	SWG	SWG	SWG	DWG	DWG
RUNWAY LIGHTING	MIRL	MIRL	MIRL	MIRL	MIRL	MIRL
RUNWAY MARKING	N.P.	N.P.	N.P.	N.P.	N.P.	N.P.
NAVIGATIONAL AIDS	N.A.	VOR, GPS	GPS	GPS, WAAS, VOR	GPS	GPS, WAAS, VOR
VISUAL AIDS	SVASI	SVASI	PAPI/REIL	PAPI/REIL	PAPI/REIL	PAPI/REIL
APPROACH LIGHTING	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AIRPORT REFERENCE CODE	BI	BI	BII	BII	BII	BII
CRITICAL AIRCRAFT	AIRTRACTOR 802A	AIRTRACTOR 802A	AIRTRACTOR 802A	AIRTRACTOR 802A	DASSAULT FALCON 2000	DASSAULT FALCON 2000
CRITICAL AIRCRAFT ANNUAL OPERATIONS	4,400	4,400	4,400	4,400	500	500
APPROACH RATIO FAR PART 77	20:1	20:1	34:1	34:1	34:1	34:1
RUNWAY PROTECTION ZONE	500x700x1000	500x700x1000	500x700x1000	500x700x1000	1000x1510x1700	1000x1510x1700
APPROACH VISIBILITY MINIMUMS	1 MILE	1 MILE	1 MILE	1 MILE	> ¾ MILE	> ¾ MILE
APPROACH TYPE	VISUAL	VISUAL	N.P.	N.P.	N.P.	N.P.
TYPE OF AERONAUTICAL SURVEY REQUIRED FOR APPROACH	NON-VERTICAL GUIDED	NON-VERTICAL GUIDED	NON-VERTICAL GUIDED	NON-VERTICAL GUIDED	NON-VERTICAL GUIDED	NON-VERTICAL GUIDED
RUNWAY DEPARTURE SURFACE	N/A	N/A	N/A	N/A	N/A	N/A
OBJECT FREE AREA (WIDTH x LENGTH BEYOND RWY. END)	400 x 240	400 x 240	500 x 300	500 x 300	500 x 300	500 x 300
OBSTACLE FREE ZONE (WIDTH x LENGTH BEYOND RWY. END)	400 x 200	400 x 200	400 x 200	400 x 200	400 x 200	400 x 200
OBSTACLE FREE ZONE PENETRATIONS	NONE	NONE	NONE	NONE	NONE	NONE
RUNWAY END COORDINATES LAT.	40°31'28.579"	40°31'27.985"	40°31'28.579"	40°31'27.985"	40°31'28.731"	40°31'27.883"
RUNWAY END COORDINATES LONG.	82°51'22.855"	82°50'37.583"	82°51'22.855"	82°50'37.583"	82°51'34.545"	82°50'29.816"

AIRPORT DATA TABLE

COUNTIES: MORROW	**CITY:** MOUNT GILEAD	**TOWN:** T17N	
MEAN MAXIMUM TEMPERATURE: 85°		**RANGE:** R21W	
	EXISTING	**FUTURE**	**ULTIMATE**
AIRPORT ELEVATION:	1085	1085	1106
AIRPORT REFERENCE POINT:	**LAT:** 40°31'28.283" **LONG:** 82°51'00.219"	**LAT:** 40°31'28.283" **LONG:** 82°51'00.219"	**LAT:** 40°31'28.309" **LONG:** 82°51'02.181"
AIRPORT NAVIGATIONAL AIDS:	GPS, VOR, BEACON	GPS, VOR, BEACON	GPS, VOR, WAAS, BEACON
MISCELLANEOUS FACILITIES:	MITL, WIND CONE	MITL, WIND CONE, REIL'S, PAPI	MITL, WIND CONE, REIL'S, PAPI
SERVICE LEVEL:	GENERAL AVIATION	GENERAL AVIATION	GENERAL AVIATION
RUNWAY:	10 - 28	10 - 28	10 - 28
APPROACH CATEGORY	B	B	B
AIRPLANE DESIGN GR.:	I	II	II
TAIL HEIGHT (FT):	< 20	< 30	< 30
WING SPAN (FT):	< 49	< 79	< 79

WIND DATA SUMMARY

WIND COVERAGE	10.5 KNOTS	13 KNOTS	16 KNOTS
IFR	94.61%	98.60%	99.65%
VFR	96.05%	98.455	99.805
ALL WEATHER	94.14%	96.40%	99.60%

WIND SOURCE DATA

NATIONAL CLIMATIC CENTER, U.S. DEPT. OF COMMERCE ASHVILLE, N. CAROLINA

ALL WEATHER WINDROSE:
OBSERVATION STATION; PORT COLUMBUS INTERNATIONAL AIRPORT, COLUMBUS, OHIO
OBSERVATION STATION PERIOD; JANUARY 1993 TO DECEMBER 2002

IFR WINDROSE:
OBERVATION STATION; PORT COLUMBUS INTERNATIONAL AIRPORT, COLUMBUS, OHIO
OBSERVATION STATION PERIOD; JANUARY 1993 TO DECMBER 2002

RUNWAY SAFETY AREA INVENTORY TABLE

RUNWAY	RUNWAY CATEGORY	RSA LENGTH	RSA WIDTH	OBJECTS ENCROACHING RSA	
				TYPE OF STRUCTURE	DISPOSITION
EXISTING 10	BI	240 FT	120 FT	NONE	N/A
EXISTING 28	BI	240 FT	120 FT	NONE	N/A
FUTURE 10	BII	300 FT	150 FT	NONE	N/A
FUTURE 28	BII	300 FT	150 FT	POLE LINE & BLDG.	OBSTR. LIGHT
ULTIMATE 10	BII	300 FT	150 FT	POLE LINE & ROAD	RELOCATE
ULTIMATE 28	BII	300 FT	150 FT	POLE LINE & BLDG.	OBSTR. LIGHT

AIRCRAFT DATA TABLE

	EXISTING/FUTURE	ULTIMATE
CRITICAL AIRCRAFT:	AIR TRACTOR 802A	DASSAULT FALCON 2000
APPROACH SPEED:	120 KNOTS	114 KNOTS
WING SPAN:	59.2 FT.	63.3 FT.
LENGTH:	36.0 FT.	66.3 FT.
TAIL HEIGHT:	11.1 FT.	23.23 FT.
MAXIMUM TAKE OFF WEIGHT:	16,000 LB.	35,800 LB.
ANNUAL OPERATIONS:	4,400	500

NOTES:

1. FOR THRESHOLD SITING SURFACE (TSS) OBJECT PENETRATIONS, SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS SHEETS 7 & 8.

COORDINATES ARE CONSISTENT WITH OHIO STATE PLANE COORDINATE SYSTEM, NAD83 (2007), NORTH ZONE

NO.	REVISION	BY	APPR.	DATE

CALCULATED KMK CHECKED HS

AIRPORT DATA SHEET

MORROW COUNTY AIRPORT

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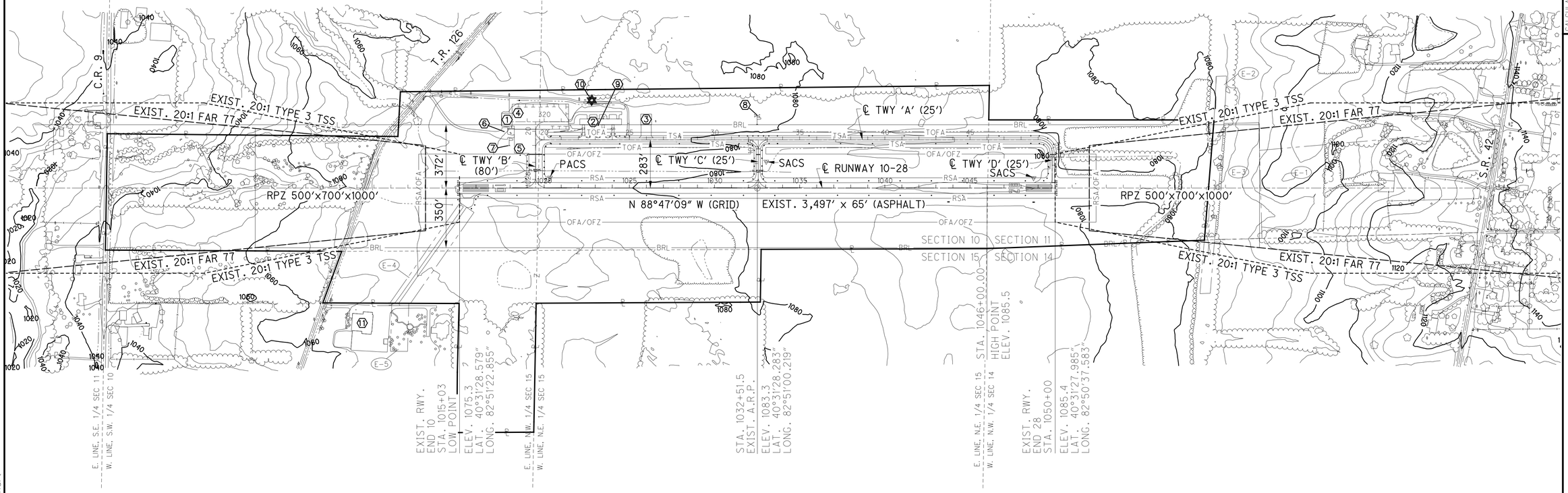
NOTE:

ALL RUNWAY AND TAXIWAY OBJECT FREE AND SAFETY AREAS WILL BE CLEARED OF OBSTRUCTIONS, GRADED TO DRAIN WITH SMOOTH AND STABILIZED SURFACE CHARACTERISTICS TO SUPPORT MAINTENANCE, EMERGENCY VEHICLES AND AN OCCASIONAL OVER-STEERED AIRCRAFT.

SURVEY MONUMENTS

MONUMENT	STATION	OFFSET	ELEVATION	FEATURE	DESCRIPTION
PACS	1020+34.47	-61.76	1076.40	GILPORT	NGS MONUMENT
SACS	1033+03.70	-155.44	1081.10	419 B	NGS MONUMENT
SACS	1048+73.36	-58.71	1083.60	GILPORT AZ MK	NGS MONUMENT



LEGEND

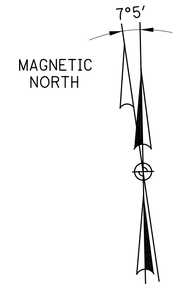
DESCRIPTION	EXISTING
AIRPORT BEACON	
AIRPORT PROPERTY LINE	
AIRPORT REFERENCE POINT	
BUILDINGS	
DITCH	
FENCE	
GROUND CONTOURS	1150
LIGHTED WIND CONE	
S.V.A.S.I.	
ROADS	
RUNWAY/TAXIWAY LIGHTS	
RUNWAY THRESHOLD LIGHTS	
RUNWAY HOLD LINE	
STORM SEWER	ST
PACS/SACS	
BUILDING RESTRICTION LINE	BRL
AVIGATION EASEMENT	E-1

AIRPORT FACILITIES TABLE

NO.	DESCRIPTION	ELEV.
1	FBO/TERMINAL BUILDING	1099
2	T-HANGAR	1092
3	COPORATE HANGAR	1106
4	TIE-DOWN APRON AREA (150'x335')	1076
5	APRON AREA (125'x140')	1077
6	VEHICLE PARKING	1074
7	WINDCONE	1098
8	LIGHTED WINDCONE	1107
9	LIGHT POLE	1103
10	AIRPORT BEACON	1144
11	THRU FENCE FBO/FUEL (100' x 250')	1067

EXISTING RUNWAY DATA

DESCRIPTION	RUNWAY 10-28
RUNWAY SHOULDER WIDTH	10'
RUNWAY SAFETY AREA WIDTH	120'
RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY END	240'
RUNWAY OBSTACLE FREE ZONE WIDTH	400'
RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END	200'
RUNWAY OBJECT FREE AREA WIDTH	400'
RUNWAY OBJECT FREE AREA LENGTH BEYOND RUNWAY END	240'
RUNWAY CENTERLINE TO HOLD LINE	200'
RUNWAY CENTERLINE TO PROPERTY LINE (NEAREST POINT)	303'
RUNWAY CENTERLINE TO EDGE OF AIRCRAFT PARKING	200'
RUNWAY CENTERLINE TO TAXIWAY CENTERLINE	283'
TAXIWAY EDGE SAFETY MARGIN	5'
TAXIWAY SHOULDER WIDTH	10'
TAXIWAY SAFETY AREA WIDTH	49'
TAXIWAY OBJECT FREE AREA WIDTH	89'
TAXILANE OBJECT FREE AREA WIDTH	79'
TAXIWAY CENTERLINE TO FIXED OR MOVABLE OBJECT	-
TAXILANE CENTERLINE TO FIXED OR MOVABLE OBJECT	-
TAXIWAY WINGTIP CLEARANCE	-
TAXILANE WINGTIP CLEARANCE	-



MAGNETIC DECLINATION
JULY 1, 2011
7°5' WEST
ANNUAL RATE OF
CHANGE 0°3' WEST

EXISTING CENTERLINE BEARING RUNWAY 10-28

FORWARD AZIMUTH FROM NORTH 90°58'48.558"
FORWARD BEARING SOUTH 89°01'11" EAST
BACK AZIMUTH FROM NORTH 270°59'17.975"
BACK BEARING NORTH 89°00'42" WEST

NO.	REVISION	BY	APPR.	DATE

HORIZONTAL SCALE IN FEET
0 300 600

CALCULATED KMK
CHECKED HS

EXISTING AIRPORT LAYOUT PLAN

MORROW COUNTY AIRPORT

3
11

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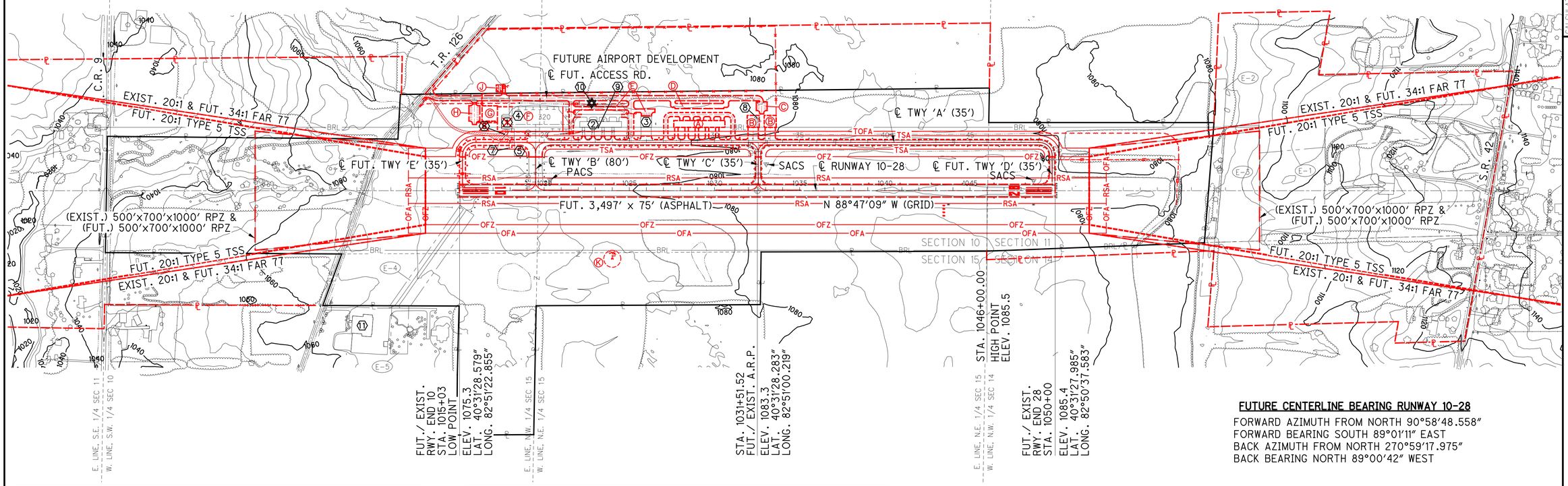
NOTE:

ALL RUNWAY AND TAXIWAY OBJECT FREE AND SAFETY AREAS WILL BE CLEARED OF OBSTRUCTIONS, GRADED TO DRAIN WITH SMOOTH AND STABILIZED SURFACE CHARACTERISTICS TO SUPPORT MAINTENANCE, EMERGENCY VEHICLES AND AN OCCASIONAL OVER-STEERED AIRCRAFT.

SURVEY MONUMENTS

MONUMENT	STATION	OFFSET	ELEVATION	FEATURE	DESCRIPTION
PACS	1020+34.47	-61.76	1076.40	GILPORT	NGS MONUMENT
SACS	1033+03.70	-155.44	1081.10	4I9 B	NGS MONUMENT
SACS	1048+73.36	-58.71	1083.60	GILPORT AZ MK	NGS MONUMENT



FUTURE CENTERLINE BEARING RUNWAY 10-28

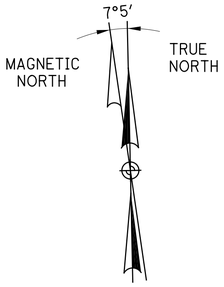
FORWARD AZIMUTH FROM NORTH 90°58'48.558"
FORWARD BEARING SOUTH 89°01'11" EAST
BACK AZIMUTH FROM NORTH 270°59'17.975"
BACK BEARING NORTH 89°00'42" WEST

LEGEND

DESCRIPTION	EXISTING	FUTURE
AIRPORT BEACON	✡	
AIRPORT PROPERTY LINE	℄	℄
AIRPORT REFERENCE POINT	⊕	◆
BUILDINGS	▭	▭
DITCH	~	~
FENCE	× × ×	× × ×
GROUND CONTOURS	1150	
LIGHTED WIND CONE		
S.V.A.S.I. / P.A.P.I.	S.V.A.S.I.	P.A.P.I.
ROADS		
R.E.I.L.		◁
RUNWAY/TAXIWAY LIGHTS	● ● ●	▫ ▫ ▫
RUNWAY THRESHOLD LIGHTS	●●●● ●●●●	▫▫▫▫ ▫▫▫▫
RUNWAY HOLD LINE		
STORM SEWER	ST	ST
PACS/SACS	▽	
BUILDING RESTRICTION LINE	BRL	
NON-USABLE APRON AREA		
FACILITY ABANDONED/REMOVED		
AVIGATION EASEMENT	E-1	

FUTURE RUNWAY DATA

DESCRIPTION	RWY 10–28
RUNWAY SHOULDER WIDTH	10′
RUNWAY SAFETY AREA WIDTH	150′
RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY END	300′
RUNWAY OBSTACLE FREE ZONE WIDTH	400′
RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END	200′
RUNWAY OBJECT FREE AREA WIDTH	500′
RUNWAY OBJECT FREE AREA LENGTH BEYOND RUNWAY END	300′
RUNWAY CENTERLINE TO HOLD LINE	200′
RUNWAY CENTERLINE TO PROPERTY LINE (NEAREST POINT)	303′
RUNWAY CENTERLINE TO EDGE OF AIRCRAFT PARKING	250′
RUNWAY CENTERLINE TO TAXIWAY CENTERLINE	283′
TAXIWAY EDGE SAFETY MARGIN	7.5′
TAXIWAY SHOULDER WIDTH	10′
TAXIWAY SAFETY AREA WIDTH	79′
TAXIWAY OBJECT FREE AREA WIDTH	131′
TAXILANE OBJECT FREE AREA WIDTH	115′
TAXIWAY CENTERLINE TO FIXED OR MOVABLE OBJECT	65.5′
TAXILANE CENTERLINE TO FIXED OR MOVABLE OBJECT	57.5′
TAXIWAY WINGTIP CLEARANCE	26′
TAXILANE WINGTIP CLEARANCE	18′



MAGNETIC DECLINATION
JULY 1, 2011
7°5′ WEST
ANNUAL RATE OF
CHANGE 0°3′ WEST

AIRPORT FACILITIES TABLE

NO.	DESCRIPTION	ELEV.	NO.	DESCRIPTION	ELEV.
⬡1	FBO/TERMINAL BUILDING	1099	Ⓐ	T-HANGAR	1102
⬡2	T-HANGAR	1092	Ⓑ	CORPORATE HANGAR	1120
⬡3	COPORATE HANGAR	1106	Ⓒ	VEHICLE PARKING	1078
⬡4	TIE-DOWN APRON AREA (150′x330′)	1076	Ⓓ	VEHICLE PARKING	1074
			Ⓔ	VEHICLE PARKING	1075
⬡5	APRON AREA (125′x140′)	1077	Ⓕ	TIE-DOWN APRON AREA (150′x300′)	1076
⬡6	VEHICLE PARKING	1074			
⬡7	WINDCONE	1098	Ⓖ	FBO/TERMINAL BUILDING	1104
⬡8	LIGHTED WINDCONE	1107	Ⓗ	VEHICLE PARKING	1074
⬡9	LIGHT POLE	1103	Ⓙ	FUEL TANKS	1070
⬡10	AIRPORT BEACON	1144	Ⓚ	LIGHTED WINDCONE	1107
⬡11	THRU FENCE FBO/FUEL	1067			

⬡ EXISTING ○ PROPOSED

NO.	REVISION	BY	APPR.	DATE

HORIZONTAL SCALE IN FEET
0 300 600

CALCULATED KMK
CHECKED HS

FUTURE AIRPORT LAYOUT PLAN

MORROW COUNTY AIRPORT

4
11

109012/419/ROADWAY/SHEETS/419ALF.DGN 5-13-13 SCB

NOTE:

ALL RUNWAY AND TAXIWAY OBJECT FREE AND SAFETY AREAS WILL BE CLEARED OF OBSTRUCTIONS, GRADED TO DRAIN WITH SMOOTH AND STABILIZED SURFACE CHARACTERISTICS TO SUPPORT MAINTENANCE, EMERGENCY VEHICLES AND AN OCCASIONAL OVER-STEERED AIRCRAFT.

SURVEY MONUMENTS

MONUMENT	STATION	OFFSET	ELEVATION	FEATURE	DESCRIPTION
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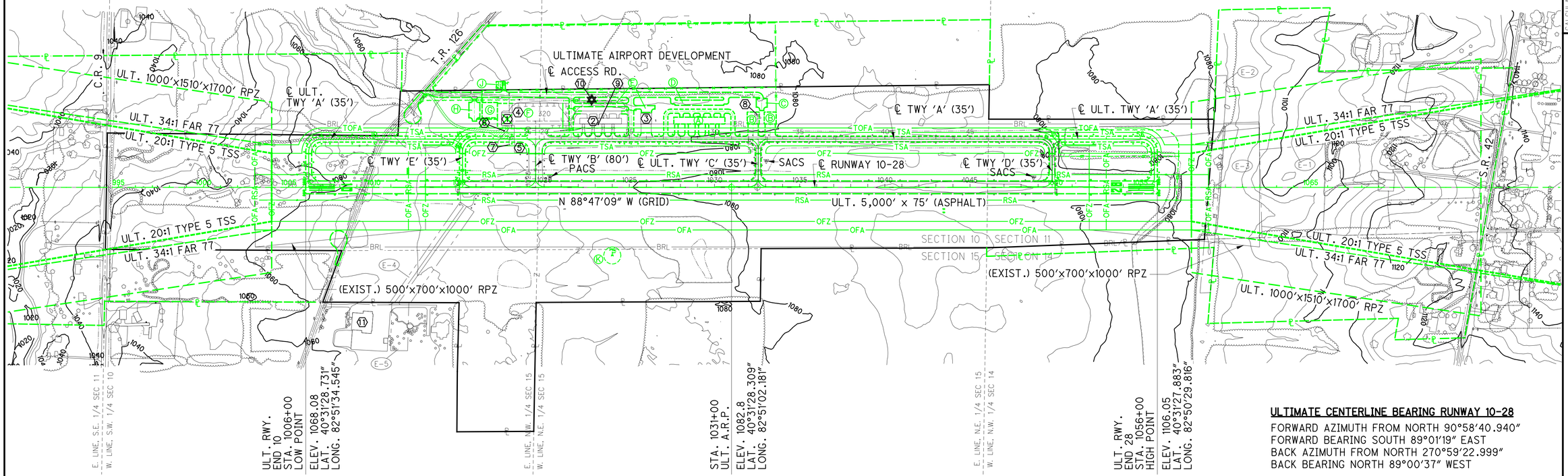

ULTIMATE CENTERLINE BEARING RUNWAY 10-28

FORWARD AZIMUTH FROM NORTH 90°58'40.940"
FORWARD BEARING SOUTH 89°01'19" EAST
BACK AZIMUTH FROM NORTH 270°59'22.999"
BACK BEARING NORTH 89°00'37" WEST

LEGEND

DESCRIPTION	EXISTING	ULTIMATE
AIRPORT BEACON	✡	
AIRPORT PROPERTY LINE	℄	℄
AIRPORT REFERENCE POINT	⊕	◆
BUILDINGS	▭	▭
DITCH	~	~
FENCE	×—×—×	×—×—×
GROUND CONTOURS	1150	
LIGHTED WIND CONE		
S.V.A.S.I. / P.A.P.I.	S.V.A.S.I.	P.A.P.I.
ROADS		
R.E.I.L.		◁
RUNWAY/TAXIWAY LIGHTS	● ● ●	▫ ▫ ▫
RUNWAY THRESHOLD LIGHTS	●●●● ●●●●	▫▫▫▫ ▫▫▫▫
RUNWAY HOLD LINE		
STORM SEWER	ST	ST
PACS/SACS	▽	
BUILDING RESTRICTION LINE	BRL	
NON-USABLE APRON AREA		
FACILITY ABANDONED/REMOVED		
AVIGATION EASEMENT	E-1	

ULTIMATE RUNWAY DATA

DESCRIPTION	RWY 10–28
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RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY END	300′
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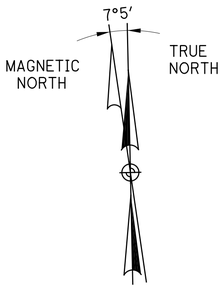


MAGNETIC DECLINATION
JULY 1, 2011
7°5′ WEST
ANNUAL RATE OF
CHANGE 0°3′ WEST

AIRPORT FACILITIES TABLE

NO.	DESCRIPTION	ELEV.	NO.	DESCRIPTION	ELEV.
⬡1	FBO/TERMINAL BUILDING	1099	ⒶA	T-HANGAR	1102
⬡2	T-HANGAR	1092	ⒷB	CORPORATE HANGAR	1120
⬡3	COPORATE HANGAR	1106	ⒸC	VEHICLE PARKING	1078
⬡4	TIE-DOWN APRON AREA (150′x330′)	1076	ⒹD	VEHICLE PARKING	1074
			ⒺE	VEHICLE PARKING	1075
⬡5	APRON AREA (125′x140′)	1077	ⒻF	TIE-DOWN APRON AREA (150′x300′)	1076
⬡6	VEHICLE PARKING	1074			
⬡7	WINDCONE	1098	ⒼG	FBO/TERMINAL BUILDING	1104
⬡8	LIGHTED WINDCONE	1107	ⒽH	VEHICLE PARKING	1074
⬡9	LIGHT POLE	1103	ⒿJ	FUEL TANKS	1070
⬡10	AIRPORT BEACON	1144	ⓀK	LIGHTED WINDCONE	1112
⬡11	THRU FENCE FBO/FUEL	1067			

⬡ EXISTING ○ PROPOSED

NO.	REVISION	BY	APPR.	DATE

HORIZONTAL SCALE IN FEET
0 300 600

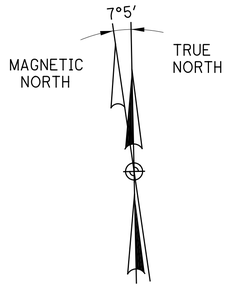
CALCULATED KMK
CHECKED HS

ULTIMATE AIRPORT LAYOUT PLAN

MORROW COUNTY AIRPORT

5
11

109012/419/ROADWAY/SHEETS/419ALUDGN 5-13-13 SCB



MAGNETIC DECLINATION
JULY 1, 2011
7°5' WEST
ANNUAL RATE OF
CHANGE 0°3' WEST

ALL LANDUSE IS RURAL AGRICULTURAL
UNLESS OTHERWISE NOTED

AN - AERONAUTICAL USE
AD - AIRPORT COMPATIBLE DEVELOPMENT
AR - AGRICULTURAL RURAL
RR - RURAL RESIDENTIAL

LEGEND

℄ ULTIMATE AIRPORT PROPERTY
℄ EXISTING AIRPORT PROPERTY

AERIAL PHOTOGRAPHY BY MAN MAPPING; DATE: FEB. 24, 2011

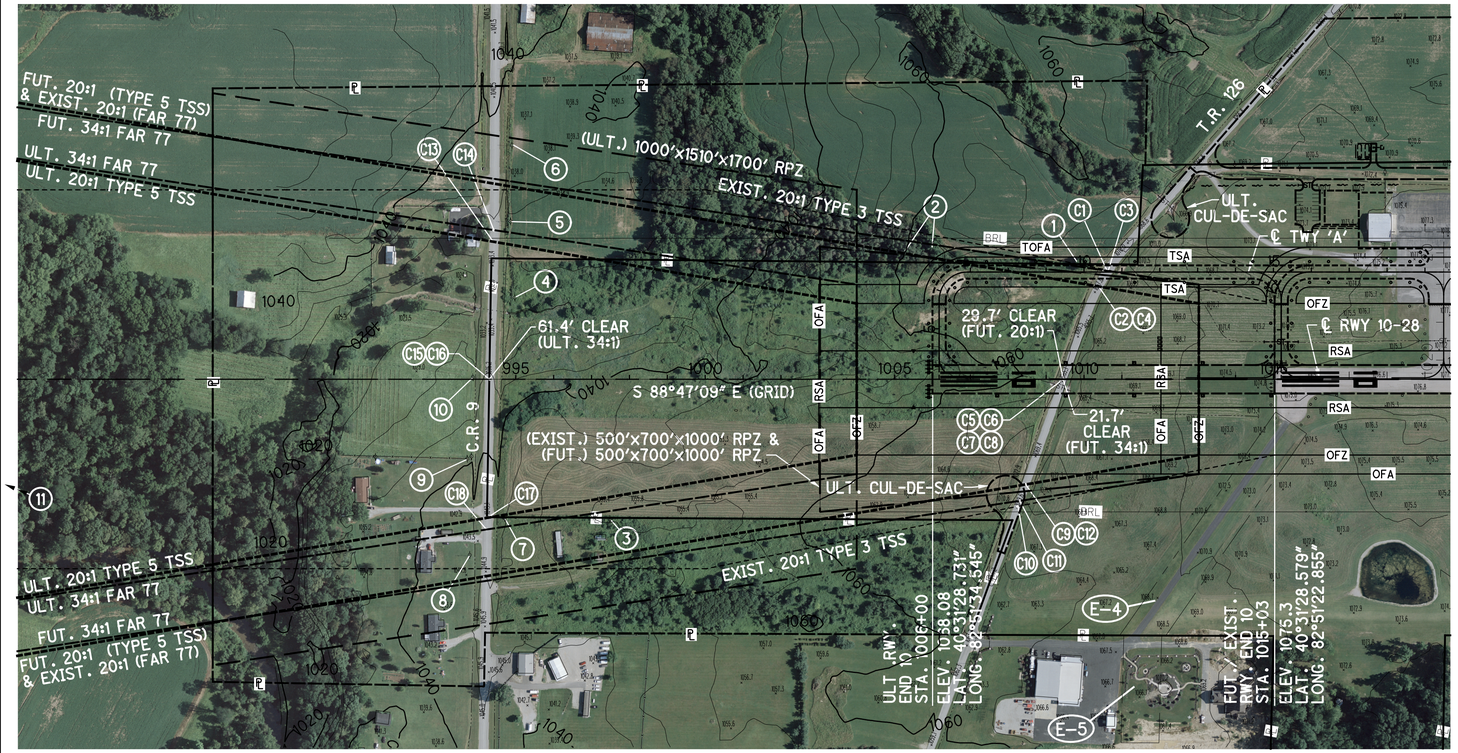
HORIZONTAL SCALE IN FEET
0 300 600

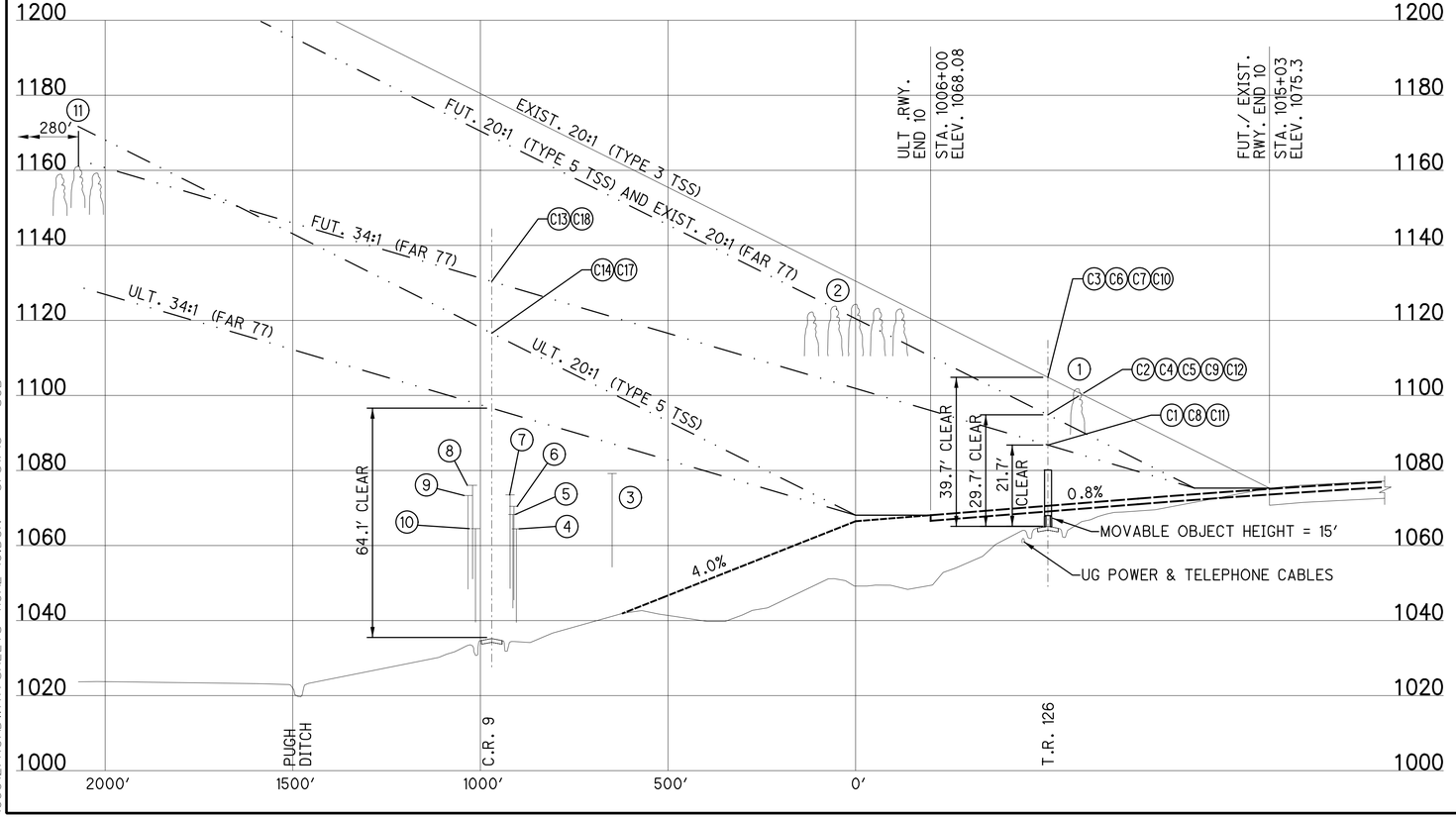
CALCULATED KMK
CHECKED HS

AERIAL LAYOUT PLAN
LAND USE AND AE

MORROW COUNTY AIRPORT

6
11





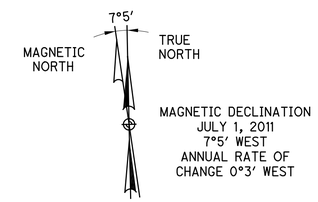
RUNWAY END-10 APPROACH DATA TABLE

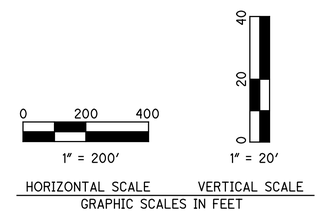
NO.	OBJECT DESCRIPTION	TOP EL.	THRESHOLD SITING SURFACE MAX. ALLOWABLE EL. EXIST.	THRESHOLD SITING SURFACE MAX. ALLOWABLE EL. FUT.	THRESHOLD SITING SURFACE MAX. ALLOWABLE EL. ULT.	THRESHOLD SITING SURFACE PENETRATION EXIST.	THRESHOLD SITING SURFACE PENETRATION FUT.	THRESHOLD SITING SURFACE PENETRATION ULT.	FAR PART 77 APPROACH SURFACE MAX. ALLOWABLE EL. EXIST.	FAR PART 77 APPROACH SURFACE MAX. ALLOWABLE EL. FUT.	FAR PART 77 APPROACH SURFACE MAX. ALLOWABLE EL. ULT.	FAR PART 77 APPROACH SURFACE PENETRATION EXIST.	FAR PART 77 APPROACH SURFACE PENETRATION FUT.	FAR PART 77 APPROACH SURFACE PENETRATION ULT.	PROPOSED DISPOSITION EXIST.	PROPOSED DISPOSITION FUT.	PROPOSED DISPOSITION ULT.
1	TREE, 300' LT.	1101.8	1100.8	1090.8	-	1.0	11.0	-	1090.8	1084.4	-	11.0	17.4	-	REMOVE	REMOVE	REMOVE
2	TREE, 353' LT.	1124.3	1130.4	1120.4	1068.1	-6.1	3.9	56.2	1120.4	1101.8	1068.1	3.9	22.5	56.2	REMOVE	REMOVE	REMOVE
3	POLE, 365' RT.	1079.2	1162.9	1152.9	1100.5	-83.7	-73.7	-21.3	1152.9	1120.9	1087.2	-73.7	-41.7	-8.0	-	-	-
4	POLE, 216' LT.	1064.5	1175.7	1165.7	1113.3	-111.2	-101.2	-48.8	1165.7	1128.5	1094.7	-101.2	-64.0	-30.2	-	-	-
5	POLE, 415' LT.	1068.3	1176.1	1166.1	1113.8	-107.8	-97.8	-45.5	1166.1	1128.7	1095.0	-97.8	-60.4	-26.7	-	-	-
6	POLE, 618' LT.	1070.4	1176.0	1166.0	1113.6	-105.6	-95.6	-43.2	1166.0	1128.6	1094.9	-95.6	-58.2	-24.5	-	-	-
7	POLE, 368' RT.	1073.5	1176.4	1166.4	1114.0	-102.9	-92.9	-40.5	1166.4	1128.9	1095.1	-92.9	-55.4	-21.6	-	-	-
8	POLE, 464' RT.	1076.1	1181.5	1171.5	1119.2	-105.4	-95.4	-43.1	1171.5	1131.9	1098.1	-95.4	-55.8	-22.0	-	-	-
9	POLE, 210' RT.	1073.3	1182.1	1172.1	1119.8	-108.8	-98.8	-46.5	1172.1	1132.2	1098.5	-98.8	-58.9	-25.2	-	-	-
10	POLE, 6' LT.	1064.5	1181.1	1171.1	1118.8	-116.6	-106.6	-54.3	1171.1	1131.7	1097.9	-106.6	-67.2	-33.4	-	-	-
11	TREE, 250' RT.	1161.1	1246.0	1236.0	1183.7	-84.9	-74.9	-22.6	1236.0	1169.8	1136.1	-74.9	-8.7	25.0	-	-	OBSTR. LIGHT

DATE OF OBSTRUCTION SURVEY: 10-27-2011 SURVEY ACCURACY: HORIZONTAL: POLES-3'±; TREES-10'± VERTICAL: POLES-3'±; TREES-5'±

RUNWAY END-10 CLEARANCES OVER T.R. 126 AND C.R. 9

LOC.	DISTANCE FROM RUNWAY END EXIST./FUT.	DISTANCE FROM RUNWAY END ULT.	ROADWAY ELEVATION	SURFACE	SLOPE	MAXIMUM ALLOWABLE ELEVATION	ROADWAY CLEARANCE	MOVEABLE OBJECT CLEARANCE
C1	442'		1068.0	FUTURE FAR 77	34:1	1082.4	14.4'	-0.6'
C2	465'		1067.3	EXISTING FAR 77	20:1	1088.6	21.3'	6.3'
C3	441'		1067.3	EXISTING TSS	20:1	1088.6	21.3'	6.3'
C4	465'		1067.3	FUTURE TSS	20:1	1088.6	21.3'	6.3'
C5	558'		1065.1	FUTURE TSS	20:1	1093.2	28.1'	13.1'
C6	558'		1065.1	EXISTING TSS	20:1	1103.2	38.1'	23.1'
C7	558'		1065.1	EXISTING FAR 77	20:1	1103.2	38.1'	23.1'
C8	558'		1065.1	FUTURE FAR 77	34:1	1093.2	28.1'	13.1'
C9	657'		1069.5	FUTURE TSS	20:1	1098.2	28.7'	13.7'
C10	680'		1069.6	EXISTING TSS	20:1	1109.3	39.7'	24.7'
C11	675'		1069.6	FUTURE FAR 77	34:1	1089.3	19.7'	4.7'
C12	657'		1069.5	EXISTING FAR 77	20:1	1098.2	28.7'	13.7'
C13		1158'	1034.6	ULTIMATE TSS	34:1	1096.3	61.7'	46.7'
C14		1160'	1034.3	ULTIMATE TSS	20:1	1116.1	81.8'	66.8'
C15		1169'	1035.2	ULTIMATE TSS	20:1	1116.6	81.4'	66.4'
C16		1169'	1035.2	ULTIMATE TSS	34:1	1096.6	61.4'	46.4'
C17		1177'	1043.1	ULTIMATE TSS	20:1	1117.0	73.9'	58.9'
C18		1178'	1043.5	ULTIMATE TSS	34:1	1096.9	53.4'	38.4'





LEGEND

DESCRIPTION	EXIST.	PROP.	DESCRIPTION	EXIST.	PROP.
AIRPORT BEACON			P.A.P.I.		
AIRPORT PROPERTY LINE			ROADS		
AIRPORT REFERENCE POINT			R.E.I.L.		
BUILDINGS			RUNWAY/TAXIWAY LIGHTS		
DITCH			RUNWAY THRESHOLD LIGHTS		
FENCE			RUNWAY HOLD LINE		
GROUND CONTOURS	1150		STORM SEWER	ST	ST
LIGHTED WIND CONE			AVIGATION EASEMENT	E-1	

NO.	REVISION	BY	APPR.	DATE

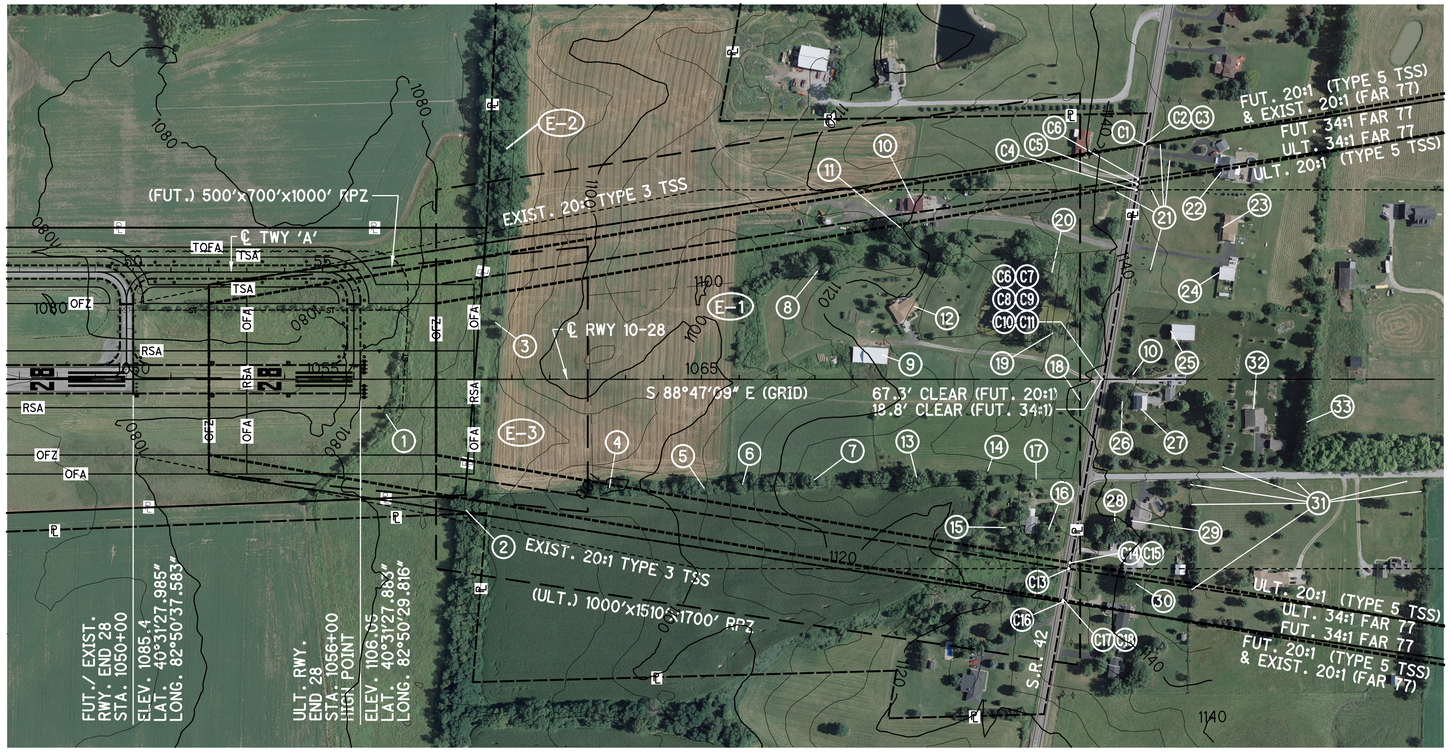
CALCULATED HS CHECKED KMK

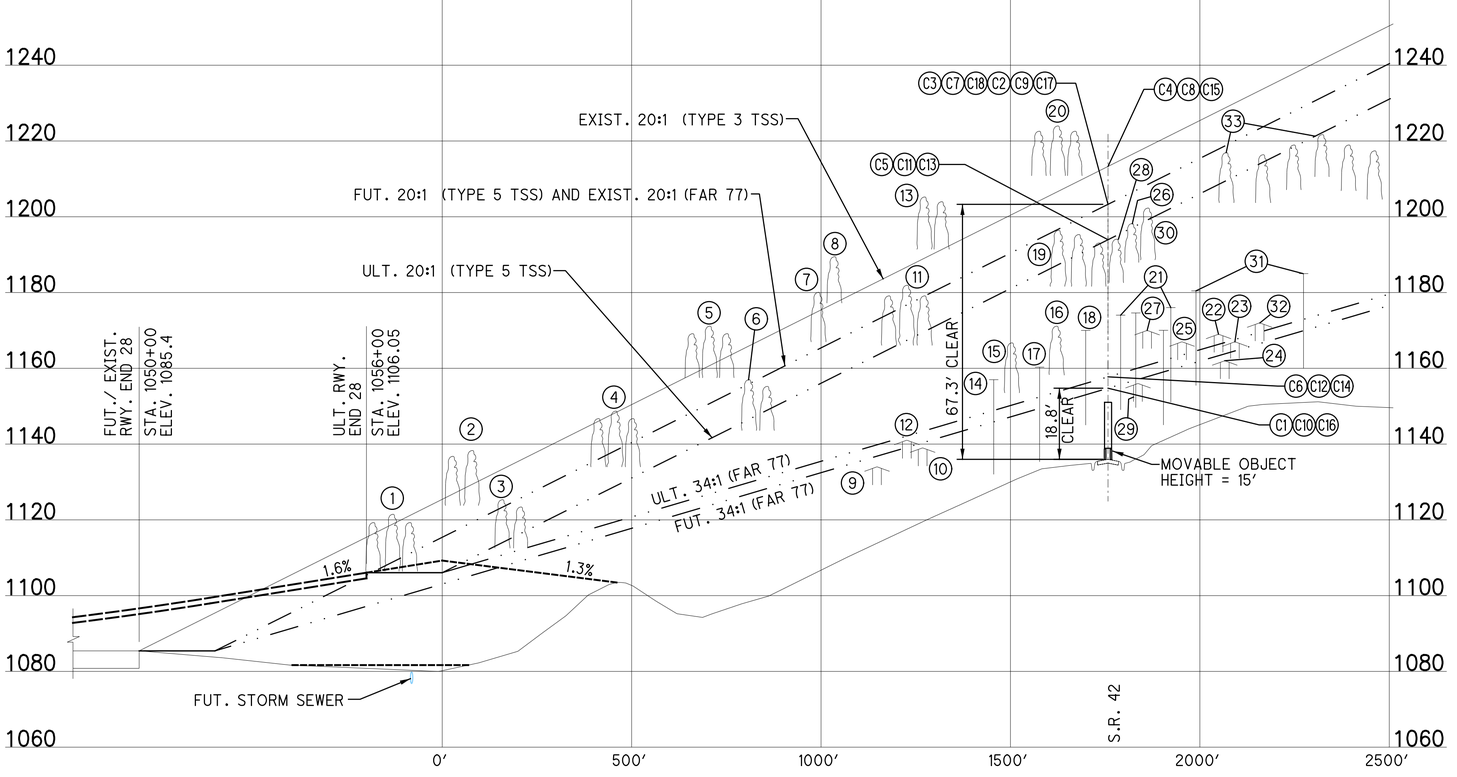
INNER PORTION OF THE APPROACH SURFACE RUNWAY END 10

MORROW COUNTY AIRPORT

7/11

109012/ROADWAY/SHEETS 419AZ-10.DGN 5/31/13 SCB





RUNWAY END-10 APPROACH DATA TABLE

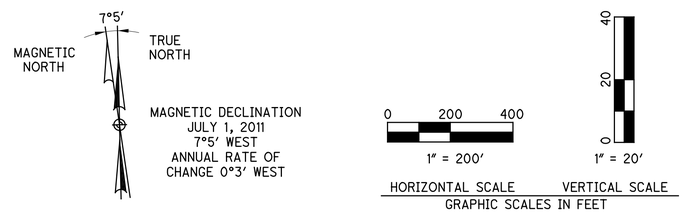
OBJECT		TOP EL.	THRESHOLD SITING SURFACE						FAR PART 77 APPROACH SURFACE						PROPOSED DISPOSITION		
			MAX. ALLOWABLE EL.			PENETRATION			MAX. ALLOWABLE EL.			PENETRATION					
NO.	DESCRIPTION		EXIST.	FUT.	ULT.	EXIST.	FUT.	ULT.	EXIST.	FUT.	ULT.	EXIST.	FUT.	ULT.	EXIST.	FUT.	ULT.
1	TREE, 95.0' RT.	1120.6	1118.7	1108.7	1110.0	1.9	11.9	28.1	1108.7	1099.1	1108.4	11.9	21.5	29.7	REMOVE	REMOVE	REMOVE
2	TREE, 345.3' RT.	1138.1	1129.4	1119.4	1098.4	8.7	18.7	26.8	1119.4	1105.4	1101.6	18.7	32.7	23.6	REMOVE	REMOVE	REMOVE
3	TREE, 154.0' LT.	1125.2	1117.8	1107.8	1128.9	7.4	17.4	19.7	1107.8	1098.5	1119.5	17.4	26.7	29.1	REMOVE	REMOVE	REMOVE
4	TREE, 284.9' RT.	1148.6	1148.3	1138.3	1141.4	0.3	10.3	29.2	1138.3	1116.5	1126.8	10.3	32.1	43.8	REMOVE	REMOVE	REMOVE
5	TREE, 287.4' RT.	1170.6	1160.8	1150.8	1146.5	9.8	19.8	10.1	1150.8	1123.8	1129.8	19.8	46.8	26.8	REMOVE	REMOVE	REMOVE
6	TREE, 277.0' RT.	1156.6	1165.8	1155.8	1156.0	-9.2	0.8	23.7	1155.8	1126.8	1135.4	0.8	29.8	44.3		REMOVE	REMOVE
7	TREE, 265.1' RT.	1179.7	1175.3	1165.3	1156.3	4.4	14.4	33.1	1165.3	1132.4	1135.6	14.4	47.3	53.8	REMOVE	REMOVE	REMOVE
8	TREE, 283.0' LT.	1189.4	1175.6	1165.6	1171.9	13.8	23.8	13.0	1165.6	1132.6	1144.8	23.8	56.8	40.1	REMOVE	REMOVE	REMOVE
9	BARN, 64.4' LT.	1184.9	1191.3	1181.3	1177.7	-6.4	3.6	-38.2	1181.3	1141.8	1148.2	3.6	43.1	-8.7	-	-	-
10	BLDG., 461.6' LT.	1139.5	1197.0	1187.0	1167.3	-57.5	-47.5	14.5	1187.0	1145.2	1142.1	-47.5	-5.7	39.7	-	-	REMOVE
11	TREE, 400.2' LT.	1181.8	1186.6	1176.6	1177.0	-4.8	5.2	-36.4	1176.6	1139.1	1147.8	5.2	42.7	-7.2	-	REMOVE	REMOVE
12	BLDG., 195.4' LT.	1140.6	1196.3	1186.3	1169.5	-55.7	-45.7	35.2	1186.3	1144.8	1143.4	-45.7	-4.2	61.3	-	-	-
13	TREE, 258.3' RT.	1204.7	1188.8	1178.8	1178.9	15.9	25.9	-21.9	1178.8	1140.3	1148.9	25.9	64.4	8.1	REMOVE	REMOVE	REMOVE
14	POLE, 241.2' RT.	1157.0	1198.2	1188.2	1181.2	-41.2	-31.2	-15.4	1188.2	1145.9	1150.3	-31.2	11.1	15.5	-	OL	OL
15	TREE, 391.4' RT.	1165.8	1200.5	1190.5	1186.9	-34.7	-24.7	-15.7	1190.5	1147.2	1153.6	-24.7	18.6	17.6	-	REMOVE	REMOVE
16	TREE, 396.3' RT.	1171.2	1206.3	1196.3	1185.2	-35.1	-25.1	-25.3	1196.3	1150.6	1152.6	-25.1	20.6	7.3	-	REMOVE	REMOVE
17	POLE, 262.3' RT.	1159.9	1204.6	1194.6	1199.5	-44.7	-34.7	-29.8	1194.6	1149.6	1161.0	-34.7	10.3	8.7	-	OL	OL
18	POLE, 54.5' RT.	1169.7	1218.8	1208.8	1187.4	-49.1	-39.1	8.9	1208.8	1158.0	1153.9	-39.1	11.7	42.4	-	OL	OL
19	TREE, 121.5' LT.	1196.3	1206.8	1196.8	1187.3	-10.5	-0.5	36.8	1196.8	1150.9	1153.9	-0.5	45.4	70.2	-	REMOVE	REMOVE
20	TREE, 282.7' LT.	1224.1	1206.7	1196.7	1202.1	17.4	27.4	-26.1	1196.7	1150.9	1162.6	27.4	73.2	13.4	REMOVE	OL	OL
21	POLES, LT.	1176.0	1221.5	1211.5	1209.6	-45.5	-35.5	-40.6	1211.5	1159.5	1167.0	-35.5	16.5	2.0	-	OL	OL
22	BLDG., 545.7' LT.	1169.0	1229.0	1219.0	1209.8	-60.0	-50.0	-43.0	1219.0	1164.0	1167.1	-50.0	5.0	-0.3	-	OIOL	OIOL
23	BLDG., 400.7' LT.	1166.8	1229.2	1219.2	1209.3	-62.4	-52.4	-47.4	1219.2	1164.1	1166.8	-52.4	2.7	-4.9	-	OIOL	OIOL
24	BLDG., 281.4' LT.	1161.9	1228.7	1218.7	1203.0	-66.8	-56.8	-36.3	1218.7	1163.8	1163.1	-56.8	-1.9	3.6	-	-	-
25	BLDG., 126.3' LT.	1166.7	1222.4	1212.4	1196.6	-55.7	-45.7	1.7	1212.4	1160.1	1159.3	-45.7	6.6	39.0	-	OIOL	OIOL
26	TREE, 54.7' RT.	1198.3	1216.0	1206.0	1199.1	-17.7	-7.7	-29.1	1206.0	1156.3	1160.8	-7.7	42.0	9.2	-	-	REMOVE
27	BLDG., 79.0' RT.	1170.0	1218.4	1208.4	1195.6	-48.4	-38.4	-1.1	1208.4	1157.8	1158.7	-38.4	12.2	35.8	-	OIOL	REMOVE
28	TREE, 372.8' RT.	1194.5	1215.0	1205.0	1206.4	-20.5	-10.5	-50.2	1205.0	1155.7	1165.1	-10.5	38.8	-8.9	-	-	REMOVE
29	BLDG., 374.1' RT.	1156.2	1225.7	1215.7	1198.5	-69.5	-59.5	3.7	1215.7	1162.0	1160.4	-59.5	-5.8	41.8	-	-	-
30	TREE, 540.2' RT.	1202.2	1217.8	1207.8	1236.1	-15.6	-5.6	-51.2	1207.8	1157.4	1182.5	-5.6	44.8	2.4	-	REMOVE	REMOVE
31	POLES, RT.	1184.9	1255.4	1245.4	1213.9	-70.5	-60.5	-42.2	1245.4	1179.5	1169.5	-60.5	5.4	2.2	-	OL	OL
32	BLDG., 78.0' RT.	1171.7	1233.3	1223.3	1221.0	-61.6	-51.6	0.1	1223.3	1166.5	1173.7	-51.6	5.2	47.4	-	OIOL	OIOL
33	TREE, 33.8' LT.	1221.1	1240.3	1230.3		-19.2	-9.2		1230.3	1170.7		-9.2	50.4		-	REMOVE	REMOVE

DATE OF OBSTRUCTION SURVEY: 10-27-2011 SURVEY ACCURACY: HORIZONTAL: POLES-3'±; TREES-10'± VERTICAL: POLES-3'±; TREES-5'±

DISPOSITION ACRONYM: OL/OBSTRUCTION LIGHT; OIOL/OBSTRUCTION IDENTIFIED BY NEARBY OBSTRUCTION LIGHT

RUNWAY END-28 CLEARANCES OVER S.R. 42

LOC.	DISTANCE FROM RUNWAY END		ROADWAY ELEVATION	SURFACE	SLOPE	MAXIMUM ALLOWABLE ELEVATION	ROADWAY CLEARANCE	MOVEABLE OBJECT CLEARANCE
	EXIST./FUT.	ULT.						
C1	2669'		1140.5	FUTURE FAR 77	34:1	1158.0	17.5'	2.5'
C2	2669'		1140.5	EXISTING FAR 77	20:1	1208.9	68.4'	53.4'
C3	2669'		1140.5	FUTURE TSS	20:1	1208.9	68.4'	53.4'
C4	2648'		1139.2	EXISTING TSS	20:1	1217.8	78.6'	63.6'
C5		2050'	1139.4	ULTIMATE TSS	20:1	1198.6	59.2'	44.2'
C6		2053'	1139.5	ULTIMATE FAR 77	34:1	1160.6	21.1'	6.1'
C7	2559'		1135.9	FUTURE TSS	20:1	1203.4	67.5'	52.5'
C8	2559'		1135.9	EXISTING TSS	20:1	1213.4	77.5'	62.5'
C9	2559'		1135.9	EXISTING FAR 77	20:1	1213.4	77.5'	62.5'
C10	2559'		1135.9	FUTURE FAR 77	34:1	1154.8	18.9'	3.9'
C11		1959'	1135.9	ULTIMATE TSS	20:1	1194.1	58.2'	43.2'
C12		1959'	1135.9	ULTIMATE FAR 77	34:1	1157.8	21.9'	6.9'
C13		1873'	1128.4	ULTIMATE TSS	20:1	1189.8	61.4'	46.4'
C14		1870'	1128.1	ULTIMATE FAR 77	34:1	1155.2	27.1'	12.1'
C15	2470'		1128.1	EXISTING TSS	20:1	1208.9	80.8'	65.8'
C16	2455'		1126.4	FUTURE FAR 77	34:1	1151.7	25.3'	10.3'
C17	2454'		1126.5	EXISTING FAR 77	20:1	1198.1	71.6'	56.6'
C18	2454'		1126.5	FUTURE TSS	20:1	1198.1	71.6'	56.6'



NOTE: FOR PROPOSED ITEM LEGEND SEE SHEET NO. 7

NO.	REVISION	BY	APPR.	DATE

CALCULATED HS CHECKED KMK

INNER PORTION OF THE APPROACH SURFACE RUNWAY END 28

MORROW COUNTY AIRPORT

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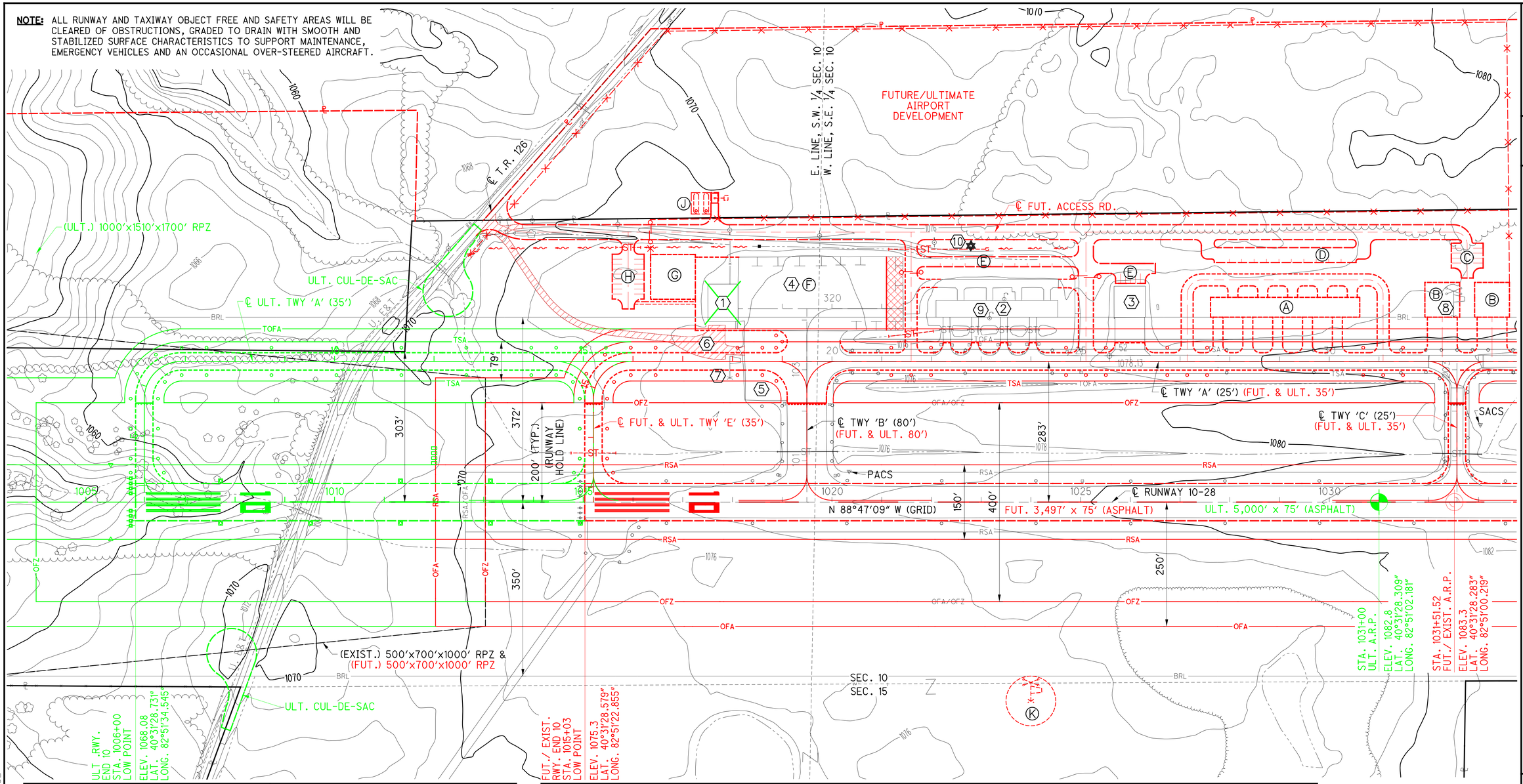
11

109012/419/ROADWAY/SHEETS/419AZ-28.DGN 5-31-13 SCB

NOTE: ALL RUNWAY AND TAXIWAY OBJECT FREE AND SAFETY AREAS WILL BE CLEARED OF OBSTRUCTIONS, GRADED TO DRAIN WITH SMOOTH AND STABILIZED SURFACE CHARACTERISTICS TO SUPPORT MAINTENANCE, EMERGENCY VEHICLES AND AN OCCASIONAL OVER-STEERED AIRCRAFT.



AIRPORT ITEM LEGEND

NO.	DESCRIPTION	ELEV.	NO.	DESCRIPTION	ELEV.
⟨1⟩	FBO/TERMINAL BUILDING	1099	Ⓐ	T-HANGAR (F)	1102
⟨2⟩	T-HANGAR	1092	Ⓑ	CORPORATE HANGAR (F)	1120
⟨3⟩	COPORATE HANGAR	1106	Ⓒ	VEHICLE PARKING (F)	1078
⟨4⟩	TIE-DOWN APRON AREA (150'x335')	1076	Ⓓ	VEHICLE PARKING (F)	1074
			Ⓔ	VEHICLE PARKING (F)	1075
⟨5⟩	APRON AREA (125'x140')	1077	Ⓕ	TIE-DOWN APRON AREA (150'x384'-USEABLE) (F)	1076
⟨6⟩	VEHICLE PARKING	1074			
⟨7⟩	WINDCONE	1098	Ⓖ	FBO/TERMINAL BUILDING (F)&(U)	1104
⟨8⟩	LIGHTED WINDCONE	1107	Ⓗ	VEHICLE PARKING (F)&(U)	1074
⟨9⟩	LIGHT POLE	1103	Ⓙ	FUEL TANKS (F)&(U)	1070
⟨10⟩	AIRPORT BEACON	1144	Ⓚ	LIGHTED WINDCONE (F)	1107

⟨⟩ EXISTING ◯ FUTURE (F) ◯ ULTIMATE (U)

LEGEND

DESCRIPTION	EXISTING	FUT. / ULT.	DESCRIPTION	EXISTING	FUT. / ULT.
AIRPORT BEACON	✱		A.V.A.S.I./P.A.P.I.	A.V.A.S.I.	P.A.P.I.
AIRPORT PROPERTY LINE	℄	℄	ROADS		
AIRPORT REFERENCE POINT	⊕	⊕	R.E.I.L.		◁
BUILDINGS			RUNWAY/TAXIWAY LIGHTS	● ● ●	▣ ▣ ▣
DITCH			RUNWAY THRESHOLD LIGHTS	●●●● ●●●●	▣▣▣▣ ▣▣▣▣
FENCE	× × ×	× × ×	RUNWAY HOLD LINE		
GROUND CONTOURS	1150		STORM SEWER	ST	ST
LIGHTED WIND CONE			PACS/SACS	▽	
NON-USABLE APRON AREA					
FACILITY ABANDONED/REMOVED					

MAGNETIC NORTH — TRUE NORTH — 7°5'

MAGNETIC DECLINATION
JULY 1, 2011
7°5' WEST
ANNUAL RATE OF
CHANGE 0°3' WEST

NO.	REVISION	BY	APPR.	DATE
-	-	-	-	-

HORIZONTAL SCALE IN FEET
0 100 200

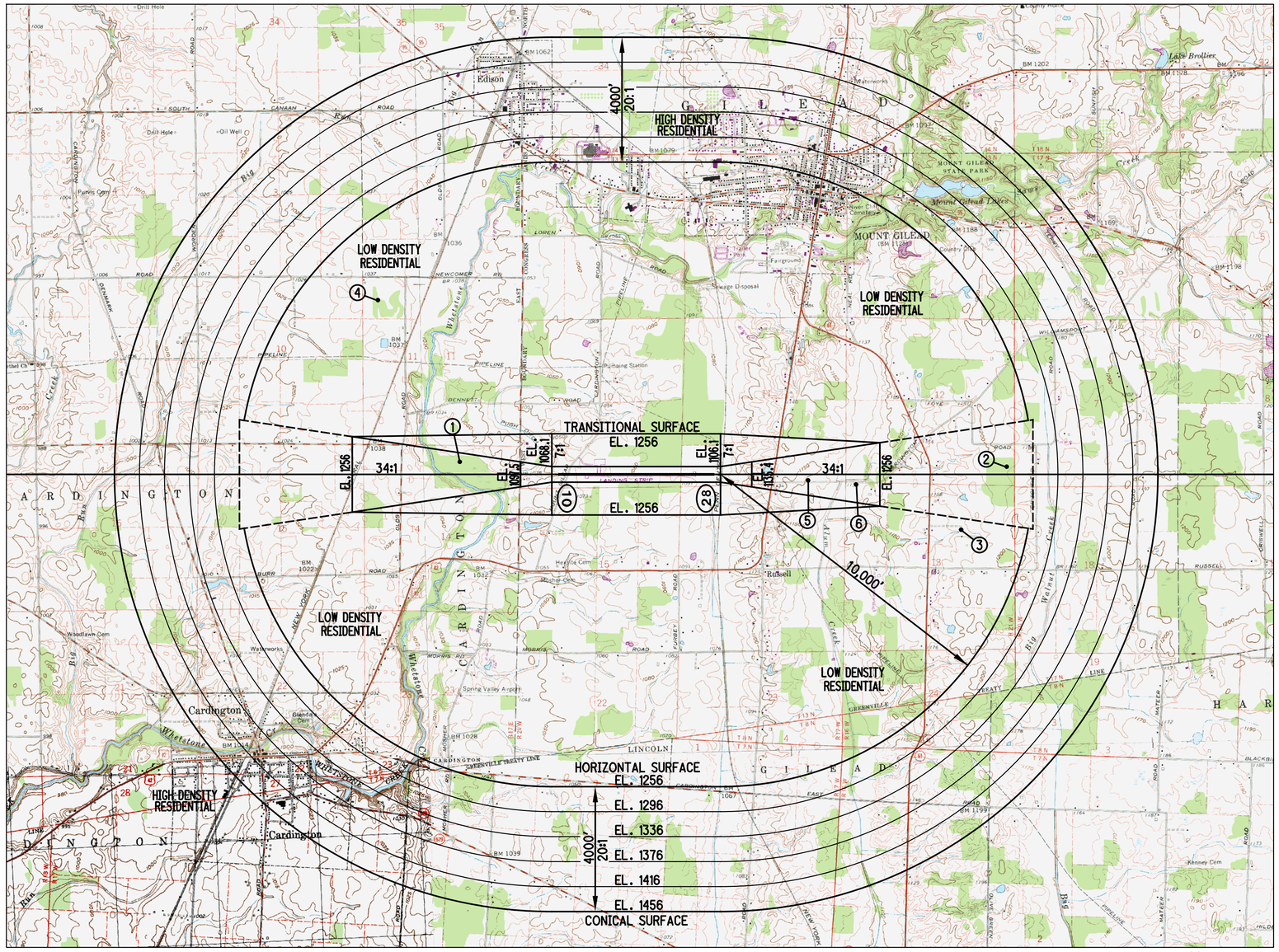
CALCULATED KMK
CHECKED HS

TERMINAL LAYOUT PLAN

MORROW COUNTY AIRPORT

9
11

109012/419/ROADWAY/SHEETS/419TLP 5-21-13 SCB



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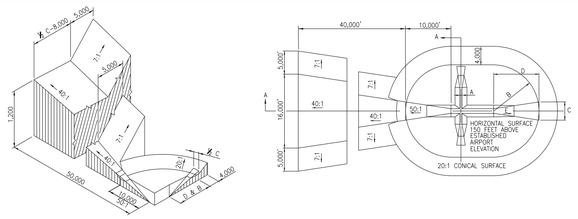


DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B C	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	*

A– UTILITY RUNWAYS
B– RUNWAYS LARGER THAN UTILITY
C– VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D– VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
*– PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET

FEDERAL AVIATION ADMINISTRATION PART 77.25 CIVIL AIRPORT IMAGINARY SURFACES

FEDERAL AVIATION REGULATIONS PART 77 DETERMINES THAT A STRUCTURE IS PRESUMED TO HAVE SUBSTANTIAL ADVERSE EFFECT UPON THE SAFE AND EFFICIENT USE OF A NAVIGABLE AIRSPACE IF HEIGHT EXCEEDS THE FOLLOWING STANDARDS:

1. A HEIGHT OF FIVE HUNDRED (500) FEET ABOVE GROUND LEVEL AT THE SITE OF THE ANYWHERE IN THE STATE.
2. A HEIGHT THAT IS TWO HUNDRED (200) FEET ABOVE GROUND LEVEL OR ABOVE THE ESTABLISHED AIRPORT ELEVATION, WHICHEVER IS HIGHER WITHIN THREE (3) NAUTICAL MILES OF THE ESTABLISHED REFERENCED POINT OF A PUBLIC-USE AIRPORT, EXCLUDING HELIPORTS, AND THE HEIGHT INCREASES IN THE PROPORTION OF ONE HUNDRED (100) FEET FOR EACH ADDITIONAL NAUTICAL MILE OR DISTANCE FROM THE AIRPORT UP TO A MAXIMUM OF FIVE HUNDRED (500) FEET.
3. A HEIGHT WITHIN A TERMINAL OBSTACLE CLEARANCE AREA, INCLUDING AN INITIAL APPROACH SEGMENT, A DEPARTURE AREA, AND A CIRCLING APPROACH AREA, AS DEFINED BY FEDERAL LAWS AND REGULATIONS, WHICH WOULD RESULT IN THE VERTICAL DISTANCE BETWEEN ANY POINT ON THE OBJECT AND AN ESTABLISHED MINIMUM INSTRUMENT FLIGHT ALTITUDE WITHIN THAT AREA OR SEGMENT TO BE LESS THAN THE REQUIRED OBSTACLE CLEARANCE.
4. A HEIGHT WITHIN AN EN ROUTE OBSTACLE CLEARANCE AREA, AS DEFINED BY THE FEDERAL LAWS AND REGULATIONS, INCLUDING TURN AND TERMINATION AREA, OF A FEDERAL AIRWAY OR APPROVED OFF-AIRWAY ROUTE, THAT WOULD INCREASE THE MINIMUM OBSTACLE CLEARANCE ALTITUDE.
5. THE SURFACE OF A TAKEOFF AND LANDING AREA OF A PUBLIC-USE AIRPORT OR ANY IMAGINARY SURFACE AS ESTABLISHED BY FAR PART 77, HOWEVER, NO PART OF THE TAKEOFF OR LANDING AREA ITSELF WILL BE CONSIDERED TO BE AN OBSTRUCTION.

RUNWAY 10-28 OBSTRUCTION TABLE

OBJECT NO.	OBJECT DESCRIPTION	TOP ELEV.	MAX. ALLOWABLE ELEV. EXIST.	MAX. ALLOWABLE ELEV. FUT.	MAX. ALLOWABLE ELEV. ULT.	PENETRATION EXIST.	PENETRATION FUT.	PENETRATION ULT.	PROPOSED DISPOSITION EXIST.	PROPOSED DISPOSITION FUT.	PROPOSED DISPOSITION ULT.
1	TREES, LT.	1153.0	1256.0	1187.8	1154.0	-103.0'	-34.8'	-1.0'	-	-	-
2	TREES, LT./RT.	1311.9	1256.0	1256.0	1256.0	55.9'	55.9'	55.9'	OBSTR. LIGHT	OBSTR. LIGHT	OBSTR. LIGHT
3	SILO, RT.	1233.2	1256.0	1256.0	1256.0	-22.8'	-22.8'	-22.8'	-	-	-
4	ANTENNA, LT.	1223.0	1256.0	1241.4	1207.7	-33.0'	-18.4'	15.3'	-	-	OBSTR. LIGHT
5	TREES, RT.	1220.0	1256.0	1185.7	1188.7	-36.0'	34.3'	31.3'	-	REMOVE	REMOVE
6	TREES, RT.	1232.5	1256.0	1230.5	1233.5	-23.5'	2.0'	-1.0'	-	REMOVE	-

NOTE: SEE INNER PORTION OF APPROACH SURFACE SHEET NO'S. 6 & 7 FOR ADDITIONAL OBSTRUCTIONS

DATE OF OBSTRUCTION SURVEY: 10-27-2011

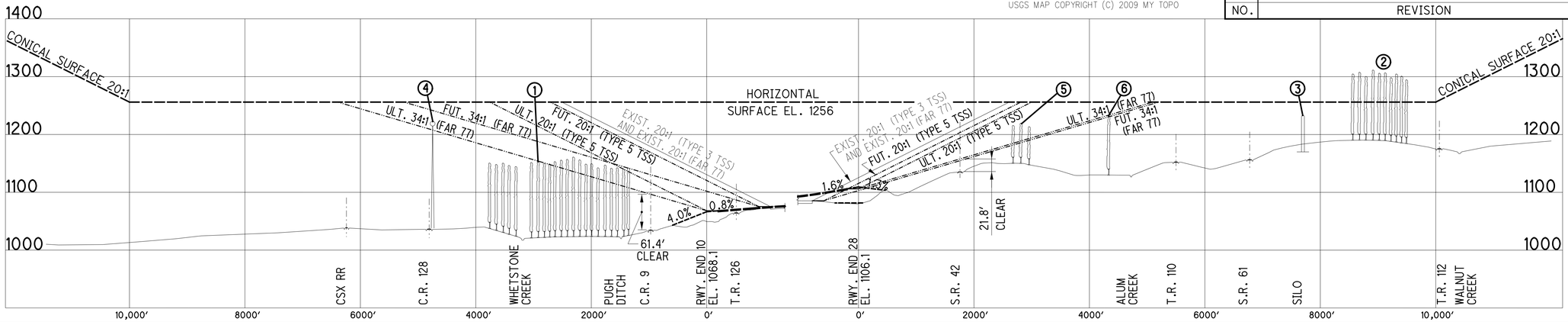
LEGEND

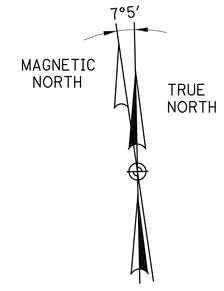
- ● – OBJECTS WHICH VIOLATE PART 77
- – ELECTRIC TRANSMISSION LINE
- – INTERSTATE ROUTE
- – U.S. ROUTE
- – STATE ROUTE

ROAD CLASSIFICATION

HEAVY DUTY | LIGHT DUTY | MEDIUM DUTY | UNIMPROVED DIRT

NO.	REVISION	BY	APPR.	DATE
-	-	-	-	-





MAGNETIC DECLINATION
JULY 1, 2011
7°5' WEST
ANNUAL RATE OF CHANGE 0°3' WEST

HORIZONTAL SCALE IN FEET
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MORROW COUNTY AIRPORT

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PROPERTY TABLE

PARCEL NO.	GRANTOR	GRANTEE	TYPE OF DEEDS	VOLUME/PAGE	ACREAGE OWNED	ACREAGE TO BE ACQUIRED	DATE OF ACQUISITION	FEDERAL PROJECT NO. FOR ACQUISITION/NOTES
1	MORROW CO. AIRPORT AUTHORITY	MORROW CO. BOARD OF COMMISSONERS	WARRANTY	183/21	46.91		06-29-1968	LAND REIMBURSEMENT
2	MORROW CO. AIRPORT AUTHORITY	MORROW CO. BOARD OF COMMISSONERS	WARRANTY	183/21	20.39		06-29-1968	LAND REIMBURSEMENT
3	MORROW CO. AIRPORT AUTHORITY	MORROW CO. BOARD OF COMMISSONERS	WARRANTY	183/21	20.30		06-29-1968	LAND REIMBURSEMENT
4	MORROW CO. AIRPORT AUTHORITY	MORROW CO. BOARD OF COMMISSONERS	QUIT CLAIM	284/41	9.35		10-29-1985	
5	PAUL SHAFFER	MORROW CO. BOARD OF COMMISSONERS	WARRANTY	284/326	1.453		11-26-1985	
6	PAUL SHAFFER	MORROW CO. BOARD OF COMMISSONERS	WARRANTY	284/326	5.987		11-26-1985	
7	PAUL SHAFFER	MORROW CO. BOARD OF COMMISSONERS	WARRANTY	284/326	8.49		11-26-1985	
8	PAUL SHAFFER	COMMISSONERS OF MORROW COUNTY	WARRANTY	295/357	1.49		11-22-1988	
9	F. McPEEK & N. PHILBROOK & L. W. PHILBROOK	MORROW CO. BOARD OF COMMISSONERS	WARRANTY	299/911	22.84		01-30-1990	
10	MORROW CO. COMMUNITY IMPROVEMENT CORP.	COMMISSONERS OF MORROW COUNTY	WARRANTY	331/387	1.207		01-11-1996	
11	MORROW CO. COMMUNITY IMPROVEMENT CORP.	COMMISSONERS OF MORROW COUNTY	WARRANTY	331/387	2.494		01-11-1996	
12	MORROW CO. COMMUNITY IMPROVEMENT CORP.	COMMISSONERS OF MORROW COUNTY	WARRANTY	331/387	7.859		01-11-1996	
13	JERRY D. KORODY, JR.		WARRANTY	612/356		23.625		
14	CYNTHIA R. LEYVAS		WARRANTY	628/768		2.703		
15	JOHN D. & LIDA E. MILLINGTON		WARRANTY	400/55		11.882		
16	JEFFREY L. REICHEL		WARRANTY	392/84		2.698		
17	McCHESNEY PROP. LTD.		WARRANTY	616/424		1.45±		TOTAL 42.78 AC; PARTIAL TAKE
18	GARY, LUST, SHARON CICHOSKI & CONNIE MARTIN		WARRANTY	688/171		14.67±		TOTAL 65.816 AC; PARTIAL TAKE
19	C. & J. SHAFFER & P. SHAFFER		WARRANTY	316/534, 313/60, 385/324		27.57±		TOTAL 87.72 AC; PARTIAL TAKE
20	NELSON R. & KATHRYN R. SHAFFER		WARRANTY	624/404		18.51±		TOTAL 24.997 AC; PARTIAL TAKE
21	NANCY McPEEK PHILBROOK		WARRANTY	335/278, 392/94		9.338		
22	JENNIFER A. LYONS		WARRANTY	722/94		1.10		
23	RALPH COMPTON & CHARLOTTE COMPTON		WARRANTY	239/418, 243/145		3.084		
24	SHIRLEY A. GROSH		WARRANTY	358/761		1.86		
25	LEE H. ROUSH & DEBRA L. ROUSH		WARRANTY	630/88		2.484		
26	LISA SCHOONOVER		WARRANTY	375/269		2.484		
27	LEVERING BROTHERS, INC.		WARRANTY	230/487, 287/667		19.0±		TOTAL 106.28 AC; PARTIAL TAKE
TOTAL ACREAGE OWNED BY MORROW COUNTY COMMISSONERS					148.770	142.232		

EASEMENTS

PARCEL NO.	GRANTOR	GRANTEE	TYPE OF DEEDS	VOLUME/ PAGE	ACREAGE	DATE OF ACQUISITION	FEDERAL PROJECT NO. FOR ACQUISITION/NOTES
E-1	B. DANIELS	MORROW CO. BOARD OF COMMISSONERS	EASEMENT		16.63		
E-2	PENN CENTRAL CORPORATION	MORROW CO. BOARD OF COMMISSONERS	EASEMENT	BY LETTER	1.76	03-18-1991	3-39-0114-01
E-3	B. DANIELS	MORROW CO. BOARD OF COMMISSONERS	EASEMENT	312/368	3.70	09-10-1992	
E-4	MORROW CO. BOARD OF COMMISSONERS	CARL R. FISHER JR.	EASEMENT	338/27	1.57	05-12-1997	
E-5	CARL R. FISHER JR.	LEVERING BROTHERS, INC.	EASEMENT	338/31	0.65	05-12-1997	

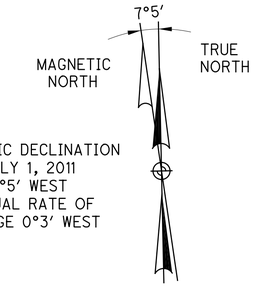
NOTES:

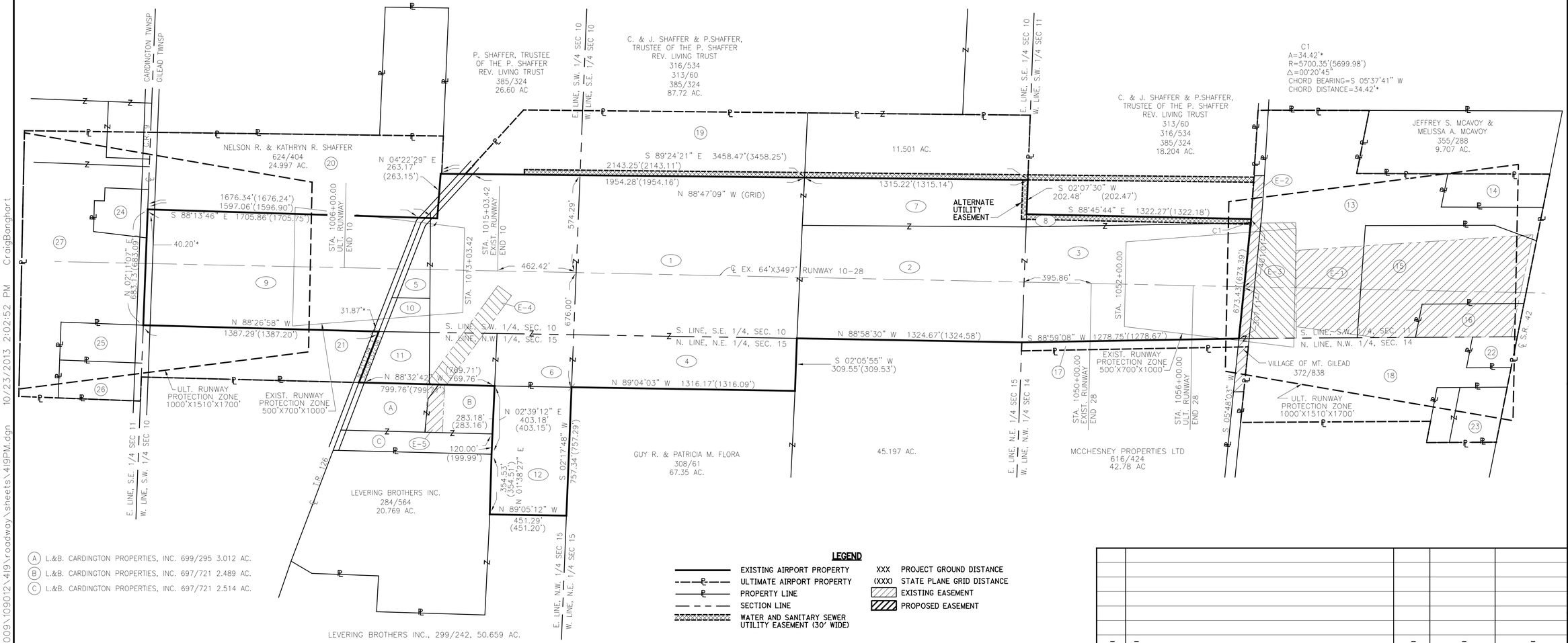
SITUATED IN THE TOWNSHIP OF GILEAD, COUNTY OF MORROW, STATE OF OHIO AND BEING A PART OF THE SOUTHEAST AND SOUTHWEST QUARTERS OF SECTION 10, THE SOUTHWEST QUARTER SECTION 11, THE NORTHEAST AND NORTHWEST QUARTERS OF SECTION 15, T-13N, R-21W

BEARINGS ARE GRID BEARINGS BASED ON A GLOBAL POSITIONING TRAVERSE ORIGINATING ON GILPORT (KZ2154 PACS) NGS MONUMENT AND ARE BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM, NAD83(2007), NORTH ZONE.

ALL DISTANCES ARE PROJECT GROUND WITH STATE PLANE GRID DISTANCES DEPICTED AS (XXX). THE PROJECT ADJUSTMENT FACTOR(PAF) FOR THIS SURVEY IS 1.000064273.

BASED ON A FIELD SURVEY DATED AUGUST, 2010.





(A) L.&B. CARDINGTON PROPERTIES, INC. 699/295 3.012 AC.
(B) L.&B. CARDINGTON PROPERTIES, INC. 697/721 2.489 AC.
(C) L.&B. CARDINGTON PROPERTIES, INC. 697/721 2.514 AC.

LEGEND

- EXISTING AIRPORT PROPERTY
- ULTIMATE AIRPORT PROPERTY
- PROPERTY LINE
- SECTION LINE
- WATER AND SANITARY SEWER UTILITY EASEMENT (30' WIDE)

XXX PROJECT GROUND DISTANCE
(XXX) STATE PLANE GRID DISTANCE
EXISTING EASEMENT
PROPOSED EASEMENT

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PROPERTY MAP

MORROW COUNTY AIRPORT

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Chapter 7

7. Facilities Implementation Plan

7.1 General

This chapter provides guidance for implementing the findings and recommendations of the planning effort. The recommendations will focus primarily on facilities that are required to meet basic aviation demand for airside development and landside development. Airside development would include runways, taxiways, tie-down apron, airfield lighting, marking, and navigation aids. Basic landside development would include facilities that would support air operation activities such as aviation fuel storage and dispensing systems, fueling apron, vehicular parking and access to the airfield, aircraft storage, taxilanes, pilot and passenger comfort, maintenance and service facilities. The implementation or capital improvement plan will provide the Sponsors Administration, the Federal Aviation Administration and the Ohio Office of Aviation with necessary information to make improvements to meet the demand for aviation activities of the airport.

While the primary support for capital improvements and some airport maintenance needs will be provided through available Federal and State grants, a small percentage of this cost must be provided from local funds. The implementation of the Airport Capital Improvement Plan (ACIP) will address most of the airportôs planned capital projects including those generally not associated with the recommendations of the master plan. The documentation should be used to ensure that adequate funding, staffing, scheduling and support is available to meet the needs of the aviation community.

In preparing the Morrow County Airport Facilities Implementation Plan, much consideration was given in balancing funding constraints with demand of facilities, community and tenantsô acceptance, business and community development issues, and environmental concerns. The Facilities Implementation Plan is coordinated with the future Airport Layout Plan and the airport's financial plan. The plan is flexible, and can and should be reviewed on a regular basis to meet the aviation demand just in time of need.

7.2 Formulation of the the Capital Improvement Plan

An annually updated ACIP should be the driver of the facilities plan. The forecast demand and associated facility requirements outlined in Chapter 4 are described here in greater detail along with anticipated justification for the scheduled improvement. Each scheduled improvement should be based on purpose and need to first improve safety, and second, to meet aviation demand. The facility plan formulated below focused first on repair, maintenance and obstruction removal projects to improve safety and air operations and then address the need to meet aviation demand. Improvements to meet aviation demand should be scrutinized and be market driven with an anticipated positive cash flow. Prior to submitting the recommended capital improvements to the Ohio Office of Aviation or to the Federal Aviation Administration for funding consideration, it is suggested that the scheduled improvements also be reviewed with tenants and local stakeholders.

Due to limited available local, state and federal funds the need for existing and future capital improvements focused primarily on maintaining and improvement existing facilities and when financially possible provide for limited additional demand. The airside demands consist entirely of runway, taxiway, apron, obstruction removal and navigation facilities, while the landside demand centers on aircraft storage, terminal requirement, fuel storage and dispensing, access improvement, vehicle parking, security fencing, utility requirements, approach surface protection including associated land acquisition.

The following projects are scheduled for timed implementation with standard descriptions as outlined in the FAAôs System of Airport Reporting (SOAR). The Airport Capital Improvement Projects are ranked by applying the SOAR priority system and expected federal and state funding availability. The scheduled projects should be reviewed with locally available matching or participating funds prior to submitting a federal or state funding application.

Table 7-1: 5 Year (2013-2018) Capital Improvements

Year FAA Priority	Project Description	Total Cost	FAA Entitlement	Aviation Non FAA	Local	Purpose and Need Justification
2013 47	Install Supplemental Wind Cone	$30,000	$27,000		$300,000	Supplement available wind data to enhance safety
2014 47	Acquire Hangar	$132,000	$118,800		$13,200	Meet Aviation Demand Increase Revenue Source
2015 45	Acquire Snow Removal Equipment	$157,895	$142,106		$15,789	Enhance winter operation safety
2017 44	Install Weather Reporting Equipment	$250,000	$225,000		$25,000	Enhance all weather safety
2018 47	Improve Runway Safety Areas	$81,120	$73,008		$8,112	Comply with FAA Runway Safety Area Requirements

Table 7-2: 10 year (2019-2023) Capital Improvements

Year / FAA Priority	Project Description	Total Cost	FAA Entitlement	Aviation Non FAA	Local	Purpose and Need Justification
2019 64	Environmental Assessment	$64,000	$57,600		$6,400	Planning Requirement for runway widening, extending, relocate residences, wetland
2020/2021 42	Land Acquisition 35.5 Acres	$299,600	$269,640		$29,960	Approach Surface Protection
2022/2023 42	Land Acquisition 55.5 Acres	$461,250	$415,125		$46,125	Approach Surface Protection

Table 7-3: 20 year (2024-2033) Capital Improvements

Year / FAA Priority	Project Description	Total Cost	FAA Entitlement	Aviation Non FAA	Local	Purpose and Need Justification
2024* /2025	Update ALP and Update Environmental Assessment	$36,000	$32,400		$3,600	Environmental Mitigation, Pre-Planning Requirements for Major Runway Construction and Runway Role Upgrade
2024 49	Extend Partial Parallel Taxiway	$298,100	$268,290		$29,810	Prevent Back Taxiing
2026 47	Runway, Taxiway Widening, Design	$93,000	$83,700		$9,300	Meet Aviation Demand
2027/2028 47	Runway, Taxiway Widening, Construction	$973,600	$876,240		$97,360	Meet Aviation Demand
20 47	Relocate Taxilane, Extend Vehicle Parking	$109,540	$98,586		$10,954	Meet Revenue Producing Demand Prevent Vehicle Incursion into Air Operations Areas
20 31/NA	Construct 10-Unit T-Hangar	$450,000			$450,000	Meet Revenue Producing Demand
20 45/N/A	Construct Terminal Building	$700,000	$630,000		$63,000	Meet Aviation Demand
20 18/N/A	Construct Fuel Storage Dispensing	$250,000			$250,000	Meet Aviation Demand

* Relocation of TL is based for maximum utilization of apron and improve safety operations.
N/A May not be on FAA participating improvement ï FAA will only participate in priority funding when all airside and critical landside facilities are within FAA compliance standards.

Table 7-4: Install Supplemental Wind Cone Cost

	Work Item Description	Estimated Quantity	Unit	Unit Price	Amount
1	12ô Lighted Wind Cone	1	L.S.	$7,000.00	$7,000.00
2	Single Phase Booster Transformer	1	L.S.	$1,500.00	$1,500.00
3	Trenching, Single Way	1,000	L.F.	$6.50.00	$6,500.00
4	Power Cable, 2/C #4 AWG, 500V, Direct Burial	1,000	L.F.	$3.40	$3,400.00
5	Junction Structure, 18ò Diameter	2	Ea.	$480.00	$960.00
6	Conduit, 2ò Bored and Jacked	150	L.F.	$29.00	$4,350.00
7	Power and Interconnect Cabling	180	L.F.	$2.00	$360.00
8	Mobilization	1	L.S.	$2,000.00	$2,000.00
				Total Construction Cost	$26,070.00
				Engineering & Administration	$6,200.00
				Administrative Costs (Bid Advertisement, Etc.)	$2,080.00
				Total Project Cost	**$34,350.00**

Table 7-5: Acquire Snow Removal Equipment

	Work Item Description	Estimated Quantity	Unit	Unit Price	Amount
1	Administrative Cost	1	L.S.	$2,000.00	$2,000.00
2	Architectural Basic Fees (Facilitate Equipment Acquisition through State Purchasing Program, Project Formulation and Administration)	1	L.S.	$8,000.00	$8,000.00
3	Truck with Dump Bed, Snow Plow, Sweeper	1	L.S.	$147,895.00	$147,895.00
				Total Construction Cost	**$157,895.00**

Table 7-6: Improve Runway Safety Area

	Work Item Description	Estimated Quantity	Unit	Unit Price	Amount
1	Clearing and Grubbing	3	Ac.	$2,000.00	$6,000,00
2	Unclassified Excavation	130	C.Y.	$12.00	$1,520.00
3	Drainage Excavation	10	C.Y.	$35.00	$350.00
4	Embankment In Place	130	C.Y.	$15.00	$1,950.00
5	Culverts and Storm Drains	800	L.F.	$65.00	$52,000.00
6	Turfing	3	Ac.	$3,100.00	$9,300.00
				Total Construction Cost	$71,120.00
				Engineering & Administration	$6,500.00
				Project Administration	$3,500.00

Total Project Cost	**$81,120.00**

Table 7-7: Acquire Hangar

	Work Item Description	Estimated Quantity	Unit	Unit Price	Amount
1	Administrative Cost (Legal Fees)	1	L.S.	$1,500.00	$1,500.00
2	Preliminary Expense (Appraisals and Review Appraisal)	1	L.S.	$2,000.00	2,000.00
3	Land, Structures, Right of Way	1	L.S.	$125,000.00	$125,000.00
4					
				Total Project Cost	**$132,000.00**

Table 7-8: Land Acquisition, Obstruction Removal (2019 & 2020)

	Work Item Description	Estimated Quantity	Unit	Unit Price	Amount
1	Acquire Land, Parcel 13 ï 18 Acres, Parcel 18 ï 14.67 Acres, Parcel 16 ï 2.69 Acres, Environmental Assessment	35.5	Ac.	$6,000.00	$213,000.00
2	Appraisals, Review Appraisals	1	L.S.	$1,500.00	$19,500.00
3	Negotiations & Legal Expenses	1	L.S.	$18,600.00	$18,600.00
4	Obstruction Removal (Trees)	2	Ac.	$7,000.00	$14,000.00*
5	Isolated Tree Removal (11, 13 & 20)	6	Ea.	$1,000.00	$6,000.00*
	Survey & Engineering	1	L.S.	$21,000.00	$21,000.00
	Project Administration	1	L.S.	$7,500.00	$7,500.00
				Total Project Cost	**$299,600.00**

Table 7-9: Land Acquisition, Obstruction Removal (2021-2023)

	Work Item Description	Estimated Quantity	Unit	Unit Price	Amount
1	Acquire Land Parcel 19 - 27.57 Acres, Parcel 20 ï 18.51 Acres, Parcel 21 ï 9.33 Acres	55.5	Ac.	$6,000.00	$333,000.00
2	Relocation Assistance	1	L.S.	$32,000.00	$32,000.00
3	Appraisals & Review Appraisals	1	L.S.	$18,000.00	$18,000.00
4	Negotiations & Legal Expenses	1	L.S.L.F.	$15,000.00	$15,000.00
5	Obstruction Removal (Trees	5.5	Ac.	$5,500.00	$30,250.00*
6	Isolated Tree Removal	1	Ea.	$1,000.00	$1,000.00*
	Surveying & Engineering	1	L.S.	$23,000.00	$23,000.00
	Project Administration	1	L.S.	$9,000.00	$9,000.00

	* Anticipated ODOT/OA Participating Item				
				Total Project Cost	**$461,250.00**

Table 7-10: Widen Runway to 3,497' x 75'
Widen Parallel Taxiway to 35' (2025-2028)

	Work Item Description	Estimated Quantity	Unit	Unit Price	Amount
1	Barricades & Safety Marking	1	L.S.	$30,000.00	$30,000.00
2	Clearing & Grubbing	2.5	Ac.	$2,000.00	$5,000.00
3	Unclassified Excavation	3,200	C.Y.	$8.00	$25,600.00
4	Pavement Widening (Asphalt)	7,800	S.Y.	$38.00	$296,400.00
5	Runway Resurfacing ï 2ò - 401	3,300	Ton	$90.00	$297,000.00
6	Taxiway Resurfacing ï 2ò ï 401	1,800	Ton	$90.00	$162,000.00
7	Turfing	16,000	S.Y.	$2.00	$32,000.00
8	Runway/Taxiway Pavement Marking	13,000	S.F.	$1.20	$15,600.00
	Construction Engineering	1	L.S.	$90,000.00	$90,000.00
	Project Administration	1	L.S.	$20,000.00	$20,000.00
				Total Project Cost	**$973,600.00**

Table 7-11: Construct Vehicle Parking (T-Hangar Tenants)
Relocate T-Hangar Taxilane

	Work Item Description	Estimated Quantity	Unit	Unit Price	Amount
1	Clearing and Grubbing	1	L.S.	$4,000.00	$4,000.00
2	Earthwork	350	C.Y.	$10.00	$3,500.00
3	Pavement (Asphalt)	950	S.Y.	$36.00	$34,200.00
4	Pavement Marking	1	L.S.	$600.00	$600.00
5	Turfing	800	S.Y.	@.80	$2,240.00
6	Relocate T-Hangar Taxilane	1	L.S.	$50,000.00	$50,000.00
	Engineering	1	L.S.	$15,000.00	$15,000.00
				Total Project Cost	**$109,540.00**

Table 7-12: Extend Partial Parallel Taxiway

	Work Item Description	Estimated Quantity	Unit	Unit Price	Amount
1	Barricades & Safety Marking	1	L.S.	$15,000.00	$15,000.00
2	Clearing & Grubbing	4.5	Ac.	$2,000.00	$9,000.00
3	Unclassified Excavation	1,500	C.Y.	$8.00	$12,000.00
4	Embankment	800	C.Y.	$9.00	$7,200.00
5	Pavement (Asphalt)	3,300	S.Y.	$44.00	$145,200.00
6	Medium Intensity Taxiway Lights	24	Ea.	$1,800.00	$43,200.00
7	Taxiway Pavement Marking	500	S.F.	$3.00	$1,500.00
8	Turfing	3,600	S.Y.	$2.50	$9,000.00
	Design Engineering	1	L.S.	$24,000.00	$24,000.00
	Construction Engineering	1	L.S.	$24,000.00	$24,000.00
	Project Administration	1	L.S.	$8,000.00	$8,000.00
				Total Project Cost	**$298,100.00**

7.3 Project Sequencing and Comprehensive Master Plan Schedule

The Morrow County Airport Master Plan Study revealed no complex issues or interrelationships from users, tenants, owner or the public that would create conflicts in scheduling or sequencing of implementation. Scheduling and timing of capital improvements for the short term is entirely based on need to maintain the integrity of the airside operations facilities that include runway, taxiway and terminal apron and all associated airfield lighting and navigation aides. The improvements are scheduled for early implementation to avoid future and more costly replacement costs. Landside improvements or maintenance projects are scheduled as dependent or interrelated airside projects.

The short-term improvements revealed no environmental issues or processing requirements and appear to fall under the "Categorical Exclusion Provision". The anticipated funding information shows considerable upfront financial commitments. The Federal share could be entirely funded from currently available "Non Primary Entitlement Funds" without reliance on FAA and State and future apportionment or Discretionary Funds. The local share would consist of approximately $69,789 of Morrow County Airport funds and $643,514 of FAA Entitlement allocation. State of Ohio Office of Aviation funds were not considered for short term projects because availability of state funds are extremely limited and are allocated for critical needs only. Private investment if any, would primarily be dependent on the developerôs perceived return on investment criteria, which in turn will be largely influenced by local, state or national economic and political conditions.

Special attention should be given by the fixed base operators for opportunities to increase revenues by filling niches that demand services from small corporate and private aircraft owners or transient operators from nearby larger airports.

The intermediate and long-term improvements focus on projects that would maintain existing facilities in good condition to serve forecast demand. The improvements also sequence projects that are primarily driven by increased operations and by an increase in based aircraft. Implementation of these projects will be entirely driven by demand, again generated by local, state and national or worldwide economic and political conditions.

Anticipated revenues to cover the local share of intermediate and long term eligible projects would come from increased aviation activities rather than from lease holds. Private investment and revenues from corporate users would be the driving component that will move and keep the airport into a financially self-sustaining position.

7.4 Key Activities and Responsibilities

Tables 7.1 through 7.3 provide basic information on critical activities and key responsibilities to implement the minimum services that are or will be demanded by aviation. While the short-term improvements are primarily catch up projects to maintain the airport in its intended role, the intermediate and long-term projects have lead time that could help prepare essential growth activities to be completed on a timely basis.

The recently updated Ohio State Airport Systems Plan indicates declining activities for Morrow County since 1990. However, since 2012, the decline has leveled and this study indicates that the decline may be reversed to a moderate but steady growth. The growth is anticipated to be generated from sharply increased agricultural services and offsite services provided to local business development. While increases in recreational and private business activities are anticipated along with the recent upturn in the economic outlook, no increases have been realized within that sector.

Key responsibilities and direction of activities is presently provided by the Morrow County administrative body with assistance from the Airport Commission. Together, the County Administration and the Airport Commission formulate maintenance and capital improvement projects, various budgetary approvals, funding appropriations, airport management and operation, lease hold, fixed base and offsite operations and similar other airport related activities.

The Morrow County Administration and the Airport Commission also are responsible for:

1. Business aircraft (charter or air taxi) for offsite and onsite tenant approvals.
2. Project funding activities through State, Federal, Local or Private sources including debt financing.
3. Planning including associated environmental processing.
4. Compatible land use, land lease and land acquisition activities.
5. Owner or sponsor specific project implementation from design bid phase to construction-implementation phase.
6. Other interested agency coordination from local planning agencies to statewide transportation system including State of Ohio Office of Aviation and Federal Aviation Administration.
7. Public involvement and dissemination process from the planning stage to the implementation stage.

7.5 Documentation Guidelines

For the short-term development of the Morrow County Airport this study recommends formulating, planning and phased implementation of the Airport Capital Improvement Plan 2013-2018 listed in Table 7.1 Timing, sequencing and implementation of major line times listed in the table for year 2014 and 2015 should be firm. For the remaining years 2018 to 2019 adjustments based on available Local, Federal, or State funds may be necessary. This report recommends that for each of the next three years the airport budget include a minimum of $16,300 annually a shown in Tables 7.2 and 7.3 to cover the local share of airside capital improvements.

The remaining intermediate and long-term facilities implementation should be evaluated based on the conditions of the existing facilities, realized growth in activities, and available funding from Local, State and Federal and Private sources.

Chapter 8

8. Financial Feasibility Analysis

8.1 General

This chapter outlines potential sources for financing the recommended implementation of facilities to meet aviation demand during the planning period. This chapter will also address the County's ability to fund the local share for projects recommended in the master plan. The financial feasibility of the immediate or upfront short-term improvements has been discussed in detail in Chapter 7, Sections 7.2, 7.3 and 7.5. The following section will address the upfront funding need in detail while a more general discussion of funding for the intermediate and long-term projects will be addressed. Intermediate and long-term projects will be subjected to many uncertainties and will be very dependent on realizing forecast growth, revenues, economic and political conditions not only within the study area but also within the region, state and the nation.

8.2 Sources of Funding

The Morrow County Airport is a general aviation airport. Development of a general aviation airport can be financed from sources, that would as in the past, encompass Federal Aviation Administration and Ohio Office of Aviation grant and non-primary entitlement funds, including revenues generated at the airport or subsidies provided from the County's general fund. Private financing or private development and available bonds or state infrastructure loans can also contribute to the financial responsibility for the recommended landside facilities. Available funds including the potentials as applicable to finance the recommended projects are discussed as follows:

1. Federal Aviation Administration Funding
   The Morrow County Airport is eligible for FAA funding through the Airport Improvement Program (AIP)[1]. The program provides state distributed AIP funds and non-primary entitlement funds. Eligible projects listed in Tables 7.1 through 7.3 would be funded at the current participating rate of 90% Federal and 10% Morrow County. Although the participating percentages have varied during the last 30 years, the rates generally remained 90% or higher for the Federal share of eligible projects. Eligible projects are primarily limited to needed airside improvement and some landside facilities justified under the national priority basis provided all needed airside facilities meet FAA standards. Currently the eligible projects under the FAA program including the amount of project participation have been listed in Tables 7.1, 7.2 and 7.3. Under the current federal ACIP program Morrow County would be entitled to receive $150,000 annually

2. Ohio Department of Transportation, Office of Aviation Funding
   The Ohio Office of Aviation administers an Ohio Airport Grant Program. Morrow County Airport would be eligible for project specific grants under this program. Eligible projects and available grants are ranked based on a statewide priority system and the Office of Aviation

[1] Department of Transportation, Federal Aviation Administration Airport Improvement Program (AIP) Handbook, Order 5100.38A

generally supports 80% of the actual construction cost only, with a maximum annual participation of $175,000. The Deputy Director or Administrator may increase the state share up to 100% in special cases. Airside maintenance projects are eligible for 80% State funds while airside capital improvement projects are eligible for only 50% State participation. The remaining 20% and 50% respective shares would be local shares not derived from other state funds.

The State funds are limited and are generally only available to maintenance type projects such as resurfacing or reconstruction of pavements, obstruction survey and removal, airport lighting and visual navigation aids, drainage improvements and communication equipment.

3. Private Development, Private Investment

Private onsite investments are encouraged to be undertaken by developers or tenants that have an interest in the success of the airport. Normally private capital is only available for projects that have a record of positive cash flow, such as medical evacuations, air taxi, fueling facilities, hangar construction and rental, flight training facilities, and engine and frame repair service facilities. Developers or entrepreneurs would finance construction of the needed facilities and pay rental or tenant fees for conducting the business ventures on airport owned property. If profitable for the developers, private investors can produce sufficient revenues to fund a substantial portion of the local share of other priority projects funded in part by the FAA or Ohio Office of Aviation. Examples of projects that can be funded by private investment are T-hangars, general aviation hangars, corporate hangars, and cargo and freight expediting facilities and services.

4. Other Available Funds

Other airport development funds are available from a variety of sources. The funds are available and issued to the borrowers as backed by the credit worthiness and the taxing power of the municipality operating the airport or by the potential revenues that a project can produce for repayment of debt. Special facility revenue bonds are normally also available for constructing facilities for a third party or tenant such as a maintenance hangar or air cargo facilities. Industrial development bonds and state infrastructure development bonds can be issued by Ohio or by Morrow County to fund the construction of an airport industrial park or similar facilities that will attract business and increase non-aeronautical leasing revenues at the airport. The airport will have available "non-obligated" airport land that could be used for such developments. It also appears that additional land would be available north and south of the existing airport under the land acquisition program listed in Tables 7.2 and 7.3 to expand the non-airport obligated land for light industrial or commercial development.

5. Morrow County Funds

Historically it has been difficult for Morrow County to finance not only capital improvements but also airport maintenance and operation projects. Even when Federal and State funds are available, the Morrow County Airport Budget has at times been unable to cover needed local matching grants or provide for in-time preventative maintenance work. At times, the airport was incorrectly perceived as a recreational facility only for the well to do and as a tax drain on the local economy. While many small general aviation airports are not financially self-sustaining, they are an important alternative transportation mode needed by local and non-local industry to conduct commerce. Regardless of the size, location and role of the general

aviation airport the responsibility to finance operations, maintenance and capital improvements depend directly on airport management.

The financial responsibility of this report is primarily limited to capital improvement projects and projects that would maintain the critically needed facilities to meet aviation demand now and during the planning period. Table 8.1 below is an attempt or alternative on how this task could be accomplished.

A review of Tables 7.1, 7.2 and 7.3 indicates considerable upfront expenditures of Federal, State and Morrow County Funds. If the current level of funding on the Federal and State level remains as is, then the Morrow County airside improvements could be accomplished entirely using the more attractive Airport Capital Improvement Program (Non Primary Entitlement Funds), Morrow County Airport Funds and Private Investment.

Table 8.1 however limits improvement expenditures to maintain critically needed airside and landside facilities only and recommends further improvement based only on aviation demand that is market driven. No capital improvements are recommended for implementation that are not supported by aviation demand and would not result in an overall positive cash flow.

The 20 year financial feasibility analysis centers only on maintenance improvements of existing facilities with consideration given to future development of the airport from a BI to BII ARC. Should additional local funds become available the Morrow County Administration could then also take advantage of the projected additional federal and state anticipated funds. For example the acquisition of approximately 90 acres of farmland could be considered a revenue source to cover the cost of future runway and taxiway extension or other landside critically needed facilities.

Table 8.1: Long-Term (20 Years) Capital Improvement Financial Plan 2013-2033

		Funding Participation				
Project Description	**Year**	**FAA Entitlement**	**ODOT/ OA**	**Morrow County**	**Private Investment**	**Total Cost**
Remove Obstructing Trees	2014		$8,0000	$2,000		$10,000
Supplemental Wind Cone	2014	$27,000		$3,000		$30,000
Acquire Private Hangar	2014	$0			$132,000	$132,000
Acquire Snow Removal Equipment	2015	$142,106		$15,789		$157,895
Resurface Partial Apron	2016		$52,000	$13,000		$157,895
Construct Automatic Weather Observation Station		$229,000		$21,000		$250,000
Crack Seal, Runway, Taxiway, Apron Pavement	2018		$32,000	$8,000		$40,000
Relocate Taxilane	2019	$27,000		$3,000		$30,000
Resurface Partial Taxiway		$180,000		$20,000		$200,000
Prepare Environmental Assessment	2020	$57,600		$6,400		$64,000
Crack Seal Runway, Taxiway, Apron & Taxilane Pavement	2022 2026		$32,000	$8,000		$40,000
Acquire Land, Approximately 35.5 Acres	2022	$251640		$27,960		$279,600
Obstruction Removal			$18,000	$2,000		$20,000
Acquire Land, Approximately 55 Acres	2024	$387,725		$43,025		$430,250
Obstruction Removal			$25,000	$6,250		$31,250
Resurface Runway, Taxiway, Apron and Taxilane Pavement	2029	$756,000		$84,000		$840,000
Update Airport Layout Plan	2020	$27,000		$3,000		$30,000
Update Environmental Assessment	2030	$18,000		$2,000		$20,000
Runway and Taxiway Widening, Design Only	2031	$86,400		$9,600		$96,000
Runway and Taxiway Widening, Construction	2032-2033	$876,240		$97,360		$973,600
Anticipated 20 Year Capital Improvements Total Cost Breakdown		$2,276,595	$231,000	$391,384	$132,000*	$2,898,979
Anticipated Available Funds		$3,000,000	$400,000	$391,384		$3,791,384
Anticipated Non-Allocated Funds from Public Sources						$892,405

* Private Investment is not included in the Total Cost as it involves an existing structure ownership transfer.

8.3 Review of Morrow County Airport Financial Structure

The Morrow County Airport is operated by an offsite business under the financial control of the Morrow County Administration who is responsible for the aviation needs. The Countyôs ability to support airport development, operation and maintenance is based on the likelihood of obtaining Federal and State of Ohio grants and upon the Countyôs willingness to appropriate money to fund a portion of the costs.

The potential revenue producing areas at the Morrow County Airport include the landing area, aircraft aprons, terminal building, parking and ground transportation, aircraft maintenance facilities and fixed base operator facilities. With limited activities at the airport, many of the described facilities will not produce revenues. Should a revenue-producing program be implemented such as tie down, parking and landing fees, the airport would not be able to sustain itself. Collecting tie down and landing fees at small general aviation airports generally results in reduced itinerant operations which has a domino effect on associated revenue producing services such as fuel sales, airframe and engine repair and travel and other expenses made in the community. At small general aviation airports, tie down, parking, and landing fees are not usually collected. That limits the County's ability for cost recovery to a compensatory and residual cost method.

1. The compensatory approach would allocate airport cost to cost centers and the rates and charges assigned to airport tenants based upon recovering costs in proportion to the use of its facilities and services. For the Morrow County Airport the cost centers are limited to the fixed base operation facilities capable of producing revenues such as fuel sales, engine and aircraft frame repair, hangar rental and lease agreements for airport facilities and agriculture or crop production.

2. A residual method of revenues would be to enter into agreements with the offsite fixed base operator and tenants to pay the net costs of operating, maintaining and providing the local share of the capital improvements.

The Morrow County Administration opted to employ a barter mechanisms for recovery of airport operating and maintaining costs. The fixed base operator provides all necessary services and sets rates and charges. The County in turn collects T-hangar rentals and enters into agreement with the fixed base operator to manage the airport and provide all necessary services for operating and maintaining the airport. The County also agrees to pay the net cost of capital improvements of airside facilities maintenance costs not covered from other sources. Because of a competing offsite operator, the airport has limited opportunities to increase revenues from airport user services. Currently the airport revenue sources are derived entirely from terminal area space rental, hangar rental and land lease.

8.4 Key Activities, Responsibilities, Including Documentation Guidelines

Table 8.1 schedules critically needed improvements that are anticipated during the 20 year planning period. For each needed project where federal or state funds are expected to participate there is currently at least a one year lead time from project application, approval, design bid phase, allocation of funds to construction start. Larger and complex projects which incorporate environmental concerns, land acquisition including relocation assistance will require additional lead-time. The project activities listed in Table 8.1 including the timing of actions to be taken by the Morrow County Administration may be helpful during the annual budget preparation.

Projects which require multi-year federal or state allocations to implement should as a minimum have the entire local share budgeted for the implementation period. It is also recommended that the public and other participating or interested agencies are kept informed of the project initiation planning and funding activities.

The scheduled activities in Table 8.1 addresses anticipated activities from airport maintenance to major developments and how to fund each improvement or project. While the activities financial plan includes available federal, state, private, and local funds, the plan does not address potential outside private development or any Morrow County Administration consideration of revenue bonds, general application bonds or industrial developments to enhance the local funds. Should the annual cash flow or available cash reserves fall short of the required local share the available bonds could be considered to supplement the local share on a cost benefit basis.

Chapter 9

9. Public Involvement

9.1 General

The Morrow County Airport Master Plan Study was initiated through a meeting with the nine-member Morrow County Airport Commission including the Morrow County Administration. It was decided that the public involvement in the planning process would be done on several levels.

1. News releases through locally widely circulated newspapers.

2. Airport Commission Meetings open to the public, where the Airport Master Plan process and progress is periodically reviewed with the Consultant.

3. Stakeholders are consulted and are provided with materials available throughout the planning process.

4. Stakeholders and the public are made aware of issues throughout the planning process and invited to participate in the planning process including the decision making process.

9.2 Process and Program Format

The study team consisting of the Morrow County Administrator, Airport Manager, Airport Commission, Stakeholders and the Consultant periodically conducted working sessions that reviewed the Master Planning process along with the practices and policies of the Morrow County A program format was established with input from the County Administration and Airport Commission. Along with the Commission Meetings, which are open to the public, dates, times and locations for information meetings were advertised and held jointly with Morrow County Commission Meetings.

For maximum exposure and public access, the Airport Commission Meetings were held in the Morrow County Airport Terminal Building Conference Room on regularly scheduled commission meetings and the remaining meetings were held during scheduled sessions for public participation.

At each of the scheduled meetings, informational material was prepared and distributed to all interested parties. The material was periodically updated and expanded with fact sheets, executive summaries and general information packets that not only revealed the progress of the study but also the findings and recommendations including input from the public.

9.3 Stakeholders of Morrow County Airport

1. Fishers Agricultural Services, the offsite (through the fence) based operator provides major and minor engine repair for fixed wing and rotary wing aircraft, fuel sales, hangar rental, general aircraft maintenance, ground transportation and comfort facilities for pilots and passengers, including air cargo, agricultural air service and flight training activities.

2. Airport Board, oversees the operations and general maintenance of all airport facilities. The Commission also oversees master planning processes and any safety and security issues including representing other stakeholders and the public interest. Other functions of the Board include advising the Morrow County Administration on issues and resolutions involving capital improvements and associated funding.

3. Morrow County Development Office is interested in providing convenient air access to existing industrial, commercial, medical and private users.

4. Ohio Department of Transportation, Office of Aviation, resource agency for providing financial assistance, operations safety and compliance reviews.

5. Federal Aviation Administration, Detroit Airport District Office, the District personnel along with its other Federal Aviation Offices provides a variety of critical services necessary for the safe and secure operations of the airport. The services include technical and financial assistance for planning, design and construction of airport facilities, master planning, periodic review of airport capital improvement and operation needs including pilot and air travel routing services and safety reviews.

9.4 Key Issues of Stakeholders

The Master Plan organizational meetings and preplanning meetings revealed several issues of primary concern affecting the airport. Of greatest importance were critical capital improvement issues that focused on runway length, taxiway and apron pavement rehabilitation, airfield drainage, runway edge and approach lighting, navigation aids, and general airfield maintenance.

Other issues centered on land use, land lease, land acquisition, hangar needs, landing fees, obstruction removal and the future role of the airport. Environmental issues normally associated with airport operations or improvements were not a significant concern. One key issue related to potential future or ultimate build-out of the airport is a strong desire by the Sponsor to make sufficient land available for runway and taxiway extension, approach surface protection and airport development. The potential major land acquisition did not appear to be a negative concern to adjoining property owners or to the public in general.

Details and documentations of the Public Involvement Programs are attached to the Appendix.

GLOSSARY

Access Road. The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public highway.

AGL (Above Ground Level). Altitude expressed as feet above terrain or airport elevation (*see MSL*).

AIP (Airport Improvement Program). A grant-in-aid program, administered by the Federal Aviation Administration.

Aircraft Approach Category: A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certificated landing weight.

Airplane Design Group (ADG): A grouping of airplanes based on wingspan or tail height. Where an airplane is in two categories, the most demanding category should be used.

Airport Elevation: The highest point on an airport's usable runway expressed in feet above mean sea level (MSL).

Airport Layout Plan (ALP): The plan of an airport showing the layout of existing and proposed airport facilities.

Airport Reference Point (ARP): The latitude and longitude of the approximate center of the airport.

Apron. An area on the airport designated for the parking, loading, fueling or servicing of aircraft.

ASV (Annual Service Volume). The maximum number of operations per year an airport can service.

ATC (Air Traffic Control). The FAA service providing separation services to participating airborne traffic and clearances to land, takeoff or taxi at airports with a control tower.

Avigation Easement. A form of legal land-use control restricting incompatible development of areas required for airport or aviation related activities.

AWOS (Automated Weather Observation System). Provides automated Airport weather observations to pilots on a discrete radio frequency via a compute-generated voice. Less sophisticated than ASOS.

Based Aircraft. Aircraft stationed at the airport on a permanent basis.

Blast Fence: A barrier used to divert or dissipate jet blast or propeller wash.

Building Restriction Line (BRL): A line which identifies suitable building area locations on airports.

Clear Zone: See Runway Protection Zone.

Clearway (CWY): A defined rectangular area beyond the end of a runway cleared or suitable for use in lieu of runway to satisfy takeoff distance requirements.

Compass Calibration Pad: An airport facility used for calibrating an aircraft compass.

Critical Aircraft. The user aircraft that requires the most elaborate facilities at an airport; the aircraft for which the airport facilities are designed to accommodate.

CTAF (Common Traffic Advisory Frequency). The radio frequency, also called the *UNICOM* frequency, used by all traffic at an airport without an operating control tower to coordinate approaches and landings, takeoffs and departures. Pilots announce their positions, intentions and actions in the *traffic pattern* for the benefit of other traffic.

dB (Decibel). A unit of measurement used for defining a noise level or an exposure level. The number of decibels is calculated as ten times the base-10 logarithm of a ratio of mean-square pressure or noise exposure.

Declared Distances: The distances the airport owner declares available for the airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

> **Takeoff run available (TORA):** The runway length declared available and suitable for the ground run of an airplane taking off.
>
> **Takeoff distance available (TODA):** The TORA plus the length of any remaining runway or clearway (CWY) beyond the far end of the TORA;
>
> **Accelerate-stop distance available (ASDA):** The runway plus stopway (SWY) length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff: and
>
> **Landing distance available (LDA):** The runway length declared available and suitable for a landing airplane.

Displaced Threshold. The section of pavement behind a displaced threshold that may be available for takeoffs in either direction and landings from the opposite direction.

DOT. U.S. Department of Transportation.

FAA (Federal Aviation Administration). The U.S. Department of Transportation's Agency for aviation. In addition to regulating airports, aircraft manufacturing and parts certification, aircraft operation and pilot certification ("licensing"), the FAA operates air traffic control, purchases and maintains navigation equipment, certifies airports and aides airport development among other

activities.

FAR (Federal Aviation Regulations). Commonly used term for the rules and regulations covering every aspect of aviation. Codified into "Parts".

FBO (Fixed Base Operator). An airport-based business which parks, services, fuels and may repair aircraft; often rents aircraft and provides flight training. The term was coined to differentiate FBO's from businesses or individuals without an established place of business at the airport.

Fixed by Function NAVAID: An air navigation aid (NAVAID) that must be positioned in a particular location in order to provide an essential benefit for civil aviation is fixed by function. Exceptions are:

a.). Equipment shelters, junction boxes, transformers, and other appurtenances that support a fixed by function NAVAID are not fixed by function unless operational requirements require them to be located in close proximity to the NAVAID.

b.) Some NAVAIDs, such as localizers, can provide beneficial performance even when they are not located at heir optimal location. These NAVAIDS are not fixed by function.

Frangible NAVAID: A navigational aid (NAVAID) which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft. The term NAVAID includes electrical and visual air navigational aids, lights, signs, and associated supporting equipment.

GA (General Aviation). The 92% of U.S. Aircraft and more than 65% of U.S. Flight hours flown by other than major and regional airlines or the military. Often misunderstood as only small, propeller-driven aircraft. Even large jet or cargo planes operated under FAR Part 91 can be general aviation.

GPS (Global Positioning System). Satellite-based navigation system operated by Department of Defense, providing extremely accurate position, time, and speed information to civilian and military users. Based on a "constellation" of 24 satellites, GPS will replace ground-based navigation systems *(VOR, ILS)* as the primary worldwide air navigation system in the 21st century.

Hazard to Air Navigation: An object which, as a result of an aeronautical study, the FAA determines will have a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft, operation of air navigation facilities, or existing or potential airport capacity.

IFR (Instrument Flight Rules). Rules of the road for flights permitted to penetrate clouds and low visibility conditions by reference to cockpit, flight instruments and radio navigation. Aircraft must be equipped and pilots qualified and current for *IFR* flight. Flight plans and *ATC* clearances are required. Flights are monitored and traffic separated by Air Traffic Control, usually by radar.

ILS (Instrument Landing System). A precision instrument approach system utilizing radio transmitters at the runway ends which provide descent and course guidance to the runway permitting aircraft to land during periods of low ceilings or poor visibility.

INM (Integrated Noise Model). The FAA's standard methodology since 1978 for noise assessments. INM is a computer program used by over 700 organizations in over 50 countries to access changes in noise impacts resulting from a variety of airport improvements.

Instrument Runway. An authorized runway approach end that provides instrument approach procedure.

Itinerant Operations. All other arrivals and departures not covered in the *local operations* description.

KNOT (Nautical mile per hour). Most common measure of aircraft speed. 100 knots equals 115 statute miles per hour. (For mph, multiply knots by 1.15).

Large Airplane: An airplane of more than 12,500 pounds (5,700 kg) maximum certificated takeoff weight.

Local Operations. Arrivals and departures of aircraft which operate in the local traffic pattern or within sight of the tower and are known to be departing for or arriving from flights in local practice areas within a 20 mile radius of the airport and/or control tower. Plus simulated instrument approaches or low passes at the airport executed by any aircraft. (FAA/AC 150/5070-6A).

Low Impact Resistant Supports (LIRS): Supports designed to resist operational and environmental static loads and fail when subjected to a shock load such as that from a colliding aircraft.

MSL (Mean Seal Level). Altitude expressed as feet above sea level, rather than above local terrain (*AGL*) to ignore varying terrain elevations, all navigational altitudes and barometric altimeters are based on height above mean sea level. Only radar altimeters, which measure the distance between the aircraft and the ground at low altitudes indicate actual heights above the ground.

Nautical Mile. Most common distance measurement in aviation, equivalent to 1.15 statute (standard U.S.) miles.

NAVAID (Navigational Aid). Examples include REIL, VASI, PAPI, VOR, Rotating Beacons, etc.

NPIAS (National Plan of Integrated Airport Systems). Prepared by the FAA and updated and published every two years, identifies public use airports considered necessary to provide a safe, efficient, and integrated national system of airports that meets the needs of civil aviation, national defense, and the postal service. Field formulation of the NPIAS can be found in FAA Order 5090.3C.

Noise Contour. A line connecting equal points of noise exposure. Usually color coded by decibels.

Non-Precision Approach. Provides course guidance without vertical path guidance.

Non-Towered Airport. An airport without a control tower - the majority of America's 13,000

airports. Only 680 Airports have control towers. Non-towered airports are far from being "uncontrolled". Pilots follow *Traffic pattern* procedures and self-announce positions and intentions using the *Common Traffic Advisory Frequency (CTAF)*, usually called the *UNICOM* frequency.

Object: Includes, but is not limited to above ground structures, NAVAIDs, people, equipment, vehicles, natural growth, terrain and parked aircraft.

Object Free Area (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

Obstacle Clearance Surface (OCS): An inclined obstacle evaluation surface associated with a glidepath. The separation between this surface and the glidepath angle at any given distance from GPI defines the MIMIMUM required obstruction clearance at that point.

Obstacle Free Zone (OFZ): The OFZ is the airspace below 150 feet (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway, and for missed approaches. The OFZ is sub-divided as follows:

> **Runway OFZ:** The airspace above a surface centered on the runway centerline.
>
> **Inner-approach OFZ:** The airspace above a surface centered on the extended runway centerline. It applies to runways with an approach lighting system.
>
> **Inner-transitional OFZ:** The airspace above the surfaces located on the outer edges of the runway OFZ and the inner0approach OFZ. It applies to runways with approach visibility minimums lower than $^{3}/_{4}$-statute mile (1200m).

Obstruction to Air Navigation: An object of greater height than any of the height than any of the heights or surfaces presented in Subpart C of Code of Federal Regulation (14 CFR), Part 77. (Obstructions to air navigation are presumed to be hazards to air navigation until FAA study has determined otherwise.)

Operation. Either a takeoff or landing at an airport. *Touch-and-go* operations are considered two operations.

Part 91, 121, 125, 135. The parts of Federal Aviation Regulations (FAR's) covering non-commercial operations (*Part 91*), major scheduled air carriers (*Part 121)*, commuters (*Part 125*), non-scheduled carriers and air taxis (*Part 135*).

Peak Hour. Represents the highest number of operations during the busiest hour of an average day of a peak month.

Precision Approach. Provides course guidance and vertical path guidance conforming to *ICAO* performance standards.

Rotating Beacon. A visual *NAVAID* displaying alternating white and/or colored light to identify the location and type of the airport.

Runway (RW): A defined rectangular surface on an airport prepared or suitable for the landing or takeoff of airplanes.

Runway Blast Pad: A surface adjacent to the ends of runways provided to reduce the erosive effect of jet blast and propeller wash.

Runway Protection Zone (RPZ): An area beyond the runway end to enhance the protection of people and property on the ground.

Runway Safety Area (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Shoulder: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection.

Socioeconomic. Information dealing with population or economic characteristics of a region.

Small Airplane: An airplane of 12,500 pounds (5,700kg) or less maximum certificated takeoff weight.

Stopway (SWY): A defined rectangular surface beyond the end of a runway prepared or suitable for use in lieu of runway to support an airplane, without causing structural damage to the airplane, during an aborted takeoff.

Student Pilot. A pilot who is training for a private pilot certificate, either before or after the first solo. A student must obtain a third class medical certificate through an examination by an FAA-designated aviation medical examiner before being allowed to fly solo in a powered aircraft. The medical certificate for a student pilot has a student "license" printed on the back.

Taxilane (TL): The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

Taxiway (TW): A defined path established for the taxiing of aircraft from one part of an airport to another.

Taxiway Safety Area (TSA): A defines surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

Threshold (TH): The beginning of the portion of the runway available for landing. N some instances, the landing threshold may be displaced.

> **Displaced Threshold:** The portion of pavement behind a displaced threshold may be available for takeoffs in either direction and landings from the opposite direction.

Relocated Threshold: The portion of pavement behind a relocated threshold is not available for takeoff or landing. It may be available for taxiing of aircraft.

Touch-and-Go. A flight operation that beings with level flight in the "traffic pattern", descends and lands on the runway, and then takes off immediately after landing and returns to level flight.

Traffic Pattern. A standard rectangular flight pattern around the landing runway at an airport. Includes 45-degrees or crosswind entry to the rectangle, with downwind, base and final legs as sides of the rectangle. Standard 90-degree left turns around the rectangle (non-standard right-hand traffic pattern is noted in Airport Facility Directories) with downwind flown at a specific altitude, usually 1,000 or 1,500 feet above the airport elevation. At airports with a control tower; the pattern may be modified or short-cut according to *ATC* instructions.

Turboprop. An airplane using a turboprop engine, a jet rather than piston engine connected to a propeller. Such aircraft can be single or multi-engine. Turboprop engines are increasingly used when more horsepower is needed for speed or payload than the 300-400 horsepower available from current light-aircraft piston engines.

Unicom. A common, multi-purpose frequency used at most *non-towered airports* as the *Common Traffic Advisory Frequency*. AOPA coined the term (derived from the words "universal communications) in the 1950's. UNICOM is also used by a *Fixed Base Operator* for general administrative uses, including fuel orders, parking instructions, etc. Originally 122.8 MHz universally, now includes 122.7, 123.90 and other frequencies.

VFR (Visual Flight Rules). A defined set of FAA regulations and "rules of the road" covering operation of aircraft primarily by visual reference to the horizon (for aircraft control) and see-and-avoid procedures (for traffic separation). VFR is used by more than 70% of all flights; it is not, by definition, uncontrolled or out of control.

Visual Runway: A runway without an existing or planned straight-in instrument approach procedure.

VOR (VHF Omnidirectional Range). Ground-based radio navigation aid. More than 1,000 VOR electronically defined Vector Airways and Jet Airways, "Highways in the sky". Most IFR and many VFR flights follow airway routes.

Wind Cone or Wind Sock. Conical wind direction indicator.

Wind Rose. A circular detail indicating the direction and percentages of the prevailing winds for a specific area.

Wind Tee. A visual device in the shape of a "T" used to determine wind direction.

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FAA Order 5050-4A (Airport Environmental Handbook) 10/08/85

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MORROW COUNTY AIRPORT

GENERAL AVIATION

Ohio's Airport System

Ohio's participation in the growing, global economy depends upon a variety of factors. One of the most important is having access to a transportation system that promotes safe, efficient, and rapid movement of people and goods. To ensure that the Ohio airport system continues to serve as an integral connection between Ohio businesses and residents and the ever-expanding global economy, the Ohio Department of Transportation (ODOT) recently completed a statewide airport system plan (SASP) to provide general guidance on airport improvements and to help insure the system of airports is developed in a manner that best serves the State's residents.

The Ohio State Airport System consists of 105 public use airports which include 104 public owned facilities and Airborne Airpark. These airports range from small, low-activity general aviation airports, to large commercial service and air cargo facilities. These airports fulfill a variety of roles that enable Ohioans to access all levels of the national air transportation system. Data indicates that the Ohio's public-use airports accommodate more than 4.0 million aircraft operations and are home to nearly 7,200 based aircraft. By 2014, activity is projected to increase to 4.6 million operations and more than 7,600 based aircraft. While Ohio's system of airports is relatively well positioned to meet the ever-changing local, national, and global transportation needs, various improvements were recommended in order to insure that Ohio maintains its' position at the forefront of aviation. Key components of the SASP for your community's airport are highlighted in this brochure.

Aviation's Economic Benefit to Ohio

Ohio's 105 State System Plan airports provide the State with more than a safe and efficient mode of transportation. This system of airports is also an important stimulus for economic growth and development. Airports are used not only by the State's largest employers, but by a wide variety of growing businesses and industries. In addition, aviation-related businesses located on airports create thousands of jobs and produce billions of dollars of economic impact. The SASP quantified the total economic impact of each airport in the Ohio system. Through a comprehensive survey process, the direct economic benefits related to on-airport business tenants and the indirect benefits associated with visitor-related expenditures were determined for each system airport. The multiplier effect of these benefits was then calculated to ascertain the total airport-related impacts. The total economic impact is the sum of all direct, indirect, and multiplier impacts.

When all impacts at Ohio airports were summed, nearly 142,850 jobs can be traced to aviation. These employees receive nearly $3.2 billion in payroll and benefits. In total, nearly $10.5 billion in economic activity can be attributed to aviation activity in the State. This number represents a 38 percent increase since the last statewide economic impact study was prepared in 1995. In addition to economic benefits, the system of airports provides numerous critical services to enhance the quality of life, health, safety, and welfare of Ohio citizens. Examples include business development, medical transport and evacuation, access to rural areas, law enforcement, fire protection, wildlife management, and recreation. In addition, a survey of statewide businesses indicated that proximity to a commercial service airport ranked 4th and proximity to a general aviation airport ranked 9th in their siting decisions when expanding or relocating.

AIRPORTS IN OHIO CREATE:

	Air Carrier Airports	General Aviation Airports	All Systems Airports
Total Employment	125,500	17,350	142,850
Total Payroll	$2.7 Billion	$498,018,900	$3.2 Billion
Total Economic Impact	$8.8 Billion	$1.6 Billion	$10.5 Billion

MORROW COUNTY AIRPORT

Morrow County Airport, owned by the Morrow County Airport Authority, is located in Mount Gilead, Ohio. Major facilities at the airport include a 3,497-foot long runway (Runway 10/28) with a partial parallel taxiway, non-precision approaches, a fixed base operator, and fuel (Jet-A and AvGas). Morrow County Airport supports business and recreational operations by light twin- and single-engine aircraft.

Morrow County Airport contributes to the local community and the economy in a variety of ways. The airport supports one on-airport business, Fisher's Agricultural Service. The most common activities carried out at the airport are agricultural spraying, flight instruction, and recreational flying.

Aviation Services

Aircraft Rental	Aircraft Repair	100LL Fuel
Flight Instruction	Crop Dusting	Jet-A Fuel
Aircraft Storage		

Aviation Activities & Facilities

Based Aircraft	22
Operations	19,108
Primary runway	Runway 10/28
Dimensions	3,497' x 65'
Taxiway	Partial parallel
Approach	Non-precision

Morrow County Airport's Economic Impact

The aviation businesses, on-airport construction, visitors arriving to the area via the airport, and the associated multiplier impacts create approximately 33 jobs, with an estimated total payroll of $475,500. The total output or economic activity is estimated at $835,500.

IMPACTS

First Round Impacts include both direct and indirect impacts. Direct impacts are those benefits associated with on-airport business and government tenants. Indirect impacts generally take place off-airport and are usually attributable to the spending of visitors who arrive in a community via general aviation aircraft.

Second Round Impacts primarily consist of induced impacts, which are those benefits that result from the re-circulation of direct and indirect impacts within the economy. This re-circulation is commonly referred to as the "multiplier effect".

IMPACT MEASURES

Employment measures the number of full-time equivalent jobs related to aviation activity including on-airport construction.

Payroll measures the total annual wages and benefits paid to all workers whose salaries are directly or indirectly attributable to general aviation activity.

Total Economic Activity measures the value of all goods and services related to general aviation in Ohio. The output of general aviation businesses is typically assumed to be the sum of annual gross sales and average annual capital expenditures.

Ohio's Airport System Facts

84 of Ohio's 88 counties have publicly-owned airports.

Ohio's public-use airports are home to nearly 7,200 aircraft.

Annually, Ohio's public-use airports accomodate more than 4.0 million aircraft operations.

More than 90% of Ohio's system airports feature an instrument approach. Precision approaches can be found at 20 of the system airports.

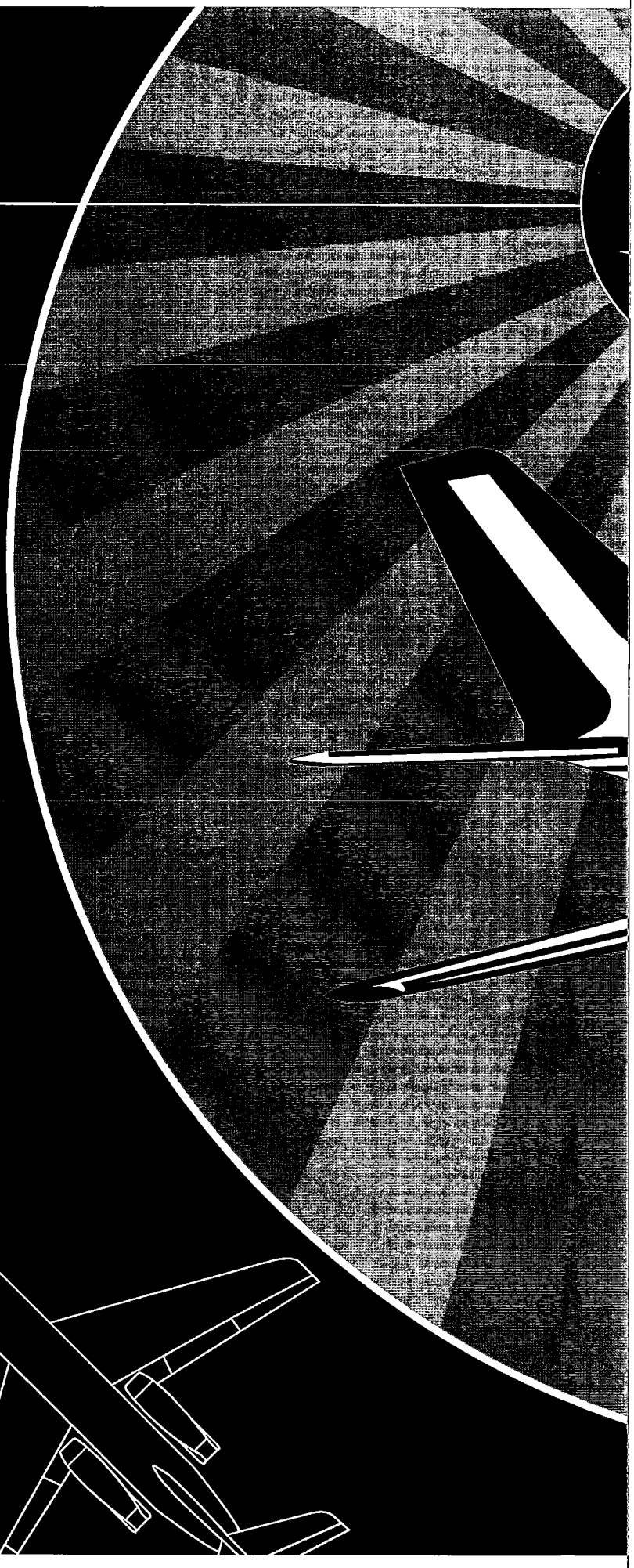
If laid end-to-end, Ohio's primary runways at the 105 system airports would stretch more than 96 miles.

According to FAA records, there are nearly 17,450 pilots in Ohio. Approximately 8,900 of these pilots also possess instrument ratings.

Ohio's six commercial service airports enplaned more than 11.2 million passengers.

Ohio's six commercial service airports contribute $8.8 billion and 125,500 jobs to the State's economy.

The 100 general aviation airports in the State system generate $1.6 billion in total economic impact and create 17,350 jobs.



STATE OF OHIO DEPARTMENT OF TRANSPORTATION

614-387-2352
www.dot.state.oh.us/aviation

Wilbur Smith Associates

Prepared by: Wilbur Smith Associates
www.wilbursmith.com

MORROW COUNTY AIRPORT - 4I9 - MOUNT GILEAD, OHIO
AIRPORT SURVEY

This brief survey is being conducted to provide planning information for use in a Master Plan Study for the Morrow County Airport. The Master Plan Study will identify current and potential future needs for the Airport. The purpose of this survey is to gather information about the activities or potential activities at the Airport. Your response will be held in confidence and will be used for airport planning purposes only. Your assistance is greatly appreciated.

RESPONDENT INFORMATION (OPTIONAL)

Company/User Name:	City/State/Zip Code:
Address:	Phone:

AIRCRAFT INFORMATION

AIRCRAFT INFORMATION - Please provide the following information for the aircraft you own or operate and use or wish to use at the Morrow County Airport. Include the aircraft which you plan to purchase through 2028. Attach additional sheets if needed.

	Aircraft #1	Aircraft #2
"N" Number:		
Make and Model:		
Estimated Annual Operations 2008:		
Estimated Annual Operations 2018:		
Estimated Annual Operations 2028:		
Average Trip Length (Miles):		
Minimum Required Runway Length:		
Is the Aircraft Owned/Leased:		
Airport where Aircraft is currently based:		

AREA AIRPORTS

Do you or your company presently use other airports or do business with other companies that use other airports when traveling to destinations in the Morrow County area?

If so, please identify that airport and briefly indicate the reason for using it rather than the Morrow County Airport.

IMPROVEMENTS - Consideration is being given to improvements of the airport. Please rank specific improvements you would recommend at the airport based upon your needs at the facility, with 1 being the most important.

Airfield Lighting		Repair Services	
Navigation Aides (Specify)		Restaurant	
Instrument Approaches (Specify)		Conference Room	
Runway/Taxiway Pavement		Internet Access	
Apron/Tie Downs		Security Fencing	
Vehicle Parking		Other (Specify)	
Fuel Facilities		Other (Specify)	
Hangar Facilities		Other (Specify)	

PURPOSE - Specify the percentage of times you fly or would potentially fly for the following reasons:

Business	%	Flight Training	%
Fuel/Maintenance	%	Recreation	%
Emergency/Medical	%	Other (Specify)	%

SUPPLIERS, CLIENTS & CUSTOMERS

Do you or your company do business with other companies which fly their aircraft into the Morrow County Airport?

If so, please indicate the types of aircraft (and/or the company, etc. owning the aircraft) and number of annual visits each aircraft makes to the airport.

	Aircraft #1	Aircraft #2
Company Name:		
"N" Number:		
Make and Model:		
Estimated Annual Operations 2008:		

COMPLETED AIRPORT SURVEY - When completed, please return the Airport Survey to:

Richland Engineering Limited
29 N. Park St.
Mansfield, Ohio 44902

Please contact Richland Engineering Limited with any questions or comments. Thank you for your assistance.

Phone (419) 524-0074
Fax (419) 524-1812
Email reltd@r-e-l.com

109012

Ohio Department of Natural Resources

TED STRICKLAND, GOVERNOR

SEAN D. LOGAN, DIRECTOR

Division of Natural Areas and Preserves
Steven D. Maurer, Chief
2045 Morse Rd., Bldg. F-1
Columbus, OH 43229-6693
Phone: (614) 265-6453; Fax: (614) 267-3096

June 29, 2009

Kelsey Keller
Richland Engineering Ltd.
29 N. Park St.
Mansfield, OH 44902

Dear Ms. Keller:

After reviewing our Natural Heritage maps and files, I find the Division of Natural Areas and Preserves has no records of rare or endangered species in the Morrow County Airport Master Plan project area, including a one mile radius, at 4679 Twp. Rd. 126 in Gilead and Cardington Townships, Morrow County, and on the Mount Gilead Quad (109012).

There are no state nature preserves or scenic rivers at the project site. We are also unaware of any unique ecological sites, geologic features, animal assemblages, state parks, state forests or state wildlife areas within a one mile radius of the project area.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although we inventory all types of plant communities, we only maintain records on the highest quality areas.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woischke, Ecological Analyst
Natural Heritage Program

JUL - 1 2009

cc: KK / JKerr

109012

Subject: 09-0218; Morrow County Airport Master Plan Study
From: "Mitch, Brian" <Brian.Mitch@dnr.state.oh.us>
Date: Tue, 21 Jul 2009 16:00:34 -0400
To: <kkeller@r-e-l.com>

ODNR COMMENTS TO Kelsey M. Keller, Richland Engineering Limited, 29 North Park Street, Mansfield, Ohio, 44902-1769

Location: The site is located in Section 10, Gilead Township, Morrow County, Mount Gilead Quadrangle.

Project: The proposed project consists of the master planning study for the Morrow County Airport.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Rare and Endangered Species: The ODNR, Division of Natural Areas and Preserves, Natural Heritage Database contains no records of rare species or unique natural features within the proposed projects and there are no state nature preserves, state parks, wildlife areas, or scenic rivers in the vicinity of the sites.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although we inventory all types of plant communities, we only maintain records on the highest quality areas.

Fish and Wildlife: The ODNR, Division of Wildlife (DOW) has the following comments.

The airport is within the range of the Indiana bat (*Myotis sodalis*), a state and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees: Shagbark hickory (*Carya ovata*), Shellbark hickory (*Carya laciniosa*), Bitternut hickory (*Carya cordiformis),* Black ash (*Fraxinus nigra*), Green ash (*Fraxinus pennsylvanica*), White ash (*Fraxinus americana*), Shingle oak (*Quercus imbricaria*), Northern red oak (*Quercus rubra*), Slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), Eastern cottonwood (Populus deltoides), Silver maple (*Acer saccharinum*), Sassafras (*Sassafras albidum*), Post oak (*Quercus stellata*), and White oak (*Quercus alba*). Indiana bat habitat consists of suitable trees that include dead and dying trees of the species listed above with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees of the species listed above with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. If suitable trees occur within any area to be impacted, these trees must be conserved. If suitable habitat occurs on a project area and trees must be cut, cutting must occur between September 30 and April 1. If suitable trees must be cut during the summer months of April 2 to September 29, a net survey must be conducted in May or June prior to cutting. If no tree removal is necessary for any updates to the airport, the project would not likely impact this species.

The airport is within the range of the bald eagle (*Haliaeetus leucocephalus*), a state threatened species. The location of bald eagle activity frequently changes. Therefore, when close to the actual date of any construction, the applicant must obtain an updated status of bald eagle activity in the area. To obtain any changes in status, contact Andrea Tibbels or Dave

Sherman at the Ohio Department of Natural Resources, Division of Wildlife, Crane Creek Wildlife Research Station, for current information on the presence of bald eagles in the area. Andrea can be reached at (419) 898-0960 extension 25 and Dave at extension 24. If a nest is located within ½ mile of the project site, coordination with the DOW is required.

The airport is within the range of the purplish copper (*Lycaena helloides*), a state endangered butterfly. Due to the habitat used by this species, a project in this area is not likely to impact this species.

Parks and Recreation: The ODNR, Division of Parks and Recreation offers no comment on this project since by the information provided it does not appear to affect any of the division's lands and/or waters.

ODNR appreciates the opportunity to provide these comments. Please contact Brian Mitch at (614) 265-6378 if you have questions about these comments or need additional information.

Brian Mitch, Environmental Review Manager
Ohio Department of Natural Resources
Environmental Services Section
2045 Morse Road, Building D-3
Columbus, Ohio 43229-6693
Office: (614) 265-6378
FAX: (614) 267-4764
brian.mitch@dnr.state.oh.us

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Morrow County Airport Master Plan: The Master Plan Process

3/17/2009 Airport Terminal Building

1. Introduction: The First Steps and Purpose of a Master Plan

1.1 The Purpose of an Airport Master Plan

- Assess the existing facilities of the airport
- Develop short-term and long-term goals and strategies for the development of the airport to meet aviation demand.

1.2 Who is involved in the Master Plan Process?

- The Morrow County Airport Authority
- The Airport Master Plan Advisory Committee (TBD)
- The Consultant – Richland Engineering Ltd
- The Federal Aviation Administration (FAA
- Please see attached "List of Interested Parties"

1.3 Pre-Planning Tasks (Completed)

- Initial Needs Determination (Completed)
- Request for Proposal and Consultant Selection (Completed)
- Development of Study Design (Completed)
- Negotiation of Consultant Contract (Completed)
- Application for Study Funding (Completed)

1.4 Public Involvement

- Establish a public involvement program (meetings, surveys, etc.) early in the planning process
- Determine the stakeholders (users, public officials, residents, general public)

1.5 Environmental Considerations

- Establish a clear understanding of the environmental requirements needed to move forward with each project in the recommended development program

2. Elements of a Master Plan

2.1 Existing Conditions

- History and background of the airport
- Inventory and description of the existing facilitie
- Current financial situation

2.2 Aviation Forecasts

- Forecasts of aeronautical demand for short-, medium-, and long-term time frames
- Number of operations and aircraft type
- Use historical data to predict future operations

2.3 Facility Requirements

- Assess existing airport (landside and airside) to support the forecast demand
- Identify demand levels that will trigger the need for improvements
- Estimate extent of new facilities that may be required to meet that demand

2.4 Alternatives Development and Evaluation

- Identify options to meet projected facility requirements and alternative configurations for each major component
- Evaluate the alternatives using a wide range of criteria, including operational, environmental, and financial impacts.
- A recommended alternative should emerge.

2.5 Airport Layout Plans

- Set of drawings that shows the long-term development plans for the airport

2.6 Facilities Implementation Plan

- Describes the recommended improvements and their associated costs

2.7 Financial Feasibility Analysis

- Identify the financial plan for the airport
- Describe how the projects will be financed
- Demonstrate the feasibility of the program

3. Conclusion: The Next Steps

3.1 What we need from you

- Establish a Technical Advisory Committee

Joe Cook will assemble.

- Operations logs

Operations log sheets have been placed at the terminal building and at FBO.

- Historical data

None is available. REL will research/compile.

- Input from stakeholders (airport management, fixed-base operators, tenants, aircraft owners/pilots)
- Based aircraft list
- Responsibilities of the Airport Authority

Maintenance of facilities

- Services provided by the FBO

Fuel sales, snow removal, NOTAMs, frame and engine repair, aircraft annual inspections.

- Airport Business Model
- Operating Revenue and Expenses

Commissioners used to allocated $10,000/yr to airport, then reduced to $5,000, now $0 due to County financial hardships.
Airport Authority receives hangar rental and $100/month from GeoShack for GPS ground station equipment mounted on terminal building.

Red and white hangars – Airport Authority purchasing hangars from Whetstone Flyers.

- Document letters from users who wish to use the airport but cannot due to inadequate facilties

Will get letter from Daryl Lanker, Mid-Ohio Resources. Owns Eclipse that is based at the airport. Limited operations due to inadequate runway length.

3.2 Questions for you

- What role will the airport play in the community in over the next 20 years?
- What facilities will be needed to accomplish this?
- What facilities are needed to improve efficiency and safety?
- What social, economic, and/or environmental issues do you foresee if major airport upgrading is undertaken?

Input from Airport Authority

- *Could attract some local industry that could use the airport. Runway extension is needed. Runway marking is in poor shape. Currently charge $125/month for hangar. 2 industrial parks in Morrow Co. Empty; ready to go. Near 71 interchanges. Platted and utilities are there.*

- *Would like to see more fly-ins, more public involvement. Wants more people to be aware of and involved with the airport.*

- *Longer runway would encourage more corporate users. Used to sell jet fuel, barely sold any. Now just AvGas. Fuel is not self-service.*

- *We need to maintain/repair what we have now, and develop the airport as the need arises. Rising costs of aircraft and fuel have deterred many from flying in recent years.*

- *Cummins Airfield Solutions. Airport Authority has hired to assist with maintenance, particularly lighting/electrical. Major maintenance issues with lights. Freeze/thaw cycle causes the plugs to pull apart and short. 25% +- of lights are not functional. The plugs have poor connections. Crouse-Hines fixtures. Seems to be defect of equipment. Knox Electric was the contractor. Consider improving drainage in the future by installing underdrains for the runway and a storm sewer system to lower the water table. This would help the lights and also the pavement.*

Morrow County Airport Authority Meeting
Sign In Sheet

Date: 3/17/09 **Time:** 7:00PM

Name	Affiliation	Address	Phone	Email
Hermona Schwaner	REL	29 N. Park St. Mansfield, OH 44902	419-524-0074	hschwaner@r-e-l.com
Kelsy Keller	REL	"	"	kkeller@r-e-l.com
Brian Cummins	CAS	3054 Likens Rd. Marion, OH 43302	740-341-4538	cumminsairfieldservices@gmail.co
Joseph Cook	AIRPORT BOARD	4575 SR 95 MT GILEAD, O		
Butch Fisher	MANAGER	4579 TR 124 Guidingtown Rd	419-947-1833	Fisher48@RedBird.Net
Rick Jenkins	Board Member	6521 Co Rd 191 Marengo	419-768-3821	
DAVID EDWARDS	" "	3557 Twp Rd 145 MT. GILEAD, OH 43338	419-560-0760	dedwards@co-opgas.com

Morrow County Airport Master Plan

1. Introduction: The First Steps and Purpose of a Master Plan

1.1 The Purpose of an Airport Master Plan and Advisory Committee

- Federal Aviation Administration (FAA) requires Master Plan every 20 years. The last Plan was in 1988.
- Assess the existing facilities of the airport
- Develop short-term and long-term goals and strategies for the development of the airport to meet aviation demand
- Advisory Committee – provide input and weigh the recommendations against community goals, values and needs

1.2 Who is involved in the Master Plan Process?

- The Morrow County Airport Authority / Morrow County Commissioners
- The Airport Master Plan Advisory Committee
- The Consultant – Richland Engineering Ltd
- The Federal Aviation Administration (FAA)

1.3 Pre-Planning Tasks (Completed)

- Initial Needs Determination, development of study design, and approval of FAA grant (completed)

1.4 Public Involvement

- Establish a public involvement program (meetings, surveys, etc.) early in the planning process
- Determine the stakeholders (users, public officials, residents, general public)

1.5 Environmental Considerations

- Establish a clear understanding of the environmental requirements needed to move forward with each project in the recommended development program

2. Elements of a Master Plan

2.1 Existing Conditions

- History and background of the airport
- Inventory and description of the existing facilities

2.2 Aviation Forecasts

- Forecasts of aeronautical demand for short-, medium-, and long-term time frames
- Number of operations and aircraft type
- Use historical data to predict future operations

2.3 Facility Requirements

- Assess existing airport (landside and airside) to support the forecast demand
- Identify demand levels that will trigger the need for improvements
- Estimate extent of new facilities that may be required to meet that demand

2.4 Alternatives Development and Evaluation

- Identify options to meet projected facility requirements and alternative configurations for each major component
- Evaluate the alternatives using a wide range of criteria, including operational, environmental, and financial impacts.
- A recommended alternative should emerge.

2.5 Airport Layout Plans

- Set of drawings that shows the long-term development plans for the airport

2.6 Facilities Implementation Plan

- Describes the recommended improvements and their associated costs

2.7 Financial Feasibility Analysis

- Identify the financial plan for the airport
- Describe how the projects will be financed
- Demonstrate the feasibility of the program

3. Conclusion: The Next Steps

3.1 What we need from you

- Input from stakeholders (airport management, fixed-base operators, tenants, aircraft owners/pilots, Advisory Committee members)
- Document letters from users who wish to use the airport but cannot due to inadequate facilities
- Potential users/business contacts

3.2 Questions for you

- What role will the airport play in the community in over the next 20 years?
- What facilities will be needed to accomplish this?
- What facilities are needed to improve efficiency and safety?
- What social, economic, and/or environmental issues do you foresee if major airport upgrading is undertaken?

Key Individuals for the Preparation of the Morrow County Airport Master Plan Report

Morrow County Airport Authority
- Joseph Cook, President

Morrow County Development Office / Morrow County Commissioners
- Patricia Davies, Director of Operations

Federal Aviation Administration
- Mathew Thys, Manager, Detroit Airports District Office
- John Mayfield, Assistant Manager, Detroit Airports District Office
- Mary Jagiello, Airports Program Manager, Detroit Airports District Office
- Ernest Gubry, Airport Planner

Ohio Department of Transportation
- James Bryant, Administrator, Ohio Office of Aviation
- David Dennis, Airport Planner, Ohio Office of Aviation
- Mark Justice, Airport Engineer, Ohio Office of Aviation

Richland Engineering Limited
- Kelsey Keller, E.I.
  (419) 524-0074
  kkeller@r-e-l.com
- Patrick R. Schwan, P.E.
  (419) 524-0074
  pschwan@r-e-l.com
- Hermann Schwaner, P.E.
  (419) 524-0074

Attachments

- 2010-2019 Airport Capital Improvement Plan Exhibit

Morrow County Airport Master Plan Report
Comments

Name:_____

Contact Information:_____

Comments/Suggestions:

Please return to:

Kelsey Keller
Richland Engineering Limited
29 N. Park St.
Mansfield, Ohio 44902

Comments may also be emailed to Kelsey Keller at kkeller@r-e-l.com or faxed to (419) 524-1812.

Thank you for your participation!

Morrow County Airport
Master Plan Advisory Committee Meeting
Sign In Sheet

Date: Tuesday, Nov. 17, 2009 **Time:** 1:30pm

Name	Affiliation	Address	Phone	Email
Van Creasap	Shamrock Vineyard	111 C.R. 25 Waldo, OH 43356	740-726-2883	shamrockmail@aol.com
DAN BOYSEL	Consolidated Electric Cooperative	5525 SR 95 MT GILEAD OH	740 815 2453	dboysel@conelec.com
Pat Davies	Morrow Cty Comm/Dev.	80 N. Walnut St. Mt Gilead, Ohio	419-947-7535	daviesp@rrohio.com
Rodney K. Clinger	Morrow County Commissioner	80 N. Walnut St. Mt. Gilead, Ohio	419-947-4085	rclinger@rrohio.com
Rosemary Lleeng	Morrow Co Chamber	19½ W High PO Box 174 Mt Gilead	419-946-2891	chamwa@bright.net
Jennifer Williams	Morrow Co. RPC	2405 OR 24 Cardington,	419-864-9223	jennifer.williams@embarqmail.com
Jeff McCutchoon	OSUE - Morrow	871 W. Marion Rd Suite 102	419 947 1070	mccutchoon.30@cfaes.osu.edu
Patrick Schnurr	Richland Engineering Limited	29 North Park St Mansfield, Oh	419.524.0074	pschnurr@r-e-l.com
MIKE MCLAIN	MORROW CO ENG. OFFICE	50 E. HIGH ST. MT. GILEAD, O	419-947-4530	mrwcoeng@rrohio.com
DAN ROGERS	Village of Mt. Gilead	72 W. High St. Mt. Gilead	419-946-1931	mtgileadgov@bright.net
DAVE EDWARDS	Morrow Co. Airport	3557 Twp Rd 145 Mt. Gilead, Oh	419-946-7502 419.947.3060	—

TOM SLAUTON	ATOMIC ADVERTISING Morrow Co. RPC.	197 W. HIGH ST MT. GILEAD OH	614 563 6175	tom@atomic1235.com
Kelsey Keller	REL	29 N. Park St. Mansfield, OH	419 524-0074	kkeller@r-e-l.com

4I9

AIRPORT AND RUNWAY DATA

Airport elevation . . . . . 1085 feet
Mean daily maximum temperature of the hottest month . . . . . 82.00 F.
Maximum difference in runway centerline elevation . . . . . 5 feet
Length of haul for airplanes of more than 60,000 pounds . . . . . 1000 miles
Wet and slippery runways

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots . . . 330 feet
Small airplanes with approach speeds of less than 50 knots . . . 890 feet
Small airplanes with less than 10 passenger seats
- 75 percent of these small airplanes . . . . . 2790 feet
- 95 percent of these small airplanes . . . . . 3320 feet
- 100 percent of these small airplanes . . . . . 3930 feet

Small airplanes with 10 or more passenger seats . . . . . 4340 feet

Large airplanes of 60,000 pounds or less
- 75 percent of these large airplanes at 60 percent useful load 5470 feet
- 75 percent of these large airplanes at 90 percent useful load 7000 feet
- 100 percent of these large airplanes at 60 percent useful load 5500 feet
- 100 percent of these large airplanes at 90 percent useful load 8140 feet

Airplanes of more than 60,000 pounds . . . . . Approximately 6400 feet

REFERENCE: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design, no Changes included.

AIRPORT AND RUNWAY DATA

Airport elevation . . . . . 1085 feet
Mean daily maximum temperature of the hottest month . . . . . 86.00 F.
Maximum difference in runway centerline elevation . . . . . 5 feet
Length of haul for airplanes of more than 60,000 pounds . . . . . 1000 miles
Wet and slippery runways

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

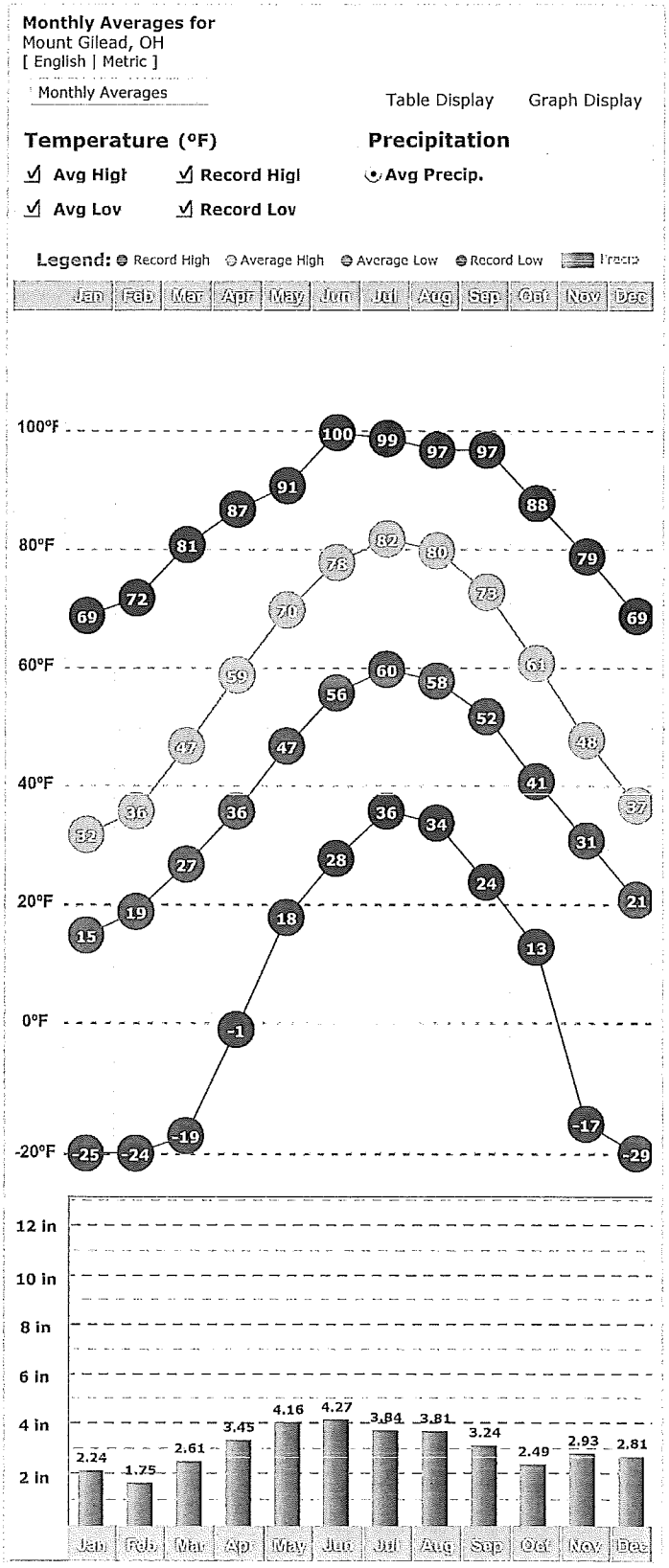
Small airplanes with approach speeds of less than 30 knots . . . 330 feet
Small airplanes with approach speeds of less than 50 knots . . . 890 feet
Small airplanes with less than 10 passenger seats
- 75 percent of these small airplanes . . . . . 2840 feet
- 95 percent of these small airplanes . . . . . 3370 feet
- 100 percent of these small airplanes . . . . . 3990 feet

Small airplanes with 10 or more passenger seats . . . . . 4410 feet

Large airplanes of 60,000 pounds or less
- 75 percent of these large airplanes at 60 percent useful load 5500 feet
- 75 percent of these large airplanes at 90 percent useful load 7000 feet
- 100 percent of these large airplanes at 60 percent useful load 5620 feet
- 100 percent of these large airplanes at 90 percent useful load 8460 feet

Airplanes of more than 60,000 pounds . . . . . Approximately 6400 feet

REFERENCE: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design, no Changes included.


Monthly Averages for
Mount Gilead, OH
[English | Metric]
Monthly Averages
Table Display
Graph Display
Temperature (°F)
Avg High
Record High
Avg Low
Record Low
Precipitation
Avg Precip.
Legend: Record High Average High Average Low Record Low Precip
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
100°F
80°F
60°F
40°F
20°F
0°F
-20°F
12 in
10 in
8 in
6 in
4 in
2 in
2.24
1.75
2.61
3.45
4.16
4.27
3.84
3.81
3.24
2.49
2.93
2.81