Dickinson Theodore Roosevelt Regional Airport

Airport Master Plan

PHASE II

Includes: Addendum (Approved Forecasts, Updated Facility Requirements, Fiscal Requirements and RPZ Analysis)

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ADDENDUM

AIRPORT MASTER PLAN AND ALP UPDATE

Dickinson, ND

PREPARED FOR:

DICKINSON THEODORE ROOSEVELT REGIONAL AIRPORT
DICKINSON, ND

October 2016

Project # 1513301; 1511304

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REQUIREMENT FOR THE ADDENDUM

The Airport Master Plan and Airport Layout Plan (ALP) for the Dickinson Theodore Roosevelt Regional Airport was started in 2012 and the draft final report and ALP were submitted to the Federal Aviation Administration (FAA) on June 16, 2015. Over the course of the summer and early fall (2015) the economy in the Dickinson area (as well as the entire region) was affected by the downturn in oil. In October (2015) Delta announced that it would be ceasing flights out of the Airport of December 1, 2015. Also in October (2015), the Airport, along with the FAA agreed to the use of a revised forecast, which was based on the January 2015 Terminal Area Forecasts (TAF). The TAF numbers were lower than the forecasts contained in the June 2015 final draft submittal which slightly changed some of the requirements within the ALP. Based on these changes it was determined that an addendum to the master planning document would be beneficial, rather than to remove or change the final draft document.

Also during the course of the master plan development it was determined that a revised Fiscal Analysis and a Runway Protection Zone (RPZ) Analysis would be required. The revised Fiscal Analysis was needed based on the tremendous growth which occurred at the Airport from 2012 to 2015, coupled with the selected preferred alternative; determining how to fund the preferred alternative is the basis for the revised Fiscal Analysis report. The RPZ Analysis was required based on a new requirement by the FAA, entitled, *Interim Guidance on Land Uses Within a Runway Protection Zone*, *September- 2012*. This document requires that all airports review and document existing or future land uses underneath RPZs to ensure that they met standards, which are outlined in FAA Advisory Circular 150/5300-13A and the interim guidance.

The Addendum is split up into the following sections, Forecasts, Facility Requirements, Fiscal Analysis, and RPZ Analysis.

FORECASTS

Forecasts are contained in Chapter 3 of the master plan document. These forecasts were developed over the course of three (3) years and occurred during a robust period of activity at the Airport and Region. During the fall of 2015 Delta Airlines announced that it would end service to the Airport on December 1, 2015. This change in service, along with the economic fluctuations in the Region prompted the Airport to revisit the forecasts for future critical aircraft, enplanements and operations by commercial aircraft. The following page contains the approved forecast from the TAF, Table 1.

TABLE 1 –FAA TAF

APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued Janaury 2015
DIK

REGION:AGL STATE: ND LOCID:DIK
CITY: DICKINSON AIRPORT: DICKINSON - THEODORE ROOSEVELT RGNL

	Enplanements			AIRCRAFT OPERATIONS: Itinerant Operations					Local Operations					
Fiscal Year	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	Total Tracon Ops	Based Aircraft
2012	0	24,713	24,713	0	3,475	3,192	48	6,715	1,440	0	1,440	8,155	-	21
2013	0	27,274	27,274	0	3,892	3,192	48	7,132	1,440	0	1,440	8,572	-	21
2014	0	52,729	52,729	0	4,086	3,192	48	7,326	1,440	0	1,440	8,766	-	21
2015	**0**	**55,892**	**55,892**	**0**	**4,249**	**3,192**	**48**	**7,489**	**1,440**	**0**	**1,440**	**8,929**	**-**	**21**
2016	0	58,686	**58,686**	0	4,376	3,192	48	7,616	1,440	0	1,440	**9,056**	-	21
2017	0	61,622	**61,622**	0	4,507	3,192	48	7,747	1,440	0	1,440	**9,187**	-	21
2018	0	63,469	**63,469**	0	4,597	3,192	48	7,837	1,440	0	1,440	**9,277**	-	21
2019	0	65,374	**65,374**	0	4,688	3,192	48	7,928	1,440	0	1,440	**9,368**	-	21
2020	0	67,334	**67,334**	0	4,781	3,192	48	8,021	1,440	0	1,440	**9,461**	-	21
2021	0	69,351	**69,351**	0	4,876	3,192	48	8,116	1,440	0	1,440	**9,556**	-	21
2022	0	71,431	**71,431**	0	4,973	3,192	48	8,213	1,440	0	1,440	**9,653**	-	21
2023	0	73,574	**73,574**	0	5,072	3,192	48	8,312	1,440	0	1,440	**9,752**	-	21
2024	0	75,778	**75,778**	0	5,173	3,192	48	8,413	1,440	0	1,440	**9,853**	-	21
2025	0	78,050	**78,050**	0	5,276	3,192	48	8,516	1,440	0	1,440	**9,956**	-	21
2026	0	80,388	**80,388**	0	5,381	3,192	48	8,621	1,440	0	1,440	**10,061**	-	21
2027	0	82,799	**82,799**	0	5,488	3,192	48	8,728	1,440	0	1,440	**10,168**	-	21
2028	0	85,280	**85,280**	0	5,597	3,192	48	8,837	1,440	0	1,440	**10,277**	-	21
2029	0	87,838	**87,838**	0	5,708	3,192	48	8,948	1,440	0	1,440	**10,388**	-	21
2030	0	90,471	**90,471**	0	5,822	3,192	48	9,062	1,440	0	1,440	**10,502**	-	21
2031	0	93,183	**93,183**	0	5,938	3,192	48	9,178	1,440	0	1,440	**10,618**	-	21
2032	0	95,977	**95,977**	0	6,056	3,192	48	9,296	1,440	0	1,440	**10,736**	-	21
2033	0	98,855	**98,855**	0	6,177	3,192	48	9,417	1,440	0	1,440	**10,857**	-	21
2034	0	101,819	**101,819**	0	6,300	3,192	48	9,540	1,440	0	1,440	**10,980**	-	21
2035	0	104,873	**104,873**	0	6,426	3,192	48	9,666	1,440	0	1,440	**11,106**	-	21
2036	0	108,020	**108,020**	0	6,554	3,192	48	9,794	1,440	0	1,440	**11,234**	-	21
2037	0	111,260	**111,260**	0	6,685	3,192	48	9,925	1,440	0	1,440	**11,365**	-	21
2038	0	114,597	**114,597**	0	6,818	3,192	48	10,058	1,440	0	1,440	**11,498**	-	21
2039	0	118,032	**118,032**	0	6,954	3,192	48	10,194	1,440	0	1,440	**11,634**	-	21
2040	0	121,575	**121,575**	0	7,093	3,192	48	10,333	1,440	0	1,440	**11,773**	-	21

The differences between the approved forecast (TAF) and the 2015 final draft master plan (Chapter 3) forecasts are contained in Table 2. Changes between 2014 TAF and 2015 TAF numbers are highlighted in yellow.

TABLE 2 – FORECAST COMPARISON TO FAA TAF

Dickinson Theodore Roosevelt Regional Airport
Preferred Forecast Comparison to TAF Forecast

Passenger Enplanements	Year	Airport Forecast	Feb-14 TAF	AF/TAF (% Difference)	15-Jan TAF	AF/TAF (% Difference)
Base yr.	2013	*35,125*	22,840	**53.79%**	27,274	**28.79%**
Base yr. +1 yr	2014	60,309	24,667	**144.49%**	52,729	**14.38%**
Base yr. + 5yrs.	2018	82,992	29,691	**179.52%**	63,469	**30.76%**
Base yr. + 10yrs.	2023	125,330	34,418	**264.14%**	73,574	**70.35%**
Base yr. + 15yrs.	2028	150,906	39,895	**278.26%**	85,280	**76.95%**
Base yr. + 20yrs.	2033	161,886	46,247	**250.05%**	98,855	**63.76%**
Itinerant Operations						
Base yr.	2013	14,591	7,132	**104.59%**	7,132	**104.59%**
Base yr. +1 yr	2014	15,542	7,326	**112.15%**	7,326	**112.15%**
Base yr. + 5yrs.	2018	18,245	7,837	**132.80%**	7,837	**132.80%**
Base yr. + 10yrs.	2023	19,810	8,312	**138.33%**	7,312	**170.93%**
Base yr. + 15yrs.	2028	20,776	8,837	**135.10%**	8,837	**135.10%**
Base yr. + 20yrs.	2033	21,237	9,417	**125.52%**	9,417	**125.52%**
Local Operations						
Base yr.	2013	1,728	1,440	**20.00%**	1,440	**20.00%**
Base yr. +1 yr	2014	2,376	1,440	**65.00%**	1,440	**65.00%**
Base yr. + 5yrs.	2018	2,808	1,440	**95.00%**	1,440	**95.00%**
Base yr. + 10yrs.	2023	2,952	1,440	**105.00%**	1,440	**105.00%**
Base yr. + 15yrs.	2028	3,168	1,440	**120.00%**	1,440	**120.00%**
Base yr. + 20yrs.	2033	3,528	1,440	**145.00%**	1,440	**145.00%**
Total Operations						
Base yr.	2013	16,319	8,572	**90.38%**	8,572	**90.38%**
Base yr. +1 yr	2014	17,918	8,766	**104.40%**	8,766	**104.40%**
Base yr. + 5yrs.	2018	21,053	9,277	**126.93%**	9,277	**126.93%**
Base yr. + 10yrs.	2023	22,762	9,752	**133.41%**	9,752	**133.41%**
Base yr. + 15yrs.	2028	23,944	10,277	**132.98%**	10,277	**132.98%**
Base yr. + 20yrs.	2033	24,765	10,857	**128.11%**	10,857	**128.11%**

Note: TAF data is on a Federal fiscal year basis (October through September). 2013 Enplanement Data based upon FFY, Operations data from 2013 is CY from Airport Records, Reported IFR traffic, KLJ Analysis

The only difference between the 2014 TAF and the 2015 TAF are the Passenger Enplanement numbers. The FAA decided to increase the amount of enplanements across the planning period considerably over the 2014 numbers. As can be seen in Table 2 the 2015 TAF numbers reflect robust growth in enplanements over the planning period. Even with these increases the difference between the airport forecast numbers (column 1) and the numbers presented in the 2015 TAF (column 4) are too far apart for local or even regional approval. Based on the time sensitivity (regarding the existing runway pavement condition) it was determined that since the TAF numbers do not change the need for the preferred alternative (Alternatives Chapter- Chapter 5), that the Airport accept them, which they did at the October 2015 Airport Board meeting.

FACILITY REQUIREMENTS

Based on the changes accepted in the Forecasting effort (discussed above), several items were changed in the Facility Requirements. Again, these changes do not change any of the needs portrayed in the preferred alternative or on the ALP, but it was determined that for consistency within the document that these differences be explained.

Design Aircraft Changes

The current RDC for the Primary Runway (14-32) is C-II which is based on United's use of the Embraer (EMB) -145[1]. This aircraft has operated into the Airport as a scheduled service as United has been operating the Embraer ERJ-145 (C-II) for three daily round trips to Dickinson from Denver, Colorado.

The Facility Requirements Chapter (Chapter 4) described the Future design aircraft for Runway 14-32 as an MD-83. This aircraft is classified within the FAA's Runway Design Code (RDC) as a D-III. This aircraft was chosen as the design aircraft in the master plan based on information provided to the Airport from Allegiant Airlines stating that they would be interested in operating at the Airport in the future.

Based on the downturn in the economy the Airport decided that the forecasted RDC for the Primary Runway (14-32) will be C-III. This is based on the Embraer EMB-175/190 (C-III). United Airlines currently uses the Embraer EMB-145 (C-II), with three daily round trip flights to Denver, Colorado. Airlines

[1] The existing RDC is B-II. This is based on the EMB 120 which Great Lakes Airlines operates; this carrier operated at the Airport until 2013.

typically do not provide confirmation of their long range plans to upgrade the types of aircraft providing service in a given market. However, when examining the fleet mix currently used by air carriers serving airports in the region with comparable enplanement (passenger) levels, it is assumed the carriers would use a similar fleet mix to meet the additional demand in the Dickinson area. Also, since the EMB-145 and has seating capacities of 50 passengers or less United have been purchasing Embraer EMB-175/190 (C-III), in large numbers, as these aircraft can seat 70-90 passengers.

Over the course of 2016 the Airport and the FAA determined that the future runway length of 7,300 feet should be planned for in the future as opposed to 7,700 feet which was developed in Chapter 4 (Appendix A) of the master plan. A runway length of 7,300 feet accommodates 75% of Fleet (up to 60,000lb MTOW) at 90% Useful Load, and it would accommodate most of the commercial service carriers (Delta, United, American, Alaska, Allegiant) existing and potential aircraft (CRJ 200-700-900, EMB 145-175-90,B717-737 and MD83-90), which could be anticipated to operate from DIK on airlines current routes as seen in the following Table from Appendix A.

DESIGN AIRCRAFT ANALYSIS

Adjusted for Runway Gradient: Maximum Difference between Runway Centerline Elevations 5' = 50' Takeoff Length Extension

AIRLINES	HUBS		Aircraft / ARC / Engines / Maximum Gross Takeoff Weight (LBS)									
			CRJ200	E145	CRJ700	CRJ900	E175	B717	MD83	MD90	A320	B737-800
	Current Service in ND*	Engine	CF34-3B1	AE 3007-A1E	CF34-8CG	CF34-8C5	CF34-8E5	BR715-A1-30	JT8D-219	V2500-D5	CFM56	CFM56-7B
		Maximum Takeoff Weight (lbs)	53,000	53,131	75,000	80,500	82,673	121,000	160,000	156,000	171,961	174,200
		Runway Design Code (RDC)	D-II	C-II	C-II	C-III	C-III	C-III	D-III	C-III	C-III	C-III
		Taxiway Design Group (TDG)	3	3	3	3	3	3	4	4	3	3
		Distance (NM)	Runway Length (FT) @ ISA +15C									
Delta	MSP	420	7,300		5,100	6,100	4,900	6,600		6,000		
United	DEN	425	7,300	6,000	5,100	6,100	4,900					
Delta	SLC	540	7,500		5,200	6,200	5,000	6,700				
United	ORD	700	7,700	6,300	5,500	6,400	5,100					
American	ORD	700		6,300								
Alaska	SEA	800			5,600							
Allegiant	LAS	850							7,700		6,100	
American	DFW	875	7,800	6,600			5,300					
Allegiant	IWA	905							8,000		6,100	
United	IAH	1,070		6,900	6,400	7,300					5,700	6,400
Delta	ATL	1,150	8,300		6,500	7,600		7,600		7,000	5,700	6,500
United	IAD	1,200	8,400		6,500	8,500	6,800				5,900	6,600
Delta	JFK	1,310			6,600	8,600	6,900	8,100		7,300	6,100	6,700
Allegiant	SFB	1,500							8,900		6,800	
Alaska	ANC	1,825										7,200

* Non Stop Service to Cities in North Dakota include MSP, DEN, SLC, ORD, LAS, DFW, IWA, IAH, ATL, SFB, LAX, and PIE

FAA A/C 150/5325 - 4B Runway Length: 75% of Fleet (up to 60,000lb MTOW) at 90% Useful Load, Length = 7,300

FAA A/C 150/5325 - 4B Runway Length: 100% of Fleet (up to 60,000lb MTOW) at 90% Useful Load, Length = 8,900

- Mean daily high temperature of 84 degrees F
- Runway difference in center line elevations 5 feet
- Elevation 2,590 MSL

As indicated above, the future design aircraft is the EMB 175 which is in aircraft approach category (AAC) C and D and airplane design group (ADG) II and III. The requirements are the same for C and D aircraft regarding all information contained in the summary table, Table 4, below, so no requirements have changed from what was depicted in Table 16 of Chapter 4; however because the runway length has changed from 7,700 feet to 7,300 the Runway Safety Area and the Runway Object Free Area has changed. Also the Future pavement strength requirement has been changed to reflect the lighter design aircraft.

Summary Table Showcasing the Changes to Facility Requirements

Changes to the Requirements Table, shown in Chapter 4, Table 16 are highlighted in yellow below:

TABLE 4 – FACILITY REQUIREMENTS SUMMARY

Design Element	Existing	Future Requirement	Ultimate Development
Airport Reference Code	B-II	C-III	D-III
Primary Runway 14/32	6,400' x 100'	7,300' x 150'	8, 900' x 150'
Runway Design Code	B-II	C-III	D-III
Critical Aircraft	EMB-120	EMB-175	MD-83
Visibility Minimums	Non-Precision/Precision	Precision/Precision	Precision/Precision
Parallel Taxiway TDG & Width	none	TDG 4, 50’	TDG 4, 50’
Pavement Strength	30,000 SW, 37,500 DW	90,000 DW	162,000 DW
Shoulders/Blast Pad	None	25’ wide Shoulders 200’w x 200’l Blast Pad	25’ wide Shoulders 200’w x 200’l Blast Pad
Runway Safety Area	7’799’ x 500’[2]	9,300’ x 500’	10,900’ x 500’
Runway Object Free Area	7,600’ x 800’	9,300’ x 800’	10,900’ x 800’
Runway 14 Runway Protection Zone	1000’ x 1510’ x 1700’ Partially by Easements With Incompatible uses	1000’ x 1750’ x 2500’ Owned in Fee with Compatible Uses	1000’ x 1750’ x 2500’ Owned in Fee with Compatible Uses
Runway 32 Runway Protection Zone	1000’ x 1750’ x 2500’ Partially by Easements With Incompatible Uses	1000’ x 1750’ x 2500’ Owned in Fee with Compatible Uses	1000’ x 1750’ x 2500’ Owned in Fee with Compatible Uses
Crosswind Runway 7/25	4,700' x 75'	4,700' x 75'	4,700' x 75'
Runway Design Code	B-II	B-II	B-II
Critical Aircraft	B200	B200	B200

[2] Currently have 400’ long x 500’ wide RSA with incremental gain from 2015 construction. Future RSA at Runway 32 end will require runway shift; this is planned for 2017-2020-December 2015 CIP

TABLE 4 – FACILITY REQUIREMENTS SUMMARY

Design Element	Existing	Future Requirement	Ultimate Development
Visibility Minimums	Visual/Non-Precision	Non-Precision/Non-Precision	Non-Precision/Non-Precision
Parallel Taxiway TDG & Width	none	TDG 2, 35’	TDG 2, 35’
Pavement Strength	16,000 SW, 20,000 DW	16,000 SW, 20,000 DW	16,000 SW, 20,000 DW
Shoulders/Blast Pad	none	10’ wide Shoulders 95’w x 175’l Blast Pad	10’ wide Shoulders 95’w x 175’l Blast Pad
Runway Safety Area	5,300’ x 150’	5,300’ x 150’	5,300’ x 150’
Runway Object Free Area	5,300’ x 500’	5,300’ x 500’	5,300’ x 500’
Runway 7 Runway Protection Zone	500’ x 700’ x 1000’ Partially by Easements	500’ x 700’ x 1000’ Partially by Easements	500’ x 700’ x 1000’ Partially by Easements
Runway 25 Runway Protection Zone	500’ x 700’ x 1000’ Partially by Easements With Incompatible Uses	500’ x 700’ x 1000’ Partially by Easements With Incompatible Uses	500’ x 700’ x 1000’ Partially by Easements With Incompatible Uses
Terminal Landside Facilities			
Terminal Building Size	9700 s.f.	49,822 s.f.	63,908 s.f.
Terminal Parking Stalls	~ 250	565	720
Parking Area Required Space (82 s.y. per stall based on existing layout)	20,500 s.y	46,330 s.y.	59,040 s.y.
Total Acres Required	17.6	21.3	24.2
Terminal Apron			
Use	2 - Group II aircraft	3 - Group III aircraft	4 - Group III Aircraft
Dimensions	250'w x 200'd	500' w x 300' d	650' w x 300' d
Space	5,555 s.y.	16,666 s.y.	21,666 s.y.
G.A. Requirements			
General Aviation Apron	20,700 s.y.	29,900 s.y.	37,600 s.y.
Conventional Hangar Space S.F. needed	51,050	84,778	TBD
T-Hangar Units	5 units	35 units	TBD

FISCAL ANALYSIS

There are a number of significant changes that have occurred to airline passenger demand at Dickinson Theodore Roosevelt Regional Airport. Recent history shows a dramatic uptick in passengers over the past three years. Forecast demand is anticipated to grow more slowly over the remaining planning period.

Assuming that the airlines will cooperate and provide the needed capacity, the Airport will require significant terminal area facility expansion. As described in a previous chapter, key passenger facility development growth is shown in Table 5.

TABLE 45- TERMINAL AREA NEEDS

Terminal Facilities	Existing	Future Requirements
Terminal Building Size	9,700 s.f.	49,822 s.f.
Auto Parking Stalls	250	565
Auto Parking Area	17.6 acres	21.3 acres
Terminal Apron Area	5,555 s.y.	16,666 s.y.
Conventional Hangar Space	50,050 s.f.	84,778 s.f.
T-Hangars	5 Units	35 Units

The financial plan assumes that the airline service and the physical expansion of the Airport will occur within the timeframe indicated by the forecast. These assumptions require Airport Authority action on implementation of the recommended plan in the near term.

For the terminal building, the question of how the implementation is to be undertaken revolves around incremental improvements versus wholesale improvements. The business plan assumes a combination of activities, where stopgap measures are taken in the near term to accommodate demand increases, but by the fall of 2021, the new terminal will be under construction. Prior to that time, temporary accommodations for passengers will be developed under a low-cost strategy.

Surface paving such as auto parking and terminal area apron can be undertaken on an incremental basis without interrupting passenger traffic. Until the new terminal is constructed, auto parking will be the most critical need if passengers are to be accommodated. It is always possible to shuttle passengers from remote lots, but that requires vans and personnel. Most of these logistical issues should disappear once the new terminal building is constructed.

General aviation demand accommodation in the form of conventional hangars and T-hangars is less critical to the overall mission of the Airport and should be developed either through private financing or public financing if the projects can be shown to be economically feasible. The pro formas, presented later, will address the decision factors.

CAPITAL NEEDS

Capital needs for Airport development have been estimated for the Airport Master Plan Update recommendations. These needs are considered non-operational costs and are generally financed through federal, state, and local grants. Because the full federal share will not be available during the planning period due to funding shortfalls, creative methods of financing the infrastructure improvements must be developed. This section discusses the future capital needed to fund the expansion program at Dickinson Theodore Roosevelt Regional Airport and the funding sources available to the Airport Authority.

Airport Capital Improvement Program

Table 6 presents a listing of proposed projects and costs associated with the future development of Dickinson Theodore Roosevelt Regional Airport by year and source of funding. As shown, there is over $151.3 million needed before 2028. Justification for these projects and their timing for development came from the Airport Master Plan analysis. The growth in airline passenger demand occurring at DIK has created a need for expanded Airport infrastructure that will be difficult to finance under current federal and State funding levels. The current sources of funding are described in the following sections.

TABLE 6- CAPITAL IMPROVEMENT PROGRAM

Year	Project Description	Total Project Probable Cost	Federal AIP		Sponsor Share		PFC Funded	Airport AIP Ineligible	CFC Funded	Private Funded
			Entitlement	Discretionary	NDAC	Airport				
2015	Runway 32 RSA Grading	$1,790,000	$1,000,000	$611,000	$179,000					
	Environmental Assessment	$650,000		$585,000	$65,000					
	Aeronautical Survey & eALP & Imagery	$400,000			$400,000					
	Master Plan 2- Amendment	$265,774			$265,774					
	Wildlife Hazard Assessment & Wildlife Hazard Management Plan Update	$69,712			$69,712					
	BCA/LOI	$575,000			$575,000					
	Compatible Land Use Plan	$150,000			$150,000					
	2015 Pavement Maintenance	$635,000		$235,000	$400,000	$30,850				
	Purchase Snow Removal Equipment	$757,000					$757,000			
	General Aviation Apron Expansion - Phase III (Lighting)	$307,000			$307,000	$5,000				
	2015 Total	**$5,599,486**	**$1,000,000**	**$1,431,000**	**$2,411,486**	**$35,850**	**$757,000**	**$0**	**$0**	**$0**
2016	Major Pavement Rehabilitation - Runway 14-32 & 7-25	$500,000	$70,300	$379,700		$50,000				
	Land Acquisition for Runway Relocation and Extension	$2,000,000			$2,000,000					
	Design Parallel Taxiway for Primary - 7,700' x 50'	$412,000	$370,800							
	Design Medium Intensity Taxiway Lighting for Primary Parallel Taxiway	$51,000	$45,900			$53,300				
	Design Wildlife Fence on Acquired Property	$40,000	$36,000							
	Design PAPIs for Temporary Runway (taxiway) (if any)	$30,000	$27,000							
	Reimbursable Agreement with FAA Tech Ops for Design of NAVAIDs on Primary Runway	$250,000	$225,000			$50,000				
	Design of NAVAIDs on Primary Runway	$250,000	$225,000							
	Design Primary Runway - 7,700' x 150'	$735,000								
	Design High Intensity Runway Lighting	$66,000			$841,000					
	Design AWOS Relocation	$40,000								
	Programming and Schematic Design of Terminal Building	$410,000			$500,000					
	Programming and Schematic Design of ARFF/SRE Building	$90,000								
	2016 Total	**$4,874,000**	**$1,000,000**	**$379,700**	**$3,341,000**	**$153,300**	**$0**	**$0**	**$0**	**$0**
2017	Reimbursement for 2016 Land Acquisition for Runway Relocation and Extension	$602,000	$541,800		$30,100	$30,100		-$602,000		
	ARFF Truck - Index B - 1,500 gallon	$635,000	$571,500		$63,500					
	Construct Parallel Taxiway for Primary - 7,700' x 50'	$15,886,000	$8,200	$14,289,200	$794,300	$794,300				
	Construct Medium Intensity Taxiway Lighting for Primary Parallel Taxiway	$701,000		$630,900	$35,050	$35,050				
	Construct Wildlife Fence on Acquired Property	$510,000		$459,000	$25,500	$25,500				
	Construct PAPIs for Temporary Runway (Taxiway) (If Needed)	$150,000		$135,000	7500	7500				
	Construct ASOS Relocation (if needed)	$340,000		$306,000	$17,000	$17,000				
	Design Commercial Service Terminal Building	$1,600,000		$1,440,000	$80,000	$80,000				
	Design Commercial Service Terminal Boarding Bridges	$80,000		$72,000	$4,000	$4,000				
	Design Development ARFF/SRE Building	$225,000		$202,500	$11,250	$11,250				
	Acquire Snow Removal Equipment - 2 trucks	$1,200,000					$1,200,000			
	Reimbursement for 2015 BCA/LOI	$500,000	$450,000		$25,000	$25,000		-$500,000		
	2017 Total	**$22,429,000**	**$1,571,500**	**$17,534,600**	**$1,093,200**	**$1,029,700**	**$1,200,000**	**-$1,102,000**	**$0**	**$0**
2018	Switch Operations to Taxiway									
	Construct Primary Runway - 7,700' x 150'	$41,862,000	$1,000,000	$36,675,800	$2,093,100	$2,093,100				
	Construct High Intensity Runway Lighting	$873,000		$785,700	$43,650	$43,650				
	Switch Operations to Runway									
	Reimbursable Agreement with FAA Tech Ops for Construction of NAVAIDs on Primary Runway	$250,000		$225,000	$12,500	$12,500				
	Construct New ILS & NAVAIDs on Primary Runway	$1,350,000		$1,215,000	$67,500	$67,500				
	Design Water and Sewer connection to City of Dickinson	$250,000						$250,000		
	Construction Documents for Design of Commercial Service Terminal Building	$1,600,000		$1,440,000	$80,000	$80,000				
	Construction Documents for Design of Commercial Service Terminal Boarding Bridges	$80,000		$72,000	$4,000	$4,000				
	Construction Documents for Design of ARFF/SRE Building	$225,000		$202,500	$11,250	$11,250				
	2018 Total	**$46,490,000**	**$1,000,000**	**$40,616,000**	**$2,312,000**	**$2,312,000**	**$0**	**$250,000**	**$0**	**$0**

TABLE 6- CAPITAL IMPROVEMENT PROGRAM

Year	Project Description	Total Project Probable Cost	Federal AIP Entitlement	Federal AIP Discretionary	Sponsor Share NDAC	Sponsor Share Airport	PFC Funded	Airport AIP Ineligible	CFC Funded	Private Funded
2019	Acquire ARFF Truck	$750,000					$750,000			
	Construct ARFF/SRE Building Expansion	$4,000,000	$1,000,000	$2,600,000	$200,000	$200,000				
	Construct Water and Sewer Connection to City of Dickinson	$2,500,000						$2,500,000		
	Construct Commercial Service Terminal Building	$22,880,000		$15,842,000	$3,519,000	$3,519,000				
	Construct Commercial Service Terminal Boarding Bridges	$1,260,000		$1,134,000	$63,000	$63,000				
	Design Commercial Service Apron (300' x 500') & Taxiways (50' wide)	$300,000		$270,000	$15,000	$15,000				
	Design Commercial Service Terminal Parking & Access Roads	$300,000							$300,000	
	Design General Aviation Apron Expansion (Approx. 35,100 s.y.)	$150,000		$135,000	$7,500	$7,500				
	Design General Aviation Hangar Taxilane (Approx. 270' x 25' - Each)	$75,000		$67,500	$3,750	$3,750				
	Design Corporate Aviation Hangar Taxilane (Approx. 3750 s.y.)	$150,000		$135,000	$7,500	$7,500				
	Design Commercial Apron GSE Access Road (Approx. 4,700' x 24')	$110,000		$99,000	$5,500	$5,500				
	Design General Aviation Hangar Automobile Access Roads & Parking Areas (Approx. 10,000 s.y.)	$70,000		$63,000	$3,500	$3,500				
	Design Corporate Aviation Hangar Automobile Access Roads & Parking Areas (Approx. 10,000 s.y.)	$100,000		$90,000	$5,000	$5,000				
	Design Rental Car QTA Facility	$100,000							$100,000	
	2019 Total	**$32,745,000**	**$1,000,000**	**$20,435,500**	**$3,829,750**	**$3,829,750**	**$750,000**	**$2,500,000**	**$400,000**	**$0**
2020	Construct Commercial Service Apron (300' x 500') & Taxiways (50' wide)	$8,710,000	$1,000,000	$6,839,000	$435,500	$435,500				
	Acquire Snow Removal Equipment	$750,000		$675,000	$37,500	$37,500				
	Construct Commercial Service Terminal Parking & Access Roads	$7,330,000							$7,330,000	
	Construct General Aviation Apron Expansion (Approx. 35,100 s.y.)	$4,300,000		$3,870,000	$215,000	$215,000				
	Construct General Aviation Hangar Taxilane (Approx. 270' x 25' - Each)	$500,000		$450,000	$25,000	$25,000				
	Construct Corporate Aviation Hangar Taxilane (Approx. 3750 s.y.)	$1,550,000		$1,395,000	$77,500	$77,500				
	Construct Commercial Apron GSE Access Road (Approx. 4,700' x 24')	$1,760,000		$1,584,000	$88,000	$88,000				
	Construct General Aviation Hangar Automobile Access Roads & Parking Areas (Approx. 10,000 s.y.)	$800,000		$720,000	$40,000	$40,000				
	Construct Corporate Aviation Hangar Automobile Access Roads & Parking Areas (Approx. 10,000 s.y.)'	$2,170,000		$1,953,000	$108,500	$108,500				
	Construct Rental Car QTA Facility	$1,540,000							$1,540,000	
	2020 Total	**$29,410,000**	**$1,000,000**	**$17,486,000**	**$1,027,000**	**$1,027,000**	**$0**	**$0**	**$8,870,000**	**$0**
2021+	Design & Construct Crosswind Parallel Taxiway - 4700' x 35'	$2,570,000	$1,000,000	$1,325,000	$128,500	$128,500				
	Design & Construct Medium Intensity Taxiway Lighting for Crosswind Parallel Taxiway	$470,000		$423,000	$23,500	$23,500				
	Design & Construct 10-Unit T-Hangar (Approx. 12,000 s.f. Each - $800K) 25 Additional Units needed	$2,000,000								$2,000,000
	Design & Construct Conventional Hangar (Approx. 10,000 s.f. Each - $930K) 35,000 s.f. needed	$3,255,000								$3,255,000
	Design & Reconfigure Old Terminal for Other Use	$1,500,000						$1,500,000		
	2021+ Totals	**$9,795,000**	**$1,000,000**	**$1,748,000**	**$152,000**	**$152,000**	**$0**	**$1,500,000**	**$0**	**$5,255,000**
	GRAND TOTALS	**$151,342,486**	**$7,571,500**	**$99,630,800**	**$14,166,436**	**$8,539,600**	**$2,707,000**	**$3,148,000**	**$9,270,000**	**$5,255,000**

Funding Sources

Funding for the capital improvement program is available from several sources, including FAA funding, State funding, local share funding, and private funding.

- **FAA Funding**

The FAA Modernization and Reform Act of 2012 provided $63.4 billion to fund the agency through 2015. This included approximately $11 billion towards the FAA's proposed Next Generation (“NextGen”) air traffic control system. However, that program has expired, and new legislation and funding is needed. Until that happens, the FAA will be funded through continuing resolutions, which continue the old funding at levels frozen to the last year of their authorization.

Dickinson Theodore Roosevelt Regional Airport is eligible for assistance in funding capital projects through the FAA Airport Improvement Program (AIP). As an eligible participating airport in the AIP program, the Airport is required to prepare, update annually, and submit to the FAA a five-year Airport Capital Improvement Program (ACIP) to apply for Federal grants. AIP grants typically fund 90 percent of development costs for eligible projects.

AIP eligible projects include the planning, design, and construction of projects associated with public use non-revenue generating facilities and equipment of the Airport. Typical AIP eligible projects include: Airport Master Plans, Airport Layout Plans; land acquisition and site preparation; airfield pavements, e.g. runways, taxiways, and transient aprons; lighting and navigational aids; safety, security, and snow removal equipment; public use passenger terminal facilities that are not leased for exclusive use; and obstruction identification and removal. The highest funding priority according to FAA’s rating procedure is generally given to those projects that are safety-related such as runway safety area improvements, obstruction removal, and facility improvements to meet current FAA Airport Design Standards.

The FAA has already indicated that they will not have enough money within the planning period to fund all of the required projects for airports in the northwest part of North Dakota (the Bakken-impacted airports). For Williston, Minot, and Dickinson, the funding for more than $350 million in requirements is just not available. Thus, Dickinson and the other impacted airports have had to plan for the identification of other funding sources that may be tied back to State or local revenues from the energy industry.

For this plan, it was estimated that a 50 percent shortfall in Federal discretionary funding - roughly $49.8 million - is likely. These costs will have to be borne by the Airport or City and will create a need for local funding of some type. The financial plan addresses this issue in Section 7.4, below.

- **State Funding**

The North Dakota Aeronautics Commission provides State funding to assist aviation and airport development. Airport sponsors may apply for State grant funding at 50 percent or higher of the local share of project costs. Given a 90 percent federal funding share, the State's match would typically be 5 percent of the project total. If a higher state funding level is needed for the project, the airport sponsor must indicate the level that is required and provide justification within the grant application. The Commission will not fund aerial spray pads, interest payments, airport liability insurance premiums, privately owned hangars, and private aprons as defined by the FAA. However, requests can be made for funding assistance for fuel facilities or a community hangar if a business plan is submitted with the grant application.

It should be noted that the size and scope of airport development in North Dakota over the next decade will significantly eclipse the available funding resources from conventional programs. Efforts to identify new sources of funding are underway for the critical infrastructure improvements needed at the State's airports. If FAA funding shortfalls occur as anticipated, a significant funding burden will likely fall to the State. This could total as much as the $49.8 million shortfall in Federal funding.

- **Local Funding**

Local funding for Dickinson Theodore Roosevelt Regional Airport is accomplished through Airport net revenue surpluses or the City of Dickinson and Stark County millage tax. The Airport Authority is empowered to issue revenue bonds for borrowing, but cannot issue general obligation (GO) bonds. In the past, the City has initiated borrowing for the Airport Authority and the Authority has repaid the City for that funding. Typically, bonds must be evaluated by independent underwriters, and the proposed bonds must demonstrate a reasonable expectation of repayment.

The financial plan has been developed in order to show the amount of operating revenue surplus will be available to fund the potential borrowing by the Airport Authority for local share matching funds. The results of this analysis are presented in a following section.

- **Private Funding**

Private investors are a potential source of funds for revenue producing developments at the Airport. Tenants and/or investors may finance the purchase of existing facilities or the construction of new facilities from which they derive income. While direct revenues to the Airport are usually limited to the purchase or lease charges for the land underlying the facilities, the local sponsor does not need to obtain its own funding for these improvements. Additionally, the increased activity resulting from Airport improvements often increases the number of based aircraft or operations, which in turn generates additional revenue associated with fuel sales and other aviation services. Examples of private investment at airports include buildings for fixed based operators, fuel facilities, hangars (bulk and T-hangars), aviation-related commercial development, and non-aviation commercial development.

REVENUE ENHANCEMENT OPTIONS

Revenue enhancement initiatives are suggested strategies that focus on increasing aviation activity, and overall revenues. These strategies were recommended in an earlier financial plan:

- ***Non-Aviation Land Use:*** The Airport Master Plan has identified roughly 10 acres near the existing entrance to the Airport as potential non-aviation land use. Such use could include commercial, industrial, or hospitality use. The property is too small for an industrial park, but may serve one industrial client or several small industrial users. The possibility of a hotel location at the Airport is more likely because of the convenience that it would pose for air travelers. If this property were leased or sold, the revenues generated from the transactions would be used to support the Airport's operation or capital improvement program.

To estimate potential revenues from non-aviation land use, an average rate for land lease or sale must be combined with the annual absorption rate for the 10-acre parcel. Given the need for sanitary wastewater treatment and disposal, there may be a delay in filling the space until growth factors and infrastructure are developed. For this reason, it was assumed that there may be a 5 to 10 year gap in the planning-to-tenant-occupancy period. For planning purposes, it was estimated that lease rates for the Airport property would be the same as those for hangar development ground leases. If land were released to be sold, that property would be valued at roughly $152,500 per acre. Leased property is preferred to the sale of Airport property because of the long term revenue stream associated with lease payments and the difficulty in obtaining a release from the FAA for an outright sale of this property. For this pro forma, it was assumed that the property would be leased by 2020.

- ***Oil/Energy Leases and Royalties:*** The Airport benefits from the lease of property for potential future oil drilling purposes. Preliminary examinations have been focused on three shale formations: Lodgepole, Bakken, and Three Forks. The dry well on the Airport (Wildcat field, Airport 32-4) is over the Lodgepole formation. There is a producing well less than a mile north of the Airport (Dobson butte field, Kostelecky 11-33). From the study data, it may be unlikely that oil will be produced from either the Lodgepole or Bakken formations at the Airport. The Lodgepole formation is either towards the shelf or inter-mounded. The Bakken formation has a decreasing thickness of 17 feet (4.5 miles from the Airport) to 9 feet (1 mile northwest of the Airport). The Three Forks formation is untested. It is believed to be 200 feet thick. Currently there are no operational wells in the Three Forks formation, but several are being permitted in the Airport area and production potential should be determined within the next few years.

Revenue from potential oil/energy leases and royalties would be estimated by estimating how much Airport property could be leased for this purpose. With the required 1,280 acres spacing per unit, the 484.6 acres that is leased by the Airport for drilling equals 37.9 percent of a producing well's royalties. The prevailing royalty rate of 18 percent and an average price of $100 per barrel (future rate likely needed for feasibility), would be combined with an estimate of the production volume of a potential Airport-related well to yield a forecast of revenues. Using the data from a nearby well, the first year production would be the highest, followed by a steep reduction and long term lower production rate

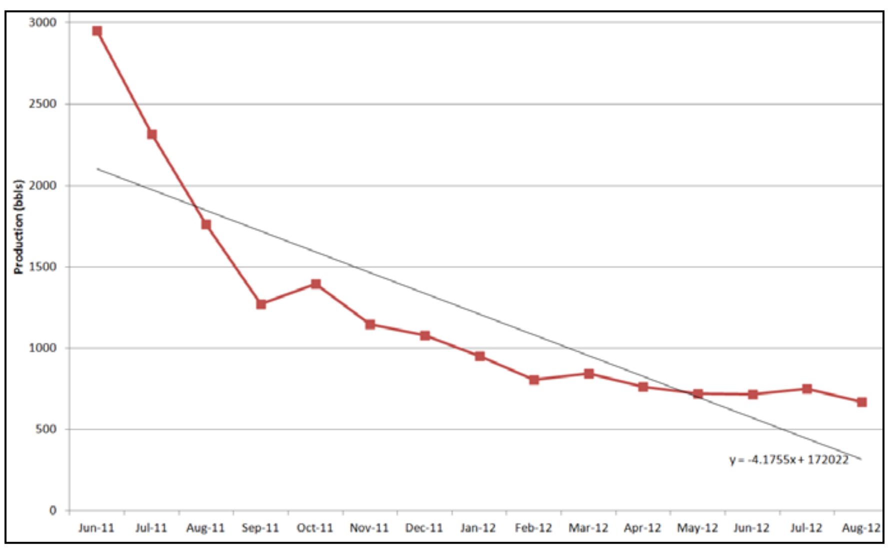


FIGURE 1 - OUKROP 34-34H WELL PRODUCTION

(Figure 1). This shows production of about 16,000 barrels the first year, declining to about 8,000 barrels the second, and so forth to zero by year 20. It would likely be that drilling near the Airport will be postponed until the price of oil increases to profitable levels. This may take several years. As such, this revenue source was not included until 2020.

- ***Additional Airport Amenities:*** The continuing increase in passenger traffic has created opportunities for new businesses at the Airport. This would include the possibility of food service (café or vending), newsstand, and a greater variety of ground transportation services. Other services such as increased air charter, flight school enrollment, and niche air cargo are some of the benefits of a growing passenger base. These amenities would provide marginal increases in rents and activity fees (landing fees, fuel flowage fees) to the Airport. Although not a high revenue category, the addition of new Airport amenities helps to better serve the clientele that use the facility. In some cases, it would mean the difference between using Dickinson Theodore Roosevelt Regional versus another airport in the region.
- ***Hangar Development Options:*** A key to attracting and maintaining based aircraft is the ability to "house" them. With a forecast of three additional business jets within the 20 year period, it is anticipated that at least two of these would require their own hangars. In addition, there are only five T-hangars located on the Airport. The forecast additional need is 30 by the year 2033. Given the additional hangar needs, the primary question that must be answered involves the feasibility of hangar development. If the Airport Authority develops the hangars, it must collect a reasonable rent that will pay for the cost of construction. The alternate method is to let private enterprise construct and lease hangar space on ground leases from the Airport Authority. The pro formas developed later in this plan will show the financial decision factors associated with each option.
- ***Other Methods:*** Although not covered by this plan, there are other methods of increasing activity and revenue at airports. These methods include branding, marketing, and proactive advertising, and are generally used to capture demand that may be leaking to other airports in the region. They are also used to attract new demand from previously untapped market segments.

PRO FORMAS FOR RECOMMENDED PLAN

This section focuses on the forecasts of revenues and expenses through the end of the planning period for Dickinson Theodore Roosevelt Regional Airport. Using the assumptions from the recommended plan along with the possible implementation of revenue enhancement options, the financial plan will help to determine the ability of the Airport Authority to finance capital development projects.

To facilitate the analysis, this section is organized to discuss the following topics:

- Historical Expenses and Revenues
- Expense Forecast
- Revenue Forecast
- Net Revenue Analysis

Historical Revenues and Expenses

Dickinson Theodore Roosevelt Regional Airport is operated by the Dickinson Municipal Airport Authority, which is appointed by the City Commission. The Authority has the power to issue bonds, set budgets, hire staff, and direct the City to levy up to four mils of property taxes. The Airport Authority's financial objective is that the Airport become self-sustaining.

Table 7 shows Airport Operating Expenses for Dickinson Theodore Roosevelt Regional Airport. These expenses were made up of the following cost items:

- ***Personnel Costs:*** This includes salary and benefits of Airport workers such as health insurance, workers compensation, taxes, etc.
- ***LEO Costs:*** This category reflects the costs of providing Law Enforcement Officers at the Airport.
- ***Travel & Seminars:*** This category includes the costs of training Airport employees and their attendance at seminars or conferences.
- ***Maintenance and Repairs:*** These costs are distributed to Buildings, Grounds, Equipment and Operations.
- ***Utilities:*** These are costs for Telecommunications, Water, Propane and Electric.
- ***Fuel:*** Fuel costs include expenditures for Gas and Diesel.
- ***Office Costs:*** This category includes costs for Office Supplies, Postage, Printing, Bank Charges, and Association dues.
- ***Advertising:*** These are costs incurred by the Airport Authority to promote services offered at DIK.
- ***Insurance:*** This cost category includes the commercial insurance premiums for the Airport.
- ***Professional Services:*** These are purchased professional and technical services that can be performed only by persons or firms with specialized skills and knowledge.
- ***Property Taxes:*** These are taxes on income-earning property improvements at the Airport.
- ***Miscellaneous:*** This category captures all expenses that are not attributable to the other categories.

TABLE 7– HISTORICAL AIRPORT EXPENSES

Expense Category	2010	2011	2012	2013	2014
Personnel Costs	$139,032	$162,984	$177,650	$247,185	$382,916
LEO Costs	$62,630	$48,829	$5,052	$0	$0
Travel & Seminars	$9,264	$11,421	$13,335	$16,973	$13,271
Maintenance & Repairs					
Building	$13,455	$8,708	$13,342	$21,283	$100,548
Grounds	$9,610	$13,077	$37,088	$46,492	$33,829
Equipment	$12,072	$12,518	$8,240	$31,973	$35,597
Operations (includes Parking)	$1,969	$12,843	$7,073	$5,780	$41,881
Utilities	$28,505	$34,661	$49,066	$66,803	$136,977

TABLE 7– HISTORICAL AIRPORT EXPENSES

Expense Category	2010	2011	2012	2013	2014
Fuel	$30,282	$33,611	$12,975	$28,477	$41,233
Office Costs	$8,639	$5,933	$5,885	$17,506	$19,287
Advertising	$8,846	$9,557	$5,609	$15,168	$12,533
Insurance	$12,793	$10,265	$11,331	$9,316	$11,719
Professional Fees	$12,772	$22,186	$60,498	$64,876	$18,989
Property Taxes	$720	$798	$1,566	$539	$1,282
Miscellaneous	$675	$393	$4,395	$8,125	$13,742
Total Operating Expenses	**$351,263**	**$387,785**	**$413,105**	**$580,496**	**$863,804**
Non-Operating Costs	**2010**	**2011**	**2012**	**2013**	**2014**
Capital Improvements	$312,428	$1,532,656	$0	$1,711,256	$0
City Loan Repayments	$0	$0	$0	$3,588	$38,181
Total Non-Operating Costs	**$312,428**	**$1,532,656**	**$0**	**$1,714,844**	**$38,181**
TOTAL COSTS	**$663,692**	**$1,920,441**	**$413,105**	**$2,295,340**	**$901,985**

Historical operating expenses grew steadily from $351,263 in 2010 to $863,804 in 2014 – a total increase of 146 percent (25.2 percent annual growth rate). Major contributors to the increases have included Personnel Costs, Maintenance and Repairs, and Utilities. Other categories have had more modest increases. The growth in aviation activity at the Airport has spurred the need for increased personnel and resources.

Table 8 shows the historical revenues for 2010 through 2014. This information was taken from the statements of revenues and expenses for Dickinson Theodore Roosevelt Regional Airport provided by the Airport Authority. Some of the revenue categories represent aggregated totals of several accounting sub-categories. Revenues from Airport operations are derived from the following:

- ***Landing Fees:*** This revenue source is based on maximum gross landing weights of Commercial Airlines and GA scheduled service and Part 125 operators.
  - ***Commercial Airlines:***
    - Signatory Rate: $1.39/1,000 lbs.
    - Non-Signatory Rate: $1.73/1,000 lbs.
  - ***GA Landing Fees:***
    - 0-3,999 lbs.: $6.00
    - 4,000-7,999 lbs.: $7.00
    - 8,000-12,499 lbs.: $10.00
    - 12,500 lbs. and Up: $1.00/ 1,000 lbs.

- ***Lease Revenues:*** This category includes hangar, Airport Rescue and Fire Fighting (ARFF), Building Rent, Terminal Rent, and Land leases.

- ***Fuel Flowage Fees:*** The Airport collects a 5-cent per gallon fuel flowage fee from its FBO. The majority of fuel flowage fees are earned from jet fuel consumption of the Airlines.
- ***Car Rental Concession Fees:*** The Airport earns 12 percent of gross revenues from each car lease.
- ***LEO Income:*** This revenue is for reimbursement of Law Enforcement Officers that attend to the Airport's security and Transportation Security Administration requirements.
- ***Parking Income:*** The Airport earns up to 7 dollars per day per car parked at the Airport's parking facilities.
- ***Interest Income:*** Interest is earned from money that is to be used for capital developments and from other money that has a spending wait time.
- ***Airport Miscellaneous Revenues:*** This category captures all revenue that is not attributable to the other categories. (includes pro-rated utilities)

TABLE 8 – TOTAL AIRPORT REVENUES BY CATEGORY

Revenue Category	2010	2011	2012	2013	2014
Landing Fees	$26,773	$23,380	$26,484	$59,602	$125,791
Lease Revenues					
Hangar Rent	$17,622	$17,801	$34,316	$58,814	$99,452
ARFF	$28,131	$31,728	$32,055	$16,028	$0
Building Rent	$16,380	$16,020	$8,265	$13,280	$7,950
Terminal Rent	$19,296	$20,153	$37,135	$56,084	$123,819
Land Leases	$3,094	$126,495	$7,399	$6,549	$6,668
Fuel Flowage Fees	$25,455	$35,345	$49,647	$53,059	$63,961
Car Rental Concession Fees	$6,684	$17,072	$87,051	$132,200	$287,046
LEO Income	$62,630	$47,573	$4,471	$0	$0
Parking Income	$0	$0	$0	$252,454	$539,279
Interest Income	$2,245	$1,351	$684	$112	$56
Other Miscellaneous Income	$7,772	$15,203	$13,528	$22,581	$80,895
Total Operating Revenues	**$216,083**	**$352,121**	**$301,035**	**$670,763**	**$1,334,917**
Non-Operating Revenues	**2010**	**2011**	**2012**	**2013**	**2014**
City Tax Subsidy	$156,825	$182,204	$199,200	$229,903	$365,638
County Subsidy	$15,000	$20,886	$16,053	$29,784	$37,049
Capital Revenues	$284,360	$1,252,612	$0	$0	$0
Customer Facility Charge	$0	$0	$0	$0	$55,915
Passenger Facility Charge	$0	$0	$0	$0	$169,748
Total Non-Operating Revenues	**$456,185**	**$1,455,703**	**$215,253**	**$259,687**	**$628,350**
Total Revenues	**$672,268**	**$1,807,823**	**$516,288**	**$930,450**	**$1,963,267**

Also included in Table 8 are the non-operating revenues associated with the Airport. These revenues include the annual contributions from the City and County, along with capital development grants from the State and the FAA. The contributions from the City and County have been quantified in property taxes as three mills from the City and one mill from the County. It should be noted that non-operating revenues costs are just that – they are not generated from Airport operations. In order to determine what the Airport itself is generating, the analysis will compare operating revenues and operating expenses.

From the historical financial information, the operating revenues have shown significant growth between 2010 and 2014. Historical operating revenues jumped from $216,083 in 2010 to $1,334,917 in 2014 - a total increase of 517.8 percent (57.7 percent annual growth rate). Prior to 2010, there was no real growth due to the fact that the energy boom had not yet impacted Dickinson Theodore Roosevelt Regional Airport. In 2010, the Airport exceeded the 10,000 enplanement level, which qualified them to receive the minimum $1 million in FAA entitlement funding for capital projects.

Non-operating revenues are composed of contributions by the City and County, along with grants for capital projects. As shown in Table 7, these revenues have grown over the 2010-2014 period. Because the City and County contributions are based upon property taxes, the more growth/development that occurs in the Dickinson area, the higher the contribution level. In this regard, there has been an increase of 134 percent in the level of annual contributions over the five-year historical period, growing from $171,825 to $402,687. Capital spending is based primarily on the Airport's ability to secure grants and program improvements. These funds vary widely from year to year and will be forecast on the basis of the recommended plan Airport Capital Improvement Program (ACIP).

Table 9 presents a summary and comparison of operating revenues and costs. As shown, there were operating losses recorded from 2010-2012. Starting in 2013, when the Airport began charging for parking, the Airport had net gains in operating revenues. Revenues from parking in 2013 and 2014 were $252,454, and $539,279, respectively.

TABLE 9 – COMPARISON OF OPERATING REVENUES & EXPENSES

Year	Revenues	Expenses	Net Gain/(Loss)
2010	$216,083	$351,263	($135,181)
2011	$352,121	$387,785	($35,665)
2012	$301,035	$413,105	($112,070)
2013	$670,763	$580,496	$90,267
2014	$1,334,917	$863,804	$471,113

It is against this historical backdrop that the forecast of revenues and expenses for Dickinson Theodore Roosevelt Regional Airport is presented in the next section.

Operating Expense Forecast

The operating expense forecast for Dickinson Theodore Roosevelt Regional Airport takes into account the recommended plan and the significant growth that is set to occur over the next 10 years. The expense forecast examines each cost area, makes assumptions about future growth, and projects these numbers into the future. Cost areas have been outlined and historical levels of expenses were shown in Table 6. Assumptions about future growth in various cost centers include:

- ***Monetary Inflation:*** All costs are assumed to be impacted by monetary inflation which was estimated at 2 percent per year over the twenty-year period. Some expense items will grow at a faster rate, but unless there are decreases in actual usage of expense elements, none are predicted to grow slower than the overall 2 percent rate.
- ***Personnel Costs:*** Personnel costs are anticipated to increase, both because of inflation and because more personnel will be used at the Airport as it grows. This analysis, used the 2016 budget increase of 84 percent over 2014 personnel costs for 2016. These were then increased by double the rate of inflation through 2033.
- ***Maintenance & Repairs:*** This category include four sub-categories: Building, Grounds, Equipment, and Operations (which includes parking maintenance). Given the planned new terminal building and the expansion of the primary runway, the facilities and their footprint will grow significantly by the year 2022. For this expense category, the growth in costs was predicted to be double the rate of inflation through 2021. For the year 2022, a 50 percent increase was added to account for the expanded Airport infrastructure. After that period, the growth rate in costs was assumed to grow at the same rate as inflation.
- ***Utilities:*** It is anticipated that the use of electricity will increase significantly with the development of the new terminal. Compared to the existing terminal building, the new facility will have a size 3.5 times larger when construction is finished fall of 2021. Prior to then, the growth in costs is predicted to be double the rate of inflation. For the year 2022, a 200 percent increase was added to account for the expanded size of the terminal building and runway system. This amount was lower than the 3.5 multiple footprint size due to the probable use of efficient energy technology - LED lighting, solar energy use, and possibly other types of cost saving practices by then. After 2022, the growth rate in costs was assumed to grow at the same rate as inflation.
- ***Insurance:*** Insurance costs have grown significantly in recent years. For the future it was predicted that they would outpace inflation by double through the entire forecast period.
- ***Other Expenses:*** All of the other expense categories were increased by the rate of inflation throughout the planning period.

Table 10 contains a summary of the operating expense forecast for Dickinson Theodore Roosevelt Regional Airport through the planning period. No non-operating costs are shown in the table. Forecast non-operating expenses will be covered separately because they are dependent upon the availability of FAA and State funding.

TABLE 10 - FORECAST OF OPERATING EXPENSES

EXPENSES	2014	2018	2023	2028	2033
Operating Expenses					
Personnel Costs	$382,916	$762,852	$928,127	$1,129,208	$1,321,522
LEO Costs	$0	$0	$0	$0	$0
Travel & Seminars	$13,271	$14,365	$15,860	$17,511	$19,333
Maintenance & Repairs					
Building	$100,548	$55,702	$191,732	$211,688	$233,721
Grounds	$33,829	$59,599	$102,572	$113,248	$125,035
Equipment	$35,597	$22,714	$39,091	$43,160	$47,652
Operations	$41,881	$48,995	$84,322	$93,099	$102,788
Utilities	$136,977	$160,244	$367,715	$405,987	$448,242
Fuel	$41,233	$29,249	$32,293	$35,654	$39,365
Office Costs	$19,287	$20,877	$23,050	$25,449	$28,098
Advertising	$12,533	$13,566	$14,978	$16,537	$18,258
Insurance	$11,719	$13,710	$16,680	$20,294	$24,690
Professional Fees	$18,989	$51,066	$38,693	$42,720	$47,167
Property Taxes	$1,282	$1,388	$1,532	$1,692	$1,868
Miscellaneous	$13,742	$9,290	$10,257	$11,324	$12,503
Toal Operating Expenses	**$863,804**	**$1,263,616**	**$1,866,902**	**$2,167,569**	**$2,470,241**

Operating Revenue Forecast

The forecast of operating revenues at Dickinson Theodore Roosevelt Regional Airport is impacted by the fast growing airline passenger traffic base that is predicted to occur at all of the airports within reach of the Bakken Shale Play. Airport revenues are composed of a number of component parts including:

- Landing Fees
- Terminal Building Rental Revenues
- Fuel Flowage Fees
- Auto Parking and Car Rental Revenues
- General Aviation Hangar Revenue Options
- Other Revenue Enhancement Options
- Non-Operating Revenues

- **Landing Fees**

Landing fees are based upon the rates per 1,000 lbs. for commercial aircraft. Thus, the rate basis must include a forecast of landed weight along with the airfield costs that are being recovered. Table 11 presents a forecast of landed weight and fees through 2033.

TABLE 11 - LANDING FEES

	2014	2018	2023	2028	2033
Airfield Costs	**$118,584**	**$130,997**	**$148,355**	**$168,014**	**$190,278**
Airline Weight (1,000s)	85,399	83,512	87,069	106,658	123,613
Landing Fee/1000 lbs.	$1.39	$1.57	$1.70	$1.58	$1.54
	$118,704	**$130,997**	**$148,355**	**$168,014**	**$190,278**
Cargo Weight (1,000s)	7,176	7,176	7,176	7,176	7,176
Landing Fee Under 12.5k lbs	$10	$10	$10	$10	$10
Landing Fee/1000 lbs.	$1.00	$1.00	$1.00	$1.00	$1.00
	$7,644	**$7,644**	**$7,644**	**$7,644**	**$7,644**
Total	**$126,348**	**$138,641**	**$155,999**	**$175,658**	**$197,922**

The forecast of landing fee revenues are assumed to be the same as the airfield costs for each forecast year. Thus, the landing fee can be computed by dividing the Airfield Costs by the Landed Weight. The results show a landing fee that increases from 2014 to 2023, then declines over the last 10 years of the period.

- **Terminal Building Rental Revenues**

The forecast of Terminal Building Rental revenues is dependent upon the ultimate size of the new terminal building and the cost of operating and maintaining the new facility. In many cases, local debt service is included in the formula to establish rental rates. In this manner, the rental rates are estimated on a cost recovery basis where the forecast of terminal costs are charged back to the renters of the facility.

TABLE 12 - FORECAST OF TERMINAL BUILDING RENTAL REVENUES

ITEM	2014	2018	2023	2028	2033
Terminal Operating Cost	$123,819	$144,851	$332,392	$366,988	$405,184
Total Rental Space	3,851	3,851	16,470	16,470	16,470
Ave. Rate/sq ft	$32	$38	$20	$22	$25
Total Revenues	$123,819	$144,851	$332,392	$366,988	$405,184

The terminal non-operating costs were not included in the analysis at this point because there are a variety of options available to deal with those costs. For now, just the operating costs are identified and assumed to be paid out of rental fees. Even with that exception, the new terminal costs will be significantly higher than existing costs. If the airlines are to pay substantially more in rental rates, they must first agree to the expenditures. Therefore, it is likely that the airlines will insist that any Passenger Facility Charges (PFCs) collected be pledged toward the terminal building construction project.

- **Fuel Flowage Fees**

Fuel flowage fee revenue was forecast based upon an assumed fuel flowage rate times the number of gallons sold in each future year. Currently, the fuel flowage fees are $0.05 per gallon for 100 Low Lead (LL) and $0.08 for Jet A that is sold to the passenger airlines. The air cargo aircraft pay $0.05 per gallon for Jet A fuel. For the long term future, it is likely that 100 LL avgas will be discontinued. Therefore, it is recommended that in the near term, a uniform flowage fee be charged. In this manner, the fuel consumption will not have to be distinguished between 100 LL and Jet A in the revenue stream. For the forecast, it was assumed that a uniform fuel flowage fee of $0.10 would be instituted in 2021 when the FBO lease is up for renegotiation. The fuel flowage fee to passenger airlines was forecast to increase to $0.10 per gallon in 2018 when the airline leases are up for renegotiation. Increases to fuel flowage fees were projected to occur at regular intervals throughout the rest of the planning period.

Fuel sales were forecast based upon anticipated consumption by both the airline and general aviation segments. In this regard, the scheduled airline and air cargo fuel consumption activity is relatively easy to predict because the number of flights and stage lengths are known. With general aviation activity, forecasts of fuel consumption used dynamic historical averages combined with aircraft operations forecasts to predict future fuel sales. Forecast fuel sales and flowage fees are shown in Table 13.

TABLE 13 - FORECAST FUEL SALES AND FLOWAGE REVENUES

ITEM	2014	2018	2023	2028	2033
Airline Jet A	532,750	501,071	500,061	668,218	764,596
GA Jet A	349,420	356,133	401,511	408,666	418,327
GA 100 LL	77,400	84,000	90,800	94,400	106,000
Total Fuel Sold	**959,570**	**941,204**	**992,372**	**1,171,284**	**1,288,923**
Fuel Flowage Fees	**$63,961**	**$68,773**	**$99,237**	**$140,554**	**$193,339**

- **Auto Parking and Car Rental Revenues**

Revenues from paid auto parking and car rental company agreements have significantly impacted Airport revenues. The Airport operates the parking facility with automated pay stations (thereby saving labor costs for manning exit booths). Forecast parking revenues are derived by multiplying future parking lot occupancy by the average daily rate of $7. This rate is predicted to increase at regular intervals throughout the planning period. Table 13 presents the forecast of auto parking revenues through the year 2033.

Rental car fees are based on 12 percent of gross revenues of the rental car companies. There is a minimum charge per year to each rental car company however, the combined revenues for the Airport in 2014 well exceeded the minimum and totaled $287,000 from both Hertz and Dollar.

The predicted gross revenue totals are based upon 12 percent of an estimated $410 average rental.

In addition, a consolidated facility charge (CFC) of $4 per day (capped at $16) per car rental agreement is added to pay for the rental car facility which is to be constructed in 2021. This analysis predicted an average CFC of $12 per rental. Table 14 presents the forecast of Car Rental Revenues through the year 2033.

TABLE 14 - AUTO PARKING AND RENTAL CAR REVENUES

ITEM	2014	2018	2023	2028	2033
Auto Parking Revenues					
Airport Parking Spaces	270	270	350	350	450
Occupancy Rate	78%	81%	67%	72%	60%
Average Daily Rate	$7	$8	$9	$10	$10
Total Parking Revenues	**$539,279**	**$637,499**	**$770,882**	**$920,624**	**$989,539**
Rental Car Revenues					
Forecast # Rentals		5,268	6,107	7,078	8,205
Average Fee/Rental (@12%)		$52.28	$55.28	$58.28	$58.28
Total Rental Car Revenues	**$287,046**	**$275,421**	**$337,592**	**$412,539**	**$478,207**
Consolidated Facility Charge (CFC)		$12	$12	$12	$12
Total CFC Revenue	**$69,894**	**$63,215**	**$73,280**	**$84,939**	**$98,460**

- **General Aviation Hangar Revenue Options**

Currently, the Airport Authority earns revenue from the lease or rental of hangar space. For the future, potential revenue from the rental of general aviation hangars was examined for two basic scenarios: publicly financed construction and privately financed construction. Under the publicly constructed option, the Authority would pay for the construction of new hangar facilities and then lease these to potential tenants. The cost of construction would be paid out of the future revenues associated with hangar rentals. Under the privately financed option, land leases would be granted to developers to construct hangars. These leases would have some type of expiration policy that either reverted the improvements on the property (hangars) to the Airport Authority, or would require a renegotiation of the terms at the end of the lease. Table 15 presents an example pro forma for T-hangar construction and Conventional hangar construction.

TABLE 15 - AIRPORT AUTHORITY HANGAR DEVELOPMENT MODEL

Hangar Type	Construction Cost	Annual Debt Service	Debt Coverage
10-Unit T-hangar	$800,000	$53,241	444/mo./unit
12,800 sf Conv. Hangars	$1,190,400	$79,223	$6.19/sf/yr.

From our previous analysis, it was determined that Airport Authority financing of T-hangar construction does not work as a model for hangar development. On the other hand, the development of conventional hangar space that rents for $6.19/sf/yr. may be feasible because corporate owners of business jets are accustomed to paying these types of rates at other locations across the nation. Thus, it is within the realm of feasibility. However, it is likely that any development of conventional hangar space by the Authority would be on a breakeven basis only. Thus, this type of hangar development would be revenue neutral to the Airport's bottom line.

- ***Privately-Financed Hangar Construction***

If hangar construction is privately financed, it removes the economic burden and risk from the Airport Authority. However, because there is no control over the supply of private investment, the Authority may not be able to secure the number and type of hangars desired. In general, the economic return on investment will dictate the level of investment. As shown previously, the public cost to develop T-hangars far outpaces the returns that may be available through rental income. For private development of T-hangars, there may be a significantly lower cost. This comes from purchasing pre-engineered buildings and using in-house site prep machinery and personnel. In some cases, the costs can be reduced by as much as one-third. However, that would only reduce the monthly rental to $296 - still much higher than the going rate.

Privately financed hangar construction would occur on land leased from the Airport. This would be true of both T-hangars and conventional hangars. In some cases, leased land includes more than just the hangar footprint. It would include some provision for hangar apron, auto parking, and access to the building. While T-hangars must be developed in groups by a developer, conventional hangars can be developed individually by a single user. If a reversion clause is included in the land lease, the Airport can either take title to the improvements or it can purchase those improvements based upon appraisals at the end of the lease.

If a full-build scenario occurred at the Airport, there would be land leases for 30 T-hangars and 34,400 square feet of conventional hangar space. Assuming only the footprint is leased for these facilities beginning at 21 cents per square foot (escalated by inflation), Table 16 presents an estimate of revenues to the City from hangar land leases.

TABLE 16 - HANGAR LAND LEASE PRO FORMA

Hangar Type	**2016**	**2018**	**2023**	**2033**
T-Hangars				
Total Sq. Ft.	12,000	12,000	24,000	36,000
Land Lease	$2,520	$2,674	$5,789	$10,115
Conventional Hangars				
Total Sq. Ft.	12,800	19,200	25,600	34,400
Land Lease	$2,688	$4,195	$6,175	$10,115
Total Revenues	**$5,208**	**$6,817**	**$11,965**	**$20,701**

While it appears that this method is the best (relative to Airport Authority financed construction), the unknown factor is whether or not developers or corporate aviation interests will lease enough land and build enough hangars at Dickinson Theodore Roosevelt Regional Airport to meet forecast demand.

Other Revenue Enhancement Options

Two other revenue enhancement options that may be realized by the Airport Authority involve the non-aeronautical use of Airport property and the royalties derived from Airport oil leases. The first involves a 10-acre parcel at the Airport's entrance that may be leased for hospitality facilities and services. This may include the development of a hotel and restaurant on the site. Assuming the airline passenger forecasts materialize, the demand for on-site hotel services should be significant.

- ***Non-Aeronautical Land Use***

Our assessment of commercial property in Dickinson indicated an average of about $185,000 per acre, depending upon the size of the parcel. Smaller parcels sell for more; larger parcels sell for less. At 20 cents per square foot, the 10-acre parcel would lease for $87,120 per year. By contrast, the debt service payment on $1.85 million at 3 percent interest is $123,120 per year - $36,000 more than the lease payment. If the interest rate on the debt were 5 percent, the difference between leasing and buying the property would become almost $60,000 per year. Thus, the lease option (versus fee simple purchase) for the property makes economic sense to businesses that need or rely upon the Airport and its passenger base. Given the lack of wastewater treatment capability at the Airport, it was assumed that the property lease would not occur for at least five years. Thus, 2020 is the first year of revenues for this land lease. Table 16 presents a summary of lease payments for the 10-acre Airport parcel using the same ground lease rate that is applied to hangar development parcels.

- ***Oil Lease Royalties***

As discussed previously, revenue from potential oil/energy leases and royalties would be estimated by estimating how much Airport property could be leased for this purpose. It would likely be that drilling near the Airport will be postponed until the price of oil increases to profitable levels. This may take several years. As such, this revenue source was not included until 2020. Key numbers associated with this lease involve the following:

- There are 1,280 acres of required spacing per drilling unit
- The Airport leases 484.6 acres for drilling. This equals 37.9 percent of a producing well's royalties.
- The prevailing royalty rate of 18 percent and an average price in the future of $100 per barrel is assumed.
- Production of about 8,000 barrels is estimated for the first year, declining to about 4,000 barrels the second, and so forth to zero by year 20.

Given these assumptions, the Airport could expect royalties of $54,600 for the first year, $27,300 the second year, declining to about $14,992 by year 2033. Table 16 presents a summary of royalty payments that are anticipated to begin in 2020.

TABLE 17 - FORECAST OF NON-AERONAUTICAL REVENUE

ITEM	2020	2023	2033
Non-Aeronautical Land Lease	$96,188	$102,075	$124,429
Oil Royalties	$54,518	$23,851	$14,992
TOTAL	**$150,705**	**$125,926**	**$139,421**

- **Non-Operating Revenues**

There are three current sources of non-operating revenues: Passenger Facility Charges (PFCs), Customer Facility Charges (CFC), and municipal government contributions. In the U.S., the federal PFC Program allows the collection of PFC fees up to $4.50 for every enplaned passenger at commercial airports controlled by public agencies. Airports use these fees to fund FAA approved projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition. The CFC is a fee collected from rental car customers at the airport. It is an additional fee collected on a per-transaction or a per-transaction-day basis to assist in paying for all or a portion of the operating and capital costs of a rental car area or facility. These funds can only be used on projects which directly support rental car activities at the Airport. Municipal government contributions to the Airport are made by the City (3 mills) and County (1 mill). With property valuations in the City exceeding those in the County, the City contribution has been significantly higher than that of the County.

- ***PFC Revenue***

The PFC revenue of $4.50 is collected for each departing passenger from the Airport. These revenues can be used to fund certain approved capital projects but not operating revenues. PFC revenues are then accounted as non-operating. PFCs at Dickinson went into effect in May 2014. Table 17 presents a summary of forecast PFC revenues.

- ***CFC Revenue***

The CFC is an additional fee collected on each car rental transaction to assist in paying for all or a portion of the operating and capital costs of a rental car area or facility. Currently the CFC is set at $4 per car rental per day and is capped at $16 dollars per transaction. The CFCs at Dickinson went into effect in April 2014 and generated $55,915 in revenues in 2014. Table 17 presents a summary of forecast CFC revenues.

- ***Municipal Government Contributions***

The City and County have both dedicated tax revenues to support the Airport. In 2014, the combined contribution to the Airport was $402,687. The City and County revenue contribution projections for 2016 project increases of 29.6 percent and 76.7 percent over 2014 levels. Forecast growth rates from 2017-2033 were calculated at double the rate of inflation. Table 18 presents a summary of the forecast municipal government contributions.

TABLE 18 – FORECAST OF NON-OPERATING REVENUES

ITEM	2014	2018	2023	2033
Commercial Enplanements	58,943	63,469	73,574	98,855
PFC Revenues	$169,748	$285,611	$331,083	$444,848
CFC Revenues	$55,915	$63,215	$73,280	$98,460
City Revenue Contribution	$365,638	$512,520	$623,559	$923,020
County Revenue Contribution	$37,049	$70,808	$86,148	$127,520
Total Non-Operating Revenues	**$628,350**	**$932,154**	**$1,114,070**	**$1,593,848**

Net Revenue Analysis

Table 19 presents a summary of the projected expenses for Dickinson Theodore Roosevelt Regional Airport through 2033. The presentation of operating costs is straightforward and represents a compilation of the various expense forecasts shown previously. As shown, the forecast of operating expenses are predicted to grow from $863,804 in 2014 to $2,470,241 in 2033 - a compound annual growth rate 5.7 percent. This significant growth rate mirrors the expansion of the Airport's infrastructure. In addition, Table 18 presents the known non-operating expenses through the year 2021 (the last year for which capital costs are estimated).

Table 19 presents a summary of the projected revenues for Dickinson Theodore Roosevelt Regional Airport through the year 2033. Both operating and non-operating revenues are shown. The forecast of operating revenues predicts that revenues will grow from $1,334,917 in 2014 to $2,660,148 by the year 2033 - a compound annual growth rate of 3.7 percent.

In the operating revenues forecast, there are three speculative income sources: Additional Hangar Lease Fees, Additional Non-aviation Leases, and Additional Oil Royalties. The additional hangar lease income assumes that private investors will develop new hangars on leased Airport land. This investment may or may not materialize. The additional non-aviation lease revenue is assumed to come from the 10-acre parcel located at the existing Airport entrance (possibly by hospitality interests). Again, this is a speculative revenue source that may or may not be realized on the timeframe shown in the forecast. Finally, the oil royalty income assumes that the current lease of Airport property by energy interests will actually be drilled and will produce oil.

Table 20 presents a summary of the net operating revenues for each of the forecast years. As shown, there is an operating surplus each year throughout the planning period. For the 20-year planning period, the total operating surplus is anticipated to reach approximately $3.9 million.

TABLE 19 – FORECAST OF EXPENSES

Year	2014	2015	2016	2017	2018	2023	2028	2033
Operating Expenses	Actual	Forecast						
Personnel Costs	$382,916	$522,914	$705,300	$733,512	$762,852	$928,127	$1,129,208	$1,321,522
LEO Costs	$0	$0	$0	$0	$0	$0	$0	$0
Travel & Seminars	$13,271	$13,536	$13,807	$14,083	$14,365	$15,860	$17,511	$19,333
Maintenance & Repairs								
Building	$100,548	$72,730	$51,500	$53,560	$55,702	$191,732	$211,688	$233,721
Grounds	$33,829	$61,091	$77,000	$57,307	$59,599	$102,572	$113,248	$125,035
Equipment	$35,597	$32,225	$21,000	$21,840	$22,714	$39,091	$43,160	$47,652
Operations	$41,881	$43,556	$45,298	$47,110	$48,995	$84,322	$93,099	$102,788
Utilities	$136,977	$142,456	$148,154	$154,080	$160,244	$367,715	$405,987	$448,242
Fuel	$41,233	$27,562	$28,113	$28,675	$29,249	$32,293	$35,654	$39,365
Office Costs	$19,287	$19,673	$20,066	$20,468	$20,877	$23,050	$25,449	$28,098
Advertising	$12,533	$12,784	$13,039	$13,300	$13,566	$14,978	$16,537	$18,258
Insurance	$11,719	$12,188	$12,675	$13,182	$13,710	$16,680	$20,294	$24,690
Professional Fees	$18,989	$48,121	$49,083	$50,065	$51,066	$38,693	$42,720	$47,167
Property Taxes	$1,282	$1,308	$1,334	$1,360	$1,388	$1,532	$1,692	$1,868
Miscellaneous	$13,742	$8,754	$8,929	$9,108	$9,290	$10,257	$11,324	$12,503
Total Operating Expenses	**$863,804**	**$1,018,897**	**$1,195,300**	**$1,217,651**	**$1,263,616**	**$1,866,902**	**$2,167,569**	**$2,470,241**
Non-Operating Costs	2014	2015	2016	2017	2018	2023	2028	2033
City Loan Repayment	$38,181	$34,055	$552,297	$0	$0	$0	$0	$0
Local Share ACIP/PFC,CFC	$0	$792,850	$153,300	$2,229,700	$2,312,000	$0	$0	$0
Total Non-Operating Costs	**$38,181**	**$826,905**	**$705,597**	**$2,229,700**	**$2,312,000**	**$0**	**$0**	**$0**
TOTAL EXPENSES	**$901,985**	**$1,052,952**	**$1,747,597**	**$1,217,651**	**$3,575,616**	**$1,866,902**	**$2,167,569**	**$2,470,241**

TABLE 20 – FORECAST OF REVENUES

Year	2014	2015	2016	2017	2018	2023	2028	2033
Operating Revenues	Actual				Forecast			
Landing Fees	$125,791	$129,216	$132,280	$135,421	$138,641	$155,999	$175,658	$197,922
Lease Revenues	$0	$0	$0	$0	$0	$0	$0	$0
Hangar Rent	$99,452	$96,659	$97,676	$98,714	$99,772	$124,372	$134,111	$144,863
Additional Hangar Lease Fees	***$0***	***$0***	***$5,208***	***$5,312***	***$6,817***	***$11,965***	***$13,210***	***$20,701***
ARFF	$0	$0	$0	$0	$0	$0	$0	$0
Building Rent	$7,950	$27,864	$30,194	$30,740	$31,354	$34,618	$38,221	$42,199
Terminal Rent	$123,819	$128,772	$133,923	$139,280	$144,851	$332,392	$366,988	$405,184
Land Leases	$6,668	$6,801	$6,937	$7,076	$7,218	$7,969	$8,798	$9,714
Additional Non-Aviation Leases	***$0***	***$0***	***$0***	***$0***	***$0***	***$102,075***	***$112,699***	***$124,429***
Additional Oil Royalties	***$0***	***$0***	***$0***	***$0***	***$0***	***$23,851***	***$18,400***	***$14,992***
Fuel Flowage Fees	$63,961	$57,309	$57,056	$59,918	$68,773	$99,237	$140,554	$193,339
Car Rental Concession Fees	$287,046	$228,624	$240,053	$252,063	$275,421	$337,592	$412,539	$478,207
LEO Income	$0	$0	$0	$0	$0	$0	$0	$0
Parking Income	$539,279	$524,600	$537,056	$549,818	$637,499	$770,882	$920,624	$989,539
Interest Income	$56	$56	$56	$56	$56	$56	$56	$56
Other Miscellaneous Income	$80,895	$39,001	$39,001	$39,001	$39,001	$39,001	$39,001	$39,001
Total Operating Revenues	**$1,334,917**	**$1,238,902**	**$1,279,440**	**$1,317,398**	**$1,449,403**	**$2,040,009**	**$2,380,859**	**$2,660,148**
Dickinson Non-Operating Revenues	**2014**	**2015**	**2016**	**2017**	**2018**	**2023**	**2028**	**2033**
City Tax Subsidy	$365,638	$424,981	$473,854	$492,808	$512,520	$623,559	$758,655	$923,020
County Subsidy	$37,049	$57,426	$65,466	$68,084	$70,808	$86,148	$104,813	$127,520
Capital Revenues	$0	$0	$0	$0	$0	$0	$0	$0
Customer Facility Charge (Rental Cars)	$55,915	$55,668	$58,451	$61,376	$63,215	$73,280	$84,939	$98,460
Passenger Facility Charge	$169,748	$251,514	$264,087	$277,299	$285,611	$331,083	$383,760	$444,848
Total Non-Operating Revenues	**$628,350**	**$789,589**	**$861,858**	**$899,567**	**$932,154**	**$1,114,070**	**$1,332,167**	**$1,593,848**
Total Revenues	**$1,963,267**	**$2,028,492**	**$2,141,298**	**$2,216,965**	**$2,381,556**	**$3,154,079**	**$3,713,026**	**$4,253,996**

TABLE 20 - NET OPERATING REVENUE ANALYSIS

Year	Revenues	Expenses	Surplus
2014	$1,334,917	$863,804	$471,113
2015	$1,238,902	$1,018,897	$220,005
2016	$1,279,440	$1,195,300	$84,140
2017	$1,317,398	$1,217,651	$99,747
2018	$1,449,403	$1,263,616	$185,787
2019	$1,483,398	$1,311,365	$172,033
2020	$1,661,704	$1,360,967	$300,736
2021	$1,703,608	$1,412,497	$291,111
2022	$1,974,001	$1,829,824	$144,177
2023	$2,040,009	$1,866,902	$173,107
2024	$2,089,732	$1,923,136	$166,596
2025	$2,129,690	$1,981,251	$148,440
2026	$2,171,229	$2,041,314	$129,915
2027	$2,313,139	$2,103,396	$209,743
2028	$2,380,859	$2,167,569	$213,290
2029	$2,447,495	$2,233,911	$213,584
2030	$2,497,550	$2,302,499	$195,051
2031	$2,546,287	$2,373,415	$172,873
2032	$2,611,733	$2,421,340	$190,393
2033	$2,660,148	$2,470,241	$189,907
Totals	**$39,330,644**	**$35,358,895**	**$3,971,749**

Table 21 presents a summary of the net non-operating revenues for applicable forecast years. As shown, there is a cumulative net negative balance of roughly $1.8 million by 2033.

TABLE 21 - NET NON-OPERATING REVENUE ANALYSIS

Year	Non-Operating Revenues	Non-Operating Costs	Surplus/(Deficit)
2014	$628,350	$38,181	$590,169
2015	$789,589	$826,905	($37,316)
2016	$861,858	$705,597	$156,261
2017	$899,567	$2,229,700	($1,330,133)
2018	$932,154	$2,312,000	($1,379,846)
2019	$965,957	$2,604,750	($1,638,793)
2020	$1,000,995	$9,897,000	($8,896,005)
2021	$1,037,318	$6,164,600	($5,127,282)
2022	$1,074,996	0	$1,074,996

TABLE 21 - NET NON-OPERATING REVENUE ANALYSIS

Year	Non-Operating Revenues	Non-Operating Costs	Surplus/(Deficit)
2023	$1,114,070	0	$1,114,070
2024	$1,154,572	0	$1,154,572
2025	$1,196,583	0	$1,196,583
2026	$1,240,137	0	$1,240,137
2027	$1,285,321	0	$1,285,321
2028	$1,332,167	0	$1,332,167
2029	$1,380,764	0	$1,380,764
2030	$1,431,155	0	$1,431,155
2031	$1,483,418	0	$1,483,418
2032	$1,537,625	0	$1,537,625
2033	$1,593,848	0	$1,593,848
Totals	**$22,940,442**	**$24,778,733**	**($1,838,291)**

Table 22 presents the total net revenue and expense forecast for Dickinson Theodore Roosevelt Regional Airport. This table combines the operating and non-operating revenue and expense streams and shows the year-by-year picture of financial production and need. As shown, there are only five years with net revenue deficits: 2017 - 2021. These deficits have a cumulative total of $15.8 million after subtracting surpluses from 2014-2017. The revenue production anticipated as a result of airline passenger growth is predicted to generate positive cash surpluses from 2022 through the end of the planning period. Although a cumulative net revenue total of almost $2.1 million is shown, that does not translate into the same amount of capital spending, due to net present value considerations or debt service interest (the amount of which depends upon the borrowing date for the capital financing).

The real issue for the Airport Authority involves just how much funding will be available from State and federal sources over the next decade. This reality will dictate whether or not full scale development is financially feasible. With a total capital development program of $151.34 million, it was assumed that there will be a $49.8 million shortfall in Federal funding. The upshot of this analysis is that the Airport will need funding of the Federal shortfall through some outside means - most likely by the State.

TABLE 22 - TOTAL NET REVENUE ANALYSIS

Year	Total Revenues	Total Expenses	Surplus/(Deficit)
2014	$1,963,267	$901,985	$1,061,282
2015	$2,028,492	$1,845,802	$182,690
2016	$2,141,298	$1,900,897	$240,401
2017	$2,216,965	$3,447,351	($1,230,386)
2018	$2,381,556	$3,575,616	($1,194,060)
2019	$2,449,355	$3,916,115	($1,466,760)
2020	$2,662,699	$11,257,967	($8,595,268)
2021	$2,740,926	$7,577,097	($4,836,171)

Table 22 - Total Net Revenue Analysis

Year	Total Revenues	Total Expenses	Surplus/(Deficit)
2022	$3,048,997	$1,829,824	$1,219,173
2023	$3,154,079	$1,866,902	$1,287,178
2024	$3,244,304	$1,923,136	$1,321,168
2025	$3,326,273	$1,981,251	$1,345,022
2026	$3,411,366	$2,041,314	$1,370,052
2027	$3,598,460	$2,103,396	$1,495,064
2028	$3,713,026	$2,167,569	$1,545,457
2029	$3,828,259	$2,233,911	$1,594,348
2030	$3,928,705	$2,302,499	$1,626,207
2031	$4,029,705	$2,373,415	$1,656,290
2032	$4,149,358	$2,421,340	$1,728,018
2033	$4,253,996	$2,470,241	$1,783,755
Totals	**$62,271,085**	**$60,137,628**	**$2,133,458**

SUMMARY OF AIRPORT BUSINESS PLANNING RECOMMENDATIONS

Given the business planning analysis that was conducted for the Airport, there are a number of recommendations that naturally follow. These recommendations are based upon the phenomenal airline passenger growth that is predicted to occur within the next decade. If these forecasts are achieved, the Airport Authority will have more than enough to do in just keeping up with the growth. In a certain sense, the Authority will be behind the development curve, starting today.

The recommended plan from the Airport Master Plan forms the basis of the financial and managerial recommendations from a business perspective. In a chronological order, the following major projects are forecast to be developed:

- 2016 – Land acquisition and runway design
- 2017 - Construction of Parallel Taxiway
- 2018 – Construct Primary Runway, design terminal building
- 2019 – Construction of Terminal Building, ARFF/SRE Building
- 2020 – Construction of Rental Car QTA facility
- 2021 - Completion of terminal, construction of auto parking and general aviation apron
- 2021+ - Crosswind parallel taxiway, GA hangars, redevelopment of old terminal building

There are a number of smaller or ancillary projects that complement these large capital improvements. The business plan recommends additional projects to the airport master plan, but these projects are not predicted to cost the Airport Authority any additional funding for their development. Instead, the business plan suggests several revenue enhancement actions that will require third parties to invest in the Airport. These projects include the development of new hangars with private funding, the development of non-aviation property on the Airport by hospitality or similar interests, and the drilling of oil wells and receiving royalties as a part of the energy company lease of Airport mineral rights. If these three initiatives are undertaken, they could collectively yield an additional $160,100 per year to the Airport's revenue base by 2033.

The management actions required of the Airport Authority will include:

- ***Seek General Aviation Hangar Development:*** The Authority should seek qualified bidders from time to time that have an interest in developing general aviation hangar space on Airport property. These developers may be scarce because of the difficulty in making the economics work. However, the Airport should periodically test the market with Requests For Proposals or even Requests for Information to determine what conditions are needed for such development to occur.
- ***Debt Financing:*** The Airport Authority may need debt financing of the shortfall of funding for critical projects. Unfortunately, this financing would only cover a portion of the estimated Federal shortfall. One unknown at this time involves the amount of funding shortfall that will occur from FAA-eligible projects. This factor has the potential to significantly impact the financial plan. It could be more or it may be offset with State funding. Table 23 summarizes the cumulative totals for ACIP costs, revenues, expenses, and net surpluses.

TABLE 23 - CUMULATIVE FINANCIALS

Cumulative Total Revenues	$39,330,600
Cumulative Total Expenses	$35,358,900
Cumulative Net Revenues	$3,971,700
Total ACIP Requirement	$151,342,500
Total Assumed FAA, State, Local, and Private Funding	$101,527,100
Preliminary Funding Shortfall	$49,815,400
Assumed Local Airport/City Additional Funding	($3,971,700)
Remaining Funding Shortfall	$46,599,700
Approx. Borrowing Costs @ 3% Interest Rate	$630,400
Remaining Funding Shortfall After Borrowing	$ 46,474,100

If FAA funding shortfalls do reach the predicted level of $49.8 million, the recommended plan will have to be trimmed back to be considered financially feasible. Under the current outlook, the FAA will not be able to meet their portions of eligible project funding. However, the State may help meet this shortfall. Under the financial plan, the Airport or City can borrow enough to bring the total shortfall down to about $46.47 million. Unless that funding shortfall is covered by the State, the revenue surpluses forecast at Dickinson Theodore Roosevelt Regional Airport will not be sufficient to cover the funding gap. Thus, a primary goal of the Airport Authority should be to work with State officials and the legislature to allocate funding for airports impacted by the Bakken shale activity.

Runway Protection Zones

INTRODUCTION

FAA airport design standards, as contained in Advisory Circular (AC) 150/5300-13A, define a number of zones, areas, and imaginary surfaces that are intended to protect aircraft and their occupants during operations on and around an airport. One of these areas, called the Runway Protection Zone (RPZ), is intended to protect people and property on the ground.

Formerly known as clear zones, the RPZ is a trapezoidal-shaped area, centered on the extended runway centerline and beginning 200 feet beyond the end of the runway or area useable for landing or takeoff. The RPZ dimensions were developed through the analysis of aircraft accidents and calculated to enclose the area on the ground with the highest probability of risk due to an aircraft accident.

There are two components of RPZs that are evaluated and analyzed in the master planning process. One component is the required dimensions of the RPZ, which are functions of the design aircraft, type of operation, and visibility minimums. The second component is the use of the land within the boundaries of the RPZ, which must meet FAA criteria and regulations, and is commonly discussed as an element of compatible land use.

Therefore, this appendix is separated into two major sections: 1) RPZ Design will address the RPZ dimensions, the FAA design standards, and the basis for the specific design. 2) RPZ Compatible Land Use will address the requirements, analysis, and recommendations for compatible land use within the RPZs.

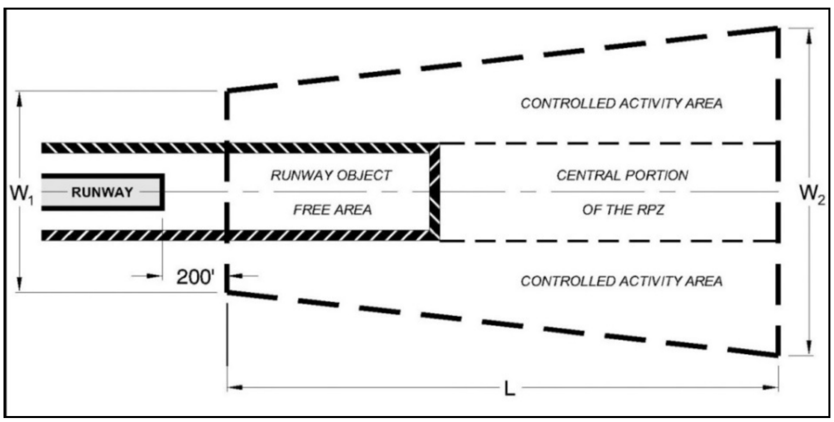
RPZ Design

The design standards for RPZ dimensions are found in FAA AC 150/5300-13A Airport Design. The RPZ is trapezoidal in shape and centered about the extended runway centerline. **Table 1** illustrates the RPZ dimensions associated with different runway design standards, as well as the designations of the various areas within the RPZ. After the design aircraft has been determined, in conjunction with the established or planned visibility minimums, the appropriate design standards table in AC 150/5300-13A can be used to determine the specific RPZ dimensions for each runway. See **Appendix A Airfield Design** for more information.

TABLE 1 RPZ DIMENSIONS

Approach Visibility Minimums	Facilities Expected to Serve	Dimensions			
		Length (L)'	Inner Width (W1)'	Outer Width (W2)'	RPZ (Acres)
Visual and not lower than 1 mile	Small aircraft exclusively	1,000	250	450	8.04
	Aircraft Approach Categories A & B	1,000	500	700	13.77
	Aircraft Approach Categories C & D	1,700	500	1,010	29.47
Not lower than ¾-mile	All aircraft	1,700	1,000	1,510	48.98
Lower than ¾-mile	All aircraft	2,500	1,000	1,750	78.91

RPZ AREAS



Current Conditions & Recommendations

The RPZ dimensions for the Dickinson Theodore Roosevelt Regional Airport are shown in **Table 2** and depicted in **Exhibit 1**. Currently, Runway 14-32 is 6,399 feet long and 100 feet wide. It has an approach with visibility minimums not lower than 1-mile. During the airport master plan an investigation into correcting the runway safety area (RSA) of Runway 32 found that there is an environmentally sensitive area located off of Runway 32 within the existing RSA and glide slope critical area, shown in **Exhibit 1**; this area cannot be disturbed.

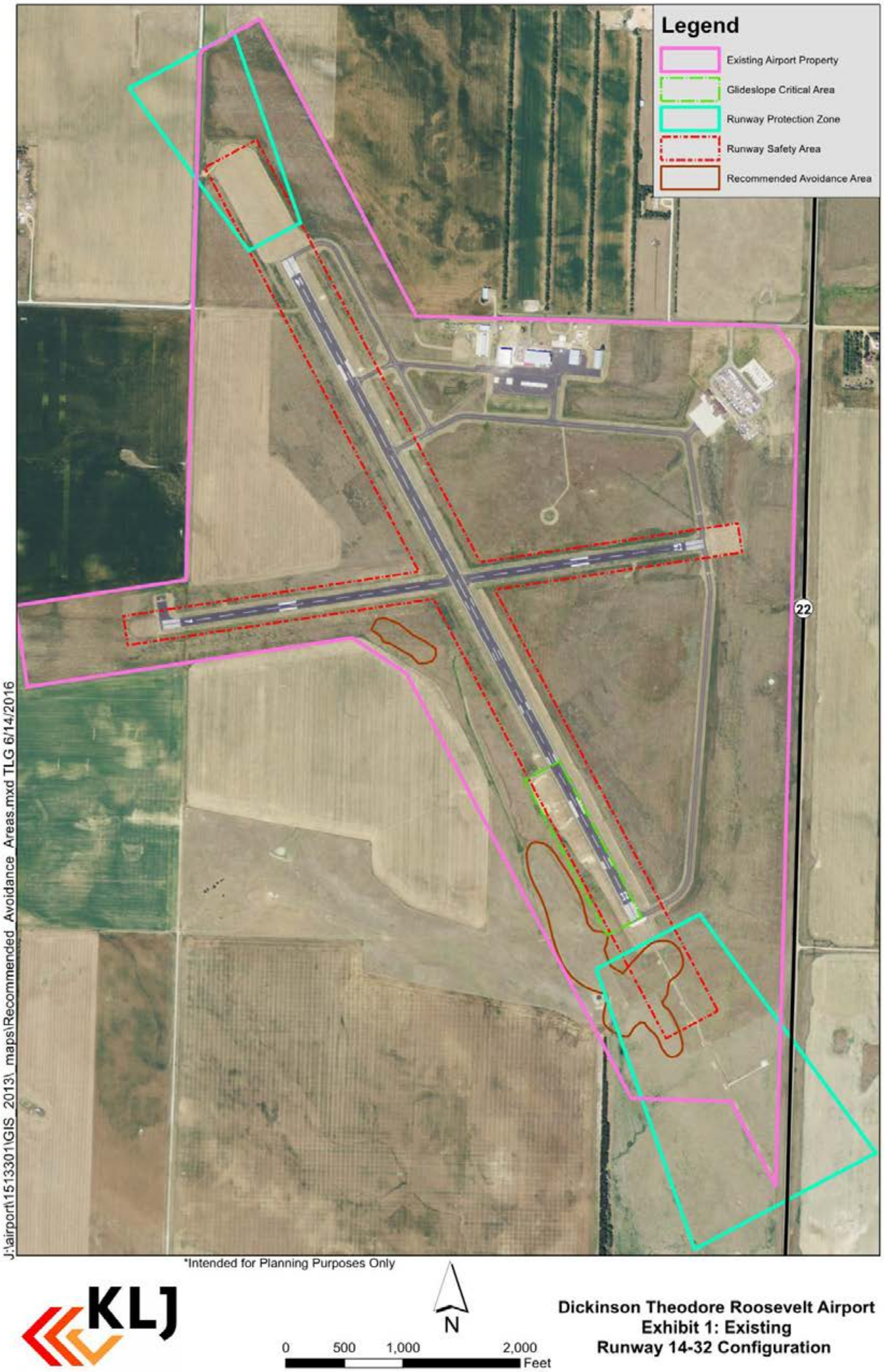
In the master plan (**Chapter 5- Alternative Analysis**) the airport selected Alternative G, as a means to correct the RSA and meet the existing and forecasted needs of the airport. Alternative G requires Runway 14/32 to be relocated along the existing centerline by approximately 1,712 feet to the northwest of its current location and lengthened and widened to 7,700[3] feet by 150 feet. Initially Runway 14 End will be served by a GPS Approach of not lower than ¾ mile and Runway End 32 will be served by an ILS and GPS approach with visibility minimums not lower than 1/2 mile. Once Runway 14 End has an approach of ½ mile both ends of Runway 14-32 will required an approach RPZ with dimensions of 1,000 feet (inner width) by 1,750 feet (outer width) by 2,500 feet in length (78.92 acres). Further details regarding this alternative can be found in the Alternative Analysis section of the RPZ Analysis, page 11 or in **Chapter 5- Alternative Analysis**.

TABLE 2 – RUNWAY 14-32 FAA DESIGN STANDARD MATRIX

Design Standard	Runway Design Code (RDC)						
	C-II/5000 (Existing 14)	**C-II/5000 (Existing 32)**	**C-II/5000 (Existing 14)**	**C-III/4000 (Construction 14)**	**C/III/2400 (Future 14)**	**C/III/2400 (Future 32)**	**D/III/2400 (Ultimate 32)**
Approach Reference Code	C/II/5000	C/II/2400	C/II/5000	C-III/5000	C/III/2400	C/III/2400	D/III/2400
Departure Reference Code	C/II	C/II	C/II	C-III	C/III	C/III	D/III
Runway Width	100 feet	100 feet	100 feet	150	150 feet	150 feet	150 feet
Approach RPZ Start	200 feet	200 feet	200 feet	200 feet	200 feet	200 feet	200 feet
Approach RPZ Length	1,700 feet	2,500 feet	1,700 feet	1,510 feet	2,500 feet	2,500 feet	2,500 feet
Approach RPZ Inner Width	500 feet	1,000 feet	500 feet	1,000 feet	1,000 feet	1,000 feet	1,000 feet
Approach RPZ Outer Width	1,010 feet	1,750 feet	1,010 feet	1,700 feet	1,750 feet	1,750 feet	1,750 feet
Departure RPZ Start	200 feet	200 feet	200 feet	200 feet	200 feet	200 feet	200 feet
Departure RPZ Length	1,700 feet	1,700 feet	1,700 feet	1,700 feet	1,700 feet	1,700 feet	1,700 feet
Departure RPZ Inner Width	500 feet	500 feet	500 feet	500 feet	500 feet	500 feet	500 feet
Departure RPZ Outer Width	1,010 feet	1,010 feet	1,010 feet	1,010 feet	1,010 feet	1,010 feet	1,010 feet

Source: FAA AC 150/5300-13A Airport Design, KLJ Analysis

[3] In October (2016) the Airport and the FAA agreed to a runway length of 7,300 feet. This runway length will accommodate 75% of Fleet (up to 60,000lb MTOW) at 90% Useful Load-FAA ASC 150/5325-4B; the 400 feet was taken off of Runway 14 End because of the environmentally sensitive RSA issue on 32 End.



Dickinson Theodore Roosevelt Airport
Exhibit 1: Existing
Runway 14-32 Configuration

RPZ Compatible Land Use

By definition, the RPZ's function is to enhance the protection of people and property on the ground. This is best achieved when the airport owner has control over the RPZs, preferably through the acquisition of sufficient property interest in the RPZ, enabling the airport owner to clear RPZ areas (and maintain the clearance of the RPZs) of incompatible objects and activities.

Control of RPZs

The FAA strongly recommends that airport sponsors own the complete RPZ area in fee simple title. This enables the sponsor to fully control all development and activity with the RPZ. If this is not practical, the sponsor is expected to control land use and activities in the RPZ through easements, leases, zoning, or restrictive covenants that provide for height restrictions and restrict current and future use of the land surface to preclude incompatible uses. The sponsor is also expected to take all possible measures to remove or mitigate incompatible land uses; this is based off of Grant Assurance 21.

Acceptable or Compatible Land Use in RPZs

The ultimate goal is to clear the entire RPZ of all above-ground objects. Where this is impractical, airport owners, as a minimum, must clear the RPZ of incompatible objects and activities. Some uses are permitted in the controlled activity areas (CAA), provided they do not attract wildlife[4], are outside of the central portion of the RPZ, and do not interfere with navigational aids. AC 5300-13A provides for some land uses in the RPZ that are permissible without further evaluation:

- Farming or agricultural activities that meet airport design standards.
- Irrigation channels that meet the requirements of AC 150/5200-33 *Hazardous Wildlife Attractants* On or Near Airports and FAA/USDA manual, *Wildlife Hazard Management at Airports*.
- Airport service roads, as long as they are not public roads and are directly controlled by the airport operator.
- Underground facilities, as long as they meet other design criteria, such as RSA requirements, if applicable.
- Unstaffed NAVAIDs and facilities, such as equipment for airport facilities that are considered fixed-by-function in regard to the RPZ.

Unacceptable or Incompatible Land Use in RPZs

The FAA had identified a number of activities that are considered incompatible within the RPZ. Those activities include:

- Fuel handling and storage facilities (except that underground fuel tanks are allowed in the CAA).
- Facilities that generate smoke, dust, or other plumes.
- Facilities with misleading lights or that create glare.

[4] The wildlife hazard management plan discusses appropriate crops which may be within the RPZ.

- Any land use or activity that attracts wildlife.
- Residences and places of public assembly (churches, schools, hospitals, office buildings, shopping centers, etc.).

However, on September 27, 2012, the FAA issued interim guidance on land use within an RPZ. The interim guidance clarifies specific land uses that are not permissible inside the RPZ, but the guidance does not apply to existing land uses. The guidance requires coordination with the FAA if certain land uses enter the RPZ as a result of:

- An airfield project (e.g., runway extension, runway shift)
- A change in the critical design aircraft that increases the RPZ dimensions
- A new or revised instrument approach procedure that increases the RPZ dimensions
- A local development proposal in the RPZ (either new or reconfigured)

The following land uses are considered incompatible in the RPZ and must be coordinated with the FAA if any of the above triggering events occur:

- Buildings and structures (examples include, but are not limited to: residences, schools, churches, hospitals or other medical care facilities, commercial/industrial buildings, etc.)
- Recreational land use (examples include, but are not limited to: golf courses, sports fields, amusement parks, other places of public assembly, etc.)
- Transportation facilities. Examples include, but are not limited to: rail facilities (light or heavy, passenger or freight), public roads/highways, or vehicular parking facilities
- Fuel storage facilities (above and below ground)
- Hazardous material storage (above and below ground)
- Wastewater treatment facilities
- Above-ground utility infrastructure (i.e., electrical substations), including any type of solar panel installations.

RPZ Alternative Analysis

The FAA interim guidance, issued on September 27, 2012, requires an analysis of alternatives be conducted before coordinating with the FAA if any of the land uses, described above, would be introduced into the new or modified RPZ. This analysis includes the identification and documentation of the full ranges of alternatives that could:

- Avoid introducing the land use issue within the RPZ.
- Minimize the impact of the land use in the RPZ (i.e., routing a new roadway around the central portion of the RPZ, or move farther away from the runway end, etc.).
- Mitigate risk to people and property on the ground (i.e., tunneling, depressing and/or protecting a roadway through the RPZ, implement operational measures to mitigate any risks, etc.).

The FAA guidance recommends that the documentation of the alternatives should include:

- A description of each alternative, including a narrative discussion and exhibits or figures depicting the alternative.
- Full cost estimates associated with each alternative regardless of potential funding sources.
- A practicability assessment based on the feasibility of the alternative in terms of cost, constructability, and other factors.
- Identification of the preferred alternative that would meet the project purpose and need while minimizing risk associated with the location within the RPZ.
- Identification of all Federal, State, and local transportation agencies involved or interested in the issue.
- Analysis of the specific portion(s) and percentages of the RPZ affected, drawing a clear distinction between the Central Portion of the RPZ versus the Controlled Activity Area, and clearly delineating the distance from the runway end and runway landing threshold.
- Analysis of (and issues affecting) sponsor control of the land within the RPZ.
- Any other relevant factors for FAA consideration.

KLJ's alternative analysis process also includes a risk analysis, described in a later section.

RPZ Alternative Analysis Process

The RPZ land use alternative analysis is required by the FAA. Since most of the FAA reviewers are unlikely to be familiar with the airport, the process begins by providing information about the airport. The process then identifies the incompatible land use(s) in each RPZ, identifies alternatives for addressing the incompatible land use, and provides recommendations on a preferred alternative.

Existing Conditions

Location

Dickinson Theodore Roosevelt Regional Airport, formerly known as Dickinson Municipal Airport, was constructed in 1944 as a war emergency airport. Located five miles south of the City of Dickinson, it was donated to the city in 1949. Dickinson is located in Stark County in the southwestern part of North Dakota. Dickinson is approximately 97 miles west of Bismarck, 62 miles east of the Montana border and 71 miles north of the South Dakota border. Dunn, Slope, Billings, Hettinger, Mercer, Morton, and Grant Counties all border Stark County.

Major highways serving Dickinson are Interstate Highway 94, US Highway 85 and North Dakota State Highway 22. Interstate Highway 94 is the primary east/west route, and North Dakota State Highway 22 is the primary north/south route; this highway runs in front of the airport through the center of town. US Highway 85, connecting to Interstate Highway 94 nineteen miles to the west of Dickinson, is a significant north/south trade route. North Dakota Highway 22 averages approximately 2,555 automobiles a day and 465 trucks according to 2016 North Dakota Department of Transportation counts.

Economic Factors

The economic growth that has been experienced in the Dickinson region in recent years is unprecedented in modern United States history. These forecasts are based upon the most current estimates of anticipated socioeconomic growth factors in the region: population, oil industry job and economic indicators. The growth trends do not follow traditionally accepted “normal” growth curves. It is assumed by industry experts and economic researchers that the growth rates experienced in the “boom” will not continue for the foreseeable future. Future development of the Bakken shale oil extractions has been thoroughly analyzed; growth of the local economy, and thus aviation at Dickinson, has been forecasted with the most up-to-date estimates available.

Airport Classification

Dickinson Theodore Roosevelt Regional Airport presently provides scheduled aircraft flights with 50-passenger seat capacity and is subsequently a certificated airport under FAR Part 139 as a Class I airport. The Airport is classified as a commercial service primary airport in the NPIAS and the North Dakota State System Plan.

Dickinson Theodore Roosevelt Regional Airport plays an important role in the social and economic well-being of Dickinson. The airport serves the region with emergency medical air service, cargo service (UPS and FedEx), commercial air service, charters, and general aviation facilities. United Airlines currently offer airline service through a regional partner with two round trips per day to Denver. The airport is currently classified with an Airport Reference Code (ARC) of C-II, meaning the airfield is designed for aircraft with approach speeds up to 141 knots and wingspans of 79 feet up to but not including 118 feet. Typical aircraft in the C-II category include such regional jets as Embraer 145s, Cessna Citations (specific models) and Gulfstream 350/450s.

Airside Facilities

Dickinson Theodore Roosevelt Regional Airport has two runways. Runway 14-32 is the primary runway for Dickinson Theodore Roosevelt Regional Airport. The primary runway is closely aligned with prevailing northwest winds and possesses the greatest pavement strength, length, width and instrument approach capability. Runway 14-32 is 6,400 feet long by 100 feet wide. It is made of bituminous pavement, and has a grooved surface. Runway 14-32 has an overall pavement strength of 30,000 pounds single wheel load (SWL) and 37,500 pounds dual wheel load (DWL).

Runway 07-25 is the crosswind runway for Dickinson Theodore Roosevelt Regional Airport. Smaller aircraft use crosswind runways when prevailing winds do not favor the primary runway. Compared to primary runways, crosswind runways are usually shorter in length and narrower in width and offer less instrument approach capability. Runway 07-25 is 4,700 feet long by 75 feet wide. Its pavement strength is rated at 16,000 pounds SWL and 20,000 pounds DWL. The surface of the runway is groove friction treated.

Aviation Forecasts and Critical Aircraft

Forecasts are contained in **Chapter 3-Forecasts** of the master plan document. These forecasts were developed over the course of three (3) years and occurred during a robust period of activity at the Airport and Region and as such they showed aggressive growth at the airport. During the fall of 2015

Delta Airlines announced that it would end service to the Airport on December 1, 2015. This change in service, along with the economic fluctuations in the Region prompted the Airport to revisit the forecasts for future critical aircraft, enplanements and operations by commercial aircraft. At the October 2015 Airport Board meeting the Airport Board approved use of the FAA Terminal Area Forecast (TAF - January 2015).

Based on the TAF, Dickinson Theodore Roosevelt Regional Airport is anticipated to grow to 70,000 enplanements in the next five years and 99,000 enplanements in the planning period (2033). Regional jet and business jet activity have increased over the past several years and the forecasts anticipate activity to continue throughout the planning period (2033). The Airport is anticipated to grow from 8,572 operations in 2013 to 10,736 operations in 2033.

As mentioned in the Airport Classification section of this report the current ARC is C-II. The future ARC is C-III and the ultimate ARC is D-III. The future ARC is based off the large regional jets such as the Embraer 175 (AAC C and ADG III). This aircraft is operating/or forecasted to operate at (based on the FAA approved forecasts) at Dickinson Theodore Roosevelt Regional Airport more than 500 times a year as they are in service by United. The ultimate ARC is based off of theMD83 which the airport has also received a letter of interest from Allegiant.

Future Runway Classification

The ALP, currently being updated, depicts Runway 14-32 being relocated. Specifically the ALP shows Runway End 14 threshold moving 1,712 feet northwest from the current location. The runway will be widened and extended to 7,300 x 150 feet in the future and ultimately it is planned to be lengthened to 8,900 x 150 feet. The need for the future runway length is depicted in **Chapter 4**- **Requirements**, pages 10-13 and Appendix A pages 13-84 and summarized as follows:

The existing and forecasted commercial service and general aviation fleet mix shows a need for a range of runway length between 8,900 feet (100% of fleet at 90% useful load) to 7,300 feet (75% of Fleet (up to 60,000lb MTOW) at 90% Useful Load-FAA ASC 150/5325-4B) as shown in Table 3, below.

TABLE 3 – RUNWAY LENGTH ANALYSIS

DESIGN AIRCRAFT ANALYSIS

Adjusted for Runway Gradient: Maximum Difference between Runway Centerline Elevations 5' = 50' Takeoff Length Extension												
AIRLINES	HUBS		Aircraft / ARC / Engines / Maximum Gross Takeoff Weight (LBS)									
			CRJ200	E145	CRJ700	CRJ900	E175	B717	MD83	MD90	A320	B737-800
	Current	Engine	CF34-3B1	AE 3007-A1E	CF34-8CG	CF34-8C5	CF34-8E5	BR715-A1-30	JT8D-219	V2500-D5	CFM56	CFM56-7B
	Service	Maximum Takeoff Weight (lbs)	53,000	53,131	75,000	80,500	82,673	121,000	160,000	156,000	171,961	174,200
	in	Runway Design Code (RDC)	D-II	C-II	C-II	C-III	C-III	C-III	D-III	C-III	C-III	C-III
	ND*	Taxiway Design Group (TDG)	3	3	3	3	3	3	4	4	3	3
		Distance (NM)	Runway Length (FT) @ ISA +15C									
Delta	MSP	420	7,300		5,100	6,100	4,900	6,600		6,000		
United	DEN	425	7,300	6,000	5,100	6,100	4,900					
Delta	SLC	540	7,500		5,200	6,200	5,000	6,700				
United	ORD	700	7,700	6,300	5,500	6,400	5,100					
American	ORD	700		6,300								
Alaska	SEA	800			5,600							
Allegiant	LAS	850							7,700		6,100	
American	DFW	875	7,800	6,600			5,300					
Allegiant	IWA	905							8,000		6,100	
United	IAH	1,070		6,900	6,400	7,300					5,700	6,400
Delta	ATL	1,150	8,300		6,500	7,600		7,600		7,000	5,700	6,500
United	IAD	1,200	8,400		6,500	8,500	6,800				5,900	6,600
Delta	JFK	1,310			6,600	8,600	6,900	8,100		7,300	6,100	6,700
Allegiant	SFB	1,500							8,900		6,800	
Alaska	ANC	1,825										7,200

* Non Stop Service to Cities in North Dakota include MSP, DEN, SLC, ORD, LAS, DFW, IWA, IAH, ATL, SFB, LAX, and PIE

FAA A/C 150/5325 - 4B Runway Length: 75% of Fleet (up to 60,000lb MTOW) at 90% Useful Load, Length =	7,300
FAA A/C 150/5325 - 4B Runway Length: 100% of Fleet (up to 60,000lb MTOW) at 90% Useful Load, Length =	8,900

- Mean daily high temperature of 84 degrees F
- Runway difference in center line elevations 5 feet
- Elevation 2,590 MSL

Future RPZs

When the runway is constructed to 7,300 feet the initial approach RPZ for Runway 14 End is anticipated to be 1,000 x 1,510 x1,700 ($^{3/4}$ mile), feet since the airport will not have approach lighting or an ILS for this end of the runway. This RPZ will be contained on airport property and is considered compatible with current FAA guidance and is shown in **Exhibit 2**. Once approach lighting and/or the ILS is installed for Runway 14 End then the RPZs are planned for 1,000 x 1,750 x 2,500 feet for Runway 14-32 (less than ¾ mile visibility). Runway 32 End will be in compliance with current FAA guidance on RPZs, as shown in **Exhibit 2,** but Runway 14 End approach RPZ (1,000 x 1,750, 2,500 feet) will be impacted by 41 ST SW (road), please see **Exhibit 3**. In the ultimate scenario with a runway length of 8,900 feet, the entire RPZ will be acquired and 41 ST SW will be relocated as shown in **Exhibit 7.**

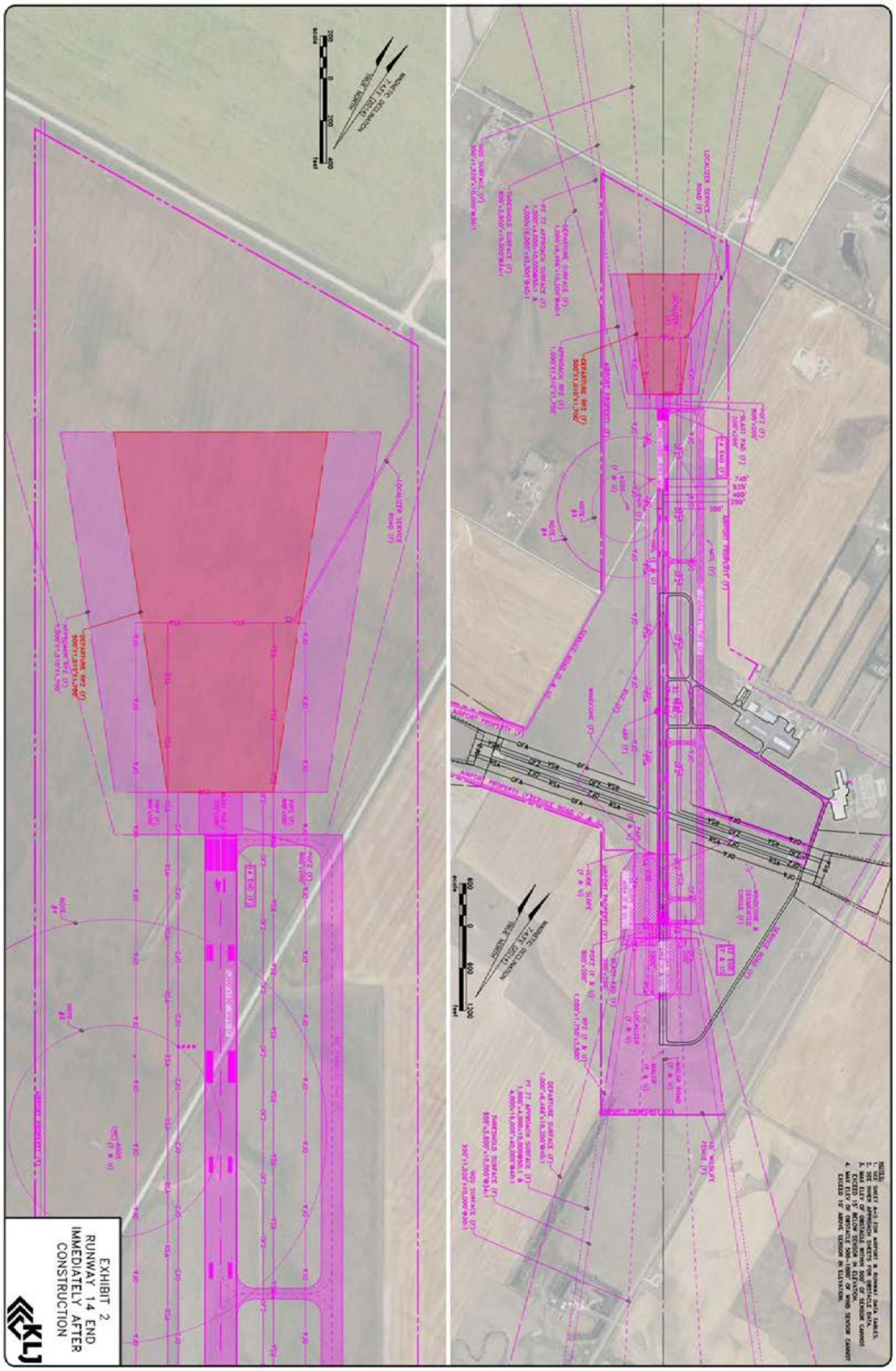


EXHIBIT 2
RUNWAY 14 END
IMMEDIATELY AFTER
CONSTRUCTION
KLJ


EXHIBIT 3
FUTURE RUNWAY
14 RPZ

Alternatives Analysis

In the master planning effort it was determined that an environmentally sensitive area as shown in **Exhibit 1** would not allow the airport from completing runway safety area (RSA) slope requirements. The environmentally sensitive area cannot be disturbed based on its environmental features, so in 2015 the airport completed a project to get incremental gains to the RSA without impacting the environmentally sensitive area. These incremental gains provided a RSA which is approximately 600 feet shy of a full RSA, based on the existing runway length of 6,399 feet (the master planning effort determined a need for 7,300 feet to meet existing and future aircraft needs). Through the master plan, **Chapter 5 (Alternative Analysis, pages 5-77)** the airport analyzed eleven alternatives including Airport Relocation, Relocation of Highway 22, and seven construction alternatives (A, B, C,D,E,F, G, H) with various options for construction. Ultimately, the airport chose Alternative G based on the ability to meet runway length and width requirements, runway safety area (RSA) criteria, instrument landing system (ILS) glide slope gradient criteria, and RPZ interim guidance.

The analysis from Chapter 5 for Alternative G, has been provided below, all other alternatives can be found in Chapter 5, pages 5-77:

Runway 14-32 Relocate threshold 1,712 feet northwest from the current location and widen and extend runway to 7,700[5] x 150 feet, so that runway protection zone is completely on airport property, the RSA is standard and the ILS critical area meets all requirements.

Runway 7-25 Maintain as existing

GA Apron Expand to the west, south and east [add 29,000 sy (18,200 sy additional space for parking and apron taxilanes)]

Hangars T-Hangars east of expanded apron

Property Acquire an additional 232 acres

Advantages:

- All required development identified in this plan can be accommodated in this layout.
- The amount of additional land to be acquired would be less in comparison to Alternative F.
- Room for expansion of the general aviation area to the south of the existing area could accommodate additional growth beyond this planning period.
- Since the threshold is shifted there would be no longer be a need to fill the existing runway safety area for Runway 32.
- The amount of land available for landside terminal area development (38.8 acres) is sufficient to handle forecast activity during the planning period.

Disadvantages:

- Area to develop additional general aviation facilities would be confined, and may limit ultimate development of the airport.

[5] In October (2016) the Airport and the FAA agreed to a runway length of 7,300 feet. This runway length will accommodate 75% of Fleet (up to 60,000lb MTOW) at 90% Useful Load-FAA ASC 150/5325-4B; the 400 feet was taken off of Runway 14 End because of the environmentally sensitive (RSA) issue on 32 End

- This configuration would likely require complete reconstruction of the runway and construction of a parallel taxiway. This will have a significant impact on airport operations during construction.

Operational Performance

Alternative G involves relocating the threshold of Runway 32 by 1,712 feet north-northwest then extending the runway 2,613 feet. This relocated threshold allows the Runway 32 RPZ to be outside of North Dakota Highway 22, and therefore in compliance with current FAA RPZ use policy. The immediate Runway 14 End approach RPZ for not less than ¾ mile visibility would be compliant with current FAA guidance. It is not until the Airport installs an approach lighting system and/or ILS for Runway 14 End that the Runway 14 approach RPZ enters into 41 ST SW as depicted in **Exhibit 3**. This is an incompatible land use and alternatives were identified.

Alternatives Considered That Were Not Discussed in the Master Plan Alternatives Chapter

As stated above, the airport will be in compliance with the current FAA RPZ guidance when the relocated runway is constructed. At the time that the Runway End 14 approach is lowered to less than ¾ mile the RPZ would not be in compliance and would need to be analyzed. There were four alternatives that were considered reasonable:

1. Do Nothing
2. Use of Declared Distances
3. Relocation of 41 ST SW
4. Closure of 41 ST SW

Other alternatives that were discussed, but immediately discarded included tunneling 41 ST SW, EMAS, and relocating/displacing the threshold of Runway End 14.

Tunneling 41 ST SW would require a rather large tunnel to be able to handle the various farm and oil equipment which generally transverse this area of Dickinson. The terrain where the tunnel would be constructed is mostly flat with a high water table which would require a constant pump to be running in order to keep water out of the tunnel. Finally the cost associated with building, maintaining and ensuring safe passage through the tunnel makes this option not feasible.

EMAS only helps with RSA issues. The location of the culturally sensitive areas along with the need for 7,300 feet of runway preclude the airport from benefiting from the use of EMAS, therefore it was not considered. Finally because of the need for 7,300 feet of usable runway length the RPZ was shifted within the airport property on the Runway 32 End, which is where the majority of automobile traffic occurs (ND State Highway 22) to over 41 ST SW; a lightly traveled road.

Relocating/displacing threshold of Runway 14 is not feasible as the recently completed master planning effort (2015) showed a need for full runway length in both the future and ultimate timeframes. The threshold for Runway 32 is as far to the southeast as possible without the Runway 32 RPZ crossing North Dakota Highway 22 or impacting environmentally sensitive areas.

Do Nothing Alternative

This alternative would allow 41 ST SW to remain as is. There would be no additional cost to the airport for acquisition or relocation of the road. The accident potential for this alternative was determined as follows with assumptions derived for Aircraft Operations and Vehicular Traffic and calculations summarized in **Tables 4** and **5**.

Aircraft Operations

Yearly operations per the recently approved forecasts from the Airport Master Plan were used in order to determine Yearly Aircraft Operations and Peak Hour for the Airport. KLJ then determined the percentage of usage for runway end based on the previous 10 year wind data (wind rose data which is shown on the ALP). Runway usage per wind data is shown as follows (totals 100 percent):

Runway 7—13.61%	Runway 25—19.67%
Runway 14—30.67%	Runway 32—36.05%

The Runway usage percentage for Runway 14 was then applied to the Peak Hour Operations in order to determine the number of operations that could be taking place during an hour. Finally, KLJ estimated that it takes a Cessna 182 traveling at 70 knots approximately 0.375 seconds to fly through the road which is in the RPZ. This aircraft was chosen as it represents one of the slower moving aircraft on approach and therefore represents the worst case scenario for aircraft on approach.

Vehicular Traffic

FIGURE 2-VIEW OF 41 ST SW

41 ST. SW is a gravel road located north of the Airport (see photo to the left). The North Dakota Department of Transportation's website[6] for traffic counts was reviewed in order to determine a baseline for travel usage per average day on 41 ST. SW in order to determine the likelihood of a vehicle being in the approach to Runway 14. The website did not have traffic counts for 41 ST. SW, but it had traffic counts from 2015 for 42 ST. SW and 40 ST. SW (these roads are the next east/west roads south of the Airport. The traffic counts for 42 ST SW and 40 ST. SW showed that in 2015 155 and 105 vehicles traveled them respectively on an average day. For the purposes of this report, 155 vehicles per day was chosen as the baseline[7]. The State of North Dakota Department of Transportation was contacted in order to determine future growth rates for rural roads. They informed KLJ that they use a growth rate of 2 percent per year when forecasting vehicle traffic on rural roadways.

[6] (http://gis.dot.nd.gov/external/ge_html/?viewer=transinfo)

[7] In comparison ND 22 (the road currently in Runway 32) is traveled on approximately 3,000 times on an average day.

Table 4 identifies the amount of operations and vehicle traffic which could potentially occur in the RPZ off of Runway 14 during an average day.

TABLE 4– BREAKOUT OF AIRCRAFT AND VEHICLE TRAFFIC FOR RUNWAY 14

	2013	2018	2023	2033
Yearly Aircraft Operations	16,319	21,053	22,762	24,765
Peak Hour Operations	11	14	16	16
Peak Hour Operations on Runway 14 (adjusted for wind conditions)	3	4	5	5
Travel Usage per typical Day of 41 ST. SW	155*	171	188	229
Hourly Usage of 41 ST. SW^	10	11	12	14

*based on 2015 traffic counts –NDDOT data http://gis.dot.nd.gov/external/ge_html/?viewer=transinfo
^based on a 16 hour day
Source: KLJ, NDDOT

Table 5 depicts the probability of an aircraft and vehicle incident occurring based on the conditions shown in **Table 4**. ***In the existing case throughout the planning period the probability of an incident is within the thresholds that the airport considers safe.***

TABLE 5– PROBABILITY OF AN AIRCRAFT AND VEHICLE INCIDENT IN RUNWAY 14 RPZ

	2013	2018	2023	2033
Probability of an Aircraft Operation Over RPZ Object	0.025878%	0.032936%	0.037641%	0.037641%
Probability of an Aircraft Accident per Flight Hour*	0.0072%	0.0072%	0.0072%	0.0072%
Probability of an Aircraft Accident Over RPZ Object	0.0000019%	0.0000024%	0.0000027%	0.0000027%
Odds of Incident (:1)	53,627,868	42,136,181	36,869,159	36,869,159
Time Between Incidents (Years)	170	134	117	117
Probability of a Car on Road in the RPZ	2.71%	2.98%	3.25%	3.79%
Probability of an Aircraft Accident in RPZ when Car in RPZ#	0.0000001%	0.0000001%	0.0000001%	0.0000001%
Odds of Incident (:1)	1,982,086,019	1,415,775,728	1,135,570,115	973,345,812
Time Between Incidents (Years)	6,285	4,489	3,601	3,086
Aircraft Operations Between Incidents	102,567,421	94,515,241	81,962,985	76,436,165

based on a vehicle traveling the speed limit (35 mph) through the 500 foot future RPZ
*http://www.ntsb.gov/investigations/data/pages/aviation_stats.aspx
Source: KLJ, NTSB

Use of Declared Distances

Declared distances are the distances the airport owner declares available for use in meeting an airplane's takeoff run (TORA), takeoff distance (TODA), accelerate-stop distance (ASDA), and landing distance (LDA) requirements. In order to not impact 41 ST SW the approach RPZ for ½ mile needed to be moved 300 feet to the south. Two different declared distance alternatives were created, reviewed and analyzed as part of this report. The first alternative shows the Runway 14 End landing threshold moving 300 feet. The TORA TODA, ASDA all remain at 7,300 feet but the LDA is reduced to 7,000 feet as shown in **Exhibit 4.** The second alternative added 300 feet of useful pavement to the Runway 32 End. The result of this alternative
Is a TORA, TODA, ADSA of 7,600 feet and a LDA of 7,300 feet as shown in **Exhibit 5.**

There are no special markings, signing, or lighting to indicate to a pilot that any portion of the runway is unavailable for use. It is the airports contention that given the users at the airport that using declared distances it not a viable option for the airport.

Relocation of 41 ST SW

Future Length of 7,300 feet

The relocation of 41 ST SW will require the Airport to purchase approximately 49 acres from Mr. Jeff Kuhn. The cost for land acquisition will be approximately $98,000 dollars. The total project cost for relocating the road outside of the RPZ is estimated at $750,000. **Exhibit 6** depicts the future road alignment.

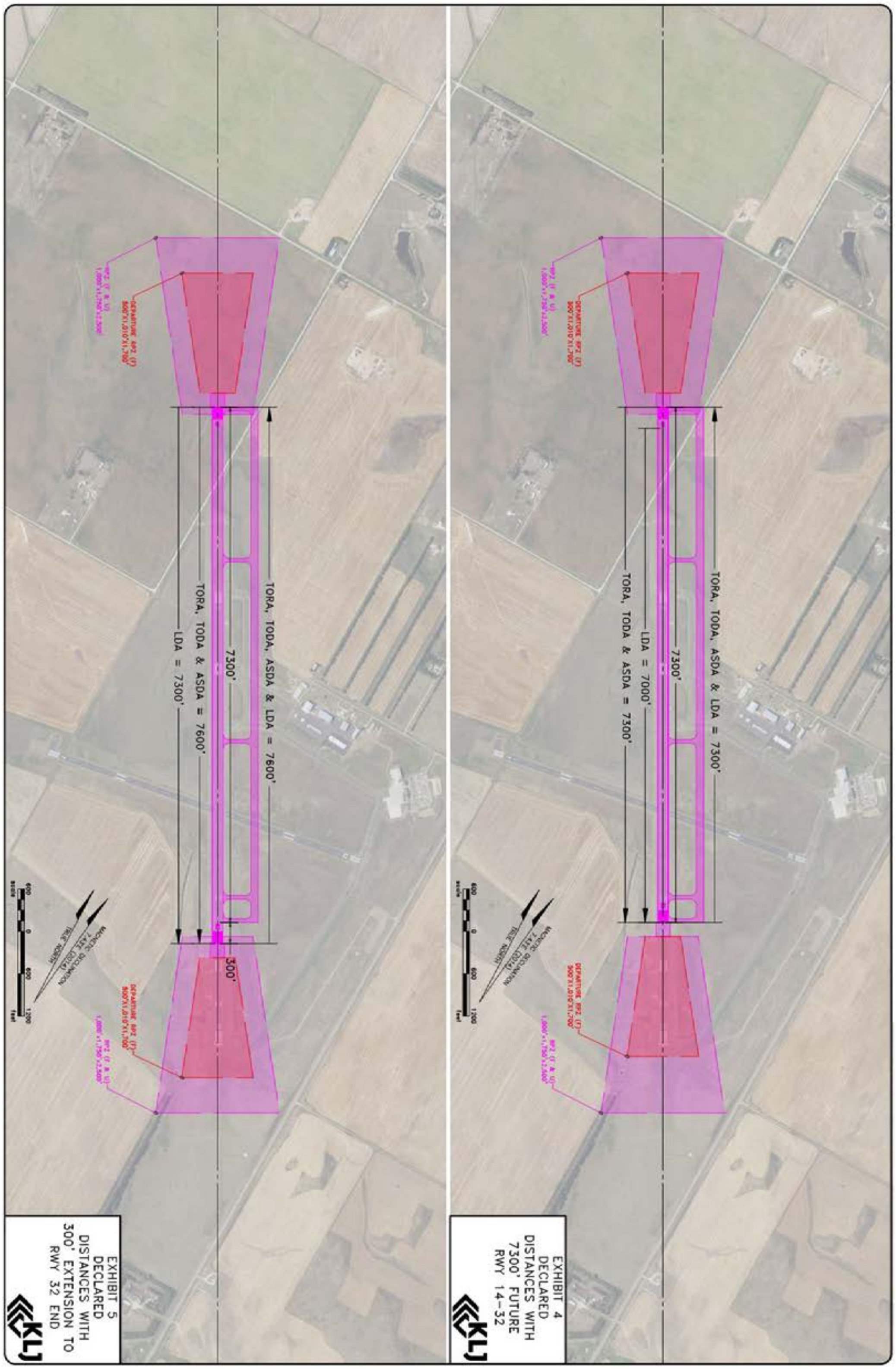
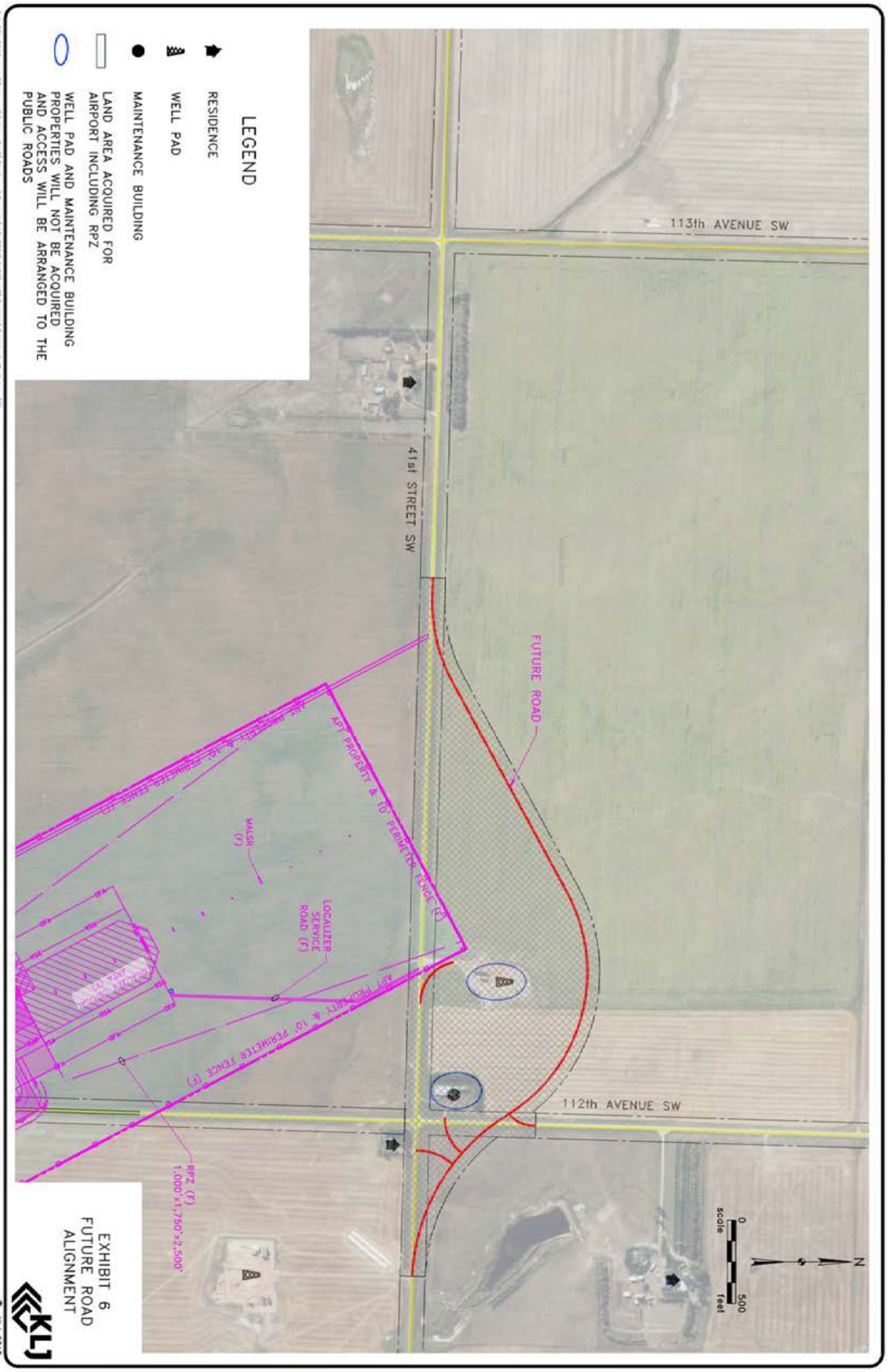


EXHIBIT 5
DECLARED
DISTANCES WITH
300' EXTENSION TO
RWY 32 END
TORA, TODA, ASDA & LDA = 7600'
7300'
TORA, TODA & ASDA = 7600'
LDA = 7300'
300'
EXHIBIT 4
DECLARED
DISTANCES WITH
7300' FUTURE
RWY 14-32
TORA, TODA, ASDA & LDA = 7300'
7300'
LDA = 7000'
TORA, TODA & ASDA = 7300'
KLJ


LEGEND
RESIDENCE
WELL PAD
MAINTENANCE BUILDING
LAND AREA ACQUIRED FOR AIRPORT INCLUDING RPZ
WELL PAD AND MAINTENANCE BUILDING PROPERTIES WILL NOT BE ACQUIRED AND ACCESS WILL BE ARRANGED TO THE PUBLIC ROADS
113th AVENUE SW
41st STREET SW
FUTURE ROAD
APT PROPERTY & 10' PERIMETER FENCE (F)
MALSR (F)
LOCALIZER SERVICE ROAD (F)
112th AVENUE SW
RPZ (F) 1,000'x1,750'x2,500'
EXHIBIT 6
FUTURE ROAD ALIGNMENT
KLJ
© KLJ 2015
0
500
scale
feet
N

Ultimate Length of 8,900 feet

The relocation of 41 ST SW will require the Airport to purchase approximately 88 acres from Mr. Jeff Kuhn. The cost for land acquisition will be approximately $175,000 dollars. The total project cost is estimated at $1,000,000. **Exhibit 7** depicts the route for the ultimate road alignment.

Relocation of 41 ST SW Conclusion

It is the Airports contention that the ultimate route should be considered if this option is pursued, so as not to relocate the road twice. Also, the road, in its current location, becomes an approach (50:1) impact in the Ultimate length scenario. The ALP recommends road relocation when the Ultimate runway length (8,900 feet) is achieved since approach impacts are between 6.2 feet to 2.0 feet. **Exhibit 8** depicts the *Ultimate Inner Approach to Runway 14 End* (from the ALP)**.** As mentioned above in the Ultimate length of Runway 14-32 (8,900 feet) there are approach slope impacts based on the elevation of the road (with vehicles on it).

Closure of 41 ST SW

Closure of 41 ST SW would have to occur at or near the intersecting roads, 20Th Avenue SW and 30Th Avenue SW and traffic would need to be rerouted to 40th ST SW. This shift would impact approximately 155 vehicles per day currently and approximately 229 vehicles per day in the future. It would also disrupt access to existing farms (3), existing homes (potential school bus routes depending on school age children living in the area). There are two (2) homes and several separate parcels of farmlands that are currently accessed from 41 ST SW. The costs for closing 41 ST. SW would be minimal, less than $20,000, as it would require installation of Jersey Barriers or some other vehicle arresting device, but as mentioned above the closure would disrupt existing vehicular routes. Also as described in **Table 5,** 41 ST. SW does not have nor is it anticipated to have vehicle traffic which would trigger safety concerns that the Airport feels is of concern. **Exhibit 9** depicts the closure of 41 ST. SW at the intersection of 112th Ave SW and just east of 113 Ave SW.

Closure of 41 ST SW at the locations shown on the exhibit will cause an increase in traffic on 40th ST SW, will increase the transit time for farm owners trying to access their land.

Conclusion

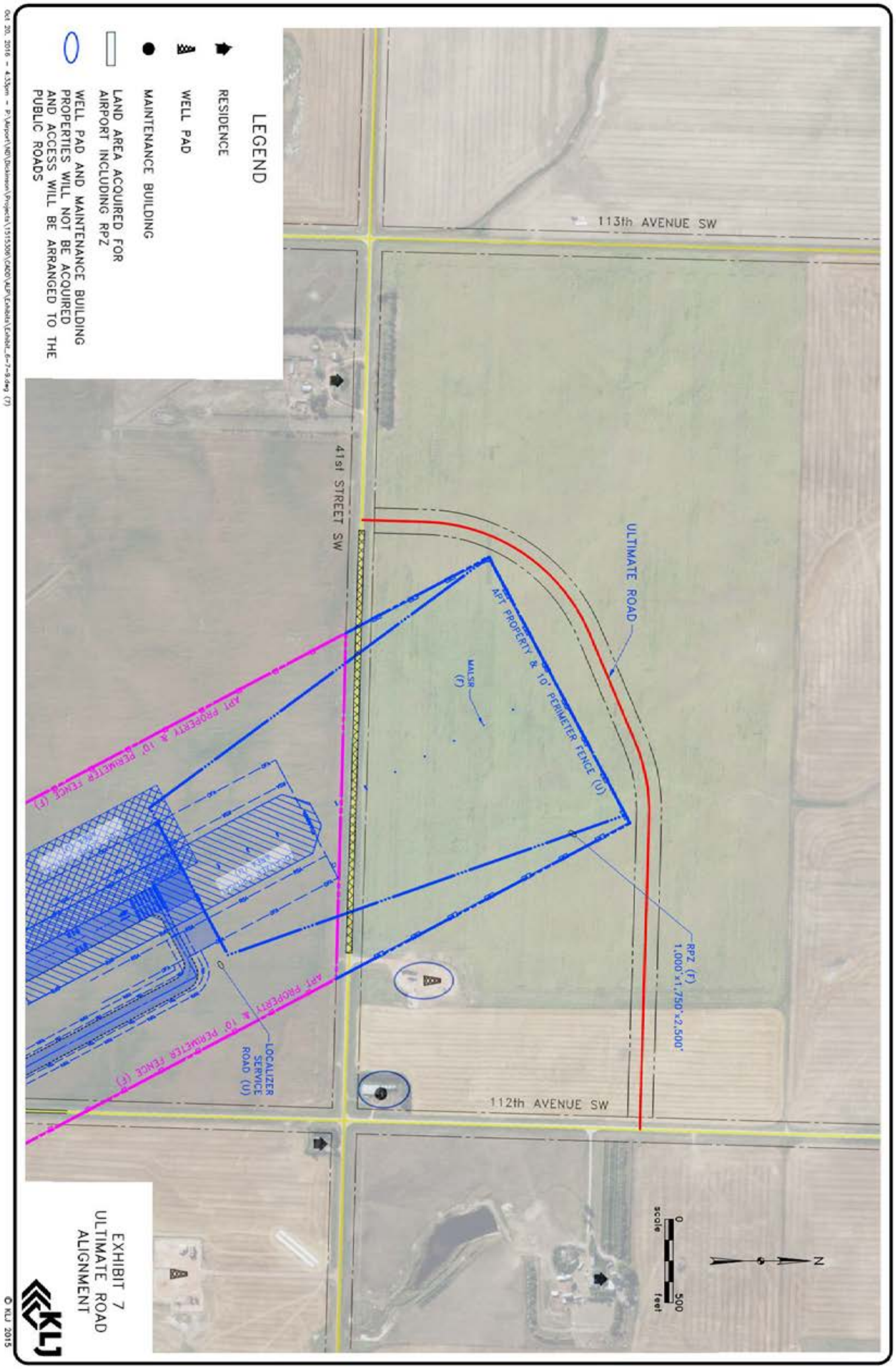
Environmental issues at the Dickinson Theodore Roosevelt Regional Airport preclude the Airport from meeting the existing and forecasted needs with the current configuration of Runway 14-32. A shift of approximately 1,700 to the north on Runway 14-32 is required in order to comply with RSA criteria, ILS glide slope gradient, and RPZ guidance on the Runway 32 End. When the runway is constructed the approach RPZ for Runway 14 End will be down to ¾ mile visibility and will not impact the RPZ. It is only when the Runway 14 End approach goes to ½ mile that the RPZ impacts the road.

It is the contention of the Airport that based on the future runway length of 7,300 feet the **Do Nothing with 41 ST SW** alternative should be approved. The Airport will take passive steps to ensure that cars are not in the RPZ for an extended period of time, including the placement of no parking/stopping signs and signs notifying cars of low flying aircraft.

When the Airport extends Runway 14-32 to 8,900 feet (Ultimate configuration) it is the contention of the Airport to **Relocate the Road in the Ultimate Phase of Runway Construction**. It is difficult to determine when this runway length will be needed based on the current economic conditions and airline trends but we estimate that it could be needed within 15 to 20 years. The level of safety for the road remaining in the RPZ for the ultimate runway lengths is well within what the airport considers safe, but 41 ST SW does impact the ultimate approach and therefore should be relocated during the ultimate development.

TABLE 6– COMPARISON OF ALTERNATIVES

	Summary
Tunneling 41 ST SW	Not considered feasible based on terrain and vehicle usage
Displaced or relocated threshold on Runway 14	Not considered feasible based on current and forecasted aircraft needs
Declared distances	Not preferred by airport as it could cause confusion for pilots
Do Nothing to 41 ST SW	Airport preferred option for future runway length (7,700 feet) -Does not cross safety threshold -Zero cost
Relocation of 41 ST SW	Airport preferred option for ultimate runway length (8,900 feet) -Relocates road outside of potential obstructions to Runway 14 approach -$1,000,000 estimated cost
Closure of 41 ST SW	Not considered feasible considering access to existing farms and homes


LEGEND
RESIDENCE
WELL PAD
MAINTENANCE BUILDING
LAND AREA ACQUIRED FOR AIRPORT INCLUDING RPZ
WELL PAD AND MAINTENANCE BUILDING PROPERTIES WILL NOT BE ACQUIRED AND ACCESS WILL BE ARRANGED TO THE PUBLIC ROADS
113th AVENUE SW
41st STREET SW
ULTIMATE ROAD
APT PROPERTY & 10' PERIMETER FENCE (U)
MALSR (F)
APT PROPERTY & 10' PERIMETER FENCE (F)
RPZ (F) 1,000'x1,750'x2,500'
LOCALIZER SERVICE ROAD (U)
112th AVENUE SW
N
0 500
scale feet
EXHIBIT 7
ULTIMATE ROAD ALIGNMENT
KLJ
© KLJ 2015

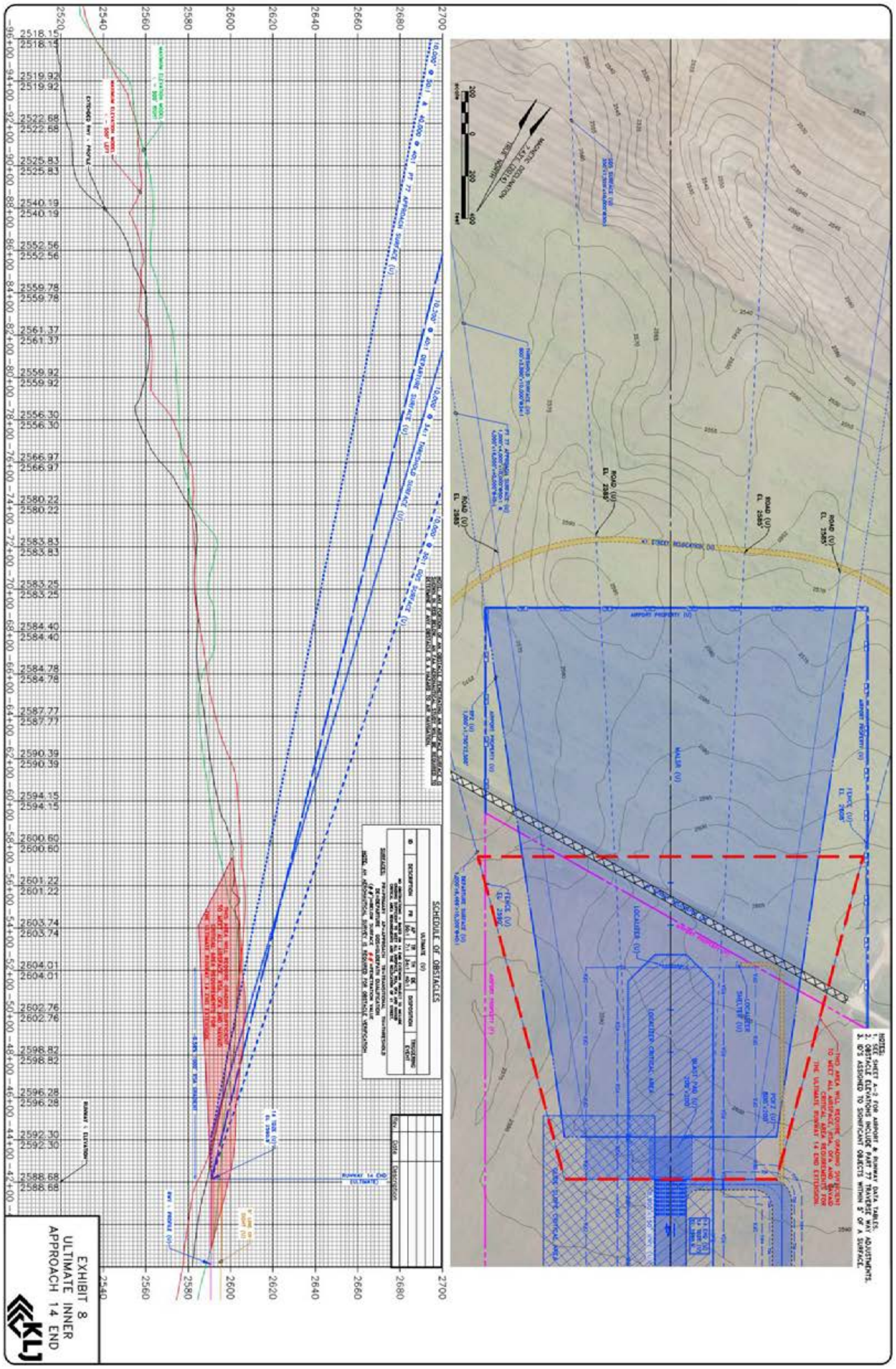
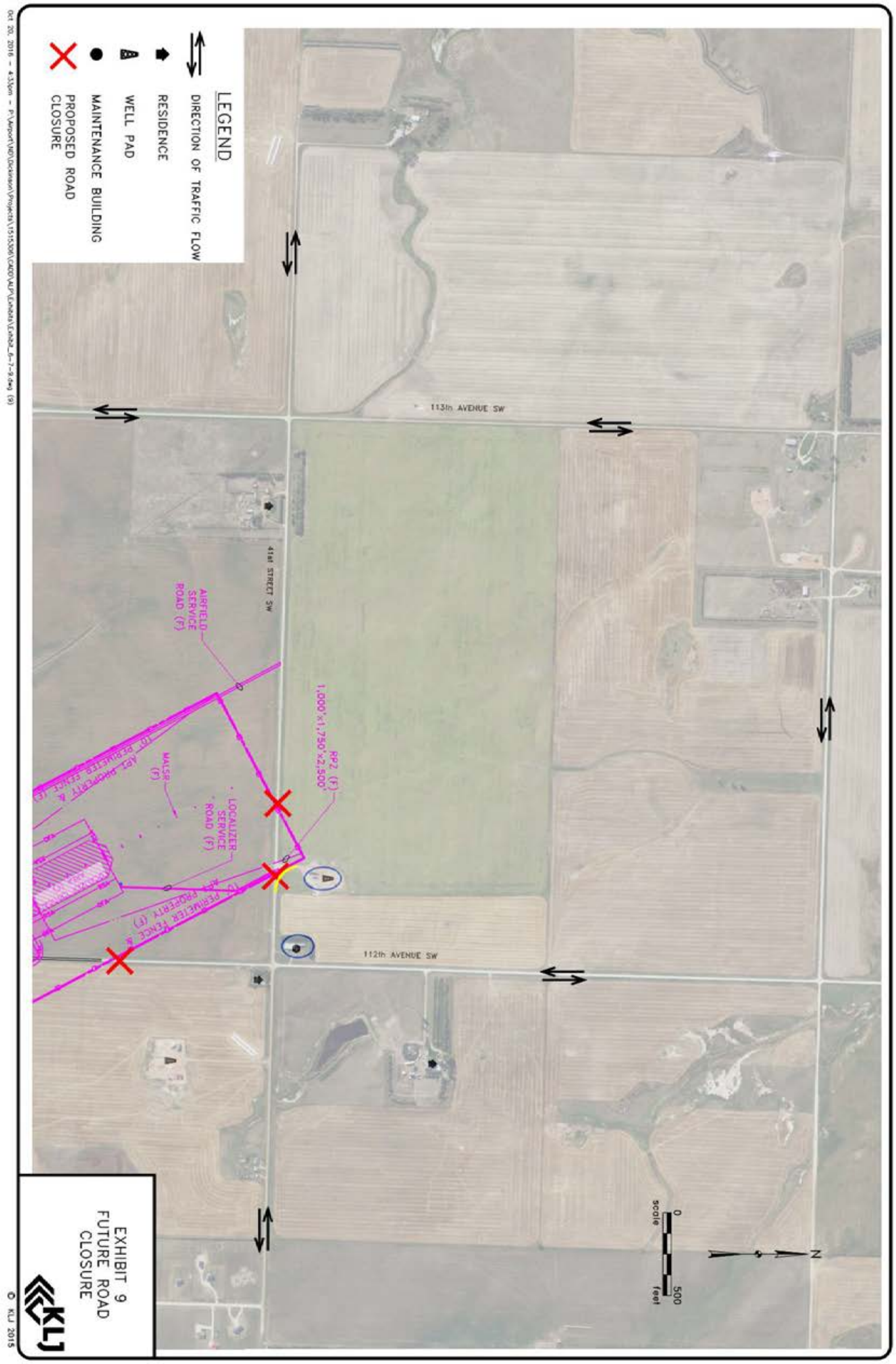


EXHIBIT 8
ULTIMATE INNER APPROACH 14 END
SCHEDULE OF OBSTACLES


LEGEND
DIRECTION OF TRAFFIC FLOW
RESIDENCE
WELL PAD
MAINTENANCE BUILDING
PROPOSED ROAD CLOSURE
113th AVENUE SW
41st STREET SW
AIRFIELD SERVICE ROAD (F)
RPZ (F) 1,000'x1,750'x2,500'
LOCALIZER SERVICE ROAD (F)
MALSR (F)
112th AVENUE SW
0 500
scale feet
N
EXHIBIT 9
FUTURE ROAD CLOSURE
KLJ
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