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## **I. OVERVIEW OF EXISTING CIRCUMSTANCES**

### **A. Location and Service Area**

Searle Field is located approximately 1 mile west of the City of Ogallala, Nebraska at the intersection of Highways 26, 61, and 30. The city owns and operates the airport, which was opened to the public in 1920.

The airport was originally established as a public-use facility by Rector Searle, Central States Aircraft and Supply Company. In 1968, the city created an Airport Authority, who leased the property from Mr. Searle. In 1970, the airport property was purchased by the city and renamed "Searle Field." The Airport Authority disbanded in 1988 and the airport responsibilities were returned to the city.



Airport Terminal Area (2013)

The airport is located in Keith County and is only 10 miles from Lake McConaughy, the biggest lake in Nebraska and the largest lake in a three-state region. Other public-use airports in the vicinity are described in Table 1 and shown on Figure 1 (following page 2). Wallace, NE and Julesburg, CO are not in the National Plan of Integrated Airport Systems (NPIAS).

**Table 1**

<b>NEARBY PUBLIC-USE AIRPORTS</b>		
<b>Airport (Identifier)</b>	<b>Distance from Ogallala, NE*</b>	<b>Runway(s)</b>
Grant Municipal Airport (GGF)	20 miles south	4,800' paved
Julesburg Municipal Airport (7V8)	32 miles west/southwest	4,100' paved
Billy G Ray Field, Chappell, NE (CNP)	43 miles west	4,000' paved
Garden County Airport, Oshkosh, NE (OKS)	44 miles west/northwest	4,700' paved
North Platte Regional Airport (LBF)	53 miles east	8,000' paved 4,436' paved
Wallace Municipal Airport (64V)	55 miles southwest	2,800' paved

\* Distance is statute miles from city to city, from [www.mapquest.com](http://www.mapquest.com)

The airport is the only public-use airport in Keith County. The airport advisory board members report that pilots and their passengers use Searle Field to visit points primarily in Ogallala and Keith County. In addition, some airport users travel north to Arthur and McPherson Counties, which do not have an airport and larger users travel south to Perkins County. Therefore, Keith County and portions of Arthur and McPherson Counties appear to be the service area for this airport. See Figure 1 on the next page for the Service Area Map.

Services at Searle Field include fuel (100LL & Jet A), aircraft repairs, aerial spraying, tiedowns and hangar storage. The Nebraska State Patrol operates two aircraft from this airport and air ambulance services also utilize the airport. The FBO is Candy Aerotech Service. Wells Flying Service also operates an agricultural spraying service from the airport.

**B. Population of Service Area**

According to the city’s Comprehensive Plan (*RDG Crose Gardner Shukert, July, 2003*), the city experienced steady growth as an agricultural service and industrial center, until the 1980s. RDG states that “The depressed agricultural economy of this pivotal decade caused many rural residents to move to larger urban areas, and resulted in an unprecedented population decline for the community. During the 1990s, Ogallala’s population declined slightly, while growth occurred in rural areas of the county and the areas around Lake McConaughy.”

The City of Ogallala’s 2010 population was 4,737. The past, present, and future populations of Keith County are presented in Table 2 below. While the population has generally been in a decline since 1980, there was some growth from 1990 to 2000. The population is projected to decline in the future.

**Table 2**

PAST, PRESENT, AND FUTURE POPULATIONS							
	Actual				Projected		
	1980	1990	2000	2010	2015	2020	2030
City of Ogallala	5,638	5,095	4,930	4,737			
Keith County	9,364	8,584	8,875	8,368	8,142	8,046	7,831
Annual County Growth Rates		-0.8%	+0.3%	-0.6%	-0.5%	-0.2%	-0.3%

Source: U.S. Census Bureau & Nebraska Department of Economic Development.

**C. Project History**

Searle Field has received a number of federal and state grants, as well as various hangar loans. As shown in Table 3 (next page), the City of Ogallala, the Nebraska

Department of Aeronautics (NDA), and the Federal Aviation Administration (FAA) have all taken an active role in building, maintaining and supporting this airport.

**Table 3**

GRANT AND LOAN HISTORY						
Grant Date	Project Number	Description	Local Funds	State Funds	Federal Funds	Total Cost
1971	H-01	8-Place Hangar	\$10,681	\$13,200	\$0	\$23,881
1972	SA-10G-73	Admin Building, Hangar Taxiways, Runway Lighting	\$23,745	\$11,680	\$0	\$35,425
1972	7-31-006101	Land, Pave & Light RW 8/ Taxiway, Apron	\$111,131	\$107,000	\$217,649	\$435,779
1976	5-31-006102	Pave RW 13/31, Surround, Connector TW, Remove Obstruction	\$10,864	\$7,243	\$162,961	\$181,068
1977	5-31-006103	Overlay RW 8/26, Coring TW, Apron	\$4,092	\$2,728	\$61,337	\$68,157
1977	5-31-006104	MIRL both RWs, and MITL	\$3,197	\$2,132	\$47,959	\$53,288
1981	5-31-006105	Repair RW 8/26, Surface Treat Both RWs & Taxiway	\$37,700	\$25,134	\$114,840	\$177,674
1987	SA-2 OGA	Overlay & Expand Apron Overlay, Expand, Armor Co Hangar Taxiway	\$24,618	\$42,279	\$0	\$66,897
1990	SA-3 OGA	Correct Drainage, Structure and Runoff	\$11,413	\$100,000	\$0	\$111,413
1994	SA-4P OGA	Seal Both RWs, Taxiway, Apron	\$22,403	\$67,208	\$0	\$89,610
1994	H-02	Shop Hangar (10' x 100')	\$75,537	\$160,000	\$0	\$235,537
1994	SA-5 OGA	Pilots Lounge (Building)	\$59,735	\$10,000	\$0	\$69,735
2000	3-31-006101	Land (Tract 1) Extend, Rebuild, Light RW 8/26, Taxiways & Apron; PAPIs	\$76,758	\$32,896	\$986,888	\$1,096,542
2001	3-31-006102	2 <sup>nd</sup> Half- OGA 01; PAPI	\$21,199	\$56,633	\$700,484	\$778,316
2005	3-31-006103	Land Acquisition	\$18,694	\$0	\$355,188	\$373,882
2005	3-31-006104	Reconstruct Runway 13/31	\$35,851	\$23,905	\$1,135,477	\$1,195,233
2007	3-31-006105	Install PAPIs	\$1,918	\$0	\$36,431	\$38,349
2009	H-03	State Patrol Hangar	\$105,988	\$247,291	\$0	\$353,279
2009	SA-6 OGA	Taxiway to Patrol Hangar	\$11,170	\$34,200	\$0	\$45,370
2009	3-31-006106	6-Place Hangar (phase 1)	\$9,841	\$0	\$186,978	\$196,819
2009	3-31-006108	6-Place Hangar (phase 2)	\$19,821	\$0	\$376,598	\$396,419
2010	3-31-006107	6-Place Hangar (phase 3)	\$5,580	\$0	\$106,016	\$111,596
2012	3-31-006109	Airport Layout Plan	\$14,900	\$0	\$134,100	\$149,000
		TOTALS	\$716,838	\$943,311	\$4,622,891	\$6,283,260

\* Grant Amount Listed

## II. FORECASTS

### A. National and Local Trends

Each year the Federal Aviation Administration (FAA) publishes aviation forecasts. The latest forecast report, entitled “FAA Aerospace Forecasts Fiscal Years 2012-2032” is available on the internet at:

[www.faa.gov/about/office\\_org/headquarters\\_offices/apl/aviation\\_forecasts/aerospace\\_forecasts/2012-2032/](http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2012-2032/)

The FAA forecasts are summarized in Table 4, which provides an overview of nationwide aviation activity for comparison purposes.

**Table 4**

FAA AVIATION FORECASTS	
Activity	Annual Rate of Change 2012-2032
Active General Aviation (GA) fleet	0.6%
< Turbine-powered	2.9%
< Turbine Jet	4.0%
< Piston-powered	-0.1%
GA Hours Flown	2.5%
< Turbine-powered	4.0%
< Piston-powered	-0.1%
GA Activity at FAA and Contract Towers	0.3%

*Source: FAA Aerospace Forecasts Fiscal years 2012-2032*

In regards to general aviation, the FAA report included the following comments.

“The general aviation market continued its decline in calendar year (CY) 2011, although at a slower rate.” (*FAA Report, page 3*)

“The active general aviation fleet is projected to increase at an average annual rate of 0.6 percent over the 21-year forecast period, growing from an estimated 222,520 in 2011 to 253,205 aircraft by 2032. The more

expensive and sophisticated turbine-powered fleet (including rotocraft) is projected to grow at an average of 2.9 percent a year over the forecast period, with the turbine jet portion increasing at 4.0 percent a year.” (*FAA Report, page 51*)

Business, corporate, and government use of Searle Field is a common occurrence. Frequent users of Ogallala’s airport include:

- < Adams Bank & Trust
- < Schmidt Motors
- < Scoular Grain
- < Doctors from Scottsbluff, Greeley, CO, and Steamboat, CO
- < Air Ambulance
- < Candy Aerotech
- < Farmers/Ranchers
- < Hunters
- < John Deere
- < Nebraska Public Power District (NPPD)
- < Nebraska State Patrol (NSP)
- < Nebraska Game and Parks Commission
- < Oregon Trail Eye Center (OTEC)
- < Pipeline Patrol
- < Student Pilots
- < Visitors to Lake McConaughy
- < Wells Flying Service

Due to this diverse group of users, the need for aviation facilities in the area is expected to continue to increase.





Main Shop Hangar and Pilot's Lounge

## **B. Based Aircraft**

In 2012, there were 16 aircraft permanently based at Ogallala's airport plus 2-3 aerial spraying aircraft temporarily located there during the spray season. The number of based aircraft has varied between 8 and 36 over the last 35 years (per information obtained from NDA). Most aircraft owners are from Keith County. There are 30 aircraft registered in Keith County.

The FAA's national forecast for the active general aviation fleet is a 0.6% annual increase over the next 20 years. FAA's Terminal Area Forecast (TAF) for Searle Field predicts no change in the number of based aircraft through 2030. The population in the service area is expected to decrease at an annual rate of 0.3%. Since these trends are contradictory, regression analysis and market share analysis were not used. Instead, the local situation was explored further.

There are 30 aircraft registered in Keith County but only 16 based at the airport. Thus, there are potentially 14 aircraft based outside the area or on a private-use airport. As aircraft costs increase, owners are seeking out better facilities and relocating from private grass strips. Therefore, some of these aircraft can be expected to relocate their planes to the Ogallala airport.

In 2012, the city reported that all but one hangar stall was rented. While there is no written waiting list for hangar rental, they receive inquiries on a regular basis. The planning advisory committee felt that if more storage was available, based aircraft numbers would increase. In addition, the aerial spray industry is growing and these types of aircraft are expected to be permanently based at the airport in the future.

The forecasts shown in Table 5 reflect not only FAA’s forecast growth in general aviation, but the anticipated relocation of more local aircraft as hangars are constructed and as aerial spraying activity increases.

**Table 5**

<b>BASED AIRCRAFT HISTORICAL AND FORECAST</b>	
<b>Year</b>	<b>Based Aircraft</b>
1978	29
1982	34
1986	28
1992	13
1997	15
2002	13
2007	13
2012	16
2017 (forecast)	19
2022 (forecast)	22
2032 (forecast)	28

*Source: Nebraska Department of Aeronautics,  
Olsson Associates*

**C. Design Aircraft**

The design or critical aircraft is the most demanding aircraft that can be reasonably forecast to have 500 itinerant operations within the 20-year planning period. Airport development standards, such as runway length and width, are based primarily on the design aircraft’s characteristics. Thus the design aircraft will dictate the ultimate size of the airport.

The FAA categorizes aircraft by Airport Approach Category (AAC) and Airplane Design Group (ADG), as shown below in Table 6.

**Table 6**

AIRCRAFT APPROACH CATEGORIES		AIRPLANE DESIGN GROUPS		
Aircraft Approach Category	Approach Speed (knots)	Group*	Wingspan (feet)	Tail Height (feet)
A	< 91	I	0-48.9	0-19.9
B	91 – 120	II	49-78.9	20-29.9
C	121 – 140	III	79-117.9	30-44.9
D	141 – 165	IV	118-170.9	45-59.9
E	≥ 166	V	171-213.9	60-65.9
		VI	214 or more	66 or more

*\* Where an airplane is in two groups, the most demanding category is used*

A third component, aircraft weight, is used to determine some runway dimensional standards and to establish the pavement thickness and design

The aircraft based at Searle Field are A-I and B-I aircraft, ranging from a Piper Cub to a Cessna 210. The aerial sprayer utilizes an Air Tractor 402, which is a B-II aircraft. Other frequent users include twin-engine and small turboprops such as a King Air (B-II), Cheyenne (B-I), and Socata TBM (B-I).

The airport reports that the largest aircraft using the airport are small jets, including a variety of Cessna Citations and several types of Lear Jets, which are generally C-I and

C-II aircraft. While these operations occur weekly, the annual total is no more than 100 operations, which is not frequent enough to justify C-II as the current design aircraft.

Fuel sales records were reviewed. Sales of 100LL have remained steady over the past four years, ranging from 17,700 to 18,500 gallons. For 2012, 17,765 gallons of 100LL were sold. Sales of Jet A dropped from 17,271 gallons in 2008 to 3,378 in 2009, most likely due to the nationwide economic downturn. Jet A rebounded in 2012, when the airport had sold 27,088 gallons, which is almost double the 2008 amount.

With a large number of B-II itinerant operations, the family of B-II aircraft was selected as



the current design aircraft for this airport. For the ultimate design aircraft, it was determined that C-II activity would be sufficient at the end of the 20-year forecasting period to designate the C-II aircraft as the ultimate design aircraft. FAA forecasts a 4% annual increase for the jet

fleet as well as turbine-powered hours flown. In addition, increases in jet fuel sales indicates an increase in larger aircraft activity.

Therefore, activity by C-I and C-II aircraft is expected to increase. The forecast of design aircraft operations is shown in Table 7 on the next page. However, the city should not proceed with any new developments required for C-II aircraft until there is strong evidence of their existing or imminent activity. Per FAA's November 29, 2012 letter (attached in Appendix B), if any major runway or taxiway construction, reconstruction or extension is planned, documentation of 500 annual itinerant operations of the design aircraft will be required.

## D. Operations

At Searle Field, activity reported to the Nebraska Department of Aeronautics (NDA) 5010 Inspectors has varied from 2,138 annual operations in 1984 to 22,585 in 1979. For 2012, 4,930 operations were reported. These numbers are simply an estimate made by the airport manager at the time. The FAA's Terminal Area Forecast (TAF) reports 4,483 operations in 2010. Based on an interview with the current airport and city staff, the current NDA 5010 numbers were deemed to be reasonably accurate.

The FAA's national forecast for general aviation hours flown is a 2.5% annual increase and a 0.3% annual increase is expected in general aviation activity at control towers. FAA's Terminal Area Forecast for Searle Field predicts no change in the number of local and itinerant operations through 2030. Based on past experience, the Operations per Based Aircraft (OPBA) method was selected for use in the forecasts shown in Table 7. Historically 250 operations per based aircraft (OPBA) are used at small General Aviation (GA) airports for this forecasting method.

At Ogallala, there are a significant number of aerial applicator operations, which are in addition to the historical OPBA. Their activity is seasonal, with the highest activity in the summer months. Typically, 2-3 aircraft operate at the airport for approximately 3 months per year. Daily operations average about 10



per aircraft. This results in approximately 2,000 operations per year by aerial sprayers. The OPBA results have been adjusted to account for these operations, as shown in Table 7 on the next page.

**Table 7**

ANNUAL OPERATIONS CURRENT AND FORECAST							
Year	Based Aircraft	OPBA*	Total	Local	Itinerant	Design Aircraft (B-II)**	Design Aircraft (C-II)**
1978	29	738	21,400	11,000	10,400	1,000	None***
1982	34	575	19,550	11,000	8,550	1,000	None
1986	28	287	8,023	3,600	4,423	800	None
1992	13	424	5,512	2,500	3,012	500	None
1997	15	314	4,713	1,545	3,168	500	None
2002	13	345	4,483	1,405	3,078	500	50
2007	13	362	4,713	1,545	3,168	800	75
2012	16	308	4,930	1,852	3,078	1,600	100
2017 (forecast)	19	250	6,750	2,250	4,500	1,700	200
2022 (forecast)	22	250	7,500	2,500	5,000	1,800	300
2027 (forecast)	28	250	9,000	3,000	6,000	2,000	500

\* Operations per Based Aircraft (OPBA)

\*\* Estimated by Airport Authority and Olsson Associates

\*\*\* Runway 8/26 was extended in 2001. Prior to that time, the airport could not accommodate C-II aircraft.

Source: Nebraska Department of Aeronautics, Olsson Associates, Airport Authority

### E. Instrument Approaches

Searle Field has RNAV (GPS) instrument approaches to both ends of both Runway 8/26 and Runway 13/31, plus VOR and VOR/DME approaches to Runways 8 and 26. The FAA's Terminal Area Forecast lists no instrument approach activity. This is not accurate. Many of the airport's itinerant operations are charter and corporate flights and these types of operators commonly use instrument approaches.

The airport has no means to accurately gauge the number of instrument approaches. It was estimated that 10% of the itinerant operations use the instrument approaches. Note that none of the itinerant operations are air taxi, which would be required to use an instrument approach if operating under FAR Part 135. Some of the local pilots also take advantage of the instrument approaches. Therefore, it was assumed that 5% of local

operations are under Instrument Flight Rules (IFR). Table 8 contains the forecasts for instrument approaches.

**Table 8**

<b>ANNUAL INSTRUMENT APPROACHES CURRENT AND FORECAST</b>	
<b>Year</b>	<b>Instrument Approaches</b>
2017 (forecast)	562
2022 (forecast)	625
2028 (forecast)	750

Source: Olsson Associates

### III. DEVELOPMENT REQUIREMENTS

#### A. Runways

Existing Conditions. Runway 8/26 (shown below) is 5,100' x 75'. The east 4,500' was originally paved with 5.5" of asphalt in 1973 and was overlaid in 1977. In 2001, the runway was whitetopped with 5" of concrete and extended to 5,100'.

The pavement design strength is currently 12,500 lbs. The ultimate design aircraft, identified in Chapter II, will weigh 30,000 lbs. Thus an increase in pavement strength will be needed within the 20-year planning period. This can be accomplished with either an asphalt overlay, concrete whitetopping, or removal and reconstruction.



(Runway 26 looking west)

Runway 13/31 is 3,698' x 60'. It was originally paved to a length of 3,050' with 5.5" of asphalt in 1976. In 2006, the runway was reconstructed with 5" of concrete and was extended to 3,698' at that time.

Both runways are in very good condition.



Recommended Runway Length and Width is determined by the design aircraft reference code (C-II) and the following factors:

Airport Elevation	3,278 feet AMSL
Mean daily maximum temperature of the hottest month	89.1 degrees F
Maximum difference in runway centerline elevation	50 feet

The recommended runway lengths and widths shown below are based on FAA Advisory Circulars 150/5325-4B and 150/5300-13.

**RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN**

Small airplanes with less than 10 passenger seats	
75% of small airplanes .....	3,700' x 60'
95% of small airplanes .....	4,900' x 60'
100% of small airplanes .....	5,100' x 75'
Small airplanes with 10 or more passenger seats .....	5,100' x 75'
Large airplanes of 60,000 pounds or less	
75% of these large airplanes at 60 percent useful load .....	6,000' x 100'

For the ultimate design aircraft, which has an ARC of C-II, the recommended runway dimensions are 75% of large airplanes or 6,000' x 100'. To meet this design standard, Runway 8/26 will need to be extended 900' and widened 25'.

For the current design aircraft, which has an ARC of B-II, the recommended runway dimensions are 100% of small airplanes or 5,100' x 75'. These are the existing dimensions of Runway 8/26.

Runway 13/31 is 3,698' x 60', which meets the standards for 75% of small airplanes.

Wind Coverage is the percent of time crosswind components are below an acceptable velocity. The desirable wind coverage for an airport is 95%. This means that the wind will blow along and not across the runway 95% of the time. Table 9 shows the wind coverage, based on 2000-2009 data from the AWOS at the Ogallala airport.

**Table 9**

<b>WIND COVERAGE (All Weather)</b>			
<b>Crosswind Component Wind Speed</b>	<b>Runway 8/26</b>	<b>Runway 13/31</b>	<b>Existing Combined</b>
10.5 knots	81.5%	90.5%	93.6%
13 knots	87.7%	94.7%	96.9%
16 knots	94.0%	98.1%	98.8%

*Wind Data Source: Ogallala NE, 2000-2009. Coverage: Olsson Associates*

For the current design aircraft B-II, a crosswind component of 13 knots is used. Runway 8/26 only provides 87.7% coverage at 13 knots, which does not meet the minimum requirement of 95%. Combined with Runway 13/31, the wind coverage is 96.9%. Therefore, this crosswind runway is needed and an upgrade to B-II standards (5,100' x 75') is justified. However, due to existing site limitations (Highway 30 and the railroad the south and high terrain to the north), an extension to the runway length is neither feasible nor cost effective. In addition, due to limited local funds, the work could not be accomplished in the 20-year planning period.

For the ultimate design aircraft C-II, a crosswind component of 16 knots is used. Runway 8/26 only provides 94% coverage at 16 knots, which is less than the minimum of 95%. Combined with Runway 13/31, the wind coverage is 98.8%, which meets the standard.

Obstructions to Runway 8/26. The existing Runway 8/26 is a B-II runway with an instrument approach procedure. Although the pavement strength is 12,500 lbs., the large aircraft category is typically used for a primary runway with instrument approaches. Per Federal Aviation Regulation Part 77, the existing runway approach slope is 34:1. The ultimate design aircraft is C-II and a non-precision instrument approach is expected to serve large aircraft (12,500 pounds or more). Therefore, the ultimate approach slope is also 34:1.



Airport looking northwest (Runway 8/26 on left and Runway 13/31 on right)

Near the existing end of Runway end 8, a barbed-wire fence and field road penetrate the 34:1 approach slope. These items should be removed. In addition, a pivot irrigation system operates too close to the runway end at the end of its swing. The pivot should be set to stop outside the 34:1 approach slope.

When Runway 8 is extended, a county road and power line will be obstructions. The road should be relocated and the power line buried. To avoid disruption to a pivot irrigation system in the adjacent field, the road should be relocated to the west edge of this field at the half-section line. While this will increase construction costs slightly, the increase will be more than offset by a decrease in land acquisition costs.

The existing Runway Safety Area (RSA) and Runway Object Free Area (ROFA) meet FAA standards. However, when the runway is upgraded from B-II to C-II, the RSA and ROFA become wider and longer and Highway 30 will penetrate these areas on Runway end 26. To cure this deficiency, the Runway 26 threshold must be displaced. When the displacement is set to provide just the 600' RSA/ROFA length prior to the threshold, this results in the future REIL lights being placed in the Runway 13/31 ROFA. To remove these objects from the 13/31 ROFA, the ultimate Runway 26 threshold will be placed an

additional 110' farther west. Thus the displaced threshold will be 310' from the end of the pavement. To provide an adequate length for C-II aircraft, Runway 8 end should be extended by the amount of the displacement (310').

For aircraft landing Runway 8, a RSA and ROFA length of 1,000' beyond the threshold at the far end is required. To meet this standard, declared distances will be used.

Obstructions to Existing Runway 13/31. The existing Runway 13/31 is a B-I runway with instrument approach procedures to each end. The pavement strength of 12,500 lbs. and the shorter runway length (3,698') places the runway in the small aircraft category. Per Federal Aviation Regulation Part 77, the existing and ultimate runway approach slope is 20:1.

A private drive and a few trees obstruct the 20:1 approach surface. The private drive will be relocated or re-graded to a lower elevation. The trees will be removed. The RSA and ROFA for Runway 13/31 already meet FAA standards.

Summary of Runway Recommendations.

1. Extend and widen Runway 8/26 to 6,310' x 100'. This includes an additional 310' to meet RSA and ROFA standards. Per FAA's November 29, 2012 letter, prior to any major runway construction, reconstruction or extension, documentation of 500 annual itinerant operations of the design aircraft will be required.
2. Increase Runway 8/26 strength to 30,000 lbs.
3. Retain Runway 13/31 at its current dimensions of 3,698' x 60'.

## B. Taxiways

### Existing Conditions

Two short taxiways, shown at right, connect the apron to the runways. One taxiway connects to Runway end 26 and the other connects near the south end of Runway 13/31. Both taxiways are 35' wide, which meets the FAA standard for Taxiway Design Group 2. Both taxiways



were whitetopped in 2001 as part of the Runway 8/26 project, and consist of 5" concrete on approximately 6" of asphalt. The pavement is in very good condition.

The pavement design strength is currently 12,500 lbs. As with Runway 8/26, an increase in pavement strength on taxiways serving 8/26 will be needed within the 20-year planning period. This can be accomplished with either an asphalt overlay, concrete whitetopping, or removal and reconstruction.

### Recommendations

A full length parallel taxiway is proposed on the north side of Runway 8/26, to eliminate back taxiing on the runway. This taxiway will also be 35' wide and will be designed to C-II standards. The minimum runway / parallel taxiway separation is 300' for approach visibility minimums of one mile. While this is adequate for the existing situation, a 400' separation would allow for future improvements to instrument approach procedures and lower approach minimums at a very low additional cost.

An existing VOR is adjacent to the proposed taxiway site. The VOR is owned by the Nebraska Department of Aeronautics (NDA) and their Navigational Aids office was consulted about the proposed plan. They advised that the taxiway centerline must be at least 200' from the center of the VOR shelter. The taxiway will either be 73' or 173' from the VOR, depending on the separation distance selected. Both locations will impact the

VOR and require its relocation, at an estimated cost of \$100,000. After coordinating with NDA, a new location for the VOR was selected in the southeast quadrant of the airport.

When the parallel taxiway is construction, the taxiway connecting to the apron will need to be realigned to match. This is required for either the 300' or 400' separation.

In summary, because either the 300' or 400' separation results in similar impacts and costs, it is recommended that the 400' separation be included in the plan, to allow for future improvements to instrument approach procedures.

A full length parallel taxiway is also proposed on the east side of Runway 13/31. The taxiway will also be 35' wide, since the airport is utilized by Taxiway Design Group 2 aircraft. The minimum runway / parallel taxiway separation is 125' for small aircraft and approach visibility minimums of one mile. An access taxiway to existing and future hangars northwest of the apron also parallels the runway and would be located 310' from the runway centerline. To eliminate duplication of pavement, a combined parallel / hangar access taxiway is recommended with a separation distance of 310'.

Midfield connectors are planned for both runways, and locations were selected based on Advisory Circular 150/5300-13A, Table 4-9.

#### Summary of Taxiway Recommendations.

1. Full parallel taxiway to Runway 8/26 with midfield connectors (35' wide)
2. Increase pavement strength on existing taxiways serving Runway 8/26
3. Realign connecting taxiway to apron
4. Full parallel taxiway to Runway 13/31 with midfield connector (35' wide)

### C. Aircraft Aprons

Existing Conditions. The apron was originally constructed with 5.5” of asphalt in 1973 and overlaid in 1977. Whitetopping and reconstruction with 5” concrete was completed in 2001 as part of the Runway 8/26 project. The pavement is in very good condition.

The pavement design strength is currently 12,500 lbs. An increase in pavement strength may be needed within the 20-year planning period. To match existing building elevations, removal and reconstruction will be required. A “wait and see” approach is recommended for the reconstruction. If the apron continues to function with just a few cracks or shattered slabs, then minor repair work is recommended. If larger areas of the apron begin to fail due to heavier loads, then full reconstruction will be needed. For the purposes of this planning document, the worst-case scenario (reconstruction) will be assumed.

The existing apron is 19,600 square yards (SY). However, most of the pavement serves as taxilanes to the hangars along the apron edge and to the fuel system near the east end of the apron. There are 9 tiedowns located in groups of three, scattered from east to west across the apron.

Recommendations. An apron size of 13,950 SY with 12 tiedowns is recommended, using the FAA Central Region Apron Calculator spreadsheet, which is summarized below. The apron calculations are based on the 20-year forecasts.

#### **Apron Size Calculations:**

1. Determine annual operations:  
 $\S$  9,000 operations are forecast (see Chapter II)
2. Busiest Month: Assume 20% of traffic occurs in June  
 $\S$  9,000 operations x 20% = 1,800 operations per month  
 $\S$  Average daily operations = 1,800 / 30 = 60
3. Assume the busiest day is 10% busier than the average day.  
 $\S$  60 x 110% = 66 operations per day
4. Itinerant traffic is approximately 67% of the total traffic  
 $\S$  66 x 67% = 44 operations per day  
 $\S$  44 operations = 22 take-offs and 22 landings

5. Assume that 50% of these transient aircraft will be on the ground at the same time  
§ 22 landings x 50% = 11 aircraft parking spaces needed
6. The airport has a mix of Category I and Category II aircraft. Allow 960 SY of apron for each Category I aircraft and 1,385 SY for each Category II aircraft, including taxilanes.  
§ 6 aircraft x 960 SY = 5,760 SY  
§ 5 aircraft x 1,385 SY = 6,925 SY
7. Adjust the calculated amount by at least 10% to accommodate expansion  
§ 12,685 SY + 10% = 13,950 SY

The existing apron will need to be expanded during the planning period to provide additional tiedowns and taxilane access to all hangars and the fuel system. The least costly expansion will be a single row of 10 tiedowns on the south edge of the apron. This shifts the taxilane centerline north and the new Taxilane Object Free Area (TLOFA) will impact four existing tiedowns, which will need to be removed.

Three (3) existing tiedowns near the southeast corner of the apron impede the taxilane route to the T-Hangars. It is recommended that these be removed.

In summary, 10 tiedowns will be added with the south expansion. Seven of the 9 existing tiedowns will be removed. Thus, there will be 12 total tiedowns in the final configuration. The ultimate apron will be 21,800 SY, or 2,200 SY larger than its current size. The majority of the apron pavement will be utilized for taxilanes, hangar access and fueling.



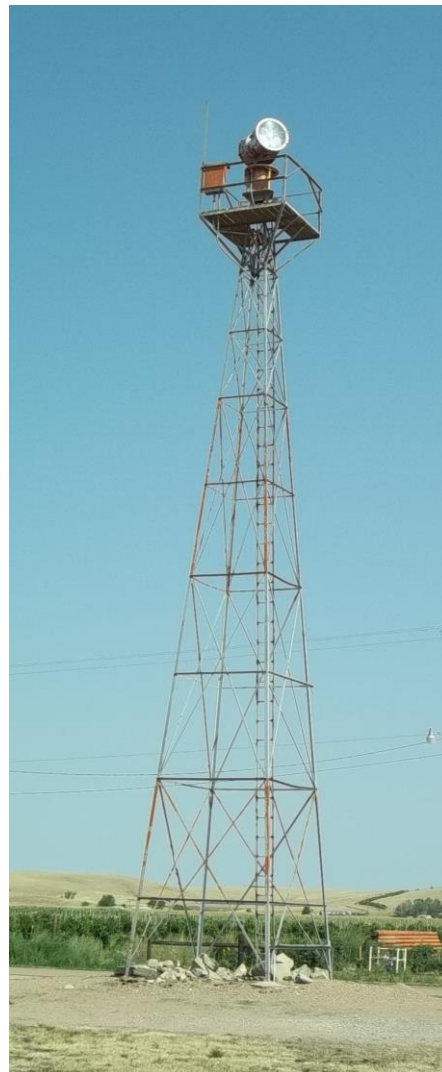
#### D. Lighting, Beacon and Signs

Both runways have base-mounted medium intensity runway lights (MIRL), which were installed in 2001 (8/26) and 2006 (13/31). Base-mounted medium intensity taxiway lights (MITL) were also installed in 2001 on the existing taxiway connectors. The lights are in excellent condition but may need replacement at the end of this 20-year planning period.

When new taxiways are built, medium intensity lights should be also installed along these pavement edges. Guidance signs should be installed as additional taxiways are paved.

The airport's beacon, shown at right, is an older model and in poor condition. A new rotating beacon is currently being installed in 2014 under AIP Project No. 3-31-0061-10

A new electrical vault is also being constructed in 2014. The regulators and other airfield lighting equipment are being replaced. This equipment is currently in the closet of a hangar, which is not easily accessible or secure. A separate building will now house all airfield lighting equipment and provide a single power source.



**E. Instrument Approaches.**

The airport has eight published instrument approach procedures as listed in Table 10.

**Table 10**

INSTRUMENT APPROACH PROCEDURES					
Runway	Type of Approach		Minimum Descent Altitude	Visibility Minimum (miles)	Controlling Obstruction, Elevation (MSL) and Location
8	RNAV (GPS)	LPV	250'	1	Center Pivot 3274' 0.1 mile W
		LNAV / VNAV	605'	2 ¼	Tree 3529' 1.6 mile NW
		LNAV	540'	1	Terrain 3859' 6.4 mile W
8	VOR / DME		820'	1	Terrain 3879' 9.6 mile NW
8	VOR		920'	1 ¼	Terrain 3879' 9.6 mile NW
26	RNAV (GPS)	LPV	250'	1	Wind Sock 3265' 0.1 mile NE
		LNAV / VNAV	286'	1	Tree 3369' 0.8 mile NW
		LNAV	375'	1	Terrain 3519' 6.2 mile NE
26	VOR / DME		575'	1	Tower 3723' 3.7 mile E
26	VOR		795'	1	Tower 3754' 5.3 mile SE
13	RNAV (GPS)	LP	661'	1	Tower 3976' 4.0 mile NW
		LNAV	721'	1	Tree 3369' 0.2 mile NE
31	RNAV (GPS)	LPV	250'	1	Tree 3290' 0.2 mile S
		LNAV / VNAV	250'	1	None
		LNAV	495'	1	Terrain 3649' 4.3 mile SE

Note that the terrain elevation listed in the table includes 100' added to account for natural vegetation growth and/or 200' added for uncharted man-made obstructions not reported under Part 77. FAA refers to this as an Adverse Assumption Obstacle (AAO).

When the RWY 13 VASI is inoperable, both straight in and circling to RWY 13 are identified as "NA at Night".

## **F. Visual Aids**

Runway 8/26 has Precision Approach Path Indicators (PAPIs) on runway both ends. The PAPIs were installed in 2001. These PAPIs will be relocated and replaced when the runway is extended and widened.

Runway End Identifier Lights (REILs) are recommended for Runway 8/26 and will also be installed with the runway is extended.

Runway 13/31 has a PAPI on the 31 end and a Visual Approach Slope Indicator (VASI) on the 13 end. The VASI is owned and maintained by the FAA. The PAPI was installed in 2007. The VASI is more than 25 years old and will need to be replaced with a PAPI. While the PAPI is in excellent condition, it will need replacement at the end of this 20-year planning period.

The existing wind cone is in poor condition and should be replaced soon. The segmented circle conflicts with the future apron expansion. These items should be relocated to the west when the wind cone is replaced.

## **G. Navigational Aids and AWOS**

A VOR/DME is located on the airport, as well as an Automated Weather Observing System (AWOS). Both facilities are owned and maintained by the Nebraska Department of Aeronautics (NDA). The city pays the NDA for a portion of the maintenance costs.

The AWOS was installed in 1990 and upgraded in 2002. Due to technological advances, the equipment will need another upgrade in the 20-year planning period.

As previously discussed, the VOR will be impacted when a parallel taxiway is constructed to Runway 8/26. A new location east of the AWOS has been coordinated with the NDA.

**H. Hangars**

There are a number of hangars on the airport, as described in Table 11 and pictured on the next page.

**Table 11**

<b>HANGARS</b>					
<b>Building Number on ALP drawing</b>	<b>Description</b>	<b>Size</b>	<b>Doors</b>	<b>Construction Date</b>	<b>Condition</b>
1	Storage Hangar with office (currently leased to State Patrol)	80' x 65' including 1,500 SF of office space	16' x 70' Bi-fold	2009	Excellent
2	Storage Hangar (privately owned by Adams Bank)	100' x 100'	18' x 70' Bi-fold	1999	Good
3	Storage Hangar	125' x 100'	11' x 40'* Bi-fold	1970s (estimated)	Fair
5	Storage Hangar	80' x 60'	12' x 50'* Sliding	1930s (estimated)	Poor
8	Shop / FBO Hangar with office & pilot's lounge	100' x 100' Including 2,000 SF office/lounge	14' x 60' Bi-fold	1994	Good
12	T-Hangar	8-place	11' x 48' Sliding	1971	Poor
14	T-Hangar	6-place	14' x 44' Bi-fold	2009	Excellent

\* Approximate

With Nebraska's weather conditions, every based aircraft is expected to be housed in a hangar. Twenty-eight (28) based aircraft are expected by 2032. Thus 10-14 additional T-hangar stalls may be needed. These calculations are based on the 20-year forecasts,

which are likely to be inaccurate beyond the 5-year horizon. Additional hangars are shown on the Airport Layout Plan drawings to reserve the space, in case future traffic justifies their construction. Multiple hangar locations are also shown on the drawings, to provide the airport board with development alternatives. All hangars should be built as demand dictates. The T-Hangar constructed in 1971 is in poor condition and reconstruction is recommended.



Hangar Leased by State Patrol (Bldg 1)



Storage Hangar (Adams Bank) (Bldg 2)



Storage Hangar with office on left (Bldg 3)



Storage Hangar (Bldg 5)



Shop Hangar / Pilot's Lounge (Bldg 8)



1971 T-Hangar (Bldg 12)

## I. Fuel Storage

The airport sells both 100LL and Jet-A fuel from trucks. The fuel is stored in two 10,000 gallon above-ground fuel tanks. These tanks were installed in 2003 and are in good condition. No additional improvements are recommended.



## J. Landside Facilities

The airport's pilot's lounge is part of the FBO hangar and office. The total finished space is 2,000 SF, including private offices. This facility meets the airport's current and future needs. No additional improvements are recommended.

The airport also has a small 2-bay garage / snow removal equipment storage building, shown at right, for the fuel truck and other equipment. As the airport grows, a larger facility will be needed.



The access road is a paved 2-lane road but the parking lot is unpaved. The road's pavement is in poor condition. Both the road and parking lot should be rehabilitated and paved in the next 5 years, with drainage improvements made at the same time.

## **K. Land**

The airport currently includes 360 acres of land owned in fee and 6.6 acres in easements. An additional 53 acres in fee and 2.3 acres in easement will be needed to extend Runway 8 and relocate the county road. An easement for the Runway 26 RPZ will also be needed across Highway 30 when the runway is extended. To protect the AWOS critical area, an additional 3.4 acres of easement should be acquired. No additional land is needed for Runway 13/31.

## **L. Adjacent Land Uses**

All land use adjacent to the airport is agricultural, with a few farmsteads in conjunction with this land use.

FAA Advisory Circular 150/5200-33B recommends a separation distance of 10,000' between any hazardous wildlife attractants and the airport operations area (known as Perimeter B) and 5 miles if the attractant could cause hazardous wildlife movement across the approach airspace (known as Perimeter C). Perimeters B and C are shown on Figure 2 on the next page.

Hazardous wildlife attractants include waste disposal operations (landfills, transfer stations, etc.), water management facilities (storm water detention, wastewater treatment, etc.), wetlands, dredge soil containment areas, agricultural activities, and golf courses.

The nearest landfill is approximately 10 miles away in Perkins County, which meets the FAA standard described above.

The South Platte River is less than one-half mile south of and roughly parallel to Runway 8/26. The area around the river contains many wetlands. This large river bisects the county west to east. Lake McConaughy is approximately 5 miles north of the airport. This 35,700 acre reservoir is the largest in Nebraska. These water features and wetlands attract many geese and other birds, which is problematic, especially during migratory seasons. However, due to the very large areas of water and wetlands, it is

neither financially feasible nor environmentally prudent to remove all existing water attractants in the vicinity of the airport.

However, new dredging operations or other human activity that creates additional ponds or wetlands should be avoided. It is recommended that land use zoning be implemented to restrict new dredging or other man-made water features within the vicinity of the airport.

#### **M. Coordination**

This report and the entire set of Airport Layout Plan drawings have been sent to the Federal Aviation Administration. The Airport Layout Plan has been or will be coordinated with the City of Ogallala, Keith County, and the Nebraska Department of Aeronautics.



**N. Summary**

**Table 12**

<b>EXISTING AND ULTIMATE FACILITIES</b>		
<b>Facility</b>	<b>Existing</b>	<b>Ultimate</b>
Runway 8/26	5,100' x 75'	6,310' x 100'
Runway 13/31	3,698' x 60'	same
Taxiways	Connecting to Runway ends 26 & 31	Full parallel to Runway 8/26 (35' width) Full parallel to Runway 13/31 (35' width)
Apron	19,600 SY 12 tiedowns	21,800 SY 12 tiedowns
Lighting	RWY 8/26: Medium Intensity RWY 13/31: Medium Intensity Connecting Taxiways: Medium Intensity	8/26: Same 13/31: Same All Taxiways: Medium Intensity
Instrument Approaches / Nav aids	8/26: RNAV (GPS), VOR & VOR/DME 13/31: RNAV (GPS)	8/26: Same 13/31: Same
Visual Aids	8/26: PAPI-2 13: VASI-4 31: PAPI-2	8/26: PAPI-2, REIL 13/31: PAPI-2
Weather Reporting	AWOS-III PT	Same
T-Hangars	14 stalls	Up to 32 stalls
Shop & Storage Hangars	44,700 SF	74,200 SF
Fuel Storage	10,000 gal. 100 LL & Jet A above ground	Same
Terminal / Pilot's Lounge	2,000 SF including FBO offices	Same
Snow Removal Equipment Building	1,200 SF	6,400 SF
Roads	2-lane paved	2-lane paved
Auto Parking	Unpaved	20-30 stalls paved
Land	360 acres fee 17.5 acres easement	413 acres fee 23.2 acres easement

Source: Olsson Associates

#### **IV. ENVIRONMENTAL OVERVIEW**

This section of the report contains a brief discussion of the environmental impact categories listed in FAA Order 1050.1E, Appendix A. This discussion includes an overview of potential impacts due to proposed developments. Environmental data was considered in the evaluation of development alternatives.

##### **A. Air Quality**

Air Quality will not be impacted by any of the proposed developments. The airport is not located in a nonattainment or maintenance area for the National Ambient Air Quality Standards (NAAQS). The forecasted activity is 9,000 annual operations, which is well below the general aviation threshold of 180,000 operations, as established by Figure 1 of the Air Quality Handbook, to require a detailed air quality assessment. Therefore no further assessment is required.

##### **B. Coastal Resources**

No coastal areas are present in the vicinity of the airport.

##### **C. Compatible Land Use**

The compatibility of land uses in the vicinity of the airport is usually associated with the extent of the airport's noise impacts. As described below in Section M, there will be no significant noise impacts. Therefore, a similar conclusion of no significant impact can be drawn with respect to compatible land use.

##### **D. Construction Impacts**

Impacts from the proposed developments may include temporary increases in noise and dust from normal construction processes. The construction will take place well away from residential areas, and therefore the noise impact will not be significant. These impacts are expected to be temporary and localized.

A National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit - Notice of Intent (NOI) will be required for each project that disturbs more than one acre of land. The NOI must be received by the Nebraska Department of

Environmental Quality (NDEQ) at least seven days in advance of starting ground disturbance activities. Development of a Storm Water Pollution and Prevention Plan (SWPPP) that addresses erosion and sediment control is the primary condition of the permit,

**E. U.S. Department of Transportation (DOT) Act, Section 4(f)**

U. S. DOT Section 4(f) restricts the use of publicly-owned land from a public park, recreation area, wildlife refuge, waterfowl refuge, or a historical site. The project area is located approximately one mile west of Ogallala, Nebraska and is surrounded by agricultural land. There are no restricted areas, as described in Section 4(f), within the vicinity of the airport and thus there will be no impacts.

**F. Farmlands**

The Farmland Protection Policy Act (FPPA) regulates federal actions with the potential to convert farmland to non-agricultural uses. Several proposed developments will require the use of adjacent farmland, as described below. Because the airport is surrounded by farmland, all alternatives except “No Action” will require the acquisition of farmland.

The Natural Resources Conservation Service (NRCS) Soil Data Map was accessed to obtain information on prime and other important farmlands. The Soil Data Map revealed that all of the soils found on the project site are classified as “Prime farmland if irrigated.” These soils include: Map Unit 1355 – Bridget silt loam, 0 to 1 percent slopes, Map Unit 1307 – Bayard very fine sandy loam, 1 to 3 percent slopes, and Map Unit 1351 – Bridget loam, 1 to 3 percent slopes. On-airport property is generally not considered prime or unique farmland.

Due to the extension of the runway and the relocation of a county road, the potential for impacts to prime farmland exists. To minimize potential impacts, aviation easements will be acquired in lieu of fee purchases wherever feasible. The easements will allow the land to be used for agricultural purposes, while limiting the height of man-made structures and natural objects. The NRCS will be consulted prior to the initiation of land acquisition, and a completed form AD-1006 will be obtained from the NRCS.

## **G. Fish, Wildlife, and Vegetation**

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure that any action authorized, funded or carried out is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species. While there are several species listed for this county, impacts are unlikely due to the current use of the airport property and the nature of the construction.

The U.S. Fish and Wildlife Service (USFWS) reviewed the proposed improvements for potential impacts on crucial wildlife habitats, current federal-listed threatened and endangered species and species in need of conservation. Per their May 6, 2013 letter, the USFWS stated that due to the project type, size, and location, impacts to federally listed species or their critical habitats are not anticipated. A copy of their letter with their recommendations and Best Management Practices is included in Appendix B.

Under the Migratory Bird Treaty Act (16 U.S.C. 703-712: Chapter 128 as amended) (MBTA) construction activities that could potentially result in the taking of migratory birds, eggs, young and/or active nests should be avoided. The provisions of MBTA are applicable year round; however most migratory bird nesting activity occurs in Nebraska from April 1 to July 15. The USFWS recommends that the proposed project(s) avoid removal or impacts to vegetation during the primary nesting season of breeding birds. In the event that construction work cannot be avoided during peak breeding season, the USFWS recommends a qualified biologist conduct an avian pre-construction risk assessment of the affected habitats to determine the absence or presence of breeding birds and their nests. Surveys must be conducted during the nesting season and should use appropriate and defensible sampling designs and survey methods. If the above conditions occur, the USFWS requests the following be provided prior to the initiation of the proposed project(s): 1) A copy of the survey(s) for migratory birds done in conjunction with the proposed project(s), if any; 2) A written description of the specific work activities that will take place in all proposed project areas; and 3) A written description of any avoidance measures that can be implemented at the proposed project site to avoid the take of migratory birds.

The Nebraska Game and Parks Commission (NGPC) was also contacted regarding potential impacts to crucial wildlife habitats, current state listed threatened and endangered species and species in need of conservation, and public recreation areas for which the agency has some administrative authority. Per their letter dated June 10, 2013, the NGPC stated the project is not likely to have any adverse impacts on state listed threatened or endangered species or their habitat. Additionally, no properties that the NGPC has administrative authority over are located within the immediate project area. A copy of the NGPC letter can be found in Appendix B.

## **H. Floodplains**

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for Keith County, Nebraska were accessed to determine potential for the requirement of a floodplain development permit associated with the project(s). Portions of the project are located within Zone A as referenced on FEMA Flood Insurance Rate Map 31101C0600C (Effective September 30, 2005) for Keith County, Nebraska. As such, a flood plain development permit may be required for the proposed project(s). See Figure 3 on the next page for a map of the flood plain.

## **I. Hazardous Materials, Pollution Prevention, and Solid Waste**

There is one leaking underground storage tank (LUST) or underground storage tank UST located at the project site with no other LUST or UST located within one mile of project site. The exact location of the tank at the project site is unknown and the current status according to the NDEQ is inactive.

There are potentially unknown fuel tanks that may have been buried in the airport's building area, which may be encountered during hangar or apron construction. If discovered, these tanks will be abandoned and closed in compliance with applicable federal and state environmental regulations.

The U.S. Environmental Protection Agency's website was accessed to determine known Resource Conservation and Recovery Act (RCRA) facilities and/or Superfund sites in the State of Nebraska. There are no RCRA or Superfund sites in Keith County on or

near the project study area. In addition, there are no solid waste landfills or dumps located on or adjacent to the project study area.

An Environmental Site Assessment (ESA) Phase I will be conducted on all proposed property, prior to the acquisition of this property. The proposed developments will not cause significant pollution nor will they generate significant solid waste.

#### **J. Historical, Architectural, Archeological, and Cultural Resources**

The Nebraska State Historic Preservation Office (NeSHPO) has reviewed its cultural files for the project site and has found “no effect” for archeological, architectural, or historic properties listed in the National Register of Historic Places or otherwise identified in their files. The NeSHPO review does not constitute the opinions of any Native American Tribes. Therefore consultation with Native American Tribes will be required prior to project(s) initiation. A copy of their letter date April 24, 2013 letter is included in Appendix B.

#### **K. Light Emissions and Visual Impacts**

Runways 8/26 and 13/31 have Medium Intensity Runway Lights (MIRL) and either Precision Approach Path Indicator (PAPIs) or Visual Approach Slope Indicators (VASIs). There is also a rotating beacon, which has operated for many years. The beacon will be replaced and relocated to the west. Runway End Identifier Lights (REIL) will be added to Runway 8/26.

The proposed actions will be of relatively low levels and will be constructed in agricultural areas. Thus there will be no significant impact.

#### **L. Natural Resources and Energy Supply**

The principles of environmental design and sustainability, including pollution prevention, waste minimization, and resource conservation will be followed in the design of all proposed developments. New buildings will be designed for energy efficiency.

A slight increase in aircraft fuel consumption and electricity for additional runway and taxiway lights is expected due to the proposed developments. In contrast, failure to make improvements at the airport will likely result in increased automobile fuel consumption, as users will drive to surrounding airports. The net impact on natural resources and energy supply will be negligible.

#### **M. Noise**

Per Order 1050.1E, Appendix A, Paragraph 14.6, no noise analysis is needed for proposals involving Design Group I and II airplanes in Approach Categories A through D operating at airports whose forecast operations do not exceed 90,000 annual propeller operations or 700 jet operations. With 9,000 forecast operations within the 20-year planning period, the airport is below the threshold. Thus no computer noise modeling or detailed noise analysis was conducted. Noise impact will not be significant.

#### **N. Secondary (Induced) Impacts**

Induced or secondary impacts on surrounding communities may result from a major development. Examples of these types of impacts include shifts in patterns of population movement and growth; public service demands; and changes in business and economic activity to the extent influenced by the airport development. When there are no significant impacts in other categories, as is the case for this Airport Layout Plan, then it is unlikely that there will be significant secondary or induced impacts.

#### **O. Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks**

Socioeconomic impacts are usually associated with the acquisition of real property or displacement of persons. While the proposed developments include property acquisition, no persons will be displaced and the property to be acquired is used for agricultural purposes. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 will be followed during the acquisition of all property.

County Road C will be an obstruction to Runway 8/26 and will be relocated approximately one-half mile west along the half section line. The road relocation will be

approved by the Keith County Board of Commissioners. The road relocation will not cause displacement of anyone, nor will it separate individuals or the communities.

The term “Environmental Justice” encompasses the need to identify and address potential impacts on minority and low-income populations that may be disproportionately high and adverse. The data in Table 13 was obtained from the U.S. Census (2000).

**Table 13**

<b>Census Data</b>		
	<b>Nebraska</b>	<b>Keith County</b>
<b>Population</b>		
White	90.1%	97.1%
Black or African American	4.7%	0.1%
American Indian and Alaska Native	1.3%	0.7%
Asian	1.9%	0.1%
Native Hawaiian and Other Pacific Islander	0.1%	0.0%
Two or more races	1.8%	1.3%
Hispanic or Latino (of any race)	9.5%	5.9%
Median Household Income	\$49,342	\$42,898
Per Capita Income	\$25,229	\$25,315
Individuals Below Poverty Level	11.8%	9.2%

Since there are no individuals living on the airport and no one will be relocated as a result of the planned improvements, no disproportional burden will be placed on minority or low-income populations within the project area.

Children’s Environmental Health and Safety Risks include risks to health or to safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to. Since there are no individuals living on the airport and no one will be relocated as a result of the planned improvements, the proposed developments will not cause a disproportionate health or safety risk to children.



## **P. Water Quality**

Water quality concerns most often involve potable water supply, domestic sewage, increased surface run-off and storage of fuel. The airport currently has water supplied from an on-site well and septic tanks for sanitary services. The well and septic tanks do not significantly impact local water quality or water resources.

There are no underground storm sewers on site, therefore water drains over land. Surface run-off may be temporarily affected by construction, as discussed under Section D above. The proposed developments, including additional impervious surfaces (runways, taxiways and apron) will not significantly impact surface drainage. Existing and future fuel storage will be in above-ground tanks, complying with secondary containment requirements and not significantly impacting water resources.

## **Q. Wetlands**

The National Wetlands Inventory (NWI) Map was reviewed and can be found on the next page as Figure 4. The NWI does not indicate the presence of any wetlands on airport property or within the proposed project areas. There are multiple wetlands associated within the Platte River to the south of the airport and south of the proposed project area. Two wetlands are located approximately one-half mile to the southwest of the project including a freshwater emergent wetland and a freshwater pond. The relocation of the county road appears to be the only project that may impact wetlands. Prior to disturbance associated with the relocation, the area should be viewed by an experienced environmental scientist, to determine if wetlands exist on the site. If wetlands exist, the U.S. Corps of Engineers (USCOE) should be consulted regarding permitting requirements. The USCOE may require mitigation, such as purchasing credits at a wetland bank or establishing new wetlands in another area. New wetlands should not be established in the vicinity of the airport, since wetlands may attract wildlife, which is hazardous to aviation.

**R. Wild and Scenic Rivers**

There are no rivers in the project area; therefore there are no Wild or Scenic Rivers or rivers that qualify for the National Rivers Inventory, as designated by the National Park Service.

**V. STAGE DEVELOPMENT**

The recommended developments have been divided into phases based on the need for improvements and the funds likely to be available. See Tables 14-17. A drawing depicting these improvements (Figure 5) is located after the tables. Detailed cost estimates can be found in Appendix C.

The airport has received non-primary entitlement funds through the FAA's Airport Improvement Program (AIP). Up to \$150,000 in grant funds are set aside each year for this airport and if not used, the funds can roll over for four years.

**Table 14**

<b>STAGE DEVELOPMENT PHASE I (0-5 YEARS)</b>				
<b>Description</b>	<b>Local Funds</b>	<b>State Funds</b>	<b>Federal Fund Eligibility</b>	<b>Total Cost</b>
1. Pave Road & Parking Lot; Drainage	\$67,000		\$587,000	\$670,000
2. Apron Expansion	\$32,000		\$294,000	\$320,000
3. New 6-Place T-hangar	\$63,000		\$567,000	\$630,000
4. Parallel, Midfield & Connector Taxiways to Runway 8, including lights and VOR Relocation	\$280,000		\$2,520,000	\$2,800,000
<b>Total Phase I</b>	<b>\$442,000</b>		<b>\$3,978,000</b>	<b>\$4,420,000</b>

**Table 15**

<b>STAGE DEVELOPMENT PHASE II (6-10 YEARS)</b>				
<b>Description</b>	<b>Local Funds</b>	<b>State Funds</b>	<b>Federal Fund Eligibility</b>	<b>Total Cost</b>
1. Joint seal, repair & mark runways, taxiways & apron	\$73,000		\$657,000	\$730,000
2. Replace 8-Place T-hangar	\$80,000		\$720,000	\$800,000
3. Parallel & Midfield Taxiway to Runway 13, including lights	\$144,000		\$1,296,000	\$1,440,000
4. Purchase Snow Removal Equipment (SRE)	\$20,000		\$180,000	\$200,000
5. Addition to SRE Building	\$42,000		\$378,000	\$420,000
6. Environmental Assessment Runway 8	\$10,000		\$90,000	\$100,000
7. Land for Runway 8, Road Relocation, Runway 26 RPZ, and AWOS easement	\$61,000		\$549,000	\$610,000
<b>Total Phase II</b>	<b>\$430,000</b>		<b>\$3,870,000</b>	<b>\$4,300,000</b>

**Table 16**

<b>STAGE DEVELOPMENT PHASE III (11-20 YEARS)</b>				
<b>Description</b>	<b>Local Funds</b>	<b>State Funds</b>	<b>Federal Fund Eligibility</b>	<b>Total Cost</b>
1. Runway 8/26 extension, widening & strengthening (reconstruction), including parallel taxiway & connector taxiway	\$580,000		\$5,220,000	\$5,800,000
2. Replace 13/31 lights, PAPI, & VASI	\$31,000		\$279,000	\$310,000
3. Reconstruct Apron to Increase Strength	\$139,000		\$1,251,000	\$1,390,000
4. Replace AWOS	\$15,000		\$135,000	\$150,000
<b>Total Phase III</b>	<b>\$765,000</b>		<b>\$6,885,000</b>	<b>\$7,650,000</b>

**Activity triggered development.** Certain development items, such as new hangar construction, are triggered by activity at the airport rather than the Phase I-III timetables. Activity forecasts are generally inaccurate and should not be the basis for construction of the items in this category. Rather we recommend construction when there is sufficient demand for these facilities. While hangars have recently become eligible for federal funds, they will probably have a low priority in comparison to other development needs at the airport.

**Table 17**

<b>STAGE DEVELOPMENT ACTIVITY TRIGGERED</b>				
<b>Description</b>	<b>Local / Private Funds</b>	<b>State Loan Fund Eligibility</b>	<b>Federal Funds*</b>	<b>Total Cost</b>
1. T-Hangar Addition (2 Stalls with 47' doors)	\$81,000	\$189,000		\$270,000
2. T-Hangar Addition (2 Stalls with 47' doors)	\$75,000	\$175,000		\$250,000
3. T-Hangar (10 Stalls with 44' doors) with Taxilanes	\$450,000	\$600,000**		\$1,050,000
4. Storage Hangars (3 @ 80' x 100')	\$558,000	\$1,302,000		\$1,860,000
5. Storage Hangar on Apron (100' x 100')	\$243,000	\$567,000		\$810,000
<b>Total Activity Triggered</b>	<b>\$1,407,000</b>	<b>\$2,833,000</b>		<b>\$4,240,000</b>
<b>GRAND TOTAL – ALL PHASES</b>	<b>\$3,044,000</b>	<b>\$2,833,000</b>	<b>\$14,733,000</b>	<b>\$20,610,000</b>

\*Although storage hangars and associated taxilanes are eligible for FAA funds, they are a low priority and unlikely to be funded given the other items of worked planned at the airport.

\*\* Maximum outstanding loan balance per airport is currently \$600,000.

**APPENDIX "A"**

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**Airport Layout Drawing Sheets 1 through 14**

**APPENDIX “B”**

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**Letters from Review Agencies**

## **APPENDIX “C”**

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### **Detailed Cost Estimates**