CHAPTER 2: EXISTING CONDITIONS

Airport Master Plan Update

Dickinson, ND

PREPARED FOR:

DICKINSON THEODORE ROOSEVELT REGIONAL AIRPORT

DICKINSON, ND

April 2015

Project # 1513301

R.A. Wiedemann & Associates, Inc.

trillion AVIATION

KLJ

CONTENTS

CHAPTER 2 – EXISTING CONDITIONS

AIRPORT PROFILE

Prior to World War II the City of Dickinson owned a small airfield called Worth Field located half a mile south of Dickinson.

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. In 1951 all operations from Worth Field were relocated to Dickinson Theodore Roosevelt Regional Airport. A terminal was constructed, the flight service station (FSS) was reconstructed, and the primary runway received an asphalt overlay during this immediate post-war period (1949-1951). In 1970 the gold hangar was constructed. Crosswind Runway 7-25 was extended and paved in the mid-1980s. Primary Runway 14-32 was extended to the north in the mid-1990s. New taxiways were also constructed, linking runway extensions to the original terminal building, a new terminal building, and associated aprons.

Today, Dickinson Theodore Roosevelt Regional Airport continues to play 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. Delta and United Airlines currently offer airline service through their regional partners with three round trips per day to Minneapolis and Denver respectively.

LOCATION

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. Dickinson Theodore Roosevelt Regional Airport is located five miles south of the city along North Dakota State Highway 22.

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. US Highway 85, connecting to Interstate Highway 94 nineteen miles to the west of Dickinson, is a significant north/south trade route.

FACILITIES

Dickinson Theodore Roosevelt Regional Airport's airside facilities include two runways: primary Runway 14-32 at 6,399 feet in length by 100 feet in width, and crosswind Runway 07-25 at 4,699 feet by 75 feet.

Its landside facilities include a passenger terminal building, fixed base operator (FBO), hangars, and associated aprons. The airport encompasses approximately 640 acres of city-owned land. The airport is surrounded by privately-owned agricultural land.

CAPITAL IMPROVEMENTS

Airport improvements accomplished since 1951 include relocated runways, runway extensions, improved systems for lighting, navigation and communication, a rebuilt and new taxiway, several miscellaneous grading, paving and sealing improvements, and construction of hangars, aprons, and a new terminal building. A mixture of federal, state, and local funding have supported these airport improvements. **Table 1 – Airport Improvement Program Funding** documents a series of airport improvement projects since 1949. The table also indicates proportional cost-sharing amounts of three contributors: the City of Dickinson, the State of North Dakota, and the Federal Aviation Administration (FAA). This funding makes possible quality airport services that meet the public's needs.

TABLE 1
AIRPORT IMPROVEMENT PROGRAM FUNDING

FAA Grant	Description of Development	State Funds	Local Funds	Federal Funds	Total Cost
9-32-049-901 (1949)	Grade, drain and pave apron (approximately 1470' x 50' and 240' x 120') and connecting taxiway; turf adjacent area; furnish and install segmented circle marker.	—	$19,951.03	$19,951.02	$39,902.05
9-32-049-102 (1951)	Furnish and install lighting system on the NW/SE runway; approach clearance.	—	$8,864.69	$8,864.68	$17,729.37
9-32-049-5703 (1957)	Land acquisition for northwest and southeast clear zones; strengthen s/w and n/s taxiways, and terminal apron; strengthen 75' width of NW/SE runway including seal coat on entire width of runway; construct additional apron (approximately 3,300 SY) including tie downs; construct connecting taxiway from apron to E/W taxiway; install electrical ducts.	—	$57,212.20	$57,212.19	$114,424.39
9-32-049-5804 (1958)	Land acquisition, tracts 8, 9, and 10; construct bituminous overlay on east half of N/S runway.	—	$18,626.69	$18,626.70	$37,253.39
A-38-0013-01 (1973)	Perform an airport master planning study including airport requirement studies, airport plan, environment studies, meetings, and report preparation. All as more particularly described in MP_6, Description of Work Program, of said application.	—	$5,715.00	$11,430.00	$17,145.00
5-38-0013-01 (1977)	Acquire land for airport development (Parcels B, C, D, E and F) and clear zone easement (Parcels G and H).	—	$18,694.47	$99,000.00	$117,694.47

Airport Improvement Program Funding continued on the next page…

FAA Grant	Description of Development	State Funds	Local Funds	Federal Funds	Total Cost
5-38-0013-02 (1978)	Construct NW/SE Runway (5,200' x 75') connecting taxiways (approx. 925' x 40' and 500' x 40') and apron extensions approx. 8750 SY); install medium intensity runway lights on NW/SE and N/S runways; install taxiway lights, rotating beacon, lighted windcone, segmented circle and tie downs; mark runway, taxiway, and apron; remove obstructions; install perimeter fencing (approx. 900 LF).	$43,620.45	$43,620.45	$785,168.04	$872,408.94
3-38-0013-01 (1982)	Strengthen and mark Runway 14/32 (75' x 5200'); connecting taxiway (40' x 900') and apron (approx. 8677 SY.); Strengthen, seal (PFC) & mark Runway 14/32 (75' x 5200'); Strengthen connecting Taxiway (40' x 900') and apron approx. 8677 SY); grade extended safety area for Rwy 14/23 & clear approach for Rwy 32; grade, drain & stabilize subgrade for Rwy 7/25 (60' x 3,400') and associated safety area; install VASI's on both ends of Rwy 7/25; install REIL's on Rwy 7; install supplemental wind cones at both ends of Rwys 14/32 & 7/25.	$70,758.01	$0.00	$636,822.09	$707,580.10
3-38-0013-02 (1983)	Pave and mark Runway 7/25 (60' x 3400'); reinstall MIRL's from Runway 17/35 to Runway 14/32.	$30,617.94	$15,230.69	$277,062.63	$322,911.26
3-38-0013-03 (1988)	Improve alternate county road system in lieu of relocating county road for Runway 14 approach clearance; construct Runway 14 extended safety area (approx. 1000' x 300'); install airport lighting radio control system.	$6,585.29	$6,585.30	$118,535.35	$131,705.94
3-38-0013-04 (1991)	Rehabilitate PFC and mark Runway 14/32 and Runway 7/25.	$2,066.16	$2,066.17	$37,190.96	41,323.29
3-38-0013-06 (1994)	Install Mandatory Airport signs and markings, and install Constant Current Regulator.	$6,057.26	$6,057.27	$61,887.27	74,001.80
3-38-0013-07 (1995)	Extend, mark and light runway 14/32 (approx. 1,300' x 75'); Reconstruct taxiway "B" (approx, 2,800 SY); construct taxiway "C" (approx. 3,300 SY); construct parallel taxiway "D" (approx. 5,900 SY); install MIRL and MITL; relocate VASI-4 system; relocate supplemental wind sock; and install REIL and airport guidance signs.	$57,190.00	$51,571.77	$928,291.82	1,037,053.59
3-38-0013-08 (1996)	Install Runway Distance Remaining Signs for Runway 14/32 and 7/25 and Upgrade Electrical Vault.	$76,531.82	—	$208,706.65	285,238.47
3-38-0013-09 (1997)	Reconstruct runway 7/25 (4700' x 75'), and portion of taxiway B (approx. 2,410 SY) and taxiway F (approx. 1,190 SY); Install MIRL, MITL, PAPI, REIL, and lighted signs (Phase 1).	$49,790.00	$20,010.60	$629,437.00	699,237.60

Airport Improvement Program Funding continued on the next page…

FAA Grant	Description of Development	State Funds	Local Funds	Federal Funds	Total Cost
3-38-0013-10 (1998)	Reconstruct runway 7/25 (4700' x 75'), [Phase 2]; Install MIRL, PAPI, REIL, and Lighted signs [Phase2]; Install 4-Strand Barbed Wire Fencing (7,575 LF); and Reconstruct a portion of Taxiway B (approx. 3,520 SY).	$38,500.00	$38,838.22	$700,000.00	777,338.22
3-38-0013-14 (1998)	Rehabilitate Runway 07/25 and Taxiway B, C and D; Rehabilitate Airport Access Road (approx. 4760 SY); Pave Terminal Access Road and Parking Lot (approx. 7000 SY); and Install Fencing and Lighting for terminal Apron and Auto Parking.	$12,104.56	$12,104.56	$217,882.00	$242,091.11
3-38-0013-11 (1999)	Reconstruct and widen Runway 14/32 (6400’ x 100’ paved); Reconstruct portion and overlay portion of apron area (approximately 15,200 SY Bituminous Pavement & 750 SY PCC Pavement); Install edge drain system on Runway 14/32 and apron area; Install medium intensity runway lights on Runway 14/32 and taxiway; Reconstruct Groove Runway 14/32; Install runway and taxiway markings on Runway 14/32 and taxiway; Reconstruct taxiway “T” hangar; Realign and reconstruct portion of Taxiway “A” north of Runway 7/25; Relocate VASI and MALS threshold lights on 32 end; Install medium intensity taxiway lights on Taxiway “B “ and “A” from Taxiway “F” to Runway 25 end.	$87,118.00	$232,626.00	$2,877,700.00	3,197,444.00
3-38-0013-13 (2000)	Construct new terminal apron (approximately 250’ x 200’ PCC pavement); Construct connecting taxiway from Taxiway B to new terminal apron (approximately 135’ x 35’ paved); Install medium intensity taxiway lights.	$20,218.61	$20,218.61	$363,935.00	$404,372.22
3-38-0013-12 (2001)	Reconstruct and Mark Taxiway A from approximately 400 feet South of Runway 25 End to approximately 250 feet from 32 End (approximately 2,700’ x 35’ paved); and install medium Intensity Taxiway Lights.	$23,339.94	$23,339.94	$420,119.00	$466,798.89
3-38-0013-14 (2001)	Master Plan Update, Improve Access Road; Rehab RW 7/25			217,882	
3-38-0013-15 (2002)	Rehab Apron, Construct Apron - GA Apron extension.	$12,452		$224,135	
3-38-0013-16 (2003)	Acquire SRE; Rehab RW 14/34; Update Airport Master Plan Study.	$9,785		$195,000	
3-38-0013-17 (2004)	Construct Taxiway D Connector / Lighting / Hangar Taxiway; ALP	$6,319		$241,429	

Airport Improvement Program Funding continued on the next page…

FAA Grant	Description of Development	State Funds	Local Funds	Federal Funds	Total Cost
3-38-0013-18 (2005)	Wildlife Assessment; Rehab Rwy 14/32 & 7/25, Apron & Taxiways; Replace Rwy 7/25 REILS.	$581		$189,301	
3-38-0013-19 (2005)	Construct ARFF Bldg (approx 51' x 41'); Acquire ARFF Truck; Install Wildlife fence (approx 27,226 linear feet); & Acquire Land (parcels Y, X, O & N).	$28,425		$96,2171	
3-38-0013-20 (2007)	Construct GA Terminal Building (approx 18'x78'); Procure SRE (plow, loader, sander); Improve RSA (drain covers).	$7,427		$53,9106	
3-38-0013-21 (2008)	Expand Terminal Parking Lot; Rehab GA Parking Lot & Access Road.	$6,711		$34,5032	
3-38-0013-22 (2009)	Commercial Terminal-Phase 1, Design; Airport Master Plan Update- Phase 1 and Terminal Study.	$5,004		$249,507	
3-38-0013-23 (2009)	Rehabilitate (remarking including enhanced taxiway markings) Runway 14/32 and 7/25, taxiways & apron; Acquire snow removal equipment (skid steer loader & attachments).	$3,728		$125,910	
3-38-0013-24 (2010)	Modify Passenger Terminal Building - Phase 2 (construction only).	$292,010		$532,409	
3-38-0013-25 (2010)	Acquire Land for RPZ.	$10,000			
3-38-0013-26 (2010)	Modify Passenger Terminal Building - Phase 2 (construction only).	$5,726		$217,591	
3-38-0013-27 (2011)	Update Airport Master Plan (phase 1).			$210,000	
3-38-0013-28 (2011)	2011 Parking Area Expansion.	$37,342.29			
3-38-0013-29 (2012)	Land Acquisition for Approaches - Southern Parcels	$4,174.29			
3-38-0013-29 (2012)	General Aviation Apron Expansion - Design	$4,901.80			

AIRPORT CERTIFICATION

Airport certification is based on Federal Aviation Regulations (FAR) Part 139. Each airport must comply with a minimum of these regulations to be certified. Airports are classified within FAR Part 139 based upon the size of aircraft serving the airport. The classes of airports are:

Class I — Authorized to serve aircraft operations of large and small air carrier aircraft.

Class II — Airports that serve scheduled small air carrier aircraft and unscheduled large air carrier aircraft operations but would not serve scheduled large air carrier aircraft.

Class III — Airports that serve scheduled operations of small air carrier aircraft. These airports would not serve scheduled or unscheduled large air carrier aircraft.

Class IV — Airports serve unscheduled passenger operations of large air carrier aircraft but would not serve scheduled large or small air carrier aircraft.

Unscheduled, as used herein, refers to an operation conducted by an air carrier or a commercial operator that is specifically negotiated with the customer. Scheduled operations are conducted by air carrier or commercial operators from a published schedule for passenger operations that include dates and/or times and is advertised or made available to the general public. Large aircraft refers to aircraft with seating capacity of 31 passengers or more per flight. Small aircraft refers to aircraft with seating capacity for more than 9 but less than 31 passengers per flight.

Airports hosting commercial passenger service that falls into one of the above classifications must be certified under FAR Part 139. 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.

Dickinson prepares and maintains a certification manual that describes the airport's compliance with certain safety standards identified in FAR Part 139. These standards include minimum levels and types of equipment for airport rescue and fire fighting (ARFF) facilities and equipment, emergency planning, and snow and ice control.

AVIATION SERVICES

In 1993, Great Lakes Aviation began serving the Dickinson Theodore Roosevelt Regional Airport with 19 passenger Beech 1900's to Denver and most recently with 30 passenger Embraer EMB-120 Brasilia aircraft, which was partially funded through the Essential Air Service (EAS) program. The EAS program was created through the Airline Deregulation Act in 1978 to subsidize service to remote communities. Since 2009 when the oil industry boom began in the region, Dickinson's passenger boardings increased substantially. In 2013, Delta Airlines and United Airlines began service and Great Lakes discontinued

service to Dickinson in April 2014[1]. Delta and United provide service to Minneapolis, Minnesota and Denver, Colorado respectively. Each began with two round trips per day which was increased to three for each in April 2014 for United and in June 2014 for Delta.

Western Edge Aviation, LLC. is a full service FBO that provides the following services:

- Fuel
  - Phillips 66 100LL
  - Phillips JetA/additive
- Quick-turn service
- Certified A&P/IA on staff
- Ground Power (GPU) - Portable Start Cart
- De-icing
- Pre-heat Service
- Free parking and tie-downs
- Heated and cold hangar space
- Courtesy Car
- Car/SUV Rental
- Catering
- Free coffee and ice
- Comfortable, home-like pilot lounge
- Computerized Weather
- Maintenance available
- Private briefing/planning room
- Quite "snooze" room

ORGANIZATION

The Dickinson Theodore Roosevelt Regional Airport operates under an Airport Authority structure. There are five board members for the Airport Authority who are appointed by the City. In addition, a City Commissioner sits as a liaison on the Airport Authority. To facilitate communication and to keep City leadership informed about Airport matters, the Airport Manager typically briefs the City Council twice a year. Currently the Airport operating budget is aided by three mills in property taxes from the City and one mill in property taxes from the County.

AIRSIDE FACILITIES

An inventory of Dickinson Theodore Roosevelt Regional Airport's facilities was performed as part of this Airport Master Plan Update. This inventory establishes a baseline for determining whether future improvements are needed.

Airside facilities consist of areas of Dickinson Theodore Roosevelt Regional Airport that are necessary for aircraft surface movement. Aircraft parking and hangar areas are described under landside facilities. Airside facilities include runways, taxiways and associated lighting, marking, and sign systems. Airside facilities are shown on **Exhibit 1 – Airside Facilities**.

Runway 14-32

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

[1] Dickinson Theodore Roosevelt Regional Airport no longer has EAS subsidized airline service as of 2012.

strength, length, width, and instrument approach capability. It also normally receives a majority of the airport's operations. Data on Runway 14-32 is summarized in **Table 3 – Runway Data**.

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).

A pavement study sponsored by the North Dakota Aeronautics Commission (NDAC) in 2012 and completed in 2013 details the pavement condition index (PCI) and pavement classification number (PCN) of airport pavements. The PCI is a numerical index between 0 and 100 which indicated the general condition of the pavement based upon objective observation of the pavement surface and any distresses that exist. There is no destructive testing involved in determining the PCI but the PCI does serve as an inexpensive tool to broadly analyze pavements in an objective manner and prioritize maintenance and rehabilitation.

The PCI for Runway 14-32 had a composite rating of 79 while the report recommended that pavements for runways with airline service should not be below 75. The condition of Runway 14-32 pavement sections ranged from 75 to 84. The 2012 airport pavement condition is depicted on **Exhibit 2 – Pavement Condition Index**.

The PCN is a more detailed measurement which shows the weight bearing capacity of a runway. The PCN for Dickinson's runways are provided in **Table 2 – Runway PCN**. The PCN is a five-part code which describes a pavement. The first part is a number indicating the load carrying capacity of the pavement. The four other parts of the PCN are codes as follows:

Pavement Type
R = Rigid
F = Flexible

Subgrade Strength
A = High (k-value ≥ 442 psi/in or CBR ≥ 13)
B = Medium (221 psi/in < k-value ≤ 442 psi/in or 8 < CBR ≤ 13)
C = Low (92 psi/in < k-value ≤ 221 psi/in or 4 < CBR ≤ 8)
D = Ultra Low (k-value ≤ 92 psi/in or CBR ≤ 4)

Maximum Allowable Tire Pressure
W = High (no pressure limit)
X = Medium (146 to 218 psi)
Y = Low (74 to 145 psi)
Z = Ultra Low (pressure limited to 73 psi)

Pavement Evaluation Method
T = Technical Evaluation
U = Using Aircraft Evaluation

The PCN for Runway 14-32 was calculated as the flight activity existed in 2012 but flight activity changed in 2013 so the NDAC report completed a calculation of the PCN based on the new flight activity as well. The PCN dropped from 20 F/D/W/T to 12 F/D/W/T and the report stated:

> When the Embraer ERJ-145LR was included in the analyzed traffic for Runway 14-32, the calculated PCN decreased to 12 F/D/W/T. The Embraer ERJ-145LR has an ACN of 17 for pavements with a subgrade category of D, which exceeds the PCN determined for Runway 14-32 when it is included in the traffic mix. Because this aircraft is being considered for regular operations and its ACN exceeds the PCN, ***it is not recommended that the Embraer ERJ-145LR operate on a regular basis without increasing the structural capacity of Runway 14-32.***

The airport is now served by 6 round trips per day of these 53,000 pound regional aircraft (ERJ 145 and CRJ 200). The complete report is included in **Appendix C – Airport Pavement Structural Evaluation**.

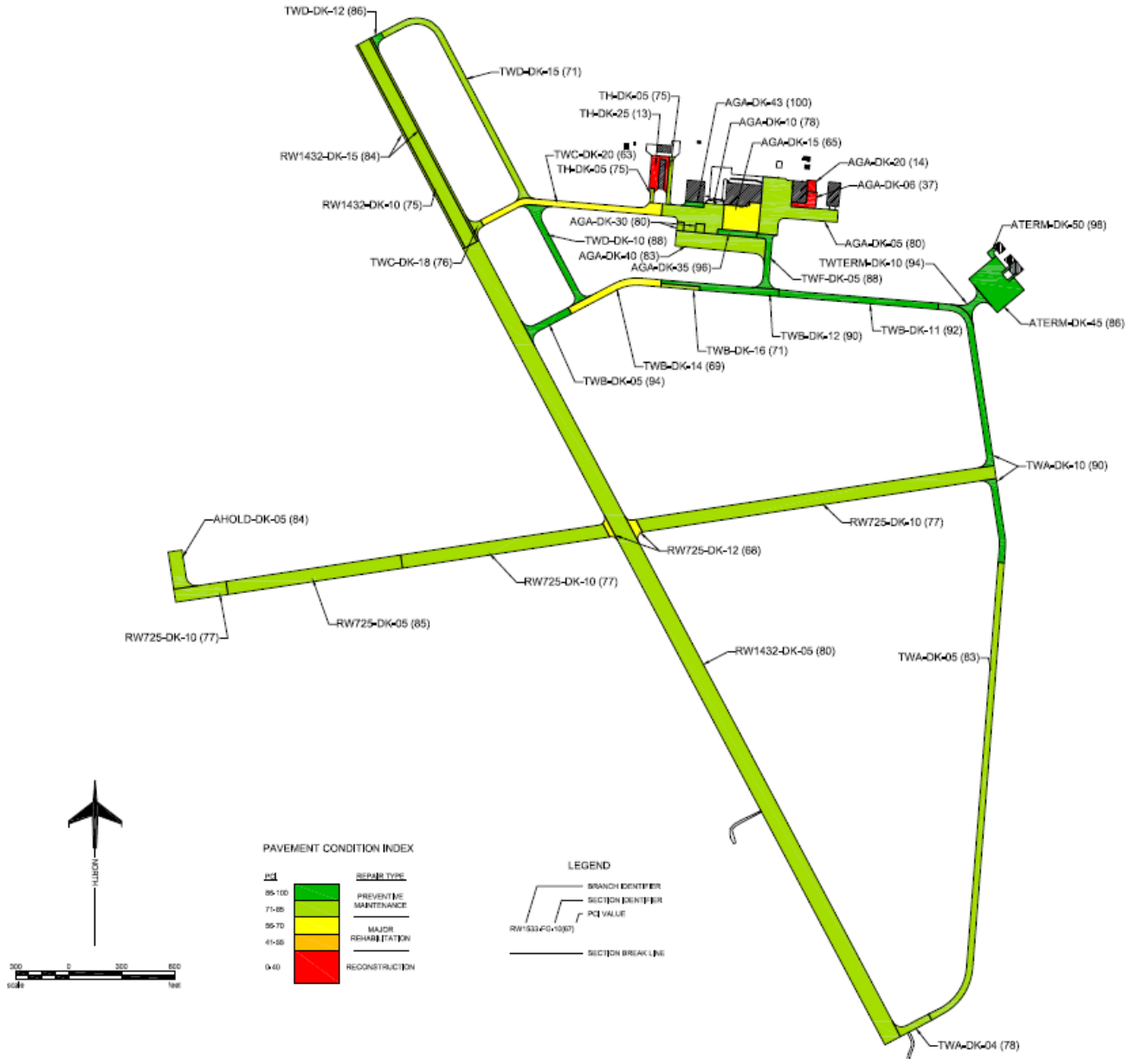
TABLE 2 – RUNWAY PCN	
Runway 14-32 with flight activity in 2012	20 F/D/W/T
Runway 14-32 with flight activity added in 2013	12 F/D/W/T
Runway 7-25	6 F/D/W/T

Exhibit 1 – Airside Facilities

TABLE 3 – RUNWAY DATA				
	Runway 14-32		**Runway 7-25**	
Role	Primary		Crosswind	
Length (ft.)	6,399		4,699	
Width (ft.)	100		75	
Surface Material	Bituminous Pavement		Bituminous Pavement	
Surface Treatment	Grooved		Grooved	
Pavement Condition Index	87		87	
Signs	Holding Position, Guidance, & Distance		Holding Position, Guidance, & Distance	
Load Capacity				
Single Wheel Load (lbs.)	30,000		16,000	
Dual Wheel Load (lbs.)	37,500		20,000	
Lighting & Markings				
	14	32	7	25
Pavement Edge Lighting	MIRL		MIRL	
Markings	Non-Precision	Precision	Non-Precision	Non-Precision
Visual Descent	VASI(V4L)	VASI(V4L)	PAPI(P2L)	PAPI(P2L)
Approach	REIL	MALSR	REIL	REIL
Instrument Approach Procedures (Ceiling, Visibility)				
Instrument Landing System (ILS)	Circling (500', 1 mile)	Yes (200', 1/2 mile)	Circling (500', 1 mile)	Circling (500', 1 mile)
VHF Omni-Directional Range (VOR)	Circling (500', 1 mile)	Circling (500', 1 mile)	Circling (500', 1 mile)	Circling (500', 1 mile)
Area Navigation (RNAV)	Yes (300', 1 mile)	Yes (200', 1/2 mile)	Circling (500', 1 mile)	Yes (400', 1 mile)

MALSR = Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
REIL = Runway End Identifier Lights
VASI = Visual Approach Slope Indicator
PAPI = Precision Approach Path Indicator
MIRL = Medium Intensity Runway Lighting
Circling = not a direct/straight in approach onto the runway, but an indirect approach
Yes = direct/straight in route on to runway
No = no capabilities for an indirect or direct use

Exhibit 2 – Pavement Condition Index



Runway 14-32 has medium intensity runway lights (MIRL). Intensity of these lights is pilot-controlled and helps pilots see the runway during low visibility conditions and at night.

Runway 32 is equipped with a medium intensity approach lighting system with runway alignment indicator lights (MALSR). The MALSR was originally installed in 1982 on a FAA project that included strengthening and marking of Runway 14-32. MALSR is an integral part of the instrument landing system (ILS) that helps pilots transition from instrument flight to visual flight for landing.

Both ends of Runway 14-32 have visual approach slope indicator (VASI). The airport's VASI is a four box design and is positioned left of the runway near the touch down points. VASI projects red and white

beams of light toward approaching aircraft, providing visual cues to pilots of the appropriate glide path to the runway.

Runway 14 is also equipped with runway end identifier lights (REIL). REIL consists of a pair of white synchronized flashing lights located laterally on each side of the runway's threshold. It provides rapid and positive identification of the approach end of the runway.

Runway 07-25

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.

The 2012 pavement study completed by ND State Aeronautics indicated an average PCI of 78 for Runway 07-25. The condition of pavement sections ranged from 68 to 85. The pavement condition of airport pavements is depicted on **Exhibit 2 – Pavement Condition Index**. In addition the PCN for Runway 7-25 is depicted in **Table 2 – Runway PCN**.

Runway 07-25 has medium intensity runway edge lights (MIRL). REILs are located on both ends of the runway. Both ends also have precision approach path indicators (PAPI).

Runway 07-25 is marked for non-precision approaches. **Table 3 – Runway Data** summarizes facility data for Runway 07-25.

Taxiways

Dickinson Theodore Roosevelt Regional Airport is served by a system of taxiways that provide safe paths for aircraft to travel between runways, aprons, terminals, and other areas on the airport. The Primary Taxiways are named A, B, C, D, and F, and are identified with lighted signs. See **Exhibit 1 – Airside Facilities**. Taxiway pavements are marked with centerline striping, side stripes, and holding position lines where necessary.

Taxiway A, 35 feet in width, begins at the intersection of Taxiway T (the connecting taxiway between the apron and air carrier terminal) with Taxiway B and runs southeasterly to serve as the entrance taxiway to Runway 25. Taxiway A then continues southeasterly, serving as the entrance taxiway to Runway 32.

Taxiway B, from Taxiway F (taxiway serving the general aviation apron to the southeast) to its intersection with Taxiway A, is 35 feet in width. Taxiway B, from Taxiway F to Runway 14-32, is 40 feet in width.

Taxiways C and D were constructed and parts of Taxiway B were reconstructed in 1995 to serve the extension of Runway 14. Taxiway C allows for a more direct route to hangars, and terminal area from this extension. Taxiway D is the parallel taxiway serving Runway 14. Taxiways C and D are 35 feet in width.

Taxiway F is 40 feet in width and connects Taxiway B to the general aviation apron. Taxiway T, which is 35 feet wide, connects the terminal apron to Taxiway A.

The 2012 PCI study resulted in the following taxiway PCI rating ranges:

Taxiway A – PCI 83-90
Taxiway B – PCI 69-94
Taxiway C – PCI 63-76
Taxiway D – PCI 71-88
Taxiway F – PCI 88
Taxiway T (Terminal) – PCI 94

Taxiway pavement condition is depicted on **Exhibit 2 – Pavement Condition Index**.

Taxiway lighting systems are installed on all taxiways. Medium intensity taxiway lighting (MITL) is controlled integral with the runway lighting system.

COMMUNICATIONS

Dickinson Theodore Roosevelt Regional Airport has a common traffic advisory frequency (CTAF) and local advisory frequency (UNICOM) of 123.0 MHz. Pilots, equipment, and vehicle operators use CTAF/UNICOM to advise each other of their movements on and around the airport. This frequency is monitored by the fixed base operator (FBO) for UNICOM purposes. UNICOM is an information service for pilots provided by the FBO to advise pilots of fueling and other airport services.

An Automated Surface Observation System (ASOS) provides on-site weather information. The ASOS system can be accessed by frequency 118.375 MHz or by telephone/internet. This system is entirely automatic and provides current wind direction and velocity, visibility, cloud clearances, sky condition, temperature, dew point, and barometric pressure. Since failure of ASOS can cause cancellation of airline flights, FAA maintains the ASOS equipment under an agreement that ensures return to service within one day.

Along with ASOS the remote communications outlet (RCO) can be used to secure weather information. RCO is an unmanned air/ground communications facility, remotely controlled, providing UHF or VHF communication capabilities to extend the service range of a Flight Service Station (FSS). RCO for Dickinson can be reached on frequency 122.2 MHz; this is a FSS frequency. FSS provides information on weather, airport conditions, radio aids and other facilities, and processes flight plans. Minneapolis Air Route Traffic Control Center (ARTCC) provides air traffic control services for aircraft in the Dickinson area operating on an instrument flight plan. The ARTCC frequency is 135.2 MHz. **Table 4 – Communication Data** represents a summary of communication data.

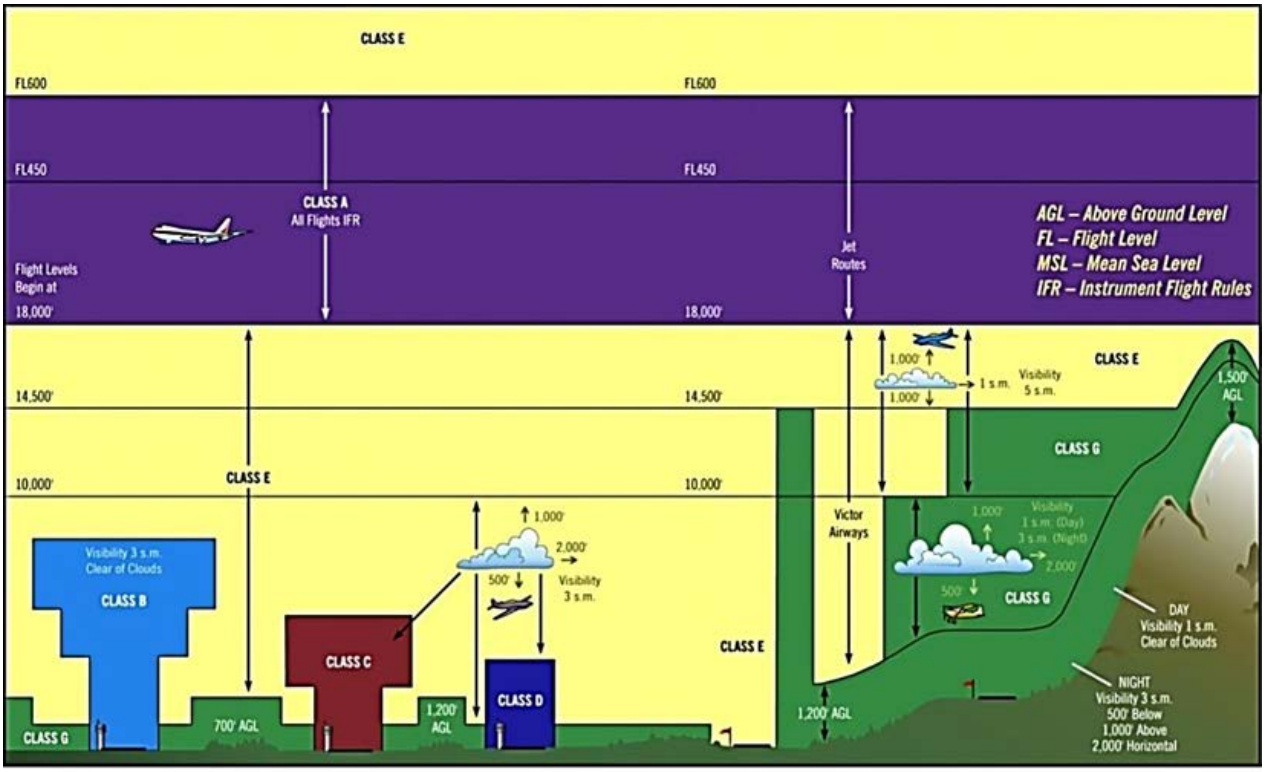
TABLE 4 – COMMUNICATION DATA		
Type Of Communication Device	**Frequency (Mhz)**	**Comments**
CTAF/UNICOM	123.0	
Flight Service Station (FSS)	122.2	RCO
Minneapolis ARTCC	124.25	RCAG
Radio Aids To Navigation		
(H) VORTAC	112.9	
NDB (LOM)	353.0	
ILS	108.3	
Weather Communications		
HIWAS	112.9	
AWOS	118.375	

CTAF = Common Traffic Advisory Frequency
UNICOM = Local Airport Advisory Frequency
FSS = Flight Service Station
RCO = Remote Communications Outlet
(H) = High Altitude Classification for VORTAC
VORTAC = VOR and TACAN (co-located)
ARTCC = Air Route Traffic Control Center
VOR = VHF Omni-Directional Radio Range
TACAN = Tactical Air Navigational Aid
NDB = Non Directional Beacon
ILS = Instrument Landing System
HIWAS = Hazardous In-flight Weather Advisory Service
AWOS = Automated Weather Observing System
RCAG = Remote Center Air/Ground Transmitter

AIRSPACE

Airspace is segregated into controlled, uncontrolled, special use, or other airspace. Controlled airspace is classified as A, B, C, D, or E. Uncontrolled airspace is classified as G. These classes specify appropriate minimum cloud clearances, visibility requirements, and other operating requirements for aircraft. The FAA does not exercise air traffic control over aircraft operating within uncontrolled airspace. The airport is within airspace class E. **Exhibit 3 – Airspace Classes** illustrates the various airspace classes.

Exhibit 3 – Airspace Classes



Classification	Definition
CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600.
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.

Classification	Definition
CLASS D	Generally airspace from the surface to 2,500 feet AGL surrounding towered airports.
CLASS E	Generally controlled airspace that is not Class A, Class B, Class C, or Class D.
CLASS G	Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E.

AIRCRAFT OPERATING RULES

FAR Part 91, General Operating and Flight Rules, also prescribes rules governing operations of aircraft. Aircraft are operated under either visual flight rules (VFR) or instrument flight rules (IFR). Generally, VFR involves flights during good visibility conditions allowing navigation by visual contact and external geographical features. IFR involves flight during low visibility requiring navigation with reference to aircraft instrumentation.

Aircraft operating under VFR must maintain specified minimum flight visibilities and cloud clearances relevant to the classes of airspace in which they are flying. This rule prevents hazardous entry of aircraft operating under VFR into low visibility conditions wherein aircraft may be operating under IFR.

Aircraft operating under IFR must be equipped with appropriate instrumentation and receive an IFR clearance. IFR clearances specify departure instructions, routes, altitudes, communications frequencies,

and other procedures controlling IFR flight. IFR clearances are only available from Air Route Traffic Control Centers (ARTCC). ARTCCs are FAA facilities that provide control services to aircraft operating under IFR clearances during en route flight phase.

NAVIGATION AIDS

Navigational aids (NAVAID) are any visual or electronic devices airborne or on the ground that provide point-to-point guidance information or position data to aircraft in flight. Ground-based electronic NAVAIDs located on or near Dickinson Theodore Roosevelt Regional Airport and airborne devices used by Dickinson are listed below.

Instrument Landing System (ILS)
VORTAC, VHF Omni-Directional Range (VOR)
Global Positioning System (GPS)

ILS and VOR are owned and operated by the FAA, and satellites used for GPS are owned and operated by the federal government's Department of Defense.

ILS

ILS provides precision instrument approach capability directly to Runway 32. It will allow for circling approach techniques onto the other three runways by indirect usage. It operates by radio beams that define a straight-line path to the runway at a slope of three degrees for a distance of six to eight miles from the runway. Major components of ILS include localizer (LOC), glide slope (GS), locator outer marker (LOM), and approach light system which for Dickinson is a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The localizer antenna provides horizontal approach guidance to Runway 14-32 and is positioned 1,000 feet north of the 14 End of Runway 14-32. The glide slope antenna provides vertical guidance, which for Dickinson is an End-Fire Array antenna, and is positioned near the runway aiming points, 1,000 feet from the Runway 32 threshold.

VOR

The VOR is located on the ground and transmits signals that provide course navigation. VOR is strictly a line of sight NAVAID and reception of a reliable signal is a function of distance from and altitude above the facility's transmitter. The Dickinson VOR is located 4 miles north of the airport just off of SE 8th Street.

Global Positioning System (GPS)

GPS was developed by the Department of Defense and is a worldwide, satellite-based radio navigation system. GPS approaches have been written for all four runways. Pilots with GPS systems can also perform a circling approach procedure for landing.

Area Navigation (RNAV)

RNAV is not a piece of equipment, but is instead a type of instrument approach procedure using GPS. An RNAV procedure is available using GPS and equipment in the aircraft to compute the airplane position, actual track and ground speed; and translate it for the pilot to provide meaningful information relative to a route of flight selected by the pilot. Pilots can use RNAV for direct approaches at both ends of Runway 14-32 and for Runway 25. Pilots can also use RNAV with a circling procedure for Runway 07.

Other Facilities

A rotating beacon mounted on a tower is located north of buildings adjacent to the old terminal building. The beacon provides pilots with a visual method of identifying the location of Dickinson Theodore Roosevelt Regional Airport after dark or during periods of low visibility.

LANDSIDE FACILITIES

Landside facilities consist of areas of Dickinson Theodore Roosevelt Regional Airport necessary for movement of passengers and automobiles, and parking and storage of aircraft. Examples of these facilities include passenger terminal building, public parking lots, access road, hangars, and aprons. Each of these facilities is discussed below.

Passenger Terminal Building

The original passenger terminal was located in what is now a portion of the Western Edge Aviation's FBO facilities. The terminal was basically a lean-to addition to an existing hangar owned by the airport, and was constructed to provide a location for passenger services, but was undersized and did not provide adequate facilities for passenger processing.

Safety concerns, security, access concerns (ADA) and space constraints with this original terminal led the airport to explore the construction of a new terminal building in an alternative location.

The current passenger terminal was constructed in 2000-2001 and was originally designed to handle 30 passenger aircraft. The original building was 3,450 square feet in area. It was designed to allow for expansion on its northwest and southeast side. Shortly after the terminal was constructed in 2001, an expansion of 1,750 square feet was made to the north to provide airport administrative and other office space.

In 2011-2012 an additional expansion was completed to the south to provide additional passenger hold room space to handle 50 seat regional jets and reconfigure the security checkpoint to accommodate TSA requirements. Additionally, a remodel of the waiting lobby and ticketing area in the existing terminal was completed. This expansion added approximately 4,500 square feet to the terminal, for a total area of 9,700 square feet.

The terminal facility is located near North Dakota Highway 22, and 600 feet northeast of Runway 25.

Terminal Building (August 2013)

Looking northeast the picture depicts the ARFF station on the left, airline terminal in the center, the light tan modular addition on the right and the original 4,600 square yard apron. The parking area shows the asphalt area filled. The gravel lot and grass areas at the top are mostly full and the rental car parking has expanded onto the grass to the right.

Public Access and Parking

The terminal area is accessed by a service road (constructed in 2000) to North Dakota Highway 22. The highway has received normal maintenance with spot patching and occasional seal work, and overlays in recent years. It provides adequate access to the airport and traffic levels generated at the airport are not overloading this highway.

The original airport terminal parking facility was constructed with the terminal in 2001 and had 40 vehicle parking spaces, with an access loop to provide for additional expansion.

In 2008, an expansion of this parking lot brought capacity up to 106 vehicles. In 2010, with the rapid increase in passenger traffic the airport was experiencing, this expanded lot was full and overflowing with numerous vehicles parking on the grass around the terminal building.

In 2011, an expansion of the parking lot was completed which filled in the entire access loop at the terminal, added a rental car parking lot and brought the total paved parking lot to a capacity of 210 parking spaces. An additional 250' x 120' gravel lot was constructed adjacent to the terminal to provide for overflow parking. This gravel lot is unmarked, but could handle 50 to 60 vehicles. Given the traffic levels that the airport is currently experiencing, this gravel lot is regularly being used by passengers and the recently expanded parking areas are already inadequate for the parking demand in 2013.

Public transportation within Dickinson includes charter bus service, regular bus service, city limousine, taxi, and rental car service. Rental car service is offered at the airport in the air carrier terminal.

The South Unit of Theodore Roosevelt National Memorial Park is located approximately 36 miles west of Dickinson near the city of Medora. Currently charter bus services are available, linking Dickinson Theodore Roosevelt Regional Airport to the city of Medora.

Aprons

Aprons are areas used for parking, loading, maneuvering and fueling aircraft. Aprons at Dickinson Theodore Roosevelt Regional Airport include general aviation and air carrier areas. Several apron facilities service various points on the airport, the largest being south of the existing air carrier terminal building.

An apron was initially constructed at the airport in 1949 which is in the current general aviation area. In 1988, this apron area was determined to be in average to fair condition with a Pavement Condition Index (PCI) varying between 58 and 90. Another PCI study, performed in 1998, gave the apron area a rating of 29 (poor). This apron was reconstructed of bituminous pavement in 1999. The most recent PCI rating for the general aviation apron was in 2012 and it had a rating ranging between 65 and 100 (depending on the individual piece of pavement). The general aviation apron is used for all transient parking, aircraft fueling and cargo handling. See **Exhibit 4 – Existing General Aviation Apron**.

In 2000, a new 4,600 square yard terminal apron area was constructed southwest of the new terminal building. The apron was expanded in 2014 to the southeast adding 4,000 square yards. The terminal apron is currently 8,600 square yards and is paved with Portland cement concrete (PCC) pavement. This apron had a PCI rating of 86 in 2012.

Hangars

The airport houses four large hangars and a five-unit T-hangar. The largest hangar, recognized as the FBO hangar, is 100 feet by 200 feet. It accommodates a cold storage area, four heated warm storage areas, and FBO facilities, including areas for a mechanic's shop, field services, charters, pilot instruction, fuel, and rentals. This hangar has the capability of storing 10-13 aircraft. Prior to construction of the new terminal building, the airline passenger terminal was located on the south side of this hangar. United Parcel Service (UPS) and FedEx currently rent space from the FBO. Access for UPS and FedEx to the hangar is available on the east side of the facilities.

Three of the four hangars and T-hangars are owned by the Airport Authority and are administered and managed by the FBO. East of the FBO hangar is a hangar primarily used for cold storage which is 80 feet by 120 feet and is in good condition. There is capacity for up to 13 smaller aircraft in the hangar. The newest hangar, west of the FBO hangar, is 120 feet by 100 feet and was constructed in early 2012. The T-hangar, also used for cold storage, is 30 feet by 170 feet and has a capacity of five spaces. In 1999, the T-hangar facility was reconstructed; therefore, it is in good condition.

There is one private hangar owned by Air Dakota Flight located east of the other hangars. This hangar is used for the agricultural spraying facilities and stores on average two aircraft and, at most, three agricultural aircraft. The hangar is a Quonset and is 135 feet by 70 feet in size.

Airport Support

Dickinson Theodore Roosevelt Regional Airport has aircraft rescue and fire fighting (ARFF) equipment and storage facility located west of the commercial terminal building. FAR Part 139 specifies minimum ARFF equipment and required quantities of fire suppressing agents, based on an index determined by length and frequency of daily departures of air carrier aircraft. The airport's ARFF truck is adequate to meet the requirements of Part 139 Index C, for the aircraft currently serving the airport.

The airport also has a support building for maintenance and snow removal equipment. It is a heated shop located directly north of the T-hangar. Having an equipment shop decreases maintenance costs and lengthens service life of equipment. The airport also has various pieces of equipment for grounds maintenance.

Bulk Fuel Storage

All fueling systems at Dickinson Theodore Roosevelt Regional Airport are owned and operated by the FBO, Western Edge Aviation LLC. The FBO currently offers 100 LL and Jet A fuel.

The original storage tanks used were purchased in 1984 from an oilfield service company. They were in poor condition but did not exhibit any signs of leakage. The tanks needed to be reconditioned or replaced so that they could meet current Environmental Protection Agency (EPA) requirements.

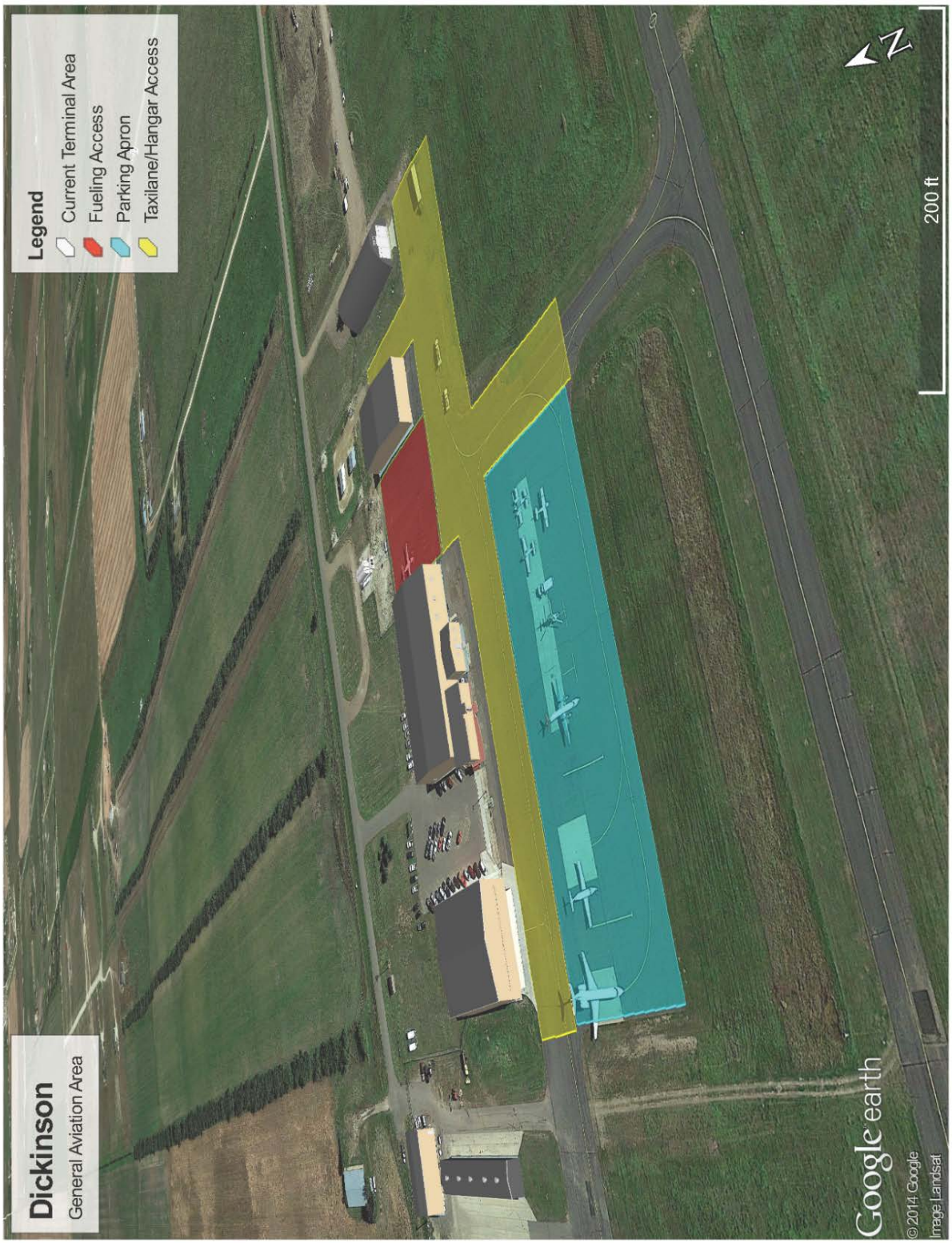
In 2000, two new tanks were bought and the older tanks were discarded. The new tanks were placed at a different location than the original tanks. The tanks are double wall-lined to ensure no leakage and are EPA approved. One tank serves Jet A fuel and has a 15,000-gallon capacity. The other tank serves 100LL and has a 12,000-gallon capacity. See **Exhibit 4** to see the fueling area.

Weather Conditions

Dickinson is located approximately 97 miles west of Bismarck, 62 miles from the Montana border, and 71 miles north of the South Dakota border. The southwestern quarter of North Dakota has the highest elevation found in the state. Due to this change in terrain from western to eastern North Dakota, the Dickinson area is influenced by a condition called upslope. This occurs under certain wind conditions, when fog and stratus clouds form and persist. Instrument Flight Rules (IFR) weather conditions exist 7.4% of the time at Dickinson. Average winter temperature in Dickinson is 23 degrees Fahrenheit, with an average summer temperature of 84 degrees. Average annual precipitation is approximately 15 inches, and prevailing winds are from the northwest.

An Automated Surface Observation System provides on-site weather information. The system can be accessed by frequency 118.375 MHz, or through telephone and internet. The system provides current wind direction and velocity, visibility, cloud clearances, sky condition, temperature, dew point, and barometric pressure.

Exhibit 4 – Existing General Aviation Apron



COMMUNITY PERSPECTIVES

In an early iteration of the Airport Master Plan scope of work, a survey of local businesses was conducted with very limited response. In 2012, this approach was replaced with a more directed survey interview process that was able to yield an interactive approach with knowledgeable community leaders, business people, and those connected to the oil industry. These interviews helped to ascertain the needs of the local community with regard to the Dickinson Theodore Roosevelt Regional Airport. To get a complete picture of the economic climate, perspectives from local government, local businesses, planning agencies, major developers, and the oil industry were contacted for interviews. Representing these perspectives were the following entities:

- City of Dickinson
- Dickinson Chamber of Commerce
- Dickinson Convention and Visitors Bureau
- Stark Development Corporation
- Roers, Inc.
- North Dakota Association of Oil and Gas Producing Counties

Representatives from each of these entities were given an in-depth interview to identify important issues that could affect aviation demand at Dickinson Theodore Roosevelt Regional Airport. The results of the interviews from 2012 are described in the following sections.

City of Dickinson

As noted earlier, the City of Dickinson has no direct control over the airport, as it is not a City Department. Instead, the Dickinson Theodore Roosevelt Regional Airport operates under an Airport Authority structure. The Authority's members are appointed by the City. To facilitate communication and to keep City leadership informed about airport matters, the Airport Manager typically briefs the City Council twice a year. Currently the Airport operating budget is aided by three mills in property taxes from the City and one mill in property taxes from the County.

There are currently requests for annexation of more than 3,000 acres into the city. For perspective, the city is currently approximately 6,000 acres in size. Some of the requested annexation property to the south would push the extra-territorial boundary of the city towards the airport. Currently, the City Police cannot patrol the airport because of its location outside the city limits. In terms of economic assistance, the planned expansion and growth of the city infrastructure and services is likely to keep the City from participating in any debt financing for airport expansion due to bond limitations.

Dickinson Chamber of Commerce

The Dickinson Chamber of Commerce primarily functions to represent its membership and point new businesses toward these members. They do not offer loans or other monetary promotions for new businesses, but do host a monthly mixer called “Business After Hours” for prospective and current members.

The current president of the Chamber manages St. Joseph’s Hospital and, in that position, indicated a desire for better airline service to Dickinson. The interview was conducted when the airport was only

served by Great Lakes Airlines to Denver. Improvements have been made since then with regional jets to Denver and Minneapolis. Of particular interest to the Chamber president was the impending St. Joseph's Hospital relocation. Currently, the hospital operates with a staff of 285. Use of the hospital has steadily increased since 2009, from 800 to 900 Emergency Room visits per month to a current average of about 1,300 per month. This increase has been attributed primarily to the oil industry and subsequent increase in the local population. Despite the increase in patients, they do not anticipate hiring more personnel, as the new facility layout will be able to handle patients more efficiently.

Currently, the hospital uses the airport and mainly fixed wing aircraft to transport critically ill patients to larger metropolitan hospitals for specialized medical care. The hospital has recently contracted with a medevac helicopter company to provide regional helicopter transport of patients to St. Joseph's. They have a helipad at the new hospital site to save time in helicopter response and transport.

Dickinson Convention and Visitors Bureau

The Dickinson Convention and Visitors Bureau provides service primarily to leisure travelers. Most of these travelers arrive by ground transportation and are passing through to the renowned National Parks in the region. The few air travelers that they serve are mostly hunters from Colorado or elsewhere, and these visitors are attracted to the area's local hunting areas and National Parks.

Over the past few years, hotel construction has been booming, bringing the total number of hotel rooms in Dickinson to more than 1,600. Additional rooms continue to be added. The economic boom has substantially increased the demand for hotel rooms, and in 2010, 4,500 rooms across the state of North Dakota were constructed. Currently, 60 percent of hotel rooms in Dickinson are contracted to oil companies. Thus, the Dickinson convention business is suffering due to a lack of readily available hotel rooms. In this regard, the Convention and Visitors Bureau has been directed not to advertise outside of the local community until additional hotel rooms become available. Hotels are also constructing convention and meeting rooms to accommodate additional events.

Stark Development Corporation

The Stark Development Corporation assists economic development for Stark County and the City of Dickinson primarily through information dissemination and by offering low interest loans. These low interest rates are achieved by buying down the commercially available 5.5 percent to 7.0 percent interest rates to 1.0 percent. Although the Stark Development Corporation had been involved in affordable housing initiatives and job training, they are currently not conducting job training.

It is estimated that 70 percent to 80 percent of all enplanements to Dickinson are oil-related; thus, sustainability is a crucial issue. A significant question involves how much of the current workforce population is temporary versus permanent. The growth in the size and number of crew camps, RV permits, and new apartment buildings serves as a solid indicator of the size of the transient workforce in the area. Stark Development Corporation estimated that the city population was around 24,000 in 2012 and stated that if all drilling and fracking operations were stopped, the population would most likely level out at 27,000. Looking toward the future, they want to avoid "boom and bust" scenarios similar to those that occurred in North Dakota in the 1980s. One particular advantage of the current cycle is the introduction of better technology and equipment, which makes the drilling process more efficient.

During the 1980s, drilling crews were three times the size of those today, which left a greater gap in the economy when oil exploration stopped.

Representatives from Stark Development Corporation indicated that with the Bakken Shale oil development to the north, the south side of the city and the Airport are currently not in demand for commercial development. With the shift in the future economic climate in mind, Stark Corporation is optimistic, observing that the area is strategically well positioned. With infrastructure improvements to the roads, increased housing and hotel rooms, a skilled workforce, and abundant warehousing space, industry in the area should sustain growth after the oil drilling subsides. In addition to this, manufacturers that were operating before the oil boom will continue to operate. Major employers in the area are listed below in **Table 5 – Largest Employers in Dickinson, ND.**[2]

TABLE 5 – LARGEST EMPLOYERS IN DICKINSON, ND (2012)

Employer	Description
Dickinson Public Schools	Elementary and Secondary Schools
TMI Systems	Manufacturer of Casework, Countertops and Millworks
Dickinson State University	Colleges and Universities
St. Joseph's Hospital	Medical
Wal-Mart	Retail
St. Benedict's Health Center	Nursing Care Facility
Baker Boy Bake Shop	Commercial Bakery
St. Luke's Home	Nursing Care Facility
Dan's Super Market	Grocery Store
Dickinson Park & Recreation Dist.	Fitness and Recreational Sports Centers
City of Dickinson	Municipal Executive and Legislative Offices
Steffes	Manufacturer of Heating and Oil Field Products
Able, Inc.	Residential Facilities for Developmentally Disabled
Killdeer Mountain Manufacturing	Printed Circuit Assembly Manufacturing
Consolidated Telecom	Wired Telecommunications Carrier

Roers, Inc.

Roers is a Developer and Contractor involved in commercial and residential development in the Dickinson area. The company estimates that there are 3,500 to 4,000 residential units coming to Dickinson in 2012 (mostly apartments). Of these, Roers is set to develop 1,500, and noted that their future plans for development do not include commercial properties adjacent to the Airport at this time.

[2] Source: http://www.starkdev.com/PDF/Dickinson%20area%20profile.pdf

A representative stated that commercial property in the area was difficult to price because it varied by location and size of parcel. However, an estimate of larger parcels was about $25,000 per acre (for land about 150 acres), while smaller parcels are selling for about $43,000 per acre ($1/sq.ft.). Approximately 50 percent of new residential property is used to house oil workers without families, while the other 50 percent of residential housing is attributed to families (which may or may not include oil workers). They believe most transient workers will be moving into apartments and estimate a population growth in Dickinson between 8,000 and 10,000 for 2012.

North Dakota Association of Oil and Gas Producing Counties

The North Dakota Association of Oil and Gas Producing Counties (NDAOGPC) is an organization consisting of 17 counties that have oil, gas, or leasing development within their boundaries. Associate memberships are also available to oil industry companies. They indicated that the typical transient oil worker normally spends two weeks in the area and one week out. These workers will most likely commute from other states, as long as oil companies are paying for the airfare. The NDAOGPC expressed interest in free parking for these workers at the Airport, as well as taxi and rental car services. Currently, Hertz and Budget Rental Car agencies operate at the airport.

For the future they estimate the Dickinson population in 10 years to be between 35,000 and 45,000, and expect that any drop in population will be directly related to the number of oil drilling rigs in service. The rig count in North Dakota is expected to increase only 20 percent in the next five to eight years, and after eight years they anticipate the oil development phase to shift to an oil production phase. As oil companies make the transition, only one-third of the workforce will be needed because two-thirds of workers are needed for drilling rather than production. In this regard, Stark County is well positioned with only 10 percent of its employment attributed to oil. In comparison, Williams County (Williston) employment is 40 percent oil-related, and thus, will be significantly impacted when oil drilling stops.

It is their belief that taxes and regulations in North Dakota will largely affect the oil companies' work in the area. Unfavorable developments in tax or regulatory policy, from the oil companies' perspectives, could reduce or stop some work in the North Dakota oil fields in favor of seeking better returns at the Eagle Ford (TX) or Marcellus (PA, NY, OH, WV) shale plays.

SUMMARY

Of major concern to those interviewed is the issue of sustainability. Transient workers are currently a major driving force for aviation demand, creating a need for greater air service, reliability, parking, taxi service, and rental car service from the airport. Determining what level of this demand is permanent is essential to avoiding "boom and bust" scenarios. Hotels, man camps, apartment development, RV permits, and oil-related enplanements are indicators for the size and growth of the temporary workforce, but there is a distinct need for reliable forecasts concerning area population and employment.

Due to local infrastructure improvements and a relatively low percentage of the workforce dedicated to oil-related jobs, the area is well positioned for long-term growth. As oil companies scale back their workforce in transition from the drilling phase to production phase over the next five to eight years, Dickinson will benefit from their employment and infrastructure advantage. After drilling subsides, the

area will have a skilled workforce, housing, and warehouses that will fuel additional industry growth. This is a healthy outlook, and it allows local businesses and government to be cautiously optimistic for the post-oil drilling period.

Interviews with local representatives of business, government, tourism, and the oil industry indicate that there is significant growth that will still occur in the Dickinson service area in the near future. The size of that growth is not accurately known. While individual energy exploration companies may know how many transient workers they employ, this information is not shared because of competitive and proprietary information policies within those companies. As such, local planners must approximate the size of the permanent and transient workforce by examining the growth in housing, permits for development, and Airport enplanements related to oil workers. With this in mind, the next section presents an examination of the published estimates of socioeconomic growth and demographic trends.

SOCIOECONOMIC AND DEMOGRAPHIC OVERVIEW

In the Dickinson area, the effect of the Bakken oil field exploration and related industrial development is readily apparent. The result has been significant growth in terms of both population and employment. Both of these socioeconomic and demographic indicators are major drivers for aviation demand. As part of the master planning process, projections of future socioeconomic and demographic metrics must be developed to help determine future aviation demand. This section provides an overview of socio-economic and demographic indicators that may influence future aviation demand at Dickinson Theodore Roosevelt Regional Airport.

The following tables depict, from a historical perspective, the population and population growth that has been experienced. **Table 6 – Population** shows historic populations for North Dakota, Stark County, and the City of Dickinson. **Table 7 – Population Growth** shows population percentage of growth for state, county, and city.

Year	North Dakota
1880	36,909
1890	190,983
1900	319,146
1910	577,056
1920	646,872
1930	680,845
1940	641,935
1950	619,363
1960	632,640
1970	617,792
1980	652,717
1990	638,800
1996	642,858
1997	640,945
1998	637,808
1999	633,666
2000	642,200
2010	672,591

Source: United States Census Bureau: www.census.gov

TABLE 7 - POPULATION GROWTH FOR THE STATE OF NORTH DAKOTA, STARK COUNTY, AND THE CITY OF DICKINSON			
Year	**North Dakota**	**Stark County**	**Dickinson City**
1890	417.44%	—	—
1900	67.11%	230.77%	—
1910	80.81%	64.07%	—
1920	12.10%	8.30%	—
1930	5.25%	13.28%	21.91%
1940	-5.71%	0.48%	16.20%
1950	-3.52%	4.69%	27.92%
1960	2.14%	14.34%	33.50%
1970	-2.35%	6.30%	24.41%
1980	5.65%	20.82%	28.37%
1990	-2.13%	-3.65%	1.09%
2000	1.35%	1.01%	-1.79%
2010	4.70%	6.90%	11.10%
Source: United States Census Bureau: www.census.gov			

Another indicator for this market area's overall general economic health is its low rate of unemployment. According to North Dakota Job Services in May 2014, the unemployment rate in the Dickinson area was 1.4 percent, while the state rate was 2.3 percent, and the national rate was 6.3 percent. This extremely low rate of unemployment speaks to the area's strong economy. According to US Census Bureau, Dickinson was the second-fastest growing Micropolitan Statistical Area in 2013, with a growth rate of 5%. This is the third year in a row that Dickinson has ranked in the top five micro areas nationwide. The area's strong employment and projected growth speak to growing demand for both airline and general aviation activity.

Population and Employment Projections

The market area has experienced considerable change since 2010. As a result, most projections of population and employment for the area that are available were prepared in the 2010 time frame, using pre-2010 economic activity, and, therefore, do not adequately capture or reflect the explosive growth that the area has recently experienced. In 2012, NDSU researchers were tasked by several agencies with developing a forecast for housing and population in the oil impacted counties in western North Dakota in an attempt to quantify anticipated growth. In developing this study, published in 2013, the researchers sought information from various oil industry and state leaders to develop assumptions upon which to base anticipated future growth rates. In 2014, these same researchers reanalyzed their findings and projections and determined that the certain assumptions developed in 2012 underestimated the growth rate that had actually occurred in 2013. Additional changes in 2013 in oil production, primarily the drilling of significantly more wells on each spacing unit, led to changes in the growth assumptions

used by NDSU in the revised forecast that was published in 2014 for the Western North Dakota Energy Project.

The researchers do admit that this is still a very difficult market in which to make projections, with the discovery of additional layers of oil producing shale, and improvements to recovery methods happening on a regular basis.

With these ongoing changes in conditions in mind, the remainder of this section summarizes the more notable socioeconomic and demographic indicators for the airport's market area.

Most sources are in agreement with the assumption that population increases relating to oil exploration are only temporary in nature, and in 2011 there was an expectation that this growth would be another "boom/bust" cycle which had been experienced in North Dakota oil fields since the 1950s. However, in the current development of Bakken oil field, the maintenance of wells and distribution systems are anticipated to replace exploration and drilling jobs over the next 20 years. As such, population and employment related to oil production (as differentiated from oil exploration) are anticipated be more permanent in nature. Combined with these replacement jobs, the estimate by the ND Oil and Gas Commission on number of wells to be drilled in the Bakken, Three Forks and other oil bearing shale formations continues to increase on an annual basis. Lastly, the level of investment by oil companies in capital infrastructure in the region is unprecedented. So therefore, the "bust" that was anticipated at the beginning of this boom appears to be less likely as this new western North Dakota industry continues to mature, and in particular, a "bust" impacting Dickinson appears to be lessened each year as production continues to grow.

The NDSU research on employment and population trends for North Dakota and the Dickinson market area show the oil-related and secondary employment continue to grow over the next 20 years. Given the type of businesses that have been established in Dickinson to support the Bakken, a decrease in oil exploration is not anticipated to impact Dickinson as significantly as other communities in western North Dakota, such as Williston and Minot.

Information on population in the Dickinson Region is summarized in **Table 8 – Dickinson Region Population Projections**. This information reflects what the NDSU researchers are describing as the "most likely" scenarios for population, primarily based upon the impact of petroleum-related employment in the region. As shown in **Table 8**, in 2013 the region's population was estimated at 43,310.

TABLE 8 – DICKINSON REGION POPULATION PROJECTIONS
ADAMS, BILLINGS, BOWMAN, DUNN, GOLDEN VALLEY, SLOPE AND STARK COUNTIES

	2013	2020	2039
Total Population	**43,310**	**66,410**	**82,010**
Growth Rate		6.4% (2013-2020)	1.1% (2021-2039)

Source: NDSU Analysis for Western North Dakota Energy Project, 2014

The "most likely scenario" for employment in the Dickinson region is presented in **Table 9 – Dickinson Region Employment (Most Likely Growth Scenario)**. For this "medium" projection, total employment will peak at roughly 46,000 in 2033 and decline to 45,000 by 2039. This employment projection will be utilized when developing aviation demand projections, and the high correlation between the growth rate the retail sales generated in the region.

TABLE 9 – DICKINSON REGION EMPLOYMENT (MOST LIKELY GROWTH SCENARIO)
ADAMS, BILLINGS, BOWMAN, DUNN, GOLDEN VALLEY, SLOPE AND STARK COUNTIES

	2013	2020	2039
Total Employment	**29,828**	**43,120**	**45,518**
Direct Petroleum	9,505	13,807	12,790
Secondary Petroleum	3,038	11,658	12,600
Other Employment	17,285	17,655	20,128

Source: NDSU Analysis for Western North Dakota Energy Project, 2014; KLJ Analysis

In addition to considering the future growth in employment, it is worth reviewing and comparing sectors of historical employment. The analysis shown in **Table 10 – Comparison Employment by Industry Sector** demonstrates the changes in employment in total and by sector in Stark County in the past 10 years. This analysis confirms the changes that were noted by the industry leaders in the community as occurring in the past decade, with a 45.1% increase in total employment. The two sectors which have seen the greatest increase in employment are the Mining and Construction, and Manufacturing sectors, which have directly benefited from the Bakken oil field.

TABLE 10 – COMPARISON EMPLOYMENT BY INDUSTRY SECTOR – STARK COUNTY

	2004	2014	% Change
Total Employment	**15,814**	**22,939**	**45.1%**
Retail and Wholesale Trade	2,843	3,132	10.2%
Management, Business & Finance	1,276	1,897	48.7%
Health Care	1,817	2,431	33.8%
Professional Services	3,606	4,463	23.8%
Government	2,346	2,534	8.0%
Farming, Fishing, & Forestry	920	959	4.2%
Mining & Construction	1,353	4,815	255.9%
Manufacturing, Transportation & Warehousing	1,653	2,708	63.8%

Source: Woods and Poole Economic Data (2014), KLJ Analysis

While the growth in total number of jobs in Stark County addresses some of the economic growth in this market, the growth in earnings during the same period is worth noting. While the total number of jobs has increased 45%, the total earnings in the county has increased 107% in constant 2009 dollars. **Table 11 – Comparison of Earning by Industry Sector** shows the change in earnings over the past decade and the percentage of market earnings per sector.

Again, the oil impacted sectors, Mining & Construction and Manufacturing, have shown the largest increase in earnings as well.

TABLE 11 – COMPARISON OF EARNINGS BY INDUSTRY SECTOR – STARK COUNTY

	2004		2014		% Change
Total Earnings (2009 dollars)	**$526.8M**		**$1091.2M**		**107.2%**
	Total	% of Total	Total	% of Total	
Retail and Wholesale Trade	$80.2M	15.3%	$104.5M	9.6%	30.0%
Management, Business & Finance	$37.3M	7.1%	$60.7	5.6%	62.8%
Health Care	59.5M	11.3%	91.9M	8.4%	54.5%
Professional Services	$88.7M	16.8%	$130.5M	12.0%	47.1%
Government	$91.2M	17.3%	$116.5M	10.7%	27.7%
Farming, Fishing, & Forestry	$22.3M	4.2%	$42.9M	3.9%	92.6%
Mining & Construction	$73.5M	13.9%	$383.5M	35.1%	421.9%
Manufacturing, Transportation & Warehousing	$73.9M	14.0%	$160.6M	14.7%	117.4%

Source: Woods and Poole Economic Data (2014), KLJ Analysis

As demonstrated above, there has been significant growth in jobs and earnings in Stark County. This combination has led to increases in the per capita income for the region as well. The FAA in their 2013 National Aerospace Forecast asserts that there is a direct correlation between aviation demand and disposable income. Between 2004 and 2014, the personal income per capita for Stark County has increased 61.1%. During the same period, the US composite personal income per capita rose 8.7%. See **Table 12 – Comparison of Personal Income Per Capita,** for additional details.

According to the University of New Mexico Bureau of Business and Economic Research, since 2004, North Dakota as a state has jumped from 38th in the nation to 6th in ranking of personal income per capita.