CITY OF NEWTON & HARVEY COUNTY
Work Session
June 9, 2026 @ 5:00 p.m.
Harvey County Community Room

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JOINT ENACTMENT

HARVEY COUNTY RESOLUTION NO. 2024-8

CITY OF NEWTON ORDINANCE NO. 5139-24

A JOINT ENACTMENT OF THE BOARD OF COUNTY COMMISSIONERS OF HARVEY COUNTY, KANSAS, AND OF THE GOVERNING BODY OF THE CITY OF NEWTON, KANSAS, REGARDING THE COMPOSITION AND DUTIES OF THE AVIATION COMMISSION AND THE OPERATION OF THE NEWTON CITY-COUNTY AIRPORT.

WHEREAS on June 18, 1969, the Board of County Commissioners of Harvey County, Kansas, and the governing body of the City of Newton, Kansas, (the Governing Bodies) entered into an agreement for the joint ownership and operation of the Newton City-County Airport (Airport), consistent with the historical policy and practice of such joint ownership and operation; and

WHEREAS subsequently through the joint enactment of Harvey County Resolution No. 38, dated October 25, 1976, and City of Newton Ordinance No. 3225, dated October 6, 1976, the said parties created the Newton City-County Aviation Commission (the Commission) to serve as an advisory body to the said County and City as to the ownership, development and operation of the said Airport, and to perform such other duties and responsibilities as may be delegated thereto, which said joint enactment was subsequently amended and repealed by Harvey County Resolution No. 12, dated February 23, 1987, and City of Newton Ordinance No. 3886, dated February 18, 1987, as to the composition of said Aviation Commission, with said joint enactments also being subsequently amended by Harvey County Resolution No. 1992-12, dated February 18, 1992, and City of Newton Ordinance No. 4038-92, dated March 4, 1992, as to certain delegated duties of the Aviation Commission, and amended by Harvey County Resolution No. 2009-22, dated November 23, 2009, and by City of Newton Ordinance No. 4720-09, dated November 23, 2009, as to the composition of the Aviation Commission, and repealed by Harvey County Resolution No. 2015-19, dated September 21, 2015 and City of Newton Ordinance No. 4893-15 dated September 22, 2015 defining the scope of the Aviation Commission; and

WHEREAS through the subsequent changes at the Airport, the City and County thought it best to clarify the scope and terms of the Aviation Commission; and

WHEREAS the City and County desire to make certain additional amendments to their agreement relating to the Airport for their mutual convenience and toward the advancement of their mutual interests; and

WHEREAS the City and County acknowledge that the County adopted Resolution 1997-18 which imposes certain term limits on County appointments.

NOW, THEREFORE, BE IT RESOLVED by the Board of County Commissioners of Harvey County, Kansas; and

NOW, THEREFORE, BE IT ORDAINED by the governing body of the City of Newton, Kansas:

SECTION 1. In accordance with the historical needs as well as the anticipated future development at the Airport, the Governing Bodies set forth the following provisions relating to the Aviation Commission:

1. Purpose. The Aviation Commission acts in an advisory capacity to the Governing Bodies in all matters pertaining to the Airport and to aviation matters to the extent that they affect the Governing Bodies. The Commission shall consider, study, investigate, review, make recommendations, and serve in an advisory capacity to the Governing Bodies upon all airport matters, aviation matters and long-range planning in matters relating to the Airport or which it shall deem in the best interests of the development and improvement of the Airport.

2. Membership. The Aviation Commission shall be composed of nine members selected as follows:

(a) One member shall be the Chair or a member of the Board of County Commissioners of Harvey County, as appointed by the Board of County Commissioners. There is no term limit for this member;

(b) One member shall be the Mayor or a member of the Newton City Commission, as appointed by the Newton City Commission. There is no term limit for this member;

(c) One member shall be the Harvey County Administrator or their designee. There is no term limit for this member;

(d) One member shall be the Newton City Manager or their designee. There is no term limit for this member;

(e) One member shall be appointed from the public at large by the Board of County Commissioners. This member shall serve for a term of three years. This member shall be limited to three consecutive three-year terms.

(f) One member shall be appointed from the public at large by the Newton City Commission. This member shall serve for a term of three years. There is no term limit for this member.

(g) Three members shall be selected from the public at large by the six members of the Aviation Commission listed above. These members shall serve for a term of three years. There are no term limits for these members.

(h) The Newton City-County Airport Manger shall serve as a non-voting *ex-officio* member to the Commission and shall act as the advisory staff to the Commission. The Airport Manager shall serve as recording secretary to the Commission. The Commission may add and remove additional ex-officio members as needed.

(i) The Commission shall have the authority to appoint members to one-year or two-year terms which shall not count against any term limitations listed herein. Further, the term of any Commission member serving the unexpired term of another member shall not be counted against any term limitations.

3. Duties & Powers of the Aviation Commission.

(a) Keep a record of the minutes of each meeting and any official actions;

(b) Submit annual reports to the Governing Bodies;

(c) With the assistance of the staff of the Governing Bodies, the Aviation Commission shall advise the Governing Bodies as necessary on:

(i) The Airport Master Plan and Capital improvement Plan;

(ii) Rules, regulations, and minimum operating standards;

(iii) Environmental policies affecting Airport operations and Airport projects;

(iv) Aviation-related development proposals at and surrounding the Airport or other development proposals. In addition to advising the Governing Bodies, the Airport Advisory Commission may take action to advise the Newton Planning Commission.

(v) Fees imposed by the City in connection with the Airport;

(vi) Lease policies regarding property at the Airport;

(vii) Land use policies at and surrounding the Airport, or other aviation-related laws, ordinances, rules, regulations or planning documents. In addition to advising the Governing Bodies, the Commission may take action to advise the Newton Planning Commission;

(viii) The future role of the Airport as part of the nationwide air transportation system;

(ix) Safety matters under the jurisdiction of the Airport.

(x) Such other matters as the Governing Bodies may direct.

4. Meetings. The Commission shall schedule quarterly meetings to conduct the business of the Commission. The Commission may amend meeting dates and times, and/or may schedule additional meetings when necessary.

(a) The Commission will give public notice of the time and place of meetings in compliance with the requirements of the Kansas Open Meetings Act (KOMA). All meetings of the Commission shall be open to the public and all persons shall be permitted to attend any meetings of the Commission except for executive sessions.

(b) Each member is required to attend meetings. If a member misses three of the four regularly scheduled meetings in a calendar year, that member will forfeit their membership. Terminated members are eligible for re-appointment after one year.

(c) Members are permitted to attend meetings remotely by telephone or through video conferencing.

5. Executive Sessions. The Commission may hold executive sessions during a regular or special meeting to consider any matter which it is authorized by the Kansas Open Meetings Act (KOMA) to consider in executive session. The Commission by State law may exclude from any such executive session any person or persons which it is authorized by State law to exclude from such executive sessions.

6. Time of Regular Meetings. The Commission shall hold four (4) regular meetings each year on a quarterly basis at 4:00 p.m. on the third Monday of the first calendar month of each quarter, or at another date and time as agreed upon. If the time scheduled for a regular meeting falls on a City or County holiday, the regular meeting shall be held on the next succeeding Monday. The Commission may specify some other time for holding any such meeting. Subject to the requirements of law, any meeting before the Commission may be continued from time to time, to times and locations convenient to the consideration of matters pending before the Commission. Special meetings may be called pursuant to a call of the Chairperson, City Manager or County Administrator.

7. Posting of Agendas. All reasonable efforts should be made so that the agenda shall be posted in a location that is freely accessible to members of the public at least forty-eight (48) hours before the regular meeting. This posting may include publication on the website of the City, the County, or the Airport. The Airport Manager shall cause the agenda to be posted.

8. Chairperson, Powers, and Duties. At the first meeting of the calendar year, the Commission shall elect a Commission member to serve as Chairperson for that calendar year. The Chairperson shall serve in this capacity for a one-year term, with no limit on consecutive terms so long as the Chairperson remains a member of the Commission. The Chairperson shall have the following powers and duties:

(a) The Chairperson shall preside at all meetings conducted by the Commission;

(b) The Chairperson shall sign all reports of the Commission and all minutes of all meetings of the Commission which are approved by the Commission; and

(c) The Chairperson shall perform all other duties which may be required by ordinance or by resolution of the Governing Bodies or those within the by-laws of the Aviation Commission.

9. Vice-Chairperson, Powers, and Duties. At the first meeting of the calendar year, the Commission shall elect a Commission member to serve as Vice-Chairperson. The Vice- Chairperson shall serve in this capacity for a one-year term, with no limit on consecutive terms so long as the Chairperson remains a member of the Commission. The Vice-Chairperson shall have the following powers and duties:

(a) In the event of and during the absence or disability of the Chairperson, the Vice-Chairperson shall preside as Chairperson at all meetings of the Commission and shall have and perform all other powers and duties of the Chairperson; and

(b) The Vice-Chairperson shall perform all duties which may be required by ordinance or by resolution of the Governing Bodies or those within the by-laws of the Aviation Commission.

10. Reservation to Amend. The foregoing notwithstanding, the Governing Bodies hereby reserve the right to establish from time-to-time restrictions, limitations, and guidelines within which such authority delegated to the Aviation Commission shall be exercised.

11. Duty of the City. Without further authorization by the Governing Bodies, the administration of the City, within the City's established authority for the management of the Airport, shall have the authority to:

(a) Engage in any and all hiring, firing, purchasing and procurement activities in relation to the operations of the Airport as are within the established budget for the operations of the Airport.

(b) Enter into lease agreements involving Airport property for terms not exceeding one year;

(c) Negotiate lease agreements involving Airport property for terms exceeding one year, subject to approval by both the City and County;

(d) Establish proprietary fees associated with the Airport;

(e) Actively manage the Airport subject to the joint policies as may be established by the Parties; provided, however, that the City Manager shall consult with the County Administrator prior to:

(i) Selecting or terminating an Airport Manager, which shall include the County Administrator being given the right and opportunity to participate in

any and all interviews of Airport Manager candidates during the City's selection process;

(ii) Preparing the annual budget for the Airport;

(iii) Preparing any capital improvements programs or proposals for the Airport; and

(iv) Making application for any federal funding for Airport projects.

(f) Airport Fund. The City shall establish a special Airport fund, placing therein the tax revenues received from each of the Governing Bodies, together with any and all revenue from the operation of the Airport, and shall pay therefrom the expense of maintenance and operation of the Airport.

SECTION 2. Appointments. Through the adoption of this Joint Enactment, it is the intent of the Governing Bodies to make new appointments and restart the terms of the members of the Aviation Commission. For any Aviation Commission member that is reappointed to the Aviation Commission, their term should start over, and the that term shall be considered their first term as it pertains to any term limits. Upon the adoption of this Joint Enactment, the Governing Bodies will make their respective appointments. At the first meeting of the Aviation Commission following the adoption of this Joint Enactment, the Aviation Commission shall make their respective appointments.

SECTION 3. Repealer. The following enactments of Harvey County and of the City of Newton are each repealed by action of the respective governing bodies: Harvey County Resolution No. 2015-19, dated September 21, 2015 and City of Newton Ordinance No. 4893-15, dated September 22, 2015.

SECTION 4. Publication. This Ordinance and Resolution shall take effect and be in force from and after its publication for the County and summary publication in THE NEWTON KANSAN, the official newspaper of the County and the City.

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PASSED AND ADOPTED by the Board of County Commissioners of Harvey County, Kansas, this 13th day of February, 2024.

BOARD OF COUNTY COMMISSIONERS OF
HARVEY COUNTY, KANSAS

Becky Reimer, Chair

Don Schroeder, Commissioner

Randy Hague, Commissioner

HARVEY COUNTY Seal KANSAS

ATTEST:

Rick Piepho, County Clerk

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PASSED AND ADOPTED by the governing body of the City of Newton, Kansas, this 13th day of February, 2024.

CITY OF NEWTON, KANSAS

Rod Kreie, Mayor

ATTEST

Denise R. Duerksen, City Clerk

City/County Airport CIP 2021-2026

Hangar		Updated 8/2/2024 Est. Cost	City	County	Status	2021	2022	2023	Updated 4/24/2025 2024	2025	2026	Notes
Oliver Entrance	Park Aerospace	$ 40,000	$ 20,000	$ 20,000	Complete	$ 40,000						
Hangar J Office Roof & E. Office Wall Repairs & Gas line relocation	Weatherly	$ 85,315	$ 42,658	$ 42,658	Complete	$ 85,315						
Hangar K Roof Repair & Install	Hesston Aviation	$ 62,478	$ 31,239	$ 31,239	Complete	$ 62,478						
Hangar C Painting	Avcon	$ 15,745	$ 7,873	$ 7,873	Complete	$ 15,745						
Hangar D Painting	Avcon	$ 17,885	$ 8,943	$ 8,943	Complete	$ 17,885						
Hangar k HVAC x2 for Office**	Hesston Aviation	$ 10,000	$ 5,000	$ 5,000	Purchased-Complete by June 2025				$ 11,189			
Hangar K Painting-Exterior*	Hesston Aviation	$ -	$ -	$ -								
Hangar A Electrical, gut & redo	Airport	$ 12,000	$ 6,000	$ 6,000	Complete							Completed with Hangar A Door
Hangar A Painting-Exterior*	Airport	$ -	$ -	$ -								
Hangar D HVAC x2 Office**	Avcon	$ 8,000	$ 4,000	$ 4,000	Purchased-Complete by June 2025				$ 6,202			
Hangar K Door-Stacking	Hesston Aviation	$ -	$ -	$ -	2024 Insurance							
T Hangar Painting*	T-Hangars	$ 32,000	$ 16,000	$ 16,000	Airport Staff 2026						$ 32,000	
Hangar J Door -Bi-Fold		$ 235,372	$ 117,686	$ 117,686						$ 235,372		
Hangar A Door -Bi-Fold	Airport	$ 227,441	$ 113,721	$ 113,721					$ 254,518			ORIG. - $ 227,441
Main Terminal, carpet/tile replace	Airport	$ 15,000	$ 7,500	$ 7,500	Complete-Airport Staff							
Main Terminal, N. glass wall & door setting	Airport	$ 25,000	$ 12,500	$ 12,500						~~$ 25,000~~		
Main Terminal, Bathroom Upgrades	Airport	$ 15,000	$ 7,500	$ 7,500						~~$ 15,000~~		
Main Terminal, Steel Beam Paint	Airport	$ -	$ -	$ -	Complete-2023							
Main Terminal, Guttering	Airport	$ -	$ -	$ -	Complete-2022							
Hangar C HVAC Office**	Avcon	$ 5,000	$ 2,500	$ 2,500	Purchased-Complete by June 2025				$ 3,011			
Hanger F - Exterior Paint*	Avcon	$ -	$ -	$ -	2024 Airport Staff							
Hangar M HVAC x2**	Avcon	$ 7,500	$ 3,750	$ 3,750	Purchased-Complete by June 2025				$ 7,190			
Hangar B-Exterior Paint*	Midwest Aircraft	$ -	$ -	$ -	2025 Airport Staff							
	Totals	**$ 813,736**	**$ 406,868**	**$ 406,868**		**$ 221,423**	$ -	$ -	**$ 282,110**	**$ 235,372**	**$ 32,000**	**$ 770,905**

*Note: Airport staff items are work done by airport staff with materials paid from operating budget.

**Note: PW staff items are work done by public work staff w/materials purchased via the project

Other: (Storm Damage)				
Hangar J Reconstruction	Weatherly	$ 988,740	Insurance	Dondlinger
T-Hangar Doors	Various	$ 122,915	Insurance	Reddi OH Door
Hangar K Door Replacement	Hesston Aviation	$ 80,792	Insurance	Ex-Cat

TO:	City Commission
FROM:	Daniela Rivas
DATE:	June 9, 2026
SUBJECT:	City/County Airport CIP

PURPOSE:

In August 2018, the City and County held a joint meeting to discuss Airport Building Maintenance projects. During that meeting, staff presented a comprehensive review of all airport buildings along with recommended Capital Improvement Program (CIP) projects. Both governing bodies agreed that maintenance improvements were necessary; however, no funding decisions were made at that time. Between 2018 and 2021, City staff continued to bring forward maintenance projects on an as-needed basis for consideration. In April 2021, the City and County Commissions formally approved and funded the Airport CIP for 2022-2026. All improvements completed under the previous Airport CIP were funded through a 50/50 cost-sharing arrangement between the City and County. The Airport CIP currently before you is a restructuring of projects originally planned for 2026, along with a proposed plan for 2027-2030. The project costs included in the plan are estimates only, with actual costs to be determined through the quotation and competitive bidding processes in accordance with the City's Purchasing Policy.

If approved by both the City and County, the projects identified in this CIP would be scheduled for implementation in their designated year. Any proposed modifications to the CIP would be brought back to the governing bodies for review and approval. Each agency will determine independently how it will fund its respective share of the project costs. Historically, the City has billed the County for its portion of shared project expenses.

FINANCIAL IMPLICATIONS:

The total estimated cost for City/County-funded airport projects from 2026-2030 is approximately $686,600. In addition, the estimated cost for four grant-funded projects over the next five years is approximately $530,200 (City/County match). Combined, the total estimated investment in Airport projects over the next five years is approximately $1,216,800. Staff has also included three additional projects that would allow for expansion of the east side of the Airport. At the June 1, 2026 Aviation Commission meeting, board members reviewed and discussed the draft CIP. Preliminary feedback was added with more feedback to come at the July

Aviation Commission meeting. Final Financial Implications would be determined as recommended by the Aviation Commission subject to City/County approval later this year.

RECOMMENDATION:
Review the City/County Airport CIP and receive questions/feedback. The City/County Airport CIP will goback to the Aviation Commission for review and recommendation in July before returning to the City and County governing bodies for final consideration and approval.

5/20/2026

Airport													
Project Description	Completion Year								Dollars				
									Funding Sources				
CITY/COUNTY FUNDED PROJECTS	2026	2027	2028	2029	2030	2031	Future Projects	Fund	State	HVCO	City	Airport	Comments
T-Hangar Painting	$ 32,000							City/County		$ 16,000	$ 16,000		
After Hours Terminal Bathroom Access	$ 25,000							City/County		$ 12,500	$ 12,500		
Hanger C HVAC x 2		$ 40,000						City/County		$ 20,000	$ 20,000		
Hangar E Roof		$ 176,000						City/County		$ 88,000	$ 88,000		
Hanger G Electrical Panels		$ 9,200						City/County		$ 4,600	$ 4,600		
Hangar J South HVAC x 4		$ 80,000						City/County		$ 40,000	$ 40,000		
Hangar L Electrical Panel		X						City/County				$ 5,000	
Building F Electrical Panel			X					City/County				$ 5,000	
Hangar G Roof			$ 176,000					City/County		$ 88,000	$ 88,000		
Main Terminal HVAC			$ 40,000					City/County		$ 20,000	$ 20,000		
Hangar B Electrical Panel				$ 15,000				City/County		$ 7,500	$ 7,500		
Hangar D Bay Heaters x 4				$ 40,000				City/County		$ 20,000	$ 20,000		
Hangar L HVAC				$ 20,000				City/County		$ 10,000	$ 10,000		
Main Terminal Skylight				$ 30,000				City/County		$ 15,000	$ 15,000		
Hangar A Gutters				$ 10,000				City/County		$ 5,000	$ 5,000		
Hangar L - Hangar door				$ 225,000				City/County		$ 112,500	$ 112,500		
Hangar B Roof					$ 150,000			City/County		$ 75,000	$ 75,000		
Building F HVAC					$ 20,000			City/County		$ 10,000	$ 10,000		
Hangar N Roof panel replacement					X			City/County				$ 4,000	
T-Hangars (21-30) Electrical Panel					X			City/County				$ 4,600	
T-Hangars (35-63) Electrical Panel					X			City/County				$ 4,600	
Hangar G Aircraft Ramp						$ 10,000		City/County		$ 5,000	$ 5,000		
Main Terminal Structure Inspection						$ 50,000		City/County		$ 25,000	$ 25,000		
Hangar G Hangar Door						$ 225,000		City/County		$ 112,500	$ 112,500		
Total	$ 57,000	$ 305,200	$ 216,000	$ 340,000	$ 170,000	$ 285,000			$ -	$ 686,600	$ 686,600	$ 23,200	
City/County Split 50/50	$ 28,500	$ 152,600	$ 108,000	$ 170,000	$ 85,000	$ 142,500							

AIP Projects (subject to grant funding)

Master Plan Update		$ 550,000						Local/Federal	$ 495,000	$ 27,500	$ 27,500		Planned for 2027
Runway 8-26 PAPI replacement			$ 331,000					Local/Federal	$ 297,900	$ 16,550	$ 16,550		Planned for 2028
Taxiway C reconstruction				$ 3,453,150				Local/Federal	$ 3,107,835	$ 172,658	$ 172,658		Planned for 2029
Airport Terminal Apron Reconstruction					$ 6,269,850			Local/Federal	$ 5,642,865	$ 313,493	$ 313,493		Planned for 2030
Fuel Farm Tank Replacement						X	$ 1,165,000	Local/Federal					Planned for 2031+
Reconstruct T-Hangar Taxi lanes						X	$ 2,500,000	Local/Federal					Planned for 2031+
Rehab & Remark 17-35						X	$ 1,500,000	Local/Federal					Planned for 2031+
Total	$ -	$ 550,000	$ 331,000	$ 3,453,150	$ 6,269,850	$ -	$ 5,165,000		$ 9,543,600	$ 530,200	$ 530,200	$ -	
City County split 50/50	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,582,500						

Capital Projects

Sewer upgrade eastside of Airport (Design, Const., ROW)		$ 7,000,000						City/County/State	$ 5,600,000	$ 700,000	$ 700,000		Planned for 2027
Paving Oliver NE 12th to NE 24th			?					City/County		?	?		?
Purchase 300 acres eastside of Airport (Industrial Expansion)							$ 6,000,000	City/County		$ 3,000,000	$ 3,000,000		Planned for 2031+
Total	$ -	$ 7,000,000	$ -	$ -	$ -	$ -	$ 6,000,000		$ 5,600,000	$ 3,700,000	$ 3,700,000	$ -	
City County split 50/50	$ -		$ -	$ -	$ -	$ -	$ 3,000,000						

City/County Airport Assumptions
1) CIP is for expenses $5,000 and above
2) Yellow is less than $5,000
3) Tentatively Planned-Subject to Commissions Approval

Recommendations to review by staff from Aviation Commission Meeting on 06-01-26
1) Settling of building/doors at Main Terminal
2) Drainage at Hangar C & Q
3) Update to City-Owned Hangar Q

*** Waiting for additional feedback to be received at July meeting

Newton City/County Airport Revenue & Expenditure Summary										
	2016	**2017**	**2018**	**2019**	**2020***	**2021**	**2022**	**2023**	**2024**	**2025**
Beginning Cash	**132,936**	**206,510**	**259,514**	**139,020**	**170,126**	**77,272**	**34,379**	**193,547**	**29,225**	**108,330**
Revenue										
City - Ad Valorem	84,967	90,716	85,076	81,310	92,919	97,400	96,673	102,357	113,360	117,748
County	80,000	80,000	80,000	80,000	90,000	90,000	90,000	90,000	90,000	90,000
Grant Funding	-	-	-	-	69,000	23,000	59,000	-	-	-
Charges for Services	1,233,478	1,330,016	1,211,609	1,109,425	1,000,266	1,309,012	1,579,545	1,359,754	1,247,623	1,175,721
Other	8,449	7,469	14,222	62,093	6,390	6,932	76,875	25,260	40,477	25,476
Total Revenue	**1,406,893**	**1,508,201**	**1,390,906**	**1,332,828**	**1,258,574**	**1,526,343**	**1,902,093**	**1,577,370**	**1,491,460**	**1,408,945**
Expenditure										
Personnel Services	431,574	421,674	481,347	509,816	537,409	526,652	540,430	635,717	675,370	752,248
Contractual Services	193,350	221,880	226,792	216,352	207,229	268,358	207,107	302,724	282,612	237,086
Commodities & Supplies	450,651	537,303	496,034	421,118	271,248	515,088	744,296	585,991 [4]	487,909 [4]	410,744 [4]
Vehicle Operating	27,409	26,135	28,778	25,864	26,510	21,639	28,845	27,658	39,554	27,090
Capital Outlay	-	-	-	-	-	14,810 [5]	-	-	-	-
Transfers										
Equipment/Capital	38,500	40,000	39,500	-	52,050	40,483	69,400	62,500	46,126	-
Debt	294,257	218,554	213,098	125,565	141,331	127,976	101,870	98,032	7,000	16,864
Total Expenditure	**1,435,742**	**1,465,547**	**1,485,549**	**1,298,714**	**1,235,777**	**1,515,005**	**1,691,948**	**1,712,623**	**1,538,570**	**1,444,033**
Net Profit	**(28,848)**	**42,654**	**(94,643)**	**34,113**	**22,797**	**11,338**	**210,146**	**(135,253)**	**(47,109)**	**(35,088)**
Ending Cash	**206,510**	**259,514**	**139,020**	**170,126**	**77,272**	**34,379**	**193,547**	**29,225**	**108,330**	**40,308**
Reserve Policy 5%										

Newton City-County Airport

Final Master Plan Update Report
February 17, 2012

Prepared for

The City of Newton, Kansas
Harvey County, Kansas

Prepared by

HNTB Corporation
Architects – Engineers – Planners
www.hntb.com

7450 West 130th Street, Suite 400 – Overland Park, Kansas 66213 – (913) 491-9333
HNTB Project No. 50746-PL-001

The preparation of this document may have been supported, in part, through the Airport Improvement Program financial assistance from the Federal Aviation Administration (Project Number 3-20-0058-27) as provided under Title 49 U.S.C., Section 47104. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable or would have justification in accordance with appropriate public laws.

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CHAPTER ONE

PURPOSE AND INTENT

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Chapter One
PURPOSE AND INTENT

1.1 PURPOSE

The purpose of the Master Plan Update is to create a logical, cost-effective, and forward-thinking plan that helps the Airport Commission, City of Newton, and Harvey County guide development of the Newton City-County Airport (EWK) over the next 20 years. To create a plan that is responsive and adaptable to the aviation needs of the community, a comprehensive evaluation of EWK's existing infrastructure and development of a phased and financially-acceptable plan will be performed. If utilized the resultant plan will result in maintaining a safe, efficient, unconstrained, and attractive public facility.

1.2 PLANNING GUIDANCE

The Master Plan Update will produce a detailed report and a set of drawings that depicts the existing and ultimate airport features. These documents will be prepared in accordance with FAA Advisory Circular 150/5070-6B, Change 1, Airport Master Plans; Advisory Circular 150/5300-13, Change 16, Airport Design; and other appropriate FAA advisory circulars and orders.

To guide the development of the Master Plan Update, a Planning Advisory Committee (PAC) has been established. This 13 member group consists of city and county leadership, local business owners, and other key airport stakeholders. The PAC will meet regularly during the Master Plan Update and will provide input and comments on Master Plan Update documents as they evolve.

1.3 INTENTIONS

The intent of this Master Plan Update is to address several key issues that have been identified by the PAC. This chapter introduces more than a dozen major issues that EWK is currently facing. For ease of understanding, the issues have been organized into the following five subparagraphs:

- 1.3.1 Overall Airport Drivers
- 1.3.2 Aircraft Operations
- 1.3.3 Airfield Infrastructure
- 1.3.4 Airport Industrial Park
- 1.3.5 Environmental Issues

1.3.1 OVERALL AIRPORT DRIVERS

Item 1. Differentiate and Expand Services

Through the services and facilities it provides to the community and the flying public, EWK is a unique airport for the area. Even so, it is still in direct competition with neighboring airports and, therefore, needs to continually differentiate itself from those other airports if it is to remain successful. This Master Plan Update will help airport leadership address the question of "What other services does EWK need to offer in order to meet the needs of our existing tenants, attract cross-country fliers, and foster additional hangar and building growth?"

Item 2. Maintain Small Airport Community

Considering the recent gains in based aircraft and building/hangar construction, the expectation is that this momentum will continue at least in the short term and hopefully for the foreseeable future. And while this growth is welcomed, airport leadership is concerned about increased aircraft activity

and the affect it may have on the "small town" feel of the airport – the environment that has helped make EWK the success story that it is today. The intention of the Master Plan Update is to help airport leadership respond this concern.

Item 3. Incorporate Sustainability Measures

As part of an FAA pilot study, EWK will incorporate the concept of sustainability into its master planning process. The key benefit of addressing sustainability within the Master Plan Update is that it allows the airport operator and users to think holistically about how the airport functions now and in the future in terms of maintaining economic growth, reducing environmental impacts, and advancing social progress. Implementing Sustainability measures can also reduce energy/consumption and other airport operating expenses.

Item 4. Coordinate with the ReNewton Plan

While the final version of the ReNewton Plan (the city's comprehensive plan) is underway, the Airport Master Plan Update has just begun. The timing of these two projects affords the city the opportunity to incorporate community goals and coordinate compatible land uses of the ReNewton Plan into the Master Plan Update.

1.3.2 AIRCRAFT OPERATIONS

Item 5. Accommodate All General Aviation Aircraft

At EWK, today's aircraft operations are conducted by wide mix of aircraft including experimental, light sport, piston singles and twins, turboprops, helicopters, and large corporate jets – essentially the entire spectrum of general aviation aircraft. On any given day, one could find recreational flying, student pilot training, aircraft equipment certification flights, and business/professional aircraft traffic at EWK. Airport leadership has long been aware of the diversity of its users but as annual aircraft operations continue to grow, they recognize that some advanced consideration and planning is needed to ensure that EWK can meet the needs of all users. Some of the aircraft operational questions the Master Plan Update will speak to include:

- How do we meet the needs of our recreational, student, and professional pilots and their aircraft?
- How will student pilots respond to increased airport operations?
- How does the airport maintain a safe operating environment in the proximate airspace and on the airfield as traffic increases?
- What is the operational threshold for an air traffic control tower?
- As many aircraft operators favor EWK as it a non-towered facility, how will an air traffic tower affect the airport? What affect will such a facility have on the airport's "small town" feel?

Item 6. Assess Fuel Farm Capacity

Against the backdrop of continued airport growth both in terms of based aircraft and total aircraft operations, additional fuel storage capacity and distribution infrastructure may be needed to meet demand. This analysis will include airport staffing needs. As fueling demand increases, the number of line attendants should increase in proportion. For a full and complete fuel demand and capacity analysis, it will be important to understand the long-term business plans of EWK's airport tenants, especially those of its newest tenant, Ballard Aviation given their intention to service EMB-145 regional jet aircraft.

1.3.3 AIRFIELD INFRASTRUCTURE

Item 7. Develop a Plan for Runway 17-35

Runway 17-35 is showing several asphalt pavement distresses such as reflective cracking, longitudinal and transverse cracking, and blowups. At several locations the

underlying 70 year old concrete pavement has failed, causing damage to the asphalt surface course and generating a debris hazard to aircraft. While EWK has worked diligently to correct these pavement items, these pavement distresses have expanded beyond normal airport maintenance efforts. Developing a plan to address these issues and maintain the runway's current length is of utmost importance to EWK.

Item 8. Consider a Parallel Runway

Airport leadership has begun to think strategically about what the airport's runway configuration may look like 30, 40, and 50 years from now – well beyond this Master Plan Update. This thought process has been triggered by the following:

- Anticipation of major rehabilitation or reconstruction Runway 17-35 in the near future and its expected temporary closure to allow for construction activities to occur,
- Need to maintain airport operations during construction and, therefore, aircraft fuel sale revenues, and
- Continued increase in aircraft operations on Runway 17-35.

In consideration of the above, the questions to be explored as part of the Master Plan Update include: What happens when Runway 17-35 is closed for major maintenance, reconstruction, or in an emergency? Is there a need for a parallel runway to Runway 17-35? Where would the parallel runway be located? Although the parallel runway concept is a long-term planning effort, it is prudent to set aside the appropriate amount of space now so as to not preclude its development.

Item 9. Investigate Aircraft Pre-flight Run-up Apron Locations

With an estimated 65,000 to 75,000 operations conducted annually at EWK, traffic on Taxiway E periodically experiences delays while waiting for pilots to complete their pre-flight checks on Taxiways A and D, the entrance taxiway to Runway 17-35. The development of run-up areas would improve the efficiency of the airfield while enhancing safety. When identifying potential run-up apron areas, consideration will be given to centrally locating aircraft engine run-up aprons for noise abatement purposes.

Item 10. Identify Hangar Locations

Additional T-hangars and community hangars are anticipated in the ultimate airfield development concept. EWK is currently in the process of extending a row of T-hangars to the north to provide five additional aircraft hangars. When construction is complete, the current T-hangar area will reach full build out with no room for additional expansion.

The only city-owned community hangar is Hangar A which is located due south of the T-hangar complex. Hangar A is nearing maximum aircraft storage capacity and locations for similar facilities will be sought out.

In addition, as the number Very Light Jets (VLJs) in the industry increase and as the Airport Industrial Park, Kansas Logistics Park, and Newton community growth continues, it is very possible that such aircraft could be based at EWK. Future hangars should be constructed to the meet VLJ specifications.

Item 11. Review Taxiway Widths

To ensure that EWK can accommodate a variety of aircraft, the need and justification for wider taxiways associated with Runway 17-35 will be researched.

1.3.4 AIRPORT INDUSTRIAL PARK

Item 12. Plan for Airport Industrial Park Expansion

The Master Plan Update will develop a plan that allows the airport industrial park to expand in response to positive market pressure. To support this plan, an airport market analysis will be performed to identify the most likely development/redevelopment opportunities for the airport. One such industry could

be composite materials manufacturing as this is a growth industry. There could be a future cluster of related development at the south end of the airfield that supports EWK's largest tenant – Park Aircraft Technologies Corporation – a manufacturer of composite aircraft components.

While investigating areas for future facilities, existing hangar and non-aviation building locations will be reviewed to determine if their layout inhibits future development's access to the taxiway system. This analysis may recommend ultimate relocation of existing facilities to improve taxiway access.

Item 13. Review Compatible Land Uses

In concert with airfield and airport industrial park concept planning, the Master Plan Update will identify what areas of the airport need protecting (such as runway approach areas) from incompatible land uses and encroachment associated with positive community growth. The compatible land use analysis will consider on-airport land uses (both aeronautical and non-aeronautical types) as well as off-airport land use. This will include a review of the city's height and hazard ordinances and development of existing and 20-year airport noise contours to help define certain land uses near the runway ends.

Item 14. Investigate FTZ Potential

Also to be explored is the potential for a Foreign Trade Zone (FTZ) and how this geographic area relates to the Airport Industrial Park, land acquisition, compatible land use, and airport access and security. Given that the City of Newton is part of the KC SmartPort initiative, FTZ establishment is a sensible consideration.

1.3.5 ENVIRONMENTAL ISSUES

Item 15. Conduct Airport Drainage Assessment

At present, land owners downstream of EWK have expressed stormwater runoff and soil erosions concerns to city leadership. One of the first tasks of the Master Plan Update will be to analyze existing airport stormwater runoff for the full mile north of 1st Street and west of Oliver Road. In this first phase, present-day drainage patterns will be delineated and total stormwater runoff quantities will be estimated.

As on-airport and adjacent land development continues, stormwater runoff could increase. Phase two of the airport drainage assessment will examine proposed airport development and make recommendations on how to potentially mitigate future stormwater runoff volumes. If appropriate, the assessment will identify those areas of the airport that should be considered for development and those areas that should remain undeveloped due to environmental/ storm water concerns.

Item 16. Discuss Wildlife Issues and Mitigation Options

Due to the increased focus on wildlife and the hazards they pose at and around the airport, the FAA has identified EWK as an airport which will need to initiate a Wildlife Hazard Assessment (WHA) by the year 2020. In preparation for the WHA, the Master Plan Update will discuss EWK's wildlife issues and on-going wildlife management activities. One typical recommendation of a WHA is the construction of a perimeter wildlife fence which could pose some interesting security and hangar access concerns for EWK to address. Mitigation of wildlife issues vis-à-vis compatible land use will also be discussed.

Chapter Two
INVENTORY

2.1 INTRODUCTION

The development of the Master Plan Update for the Newton City-County Airport (EWK) requires the collection and evaluation of existing information relating to the airport and the surrounding area it serves. The most pertinent data which can potentially affect the development of the Master Plan Update are contained within this chapter. This information includes:

- Physical inventories and descriptions of facilities and services currently provided by EWK.
- Background information pertaining to the Newton area and descriptions of recent development which has taken place on and in proximity to the airport. This includes socioeconomic information which provides an indication of future growth trends.
- Previous and on-going airport and regional planning efforts to determine their potential influence on the development and implementation of the Master Plan Update.

2.2 AIRPORT LOCATION AND ACCESS

EWK is located in south-central Kansas approximately 145 miles west of Missouri and 70 miles north of Oklahoma. Relative to major metropolitan areas, EWK is located 25 miles north of Wichita, the largest city in Kansas. **Figure 2-1** shows the EWK's location relative to the surrounding region. Located near the intersection of I-135 and US-50, EWK has very good access to the national transportation system. From I-135, access to EWK is provided via East 1st Street and N. Oliver Road. Per **Figure 2-2**, EWK is located approximately 2 miles east of the City of Newton, the seat of Harvey County.

Figure 2-1: Regional Setting

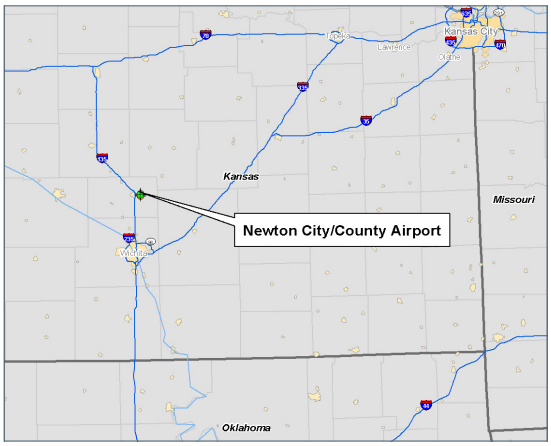


Figure 2-2: City of Newton



2.3 AVIATION SERVICES

For over 65 years, EWK has been serving the region by providing access to the nation's air transportation network and generating economic activity. Today, through its Fixed Base Operator (FBO), Metro North Flight Support, EWK provides a variety of high quality services to its tenants and the flying public. These services include the following:

- Full service aircraft fueling with 100LL Avgas, Jet A, and Mogas (auto)

- Aircraft maintenance including major airframe and powerplant service
- Aircraft ground power unit/cart (GPU)
- Aircraft parking (ramp or tiedown)
- Aircraft self-service wash facility
- Hangar leasing/sales
- Pilot lounge complete with satellite TV, WiFi, and separate pilot flight-planning work area
- Pilot supplies
- FAA Direct User Access Terminal (DUAT) service for pilots providing direct access to weather briefing, flight planning, and flight plan filing information
- A wide range of catering, refreshments, and vending available
- Hertz Rental Cars (on-site) and courtesy cars for pilots

AIRCRAFT RESCUE AND FIREFIGHTING (ARFF)

Another service provide by EWK to tenants and aircrews is on-site fire-rescue. While the airport business park enjoys fire hazard insurance premium discounts as a result of having airport personnel trained in fire-rescue with on-site equipment, the service is also a benefit to the community as it helps retain and attract new airport businesses.

Airport personnel maintain certification at First Responder Fire Fighter 1 Level. While all staff are proficient in providing emergency medical aid, one staff member maintains certification as an EMT. In the case of an emergency, the Newton Fire Department is immediately notified and can be on-site within minutes.

Included in the fire-rescue equipment inventory is a four-wheel drive fire rescue vehicle with 400 gallons of foam capability. The vehicle's garage is located on the north end of Terminal/Administrative Building. As EWK is not required by FAA standards to maintain an ARFF facility, federal funding for ARFF facilities or equipment is not available.

2.4 AIRPORT HISTORY, OWNERSHIP, AND MANAGEMENT

Originally constructed in 1944 by the U.S. Government, the airport consisted of a single turf runway and several buildings. Initially named Wirt Field, the airport was utilized by the United States Navy as an auxiliary flight training facility during World War II. Following the war, the City of Newton operated the field as the Newton Municipal Airport.

In 1969, the City of Newton and Harvey County entered into joint ownership of the airport and it was renamed the Newton City-County Airport. Its administration was assigned to the City of Newton and an Aviation Commission was formed to guide the operation of the airport. Additional airport development milestones are presented in the Airport Development Sidebar on the following page.

The City of Newton is responsible for staffing, operating, and maintaining the facility under the direction of a full-time Airport Manager who is supervised by the City Manager. The seven-member Aviation Commission is an advisory group which helps to guide airport development by providing recommendations to city and county commissioners and the Airport Manager on airport matters. Other Aviation Commission duties include:

- entering into leases, including amendments and renewals;
- establishing, assessing and collecting user fees; and
- establishing and maintaining the Airport Policies and Procedures Manual.

2.5 AIRPORT ROLE

One task of this Master Plan Update is to determine the current and future functional role of EWK with respect to the FAA's 2011-2015 National Plan of Integrated Airport Systems (NPIAS) Report and the 2009 Kansas Airport System Plan (KASP).

Airport Development Sidebar	
Date	Development Event
1944	Land purchased from city and neighboring farmers. Runway 17-35, Control Tower, and storage and service buildings constructed
1965	Runway Lights, Cross-over Taxiway, T-Hangars, and Storm Sewers constructed
1973	Airport Master Plan prepared
1978	Runway 17-35 and Taxiway E reconstructed, Taxiways B and C constructed
1981	Airport Master Plan Update
1983	Taxiway E Lighting replaced
1986	Acquired Land, Runway 8-26 and Taxiway C reconstructed
1988	Runway 17-35 drainage structures installed
1990	Overhead apron lights, VASI, Taxiway E slurry seal, Electrical Vault relocated, Taxiways reconstructed, Storm Sewer System installed, Airport Master Plan Updated, and AWOS-3 installed
1993	Runway 8-26 and Taxiway C slurry seal, Taxiway E drainage system and lights installed, Terminal Apron seal coat, and Runway 35 REIL installed
1995	Sanitary sewer system installed
1996	Runway 17 MALSR installed, Runway 17-35 VASI systems installed and comissioned , Runway 8-26 PAPI systems installed and comissioned, additional and leased for NAVAIDS
1998	Snow Removal Equipment (SRE) purchased and SRE Building constructed,; taxilane and access road constructed; land purchased; and Taxiways A, B, and part of E rehabilitated
1999	Taxiways D and E rehabilitated, Taxiway C and east portion of Apron received slurry seal
2000	Wash Bay Building constructed and associated equipment installed, T-Hangars and taxilane constructed
2001	Land acquisition of north 71 acres
2002	Runway 17-35 rehabilitated, West T-Hangar expansion
2003	Airport Master Plan Update

Airport Development Sidebar (cont)	
2004	Runway 8-26 reconstructed, Runway 8-26 and Runway 17-35 Lighting replaced
2005	Taxiway C rehabilitated, MITL rehab, Land acquisition of 156 acres
2006	Main Terminal Apron mill & overlay, Parking lot paved, Pole Barn Security Fence constructed
2007	Taxiways A, B, C (west), D, and seven tenant aprons rehabilitated, Building X ExTech constructed, Hangar renovations, and Park Electrochemical Corp facility constructed
2008	Compass Calibration Pad east of Runway 35 constructed
2009	Electrical Vault and Airfield Guidance Signs replaced
2009	West T-hangar Taxilane reconstructed and extended
2010	Aircraft Fuel Truck Parking Area constructed

The functional role of an airport is defined by the NPIAS as one of four basic airport service levels which describe the type of service that the airport currently provides to the community and is anticipated to provide the community at the end of a 5-year planning period. The four airport roles used in the NPIAS are:

- Commercial Service – Primary
- Commercial Service – Nonprimary
- Reliever
- General Aviation

Per the NPIAS, EWK functions as a Reliever Airport to Wichita Mid-Continent Airport (ICT). The Colonel James Jabara Airport (AAO) also serves as a reliever to ICT. Reliever Airports are airports designated by the FAA to relieve congestion at commercial service airports and provide improved general aviation access to the community.

To establish more specific roles for the 143 airports located in Kansas, the KASP uses system goals and performance categories to define each airport's role. According to this

plan, Kansas airports are classified into one of the following five functional roles:

- Commercial Service Airport
- Regional Airport
- Business Airport
- Community Airport
- Basic Airport

The KASP classifies EWK as a Regional Airport which is defined as an airport that accommodates regional economic activities, connects the state and national economies, and serves all types of general aviation users. A regional airport is an airport serving traffic within a relatively small or lightly populated geographical area. Aircraft using these airports tend to be smaller business jets, private aircraft and regional airliners.

2.6 AIRSPACE

The Federal Aviation Act of 1958 gave jurisdiction of all US airspace to the FAA. Following this authorization, the FAA established the National Airspace System (NAS) to manage the airspace safely and efficiently among commercial, general aviation, military, and other competing users. To ensure a safe and efficient airspace environment, the FAA separates the airspace structure into Class A, B, C, D, E, and G airspace categories as depicted in **Figure 2-3**. EWK is governed by Class E airspace which is general controlled airspace and control zones at airports without control towers.

2.7 MILITARY OPERATIONS AREA (MOA)

It is important to identify MOAs and other restricted airspace areas to have a full and complete picture of an airport's proximate airspace and to coordinate its current and future airspace needs. By definition, a MOA is airspace that separates or segregates certain military aircraft activities from civilian aircraft operations. This is not restricted airspace so pilots can use the airspace, but they should be on alert for the possibility of military traffic.

Approximately 30 nautical miles northwest of EWK are the Smoky, Bison, and the Smoky High MOAs. Over 65 nautical miles southwest of EWK are several MOAs associated with Vance Air Force Base in Oklahoma. None of these MOAs impart any direct influence on EWKs existing airspace or traffic patterns.

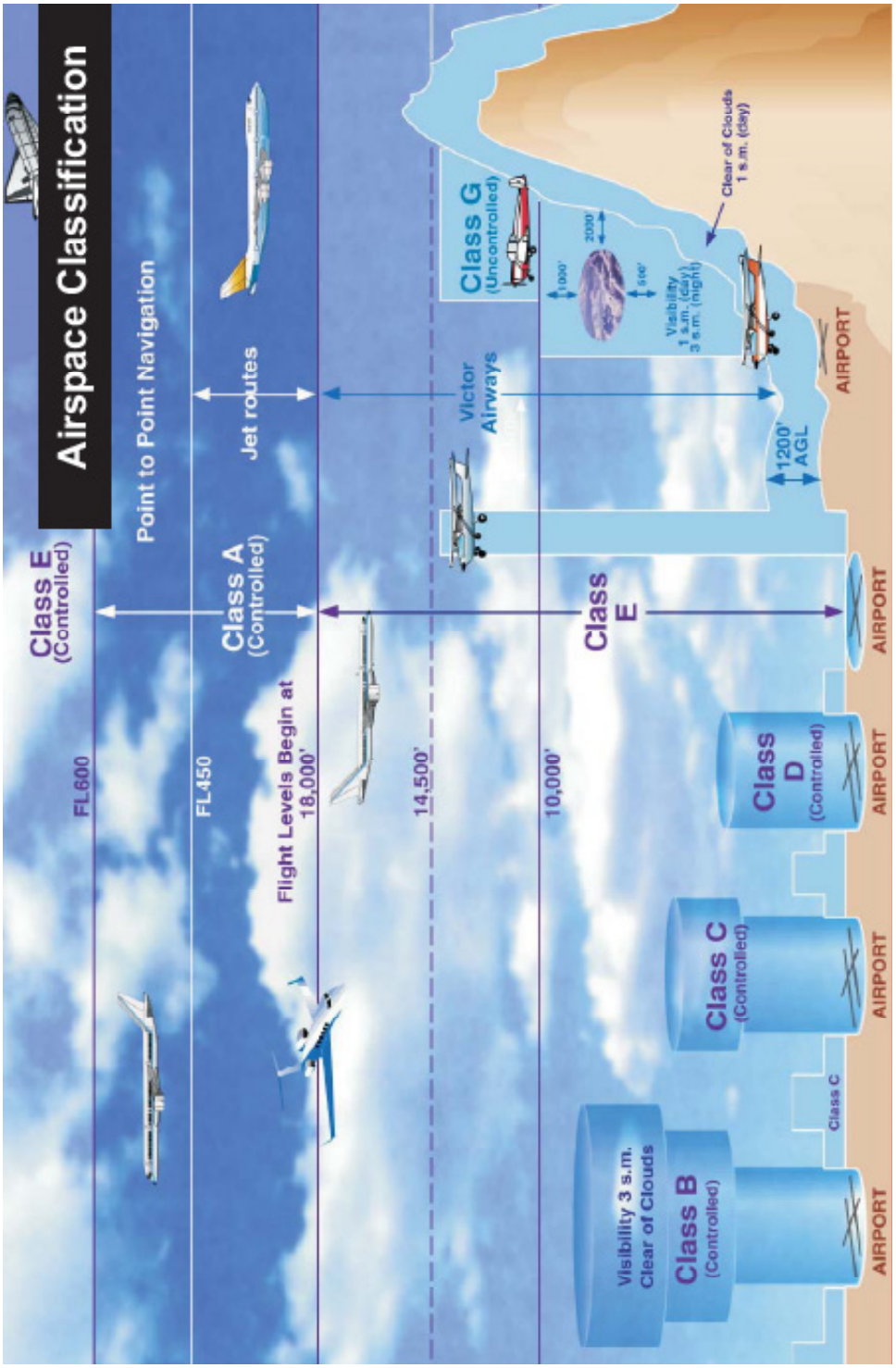
2.8 OBSTRUCTIONS TO AIR NAVIGATION

Upon a review of the Airport Layout Plan (ALP) set of drawings, the FAA 5010 Form, and published instrument approach procedures, there are no listed obstructions to EWK's airspace or runway approaches that have not been already mitigated either through marking/lighting or identified for ultimate removal. A detailed discussion of the natural and man-made objects surrounding EWK and the airport's ultimate airspace configuration will be presented in the **ALP Chapter**.

2.9 TRAFFIC PATTERNS

Standard aircraft traffic patterns have been developed to allow for the safe use of a runway during takeoff and landing operations. The standard traffic pattern requires aircraft to make left turns when approaching or departing a runway. By default, right traffic patterns are non-standard. At EWK, traffic patterns consists of standard left turns at an altitude of 800 feet AGL or 2,333 feet MSL for light aircraft (weighing 12,500 lbs. or less). For heavy aircraft, the traffic pattern is 1,000 feet AGL or 2,533 feet MSL.

Figure 2-3: Airspace Classification



Source: HNTB

HNTB

2.10 NEIGHBORING AIRPORTS

A review of airports within roughly 30 nautical miles (nm) of EWK was conducted to identify and distinguish the types of aviation services provided in the region. Within this area are ten airports - seven of which are publicly owned, public use airports. **Table 2-1** lists these airport in order of their distance and direction from EWK. Most of these airports are located in Sedgwick County which is located directly south of Harvey County.

All of the neighboring airports serve general aviation exclusively with one exception: the Wichita Mid-Continent Airport (ICT) is the only area airport to offer commercial service. ICT is also a significantly larger facility than all the surrounding airports with regard to runway length and the number of annual aircraft

Table 2-1. Neighboring Airports

	Newton Municipal Airport	Moundridge Municipal Airport	Alfred Schroeder Field Airport	Lloyd Stearman Field Airport	Colonel James Jabara Airport
FAA Airport Identifier	EWK	47K	M66	1K1	AAO
Distance and Direction from EWK	N/A	14 nm NW	17 nm N	19 nm SE	19 nm S
County	Harvey	McPherson	Marion	Butler	Sedgwick
Ownership	Public	Public	Public	Private	Public
Use	Public	Public	Public	Public	Public
NPIAS Role	Reliever	GA	GA	GA	Reliever
Primary Runway Length	7,000'	3,400'	3,230'	4,600'	6,100'
Based Aircraft	143	14	7	84	90
Annual Ops.	65,044	9,600	5,000	10,500	38,300
ATCT	No	No	No	No	No
Aircraft Fuel Types Available	100LL Jet-A	100LL	100LL	100LL Jet-A	100LL Jet-A
Fuel Cost (as of 11/11/10)	$4.56 $3.93	$3.99	$4.15	$4.30 $4.50	$5.15 $4.90
Airframe Service	Major	No	No	Major	Major
Powerplant Service	Major	No	No	Major	Major
Bottled Oxygen	No	No	No	No	No
Bulk Oxygen	Low	No	No	No	No
Compass Pad	Yes	No	No	No	Yes
Instrument Landing System (ILS)	Yes	No	No	No	Yes
Hangars	Yes	Yes	Yes	Yes	Yes
Tiedowns	Yes	Yes	Yes	Yes	Yes

Sources: FAA 5010 Forms and FAA 2011-2015 NPIAS

operations. Through several airlines, ICT provides an service to multiple destinations across the United States.

In reviewing primary runway lengths of general aviation airports, Jabara, Beech Factory, and Hutchinson airports are comparable to EWK and therefore are capable of attracting and supporting similarly-sized aircraft. In addition, as Jabara and Hutchinson offer similar aviation services, it will be important for EWK to continue to differentiate itself from these two and other area airports to be successful over the long term.

Table 2-1. Neighboring Airports (Cont.)

	Beech Factory Airport	Cessna Aircraft Field Airport	Wichita Mid-Continent Airport	McPherson Airport	Hutchinson Municipal Airport
FAA Airport Identifier	BEC	CEA	ICT	MPR	HUT
Distance and Direction from EWK	22 nm S	25 nm S	26 nm S	26 nm NW	28 nm W
County	Sedgwick	Sedgwick	Sedgwick	McPherson	Reno
Ownership	Private	Private	Public	Public	Public
Use	Public	Private	Public	Public	Public
NPIAS Role	GA	GA	Comm. Srvc.	GA	GA
Primary Runway Length	8,000'	3,900'	10,300'	5,500'	7,000'
Based Aircraft	77	16	222	33	29
Annual Ops.	32,700	100	159,100	40,100	53,100
ATCT	Yes	No	Yes	No	Yes
Aircraft Fuel Types Available	100LL Jet-A	None	100LL Jet-A	100LL Jet-A	100LL Jet-A
Fuel Cost (as of 11/11/10)	$4.44 $4.90	n/a	$5.11 $4.87	$4.50 $3.75	$5.14 $4.85
Airframe Service	No	No	Major	Major	Major
Powerplant Service	No	No	Major	Major	Major
Bottled Oxygen	No	No	High/Low	No	No
Bulk Oxygen	No	No	High/Low	No	Low
Compass Pad	Yes	Yes	Yes	No	No
Instrument Landing System (ILS)	No	No	Yes	No	Yes
Hangars	No	No	Yes	Yes	Yes
Tiedowns	Yes	No	Yes	Yes	Yes

Sources: FAA 5010 Forms and FAA 2011-2015 NPIAS

2.11 BASED AIRCRAFT AND TOTAL AIRPORT OPERATIONS

The intent of this section is to provide an overview of current based aircraft and total airport operations. A more detailed assessment of current based aircraft information and airport operations will be presented in the **Activity Forecasts Chapter**.

According to the 2005 Master Plan, there were 117 aircraft based at EWK in 2003. Using aircraft information provided by EWK, there are currently 143 based aircraft at EWK which is an increase of more than 22 percent and represents an annual growth of approximately 3.2 percent. A comparison of current and 2003 based aircraft by type is presented in **Table 2-2** below.

The 2005 Master Plan Update estimated that 64,200 operations were conduced at the airport for the baseline year 2003 using a metric of approximately 550 operations per based aircraft. To estimate the number of operations conduced 2010, application of this same metric suggests 78,500 aircraft operations.

2.12 INSTRUMENT APPROACH PROCEDURE (IAPs)

The FAA has published five IAPs to aid based and transient aircraft in landing at EWK when weather conditions deteriorate to the point where visual flight is not possible. These IAPs allow aircraft to operate with cloud ceilings as low as 200 feet AGL and visibility down to one-half statute mile. These IAPs are as follows:

- ILS or LOC RWY 17
- RNAV (GPS) RWY 17
- RNAV (GPS) RWY 35
- VOR/DME-A
- NDB RWY 35

2.13 NAVIGATIONAL AIDS (NAVAIDS)

NAVAIDS are electronic devices that transmit radio frequencies that pilots of properly equipped aircraft can use to accurately navigate between airports and land on a runway. The following electronic NAVAIDS are located on or in the vicinity of EWK:

- Instrument Land System (ILS)
- Global Positioning System (GPS)
- Wichita VORTAC, and
- Non-directional beacon (NDB).

Table 2-2. Based Aircraft

Aircraft Type	2003		2010		Comparison		
	Number of Aircraft	Percent of Total	Number of Aircraft	Percent of Total	Quantity Change	Percent Change	Annualized
SE Piston	97	83%	77	54%	-20	-21%	-2.9%
ME Piston	12	10%	18	13%	6	50%	7.1%
Jet	5	4%	11	8%	6	120%	17.1%
Turboprop	2	2%	7	5%	5	250%	35.7%
Helicopter	1	1%	6	4%	5	500%	71.4%
Glider	0	0%	2	1%	2	n/a	n/a
Experimental	0	0%	22	15%	22	n/a	n/a
Total	117	100%	143	100%	26	22.2%	3.2%

INSTRUMENT LANDING SYSTEM (ILS)

For landings to Runway 17, a Category I Instrument Landing System (ILS) is provided. The CAT I ILS allows aircraft to land in poor weather conditions with cloud ceilings as low as 200 feet AGL and visibility down to one-half of a statute mile.

The ILS is owned and maintained by the FAA and includes the following five components: the outer marker, middle marker, approach lighting system, glide slope antenna, and the localizer antenna.

The outer and middle marker are located 4.8 nm and 0.4 nm north of the Runway 17 threshold. These markers provide pilots with distance information to the runway end as they fly over them.

The Medium Intensity Approach Lighting System with Runway Alignment Indictor Lights (MALSR) is a linear system of lights that provides landing guidance during low visibility conditions. The MALSR is depicted in **Figure 2-4**.

Depicted in **Figure 2-5** is the Glide Slope antenna that is located due east of the Runway 17 touchdown markings. The Glide Slope antennas provide vertical (approach slope) guidance to arriving aircraft.

The localizer antenna shown in **Figure 2-6** is located within airport property approximately 702 feet south of the runway pavement end. It provides lateral information to guide aircraft to the runway centerline.

GLOBAL POSITIONING SYSTEM (GPS)

The GPS is a form of radio area navigation (RNAV) that consists of a constellation of 24 satellites orbiting 11,000 miles above the earth capable of providing continuous, highly accurate, three-dimensional position information to aircraft equipped with GPS receivers. When using at least four satellites, a GPS receiver can determine latitude, longitude, altitude, and time. GPS accuracy is space-based and does not degrade as aircraft position changes. As such, it is the future of navigation for most military and civil applications.

Figure 2-4. MALSR



Figure 2-5. Glide Slope Antenna



Figure 2-6. LOC Antenna



The RNAV approach procedures to Runways 17 and 35 have been developed by the FAA using the Wide Area Augmentation System (WAAS) method of navigation based on the GPS. For the WAAS, ground correction stations transmit position corrections and add vertical navigation features that enhance the accuracy of the GPS satellites.

These two RNAV approaches afford Localizer Performance with Vertical Guidance (LPV) minimums which provide horizontal accuracy

RUNWAY ORIENTATION

Wind conditions are of prime importance in determining runway orientation and use. Where winds are consistently in one direction, a single runway can adequately provide for a safe and efficient airport. In most areas however, wind direction is not consistent and a second or "crosswind" runway is typically required. Generally, the smaller and lighter the aircraft, the more its performance will be affected by wind and the more likely it will need to use a secondary runway better aligned with crosswinds.

FAA design standards specify that additional runways are recommended when the primary runway provides less than 95 percent wind coverage at specified crosswind speeds, that is, when the primary runway is usable less than 95 percent of the time. When this occurs, it is typically cost effective to construct a crosswind runway to increase the airport utilization rate. The 95 percent wind coverage is computed on the basis of crosswinds not exceeding the following values:

- *10.5 knots (12 mph) for small aircraft in Airport Reference Code A-I and B-I categories,*
- *13 knots (15 mph) for A-II and B-II aircraft classifications,*
- *16 knots (18 mph) and 20 knots (23 mph) for larger aircraft.*

With its present north-south orientation, Runway 17-35, the primary runway, provides slightly more than 94 percent wind coverage for the 10.5 knot crosswind based on the most recent 10-year period of wind data. Since the runway does not provide at least 95 percent wind coverage for the 10.5 knot crosswind, a second runway is recommended at EWK to allow small aircraft to operate safely. Runway 8-26 currently provides this need.

When combined, both runways provide nearly 98 percent wind coverage allowing a host of aircraft to land at EWK regardless of wind direction and speed.

equivalent to a localizer antenna. Pilots can use these approach procedures provided their aircraft is equipped with the required WAAS-capable avionics.

WICHITA VORTAC

An additional NAVAID is the Very High Frequency (VHF) Omni-directional radio-Range (VOR) station. The VOR is a ground-based station that broadcasts VHF radio signals 360 degrees in azimuth from the station. VORs can be combined with Distance Measuring Equipment (DME) and military TACAN (tactical air navigation). The TACAN provides military pilots with data similar to the civilian VOR. When a VOR and a TACAN are co-located, the facility is called a VORTAC. Supporting the "VOR/DME A" approach procedure to EWK is the Wichita VORTAC located approximately 23.7 nm from EWK on the 031° radial.

NON-DIRECTIONAL BEACON (NDB)

The NDB is a general purpose, ground-based, low-frequency radio beacon that a pilot can use to determine a bearing. NDBs offer less accuracy and reliability than VORs and are gradually being phased out by the FAA as new GPS-based approach procedures are developed. The EWK NDB that supports the NDB RWY 35 approach procedure is located on airport property due east of the Runway 17 Glide Slope antenna. The EWK NDB is owned and maintained by the airport.

2.14 VISUAL AIDS

The following NAVAIDS are used by pilots to visually locate the airport and safely land on a runway:

- Airport Beacon. Situated on top a tower next to the World War II Barrel Hangar, the beacon rotates to display alternating flashes of white and green light indicating to pilots the location of the public airport. The rotating beacon is in fair condition.
- Runway Approach Lighting Systems. Runway 17 is equipped with a MALSR, and the other three runways are equipped

with Runway End Identifier Light (REIL) systems. The FAA owns and maintains the MALSR and the Runway 35 REIL systems and the airport owns and maintains the Runway 8 and 26 REIL systems.

- Visual Approach Slope Indicators. A VASI is a system of lights arranged to provide visual descent guidance information during the approach for landing. Most VASI installation consists of two sets of light units, commonly referred to as a VASI-4. Runways 17 and 35 are equipped with VASI-4s owned by the FAA and the airport, respectively.
- Precision Approach Path Indicators. A PAPI system, which is a more refined version of the VASI system, consists of lights installed in a single row of two or four light units (a PAPI-2 or PAPI-4, respectively). Runways 8 and 26 are equipped with PAPI-4 systems (both owned and maintained by the airport). The Runway 26 PAPI system is currently listed as "out of service indefinitely".
- Runway Lighting. To define the lateral limits of the runway during periods of darkness and restricted visibility conditions, Runway 17-35 is equipped with standard High Intensity Runway Lights (HIRL) and Threshold Lights and Runway 8-26 is equipped with standard Medium Intensity Runway Lights (MIRL). Included at each runway end are threshold Lights which are used to identify the runway threshold.

2.15 COMMUNICATIONS AND WEATHER AIDS

Since there is no Air Traffic Control Tower (ATCT) at EWK, a Unicom radio frequency of 123.0 MHz is used for air traffic advisory in the Newton vicinity. Advisory information from both pilots and personnel at the airport is broadcast on this frequency. Since EWK is a non-towered airfield, it is equipped with a Remote Communications Outlet (RCO) which provides a direct communications link between the pilot at EWK and air traffic control specialists at ICT. The RCO operates on a frequency of 126.55 MHz.

An Automated Weather Observing Station (AWOS) provides around-the-clock, real-time weather information to aircraft in the Newton vicinity. The basic system, an AWOS-1, consists of weather sensors to measure wind speed and direction, temperature, dew point, pressure, precipitation, visibility, cloud height, and density altitude. In addition to the basic system, there are two upgrades: An AWOS-2 adds a visibility sensor and an AWOS-3 adds a cloud height reader. EWK is equipped with an AWOS-3 which is co-located with the glideslope antenna and is depicted in **Figure 2-7**.

Figure 2-7. AWOS-3



Lastly, the airport's primary lighted wind cone, located between the east T-hangar (Building No. 1-20) and Taxiway E, provides a visual indication of wind direction and strength.

2.16 AIRFIELD FACILITIES

EWK's airfield is comprised of two intersecting runways, a main aircraft parking apron, and a variety of aircraft hangars and buildings. A series of taxiways (including a full parallel taxiway for each runway) provide access between the runways and the aircraft parking/hangar areas. These facilities are described in the following paragraphs and depicted in **Figure 2-8**.

Figure 2-8: Current Airfield Layout (Early 2009)



RUNWAYS

Runway 17-35 is orientated in a north-south direction and serves as the primary runway. Runway 8-26 is the secondary or crosswind runway and is orientated in an east-west direction.

Runway 17-35 was originally constructed in 1944 with a 10" thick concrete pavement section to a length of 7,003' and a width of 300'. The runway was reconstructed in 1978 with the center 100' overlaid with asphalt pavement. The remaining outboard 100' of existing concrete pavement on both sides of the runway has been abandoned in place.

In 2002, the runway was rehabilitated with a 2" thick asphalt mill and overlay bringing the total asphalt overlay thickness to 7" at the center and 5" near the runway edges. As part of that project, precision runway markings for Runway 17 and non-precision markings for Runway 35 were installed. The runway pavement section provides aircraft weight bearing capabilities of 50,000 pounds single wheel, 75,000 pounds dual wheel, and 135,000 pounds dual tandem wheel.

To assess the condition of the runway, EWK conducted a pavement condition index (PCI) survey in 2008. One of the products of the survey was the creation of an industry-standard PCI Map which rates airfield pavements on a scale of 0 to 100 with 0 representing complete runway pavement failure and 100 representing new construction. According to the 2008 PCI Map, which is included in **Appendix A** of this Master Plan Update report, Runway 17-35 has an average PCI rating of 66 which reflects a pavement in fair condition and in need of rehabilitation.

This survey also documented significant pavement distresses at several locations along the runway. At these locations the underlying concrete pavement has created "blow ups" at the concrete joints causing the damage to asphalt pavement and creating a debris hazard to aircraft.

In light of this pavement survey, a more in-depth runway pavement study will be performed in 2011 to assess the need to rehabilitate or reconstruct Runway 17-35. This study will include non-destructive testing and structural evaluation of the runway pavement to develop repair alternatives The results of this study will be incorporated into the Master Plan Update.

Runway 8-26 was constructed in 1986 with a length of 3,499' and a width of 75'. The runway was reconstructed in 2004 to its present length of 3,501' and with of 60'. The runway has a weight bearing capacity of 13,000 pounds single wheel. As part of the 2004 project, basic runway pavement markings were installed. According to the 2008 PCI Map, Runway 8-26 has a PCI rating of 90 which reflects pavement in good to very good condition.

TAXIWAYS

EWK has five asphalt Taxiways (A, B, C, D, and E). Taxiway E is the parallel taxiway to Runway 17-35, and Taxiways A, B, C, and D are connector taxiways between Taxiway E and Runway 17-35. Taxiway A connects to the Runway 35 threshold, Taxiway D connects to the Runway 17 threshold, and Taxiways B and C are midfield connectors. Taxiway C also serves as the parallel taxiway for Runway 8-26. Per the 2008 PCI Map, the taxiways have PCI ratings from 69 to 81.

APRONS

There are twelve general aviation aprons at EWK including one Terminal/FBO Apron and eleven smaller hangar aprons that are accessed via Taxiway E. PCI ratings for each hangar apron are presented on the PCI Map.

The Terminal Apron measures 700' long by 400' wide and is equipped with 32 aircraft tie-down parking positions. The Terminal Apron consists of a 3" thick asphalt surface course underlain by 9.5" of concrete pavement. The majority of the pavement has a PCI rating of 82 with the southernmost portion of the apron rated at 91.

COMPASS CALIBRATION PAD

The aircraft compass calibration pad is located due east of the approach end of Runway 35. The compass calibration pad serves the general aviation aircraft repair businesses at EWK as well as various aircraft repair and manufacturing facilities located in the Wichita area who perform aircraft compass and navigation equipment certification.

AIRCRAFT WASH FACILITY

A self-serve aircraft wash facility is available at EWK. It is the only one of its kind within convenient flight time from the airport. This facility is located west of the T-hangars and is open 24/7.

PERIMETER SECURITY FENCING

Fencing around the entire airport for security, wildlife control, and crop/property delineation does not exist.

AIRCRAFT FUEL FACILITIES

EWK's has three 12,000 gallon underground fuel storage tanks located immediately west of the Electrical Vault. These tanks contain Jet A, 100 LL, and Mogas fuel that is for sale to the public. To dispense fuel to aircraft and vehicles, the airport uses three mobile refueler trucks: one 2,200 gallon Jet A truck, one 1,200 gallon 100 LL truck, and one 1,200 gallon Mogas truck.

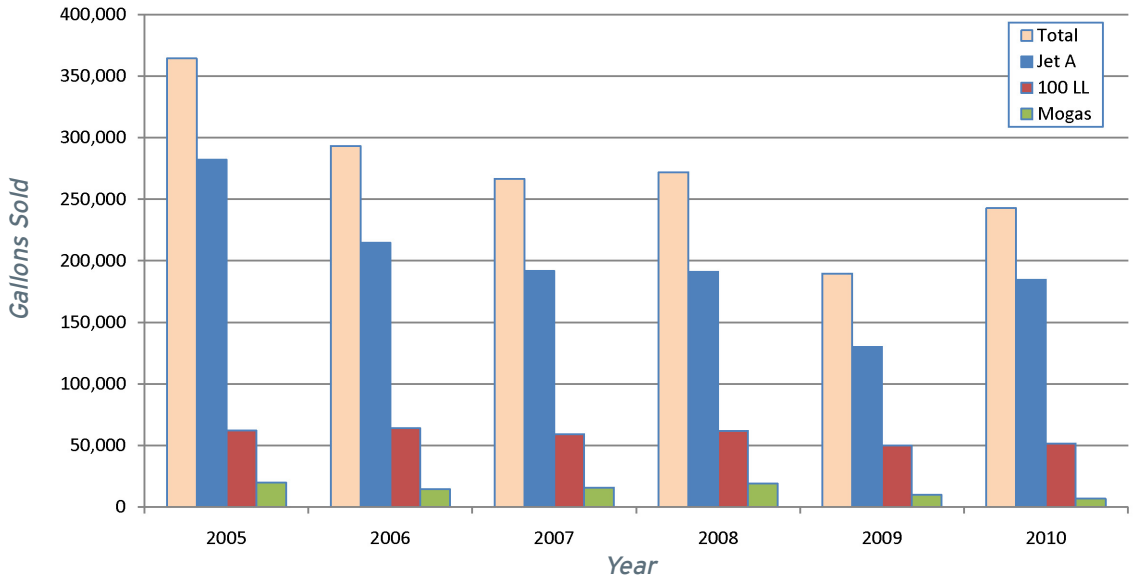
Total fuel sold over the past six years is presented in **Figure 2-9**. Although the 2010 fuel sales are down relative to recent years, it does represent a 28 percent increase over 2009 which may suggest a return to positive air traffic growth.

For the fuel sold in 2010, **Table 2-3** provides a summary of fuel sold by type. On average, EWK distributes over 15,000 gallons of Jet A each month which translates into a complete refilling of its underground storage tank every 24 days.

Table 2-3. 2010 Fuel Sales by Type

Fuel Type	Gallons Sold	Percent of Total
Jet A	184,574	76%
100 LL	51,541	21%
MoGAS	6,639	3%
Total	242,754	100%

Figure 2-9. Recent Fuel Sale Volumes



2.17 AIRPORT UTILITIES

The availability of utilities is an important factor in determining the development potential of and airport. A summary of the existing utilities serving EWK is provided below.

WATER

The City of Newton maintains the on-site water distribution system up to the Harvey County Rural Water District (RWD) No. 1 meter. The RWD system supplies sufficient pressure and quantity of water through a 12" main to meet the standards of the Airport Industrial Park. Water is currently purchased from the RWD for airport use. The individual business meters on the interior distribution system are read by City of Newton Water Department staff and Newton then bills the airport customers accordingly after reconciling the master meter water use as established from the RWD.

In the fall of 2012, EWK will be annexed into the City of Newton. Shortly thereafter, the City of Newton will be providing water to EWK after construction of a new main and purchase of a RWD main to serve the area. As the City of Newton's existing water system pressures are too low to adequately serve this area, the City is currently constructing a booster pump station designed to serve an area generally bounded by Spencer Avenue to the west and the EWK and East Fork Jester Creek to the east. Water distribution system improvements and the booster pump station facility are necessary to provide higher pressures and fire protection to the Kansas Logistic Park, EWK, and the areas on the east side of town. Per the Insurance Services Offices (ISO), the requirements for fire protection are as follows:

- Industrial – 2,500 gallons per minute (gpm) for 2 hour duration
- Commercial – 2,000 gpm for 2 hour duration
- Residential – 1,200 gpm for 2 hour duration

This pump station will provide higher pressures than can be obtained from the pump and water towers currently serving these areas in the City of Newton, including EWK. The booster pump station building (a 14' x 31' structure) will house one jockey pump rated for 105 gpm, three domestic pumps (two when the building is constructed with this project with space for one future pump) each rated for 700 gpm, and one high demand pump rated for 2,500 gpm. Construction of the booster station will be complete by the summer of 2012.

WASTEWATER

The City of Newton maintains the sanitary sewer system on-site and in the 1990's decommissioned the airport lagoons and constructed a sanitary sewer (SS) main to the airport. This new SS main carries sewer discharge via the city collection system through town to the Newton Wastewater Treatment Plant which is located on the southwest side of town at the confluence of Slate and Sand Creeks. This SS main will handle all future flow from Airport Industrial Park expansions. Another SS interceptor line is gradually being extended under Interstate I-135 and up through the Kansas Logistics Park to eventually intercept the airport's SS main along East 1st Street. This SS interceptor line is currently extended to one half mile south of 1st Street on Hillside.

ELECTRIC

Electric power service is provided by Westar Energy, a Western Resources Company through Butler County Rural Electric Cooperative. Service capacity is sufficient to meet all anticipated future demands for the airport industrial park. The airport electrical system is on a dual path system so that a supplier failure from one area can be overcome by automatic re-routing through another area. The airport also independently maintains a back-up generator system on site to power the runway and taxiway lighting system in the event of an area wide power outage. The NAVAIDS, unfortunately, have not been supplied by the FAA with a back-up power system.

NATURAL GAS

Natural gas is provided by Kansas Gas Service Company, an Oneok Company. Like the power

and water supply, sufficient gas volume and pressure exist to supply the anticipated future needs of airport industrial park expansion.

TELEPHONE

Southwestern Bell provides telephone service to EWK. The airport staff maintain back up cellular phones on contract from Alltel for use during a power outage or in the field.

HIGH-SPEED INTERNET SERVICE

Since no commercial Internet Service Provider was willing to provide adequate service, in 2003 the airport designed, implemented and made commercially available to airport industrial park tenants a wireless high speed internet system. Based upon a 2.4GB system with sufficient band width to meet even complex user requirements, the system is marketed at rates lower than otherwise commercially available services in the area as an industrial park marketing tool.

To support the recent airport business park growth discussed in Section 2.19, Airport Business Park, EWK has extended water, electrical, and sanitary sewer utilities to those new buildings and hangars. These utility expansion efforts were constructed using the airport's operating budget.

2.18 AIRPORT INDUSTRIAL PARK

The Newton Airport Industrial Park, located along the west side of Taxiway E, is home to a diverse base of aviation and non-aviation related businesses. At present, there are 10 aviation-related businesses, two non-aviation-related businesses, two conventional hangars owned by individuals, and nearly 100 individual T-hangar leases. Over 70 percent of business conducted by EWK's tenants is aviation-related.

Aviation business activities include flight instruction, airframe and power plant maintenance and repair, award-winning aircraft restoration, new and used aircraft sales, aircraft ferrying and delivery, and composite aircraft components manufacturing.

When the previous Master Plan Update was completed in 2005, there were a total of 24 building and hangars providing over 275,000 square feet of available commercial space. A summary of 2005 building and hangar area by type is presented in **Table 2-4**.

Table 2-4. Airport Industrial Park 2005 Configuration

Category	Square Feet	Percent of Total
Aviation-related Buldings	14,950	5%
Non-avaiation Buildings	33,210	12%
Community Hangars	16,800	6%
Conventional Hangars	135,475	49%
T-Hangars	75,250	27%
Total Square Footage	275,685	100%

Since the previous Master Plan Update, significant growth of the Airport Industrial Park has occurred as a result of positive market pressure. By the end of 2010, the total commercial space grew by 50 percent with nearly all of the additional space coming from aviation-related buildings. **Table 2-5** recaps the growth that has occurred since 2005.

Table 2-5. Recent Building and Hangar Construction since 2005

Category	Square Feet	Percent of Total
Aviation-related Buldings	110,800	80%
Non-avaiation Buildings	14,400	10%
Community Hangars	0	0%
Conventional Hangars	12,500	9%
T-Hangars	0	0%
Total Square Footage	137,700	100%

It is striking to note that the entire 110,800 square feet of additional building space stems from a single tenant - Park Aircraft Technologies Corporation. Park Electrochemical Corp.,

it's parent company, is a global advanced materials company which develops and manufactures high-technology digital and RF/microwave printed circuit materials and advanced composite materials. EWK is the site for it's new Advanced Composite Materials development and manufacturing facility for aircraft structures. In 2007, Park constructed their initial 55,000 square-foot manufacturing and production facility. Then in 2010, they expanded the facility by 43,000 square feet and constructed a separate 12,800 square-foot warehouse building.

Comparing **Tables 2-4 and 2-5**, the increase in total represents a staggering 50 percent increase over 2005. Non-aviation building space grew by 43 percent following construction of Building X and the North Airport Shop Building by the City of Newton. With the addition of EWK's newest tenant Ballard Aviation, conventional hangar space grew by 9 percent. The makeup of today's buildings and hangars (29 in all) in terms of type and square footage is presented in **Table 2-6**. Of the more than 413,000 square feet of building space that exists today, conventional aircraft hangars makeup nearly 40 percent.

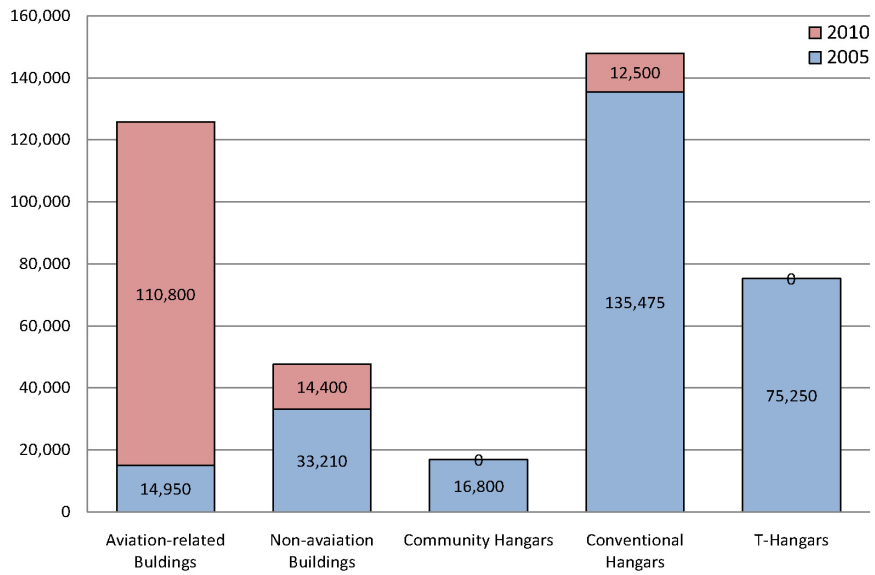
Table 2-6. Airport Business Park Current Configuration

Category	Square Feet	Percent of Total
Aviation-related Buldings	125,750	30%
Non-avaiation Buildings	47,610	12%
Community Hangars	16,800	4%
Conventional Hangars	147,975	36%
T-Hangars	75,250	18%
Total Square Footage	413,385	100%

Figure 2-10 graphic compares 2005 building and hangar area presented **Table 2-4** with that of recent activity summarized in T**able 2-5**.

In addition to their size, EWK's buildings and hangars vary in age, condition, and capacity. As such, additional analysis of facility features and future building and hangar needs will be completed and presented in the **Demand-Capacity and Facility Requirements Chapter**.

Figure 2-10. Comparison of Recent Building and Hangar Growth to 2005 Space



2.19 PROPERTY, LAND USE, AND LOGISTICS PARK DEVELOPMENT

Of the 800 acres of land the airport currently occupies, more than 275 acres is actively farmed. The airport uses closely supervised neighboring contract farmers for sharecropping the cash grain crops and the airport staff and equipment directly care for areas baled for additional revenue. Agricultural revenue accounts for more than 15% of the annual airport revenue.

A majority of the land surrounding EWK is undeveloped agricultural property with a few scattered rural residences. Existing businesses in the area are located on EWK property and are subject to airport lease terms and conditions developed by the Airport Commission.

EWK is entirely within unincorporated Harvey County, however, the airport and surrounding area will be annexed into the City of Newton in the near future. The County zoning for the EWK is currently Industrial Development and Service (IDS) and the surrounding area is zoned Agricultural (A-1). The ReNewton Plan, which is the City's updated Comprehensive Plan, identifies the area surrounding the EWK as a future growth area.

Newton is centrally located along the "North American SuperCorridor" also known as the "NAFTA Superhighway." This major highway corridor stretches from Canada to Mexico and provides an opportunity for an inland Foreign Trade Zone. Due to the proximity of this corridor, two Class I railroads in the BNSF and Union Pacific as well as the Watco short line, Newton's location provides significant intermodal and multimodal opportunities for a variety of businesses and industries to quickly and efficiently transport their products to the market place.

Due to these advantages, the City of Newton and Harvey County jointly developed the new Kansas Logistics Park. The Logistics Park is located southwest of the airport near the convergence of US 50 and I-135. The goal of the 400-acre Logistics Park is to facilitate growth in the wind industry by providing the facilities and infrastructure necessary to overcome the high costs of manufacturing and logistics.

The City is extending sewer and water service to the Logistics Park at an estimated cost of $3.5 million for sewer and $500,000 for water. The City is also financing road improvements at an estimated cost of $5.2 million. The County is financing land acquisition and drainage improvements. A portion of these costs will be covered through a $2.4 million economic development grant.

Tindall Corporation, the first tenant in the Logistics Park, is constructing a new $66 million dollar, 200,000 square foot, manufacturing facility to assemble the company's new concrete wind tower base system. This base allows a traditional wind turbine tower to be extended an additional 90 feet into higher wind currents. Construction of the facility is expected to begin in the third quarter of 2012. The facility will initially employ 200 people and is expected to employ 400 people by 2014. According to the Harvey County Economic Development Council, in addition to Tindall, numerous other companies have expressed interest in locating to the Logistics Park.

Factors influencing future growth near EWK include the imminent annexation by the City of Newton in 2012, extension of municipal sewer and water service, road upgrades as well as proximity to the Logistics Park. Due to these factors, the land surrounding the airport will be ideal for assembly, manufacturing, and distribution facilities as well as a variety of typical aviation-related businesses. Through the Airport Master Plan Update, the Airport Commission will work with the City of Newton to develop appropriate land use guidelines for development surrounding the airport to address compatibility with EWK's existing and future operations.

2.20 SOCIOECONOMIC TRENDS

Socioeconomic trends relate to population and economic trends. Population trends include characteristics like age, migration rates, and education. Economic trends include labor statistics, unemployment, per capita income, and industry employment distributions. Unless indicated otherwise, the information presented within this section was obtained from the ReNewton Plan.

2.20.1 POPULATION TRENDS

The City of Newton, City of North Newton, Harvey County, and the Wichita MSA area have experienced positive growth over the last several decades. Population statistics of these three entities are as follows:

CITY OF NEWTON POPULATION

- The current population is estimated at 19,132 persons per the 2010 Census.
- The 2010 Census indicates that the City grew at nearly 11.3 percent from 2000-2010.
- The population grew 2.9 percent over the 1990-2000 decade.
- The population grew 2.3 percent over the 1980-1990 decade.

CITY OF NORTH NEWTON POPULATION

- The current population is estimated at 1,830 persons per the 2010 Census.
- The 2010 Census indicates that the City grew at nearly 20.2 percent since 2000.
- The population grew 20.6 percent over the 1990-2000 decade
- The population grew 3.3 percent over the 1980-1990 decade

When combined, the City of Newton and North Newton grew 1.2 percent annually over the last decade.

HARVEY COUNTY POPULATION

- The current population is estimated at 34,684 persons.
- Current 2010 Census Bureau data for 2000-2010 indicate that the county is growing at 5.5 percent.
- The population grew 5.9 percent over the 1990-2000 decade
- The population grew 1.6 percent over the 1980-1990 decade

A noteworthy trend occurring during the decade of the 2000s is the increasing percentage of Harvey County's total population residing in the Newton-North Newton community. The combined total population of Newton and North Newton equaled 56.9% of the total Harvey County population [in 2000], and by 2008 the percentage had grown to 58.5%.

While this points to the Newton community's stimulus on county population, it is not surprising given that the City of Newton is the County Seat. Such a heavy concentration of population at the county seat is typical for most Kansas counties.

According to the 2008 Harvey County Transportation Book prepared by the Harvey County Economic Development Council, population growth between 2000 to 2005 for Harvey County (2.6 percent) was similar to the State of Kansas (2.2 percent). Over this same period, the population growth of the City of Newton (5.6 percent) was approximately twice that of Harvey County and similar to the population growth rate of the United States (5.4 percent).

WICHITA MSA POPULATION

The Wichita Metropolitan Statistical Area (MSA) is the largest metropolitan area anchored in the State of Kansas. This MSA consists of Butler, Harvey, Sedgwick, and Sumner counties with Sedgwick being the central county of the MSA. Historically, Harvey County and City of Newton populations have represented about 6 percent and 3 percent of the Wichita MSA population, respectively. The Wichita MSA population is estimated at 614,371 persons per the 2010 Census.

According to the ReNewton Plan and the 2009 Kansas Statistical Abstract prepared by the University of Kansas, the Wichita MSA population increased 9.4 percent increase from 1980-1990 and increase 11.8 percent from 1990-2000. Based on population growth for the years 2000 to 2008, the Wichita MSA grew by nearly 33,000 persons. Using this growth rate, the Wichita MSA population is estimated to contain 614,500 persons in 2010 which equals a 7.6 percent growth rate for the 2000-2010 decade.

URBANIZATION TREND

Lastly, a departing note on population from the 2008 Harvey County Transportation Book, is worth mentioning. According to this document:

> *...the State of Kansas is becoming increasingly "urbanized" as its citizens are gravitating towards metropolitan [areas] However, many Kansans prefer to live on the periphery of metropolitan centers while enjoying urban occupational opportunities and cultural and entertainment amenities. Living in smaller communities on the outskirts enables many to benefit from the best of both rural and urban lifestyles. This is generating tremendous economic development opportunities for the State.*
>
> *This phenomenon has occurred and continues to occur in Johnson, Wyandotte, and Douglas Counties near metropolitan Kansas City, Missouri. It is now occurring in Sedgwick, Harvey and their adjacent counties near Wichita, the largest city...in Kansas. In part, this explains the positive historical population growth trends for Newton, because Harvey County is one of four counties included in the Wichita [MSA].*

EDUCATION

When competing in the knowledge-based economy, education levels of the employee base are becoming ever more important. It appears that the Newton and North Newton communities recognize this as the number of people (25 years old and above) with associate's, bachelor's, and master's degrees has grown.

From 1990 to 2000, the number of persons with associate's degrees has increased nearly 32 percent, the number holding bachelor's degree is up almost 6 percent, and the number of individuals with a master's/professional/ doctorate degree has increased by more than 53 percent. The data clearly suggests that the citizens of Newton and North Newton are investing in their education beyond a high school diploma.

2.20.2 ECONOMIC TRENDS

DEVELOPMENT ACTIVITY

According to data provided by the Harvey County Economic Development Council, Inc., the Newton area has experienced positive growth over the past five years. Major development that has occurred since 2006 is provided in **Table 2-7**. From this data, over 800,000 square feet of new office, manufacturing, and commercial space has been added to the building inventory. Associated with these major development projects is the creation of more than 1,300 new jobs which represents an annual average of 263 new jobs over the last five years.

INCOME LEVELS

Income levels have been on the rise within the City of Newton and the City of North Newton. When combining these populations, we see that Median Family Income and Per Capita Income have increased 4.3 and 5.4 percent annually, respectively, from 1990 to 2000.

ECONOMIC IMPACT OF WICHITA MSA

Of all the factors and components of growth that impact Newton, inclusion in the Wichita MSA is by far the most important. Jobs, economic development, and educational and training opportunities, to mention but a few, all flow primarily from association with the MSA. Harvey County is classified as an outlying county, which means one of the following circumstances exists: (1) one-quarter or more

Table 2-7. Recent Major Development Projects, 2006-2010

Company	Building Size (sq. ft.)	New Jobs Created	Community
2010			
Tindall Corp.	150,000	400	Newton
Kansas Electric	30,000	25	Newton/County
2009			
Ballard Aviation	14,000	6	Airport
Horizon Milling	30,000	30	Newton
Silverstone, Inc.	50,000	8	Hesston
Southwest & Associates, Inc.	3,600	2	Burrton
USA 800	3,866	30	Halstead
Park Aircraft Technologies Corp.	38,000	30	Airport
2008			
Intrust Bank Data Center	9,600	5	Newton
AGCO Corp.	--	300	Hesston
Forest Products	--	8	Newton
Future Foam	14,500	6	Newton/County
Schaben	25,000	8	Newton/County
Silverstone	12,000	8	Hesston
2007			
Bunting Magnetics Co.	11,500	30	Newton
Excel Industries	55,000	15	Hesston
Full Vision, Inc.	--	5	Newton
Kustom Karriers	--	18	Newton
Legg Company	30,176	4	Halstead
Mackey & Sons, Inc.	5,000	10	Newton
Martin Machine & Welding	15,000	3	Halstead
Park Aerospace Materials	55,000	60	Airport
Prestressed Concrete	--	5	Newton
Southwest & Associates	--	17	Burrton
Standridge Color Corporation	40,000	2	Newton
VAE Nortrak	5,000	26	Newton
Healy Biodiesel	--	2	Sedgwick
Enertech	--	8	Newton
AGCO Corp.	--	100	Hesston
Anesthesia Billing	26,500	2	Newton
2006			
Desert Steel	-	15	Newton
ExTech	10,000	7	Airport
Sand Creek Station		10	Newton
USA 800	-	40	Newton
Big A Supply	12,000	4	Newton
Hardwood Cabinets	50,000	26	Burrton
Mackey & Sons	10,000	33	Newton
Newton Medical Center	75,000		Newton
Sims Enterprises	4,000		Newton
Unruh Fab, Inc.	20,000	8	Sedgwick
Five Year Total	**804,742**	**1,316**	- -
Average per Year	**160,948**	**263**	- -

of the employed residents work in Sedgwick County, or (2) one-quarter or more of the employment is composed of workers who live in Sedgwick County. This is an important feature to mention as Sedgwick is the central county of the Wichita MSA.

Highlights of recent community development trends from the Harvey County Transportation Book are included in **Appendix A** for reference.

2.21 AIRPORT DRAINAGE

2.21.1 DRAINAGE ISSUE

In early 2010, property owners located southwest of the airport expressed concerns regarding their perceived increases in stormwater runoff and soil erosion. These properties are located west of Oliver Road and north of 1st Street and downstream of the airport. In response, the city tasked HNTB to assess current airport drainage patterns and storm water runoff volumes to be able to determine the extent of impacts of future development with respect to storm water and soil erosion concerns.

There has not been a history of flooding problems on the airfield portion of the airport, and therefore, it will not be the primary focus of this drainage assessment. However, as detailed in Section 2.18, there has been significant development of the Airport Industrial Park and this may be contributing to storm water runoff. Therefore, the current versus proposed Airport Industrial Park development will be the focus of this airport drainage analysis effort.

2.21.2 VISUAL SITE ASSESSMENT

On November 19, 2010 HNTB drainage engineers conducted a visual inspection of various areas surrounding the airport. The main area investigated was immediately west of Oliver Road and north of 1st Street. Photographs of key features and stormwater culverts and other structures were taken. Based on the information collected during the site visit, subsequent hydraulic analysis, and reviews of city-provided LIDAR and the airport's 2008 Storm Water Pollution Prevention Plan, an overview of the airport drainage conditions has been generated.

The airport, which is at the upper end of several watersheds, drains into to two primary drainage areas: the Sand Creek Drainage area to the north and the Jester Creek Drainage area to the south. The airport's crosswind Runway 8-26 serves as the north/south division line between the two drainage areas. The Jester Creek Drainage area is further subdivided into the East and West Forks with the airport's primary Runway 17-35 acting as the divide between the two. The airport's property, as is typical with most airports, is very flat and drains in several directions through a series of swales, culverts, and enclosed systems. **Figure 2-11** depicts the existing airport drainage areas.

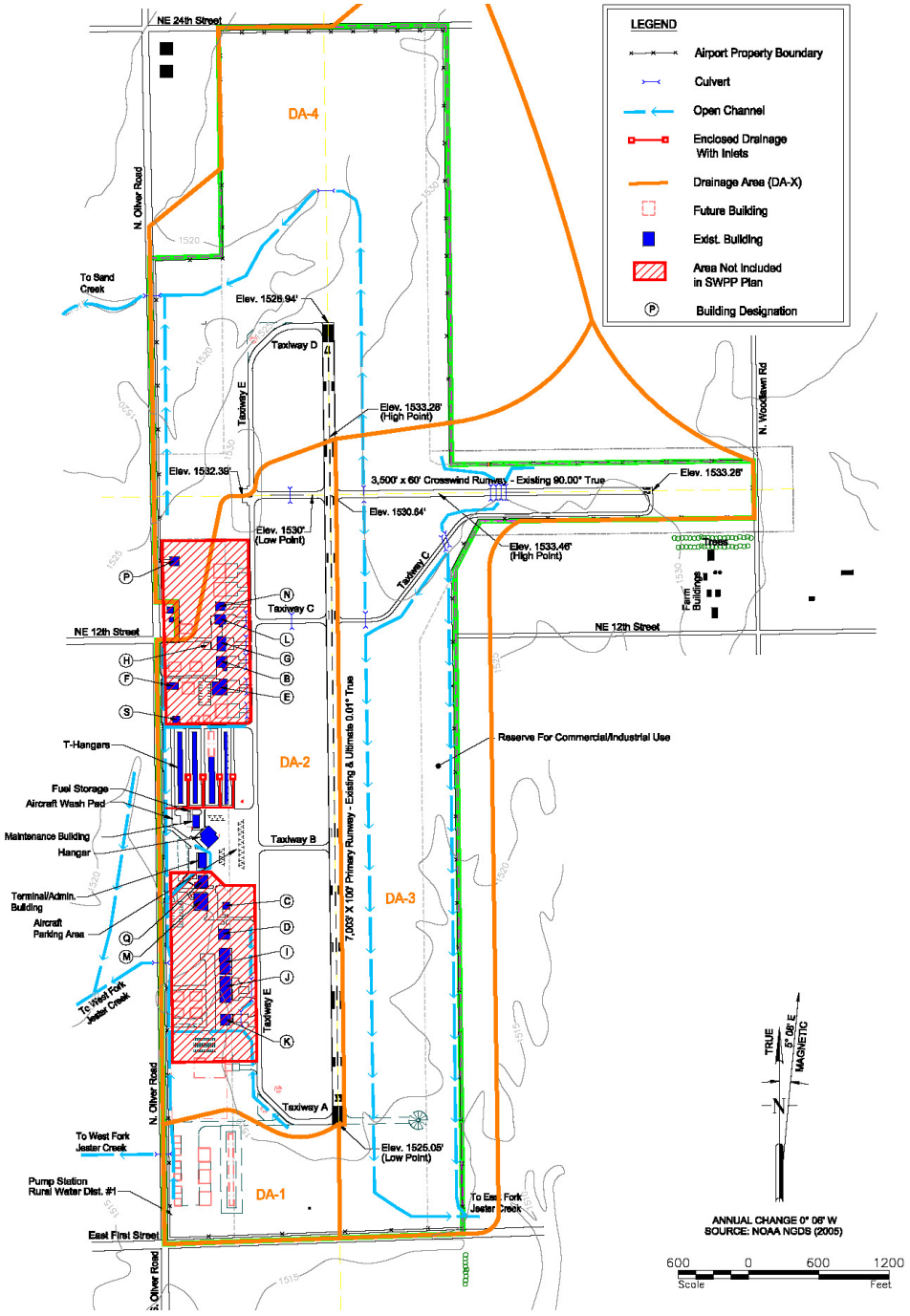
For the portion of the airport that drains into the West Fork of Jester Creek, storm water leaving airport property passes through two culverts located under Oliver Road, a 36" x 24" x 40' corrugated steel-metal arch (CSMAC), and a 5' x 2' x 29' reinforced concrete box (RCB). Based on a hydraulic analysis of these two culverts, they are undersized for a 5-year design storm.

Downstream, storm water from the two culverts merge into a single, normally dry channel before entering a 6' x 4' x 35' RCB culvert under 1st Street. Based on visual inspection, the channel is likely reacting to changes in the watershed upstream as evidenced by soil erosion. Lastly, the existing RCB under 1st Street is barely adequate to protect the roadway.

2.21.3 FUTURE ANALYSIS AND POTENTIAL RECOMMENDATIONS

Airport storm water runoff will continue to be a concern for both the city and downstream property owners as on-airport development continues. As part of the alternatives development/evaluation portion

Figure 2-11. Site Map with Drainage Areas and Storm Water Flow



Source: HNTB

of this Master Plan Update, several airport development concepts will be developed and evaluated for their on- and off-airport storm water runoff impacts. From this evaluation, recommendations will be made that could minimize off-airport storm water and erosion impacts. Depending upon what the proposed airport development looks like, these recommendations may include:

- Upsizing of existing culverts and RCB,
- Incorporation of design elements that limit discharge and/or volume increases downstream into all current and proposed airport projects,
- Updating of the 2008 Airport Storm Water Pollution Prevention Plan, and/or
- Preparation of a formal Airport Storm Water Master Plan that would be in addition to this document (refer to **Appendix H)**.

Lastly, in concert with future on- and off-airport land use and airport industrial park planning, it may be appropriate to identify areas that should be considered for development and those areas that should remain undeveloped due to storm water and other environmental concerns.

Beyond the storm water quantity and quality analysis, this Master Plan Update will coordinate with and seek comment from appropriate Federal, State, and local environmental agencies regarding proposed airport development. A detailed analysis of proposed airport development and the potential impact to the environment is included in the **Environmental Overview Chapter**.

Chapter Three
SUSTAINABILITY

3.1 EWK SUSTAINABILITY MISSION STATEMENT

The Newton City-County Airport (EWK) Master Plan Advisory Committee (PAC), comprised of Airport Commissioners, Public Officials, City and County staff and airport users helped to identify elements of sustainability that were most important and applicable to EWK. During a sustainability work session, the consultant team led the PAC participants through an exercise to identify the following mission statement:

The Newton City/County Airport will:

- be a leader in sustainable airport practices;
- balance present and future needs;
- maximize operational efficiency;
- anticipate and take advantage of emerging economic, technological, environmental and social trends;
- leverage all potential funding sources;
- support positive economic growth; and
- partner with local schools and civic groups.

Triple Bottom Line

Although the PAC had a broad definition of sustainability, which is outlined in the vision statement, all agreed that any successful operation needs to have the ability to be nimble. The organization must also anticipate changes from economic, social or environmental factors. This is commonly referred to as the "Triple Bottom Line:"

- maintain economic growth;
- reduce environmental impacts; and
- advance social progress that recognizes the needs of all airport stakeholders.

Communication

EWK's Sustainability Mission Statement and associated goals, objectives and actions will be formally communicated to the airport's employees, tenants, users and the public through the following:

- Informational signs at strategic locations throughout the airport;
- the EWK web site; and
- an annual Sustainability Progress report to track and document the Plan's progress.

3.2 FAA SUSTAINABLE MASTER PLAN PILOT PROGRAM

EWK was selected as a pilot project by the FAA as one of 10 airports around the country for the development of an airport sustainability master plan. The 10 airports are listed in **Table 3-1**. This pilot program is intended to evaluate ways to make sustainability a core objective for future airport mater plans.

Traditional FAA-funded airport master plans address each facility's impact on the natural environment. The pilot program is intended to expand beyond typical environmental impacts to address a wider spectrum of sustainability issues and opportunities to be considered throughout the master plan process. In this way, sustainability becomes a core theme for the master plan that touches every element and serves as the framework for the development of the final plan recommendations.

Table 3-1. Airports Participating in FAA Sustainable Master Plan Pilot Program

Airport	State
Denver International Airport	Colorado
Fresno Yosemite International Airport	California
Hartsfield-Jackson Atlanta International Airport	Georgia
Nashville International Airport	Tennessee
Newark Liberty International Airport	New Jersey
Newport News/Williamsburg International Airport	Virginia
Newton City-County Airport	Kansas
Outagamie County Regional Airport	Wisconisn
Renton Municipal Airport	Washington
Teterboro Airport	New Jersey

3.3 WHAT IS SUSTAINABILITY?

The United Nations convened the Brundtland Commission to address the growing concern about the deterioration of natural resources. This commission defined sustainability as: "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*."

Based on this definition, a sustainable master plan should carefully evaluate how programs and initiatives impact existing and future users and also consider the wider impact on the surrounding community and natural environment.

3.4 WHY BE SUSTAINABLE?

The key benefit of addressing sustainability within the airport master plan is that it allows airport operators and users to think holistically about how the airport functions now and in the future. Along with improving the community and the natural environment, sustainability can make good business sense. Airports that have adopted sustainable practices have found substantial benefits including but not limited to the following:

- greater utilization of assets;
- reduced life cycle costs
- reduced operating costs;
- improved work environment for employees;
- reduced energy consumption;
- reduced waste;
- reduced emissions;
- improved water quality; and
- positive community relationships.

3.5 HOW DOES SUSTAINABILITY RELATE TO EWK?

Airports large and small have the ability to implement a sustainability master plan based on the needs and resources of each individual facility. Although the FAA does not mandate sustainability to be part of the airport master

plan, requirements may change in the future. Through the sustainability master plan pilot program, the FAA will determine the elements that work best for a wide range of airports to consider. As with other federal agencies and programs, new federal, state and local directives may require projects to incorporate sustainability principles. Often, federally funded projects require sustainable practices, such as LEED® certification.

The ReNewton 2030 Comprehensive Plan (ReNewton Plan), encourages the City to take a leading role in promoting sustainable practices. Throughout the ReNewton Plan process, the community identified sustainability as a core value that will help guide future City policies and initiatives. Community leaders also identified opportunities to leverage future investment in the Kansas Logistics Park. Tindall Corporation, the park's first tenant, is constructing a large manufacturing facility to assemble the company's patented concrete wind tower base system. This base allows a traditional wind turbine tower to be extended an additional 90 feet into higher wind currents. The City and County will build on this momentum by making sustainability a significant part of the branding and marketing to attract future "Green" companies and industries to area.

The key reason for addressing sustainability within the EWK master plan is that the Airport Commission believes it is a strategic investment to leverage the facility's full potential. Although EWK has not formally undertaken a sustainability program to date, many existing practices fall within the sustainability realm including but not limited to use of recycled materials for construction, use of available local materials and use of recycled stormwater. As a core part of the master plan, all identified sustainable initiatives and activities will be documented and tracked through a formal process.

3.6 SUSTAINABILITY SUCCESS MEASURES

Like any initiative, sustainability measures need to be formally documented and tracked to measure progress. Today, the most common set of sustainability metrics include a rating system developed by the United States Green Building Council (USGBC). The Leadership in Environmental Design (LEED®) program was developed to quantify sustainability measures. LEED® provides four levels of certification: Platinum, Gold, Silver and Certified. Each level is reached by obtaining points from a LEED® rating system.

Although LEED® is often associated with buildings, many components can be applied to airports and overall site design and planning for airports. The limitations of LEED® is that it does not address airport operations and administration. In addition to LEED®, several other recognized sustainability measurement systems include:

- Energy Star®;
- Whole Building Design Guide;
- Green Globes; and
- Sustainable Aviation Guidance Alliance (SAGA)

SAGA is a broad volunteer coalition of aviation interests formed in 2008 to assist airport operators of all sizes in planning, implementing, and maintaining a sustainability program. SAGA has undertaken an effort to consolidate existing guidelines and practices into a comprehensive, searchable resource that can be tailored to the unique requirements of individual airports of all sizes and in regions throughout the United States. The SAGA Resource Guide that identifies sustainable practices, some of which have LEED® applicability.

Selected Success Measures for EWK

A sample of applicable success measures were collected and presented to the PAC for consideration and discussion. Applicable SAGA and LEED® success measures were

used as a starting point for discussion. Some of these were measures were not applicable due to the EWK's size, operations, amenities and available infrastructure. PAC members clearly articulated that the selected success measures should be scaled appropriately for EWK. It was noted that EWK was one of the smallest airports in the Sustainability Pilot Program. However, PAC members also noted that EWK should be a leader in sustainability for similar-sized airports throughout the Country. Based on input from the PAC work session, applicable sustainability concepts and success measures were selected, refined and formulated into goals, objectives and actions.

3.7 SUSTAINABILITY GOALS, OBJECTIVES AND ACTIONS

The sustainability goals, objectives and actions provide the framework that will help lead the airport into the future in a more sustainable manner. This framework was developed based on existing resources including SAGA, LEED®, the City's Stormwater BMP manual, an analysis of existing airport practices and input from the PAC.

The EWK sustainability goals, objectives and actions are organized under the following categories:

1. Administration
2. Stormwater Management
3. Water Efficiency
4. Ground Transportation
5. Land Use
6. Energy Efficiency
7. Operations and Maintenance
8. Construction
9. Community Outreach

Future EWK projects, procedures and policies will be evaluated based on their alignment with the sustainability goals, objectives and actions outlined within this chapter. For the purposes of this plan, goals, objectives and actions are defined on the following page:

Goals: Provide a broad aspirational directive for each sustainability category intended to help the airport to achieve the sustainability mission statement.

* **Objectives:** Define general approaches, initiatives or strategies intended to help achieve each goal.

> **Actions:** Provide a specific direction for achieving each objective. Each action is assigned a general time line for completion:

- Short-Term: 1 to 5 years
- Mid-Term: 5 to 10 years
- Long-Term: 10+ years

Goal 1 Administration: EWK will set the standard sustainable practices for similar airports across the country by integrating sustainable approaches and practices into day-to-day operations.

* **Objective 1.1:** Inventory existing airport practices and operations to develop a baseline for comparing progress toward achieving sustainability objectives and actions.

> **Action 1.1.1:** Inventory electrical usage, water usage, solid waste volumes, stormwater discharges, maintenance schedules and procurement practices.

- Time Frame: Short-Term

> **Action 1.1.2:** Track up-front and overall life-cycle maintenance costs for airport facilities, vehicles, equipment and other infrastructure.

- Time Frame: Short-Term

> **Action 1.1.3:** Develop an annual Sustainability Report that summarizes past and present airport practices and tracks progress toward meeting key sustainability goals, objectives and actions. This report will be provided to the Airport Commission for review and comment. Upon approval by the Commission, the report will be provided to airport tenants, users and the community-

at-large through the airport and City web sites.

- Time Frame: Mid-Term

* **Objective 1.2:** Make sustainability a significant part of future airport branding and marketing.

> **Action 1.2.2**: Proactively work with the Newton Chamber of Commerce and the Harvey County Economic Development Authority continue to attract "Green" businesses and industries.

- Time Frame: Short-Term

> **Action 1.2.1**: Integrate sustainability into airport marketing initiatives.

- Time Frame: Short-Term

* **Objective 1.3:** Effectively communicate all airport sustainability initiatives to airport employees, tenants, users and the community.

> **Action 1.3.1**: Post the Sustainability Mission Statement at strategic locations throughout the airport including but not limited to the lobby of the administration building, airport staff offices, common areas, pilot lounge areas, and the airport conference room;

- Time Frame: Short-Term

> **Action 1.3.2**: Develop a communication plan to highlight airport sustainability projects and initiatives. Use a variety of medium to reach employees, tenants, users and the public including but not limited to information signs, the airport web site and an annual Sustainability Progress Report.

- Time Frame: Short-Term

> **Action 1.3.3**: Provide sustainability training and awareness presentations for employees and airport tenants.

- Time Frame: Short-Term

> **Action 1.3.4**: Identify and apply for national, state, and local grants to support sustainability initiatives.

- Time Frame: Short-Term

* **Objective 1.4:** Integrate sustainable practices for airport meetings.

> **Action 1.4.1:** When practical, distribute documents including but not limited to airport staff reports, meeting minutes, memos, electronically through e-mail or the airport web site.

- Time Frame: Short-Term

> **Action 1.4.2:** When hard-copy documents are necessary, use recycled-content office paper and materials.

- Time Frame: Short-Term

* **Objective 1.5:** Identify sustainable goals and expectations in future Request for Qualifications (RFQs) and Request for Proposals (RFPs) for airport projects.

> **Action 1.5.1:** Require LEED® accredited professionals at all levels of planning and design.

- Time Frame: Short-Term

Goal 2: Stormwater Management: Improve onsite stormwater management practices including increasing infiltration, reducing impervious surface coverage, and eliminating contaminants.

* **Objective 2.1:** All new airport construction projects will exceed the guidelines outlined in the City of Newton's Best Management Practices (BMP) Manual for construction and post construction.

> **Action 2.1.1**: Update the airport Stormwater Management Plan to reflect the Master Plan goals, objectives and actions.

- Time Frame: Short-Term

> **Action 2.1.2**: Future airport construction projects and renovations will be designed to ensure no net increase in rate and quantity of stormwater runoff.

- Time Frame: Short-Term

> **Action 2.1.3**: Identify opportunities to use new stormwater management technologies and methods to demonstrate practical BMP

applications on airport property.

- Time Frame: Short-Term

› Action 2.1.4: Identify opportunities to install permeable pavement including but not limited to porous asphalt, porous concrete and cobble pavers to reduce stormwater runoff. Pervious pavement options are well suited for areas not exposed to high volumes of traffic or heavy equipment.

- Time Frame: Mid-Term

› Action 2.1.5: Where practical, treat and reuse and/or recycle stormwater on site.

- Time Frame: Mid-Term

* Objective 2.2: Stormwater BMPs on airport property will be designed to avoid standing water that my attract birds and other wildlife.

› Action 2.2.1: Incorporate underground infiltration systems such as dry wells or infiltrated drain pipe.

- Time Frame: Short-Term

Goal 3 Water Efficiency: Maximize water efficiency within buildings and airport property to reduce the burden on the municipal/county water supply.

* Objective 3.1: Implement targeted strategies intended to significantly reduce water use without negatively affecting existing day-to-day airport operations.

› Action 3.1.1: Educate airport employees, tenants, users and others about water saving tips such as turning off faucets while lathering.

- Time Frame: Short-Term

› Action 3.1.2: Identify opportunities to collect and use reclaimed graywater and/or harvested stormwater for landscape irrigation, aircraft wash and other non-potable needs.

- Time Frame: Mid-Term

› Action 3.1.3: Install automatic sensors on toilets, urinals and faucets to conserve water.

- Time Frame: Mid-Term

› Action 3.1.4: Install high efficiency plumbing fixtures to reduce water usage and wastewater volumes.

- Time Frame: Mid-Term

Goal 4 Ground Transportation: Help encourage reduced emissions and implement the ReNewton Plan vision of "Innovations in Transportation" by providing opportunities for multiple transportation modes.

* Objective 4.1: Identify ways to encourage fuel efficient cars, bicycles and walking.

› Action 4.1.1: Provide a system of sidewalks, pedestrian paths and trails to connect uses throughout the airport. Identify opportunities to connect to the City/County trail system.

- Time Frame: Long-Term

› Action 4.1.2: Provide incentives to airport staff, tenants, users and the public to encourage the usage of alternative fuel vehicles.

- Time Frame: Short-Term

› Action 4.1.3: Provide preferred parking for fuel-efficient vehicles.

- Time Frame: Short-Term

› Action 4.1.4: Encourage Hertz Rent-a-Car to provide access to its "Green Collection" of fuel efficient cars.

- Time Frame: Short-Term

› Action 4.1.5: Ensure day-to-day activities do not require significant amounts of vehicle idling.

- Time Frame: Short-Term

Goal 5 Land Use: Reduce the environmental impact from airport operations, airport development and surrounding uses.

* Objective 5.1: Develop airport property for purposes that support airport activities or, at a minimum, are compatible with airport activities.

› Action 5.1.1: Proactively work with the City and County to promote

compatible land uses for properties adjacent to EWK. Provide incentives to attract "Green" businesses and industries.

- Time Frame: Short-Term

> **Action 5.1.2**: Plan for future expansion to reduce development footprint and preserve natural systems.

- Time Frame: Long-Term

* **Objective 5.2:** Minimize wildlife hazards at the airport.

> **Action 5.2.1**: Work cooperatively with the Kansas Department of Wildlife and Parks (KDWP) and other agencies to ensure that wildlife hazards are addressed to ensure safe airport operations.

- Time Frame: Short-Term

Goal 6 Energy Efficiency: Maximize energy efficiency through airport operations, building design and systems.

* **Objective 6.1:** Implement energy efficiency standards to promote efficiency and long-term cost savings.

> **Action 6.1.1**: New airport and operated buildings will comply with ASHRAE/IESNA Standard 90.1.

- Time Frame: Long-Term

> **Action 6.1.2**: Future noninsulated airport buildings such as T-Hangers will incorporate applicable energy efficient standards.

- Time Frame: Long-Term

> **Action 6.1.3**: Install occupancy sensors to turn off lighting when rooms are unoccupied.

- Time Frame: Short-Term

> **Action 6.1.4**: Incorporate skylighting to increase natural daylight and reduce heating costs during the winter. For hangars, skylighting design will need to account for liability issues associated with severe weather including hail storms that may damage planes and associated equipment.

- Time Frame: Long-Term

> **Action 6.1.5**: Use High Pressure Sodium (HPS) lamps instead of Metal Halide (MH) lamps.

- Time Frame: Short-Term

* **Objective 6.2:** Reduce energy consumption through use of alternative fuel options for vehicles and aircraft.

> **Action 6.2.1**: When deemed cost effective, consider conversion of airport fleet vehicles to alternative fuels.

- Time Frame: Mid-Term

> **Action 6.2.2**: Recognizing that the airport currently receives a significant portion of its revenue from aircraft fuel sales, evaluate evolving aircraft fuel technologies and consider alternatives when the it is deemed to be cost effective and makes fiscal sense for the airport.

- Time Frame: Long-Term

Goal 7 Operations and Maintenance: Use sustainability principles to maximize operational efficiency, reduce long-term maintenance costs and to improve the environment.

* **Objective 7.1:** Integrate sustainability into every day airport operation and maintenance practices.

> **Action 7.1.1**: Develop an operation and maintenance manual that outlines required schedules and procedures to maintain sustainable performances.

- Time Frame: Short-Term

> **Action 7.1.2**: Purchase recycled content materials including but not limited to toilet paper, paper towels, cups, garbage bags, etc.

- Time Frame: Short-Term

> **Action 7.1.3**: Consider use of a cloth toweling system or electric hand dryer in airport bathrooms.

- Time Frame: Short-Term

> **Action 7.1.4**: Provide easily

accessible recycling receptacles throughout the airport. Provide signs within these areas that clearly identifies what can and cannot be recycled.

- Time Frame: Short-Term

› **Action 7.1.5**: Procure and use environmentally friendly cleaning products.

- Time Frame: Short-Term

› **Action 7.1.6**: Avoid using fertilizers and chemicals for landscape maintenance.

- Time Frame: Short-Term

› **Action 7.1.7**: Identify no-mow zones that do not create wildlife hazards to reduce grounds maintenance needs.

- Time Frame: Short-Term

› **Action 7.1.8**: Specify durable, long lasting materials and finishes to extend material life and reduce maintenance requirements. Avoid products that require frequent replacement or regular maintenance.

- Time Frame: Short-Term

Goal 8 Construction: Integrate sustainable principles, methods and procedures throughout procurement, construction and post construction for all airport projects.

* **Objective 8.1**: Develop sustainability standards for new airport construction.

› **Action 8.1.1**: Require all new airport owned and operated buildings greater than 7,500 square feet to achieve a minimum LEED® Silver rating.

- Time Frame: Short-Term

› **Action 8.1.2**: Encourage all private development on airport property to be LEED® Certified. The City and County will consider incentives to encourage use of LEED® standards.

- Time Frame: Mid-Term

* **Objective 8.2**: Maximize use of recycled materials for airport construction projects.

› **Action 8.2.1**: Recycle and reuse construction waste including but not limiter to concrete, asphalt and building debris.

- Time Frame: Short-Term

› **Action 8.2.2**: Where practical, reuse and/or repurpose existing structures on the airport grounds.

- Time Frame: Short-Term

* **Objective 8.3**: Identify and use sustainable materials for renovation and/or new construction projects.

› **Action 8.3.1**: Give preference to local businesses and sources within the procurement process.

- Time Frame: Short-Term

› **Action 8.3.2**: Work with contractors and vendors to identify a list of durable, long-lasting and natural materials to be considered for airport renovation and/or new construction projects. Information will include a breakdown of the up-front and overall life cycle costs including maintenance considerations to determine the payback period for the initial investment.

- Time Frame: Mid-Term

› **Action 8.3.3**: Require use of low maintenance, drought resistant and non-wildlife attractive landscape. Planting design should address aesthetics as part of overall design guidelines for the airport.

- Time Frame: Short-Term

Goal 9: Community Outreach: Make the airport more visible to the community through dedicated public outreach.

* **Objective 9.1**: Identify targeted community outreach programs to interested citizens, civic groups and institutions.

› **Action 9.1.1**: Document airport sustainability projects on the City, County and airport web sites to educate visitors about the sustainable aspects of completed projects.

- Time Frame: Short-Term

> **Action 9.1.2**: Partner with local schools, colleges and other educational groups to help promote and advance the airport's sustainability initiatives.

- Time Frame: Short-Term

> **Action 9.1.3**: Coordinate with schools and civic groups to arrange for field trips and presentations to demonstrate airport sustainability projects and initiatives.

- Time Frame: Short-Term

> **Action 9.1.4**: Partner with Hesston College and other schools to develop, demonstrate and evaluate new innovative sustainability technologies on air-port property.

- Time Frame: Short-Term

> **Action 9.1.5**: Develop an up-to-date "green" conference facility at the airport as a resource for airport staff, tenants, users and the public.

- Time Frame: Mid-Term

3.8 TRACKING PROGRESS

As mentioned in Section 3.6, the Sustainability Plan's goals, objectives and actions need to be formally documented and tracked to measure progress over time. To accomplish this task, an inventory and assessment will be completed to establish a baseline for comparison. Progress will be tracked and recorded in an annual progress report.

Inventory and Assessment
The inventory and assessment will be completed by airport staff in advance of the Sustainability Plan. The consultant provided airport staff with a inventory and assessment worksheet to formally quantify and document existing practices and procedures for the following:

- Airport fuel consumption
  - total fuel consumed by gallons
  - airport vehicle fleet (average MPG)
  - other equipment (mowers, etc.)
- Airport utilities consumption
  - natural gas
  - electricity
  - water
- Airport grounds maintenance
  - irrigation
  - fertilizer
- Airport recycling efforts
  - construction materials
  - site paving materials
  - office paper and products

This inventory will be used to provide a baseline for refining the Sustainability Plan's objectives and actions. This inventory and assessment worksheet is included as an **Appendix A.**

Annual Sustainability Progress Report
Airport staff will update the assessment worksheet and track progress on a quarterly basis. This information will be provided to the Airport Commission in a formal staff report for their comment and review. This will allow the Commission to track progress and, if necessary, make any adjustments throughout the year to ensure that the Sustainability Plan's objectives and actions are being met and/or implemented. This information will be compiled and summarized into an Annual Sustainability Report that will be posted on the airport web site for users, tenants and the public.

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Chapter Four
ACTIVITY FORECASTS

4.1 INTRODUCTION

Aviation activity forecasts are the basis for determining the airport facilities needed to accommodate aviation demand over the next 20 years. The three primary purposes of the forecast are 1) to develop a plan that accommodates demand, 2), to ensure that facilities will be built only when they are needed, and 3) to ensure that facilities will not be built that will later have to be abandoned or moved.

The basic premise for developing general aviation forecasts is that aviation activity correlates well to the socioeconomic characteristics of a community. For the EWK forecasts, the main focus will be on the local and regional economy and to a lesser extent the National and State economy.

4.2 NATIONAL AVIATION TRENDS

4.2.1 GAMA STATISTICS

"General aviation aircraft manufacturers experienced another challenging year..." according to the General Aviation Manufacturers Association (GAMA). In their report titled 2010 General Aviation Statistical Databook & Industry Outlook, they indicate:

> *Despite the pain cause by the global downturn, optimism has returned to the industry as signs of recovery have emerged. Corporate profits are up, the economy is recovering, flight hours are inching higher around the globe, the used jet inventory continues to slowly decline, key emerging markets show positive growth, and the availability of financing is improving. In addition, it is anticipated that the tax provisions passed by the U.S. Congress and signed by President Obama at the end of 2010 will help provide further incentives for aircraft sales and upgrades.*

According to the February 2011 edition of Airport Business magazine, the above mentioned Federal actions should help to support general aviation manufactures as follows:

> *The Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010 (H.R.4853) was signed into law December 17, 2010. The bill permits 100 percent depreciation of capital investments -- including engines, avionics, and other upgrades -- during 2011 and 50 percent depreciation for such purchases in 2012. General Aviation will benefit from passage of a comprehensive tax bill that extends certain aircraft depreciation benefits into 2013, while renewing the research and development tax credit.*

Referring back to the GAMA Report, the following 2010 aircraft manufacturing statistics are cited:

- **SHIPMENTS.** Worldwide shipments of general aviation airplanes fell for a third year in a row declining 11.4 percent from 2009 levels.
- **BUSINESS JETS.** The business jet sector declined for a second year with the number of units shipped in 2010 sliding 12.3 percent below the 2009 level. The lighter end of the business jet segment felt the brunt of the pain due in part to higher dependence on third-party financing, which became more difficult to secure in the economic downturn.
- **TURBOPROPS.** There were 17.7 percent fewer turboprop airplane deliveries in 2010

than in 2009. The total value of turboprop deliveries in 2010 was $1.3 billion.

- **PISTONS.** In years past, the piston market has reacted positively to an improving economy ahead of the other two sectors. It is too early to determine if this will hold true for the current economic downturn, but the piston segment continued to suffer in 2010 as shipments declined 7.7 percent from 2009 totals.

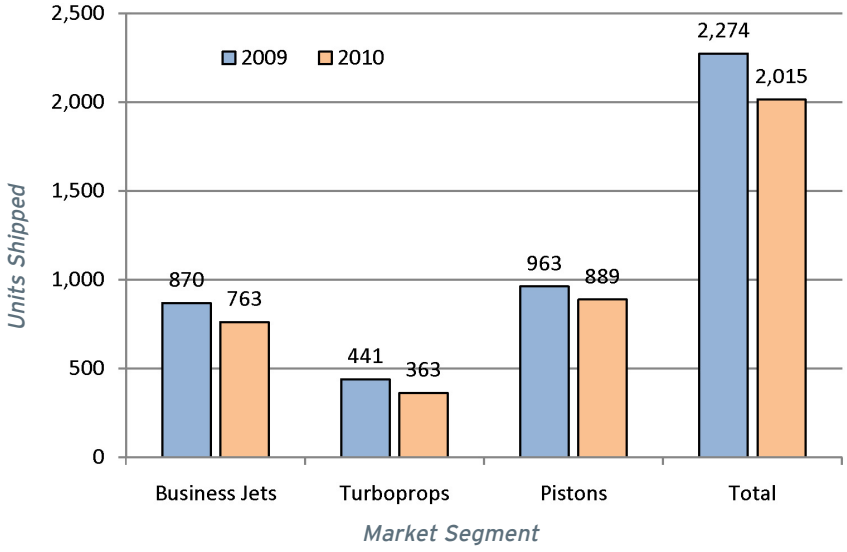
Figure 4-1 presents a side-by-side comparison of the number of business jet, turboprop, piston, and total aircraft units shipped in 2009 against 2010 numbers.

The GAMA Report also reviews trends in industry billings, fractional and corporate jet ownership, and the used aircraft market. Each of these components of the industry influence activity at the national level and are factors to consider in the local market as well. These summaries are as follows:

- **INDUSTRY BILLINGS.** Compared to 2009 billings, 2010 billings rose 1.2 percent to $19.7 billion. This increase in billings, as compared to the reduction in shipments, is in large part due to deliveries of large-cabin, long-range business jet aircraft remaining relatively stable during the recession and the delivery rates of this segment of the business jet market increasing in 2010. The 2010 billings number is still below the all time high of $21.9 billion recorded in 2007.
- **FRACTIONAL AND CORPORATE OWNERSHIP.** According to JETNET, LLC, in 2010, worldwide fractional share owners decreased for the second year in a row to 4,862. The number of fractional owners is down 6.1 percent from its peak of 5,179 in 2008. Corresponding to this trend, the total number of airplanes in fractional ownership programs was down by ten aircraft in 2010 as compared to the previous year.
- **USED MARKET.** The current condition of the used general aviation airplane market has a direct impact upon the health of the new airplane market. One key indicator that has been closely followed since the downturn in 2008 is the size of the used jet inventory as measured by airplanes for sale as a percentage of the fleet.

  The used business jet inventory in December 2010 was 14.8 percent of the

Figure 4-1: Worldwide Aircraft Shipments



fleet. This is 1.5 percentage points lower than in December 2009. While this trend continues to move in the right direction, it is still above the historical average.

The turboprop fleet has fared better in the recession and also experienced positive movement last year going from 11.2 percent of the fleet for sale at the end of 2009 to 10.6 percent at the end of 2010.

JETNET's tracking of used airplane sales, however, does indicate that average asking prices for both business jets and turboprops remained depressed during 2010 and that the average time required to sell was up for both segments suggesting continued softness in the domestic market.

Looking to the future, the "2011 Industry Outlook" section of the GAMA Report indicates:

Many analysts expect economic recovery to strengthen in 2011. If this happens, we expect it will accelerate the reduction of the inventory of used airplanes and consequently lead to strengthened airplane order books, increased flight activity, job creation and greater economic prosperity.

General aviation manufacturers continue to meet the challenges resulting from cyclical economic downturn and structural adjustments. Their efforts are beginning to show some successes. But to foster a strong, vibrant and expanding industry, pro-growth, pro-manufacturing policies will remain a crucial ingredient of success.

4.2.2 FAA AEROSPACE FORECAST

The Federal Aviation Administration (FAA) Aerospace Forecast for Fiscal Years 2010-2030 reveals the following assessment:

With the onset of the economic downturn, weakening of the general aviation industry became apparent in 2008. In 2009 the deterioration was even more pronounced with record declines by several measures of activity and double digit declines by most measures. According to numbers released by the General Aviation Manufacturers Association (GAMA), U.S. manufacturers of general aviation aircraft delivered [fewer] aircraft in CY 2009 [than in] CY 2008. This translates into a second consecutive year of decline in shipments that was preceded by four years of sustained growth.

Economic data suggests that the current recovery will be slower and more modest by historical standards with the economy continuing to face the challenges posed by continued levels of high debt, prolonged weakness in the housing sector and a continuation of tight credit policies all influencing the rate of economic growth. On the bright side, earlier concerns related to the potential for a double-dip recession appear to have dissipated and the potential for such an event is considered to be minimal with a recent (Spring 2011) weakening of the rate of economic growth and recent spikes in fuel prices.

Based on the econometric forecasts used by the FAA as a basis of their annual aerospace forecasts, medium term, (the four year period between 2012 and 2016), U.S. economic growth is projected to average 3.0 percent per year with rates ranging between 2.9 and 3.1 percent. For the balance of the FAA's forecast period, U.S. real GDP growth is projected to slow to an estimated rate of 2.7 percent annually.

Historically, the business jet, rotorcraft and to a lesser extent the turbo-prop segments of the general aviation market have been the fastest growing components of the general aviation fleet. After growing rapidly for most of the past decade, the demand for business jet aircraft declined dramatically over the past few years due to the depth of the economic recession and both its worldwide and in particular U.S. domestic impact. Despite the impact on the business jet market that resulted from the depth of the recent (2007/2009) economic recession, the FAA forecast for general aviation calls for a return to growth with the near term

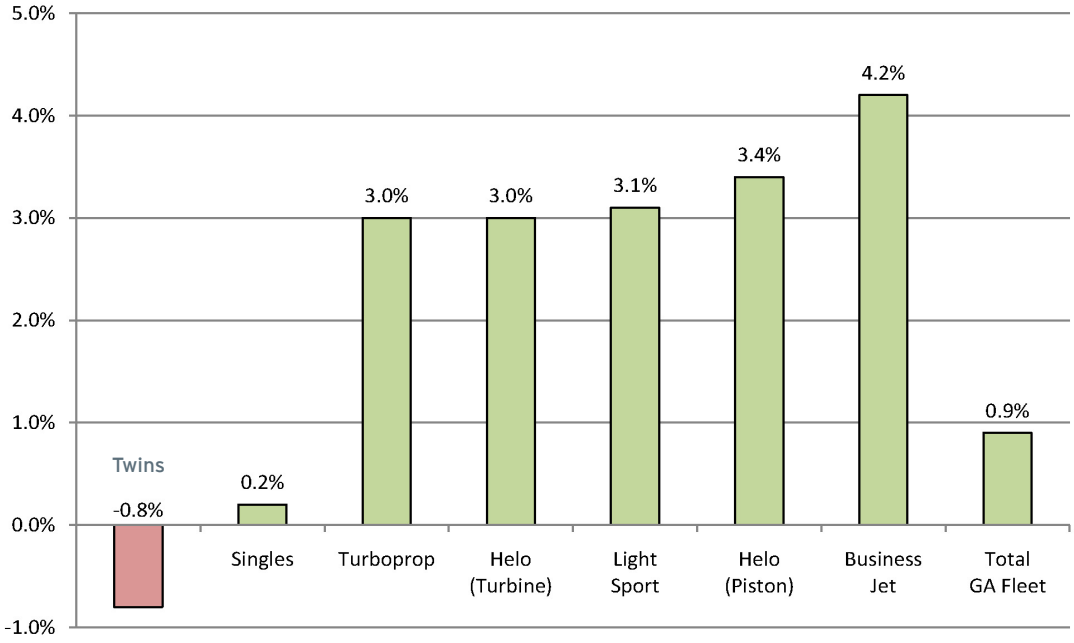
trend being governed by the more moderate rate of emergence from the recession when compared to previous recoveries.

Over the longer term, the FAA forecast calls for a more robust growth rate, driven by higher corporate profits, which are beginning to be seen in 2011, continued concerns about safety/ security and flight delays and the increasing the attractiveness of business aviation relative to commercial air travel. The FAA is projecting the following positive trends for the general aviation fleet which are summarized in Figure 4-2.

- **GENERAL AVIATION FLEET** is projected to increase at an average annual rate of 0.9 percent over the forecast period.
- **TURBINE-POWERED FLEET (INCLUDING ROTORCRAFT)** is projected to grow at an average of 3.0 percent a year over the forecast period, with the turbine jet portion increasing at 4.2 percent a year.
- **VERY LIGHT JETS (VLJs).** Since their introduction, many questions have arisen as to the future impact that VLJs may have. The lower acquisition and operating costs of VLJs were believed to have the potential to revolutionize the business jet market, particularly by being able to sustain a true on-demand air-taxi service. While initial forecasts called for over 400 aircraft to be delivered a year, events such as the recession along with the bankruptcy of Eclipse and DayJet have led to the tempering of more recent forecasts.

The worldwide delivery of VLJs this year has held up relatively well compared to the turbine jet market as a whole, helped in large part by the introduction of Embraer's Phenom 100 to the market along with continued interest in the HondaJet. Despite this, the impacts of the recession have led to dampened expectations. The current FAA forecast calls for 440 VLJs to enter the US fleet over the next three years, with an average of 216 aircraft a year for the balance of the forecast period.

Figure 4-2: FAA Forecast of GA Fleet Growth



- **PISTON-POWERED AIRCRAFT (INCLUDING ROTORCRAFT) FLEET** is projected to decrease from 2008 through 2017, with declines in both single and multi-engine fixed wing aircraft, but with the smaller category of piston-powered rotorcraft growing. Beyond 2017 piston-powered aircraft are forecast to increase as follows:
  - Single-engine fixed-wing piston aircraft are projected to grow at 0.2 percent annually.
  - Multi-engine fixed wing piston aircraft are projected to decline 0.8 percent a year.
  - Piston rotorcraft are projected to increase rapidly at 3.4 percent a year.
- **LIGHT SPORT AIRCRAFT (LSA) FLEET.** The new category of "light sport" aircraft started in 2005 and by the end of 2008, there were a total of 6,811 aircraft estimated to be in this category.

  A light sport aircraft is defined as an aircraft having a max gross weight of 1,320 pounds (or 1,430 pounds if float equipped), stalling at a maximum of 45 knots, having a maximum full power straight and level flight at sea level of no more than 120 knots, seating a maximum of two, operating day/VFR only, having a single, reciprocating engine (with a fixed or ground adjustable propeller), having an unpressurized cabin, and being outfitted with a fixed landing gear (which can be a repositionable gear for amphibians).

  The FAA forecast assumes the fleet will increase by 825 aircraft per year until 2013 (an annual growth of 12.1 percent). Thereafter, the rate of increase tapers considerably to about 335 per year (3.1 percent annually). By 2030 a total of 16,311 LSA are projected to be in the fleet.

  With respect to VLJs and LSA, the FAA has assumed that demand for these aircraft could erode the replacement market for traditional piston aircraft at the high and low ends of the market, respectively.
- **HOURS FLOWN.** The number of general aviation hours flown is projected to increase by 2.5 percent yearly over the forecast period. A large portion of this growth will occur in the short term post recession period, where record low utilization rates experienced in 2009 will return to normal trends, particularly in the turbine jet category. As with previous forecasts, much of the long term increase in hours flown reflects strong growth in the rotorcraft and turbine jet category.
  - Piston-powered aircraft hours are anticipated to grow at 1.1 percent annually.
  - Rotorcraft hours, relatively immune to the economic downturn when compared to other categories, are projected to grow by 3.0 percent yearly.
  - Hours flown by turbine aircraft (including rotorcraft) are forecast to increase 4.1 percent yearly over the forecast period. Jet aircraft are forecast to account for most of the increase, with hours flown increasing at an average annual rate of 6.1 percent over the forecast period. The large increases in jet hours result mainly from the increasing size of the business jet fleet, along with measured recovery in utilization rates from recession-induced record lows.
  - The LSA category is expected to see increases in hours flown on average of 5.9 percent a year, which is primarily driven by growth in the fleet.
- **GA PILOT POPULATION.** The FAA is anticipating that the number of general aviation pilots (excluding air transport pilots) is projected to grow 0.5 percent a year. The number of private pilots is projected to grow slightly slower at an average yearly rate of 0.2 percent.

- **STUDENT PILOT POPULATION.** Given the importance of student pilot training at EWK, special attention has been devoted to this aspect of aviation in the Master Plan Update. According to the FAA:

  Student pilots are important to general aviation and the aviation industry as a whole. Although in decline for many years now, the economic recession experienced in 2009 seems to have had an especially significant impact on the number of student pilots.

  In 2009, according to statistics compiled by the FAA's Mike Monroney Aeronautical Center, the number of student pilots decreased by 10.8 percent. This is the fifth consecutive year of decline in this category and the largest decline in recent history. The average age of a U.S. pilot in 2009 was 45.3 years old.

  Despite the negative trend, the FAA is forecasting the number of student pilots to increase at an average annual rate of 0.8 percent over the forecast period.

- **LIGHT SPORT PILOT POPULATION.** The FAA is projecting that by 2030, a total of 14,100 sport pilots will be certified. As of December 31, 2009, the number of sport pilot certificates issued was 3,248 reflecting a steady increase in this new "entry level" pilot certificate that was only created in 2005. This represents a growth rate of nearly 16 percent per year.

4.3 STATE AVIATION TRENDS

According to the 2009 Kansas Aviation System Plan (KASP), based aircraft at general aviation airports in Kansas are expected to increase from 2,987 in 2007 to 3,661 by 2027 -- a growth of 1.02 percent a year. Total annual operations at all general aviation airports are projected to increase annually by 0.92 percent from their current level of almost 1.4 million in to nearly 1.7 million by 2027.

The KASP projects EWK's based aircraft to grow at a very low 0.42 percent annually over the KASP's 20-year planning period. According to KASP data, there were 111 based aircraft at EWK in 2007 with 121 forecasted by 2027. EWK operations are forecast to approach 71,000 by 2027. For airport operations growth at EWK, the KASP applies a metric of 584 aircraft operations per each based aircraft.

4.4 LOCAL AVIATION TRENDS

4.4.1 CURRENT AIRPORT OPERATIONS

For non-towered airports, there continues to be debate regarding the total number of aircraft operations conducted at such airports. As EWK does not have an ATCT, it is difficult to determine the actual number of airport operations conducted with a high degree of certainty. To address this uncertainty, several data sources and methods were used to estimate total airport operations for the base year 2010. These sources included the following:

- FAA Order 5090.3C "Field Formulation of the NPIAS",
- The FAA's Terminal Area Forecast for EWK,
- Airport market share (from the 2009 KASP),
- The FAA-approved forecast for EWK found in the 2005 Airport Master Plan,
- Fuel flowage and operations data provided by the Kansas Association of Airports (KAA), and
- A 2001 report titled "Model for Estimating General Aviation Operations at Non-towered Airports" prepared by GRA, Inc. for the FAA's Office of Aviation Policy and Plans.

The analysis of these six data sources was presented in a memo titled "Estimating 2010 Operations at EWK" and discussed in great detail at the third Planning Advisory Committee (PAC) meeting. The memo serves as a broad, initial overview of EWK's possible operational levels and suggests that EWK's

current operations could range from 62,000 to 89,000 annually. A copy of this memo is included in **Appendix B**.

At the third PAC meeting, the discussion of this memo quickly led to a review of aircraft operations at the following select list of comparable airports in order to conduct a benchmark process to aid in defining EWK's current operational level. All but one of the airports compared are located in Kansas.

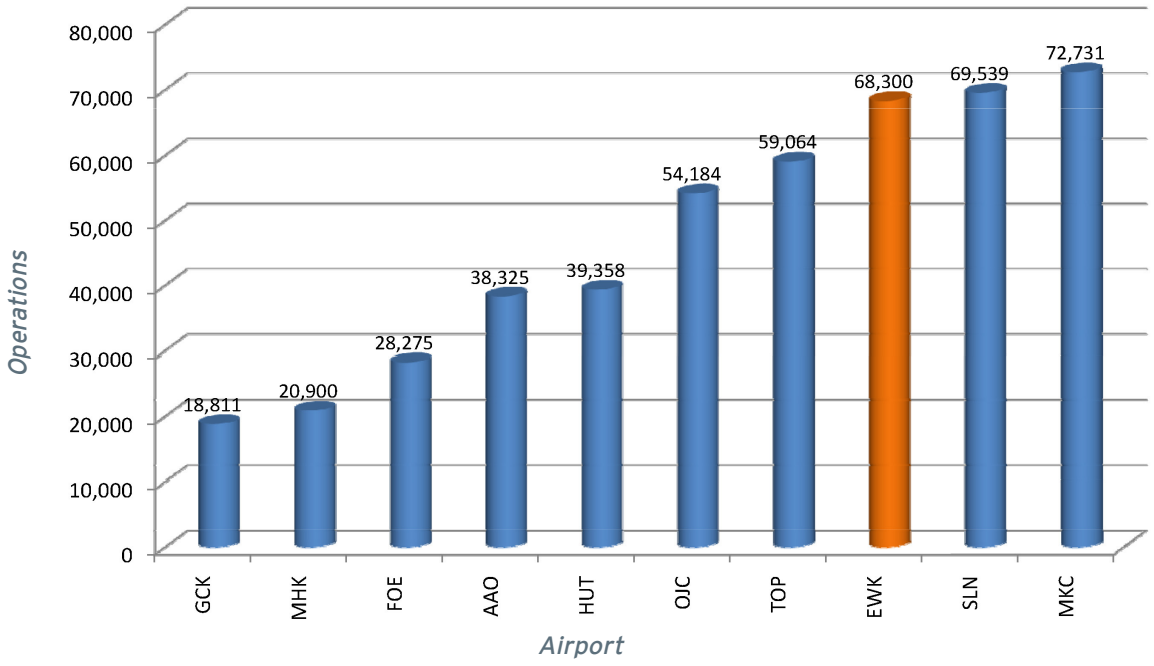
- Garden City Regional (GCK)
- Manhattan Regional (MHK)
- Topeka Forbes Field (FOE)
- Col. James Jabara (AAO)
- Hutchinson Municipal (HUT)
- Johnson County Executive (OJC)
- Topeka Billard Municipal (TOP)
- Salina Municipal (SLN)
- Charles B. Wheeler Downtown (MKC)

Operations for the comparison airports were obtained from the FAA's TAF for the calendar years 1990 to 2009. While Jabara is the only non-towered airport in the list, it was included as it is a nearby competitor airport. Charles B. Wheeler located adjacent to the Kansas City Central Business District is the only Missouri airport compared.

The number of operations conducted at these nine airports in 2009 and where the PAC believes EWK stands relative to them is presented in Figure 4-3. While airport operation data was collected for the most recent 20-year period, only operations for calendar year 2009 are shown in Figure 4-3 in order to compare the current operations estimate for EWK.

It is estimated that 68,300 operations are currently being conducted at EWK which places the airport's activity level above Topeka Billard (TOP) and slightly below Salina Municipal (SLN). This estimate is derived from the PAC's knowledge of local operations and HNTB experience in preparing similar

Figure 4-3: 2009 Operations at Similar Airports



forecasts of aviation demand and professional judgement.

4.4.2 OPS PER BASED AIRCRAFT

A key metric of general aviation airport activity is the number of annual operations divided by the number of based aircraft which is referred to as the operations per based aircraft level. According to FAA Order 5090.3C, this metric can range widely from recreational airports that average as low as 250 operations per based aircraft to busy corporate-only airports that may have 450 operations per based aircraft or more. To help validate the operations estimate for EWK, operations per based aircraft at the aforementioned nine airports are presented in Figure 4-4. In this figure the values represent the average annual number of operations per based aircraft from over the 1990-2009 period.

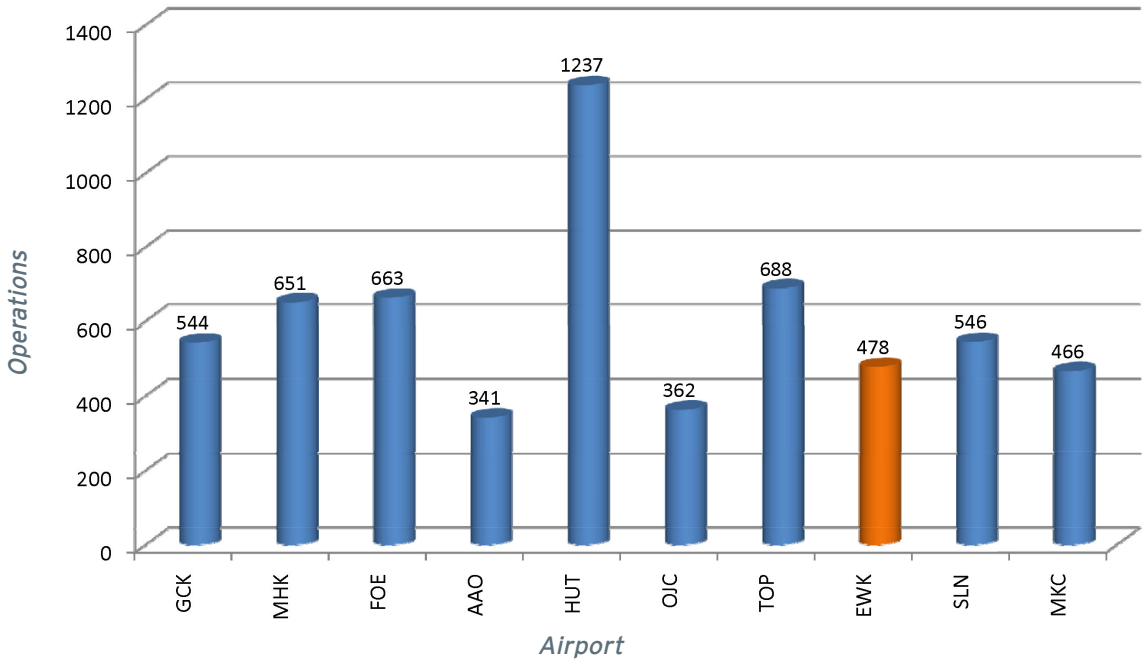
As shown in this figure, the operations per based aircraft value at these airports ranges considerably from 341 (AAO) to as high as 688 (TOP) with an outlier of 1,237 (HUT). When excluding HUT from the list of airports compared, the average operations per based aircraft is 527.

Given the estimated annual operations of 68,300 and the presence of 143 based aircraft, a value of 478 operations per based aircraft was calculated for EWK. While this value is slightly higher than the FAA's "corporate airport" value of 450, it is still below the 527 average value of the nine towered airports in Figure 4-4, the 544 value from the GRA Report analysis (refer to HNTB operations memo in **Appendix B**), and the 550 value reflected in the 2005 Airport Master Plan approved by the FAA.

4.4.3 LOCAL AND ITINERANT OPS

Total airport operations are comprised of local and itinerant operations. According to FAA Advisory Circular 150/5070-6B, *Airport Master Plans*, local operations are operations performed by aircraft that are either based at

Figure 4-4: Operations per Based Aircraft (1990-2009 average) at Similar Airports



the airport and that operate in the local traffic pattern or within sight of the airport, known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or executing simulated instrument approaches to the airport. Itinerant operations are those conducted by aircraft that leave the local airspace.

Based on historic airport operations records, fuel sales, data from similar towered airports, and PAC input, it is estimated that total operations are divided almost equally between local and itinerant operations at 49% and 51%, respectively. This results in 33,750 local and 34,550 itinerant operations being conducted annually.

4.4.3.1 Local Operations by Aircraft Type

From the types of based aircraft presented in the Inventory Chapter (Table 2-2), the number of local operations conducted by those aircraft is presented in Figure 4-5. The majority of local operations are conducted by single engine piston, fixed wing aircraft from the SE Piston and Experimental categories. Almost one fourth of local operations are conducted by turbine powered aircraft (jets and turboprops).

4.4.3.2 Itinerant Ops. by Aircraft Type

While total itinerant operations can be estimated with relative ease, determining the type of itinerant aircraft that frequent EWK and how many operations are conducted by each type is less straightforward. However, based on Metro North Flight Support's long-standing familiarity with airport operations and discussions with the PAC, reasonable assumptions can be made.

Figure 4-6 presents itinerant operations by aircraft type. Given EWK's proximity to aircraft manufacturers based in the Wichita area and the regular east-west coast traffic, it is estimated that itinerant aircraft operations are conducted by a broad mix of general aviation aircraft.

Figure 4-7 compares local and itinerant operations by aircraft type. Single engine, fixed

Figure 4-5: Local Operations by Aircraft Type for 2010

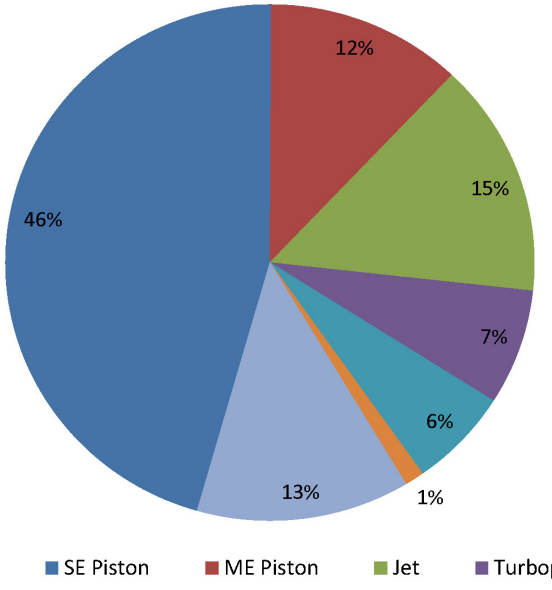


Figure 4-6: Itinerant Operations by Aircraft Type for 2010

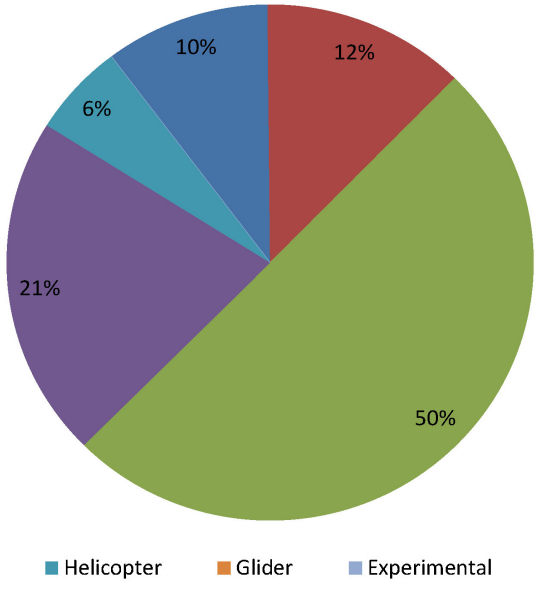
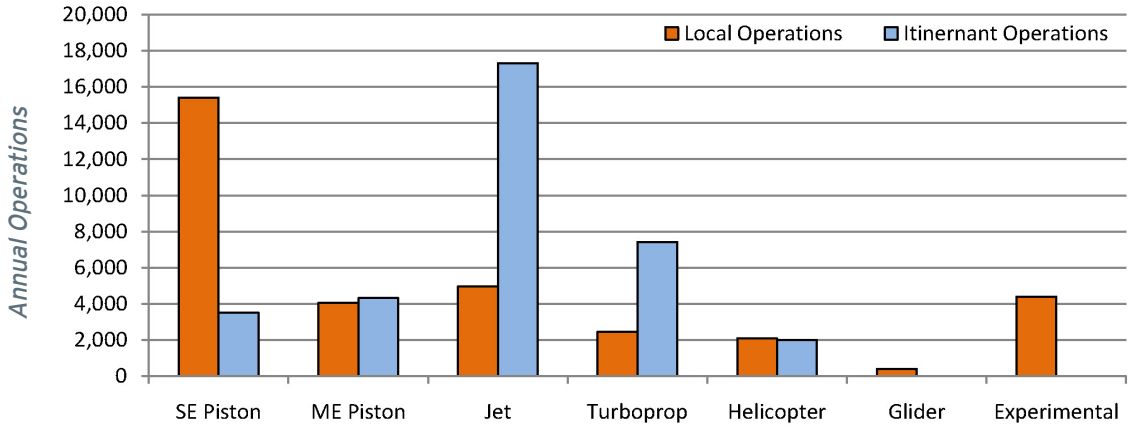


Figure 4-7: Comparison of Local and Itinerant Operations by Aircraft Type for 2010



wing piston aircraft dominate local operations whereas jet and turboprop aircraft comprise more than 70 percent of itinerant traffic. Local and itinerant operations conducted by multi-engine piston, fixed wing aircraft and helicopters remains consistent at 12 percent and 6 percent, respectively.

4.4.3.3 Operations by FAA Classification

In Advisory Circular 150/5300-13 (Change 16), Airport Design, the FAA has established detailed guidance for specifying airport needs based upon aircraft characteristics. The key parameter for airport design is the Airport Reference Code (ARC) which is comprised of two components. The first is a letter designation that denotes the Aircraft Approach Category (the aircraft's approach or landing speed). The second component, depicted by a Roman numeral, is the Airplane Design Group (ADG) and relates to the aircraft's wingspan. Table 4-1 summarizes the aircraft characteristics comprising the FAA's ARC categories. The application of this aircraft classification system to EWK's based aircraft is reflected in Table 4-2. Approximately 14% of EWK's current operations are conduced by ARC C-II aircraft comprised of corporate jet aircraft.

At the end of the Forecast Chapter, the FAA's aircraft classification system will be revisited to determine the future design aircraft or family of aircraft that will be used in defining future facility needs and the design standards that will apply.

Table 4-1: FAA Aircraft Classification System

Aircraft Approach Speed (kts.)	Aircraft Approach Category	Aircraft Wingspan (ft.)	Airplane Design Group
Less than 91	A	Less than 49	I
91 to less than 121	B	49 to less than 79	II
121 to less than 141	C	79 to less than 118	III
141 to less than 166	D	118 to less than 171	IV
166 and higher	E	171 to less than 214	V
		214 to less than 262	VI

Table 4-2: Estimated 2010 Aircraft Operations by FAA Airport Reference Code

FAA ARC	Local Operations	% of Local	Itinerant Operations	% of Itinerant	Total Operations	% of Total
A-I	21,350	63.3%	3,500	10.1%	24,850	36.4%
A-II	200	0.6%	0	0.0%	200	0.3%
A-III	0	0.0%	110	0.3%	110	0.2%
B-I	2,920	8.7%	8,800	25.5%	11,720	17.2%
B-II	2,680	7.9%	6,890	19.9%	9,570	14.0%
B-III	0	0.0%	80	0.2%	80	0.1%
C-I	4,050	12.0%	4,180	12.1%	8,230	12.0%
C-II	450	1.3%	8,950	25.9%	9,400	13.8%
C-III	0	0.0%	40	0.1%	40	0.1%
Helicopter	2,100	6.2%	2,000	5.8%	4,100	6.0%
Total	**33,750**	**100%**	**34,550**	**100%**	**68,300**	**100%**

4.5 FORECAST OF AVIATION DEMAND

4.5.1 COMMUNITY TRENDS

While the General Aviation industry continues to experience growth challenges, industry analysts expect the current economic recovery to strengthen in 2011. In terms of airport activity, aircraft operations and fuel sale volumes seem to be returning to positive growth territory. This is evidenced at EWK where 2010 fuel sales have increase by 28 percent over last year.

Nonetheless, several community elements must be in place in order for EWK to continue to serve the local community as part of the greater transportation network and the national airport system. The elements that will influence the development of EWK include population growth and local economic activity. Local socioeconomic growth rates are well documented in Section 2.20 of the Inventory Chapter and are summarized in Figure 4-8. This same information was presented and discussed at the third PAC meeting and a copy of the meeting's presentation is included in **Appendix B.**

As revealed on the left side of this chart, annual population growth is around one percent with the exception being the City of North Newton growing at two percent. In the middle of the chart are median family, median household, and per capita income growth rates for Newton, North Newton, and the Wichita MSA. These income-related growth rates range from 2.3 percent to as high as 7.4 percent per year. Lastly, other growth rates reflected on the far right side of the chart are various based aircraft growth trends and the growth of the Airport Industrial Park (in terms of building square footage since the 2005 Airport Master Plan).

4.5.2 FORECAST SCENARIOS

From experience with preparing numerous aviation economic studies and forecasts for airports, HNTB has developed a series of forecast scenarios consistent with the methods established by the FAA. Each scenario proposes a different growth level for based aircraft and subsequent aircraft operations. These scenarios are defined as follows:

- Low Growth Forecast Scenario assumes the growth rate for based aircraft will be equal to the per capita income growth of

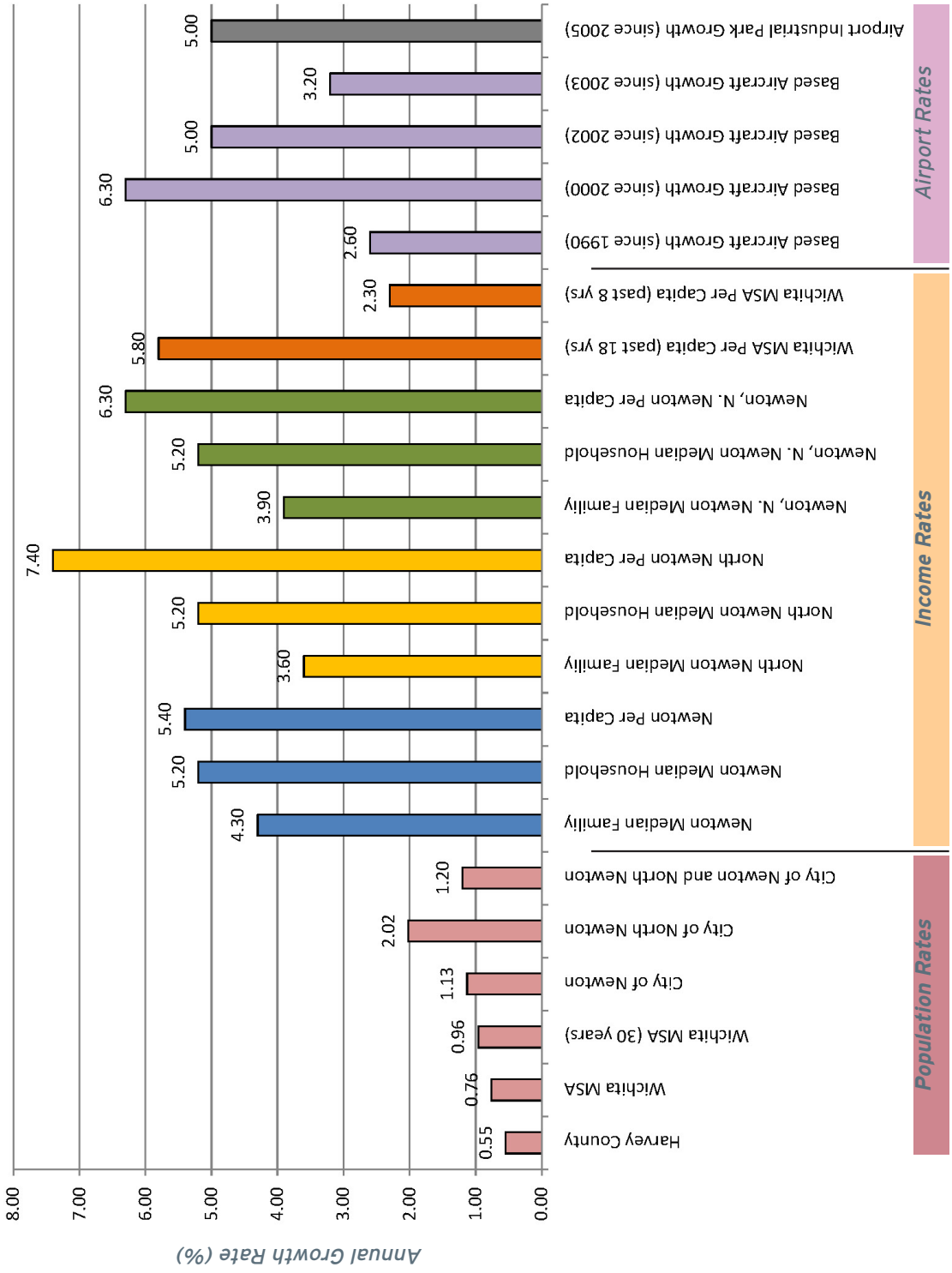


Figure 4-8: Summary of Local Socioeconomic Growth Rates

the Wichita MSA over the past eight years. This is an annualized growth rate of 2.3 percent.

Conversely, a lower growth rate could result if EWK's growth followed the average annual rate of population change witnessed by the Wichita MSA (which includes Harvey County) over the past 30 years. This is an annualized growth rate of approximately 1.0 percent. Such a low growth rate for based aircraft is not anticipated by the PAC.

In looking at growth rates in the 2 to 3 percent range, an alternative growth rate for the low forecast scenario could be EWK's historic based aircraft growth rate of 2.6 percent (1990-2010). However, the use of the Wichita MSA per capita income growth rate was felt to be more appropriate for the low growth scenario.

- Medium Growth Forecast Scenario assumes that the number of based aircraft will grow at 4.0 percent annually. This would track well with the median family income growth rate experienced by Newton and North Newton since 2000 which averaged 3.9 percent.
- High Growth Forecast Scenario assumes that the number of based aircraft will increase at 5.8 percent per year. This is the same annual growth rate of per capita income of the Wichita MSA over the last 18 years. This high growth rate could be reflected at EWK over the next 10 to 20 years especially considering that EWK's based aircraft grew at an average of 6.3 percent per year over the last 10 years.

  The only higher annual growth rate found from the socioeconomic trends analysis was the 7.4 percent per capita income growth of North Newton. But as noted in the Inventory Chapter, the Wichita MSA is expected to more strongly influence EWK's growth than the community of North Newton.

Figure 4-9 presents the low, medium, and high growth forecast scenarios of based aircraft. This figure also includes the following four growth rates for comparison:

- Zero Growth Forecast Scenario which assumes no change in based aircraft from the 143 present today
- 2009 KASP Forecast which proposed 0.42 percent growth for EWK through 2027
- 2005 Master Plan Forecast which forecast based aircraft to growth 0.85 percent annually
- FAA National GA Forecast which projects the general aviation fleet to increase at an average annual rate of 0.9 percent

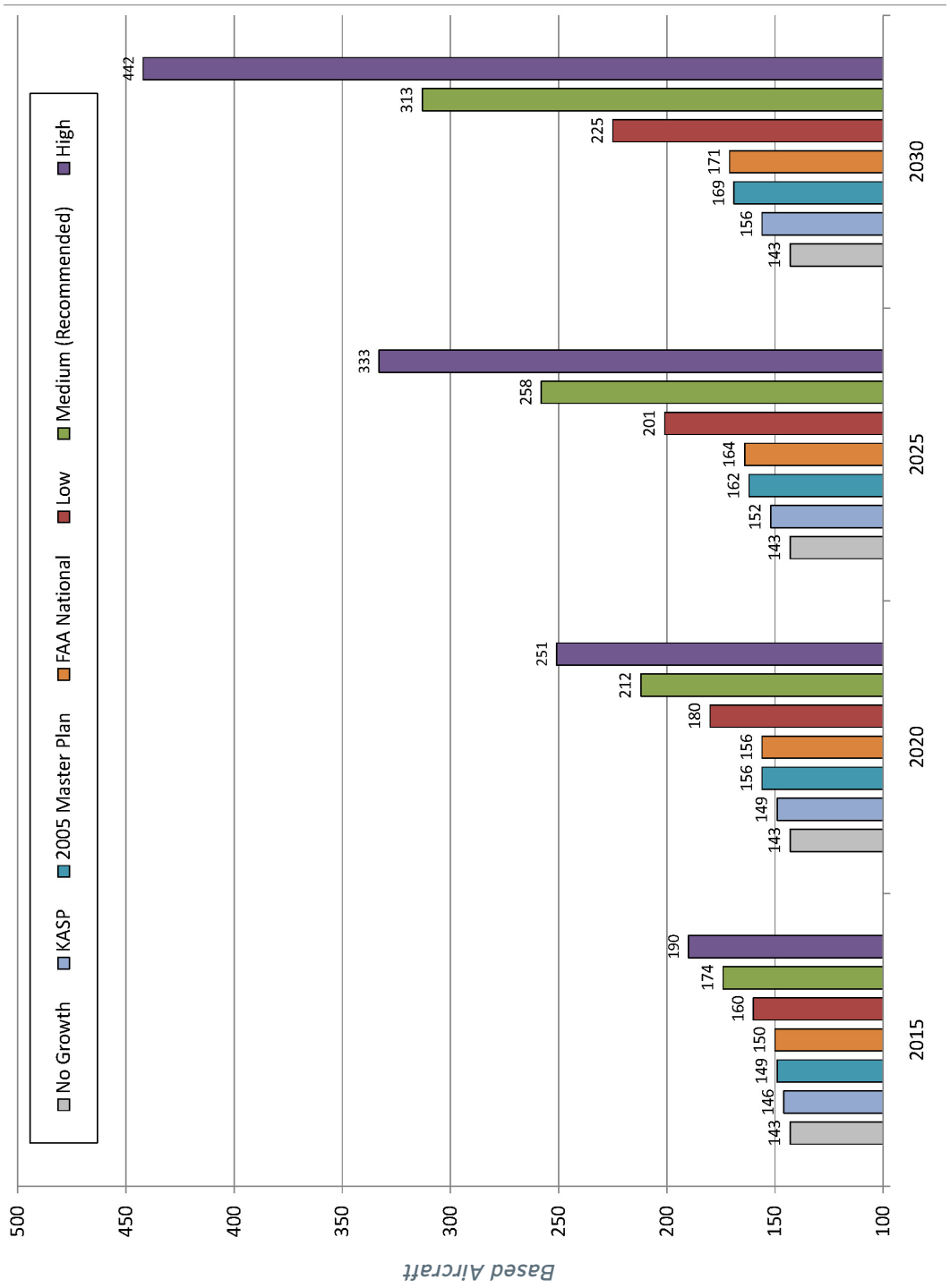


Figure 4-9: Forecast Scenarios of Based Aircraft

HNTB

4.5.3 RECOMMENDED FORECAST

After evaluating the various forecasts developed herein, the **Medium Growth Scenario** has been selected for EWK's activity forecast. Under this scenario, the number of based aircraft would grow by 4.0 percent annually from 143 today to 313 by the end of the 20-year planning period. This equates to more than a two-fold increase in based aircraft. Table 4-3 summarizes the recommended forecast of aviation demand and Table 4-4 summarizes the forecast of based aircraft by type.

4.5.4 PEAK ACTIVITY

Peak activity forecasts are used for airfield capacity analyses and for gauging the timing for future facility improvements. There are three peaking parameters typically used in airport planning. These are peak month, peak day, and peak hour which are defined in the following paragraphs. Table 4-5 represents the peaking forecasts for EWK.

Peak Month is the month in which the highest number of aircraft operations occurs. Typically, the peak month at general aviation airports ranges from 10 to 20 percent of annual operations. The low end of the range reflects a reasonable spread of aviation activity throughout the year. The high end of the range is more common with lower activity airports that may have one or two special community events during the year that concentrates activity over a short period and skews the average.

Based on a review of annual fuel sales by Metro North Flight Support staff, airport operations are highest between March and October. When sorted by fuel type, the peak month for Jet A is March, 100LL is August, and Mogas is September. As Jet A fuel sales comprise the bulk of EWK's total fuel sales, March will serve as the Peak Month. In determining the Peak Month, it is recognized that jet aircraft have a higher fuel storage capacity than single- and

Table 4-3: Recommended Forecast Summary

Year	Local Operations (49%)	Itinerant Operations (51%)	Total Operations	Based Aircraft	Operations per Based Aircraft
2010	33,750	34,550	68,300	143	478
2015	41,060	42,050	83,110	174	478
2020	50,020	51,240	101,260	212	478
2025	60,880	62,350	123,230	258	478
2030	73,850	75,650	149,500	313	478

Table 4-4: Recommended Forecast of Based Aircraft by Type

Year	SE Piston	ME Piston	Jet	TP	Helo	Glider	LSA and Experimental	Total
2010	77	18	11	7	6	2	22	143
2015	90	21	15	11	8	3	26	174
2020	105	25	20	17	11	4	30	212
2025	122	29	27	26	14	5	35	258
2030	142	33	35	40	16	6	41	313

twin-engine piston aircraft. Metro North Flight Support confirmed March as the peak month for aircraft operations. A representative Peak Month estimate for EWK is 12 percent of annual operations.

Peak Day is usually calculated as the average day of the peak month. For forecast purposes, the Peak Month Average Day (PMAD) is 30.4 or the value of 365 days divided by 12 months, as the future peak hour could shift between months having 30 or 31 days. However, assuming the peak month to be March, the average peak day of the peak month is 1/31 (or 3.2 percent) of peak month operations.

Peak Hour is the most important of the peaking statistics. It is used to determine the operational capacity of the airport and to measure against aircraft delay. The statistic is important to calculate when new facilities, such as apron expansions, taxiway construction, or even new runways would need to be constructed. For non-towered general aviation airports, peak hour statistics often range from 9 to 15 percent of daily operations. The more active an airport, the less peak hour represents daily activity. For EWK, a peak hour estimate of 13 percent of the PMAWD will be used.

Table 4-5: Peak Operations Forecast

Year	Annual Operations	Peak Month	Peak Day	Peak Hour
2010	68,300	8,196	264	34
2015	83,110	9,973	322	42
2020	101,260	12,151	392	51
2025	123,230	14,788	477	62
2030	149,500	17,940	579	75

4.5.5 ANNUAL INSTRUMENT OPERATIONS

An instrument operation is defined by the FAA as an arrival or departure operating in accordance with an Instrument Flight Rule (IFR) flight plan or an operation where IFR separation between aircraft is provided by a terminal approach control facility. The aircraft must be executing an IFR flight plan, have Special VFR (SVFR) clearance, or be provided approved standard separation while conducting practice instrument approaches. Lastly, the pilot must complete the published approach and then cancel IFR.

The number of annual instrument operations is a function of the capability of the airport and the sophistication of the instrumentation onboard the aircraft. Annual instrument operations forecasts, therefore, are the basis for determining requirements for upgraded instrument approaches.

To estimate the number of instrument operations, weather data obtained from NOAA's National Climatic Data Center was obtained and reviewed. Over the most recent ten-year period spanning 2000 to 2009, the data reveals that 81,325 all-weather observations and 5,163 instrument meteorological condition (IMC) observations* were recorded. This comparison suggests that weather conditions dictated the need for instrument approaches about 6.3 percent of the time.

**IMC are when visibility is between 1/2-mile and 3 miles and the cloud ceiling is between 200 and 1.000 feet above ground level.*

However, this method of comparing IMC to all-weather conditions may underestimate the number of actual instrument approaches for the following four reasons based on discussions with Metro North Flight Support staff:

- It is a common best practice for pilots to file an IFR flight plan when weather conditions do not require such.
- High-end GA aircraft such as turboprops and jets typically file IFR plans as procedure regardless of weather.
- Hesston College conducts a substantial amount of instrument training operations for its student pilots.
- Wichita-area aircraft manufacturers and EWK-based aircraft repair and refurbishment businesses conduct instrument operations to perform aircraft equipment checks and certifications.

In consideration of the preceding points, it is estimated that 15 to 20 percent of EWK's total operations are instrument operations. Using the high end of this estimate, annual instrument operations for the 20-year planning period are presented in Table 4-6.

Table 4-6: Instrument Operations Forecast

Year	Total Operations	Instrument Operations
2010	68,300	13,660
2015	83,110	16,620
2020	101,260	20,250
2025	123,230	24,650
2030	149,500	29,900

4.5.6 COMPARING FORECAST AND TAF

The FAA's Central Regional Airports Division is responsible for forecast review and approval. When reviewing the forecast, the FAA must ensure that it is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. After a thorough review of the forecast, FAA then determines if the forecast is consistent with its Terminal Area Forecast (TAF).

According to FAA requirements, forecasts of passenger enplanements, based aircraft, and total operations are considered consistent with the TAF if they differ by less than 10 percent in the 5-year forecast period and differ by less than 15 percent in the 10-year forecast period.

As commercial service is not provided at EWK, the forecasting of passenger enplanements is not required and therefore not available for comparison. However, a comparison of the forecast of based aircraft and total operations with the TAF has been made and is presented in Table 4-7. As this table reveals, the TAF for EWK reflects 102 based aircraft and 65,044 annual operations in 2010. As the FAA holds operations constant over the forecast period, they are indicating no growth for EWK.

In comparing the EWK forecast, based aircraft numbers differ from the TAF values by 60 percent in the 5-year forecast period and by 81 percent in the 10 year period. Total operations differ from the TAF values by 28 percent in the 5-year forecast period and by 56 percent in the 10 year period. As these percentages are higher than the respective 10 and 15 percent threshold criteria, the FAA will conclude that the forecast is not consistent with the TAF.

Yet despite this numerical nonconformity, the fact remains that the forecast for EWK was developed using recent socioeconomic data and trends (from the last 10 years), GA-appropriate forecasting methodologies recommended by the FAA, and reasonable planning assumptions thus making it a sound and agreeable forecast. It is recommended that the TAF be updated to reflect EWK's current based aircraft and operations levels at a minimum.

4.5.7 UPDATING THE FORECAST

Realizing that current socioeconomic conditions of the region could change over time, it is recommended that EWK's aviation

Table 4-7: Forecast and TAF Comparison

	Year	Airport Forecast (AF)	TAF	AF/TAF (% Diff.)
Based Aircraft				
Base Yr.	2010	143	102	40.2%
Base Yr. + 5 yrs.	2015	174	109	59.6%
Base Yr. + 10 yrs.	2020	212	117	81.2%
Base Yr. + 15 yrs.	2025	258	126	104.8%
Total Operations				
Base Yr.	2010	68,300	65,044	5.0%
Base Yr. + 5 yrs.	2015	83,110	65,044	27.8%
Base Yr. + 10 yrs.	2020	101,260	65,044	55.7%
Base Yr. + 15 yrs.	2025	123,230	65,044	89.5%
Operations per Based Aircraft				
Base Yr.	2010	478	638	-25.1%
Base Yr. + 5 yrs.	2015	478	597	-20.0%
Base Yr. + 10 yrs.	2020	478	556	-14.1%
Base Yr. + 15 yrs.	2025	478	516	-7.5%

forecast be reviewed and compared with actual airport activity levels on an annual basis. Revisiting aviation forecasts will ensure that airport facilities are developed when aviation demand requires them. A new master plan update is warranted if the number of actual based aircraft (or operations) differs from the forecast by more than 10 percent within the next five years.

4.6 DESIGN AIRCRAFT ANALYSIS

The frame of reference for airport planning criteria is established by the largest itinerant aircraft or "family" of aircraft that uses the airport on a regular basis, i.e., at least 500 itinerant operations per year. The single itinerant aircraft or family of aircraft meeting this criteria is commonly referred to as the airport's design aircraft or design family.

4.6.1 CURRENT DESIGN AIRCRAFT

From the itinerant operations data presented in Table 4-2, there is sound justification for maintaining the existing C-II Airport Reference Code (ARC) which has been assigned to EWK for many years. Itinerant aircraft included in the category are business jets typically weighing between 25,000 and 70,000 lbs. such as the Hawker 800, the Challenger 604, and the Gulfstream III. The Challenger 604 is EWK's present-day design aircraft and is pictured in Figure 4-10. With an estimated 9,400 operations conducted in 2010 by C-II aircraft, it is recommended that EWK's current design aircraft remain the Challenger 604.

4.6.2 GROUP III AIRCRAFT POTENTIAL

Upon review of current and forecasted airport operations, the design aircraft/family could change over the planning period. While C-II aircraft will continue to make up the majority of airport operations, EWK has historically received aircraft in the C-III category (the next level above C-II) but not in the numbers needed to meet the 500 operations threshold. EWK could see more activity from this aircraft family in the future which is a possibility that has EWK has discussed for some time. In

Figure 4-10: Challenger 604 Business Jet



fact, the previous Airport Master Plan Update reflected an ultimate C-III designation that was approved by the FAA.

At present, it is estimated that only 40 itinerant operations are conducted by C-III aircraft such as the Gulfstream V and Bombardier Global Express which are large, ultra long-range, corporate jets. Even if C-III aircraft were to grow at an annual rate of 4.0 percent (the selected medium growth rate for the forecast), operational levels would not approach the 500 operations threshold. But when combining all Group III aircraft operations (A-III, B-III, and C-III), the numbers begin to look more promising.

Aircraft in the Group III classification include the ATR 42, Dash 8, and Fairchild F-27 (all are A-III aircraft); the Saab 2000 (a B-III turboprop which visits EWK regularly); and the aforementioned Gulfstream V and Bombardier Global Express business jets (C-III aircraft). When combined, present-day operations from these Group III aircraft total 230 and while still below the design aircraft/family threshold criteria, these itinerant operations could reach 500 annually if they grow at the recommended forecast growth rate of 4.0 percent.

While it is possible that these operations could exceed forecasted levels (should EWK be presented with opportunities that are not anticipated at this time), Group III aircraft operations should be closely monitored over the planning period to synchronize the timing of runway improvements with actual demand levels.

Supporting the possible increase in Group III itinerant operations are the action plans of several EWK tenants to increase the number of Group III aircraft they work on. But the owner's of these aircraft have indicated that taxiways wider than 35 feet are needed to comply with insurance requirements.

Another push for Group III standards is the fact that EWK serves as a reliever to Wichita Mid-Continent and as that airport grows its commercial operations, general aviation activity will continue to migrate to EWK. It is important for EWK to be prepared for this trend and develop its facilities accordingly.

4.6.3 IMPLICATIONS OF USING GROUP III AIRCRAFT STANDARDS

Before deciding on a future design aircraft or family, consideration must be given to how this may affect future airport infrastructure, specifically the impact to runways and taxiways. For runway design standards, a comparison of C-II and C-III standards is presented in Table 4-8. Taxiway design standards for Group II and III standards are presented in Table 4-9. These standards have been extracted from the latest version of FAA Advisory Circular 150/5300-13, Airport Design.

4.6.3.1 Runway Standards

As shown in Table 4-8 below, the width of the runway is 100 feet wide for both C-II and C-III standards unless the runway is expected to serve aircraft weighing more than 150,000 lbs. Aircraft that fall into this category would be the Boeing 737 series, the Airbus 318/319, the MD-80 series, and other similarly sized jet aircraft used for commercial service. But before continuing discussion, it should be made very clear that EWK is not planning to become a commercial service airport. Its role as a reliever airport (per the NPIAS) and its classification as a regional airport (per the KASP) is to remain the status quo.

Were EWK to serve these heavier aircraft and were their operations to meet or exceed the 500 operations threshold, the runway width would need to be increased from 100 feet to 150 feet. However, as these aircraft are not anticipated at EWK over the forecast period, a 100-foot wide runway would satisfy Group III criteria. Now while the runway width would not change, the runway shoulder width and blast pad dimensions would change in moving from C-II to C-III standards regardless of aircraft takeoff weights.

Table 4-8: FAA Runway Design Standards (Aircraft Approach Categories C and D)

Item	Airplane Design Group	
	II	III
Width	100 ft	100 ft (a)
Shoulder Width	10 ft	20 ft (a)
Blast Pad Width	120 ft	140 ft (a)
Blast Pad Length	150 ft	200 ft

(a) For Airplane Design Group III serving airplanes with maximum certificated takeoff weight greater than 150,000 pounds, the standard runway width is 150 feet, the shoulder width is 25 feet, and the runway blast pad width is 200 feet.

4.6.3.2 Taxiway Standards

Under a Group III aircraft scenario, Runway 17-35 could remain at is present width of 100 feet, but its associated taxiway system would require wider pavements and clearances. As shown in Table 4-9, the taxiway standards change significantly between Group II and Group III.

One example that supports this recommendation for wider taxiways is presented in Figure 4-11 which depicts a Saab 2000 turboprop aircraft operating on Taxiway E. The main gear is precariously close to the edge of the taxiway pavement and the

Table 4-9: FAA Taxiway Geometric Standards

Item	Airplane Design Group	
	II	III
Taxiway Width	35 ft	50 ft (a)
Edge Safety Margin (b)	7.5 ft	10 ft (c)
Shoulder Width	10 ft	20 ft
Safety Area Width	79 ft	118 ft
Taxiway OFA Width	131 ft	186 ft
Taxilane OFA Width	115 ft	162 ft
Radius of Taxiway Turn	75 ft	100 ft (d)
Length of Lead-in to Fillet	50 ft	150 ft (d)
Fillet Radius for Tracking CL	55 ft	55 ft (d)
Taxiway Wingtip Clearance	26 ft	34 ft
Taxilane Wingtip Clearance	18 ft	22 ft

(a) For airplanes in Airplane Design Group III with a wheelbase equal to or greater than 60 feet, the standard taxiway width is 60 feet.

(b) The taxiway edge safety margin is the minimum acceptable distance between the outside of the airplane wheels and the pavement edge.

(c) For airplanes in Airplane Design Group III with a wheelbase equal to or greater than 60 feet, the taxiway edge safety margin is 15 feet.

(d) Airplanes in Airplane Design Group III with a wheelbase equal to or greater than 60 feet should use a fillet radius of 50 feet.

Figure 4-11: Saab 2000 on Taxiway E



minimum taxiway edge safety margin is not provided. Reduced taxiway safety is a concern for other Group III aircraft operating at EWK as well.

The FAA understands and supports the need for wider taxiways at EWK as evidenced not only by their approval of the 2005 Airport Master Plan which reflects an ultimate C-III taxiway system classification but also by their financial participation in the 2009 Taxiway A, B, C, D, E Lighting Rehabilitation project.

Under this project, new medium-intensity taxiway edge light systems were installed further away from the pavement edge in anticipation of widening the taxiway from is current width of 35 feet to 50 feet in the future. In this manner, the taxiway edge light would not have to be relocated when the pavement was widened thereby reducing future project costs. The lighting rehabilitation project was funded 95 percent by the FAA under AIP Grant No. 3-20-0058-19.

4.6.4 ULTIMATE AIRPORT CLASSIFICATION

Based on the preceding discussion, it is recommended that an ultimate C-III classification of Runway 17-35 and its associated taxiway system be assigned. Planning to C-III standards would better position EWK to accommodate future aviation demand.

Runway 8-26 has an existing and ultimate B-I classification and it is recommended that this classification remain. Accordingly, the east portion of Taxiway C that serves Runway 8-26 should remain at its current width of 30' to accommodate small aircraft with wide main gear spacing.

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Chapter Five
FACILITY REQUIREMENTS

5.1 INTRODUCTION

Once the forecasts of aviation activity are generated and approved by the FAA, the next step is to compare forecasted demand level against the capacity of the existing airport facilities. From this comparison, a determination can be made as to the adequacy or inadequacy of existing facilities to meet demand. This comparison also helps define the extent and timing of facility improvements needed to accommodate current and forecasted aviation demand. In determining future facility needs, there are three pieces of information that airport planners review:

- facilities required to accommodate current demand and maintain existing airport level of service requirements;
- facility enhancements necessary to meet FAA standards; and
- facilities required to meet future forecasted demand.

The improvements outlined on the following pages represent the development that is required not only to meet identified levels of demand but that also simultaneously yields a safe, efficient, unconstrained, and attractive public facility. A summary of the improvements is presented in **Appendix C** and where referenced therein, detailed discussion of certain improvements is provided in the Facility Requirements chapter. The next chapter of the EWK Master Plan Update will assess the viability of providing for the facility enhancements noted in Chapter 5 by taking into consideration factors including development cost, environmental factors, availability of funding sources, and construction considerations.

5.2 CAPACITY

5.2.1 AIRFIELD CAPACITY ANALYSIS

An airfield capacity analysis is conducted to determine the theoretical capacity, in terms of the number of aircraft operations the airfield can accommodate based on a number of factors including the aircraft fleet and the airfield configuration. Based on the analysis, current or potential airfield facility deficiencies impacting operational capacity can be identified. Airfield capacity for EWK was evaluated utilizing the methodology contained in FAA Advisory Circular (AC) 150/5060-5, Airport Capacity and Delay.

There are a number of techniques for assessing airfield capacity. For the EWK Master Plan Update, the assessment will utilize Annual Service Volume (ASV). An airfield's capacity as expressed in terms of its ASV is defined as the maximum number of operations (i.e. aircraft arrivals, departures, and touch-and-go's) that can take place on the runway system over a one-year period. An estimate of capacity is influenced by many factors, including:

- types of aircraft using the airfield (fleet mix),
- airfield configuration,
- operational flow/utilization of the runway system,
- wind and weather characteristics,
- exit taxiway locations, and
- airspace constraints

Two general rules of thumb pertaining to airport capacity thresholds are that when the level of operations reach 60 percent of the ASV, it is prudent to begin planning for future capacity enhancement such as taxiway improvements, runway improvements up to and including a

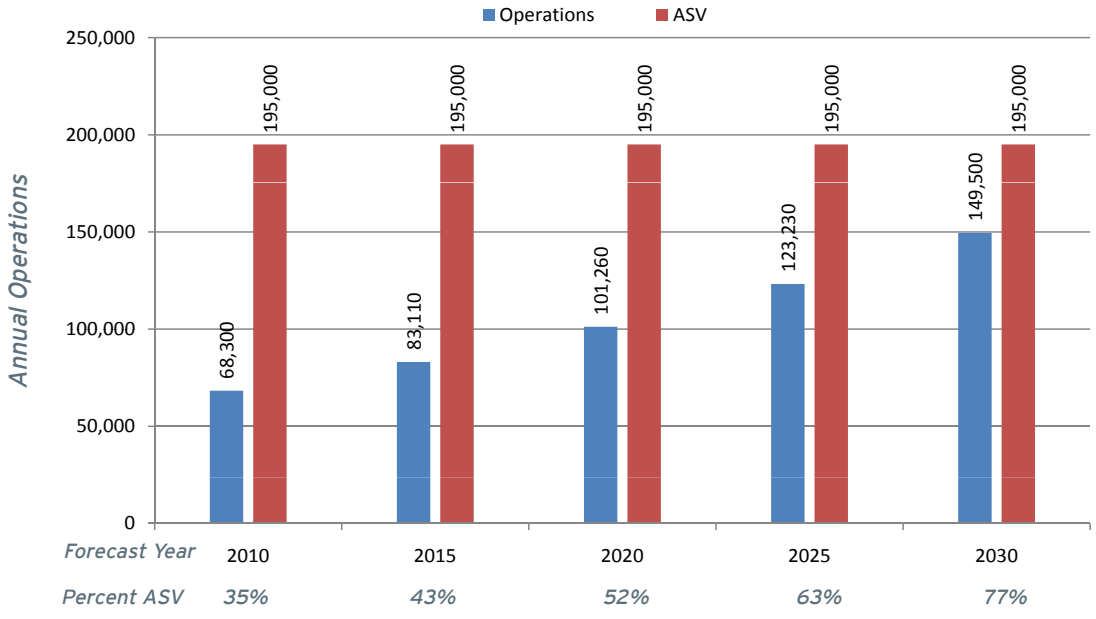
parallel runway; and at 80 percent of the ASV, construction of those enhancements/facilities should begin. While these general rules apply, capacity enhancements involving significant runway enhancements typically also must meet cost benefit thresholds and environmental approval prior to moving forward.

Preliminary planning values indicate EWK's intersecting two-runway configuration currently provides an ASV of 195,000 annual operations. Based on recent operational data, EWK experiences an estimate 68,300 annual operations representing 35 percent of the ASV. As a result, no additional capacity enhancements are required to meet current aviation demand. However, based on the forecast of future aviation activity EWK is projected to reach 149,500 annual operations towards the end of the planning period. Based on the project level of operations, EWK will reach approximately 77 percent of ASV and as a result should plan for additional airfield capacity to meet demand in the later stages of the 20 year planning period.

Figure 5-1 compares forecasted annual operations against the ASV. According to this figure, EWK's operations are forecasted to reach 60 percent of the ASV (or 117,000 operations) by the year 2024. It is recommended that detailed planning for added airfield capacity should begin at this level. When EWK's operations reach 80 percent of the ASV (or 156,000 operations), construction of the capacity enhancing facilities should begin. This activity level is projected to occur by the year 2031 which is just outside of the master plan's planning period. **Figure 5-1** also suggests that EWK's annual operations would reach 100 percent of the ASV by the year 2042.

One future capacity enhancement option may be the de-coupling of Runways 17-35 and 8-26 so that they do not physically intersect. In their current configuration, aircraft operations occurring on one runway are dependent on the other and separating the two runways would significantly reduce the dependency between them. According to AC 150/5060-5 guidance,

Figure 5-1: Forecasted Operations and ASV (Demand/Capacity)



Source: HNTB

airports with non-intersecting runways could experience an ASV of 225,000 annual operations. This would increase the ASV of the current intersecting runway configuration by approximately 15 percent. Another means of addressing EWK's future capacity needs is the addition of a parallel runway. This could potentially increase the airport's ASV to 285,000 annual operations based on an analysis using AC 150/5060-5 guidance. This is an estimated 46 percent increase over the ASV of the current intersecting runway configuration. For reference, in 2010 some of the busiest general aviation airports across the U.S. with parallel runway configurations experienced general aviation aircraft operations between 240,000 and 300,000 annually according to the FAA's Air Traffic Activity Data System (ATADS).

While the above ASV numbers are appropriate for long-range planning purposes, a more detailed analysis of hourly capacity demand, cost/benefit, and the ASV should be performed as part of future crosswind runway de-coupling or parallel runway planning efforts.

While it is important to plan for additional capacity enhancements at EWK to meet its own operational efficiency and safety needs, it is also important to allow EWK to plan so as to fulfill its role as a designated reliever airport to Wichita Mid-Continent Airport (ICT). The Newton City-County Airport is a vital airport in the Wichita metropolitan area, serving as the largest and most active reliever on the north side of Wichita. Thus, the combination of the forecast of future aviation activity coupled with the role the airport serves in the larger Wichita region fully support the need to monitor activity and plan accordingly for future demand and capacity needs.

5.2.2 AIR TRAFFIC CONTROL TOWER ASSESSMENT

Consideration should be given to the development of an Air Traffic Control Tower over the planning period at EWK. A number of factors support this recommendation. These include the existing intersecting runway configuration, concerns regarding the significant mix of high end and high performance business jets with smaller piston general aviation aircraft that operate regularly at EWK, and a significant increase in the number of aircraft operations as per the Forecast Chapter. An ATCT facility would be necessary to manage arriving and departing aircraft and therefore provide a safe and efficient aircraft operating environment.

It is recommended that an air traffic study be conducted when annual aircraft operations reach 60 percent of the ASV (or 117,000). The air traffic study would determine if an ATCT is needed, and if so, when and should also include a review of alternative ATCT locations, line-of-sight analysis, utility needs assessment, determination of conformity with Planning Standard One criteria, and a benefit-cost analysis to determine financial feasibility. In keeping with a strategic and flexible approach to planning the airport, it is recommended that land be set aside for an ultimate ATCT facility similar to the one depicted in **Figure 5-2**.

Figure 5-2: Typical ATCT



Source: HNTB

Based on EWK's current intersecting runway configuration, an ideal location for a future ATCT is west of Hangar B which would situate the ATCT due west of the midpoint of Runway 17-35. This location is likely to provide a clear line-of-sight from the ATCT cab to Runways 17-35 and 8-26 and the Terminal Apron. Another possible location for an ATCT would be east of Runway 17-35 and south of Runway 8-26 when consideration is given to the possibility of a parallel runway. At this location, the ATCT would be located between the parallel runways and have an unobstructed view of the entire airfield.

5.3 AIRFIELD FACILITIES

Airfield facilities include those needed for the arrival, on airport movement and departure of aircraft. These facilities include runways, taxiways, airfield marking and lighting, and navigational and runway landing aids. This section of the Facility Requirements chapter identifies the needs of the airfield and sets the stage for reviews of different scenario alternatives.

5.3.1 RUNWAY 17-35

5.3.1.1 Runway 17-35 Airport Reference Code (ARC)

Runway 17-35 and its associated taxiway system are currently classified with an ARC of C-II. This classification is appropriate for the current mix of aircraft operating into and out of EWK. As mentioned at the close of the Forecast Chapter, an upgrade to the C-III classification was recommended for the design of runway facilities and associated taxiways to meet an anticipated future increase in the size of aircraft anticipated to operate at the airport.

Upon its review of the Forecast Chapter, the FAA has approved the proposed C-III classification provided that future development to C-III standards is "...supported by actual operational levels at the time of the proposed development to be considered for FAA funding." In short, this requirement is that the airport must experience 500 annual itinerant operations by aircraft meeting the parameters of airport approach category C and aircraft design group III.

5.3.1.2 Runway 17-35 Approach Minimums

Instrument approach procedures have been developed to allow aircraft landings to Runways 17 and 35 in poor weather/reduced visibility conditions. Runway 17 has two precision instrument approach procedures that afford aircraft the ability to land in weather with cloud ceilings as low as 200 feet AGL and visibility down to 1/2 statute miles from the runway end. Runway 35 has two non-precision approach procedures in place and one of these procedures (the RNAV (GPS) 35 procedure) provides landing minimums of 250 feet AGL and 3/4 mile visibility.

During the winter months when winds are out of the north/northwest, wind speed frequently exceeds the maximum allowable tailwind component for aircraft to make an instrument approach to Runway 17. To increase EWK's approach coverage and better serve the flying public, improved landing minimums matching those on Runway 17 are recommended for the approaches to Runway 35. Lower minimums may be accomplished through the addition of an approach lighting system which could lower the visibility minimum to 1/2 mile. Lower minimums may also be achieved over time as enhanced GPS capability in conjunction with NextGen deployment moves forward and accuracy improve.

Lower minimums for landings from the south would help EWK fulfill its NPIAS role as a high capacity alternative to Wichita and address pilot training, aircraft testing and certification, capacity, and enhancements to safety for Wichita-area aircraft operations.

5.3.1.3 Runway 17-35 Declared Distances

Airports that are affected by site related constraints and are not able to provide a standard safety area beyond a runway end have often employed an alternative design

method for meeting FAA airport standards called the Declared Distances concept. Under this concept, the length of usable runway is reduced to allow the airport to obtain the standard safety area between the runway end and the controlling feature (e.g., a fence, road, or localizer antenna). In some cases, the airport can simply publish declared distance information without having to physically change the runway markings, that is, the length of runway available for specific operations can be different from the length of actual pavement. In those cases, using the Declared Distances concept is a very cost effective approach to providing a safe runway environment and often reduces the level of impact to the operational viability of the runway as the reduction in available operational length may only occur in one direction of operation.

Declared distances provide pilots with exact runway information that takes into consideration the provision of a runway in conformity with standards and assists them in calculating acceptable loads based on the published available runway length and within the prescribed safe operating limits for their individual airplanes. The four declared distance values that are used by pilots and depicted on Airport Layout Plans are defined as follows:

- Takeoff Run Available (TORA) – the length of runway available for the takeoff run which includes accelerating from brake release to the point of lift-off.
- Takeoff Distance Available (TODA) – the TORA plus the length of any remaining runway or clearway beyond the far end of the TORA. The usable TODA is controlled by obstacles in the departure area.
- Accelerate Stop Distance Available (ASDA) – the length of runway plus any stopway declared available to accelerate from brake release to the takeoff decision speed and then decelerate to a full stop.
- Landing Distance Available (LDA) – the length of runway declared available for completing the approach, touching down, and decelerating to a stop.

Declared distances have been published for aircraft operations using Runway 17 because of the Runway 17 Localizer Antenna location. At 702 feet south of the runway pavement, the localizer antenna precludes the provision of a standard 1,000-foot long by 500 foot wide runway safety area from being provided beyond the stop end of Runway 17. **Figure 5-3** depicts the location of the localizer antenna. To address the RSA deficiency declared distances have been applied to Runway 17/35. To provide a standard safety area beyond the runway end, the stop end of Runway 17 has been moved 298 feet to the north. This results in an ASDA and LDA of 6,705 feet. The declared distances for Runway 17-35 are listed in **Table 5-1.**

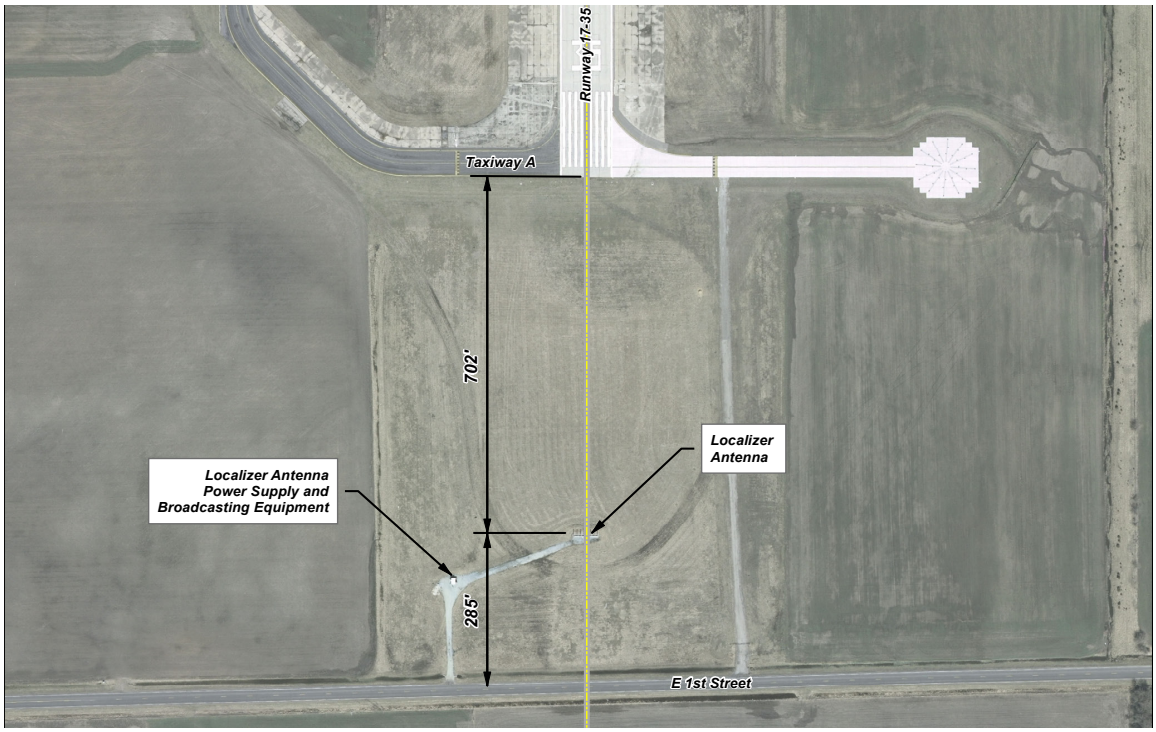
Table 5-1: Current Declared Distances

	Runway 17	Runway 35
TORA	7,003	7,003
TODA	7,003	7,003
ASDA	6,705	7,003
LDA	6,705	7,003

While a cost effective approach to providing a safe runway environment, the publication of declared distances for Runway 17 can present adverse impacts to aircraft operators. During the summer months when air temperatures are high and winds are out of the south, aircraft takeoff from and land to Runway 17. The reduced ASDA does have an impact to operators as it requires them to reduce aircraft takeoff weight which in most cases adversely impacts the ability of the operator to take on adequate fuel to reach their destination non-stop.

It is recommended that a runway safety area improvement project be constructed in the future to remove the declared distances for Runway 17 and return the runway distances to their full lengths. This may be done as a stand-alone project or as part of a runway extension project. The options available to address the RSA deficiency and provide for a standard

Figure 5-3: Current Configuration of Runway 17 Localizer Antenna



Source: HNTB

1,000-foot-long RSA generally consist of the following seven alternatives:

1. Continue the use of the Declared Distances concept. This would be considered the No Action case.
2. Relocate the localizer antenna approximately 310 feet south and relocate a portion of E. 1st Street to pass around the southern end of the RSA and ROFA.
3. Install an Engineered Materials Arresting System (EMAS) off the south end of Runway 17-35 to provide the required RSA capability beyond the stop end of Runway 17.
4. Reduce the length of Runway 17-35 by at least 298 feet. This would consists of moving the south end of the runway to the north. Should the runway's edge light spacing of 200 feet be maintained, the runway would need to be reduced by 400 feet. The approach end of Runway 17 would remain as is.
5. Shift Runway 17-35 approximately 400 feet to the north (to preserve the runway edge light spacing). This option would also include relocation of entrance Taxiways A and D to keep them aligned with the ends of the runway. Exit Taxiways B and C may also require relocation to maintain the optimum location for aircraft to exit the runway after landing. To accommodate the additional runway pavement, the existing Runway 35 approach lighting system (MALSR) would need to be relocated. The Runway 35 glide slope antenna may require relocation as approach angle and threshold crossing heights may need adjustment.
6. Extend Runway 17-35 to the north by 200 feet to the north and relocate the localizer antenna south by 200 feet.

7. Extend Runway 17-35 to the north by 400 feet. The localizer antenna would remain in its current location in this alternative.

The most appropriate alternative for implementation at EWK will be assessed in the alternative analysis of **Chapter 6**.

5.3.1.4 Runway 17-35 Pavement Condition and Strength

Runway 17-35 is in poor condition and has structural problems that are affecting its ability to accommodate the current and future aircraft. In parallel with this Airport Master Plan Update, a runway pavement study is being conducted of Runway 17-35 to assess its current condition in greater detail and to develop rehabilitation and construction options that will maintain its ability to meet aircraft needs.

In July 2011, the City of Newton met with FAA staff to discuss preliminary runway pavement rehabilitation options and these options are being explored. The Runway 17-35 Rehabilitation Options Study is expected to be finalized September 2011 and the results will be incorporated into the master plan update. Rehabilitation/reconstruction of Runway 17-35 is currently programmed for 2012.

5.3.1.5 Runway 17-35 Length

FAA Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*, was used to determine if the current length of Runway 17-35 is sufficient to accommodate a reasonable representation of the present-day and future aviation demand. The use of this Advisory Circular is mandatory for airport projects expected to receive Federal funding. This planning document provides guidelines to determine runway length using a five step procedure. The length of Runway 17-35 needed to accommodate current demand will be determined first. Then the runway's length to meet forecasted demand will be calculated.

Length Required to Meet Current Demand

Step 1. Identify the list of critical design airplanes that will conduct at least 500 annual itinerant operations at the airport.

Based on the information provided in **Table 4-2** of the Forecast Chapter, it is estimated that 13,170 annual itinerant operations are conducted by Aircraft Approach Category C aircraft. Of this category, itinerant operations are further subdivided by Airplane Design Group as follow:

- 4,180 operations by C-I aircraft
- 8,950 operations by C-II aircraft
- 40 operations by C-III aircraft

C-II aircraft will serve as the critical design family of aircraft. This family of aircraft consists exclusively of business jet aircraft, while also accounting for piston and turbo-prop aircraft in approach category A and B.

Step 2. Identify the airplanes that will require the longest runway lengths at maximum certified takeoff weight (MTOW).

When the MTOW of the critical design airplane is less than 60,000 lbs., runway length requirements are often determined using FAA software that groups aircraft having similar performance characteristics and operating weights. When the MTOW is 60,000 lbs. or greater, runway length is typically calculated based upon individual aircraft performance criteria from the manufacturer.

Of the 8,950 business jet operations conducted at EWK, it is estimated that 8,820 are conducted by aircraft weighing less than 60,000 lbs. The remaining 130 operations are conducted by large business jet aircraft with MTOWs of 60,000 lbs. and higher such as the Gulfstream III and IV.

Airplanes in the ARC C-II family of aircraft that have MTOWs below 60,000 lbs. will be used to determine runway length needs based on current activity.

Step 3. Determine the method that will be used for establishing the recommended runway length.

Chapter 3 of AC 150/5235-4B identifies two separate groups of aircraft according to performance capability and the percent of the aircraft fleet encompassed in the grouping. The two groups are "Airplanes that Make Up 75 Percent of the Fleet" and the "Remaining 25 Percent of Airplanes that Make Up 100 Percent of the Fleet".

Aircraft within the "75 percent grouping" include the Cessna Citation V (similar to the one pictured in **Figure 5-4**), the Learjet 35, and the Dassault Falcon 20. These and other similarly sized itinerant aircraft are estimated to conduct 8,420 annual operations and will be used to determine if the existing runway length can accommodate present-day demand.

Aircraft within the "100 percent grouping" include the Challenger 604, Citation X, and the Learjet 60 (depicted in **Figure 5-5**). These and other similarly sized itinerant aircraft are estimated to conduct 300 annual operations at present. As operations from these aircraft do not at this time meet the FAA's threshold for determining the runway length needed, the FAA will not participate in funding a runway extension based on these aircraft operations. However, these aircraft and their forecasted operations will be used to determine runway length to accommodate future demand (see next section).

The remaining 100 annual operations are assigned to commuter/regional jet aircraft such as the Embraer 145 and the Fairchild-Dornier 328. These aircraft do not meet the FAA's threshold for determining the runway length.

Figure 5-4: Cessna Citation V



Source: HNTB

Figure 5-5: Learjet 60



Source: HNTB

Therefore, having generally established the aircraft comprising the "75 Percent" group as the critical group of aircraft, the next step is to select a useful load for these aircraft.

Useful load consists of the passengers (and their baggage), cargo, and usable fuel that can be carried by the aircraft. The useful load is groupings are expressed as a percentage of the MTOW's of the aircraft in respective fleet group.

At airports where there is not sufficient runway length for takeoff and landing operations, operators must reduce the aircraft's useful load. Similarly, during the summer months, when air temperatures at the airport are higher than the rest of the year, aircraft operators may have to reduce the useful load even further to takeoff given the runway length available.

According to AC 150/5235-4B, two useful load categories are available: 60 percent and 90 percent of the total useful load. The selection of a useful load category is determined on the basis of the haul lengths and service needs of the critical design aircraft (or family). The 90 percent useful load category is used only when the critical design aircraft (or group) are unusually loaded with passengers, baggage, and/or cargo or flying long distances (greater than 500 miles).

Step 4. Determine the recommended runway length.

To accommodate 75 percent of the fleet at 60 percent useful load, the unadjusted runway length required is 4,964 feet. To accommodate 75 percent of the fleet at 90 percent useful load, the unadjusted runway length required is 6,910 feet.

The length required for landing operations for the 60 percent useful load group is 5,500 feet. For the 90 percent useful load group, 7,000 feet is required for landing.

These lengths are based on EWK's field elevation of 1,533 feet above mean seal level and the mean daily maximum temperature of the hottest month. At EWK, July is the hottest month with a mean daily maximum temperature of 92.7 degrees Fahrenheit based on data from "Climatography of the United States No. 81 (Kansas)" published by the National Oceanic and Atmospheric Administration.

Step 5. Apply any necessary adjustment to the recommended runway length.

Adjusting the above takeoff lengths to account for the elevation change between the high and low points along the runway centerline, an additional 58.6 feet of length is required. Adding this length to the unadjusted runway lengths, the following runway lengths result:

- 5,023 feet for 60 percent useful load. Distances ending in less than 30 feet are rounded down to the next 100-foot. The runway length required for 60 percent useful load is 5,000 feet.
- 6,969 feet for 90 percent useful load. This value is rounded up to 7,000 feet.

No further adjustments to the landing lengths determined in Step 4 are necessary as these are the maximum landing lengths allowable per the FAA Advisory Circular.

In summary, Runway 17-35 can accommodate 75 percent of the aircraft fleet operating at 90 percent useful load at its present length. As such, no extension of the runway is required to meet current aviation demand. As there are not enough operations currently being conducted by aircraft making up 100 percent of the fleet (operating at 90 percent useful load), justification to garner FAA participation in a runway extension does not exist at this time.

Length Required to Meet Future Demand

According to the Forecast of Aviation Demand, aircraft within the "100 percent grouping" with MTOWs of less than 60,000 lbs. are estimated to conduct 540 annual operations by the year 2020 and 960 annual operations by the year 2030. As these operations meet the FAA's threshold of 500 annual itinerant operations, these aircraft will serve as the critical design family for determining ultimate runway length at EWK.

Following Steps 2 through 5, the recommended ultimate runway lengths for takeoff are 6,100 feet for 60 percent useful load and 9,200 feet for 90 percent useful load. According to these calculated lengths, Runway 17-35 can accommodate 100 percent of the aircraft fleet operating at 60 percent useful load. However, to meet future aircraft takeoff length requirements for these same aircraft operating at 90 percent useful load, Runway 17-35 would need to be extended by 2,200 feet.

As mentioned earlier, the 90 percent useful load category is used when the critical group of aircraft are unusually loaded with passengers, baggage, and/or cargo or flying long distances (greater than 500 miles). To determine if the ultimate runway length can be based on the 90 percent useful load category, EWK's Jet A fuel records from 2010 were reviewed. This data is included in **Appendix C**.

The Jet A fuel records include the aircraft's N-number and the number of gallons of fuel purchased during the first six months of the year and the last six months. From the data, it is not possible to determine the aircraft's usable load. However, using the FAA's on-line N-number registry, the address of the aircraft's owner was used to determine the distance from EWK. According to the analysis, operations conducted by aircraft type are as follows:

- 90 by Turboprop
- 86 by Jets in the 75% Grouping
- 32 by Jets in the 100% Grouping

While the number of jet aircraft in the "100 percent grouping" do not conduct 500 or more annual itinerant operations (which is the FAA's criteria for critical aircraft designation), it must be understood that the number of operations logged in EWK's Jet A fuel sale records does not represent the full and complete list of operations conducted by such aircraft in 2010. The main point of this analysis is that the sample does confirm that aircraft are flying from airports more than 500 miles from EWK. The average trip distance of these aicraft is 833 statute miles.

With confirmation of distance and the 960 annual itinerant operations of aircraft within the "100 percent grouping" (with MTOWs of less than 60,000 lbs.) forecasted by the year 2030, it is recommended that Runway 17-35 ultimately be extended to 9,200 feet to accommodate takeoff needs of these aircraft.

The recommended runway lengths needed to accommodate the takeoff and landing requirements of Runway 17-35 for existing and forecasted operations are summarized in **Table 5-2**.

Table 5-2: Runway 17-35 Length Recommended to Meet Aviation Demand

Percent of Fleet	75%		100%	
Aircraft Useful Load	60%	90%	60%	90%
Takeoff Length	5,000	7,000	6,100	9,200
Landing Length	5,500	7,000	5,500	7,000

5.3.2 RUNWAY 8-26

5.3.2.1 Runway 8-26 Pavement Condition and Strength

The crosswind runway is in very good condition and is capable of supporting current and future aircraft takeoff weights. A slurry seal or similar asphalt pavement rehabilitation project is recommended for Runway 8-26 in the short term. This would be the runway's first pavement rehabilitation since its reconstruction in 2005.

5.3.2.2 Runway 8-26 Length

As mentioned in the Inventory Chapter, the presence of Runway 8-26 increases the airport's wind coverage to greater than 95 percent for the 10.5 knot crosswind allowing for a more favorable alignment for the fleet of small aircraft in the A-I and B-I categories. These aircraft range in size from single engine piston Cessnas (similar to the one pictures in **Figure 5-6**) to multi-engine piston aircraft such as the Baron 58.

Given the approach speeds of these aircraft and their maximum takeoff weight of less than 12,500 lbs., the runway length methodology for small aircraft presented in Chapter 2 of Advisory Circular 150/5325-4B will be used to determine the recommended length of Runway 8-26. This methodology is similar to that used to calculate runway length for Runway 17-35.

Figure 5-6: Cessna 172S



Source: HNTB

Using the "95 percent of fleet" category, the recommended runway length of Runway 8-26 is 3,700 feet. This "95 percent of fleet" category includes those airports that are primarily intended to serve low activity locations and small population communities. Runway 8-26 is currently 3,501 feet long and does not meet the recommended runway length. However, after discussing the crosswind runway's current length and usage with representatives comprising the Planning Advisory Committee, it was determined that no additional runway length is needed for Runway 8-26 at present or in the future to accommodate the needs of small aircraft.

5.3.3 TAXIWAY SYSTEM

5.3.3.1 Taxiway Width

Taxiways A, B, C West, D, and E are currently assigned a Group II classification which calls for a minimum taxiway width of 35'. The taxiways are 40 to 50 feet wide at present and meet current FAA standards. The Forecast Chapter recommended the taxiway classification be upgraded to Group III standards given the projected increase in operations by business jets with the Group III category over the planning period.

The FAA has approved the proposed Group III taxiway classification provided that future development to Group III standards is "... supported by actual operational levels at the time of the proposed development to be considered for FAA funding." As such it is recommended that EWK provide for a future taxiway pavement width of 50 feet to meet current and future aviation demand.

Taxiway C, east of Runway 17-35 has a current Group I classification and is 30 feet wide. The taxiway width conforms to FAA standards and is adequate to meet current and future aviation demand that uses this taxiway to provided access to and from the threshold of Runway 26.

5.3.3.2 Taxiway Pavement Condition and Strength

The Taxiway A, B, C West, D, and E pavements are of similar age and pavement section as Runway 17-35. According to the 2008 PCI Map included in **Appendix A**, the taxiways have PCI values from 69 (fair) to 81 (satisfactory).

While the taxiway pavements support current demand associated with Runway 17-35, a plan is needed to rehabilitate and ultimately reconstruct the taxiways given their similarities to the Runway 17-35 pavement. The short- and long term plan for Runway 17-35 resulting from the runway paving option study will be used to help determine the appropriate course of action for the taxiways.

The portion of Taxiway C east of Runway 17-35 has a PCI value of 81 according to the 2008 PCI Map. This taxiway pavement is in satisfactory condition and is capable of supporting current and future demand associated with Runway 8-26. Similar to Runway 8-26, a slurry seal or similar asphalt pavement rehabilitation project is recommended for Taxiway C East within the short term.

5.3.3.3 Runway-Taxiway Separation

Taxiway E is the parallel taxiway to Runway 17-35 and its centerline is located 670 feet from the centerline of Runway 17-35. This taxiway-runway separation distance is greater than the minimum 400 feet called for by FAA standards for a C-II runway with visibility minimums less than 3/4 statute miles.

This greater-than-required separation distance adversely affects EWK's ability to construct additional hangars in the long term. Therefore, it is recommended that at such time as Taxiway E requires extensive reconstruction, it is also relocated 270 feet to the east of its current alignment. This relocation will place the centerline of the future taxiway 400 feet west of the centerline of Runway 17-35 consistent with the FAA standard.

Taxiway C is the parallel taxiway to Runway 8-26 and its centerline is located 200 feet from the runway centerline. As the runway is designed to accommodate small airplanes exclusively (i.e., those with MTOWs of 12,500 lbs. or less), this taxiway-runway separation distance meets FAA standards and is acceptable for current and future aircraft demands.

5.3.4 T-HANGAR TAXILANES

Surrounding the four existing T-hangars are a series of taxilanes that provide aircraft with access to the T-hangars from Taxiway E, and vice versa. A total of seven taxilanes are present and the condition of these pavements range from very poor (PCI of 40) to very good (PCI of 91) based on the 2008 PCI Map.

All taxilanes are comprised of 5-inch concrete pavement underlain by an aggregate base course (probably varying in thickness from 4 to 6 inches). This pavement section is adequate to support current and future based aircraft in the T-hangars. All of these based aircraft have a maximum takeoff weight of 12,500 lbs. or less.

While the pavement thickness is adequate for aircraft needs, the taxilane pavements are undersized to accommodate the regular traffic from aircraft fuel trucks and the seasonal traffic from the snow removal equipment. It is recommended that when the taxilane pavements are reconstructed, the pavement section is designed to a slightly thicker concrete pavement section (perhaps 6 to 7 inches thick) to support these vehicles. This recommendation comes from a previous airport project that proposed construction of a aircraft fuel truck parking area. The pavement design recommended an 7 inch thick concrete pavement section upon which the aircraft fuel trucks would park when not refueling aircraft. This facility was proposed as a bid alternate in the Terminal Apron Rehabilitation Project (AIP-20) but was not constructed.

5.3.5 AIRCRAFT RUN-UP APRONS

With an estimated 34 peak hour operations (68,300 total annual operations) currently being conducted, traffic on Taxiway E experiences periodic delays while waiting for

pilots to complete their vital pre-flight checks and engine run-ups. According to FAA Advisory Circular 150/5300-13, paragraph 409, the trigger for constructing aircraft run-up apron (holding bays) is 30 operations per hour (or 75,000 total annual operations). Therefore, it is recommended that an aircraft run-up apron be constructed at each end of Taxiway E in the short term to meet current demand, greatly improve aircraft movement operations, and enhance operational efficiency and safety. Given the projected increase of Group III aircraft activity, the hold aprons should be planned to accommodate Group III aircraft.

5.4 TERMINAL AREA FACILITIES

5.4.1 TERMINAL APRON

The Terminal Apron currently measures 27,743 square yards. Using the FAA's apron sizing guidelines, the apron is half the size needed to handle current itinerant aircraft. To meet current aviation demand, the Terminal Apron area should be expanded to 56,540 square yards. An apron of this size would allow EWK to better accommodate itinerant aircraft such as the Learjet 60, the Challenger 604, and the Saab 2000. **Figure 5-7** depicts two Saab 2000 aircraft parked on the Terminal Apron.

To meet long-term projection of demand, an apron area of approximately 123,750 square yards is required. **Table 5-3** summarizes the Terminal Apron size required over the 20-year planning period. **Appendix C** contains the FAA apron sizing spreadsheets. According to the 2008 PCI Map, the Terminal Apron has a PCI value of 82 for the majority of the apron. The southernmost area of the apron has a PCI value of 91. Overall, the Terminal Apron is in good condition although it is exhibiting some reflective cracking resulting from the joint pattern of the underlying concrete pavement. Continued routine maintenance should be performed including crack filling to maintain the pavement as long as possible and minimize the potential of premature deterioration.

Figure 5-7: Two Saab 2000 Aircraft on Terminal Apron



Source: HNTB

Table 5-3: Recommended Future Terminal Apron Size

	2015	2020	2025	2030
Annual Itinerant Operations	42,050	51,420	62,350	75,650
Terminal Apron Area (sq. yds.)	68,790	84,115	102,000	123,750

5.4.2 TERMINAL BUILDING

To continue to offer the level of service the flying public has come to enjoy at EWK, the Terminal Building (depicted in **Figure 5-8**) should be expanded to provide for the growth in itinerant operations and the growth of corporate and business jet activity and the affiliated passengers typically associated with this segment of the general aviation market. This could include more/larger conference rooms, additional area for airport management and operations staff, a kitchenette, and a break room. Maintaining the ratio of building size (9,200 square feet) to total annual aircraft operations (68,300 operations), an ultimate Terminal Building of approximately 20,000 square feet may be required to accommodate the 149,500 annual operations expected by 2030.

To accommodate the additional airport staff required over the long term (refer to Section 5.5.1), the operations area should be expanded. To maintain an unobstructed view of the Terminal Apron, the operations area should remain along the east side of the building. This may require converting the north conference room, the airport manager's office, and the south conference room into operations space. The operations area room could also be expanded to the east and/or in combination with a north/south room expansion.

If the Terminal Building were to remain a single-story facility, airport management offices and conference rooms could be moved to the southwest corner of the building. Pilot lounge and flight planning rooms could be located to the northwest. Should expansion of the building meet site constraints, it could be expanded with airport management offices located on a second story although this would increase cost due to the need to conform to the Americans with Disabilities Accessibility (ADA) requirements.

Lastly, should garage space for the ARFF vehicles continue to be provided as part of the Terminal Building, a total of two to three bays should ultimately be provided to meet long-term aviation demand.

5.4.3 VEHICULAR PARKING

Twenty automobile parking spaces are available in the terminal parking lot. Three parking spaces are reserved for Hertz Rental Car vehicles and the remaining 17 are available for public use. Typically this parking lot reaches 50 to 80 percent capacity during most weekdays and weekends. Therefore, additional terminal parking should be provided to ensure the adequacy of supply. **Table 5-4** presents the recommended number of parking stalls based on aviation activity.

Figure 5-8: EWK Terminal Building



Source: HNTB

Table 5-4: Recommended Future Vehicle Parking Spaces

	2015	2020	2025	2030
Annual Operations	83,110	101,260	123,230	149,500
Based Aircraft	174	212	258	313
Total Vehicle Parking Spaces	24	30	36	44
Total Public Use Parking Spaces	20	26	32	38
Total Reserved Parking Spaces	4	4	4	6

With regard to non-public vehicular parking areas, it is assumed that private hangars, individual hangars, and private buildings will have parking facilities of their own or will accommodate the parking of vehicles within their building (for example, within a T-hangar when the pilot is away with the aircraft).

5.4.4 VEHICULAR ACCESS

Access to the airport is provided by N. Oliver Road which has a vehicle design capacity of approximately 1,900 vehicles per hour per lane with traffic along N. Oliver controlled by the stop sign at E. First Street. More than adequate capacity remains for N. Oliver Road throughout the planning period. Should traffic volumes along E. 1st Street increase in the future from what is currently experienced consideration might be given to improving the intersection of N. Oliver Road and E. 1st Street by providing a dedicated left turn lane from E. 1st onto N. Oliver Road.

5.4.5 HANGARS

All based aircraft at EWK reside in either City-owned T-hangars and community hangars or private/individual hangars. Based upon the weather conditions, which vary considerably in this portion of the U.S., a high percentage of hangar use is typical at both EWK and other area airports which is evident from the current demand for hangar space in the Wichita area. Based on these factors, it is assumed that all future based aircraft will reside in hangars.

According to the Forecast Chapter's **Table 4-4**, hangar space will need to be provided for an additional 170 based aircraft over the 20-year planning period. T-hangars would be required for 79 aircraft and community/conventional hangars would house the remaining 91 aircraft. **Table 5-5** presents the hangar requirements for EWK.

Community and conventional hangars would range in size from as small as 64′ x 64′ (similar to existing Hangar S) which would accommodate a single aircraft to as large as 160′ x 150′ which could hold up to eight aircraft depending on their size and how they are orientated in the hangar. The City is currently developing plans and specifications to construct 12,000 square foot community hangar that will be located immediately north of the T-hangars with access to Taxiway E. **Table 5-5** includes the proposed Hangar W as one of seven community hangars needed by 2015.

Table 5-5: Recommended Future Aircraft Hangars

	2015	2020	2025	2030
Additional Aircraft Expected				
No. of Additional Aircraft Expected	31	69	115	170
No. of Aircraft for T-Hangars	9	23	51	79
No. of Aircraft for Community/Conventional Hangars	22	46	64	91
Additional T-Hangars Recommended				
Extend Existing T-Hangar (Bldg. No. 2130) by 9 units	1	0	0	0
No. of 14-unit T-Hangars Required	0	1	2	2
Cumulative T-Hangar Capacity	9	23	51	79
Additional Community Hangars Recommended				
No. of Community Hangars Required	7	7	8	8
Cumulative Community Hangar Capacity	21	42	66	91
Cumulative Community Hangar Floor Area (sq. ft.)	107,415	214,830	337,590	465,465

5.5 AVIATION SUPPORT FACILITIES

5.5.1 AIRPORT STAFFING LEVELS

The city currently employs four full time and two part time staff to provide aircraft services and maintain airport facilities. From discussions with airport management, these levels are adequate to meet the current needs of airport tenants, based aircraft, and itinerant traffic. Using the current ratios of one full time staff member for every 36 based aircraft and 17,075 annual operations, **Table 5-6** reflects the airport staffing levels that should be considered to accommodate future aviation demand. Essentially, the airport should add one full-time staff member approximately every five years. Ultimately, full-time staff should include an airport manager, airport administrative assistant, a combined airport engineer/planner/environmental specialist, operations/maintenance supervisor, and four to five maintenance/line staff. Seasonal part-time staff would be added as required.

Table 5-6: Recommended Future Airport Staffing Levels

	2015	2020	2025	2030
Annual Operations	83,110	101,260	123,230	149,500
Based Aircraft	174	212	258	313
Full Time Staff	5	6	7	9
Part Time Staff	3	3	4	5

5.5.2 FUEL FARM

Based on annual fuel flowage values and forecasted airport operations, it is recommended that additional fuel storage tanks be installed to meet future demand. According to **Table 5-7**, one additional 12,000 gallon Jet A tank would be required when annual aircraft operations reach 123,000 and one additional 12,000 gallon 100 LL tank would be required when annual aircraft operations reach 149,500. Space is available to the north and south of the three existing underground fuel storage tanks to accommodate the expansion in fuel farm capacity.

5.5.3 AIRFIELD SNOW REMOVAL

The main carrier vehicle currently used for snow removal at EWK is a 1994 John Deere 544G four-wheel drive, front end loader. A 10-foot wide displacement plow attachment is used for snow removal operations. In addition to the loader, a 1962 grader is used as a secondary vehicle for snow removal. This vehicle provides additional displacement plowing capacity. These two vehicles maintain the airport's ability to clear the runway, taxiways, and terminal apron.

The front end loader/carrier vehicle has exceeded its design life and should be replaced with an equivalent four-wheel-drive heavy loader with rotary plow, 10-foot long displacement plow, sweeper, and a hopper spreader per FAA recommendations. The

Table 5-7: Recommended Future Fueling Facilities

	2015	2020	2025	2030
Annual Operations	83,110	101,260	123,230	149,500
Annual Fuel Flowage (gal)				
Jet A (77%)	384,000	467,900	569,300	690,700
100 LL (17%)	84,800	103,300	125,700	152,500
MoGas (5%)	29,900	36,400	44,400	53,800
Total Fuel	498,700	607,600	739,400	897,000
*Projected Annual Gross Revenue from Fuel Flowage**				
Jet A	$1,881,600	$2,292,710	$2,789,570	$3,384,430
100 LL	$377,360	$459,685	$559,365	$678,625
Total	$2,258,960	$2,752,395	$3,348,935	$4,063,055
Number of Fuel Storage Tanks Required (12,000 gallons each)				
Jet A	1	1	2	2
100 LL	1	1	1	2
MoGas	1	1	1	1
Total	3	3	4	5
Total Fuel Farm Storage Capacity				
Gallons	36,000	36,000	48,000	60,000

**Prices per gallon of $4.90 for Jet A, $4.45 for 100 LL*

replacement vehicle's multifunctional role will allow Airport personnel to complete snow removal more efficiently with greater flexibility and provide safer facilities during inclement weather.

With regard to EWK secondary vehicle, the FAA does not approve of graders for use as snow removal equipment as they can exert significant downward pressure on the pavement with their blade resulting in damage to airfield pavements. In recognition of this and given its age, this vehicle should be replaced with a more appropriate snow removal vehicle with a 10-foot long displacement plow.

As a possible near term stopgap measure, the airport may wish to monitor various U.S. and State government surplus opportunities for equipment that could fill the need for snow removal at a reduced cost to the airport. Other airports have found these sources to be highly beneficial in obtaining more up to date equipment at a fraction of the cost of a new purchase. **Appendix C** contains the FAA spreadsheet used to determine EWK's current snow removal equipment requirements.

5.6 WILDLIFE AND SECURITY

5.6.1 WILDLIFE ISSUES

Wildlife incursions on the active airfield have been documented by airport staff over the past several years. Wildlife include deer, coyote, skunk, badger, red fox, and wolf. The presence of wildlife on and around EWK is a serious concern to local pilots, the City of Newton, FAA and other interested parties due to the potential threat they pose to human safety and aircraft as well as the animal itself.

It is recommended that a Wildlife Hazard Assessment (WHA) be conducted in accordance with FAA AC 150/5200-33 in the short term. Recommendations from the WHA can be used to develop a plan to mitigate the potential for wildlife incursions at EWK. WHA recommendations may include operational and facility changes including the installation of wildlife fence similar to that pictured in **Figure 5-9**.

5.6.2 SECURITY

Following the events of September 11, 2001, the security of general aviation aircraft and airports has been widely discussed and debated. While general consensus today is that general aviation aircraft do not pose a serious threat to the safety of the public, there are security programs and guidelines in place that endeavor to enhance general aviation aircraft and airport security.

5.6.2.1 Large Aircraft Security Program

In 2008, the Transportation Security Administration (TSA) issued a Notice of Proposed Rulemaking (NPRM) for the Large Aircraft Security Program (LASP). The regulations proposed under this program would:

> "...require all U.S. operators of aircraft exceeding 12,500 pounds maximum take-off weight to implement security programs that would be subject to compliance audits by TSA. The proposed regulation would also require operators to verify that passengers are not on the No Fly and/or Selectee portions of the federal government's consolidated terrorist watch list. The LASP would

Figure 5-9: Typical Perimeter Wildlife Fencing



require currently unregulated general aviation operations over a specific weight threshold to adopt security measures, which would align these operations with operations currently regulated for security purposes. TSA continues to enhance international and domestic general aviation security by developing a comprehensive strategy to:

- Establish baseline standards of security for general aviation operations;
- Ensure that flight crews have undergone a fingerprint-based criminal history records and terrorist name check;
- Designate security coordinators;
- Conduct watch list matching of passengers through TSA-approved watch list matching service provider; and
- Check/validate property on board for unauthorized persons and accessible weapons

Given the size of aircraft that operate at EWK, airport management, tenants, and users continue to be interested in how this Federal airport security program and the regulations contained therein could impact the airport. It is recommended that airport stakeholders collaborate to develop formal security plans that meet the requirements of the LASP.

5.6.2.2 Security Guidelines for GA Airports

While, developing individual security plans for those airport tenants that are affected by the LASP are is beyond the scope of this Airport Master Plan Update, a review of the airport's facilities and identifying potential security enhancements is within the realm of this master planning effort.

In 2004, the TSA has published a document titled "Security Guidelines for General Aviation Airports" (Guidelines). The Guidelines provide an extensive list of non-mandatory options and suggestions for enhancing airport security. To assist in determining the most appropriate security enhancements, the Guidelines contains an "Airport Characteristics Measurement Tool" (ACMT) that can be used to assess security risks. The ACMT assigns a point value to a list of characteristics that potentially affect an airport's security posture. The higher the points score, the more security precautions may be appropriate.

In applying the ACMT to EWK, a total score of 41 was achieved out of a possible 55. As a result the following airport security enhancements are suggested for EWK:

- Prepare a list of emergency contacts.
- Establish an Airport Community Watch Program.
- Properly securing all transient aircraft. All of EWK's based aircraft are stored in locked hangars.
- Ensure positive passenger/cargo/baggage identification.
- Develop written security procedures/ program.
- Place security signage.
- Develop transient pilot sign-in/sign-out procedures and aircraft association.
- Establish an Airport Security Committee.
- Obtain Law Enforcement Officer (LEO) support. Regular LEO patrols are in place at EWK.
- Develop a personnel and vehicle identification system (badging/cards for personnel and decals/hang tags for vehicles).
- Install security lighting systems. An overhead lighting system is in place for the terminal apron but additional lighting may be prudent at other areas.
- Install a perimeter access control system.

With regard to the last item, it is important to note that "...perimeter control methods alone will not necessarily prevent a determined

intruder from entering, nor may they be appropriate for every facility. The strength of any security mechanism is dependent on the airport's overall security plan. Expending resources on an unnecessary security enhancement (e.g. complete perimeter fencing, and access controls) instead of a more facility specific, reasonable, and more effective method (e.g. tiedown chains with locks) may actually be detrimental to an airport's overall security posture" according to Section 3.3.3 of the TSA's Guidelines document.

However, should a Wildlife Hazard Assessment recommend perimeter wildlife fencing to mitigate the potential for wildlife incursions at EWK, such a fence could also serve as a double perimeter security control fence. This would support access control system should they ultimately be installed at EWK.

Because each general aviation airport is unique, owners, managers, and operators must assess security risks and tailor appropriate security measures to their particular environment. As such, the ability of general aviation airports to implement security measures varies. Unlike most commercial service airports, many general aviation airports are not financially self-sustaining. Therefore, the decision to implement security measures must include consideration of reasonableness and economic feasibility.

5.7 LAND ACQUISITION

For several years, the owners of the quarter section immediately north of Runway 17 has have offered to sell their land to the airport. Purchase of this 160 acres of land would serve to protect the Runway 17 approach and support any future extension of the runway to the north. Further, it would provide the airport with positive control of crop selection and potential agricultural activities that could present a bird hazard in the immediate vicinity of the runway end.

Easements have been purchased to protect the Runway 35 Runway Protection Zone. Fee simple acquisition of this area is preferred as it would provide the airport with complete control of this land. This area for potential acquisition encompasses approximately 61 acres.

Along both sides of Runway 8-26, the airport property limit does not extend to the Building Restriction Line. Fee simple purchase of these areas (approximately 14 acres total) is recommended to give the airport the appropriate degree of control over the placement of structures and buildings in areas adjacent to the runway alignment that could impact the airspace around the runway and, therefore, its use.

Other land areas that should be acquired either in fee simple or through easements to meet future airport development will be identified in the ALP Chapter.

5.8 SUMMARY OF RECOMMENDED IMPROVEMENTS

The master plan update assumes that EWK will continue to accommodate a wide mix of aircraft from Light Sport aircraft to mid-sized business jets. Major airport development recommended to accommodate these aircraft is summarized as follows:

- Begin detailed planning for capacity enhancement that may include a parallel runway when annual operations reach at least 117,000 (which is 60 percent of the ASV.
- Conduct ATCT Study when annual operations reach at least 117,000 (which is 60 percent of the ASV).
- Obtain lower visibility minimums to Runway 35 in the short-term time frame.
- Rehabilitate/reconstruct Runway 17-35 in 2012.
- Correct the RSA issue with Runway 17-35. Several alternatives to mitigate are

available and are discussed in greater detail in Chapter 6. A preferred alternative will be selected from these alternatives.

- Extend Runway 17-35 to 9,200 feet when certain itinerant jet aircraft operations exceed the FAA's 500 annual itinerant operations threshold. The runway should be upgraded to meet C-III standards with the extension.
- Rehabilitate Runway 8-26 and Taxiway C East in 2013 and again in 2018.
- Reconstruct Runway 8-26 in and Taxiway C East in 2024. At this point in time, both pavements will have reached their 20-year design life.
- Rehabilitate/reconstruct and widen Taxiways A, B, C West, and D to 50 feet wide to meet Group III standards at the point when Group III itinerant operations exceed 500 annually.
- Relocate Taxiway E from 670 feet to 400 feet from Runway 17-35 at the point in time when the existing pavement condition necessitates reconstruction.
- Construct an Aircraft Run-up Aprons on Taxiway E. This would include construction of an apron at north end of Taxiway E in 2014 and another apron at the south end of Taxiway E) in 2015. The Aircraft Run-up Aprons will occur after Taxiway E is relocated. This phased approach will provide for a more evenly-distributed airport capital improvements program.
- Reconstruct T-hangar Taxilanes. Given the number of taxilanes and the varying pavement conditions, reconstruction would be phased over the airport master plan's 20-year planning period.
- Expand Terminal Apron to 56,540 square yards to accommodate current itinerant aircraft parking needs. Terminal Apron expansion would be accomplished within the next 5 years with an additional 67,210 square yard apron expansion occurring within the next 20 years to ultimately provide 123,750 square yards of apron space.
- Expand Terminal Building to continue to provide the services the local tenants and flying public has come to expect at EWK.
- Expand the vehicle parking lot associated with the Terminal Building. Rather than several projects to expand the parking lot, it is recommended that the expansion be accomplished under a single project and appropriate stormwater management improvements be constructed in conjunction with the expansion.
- Construct additional T-hangars and Community Hangars. Given the number of hangars required over the airport master plan's 20-year planning period, a phased hangar construction program will be developed.
- Add airport staff as required to meet needs of airport tenants, based and itinerant pilots, and the airfield system.
- Install a 12,000 gallon Jet A fuel storage tank and a 12,000 gallon 100 LL fuel storage tank. The addition of these two fuel storage tanks will bring the total number of fuel storage tanks to five by the end of the 20-year planning period.
- Replace the main snow removal carrier vehicle (front-end loader) and the secondary vehicle (motor grader) in the short term planning horizon.
- Conduct Wildlife Hazard Assessment in the short term. While the WHA may or may not recommended construction of a perimeter wildlife fence, the airport should plan for an ultimate perimeter fence for wildlife mitigation and security control.
- Enhance airport security establishing an Airport Community Watch Program, developing a written security procedures/ program, and installing additional security lighting where appropriate.

- Acquire land to support east parallel runway construction and to provide adequate clearance surrounding the runway and to protect its proximate airspace.
- Relocate Water Tower to provide unobstructed approach/departure paths to the east parallel runway.

5.9 FACILITIES BEYOND FORECAST PERIOD

In the ultimate airport configuration, the following improvements are recommended. These strategic planning improvements would allow EWK to expand in the event it is presented with opportunities that are not envisioned within the 20-year planning horizon.

- Construct partial parallel taxiway on the east side of Runway 17-35 to support future hangar construction/
- Construct east parallel runway and cross-field taxiway when annual operations reach 156,000 (which is 80 percent of the ASV)/
- A third vehicle should be added to the snow removal fleet after the parallel runway is constructed.
- Construct parallel taxiway system on the west side of the east parallel runway.

Chapter Six
ALTERNATIVES

6.1 INTRODUCTION

Up to this point in the Master Plan Update, the type and quantity of airside and landside facilities required to satisfy the various elements of the aviation demand forecasts have been identified. The next step in the planning process is to define and evaluate a number of alternative actions and/or facility enhancements to provide the necessary facilities to meet the forecast of demand and appropriate airport design requirements. After a comparison of the positive and negative attributes of the various alternatives, a preferred alternative is selected by the airport sponsor that best reflects the desires of the airport to accommodate future development. Alternatives for increasing airfield capacity (refer to Section 6.2) and providing for a full runway safety area for Runway 17 (refer to Section 6.3) is the focus of Chapter 6.

6.2 ALTERNATIVES TO INCREASE AIRFIELD CAPACITY

Two potential alternatives for increasing the operational capacity of the airfield were initially identified and briefly discussed in Chapter 5. The first alternative is to de-couple Runways 17-35 and 8-26 to remove their intersection – the result being a significant reduction in the operational dependency between the two runways. Given the existing airfield configuration, reconfiguring the crosswind Runway 8-26 in order to physically separate the two runways is visibly the most cost-effective and likely viable approach (compared to level of effort involved in reconfiguring Runway 17-35 around a "fixed" Runway 8-26).

The following two airfield capacity enhancement alternatives to reconfigure Runway 8-26 have been identified:

- Alternative 1 shifts Runway 8-26 to the east while keeping the runway entirely on existing airport property and providing as much runway length as possible (refer to **Section 6.2.1**).
- Alternative 2 involves the shifting of Runway 8-26 east of Runway 17-35 while maintaining its current length of 3,500 feet (refer to **Section 6.2.2**).

A third alternative to increase airfield capacity would involve constructing a parallel runway 2,850 feet east of Runway 17-35. This parallel runway would also allow EWK to separate smaller aircraft with slower approach speeds from the larger jet aircraft that would predominately operate from Runway 17-35. A parallel runway length of 5,000 feet would be desired to support light jet, turboprop, and multi-and single engine piston aircraft. Alternative 3 is discussed in **Section 6.2.3**.

6.2.1 ALTERNATIVE 1 – SHIFT RUNWAY 8-26, REMAIN ON AIRPORT PROPERTY

Alternative 1 involves shifting Runway 8-26 to the east of its present position while keeping the runway completely within existing airport property limits. Alternative 1 is depicted in **Figure 6-1** found on page 5.

Under this alternative, the approach end of Runway 8 would be relocated 1,390 feet east to remove any physical intersection between the two runways and to provide as much clear area between Runway 8-26 and Runway 17-35 as possible (refer to sidebar on runway visibility zone requirements). Similarly, the approach end of Runway 26 would be relocated 370 feet to the east to provide as much runway length as possible within the existing airport property limits. While this moves the runway closer to N. Woodlawn Road, the standard approach path clearance of at least 15 feet would still be provided over N. Woodlawn Road.

As a result of these runway end relocations, the runway length would be reduced from its current length of 3,500 feet to 2,480 feet (a reduction of 1,020 feet). The characteristics of the alternative and other advantages and disadvantages are summarized as follows:

6.2.1.1 Advantages and Disadvantages of Alternative 1

The advantages and disadvantages of Alternative No. 1 are presented in this section and summarized in **Table 6-1** presented on page 13.

Advantages of Airfield Capacity Alternative No. 1:

- Airfield capacity could increase by approximately 15 percent with a non-intersecting runway configuration as aircraft operations conducted on one runway become less dependent on aircraft operations conducted on the other runway.
- Additional land between Oliver Road and Taxiway E is made available for aviation and non-aviation development which provides EWK with another opportunity to enhance revenues. By relocating the approach end of Runway 8, the associated Runway Protection Zone (RPZ) is also relocated. As such, the existing avigation easement for the western most portion of the RPZ is no longer required thus making available approximately 7.6 acres for building development west of Oliver Road. Properties west of Oliver Road are privately owned.

  A relocated RPZ also makes available approximately 11.3 acres of land between Oliver Road and Taxiway E for aviation-related development. The availability of utilities, vehicular access from Oliver Road, and the close proximity to Taxiway A facilitates cost-effective aviation development of this area. It should be noted that while the property noted above would be situated outside of the RPZ it would remain beneath the approach to Runway 8 and some consideration of this fact might be used to guide the placement of facilities with high concentrations of persons.
- The airport would be provided with full and complete control of the RPZ under the Runway 8 approach. At present, the RPZ is currently controlled by the airport through fee simple acquisition and avigation easement. In relocating the approach end of Runway 8, the entire RPZ would be relocated over the airfield – property that is owned in fee simple.
- The proposed shifting of the runway preserves the current alignment of N. Woodlawn Road for local residents as Runway 8-26 remains completely within existing airport property and appropriate vertical clearance over the roadway is maintained for the current visual approach. With the runway pavements physically separated, the runways no longer intersect. As such the runway visibility zone (RVZ) between the two runways is no longer required. In addition, this alternative keeps the runway object free area (ROFA) of both runways from overlapping.

RUNWAY VISIBILITY ZONE

According to FAA Advisory Circular 150/5300-13, Airport Design, Change 17, a runway visibility zone (RVZ) is required for runways that intersect. Within the RVZ, an unobstructed line of sight needs to be provide from one runway to another. Unforetunately, the AC does not clearly define what consitutes intersecting runways and when the RVZ is not required.

During this Newton Airport Master Plan Update, FAA Airports Division planning staff indicated that the RVZ is only required when the runway pavements physically intersect and the safety areas overlap. In general though, it is good practice to provide as much area between two runways as possible to maximize runway visibility and safety

The result is that future taxiway, apron, and hangar development planned along the east side of Runway 17-35 could be extended further north beyond Taxiway C and towards Runway 8-26 thereby making more efficient use of existing and future airport property and airfield infrastructure. By removing the existing RVZ, approximately 7.8 acres of airport property can be made available for development to increase airport revenues and support EWK's desire to become more financially self-sufficient.

Disadvantages of Airfield Capacity Alternative No. 1:

- The length of Runway 8-26 reduced from 3,500 feet to 2,480 feet. This would impact the runway's most prevalent user Hesston College as it uses the runway to provide crosswind training to its student pilots. Other users may also be impacted by the reduced runway length. For example, upon review of the Baron 58 airplane flight manual and subsequent discussions with a Baron 58 pilot, a runway length of 3,000 feet would be required for this twin engine piston aircraft. This would also be the minimum runway length required by the airplane's insurance company.
- An avigation easement would need to be negotiated to provide the airport sponsor with an appropriate level of control over potential activities within the relocated RPZ for Runway 26 (a portion of which would reside east of N. Woodlawn Road). Approximately 8.1 acres of avigation easement would be required over currently undeveloped agriculturally utilized property for the RPZ.
- Several taxiway improvements would be required including construction of new entrance taxiways at each end of the runway, extension of parallel Taxiway C to the east, and reconfiguration of Taxiway C east of Runway 17-35 to the approach end of Runway 8.
- Relocation of both PAPI systems, runway threshold lights, and airfield guidance signs would be required as well as re-spacing of the runway edge lights. With the extension of Taxiway C, additional taxiway edge lights will be required along with re-spacing of existing taxiway edge lights.
- Places the eastern end of Runway 8-26 approximately 370 closer to a large farm pond that could be an attractant to water fowl and as a result a potential bird strike hazard.

6.2.1.2 Estimated Probable Cost of Alternative 1

The estimated initial construction cost of Alternative No. 1, including engineering and construction observation fees but excluding the cost of all land acquisitions, could range between $1.3M and $1.6M dollars based on similar recently constructed projects.

6.2.2 ALTERNATIVE 2 – SHIFT RUNWAY 8-26, MAINTAIN LENGTH

Alternative 2 also involves relocating Runway 8-26 east of Runway 17-35, however this alternative maintains the current 3,500 foot runway length through an easterly extension which is depicted in **Figure 6-2**. To remove any physical connection between the two runways and to provide as much clear area between the two runways as possible, the alignment of Runway 8-26 is shifted 1,390 feet to the east along with corresponding shifts to the affiliated runway safety area (RSA), runway object free area (ROFA), and runway protection zone (RPZ) -- the same as Alternative 1. The alignment of shifted Runway 8-26 would extend approximately 515 feet to the east of N. Woodlawn Road and would likely result in the potential closure of this roadway.

6.2.2.1 Advantages and Disadvantages of Alternative 2

The advantages and disadvantages of Alternative No. 1 are presented in this section and summarized in **Table 6-1** presented on page 13.

Advantages of Airfield Capacity Alternative No. 2:

- Airfield capacity could increase by approximately 15 percent (same as Alternative 1).
- The existing RVZ between the two runways is no longer required and additional airport property is made available for aviation-related development (same as Alternative 1).
- Additional land between Oliver Road and Taxiway E is made available for aviation and non-aviation development (same as Alternative 1).
- The airport is provided with full and complete control of the RPZ under the Runway 8 approach (same as Alternative 1).
- The length of Runway 8-26 is maintained at 3,500 feet, which maintains the current capability of the runway and minimizes impacts to the operations of Hesston College and other users.

Disadvantages of Airfield Capacity Alternative No. 2:

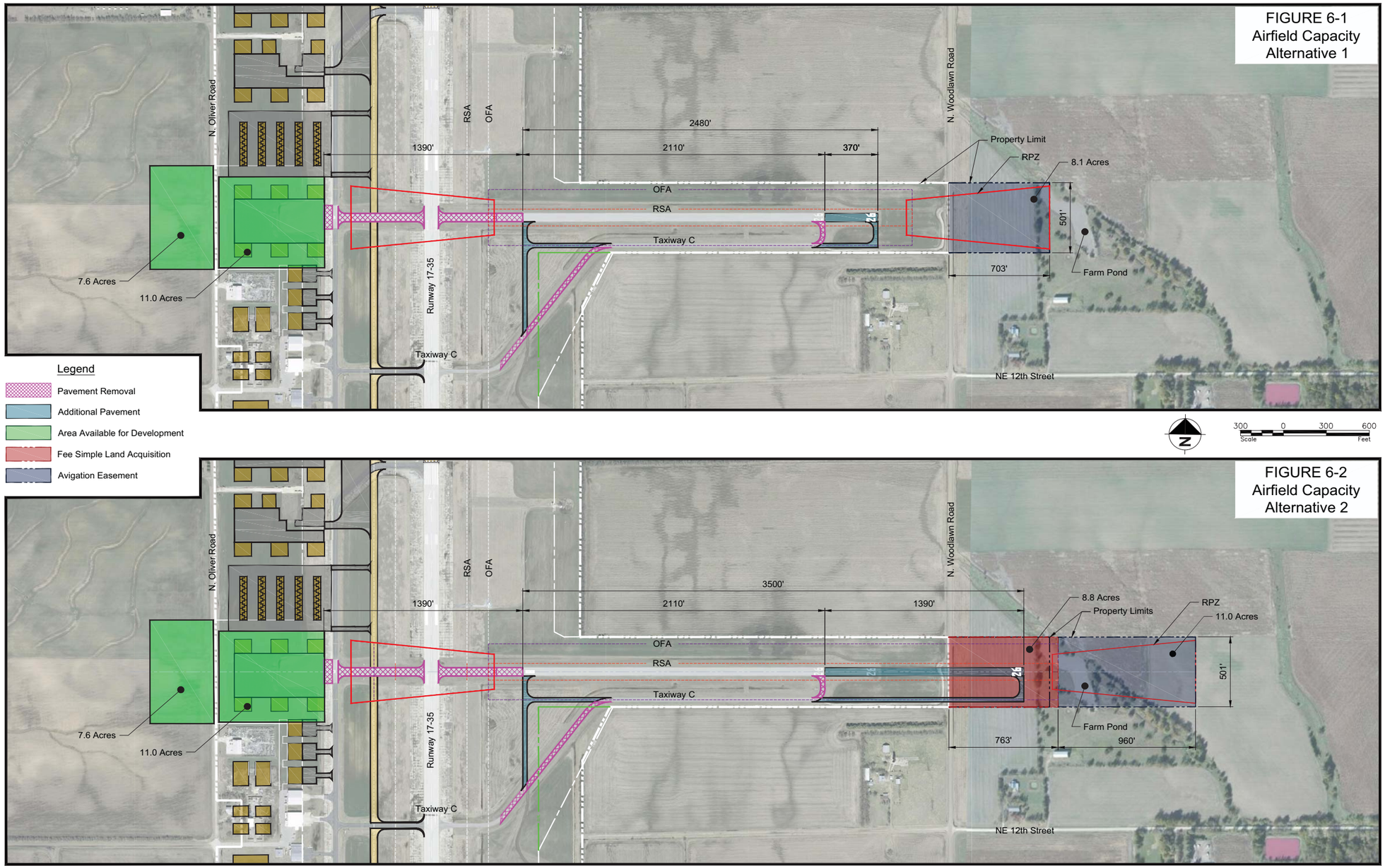
- With roughly 513 feet of Runway 8-26 located east of N. Woodlawn Road, an estimated 19.8 acres of farmland would need to be acquired to construct the runway and associated taxiways, provide the associate runway/taxiway safety clearances, and protect the RPZ for Runway 26. Of this total area, approximately 8.8 acres would need to be acquired in fee simple and converted to non-agricultural use to support the relocated runway and its associated safety clearance areas and taxiway system. The balance of approximately 11.0 acre would be for the new avigation easement to protect the majority of the relocated RPZ for Runway 26. The extent to which the acquisition would result in uneconomic property remnants of agricultural land for the owner of the property noted for potential acquisition has not been identified at this time. However, should this occur the extent of land necessary for acquisition could be increased.
- The alternative results in the elimination of thru traffic along N. Woodlawn Road for local residents as Runway 8-26 and Taxiway C bisect the road (creating two dead end roads). A contiguous road could be provided by relocating the road around the east end of Runway 8-26 but not without increasing the overall impact to adjacent property owners and overall cost of Alternative 2.
- Several taxiway improvements would be required including construction of new entrance taxiways at each end of the Runway 8-26, extension of parallel Taxiway C to the east, and reconfiguration of Taxiway C east of Runway 17-35 to the approach end of Runway 8.
- Relocation of both PAPI systems, runway threshold lights, and airfield guidance signs. Re-spacing of the runway edge lights would also be required.
- Shifting the alignment of Runway 8-26 by 1,390 feet to the east would place the Runway 26 landing threshold approximately 250 feet from a large farm pond. This 1.8 acre pond can be a wildlife attractant and in particular can attract water fowl. Thus, the potential exists for a potential bird hazard from the proximity to the pond.

6.2.2.2 Estimated Probable Cost of Alternative 2

The estimated initial construction cost of Alternative No. 2, including engineering and construction observation fees, but excluding the cost of all land acquisitions, could range between $2.3M and $2.9M dollars based on similar, recently constructed projects.

6.2.3 ALTERNATIVE 3 – CONSTRUCT EAST PARALLEL RUNWAY

As noted previously, the decoupling of the alignments of Runway 17-35 and Runway 8-26 provides for a limited (approximately 15%) enhancement to airfield capacity. Another alternative to increase airfield capacity, and one that typically results in a more significant



Source: HNTB

HNTB

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increase, is the construction of a parallel runway to Runway 17-35. This alternative would be in lieu of either of the crosswind runway relocation alternatives.

At the fourth Planning Advisory Committee Meeting held in July 2011, the east parallel runway concept was discussed. The parallel runway would be 5,000 feet long and 75 feet wide meeting FAA B-II runway standards with approach visibility minimums of not lower than 3/4 mile. The east parallel runway would be located 2,850 feet east of Runway 17-35 and immediately west of N. Woodlawn Road. The east parallel runway option is depicted in **Figure 6-3**. The advantages and disadvantages of this airport capacity alternative are summarized at the end of this section.

It should be noted that while the east parallel runway is configured to meet B-II standards, the proximity of EWK to the Wichita Metropolitan Area triggered some concurrent strategic planning that identified the need and established a goal to maximize EWK's ability to take advantage of opportunities that are not exhibited at this time. As depicted in **Figure 6-3**, the east parallel runway is located more than 1,000 feet north of East 1st Street and 750 feet west of N. Woodlawn Road. This provides the space needed to meet C-III RSA standards. Additionally, space has been provided to ensure that the future runway could also meet airspace requirements for hangars and buildings should C-III be the long-term classification of the east parallel runway. Within the general aviation jet fleet there are a number of aircraft, in both airport reference code C-II and C-III that would trigger the need for a RSA extending 1,000 feet beyond the runway end.

In addition, in strategically planning the airport to be capable to meet potential changes in fleet and growth beyond the 20-year planning period, an east parallel runway longer than 5,000 feet could be possible. In recognition of this, land north of Runway 8-26 will be identified as an area of "airport influence" and should be safeguarded either by securing first rights of refusal for acquisition or by acquiring land as it comes onto the market for future airport needs.

Should a longer runway be the ultimate result, the existing water tower located at the intersection of NE 24th Street and N. Woodlawn Road would need to be relocated to avoid being an obstruction to the runway approach and departure paths. Using a parallel runway length of 5,000 feet as depicted in **Figure 6-3**, the existing water tower would be located approximately 5,050 feet north of the proposed runway end and approximately 930 feet east of the proposed runway centerline.

Also shown in **Figure 6-3**, the approach end of Runway 26 is relocated 540 feet to the west of its current location. At this distance, a RVZ would not be required and the ROFA of Runway 8-26 does not overlap the ROFA of the east parallel runway. Without a RVZ, additional aviation-related development could occur along the west side of the parallel runway and closer to Runway 26. By avoiding the need for a RVZ, several acres of future airport property could be developed that would otherwise be reserved for the RVZ. In providing additional development area, an opportunity for EWK to maximize its aviation-related revenue stream is provided.

6.2.3.1 Advantages and Disadvantages of Alternative 3

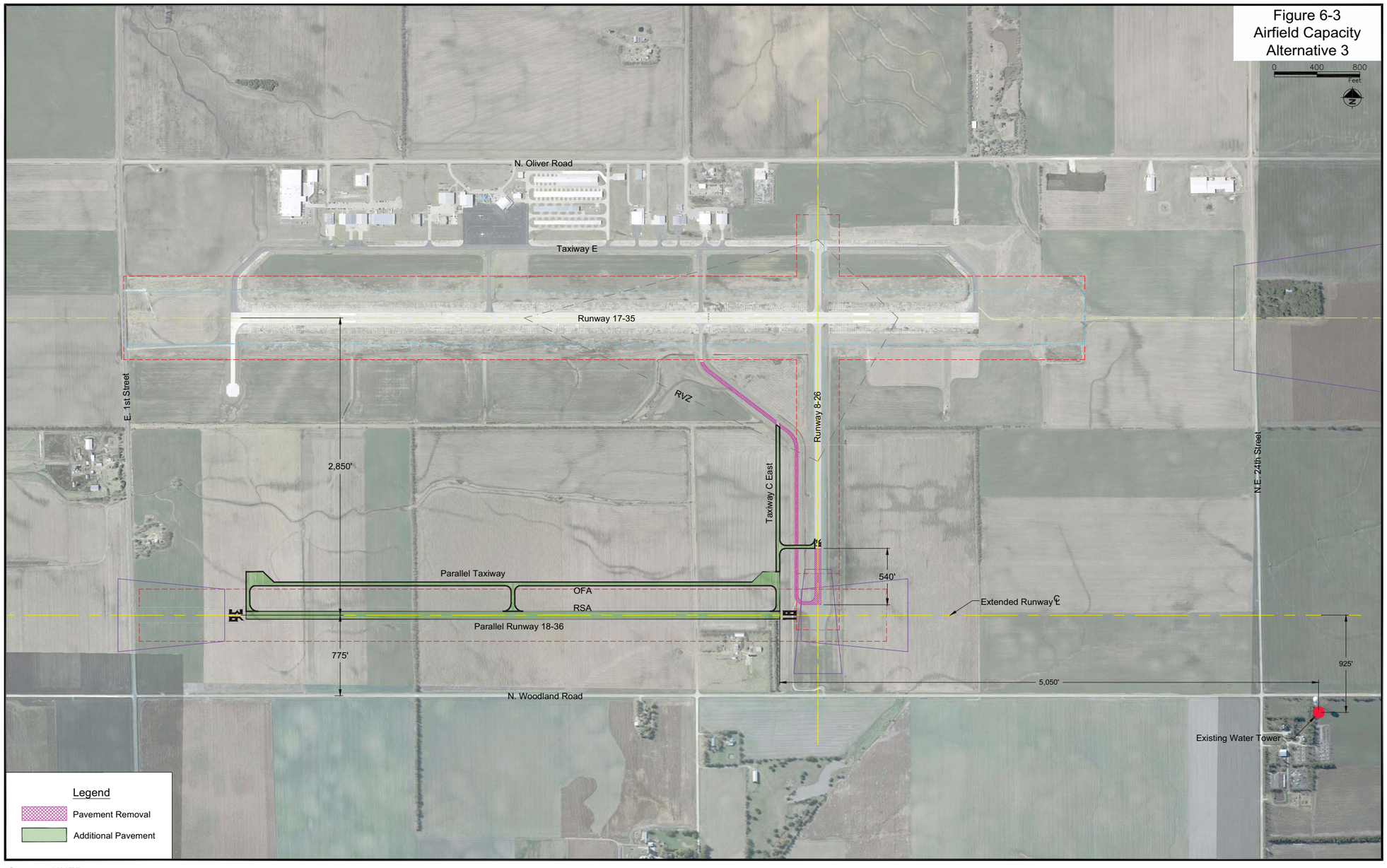
The advantages and disadvantages of Alternative No. 3 are presented in this section and summarized in **Table 6-1** on page 13.

Advantages of Airfield Capacity Alternative No. 3:

- Airfield capacity could increase by approximately 46 percent (ASV of 285,000) with a parallel runway configuration. With 2,850 feet between the parallel runways, simultaneous VFR operations would be permissible but simultaneous IFR operations would not.
- The east parallel runway and its associated clearance areas remain north of East 1st

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Figure 6-3
Airfield Capacity
Alternative 3



Source: HNTB

HNTB

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Street and west of N. Woodlawn Road thereby avoiding any impact to local public roads.

- By relocating the approach end of Runway 26 west of its current location by 540 feet, the a RVZ is not required. In addition, the RSA and ROFA of the crosswind and east parallel runways do not overlap. Without a RVZ, additional aviation-related development can occur along the west side of the proposed parallel runway and closer to the alignment of Runway 26. The result being a future taxiway, apron, and hangar development envelop along the east side of existing Runway 17-35 that could be extended further north towards Runway 8-26. By removing the existing RVZ, several acres of airport property can be developed to increase airport revenues and support EWK's desire to become more financially self-sufficient.
- An east parallel runway and its associated taxiway system would provide additional infrastructure to support long-term aviation development between the parallel runways thereby making efficient use of future airport property and road and utility infrastructure. Hangar development over the next 20-years is planned to occur west of Runway 17-35. Beyond this planning period (or in the event future tenants need larger areas than can be provided west of Runway 17-35), hangar development is planned along the east side of Runway 17-35.
- In the event Runway 17-35 is closed to aircraft traffic due to maintenance, rehabilitation, or an aircraft accident, the east parallel runway would serve as a backup runway.

<u>Disadvantages of Airfield Capacity Alternative No. 3:</u>

- Approximately 220 acres would need to be acquired in fee simple to support the east parallel runway, its associated safety clearances, and an east-west cross-field taxiway. This assumes a building restriction line located 745 feet either side of the conceptual runway centerline (the minimum distance required for a future precision runway). A large portion of the acreage to be acquired is currently farmland and would need to be converted to non-agricultural use to support the east parallel runway and its associated safety clearance areas, taxiway system and potential development areas. In addition, approximately 11 acres of avigation easement would be required for those portions of the RPZs located south of East 1st Street and north of Runway 8-26.
- The lateral separation of the proposed parallel runway from the centerline of the existing Runway 17-35 alignment coupled with the 745 foot building restriction line, combines to essentially negate the development utility of land located between the proposed runway and N. Woodlawn Road.
- A new cross-field taxiway would be required to provide access from developed aviation uses along the west side of the airport to the east parallel taxiway and vice versa. At its current location 240 feet from Runway 8-26 and with a constructed width of 30 feet, Taxiway C is not designed to support operations by aircraft larger than Group I. Taxiway C would need to be replaced with a taxiway of 35 feet in width to meet ADG-II standard and potentially 50 feet in width at some point in the future should ADG-III general aviation aircraft operate in substantial numbers (over 500 annual itinerant operations). At such time as the taxiway were subject to reconstruction, consideration should be given to shifting the alignment of Taxiway to a position of at least 300 feet laterally to the south of Runway 8-26 to accommodate future aircraft types.

  The proposed location of the east parallel runway places the extended runway centerline 930 feet west of the existing water tower located at the intersection of N. Woodlawn Road and NE 24th Street. Should the length of the east parallel runway be extended to a length greater

than 5,000 feet, the water tower would be situated within the inner portion of the runway approach/departure paths which would create airspace and traffic pattern issues especially if non-precision or precision (ILS) approach procedures are envisioned, something whose likelihood is enhanced by NextGen. Relocation of the water tower is probably necessary to mitigate airspace issues.

- To avoid a RVZ between the east parallel runway and Runway 8-26, the approach end of Runway 26 would need to be relocated 540 feet west of its current location. This would reduce the crosswind runway's length from 3,500 feet to 2,960 feet. A shorter crosswind runway would likely impact twin piston aircraft operations.

6.2.3.2 Estimated Probable Cost of Alternative 3

The estimated initial construction cost of Alternative No. 3, including engineering and construction observation fees but excluding the cost of all land acquisitions, could range between approximately $13M and $16M dollars based on similar recently constructed projects. The estimate cost of Alternative 3 is significantly higher than Alternatives 1 and 2.

6.2.4 COMPARISON OF AIRFIELD CAPACITY ALTERNATIVES

To better analyze and compare Alternatives 1, 2, and 3, the recommended improvements and potential impacts of each have been summarized in **Table 6-1**. It must be noted that the alternatives to increase airfield capacity are preliminary in nature. A more detailed runway capacity analysis needs to be performed when total annual airport operations reach 60% of the Annual Service Volume (ASV) which is forecasted to occur by the year 2024.

In consideration of the information presented herein, Alternative 1 appears to be the most appropriate alternative at this time and was the alternative recommended by HNTB to the Planning Advisory Committee.

6.2.5 AIRFIELD CAPACITY ALTERNATIVE SELECTED BY SPONSOR

The three airfield capacity alternatives were presented and discussed at the fifth Planning Advisory Committee (PAC) meeting held September 13, 2011. **The PAC selected a modified version of Alternative 1 that seeks to maximize the length of the crosswind as much as possible while keeping all proposed improvements within existing airport property.**

While this modified version of Alternative 1 (named Alternative 1A) retains the 370-foot relocation of the approach end of Runway 26, it relocates the approach end of Runway 8 by 1,205 feet instead of 1,390 feet to obtain a crosswind length of 2,665 feet. Alternative 1A is depicted in **Figure 6-4**.

While Alternative 1A keep the Runway 17-35 and 8-26 pavements from intersecting, their RSAs and ROFAs intersect/overlap because of the slightly smaller distance that the Runway 8 end is relocated by. Even so, a RVZ is not required as the runway pavements do not physically intersect.

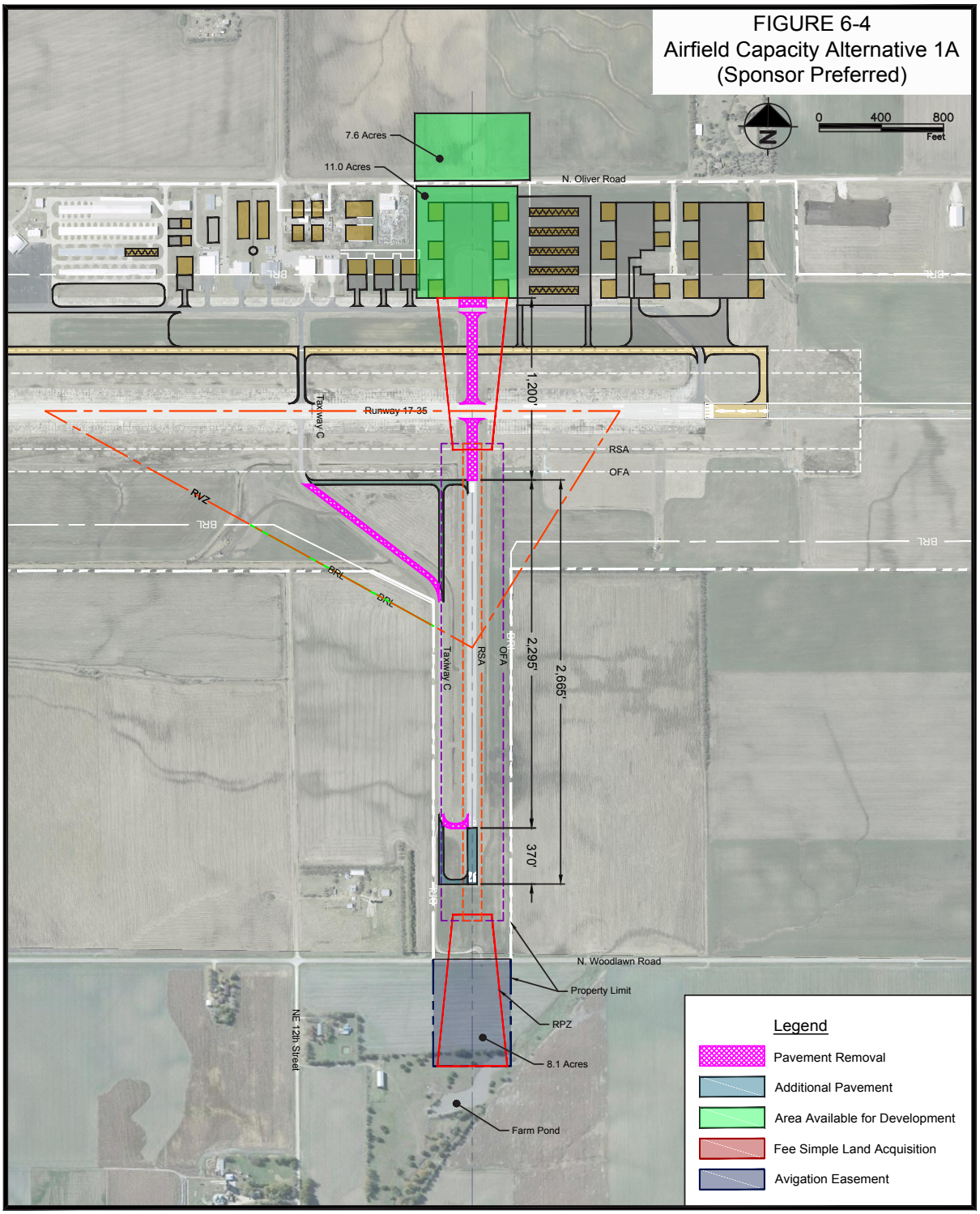
Alternative 1A shall be carried forward for environmental and land use planning and will be depicted in the Airport Layout Plan set of drawings.

Lastly, Runway 8-26 was recently reconstructed in 2004 and will reach the end of its design life in 2024. At this time, a major rehabilitation or reconstruction of the runway pavement is anticipated. When Alternative 1A is constructed, the relocation of the runway approach end, reconstruction of the pavement, and the associated Taxiway C East improvements could be combined until a single project for better economies of scale.

Table 6-1. Comparison of Alternatives to Increase Airfield Capacity

	Alternative 1	Alternative 2	Alternative 3
	Shift Runway 8-26, Remain on Airport Property	Shift Runway 8-26, Maintain Length	Construct East Parallel Runway
What is the estimated percent increase in capacity over current ASV of 195,000 annual operations?	15%	15%	46%
Any changes to (or new) runway threshold locations?	Yes	Yes	Yes
Any potential obstructions and/or airspace issues anticipated?	No	No	Yes - Water Tower
Any changes to aircraft approach paths and traffic patterns?	Yes	Yes	Yes
Does the alternative enhance airfield safety?	Yes	Yes	Yes
Do any areas of existing airport property become immediately available for development?	Yes	Yes	No
Can the alternative be physically constructed entirely within existing airport property?	Yes	No	No
How many acres of additional land are to be acquired (both fee simple and easements)?	8	20	230
Is any farmland to be acquired and converted to non-agricultural use?	No	Yes	Yes
Any physical impact to adjacent residential property?	No	Yes	Yes
Any impact to local road infrastructure and vehicle traffic patterns?	No	Yes	No
Is a significant change to aircraft noise contours likely?	No	No	Yes
Potential impact to environment resources (streams, wetlands, etc.)?	None	Yes	None
What is the likelihood of needing additional airport environmental planning and coordination (relative to alternatives analyzed)?	None	Low	Low
Probable FAA support for alternative?	Yes	Yes	No
What is the level of operating and maintenance costs (relative to alternatives analyzed)?	Low	Low	High
Probable initial construction cost in FY2010 dollars (excluding land, ROW, utilities)	**$1.3M-$1.6M**	**$2.3M-$2.9M**	**$12.8M-$15.9M**

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FIGURE 6-4
Airfield Capacity Alternative 1A
(Sponsor Preferred)
N
0
400
800
Feet
7.6 Acres
11.0 Acres
N. Oliver Road
Runway 17-35
Taxiway C
1,200'
RSA
OFA
RVZ
BRL
2,295'
2,665'
370'
N. Woodlawn Road
Property Limit
RPZ
8.1 Acres
Farm Pond
NE 12th Street
Legend
Pavement Removal
Additional Pavement
Area Available for Development
Fee Simple Land Acquisition
Avigation Easement

Source: HNTB

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6.3 ALTERNATIVES TO PROVIDE FULL RSA

To provide a standard 1,000-foot long RSA) beyond the stop end of Runway 17, seven alternatives have been proposed. These alternatives are listed in **Table 6-2** and are discussed in greater detail in the sections referenced. The alternatives are depicted in **Figures 6-5** through **6-11**. A comparison of all seven alternatives is presented in **Table 6-3**.

6.3.1 ALTERNATIVE 1 - MAINTAIN DECLARED DISTANCES

At present, declared distance values have been published for Runway 17. By implementing the declared distance concept, the FAA criteria for providing a full RSA beyond the stop end of Runway 17 has been met without any physical changes to the runway. However, the length available for aircraft departing from and landing on Runway 17 is 6,705 feet which is less than the 7,000 feet that has been identified as needed for these operations and in particular for the departure operations from the runway (refer to **Chapter 5, Section 5.3.1.3**). The declared distances for Runway 17-35 are conveyed in **Figure 6-5**.

Since it has been determined that a runway length of 7,000 feet is needed, the application of the declared distances concept currently in place is not considered a viable permanent solution for addressing RSA requirements by the airport sponsor. While adequate for a limited timeframe the impact to stage lengths flown by many of the corporate aircraft currently operating through EWK along with those anticipated to operate from the airport in the future presents a condition that adversely impacts the airport's potential value to the region and the community. For this reason other alternatives to provide for a conforming RSA while maintaining a fully viable 7,000 foot runway length have been investigated.

6.3.1.1 Estimated Probable Cost of Alternative 1

There is no cost associated with implementing Alternative 1 as the declared distances are currently published and Runway 17-35 is configured accordingly.

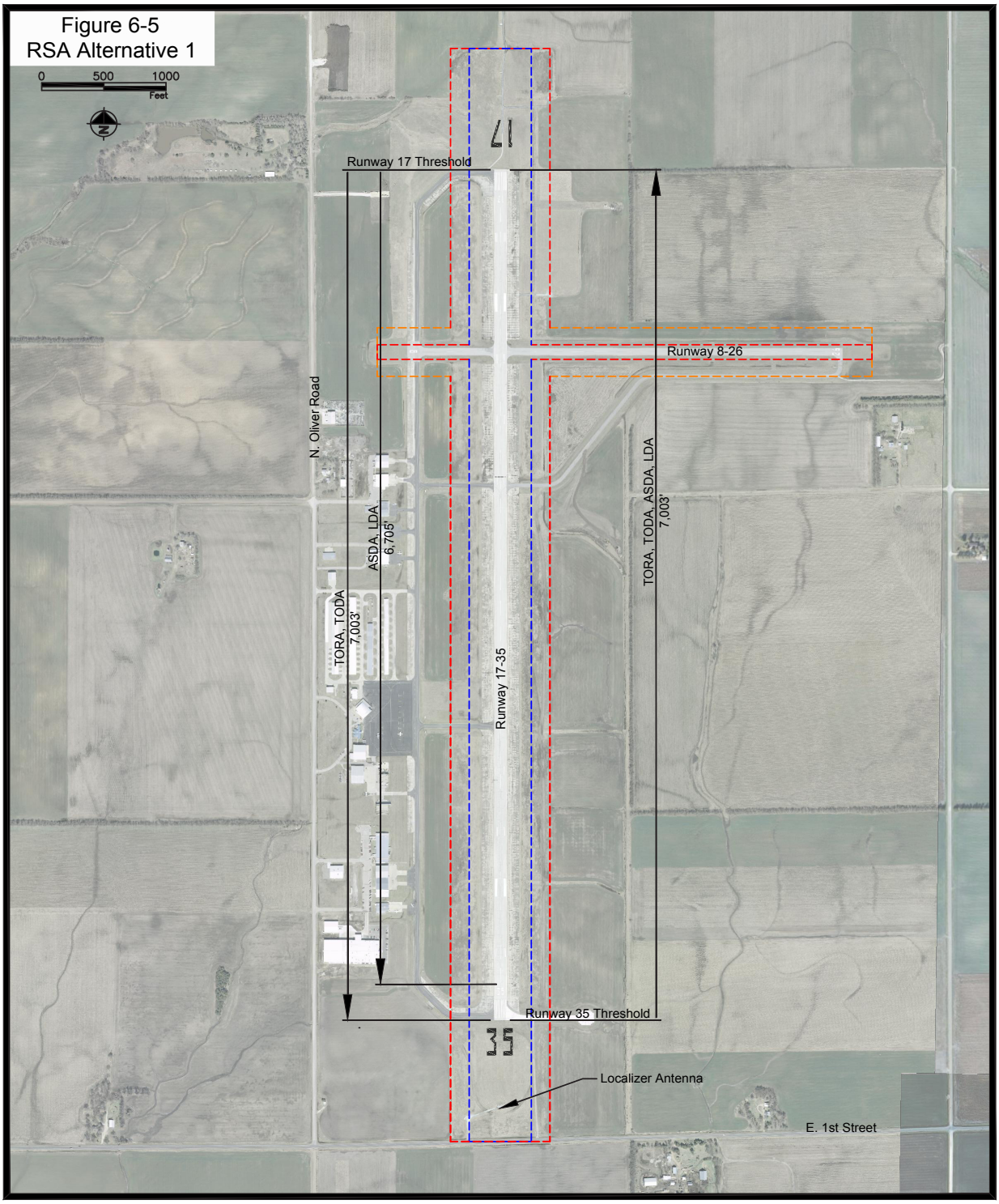
6.3.2 ALTERNATIVE 2 - RELOCATE EAST 1ST STREET AND THE LOCALIZER ANTENNA

Paragraph 3 of Appendix 2 of FAA Order 5200.8 states that the "...first alternative that must be considered...is constructing the traditional graded safety area surrounding the runway. Where it is not practicable to obtain the entire safety area in this manner, as much as possible should be obtained."

To provide a full RSA, a portion of East 1st Street and the localizer antenna would have to be relocated as depicted in **Figure 6-6**. This alternative would require additional property to be acquired by the City for the localizer antenna and additional right of way for the new

Table 6-2. List of Alternatives to Provide Full RSA

Alternative No. and Description	Section
1. Maintain Declared Distances	6.3.1
2. Relocate a portion of East 1st Street and the Localizer Antenna	6.3.2
3. Install Engineered Material Arresting System (EMAS)	6.3.3
4. Reduce Length of Runway 17-35	6.3.4
5. Shift Runway 17-35	6.3.5
6. Extend Runway 200' North, Relocate Localizer Antenna, Modify Declared Distances	6.3.6
7. Extend Runway 400' North, Modify Declared Distances	6.3.7


Figure 6-5
RSA Alternative 1
0
500
1000
Feet
N
17
Runway 17 Threshold
Runway 8-26
N. Oliver Road
ASDA, LDA
6,705'
TORA, TODA
7,003'
TORA, TODA, ASDA, LDA
7,003'
Runway 17-35
Runway 35 Threshold
35
Localizer Antenna
E. 1st Street

Source: HNTB

alignment of East 1st Street. East 1st Street is a high volume, two-lane County road that provides direct access to the City of Newton from points east. To relocate East 1st Street to the south and maintain the 55 mph design speed, approximately 2,500 to 3,000 feet of the road would need to be realigned (using a superelevation of 4 to 6 percent).

In Alternative 2, the localizer antenna would be moved 310 feet south, its service shed would remain in it's current location, and the associated access road would be extended to the south (to connect to the realigned East 1st Street). Conversely, the access road could be extended north towards and connect to entrance Taxiway A to eliminate the gate located at East 1st Street and help to minimize the number of airport access points and enhance security.

Other disadvantages of realigning East 1st Street include potential modifications to the East 1st Street and N. Oliver Road intersection, relocation/extension of existing storm water box culverts and pipe, and impacts (such as acquiring a portion of the property and removing trees and structures) to a residential property located south of Oliver Road. In addition, an underground electrical line is located along the north side of East 1st Street and would likely require relocation to the south to avoid conflicting with the localizer antenna power cable.

6.3.2.1 Estimated Probable Cost of Alternative 2

The estimated initial construction cost of Alternative No. 2, including engineering and construction observation fees but excluding the cost of all land acquisitions, could range between $1.4M and $1.8M dollars based on similar recently constructed projects.

6.3.3 ALTERNATIVE 3 - INSTALL EMAS

EMAS is a bed of crushable, lightweight concrete blocks installed in a non-standard RSA. When an aircraft travels across the EMAS, it crushes the concrete blocks and thus decelerates. FAA Order 5200.8, states that EMAS shall be considered when determining the feasible alternatives to develop a standard RSA[1]. According to FAA Order 5200.9, Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems, "A standard EMAS installation provides a level of safety that is generally equivalent to a full RSA constructed to the standards of AC 150/5300-13 for overruns. It also provides an acceptable level of safety for undershoots."[2] Therefore, this Install EMAS alternative is feasible and meets the purpose and need to provide an RSA that would satisfy FAA requirements.

As illustrated in **Figure 6-7**, the EMAS would begin 375 feet from the end of the runway pavement. The area between the end of the runway and the beginning of the EMAS would be paved. For planning purposes, an EMAS measuring 225 feet long by 120 feet wide should provide an equivalent RSA. The length of the EMAS bed was determined using Figure 3 of FAA Order 5200.9 and a design aircraft weighing 50,000 lbs. (MTOW) such as the Cessna Sovereign 680, Challenger 300/600/604, Falcon 50 or Falcon 900. These aircraft were selected based on the information presented in Chapters 4 and 5.

As illustrated in **Figure 6-7**, the advantage of the EMAS is that it can be constructed entirely within existing airport property. No additional land is required and moreover, the Localizer Antenna and East 1st Street are not impacted and therefore can remain in their current configuration. However, based on discussions with FAA Central Region staff in analyzing this alternative, installation of an EMAS at an unconstrained general aviation airport is unlikely.

1. US DOT FAA Order 5200.8, October 1999, Appendix 2, pages 1 and 2.
2. US DOT FAA Order 5200.9, Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems, March 2004, page 3, paragraph 6.

6.3.3.1 Estimated Probable Cost of Alternative 3

The estimated initial construction cost of Alternative No. 3, including engineering and construction observation fees but, could range between $5.8M and $7.3M dollars based on similar recently constructed projects. As has been cited by other airports who have installed EMAS, there are unique long-term maintenance requirements and costs for the EMAS. Such costs (which are not included in the above estimated costs) would be financially burdensome to EWK's annual operating and maintenance budget.

6.3.4 ALTERNATIVE 4 - REDUCE LENGTH OF RUNWAY 17-35

The closest object to the stop end of Runway 17 (south end of Runway 17-35) is the localizer antenna at 702 feet from the runway pavement. Under this alternative, to provide for a full RSA between the runway and the localizer antenna (assumes that the antenna's location remaining fixed), the southern end of Runway 17-35 would be shifted 298 feet to the north. This action would reduce the available takeoff and landing lengths in both the 17 and 35 directions to 6,705 feet.

As the runway's edge lights are spaced at 200-foot intervals per FAA design standards, the relocation of the south end of the runway would require re-spacing of the runway edge lights to maintain FAA standards. Relocating the lights is complicated by the fact that the runway edge lights are located in 10-inch thick, abandoned concrete pavement (as opposed to the edge lights being installed in turf shoulders as is done at most GA airports), re-spacing of the runway edge lights would significantly increase the cost of this alternative.

If instead the Runway 35 Threshold were moved 400 feet to the north, the overall cost of constructing this alternative would be reduced as runway edge lights would not require re-spacing. However, with a 400 foot move of the south end of the runway, the available takeoff and landing lengths in both the 17 and 35 directions would be reduced to 6,600 feet as illustrated in **Figure 6-8**. Additional airfield modifications associated with this alternative include:

- Relocate Runway 35 threshold lights, VASI-4, and REIL. As the FAA owns and maintains the Runway 17 and 35 VASI systems, replacement with PAPI systems is something the FAA may consider but is not a requirement for this alternative.
- Remove and relocate Entrance Taxiway A.
- Remove a portion (shorten) of parallel Taxiway E.
- Reconfigure Compass Calibration Pad taxilane.
- Remark the south end of Runway 17-35 (threshold, numerals, touchdown zone, and aiming point markings). The runway centerline and edge stripes could remain in place.
- Relocate existing or install additional airfield guidance signs and taxiway edge lights.
- Relocate the Runway 35 Approach RPZ (and modify avigation easement).
- Relocate the Runway 17 Departure RPZ (and modify avigation easement).
- Develop and publish a new Runway 35 GPS (RNAV) and NDB Approach Procedures.

From the analysis completed in Chapter 5, the runway length needed to accommodate current and future aviation demand is 7,000 feet and 9,200 feet, respectively. Therefore, reducing the runway to provide a full RSA is a direct departure from meeting the requirements of current and forecast airport users and as such is not considered an appropriate or viable action.

6.3.4.1 Estimated Probable Cost of Alternative 4

The estimated initial construction cost of Alternative No. 4, including engineering and construction observation fees but, could range between $1.5M and $1.9M dollars based on similar recently constructed projects.

6.3.5 ALTERNATIVE 5 - SHIFT RUNWAY 17-35

Alternative 5 incorporates actions to address the loss of runway that occurs under a previous alternative to provide for the required 7,000 feet of runway in all operational components. To counter the 400 feet of runway pavement removed/lost in Alternative 4, Alternative 5 would add 400 feet of runway pavement on the north end of Runway 17-35 thus, in effect, "shifting" Runway 17-35 to the north and preserving its length of 7,003 feet which is needed to meet current aviation demand. In this alternative, both the Runway 35 and 17 thresholds would be relocated. **Figure 6-9** illustrates the improvements proposed by Alternative 5.

In addition to the modifications at the south end of Runway 17-35 proposed under Alternative 4, Alternative 5 includes the following improvements to the north end of the runway:

- Extend Runway 17-35 400 feet to the north of its current north end of pavement.
- Relocate Runway 35 threshold lights and VASI-4.
- Relocate several lights of the MALSR. It appears that one of the relocated approach lights may fall in very close proximity to or on NE 24th Street. For planning purposes, it is assumed that the gravel road could be adjusted to avoid conflicting with the relocated approach light. As the MALSR would be extended north, the power cables would overlap the existing underground electric (and the utility right-of-way if one exists) located along the south side of NE 24th Street.
- Reconfigure a portion of the MALSR service road.
- Relocate the Glide Slope Antenna and the co-located ASOS-3. A 400-foot relocation of the Runway 17 threshold would likely require the relocation of the Glide Slope antenna as well to maintain a 3 degree approach angle for landings.
- Remove and relocate Entrance Taxiway D.
- Extend parallel Taxiway E to the relocated Entrance Taxiway D.
- Remark the north end of the runway (threshold, numerals, touch down zone, and aiming point markings). Given that both ends of the runway would be remarked and considering that temporary displaced thresholds would be utilized during construction, only the markings within center portion of the runway would remain unchanged. Therefore, Alternative 5 includes the remarking of Runway 17-35 in its entirety.
- Relocate existing or install additional airfield guidance signs and taxiway edge lights.
- Relocate the Runway 17 Approach RPZ (and modify avigation easement).
- Develop and publish a new Runway 17 ILS and GPS (RNAV) Approach Procedures.

6.3.5.1 Estimated Probable Cost of Alternative 5

The estimated initial construction cost of Alternative No. 5, including engineering and construction observation fees but excluding the cost of all land acquisitions, could range between $4.7M and $5.9M dollars based on similar recently constructed projects.

6.3.6 ALTERNATIVE 6 – EXTEND RUNWAY 200 FEET, MODIFY DECLARED DISTANCES

Alternative 6 combines elements of Alternative 1 (declared distances) and Alternative 5 (shifting Runway 17-35). In this alternative, the localizer antenna would be relocated 200 feet to the south and 200 feet of runway pavement is added to the north end. Alternative 6 is depicted in **Figure 6-10**.

In Alternative 6, the Runway 17 and 35 landing thresholds remain unchanged; which offers several benefits over the other alternatives included the following:

- Runway 17 and 35 VASI systems do not require relocation.
- All published instrument approach procedures are unaffected.

- The runway/taxiway pavement geometry and edge lighting and airfield guidance sign systems are unaffected.
- The MALSR and Glide Slope antenna remain in their current location. With no need to relocate lights of the MALSR to the north, conflict with the underground electric utility (located on the south side of NE 24th Street) is avoided.
- RPZs and the respective avigation easement to not require modification.

The improvements proposed by Alternative 6 are summarized as follows:

- Relocate Localizer Antenna 200 feet to the south.
- Construct an additional 200 feet of pavement on the north end of Runway 17-35. This pavement is usable for takeoff operations to the south.
- Reconfigure the Runway 17 threshold lights to accommodate the additional 200 feet of runway pavement. The threshold lights would need to be either relocated outboard of the runway or reconstructed as in-pavement (flush) threshold lights. Similarly, the first set of the MALSR lights would need to be reconfigured as in-pavement approach lights. The remaining lights would remain as currently configured on above-ground light stands.
- Construct a new entrance taxiway at the new runway end. The existing entrance Taxiway D would remain in place which would create a by-pass taxiway configuration and offers some operational benefits to the airfield.
- Extend parallel Taxiway E to the new entrance taxiway.
- Install additional airfield guidance signs and taxiway edge lighting.
- Reconfigure a portion of the MALSR service road to connect to the new entrance taxiway.
- Mark the additional 200 feet north of the Runway 17 threshold as a displaced threshold configuration.

Because of the lighting/marking configuration proposed, Alternative 6 would increase the accelerate-stop distance available (ASDA) value of 6,705 feet to 7,105 feet for takeoffs from Runway 17. With the localizer antenna relocated to the south (increasing the distance between the stop end of Runway 17 and the localizer antenna), the LDA for Runway 17 would be increased from 6,705 feet to 6,905 feet. However, this relocating may place the localizer antenna within the utility Right of Way located on the north side of East 1st Street which may require the relocation of existing utilities may be required to execute Alternative 6.

6.3.6.1 Estimated Probable Cost of Alternative 6

The estimated initial construction cost of Alternative No. 6, including engineering and construction observation fees but, could range between $1.1M and $1.4M dollars based on similar recently constructed projects.

6.3.7 ALTERNATIVE 7 – EXTEND RUNWAY 400 FEET, MODIFY DECLARED DISTANCES

In Alternative 6, the relocation of the localizer antenna is predicated upon receiving funding from the FAA's F&E Division which has a greater level of uncertainty than funding from the FAA's Airports Division (AIP Program). To mitigate this uncertainty, the localizer remains in its current location under Alternative 7. However, in doing so, the LDA for Runway 17 remains unchanged at 6,705 feet which is the primary disadvantage of Alternative 7.

The runway configuration proposed by Alternative 7 is depicted in **Figure 6-11** and the improvements of this alternative are summarized as follows:

- Construct an additional 400 feet of pavement on the north end of Runway 17-35. This additional pavement would increase the accelerate-stop distance available (ASDA) value of 6,705 feet to 7,105 feet for takeoffs from Runway 17 (the same as Alternative 6).
- Reconfigure the Runway 17 threshold lights

to accommodate the additional 400 feet of runway pavement (same as Alternative 6).

- The first two sets of the MALSR lights would need to be reconfigured as in-pavement approach lights with the other sets of lights remaining in their current above-ground configuration.
- Construct a new entrance taxiway at the new runway end (same as Alternative 6).
- Extend parallel Taxiway E to the new entrance taxiway.
- Install additional airfield guidance signs and taxiway edge lighting.
- Reconfigure a portion of the MALSR service road to connect to the new entrance taxiway.
- Mark the additional 400 feet north of the Runway 17 threshold as a displaced threshold configuration.

6.3.7.1 Estimated Probable Cost of Alternative 7

The estimated initial construction cost of Alternative No. 7, including engineering and construction observation fees but, could range between $1.1M and $1.3M dollars based on similar recently constructed projects.

6.3.8 COMPARISON OF RSA ALTERNATIVES

A side-by-side comparison of the alternatives to providing a full RSA is summarized in **Table 6-3**. Based on this comparison, a brief summary of overriding concerns of each alternative is provided below.

Alternative 1 – Maintain Declared Distances does provide a full RSA at virtually no direct financial cost to the sponsor, however, it does so at the an expense of runway operational capability and potential impacts to aircraft payload and stage lengths from EWK. With an ASDA of 6,705 feet, the takeoff length available to aircraft under this alternative is less than the 7,000 feet desired by the airport. Although it would be supported by the FAA, Alternative 1 is not deemed in the best interest of the airport and is therefore not recommended.

Alternative 2 – Relocate East 1st Street and Localizer Antenna was rejected by the airport as the realignment of East 1st Street is not acceptable based on conversations with City and County officials. In addition, the FAA would not participate in this alternative as EWK is not a commercial service (FAR Part 139) airport.

While Alternative 3 – Install EMAS offers the fewest number of both on- and off-airport impacts of all the alternatives, it has significant initial and long-term costs that would be a financial burden to EWK's annual budget. Moreover, based on discussions with FAA Central Region staff, installation of an EMAS at an unconstrained general aviation airport is not likely. This alternative is not recommended.

Reducing the length of Runway 17-35 in order to provide for a full RSA is counterproductive and its primary disadvantage is that it does not provide the runway length needed to accommodate current aviation demand. Alternative 4 runs counter to the airport sponsors goal of providing facilities that support current and emerging demand and therefore this alternative is not deemed to be a viable alternative for EWK.

The Alternative 5 concept of shifting Runway 17-35 to the north would require the relocation of a variety of visual and electronic navigational aids including the relocation of the MALSR and the Glide Slope Antenna. Since EWK is not a Part 139 airport, relocating the Glide Slope Antenna would not be eligible for FAA funding. Relative to the other alternatives, Alternative 5 provides the same benefit (a full RSA) but at the highest probable cost. Alternative 5 is not recommended.

As evidenced in **Table 6-3**, Alternative 6 and 7 offer similar advantages with estimated initial costs within 10 percent of each other. While Alternative 7 does not increase the LDA for

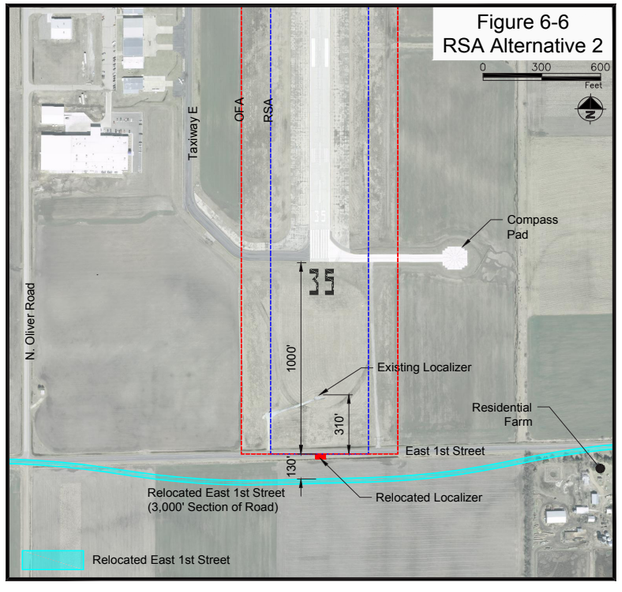
Runway 17, it does provide the same ASDA as Alternative 6. Moreover, with leaving the localizer antenna in place, Alternative 7 would avoid conflict with existing public utilities along East 1st Street and reduce funding concerns.

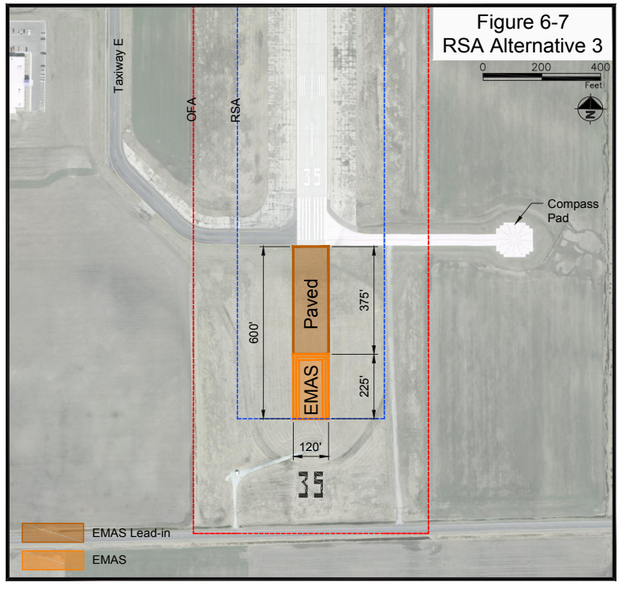
Therefore, HNTB recommends that Alternative 7 be employed to provide for a full RSA as this alternative best meets the airport's needs, offers minimal impact to existing airport and public infrastructure, and does so in a financially responsible manner.

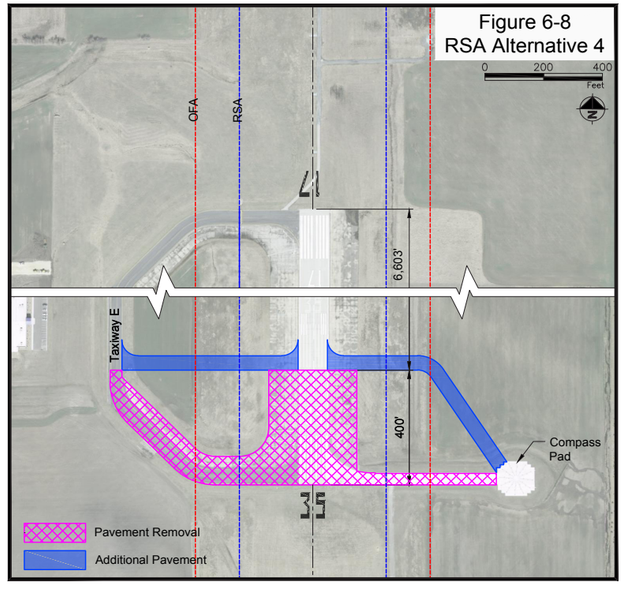
6.3.9 RSA ALTERNATIVE SELECTED BY PAC

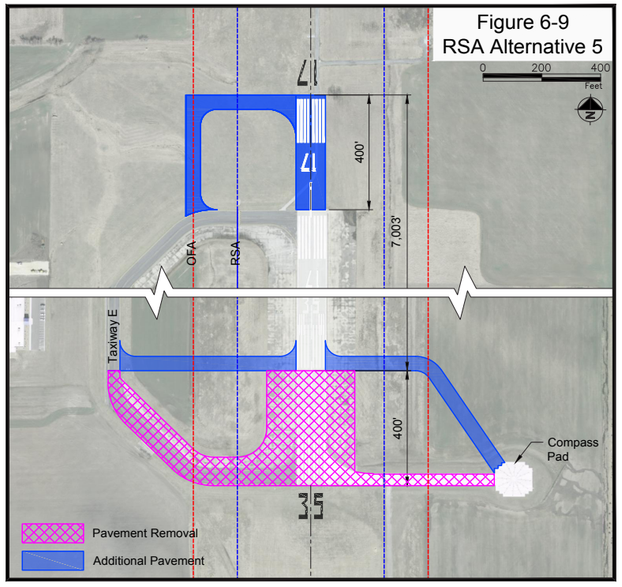
The seven RSA alternatives were presented and discussed at the fifth Planning Advisory Committee (PAC) meeting. The PAC selected an alternative that combined Alternatives 6 and 7. In this combined alternative (named Alternative 7A), the 200-foot relocation of the localizer antenna from Alternative 6 and the 400 feet of additional runway pavement from Alternative 7 are combined. Alternative 7A is depicted in **Figure 6-12**. Alternative 7A will be carried forward for environmental and land use planning and will be depicted in the Airport Layout Plan set of drawings.

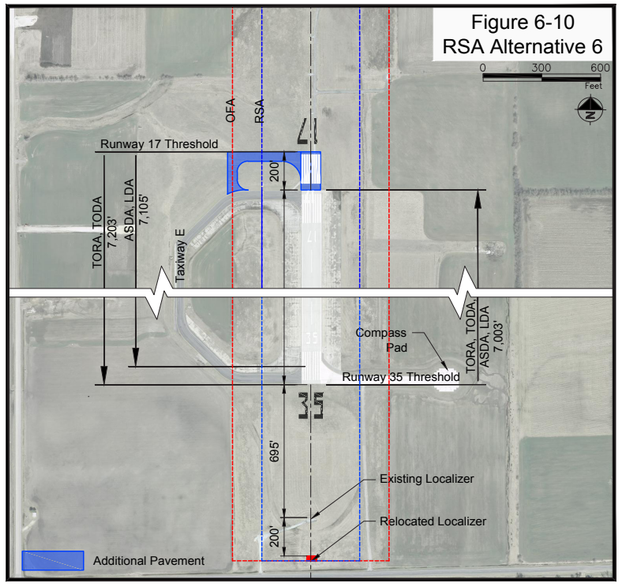
The purpose of combining these alternatives is to provide EWK with flexibility both in terms of the airfield (by not precluding any viable RSA alternatives) and any potential FAA funding, if available. In the event FAA funding from its F&E Division becomes available, the localizer antenna would be relocated 200 feet to the south. And if Airports Division funds (AIP Program) are available, Runway 17-35 and Taxiway E would be extended 200 feet to the north. This is the layout proposed by Alternative 6. Alternatively, in the event only Airports Division funds are available, the localizer antenna would remain in place and Runway 17-35 and Taxiway E would be extended 400 feet to the north – the layout proposed by Alternative 7.

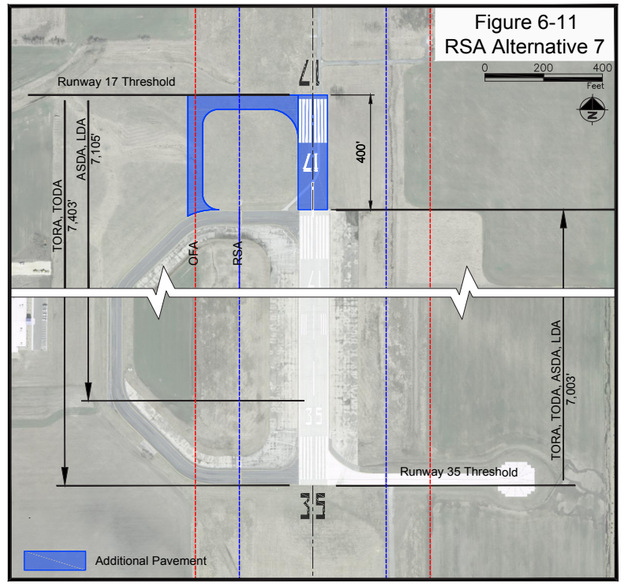












Source: HNTB

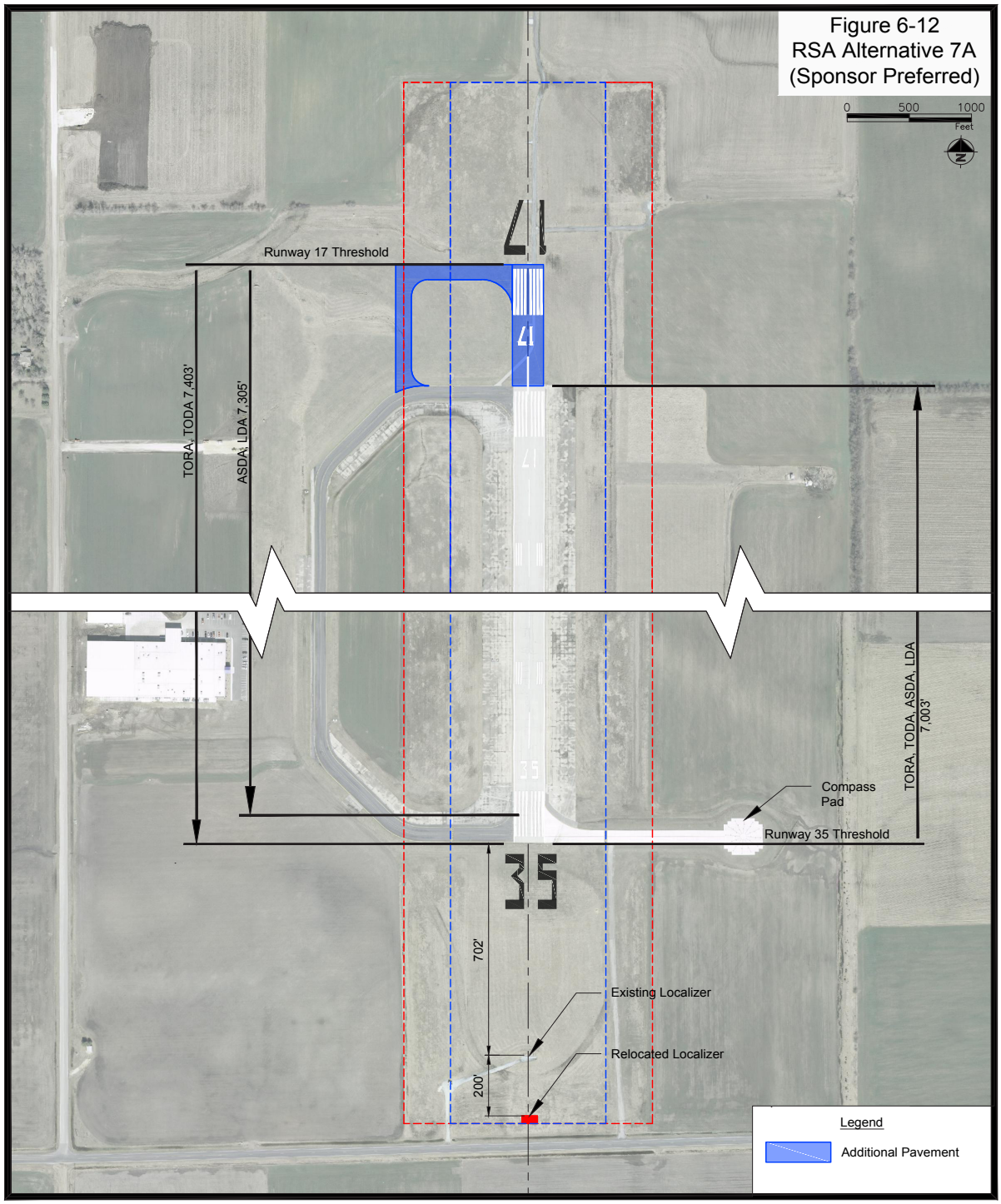
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Table 6-3. Comparison of Alternatives to Provide Full RSA

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
	Maintain Declared Distances	Relocate 1st Street and Localizer	Install EMAS	Reduce Runway Length	Shift Runway	Extend Runway 200', Relocate Localizer, Modify DD	Extend Runway 400', Modify DD
	Figure 6-5	*Figure 6-6*	*Figure 6-7*	*Figure 6-8*	*Figure 6-9*	*Figure 6-10*	*Figure 6-11*
Runway 17							
TORA - Takeoff Run Available	7,003 ft	7,003 ft	7,003 ft	6,603 ft	7,003 ft	7,203 ft	7,403 ft
TODA - Takeoff Distance Available	7,003 ft	7,003 ft	7,003 ft	6,603 ft	7,003 ft	7,203 ft	7,403 ft
ASDA - Accelerate Stop Distance Available	6,705 ft	7,003 ft	7,003 ft	6,603 ft	7,003 ft	7,105 ft	7,105 ft
LDA - Landing Distance Available	6,705 ft	7,003 ft	7,003 ft	6,603 ft	7,003 ft	6,905 ft	6,705 ft
Runway 35							
TORA - Takeoff Run Available	7,003 ft	7,003 ft	7,003 ft	6,603 ft	7,003 ft	7,003 ft	7,003 ft
TODA - Takeoff Distance Available	7,003 ft	7,003 ft	7,003 ft	6,603 ft	7,003 ft	7,003 ft	7,003 ft
ASDA - Accelerate Stop Distance Available	7,003 ft	7,003 ft	7,003 ft	6,603 ft	7,003 ft	7,003 ft	7,003 ft
LDA - Landing Distance Available	7,003 ft	7,003 ft	7,003 ft	6,603 ft	7,003 ft	7,003 ft	7,003 ft
Any changes Runway 17 threshold location?	No	No	No	No	Yes	No	No
Any changes Runway 35 threshold location?	No	No	No	Yes	Yes	No	No
Would new Instrument Approach Procedures be needed?	No	No	No	Yes	Yes	No	No
Any potential obstructions and/or airspace issues anticipated?	No	No	No	No	No	No	No
Any changes to aircraft approach paths and traffic patterns?	No	No	No	Yes	Yes	No	No
Does the alternative enhance airfield safety?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Any impact/relocation to existing airport NAVAIDS	No	Yes	No	Yes	Yes	No	No
Can the alternative be physically constructed entirely within existing airport property?	Yes	No	Yes	Yes	No	Yes	Yes
How many acres of additional land are to be acquired (both fee simple and easements)?	0	11.3	0	0	10.9	0	0
Any farmland to be acquired and converted to non-agricultural use?	No	Yes	No	No	Yes	No	No
Any physical impact to adjacent residential property?	None	Yes	None	None	None	None	None
Any impact to local road infrastructure and vehicle traffic patterns?	No	Yes	No	No	No	No	No
Any possible impact to public utilities?	No	Yes	No	No	Yes	Yes	No
Is a change to aircraft noise contours likely?	No	No	No	Yes	Yes	Yes	Yes
Potential impact to environment resources (streams, wetlands, etc.)?	No	No	No	No	No	No	No
What is the likelihood of needing additional airport environmental planning and coordination (relative to alternatives analyzed)?	None	Low	None	Low	Low	Low	Low
Probable FAA support for alternative?	Yes	No	No	Yes	No	Yes	Yes
What is the level of operating and maintenance costs (relative to alternatives analyzed)?	Low	Low	High	Low	Low	Low	Low
Probable initial construction cost in FY2010 dollars (excluding land, ROW, utilities)	**$0**	**$1.4M - $1.8M**	**$5.8M - $7.3M**	**$1.5M - $1.9M**	**$4.7M - $5.9M**	**$1.1M - $1.4M**	**$1.1M - $1.3M**

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Figure 6-12
RSA Alternative 7A
(Sponsor Preferred)
0
500
1000
Feet
N
17
Runway 17 Threshold
TORA, TODA 7,403'
ASDA, LDA 7,305'
TORA, TODA, ASDA, LDA
7,003'
Compass
Pad
Runway 35 Threshold
35
702'
200'
Existing Localizer
Relocated Localizer
Legend
Additional Pavement

Source: HNTB

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Chapter Seven
LAND USE PLAN

7.1 INTRODUCTION

The Airport Land Use Plan (ALUP) is the policy guideline for future development of non-aviation or "landside" uses within and surrounding the airport. This chapter focuses on protecting and preserving future development opportunities that are compatible with existing and future airport operations.

7.1.1 BASIS FOR THE LAND USE PLAN

The ALUP recommendations represent the City of Newton and the Harvey County's desire to plan for efficient and compatible growth. Incompatible land uses range from noise sensitive residential development or may include higher-intensity development that impacts airport operations due to building height, light pollution, etc. The common denominator with all incompatible land uses is their effect on the safety and efficiency of the airport operation as well as the safety of adjacent uses. The ALUP is based on the Airport Market Assessment (AMA). The AMA analyzed local and regional economic trends to identify emerging economic activities that will influence growth in the future. The Land Use Plan is intended to:

- Eliminate incompatible uses
- Protect the long-term economic viability of the airport
- Promote sustainable development
- Protect the health, safety and welfare of the public by minimizing exposure to hazards associated with airport operations
- Proactively plan for future infrastructure needs
- Identify design guidelines to provide a consistent standard to that reflects the airports importance as a key gateway to the City of Newton and Harvey County

7.1.2 RELATIONSHIP TO THE RENEWTON PLAN

ReNewton 2030 was adopted in February 2011 and serves as the official comprehensive plan to guide future land use guide for Newton and North Newton. Because the Comprehensive Plan was recently adopted, it was used as a key starting point for the development of a land use plan for the area surrounding the airport. Refinements were made based upon input received during the planning process. For the most part, the future land use categories were retained from the ReNewton Plan with strategic refinements and additions.

7.2 FUTURE LAND USE VISION, GOALS, OBJECTIVES AND ACTION STEPS

The ALUP goals, objectives and actions provide the framework that will help lead the airport into the future in a more sustainable manner. This framework was developed based on planning principles identified in the ReNewton Plan, an analysis of existing airport conditions and input from the PAC.
The goals, objectives and actions are organized under the following categories:

1. Compatibility with Airport Operations
2. ReNewton Plan Vision
3. Economic Development
4. Quality Development
5. Sustainable Design

Future development projects within and surrounding the airport will be evaluated based on their compliance with the ALUP goals, objectives and actions outlined within this chapter. For the purposes of this plan, goals, objectives and actions are defined as follows:

- **Goals:** Provide a broad aspirational

directive for each land use category intended to help the airport to achieve the sustainability mission statement.

* **Objectives:** Define general approaches, initiatives or strategies intended to help achieve each goal.
  > **Actions:** Provide a specific direction for achieving each objective.

- **Goal 1:** New development will be compatible with existing and future airport operations.
  * **Objective 1.1:** Protect the health, safety and welfare of area residents and the long-term viability of the airport.
    > **Action 1.1.1:** Identify guidelines for Airport Approach Zones for existing and potential future runways based on FAA guidelines.
    > **Action 1.1.2:** Proactively acquire land through purchase of property or easements within areas identified for future airport expansion.

- **Goal 2:** In order to promote quality growth and development, future developments should adhere to the vision identified in the ReNewton Plan.
  * **Objective 2.1:** Within the plan review process, new developments are encouraged to help implement the goals and outlined in the ReNewton Plan.
    > **Action 2.1.1:** City, County and Airport staff reports should identify how the goals and vision of the ReNewton Plan and ALUP are met by development proposals.

- **Goal 3:** New development is encouraged at the airport to help create local jobs and expand the City and County's tax base.
  * **Objective 3.1:** Use the AMA to target key industries and businesses to the airport and surrounding area.
    > **Action 3.1.1:** The City and County should continue to work proactively with the Harvey County Economic Development Council to market the airport business park and attract emerging industries identified in the AMA.
  * **Objective 3.2:** Identify available sites adjacent to or near the airport for growth industries including but not limited to aviation-related composite, green/sustainable technology businesses and other emerging industries.
    > **Action 3.2.1:** Develop an incentive plan for future development based on the ALUP and AMA.
    > **Action 3.2.2:** Ensure that adequate infrastructure is available to support higher intensity uses. This includes the availability and capacity of sanitary sewer, domestic water, upgrades to 1st Street and Oliver Road as well as emergency services including a potential new fire station to serve the area.

- **Goal 4:** All development within and adjacent to airport should reinforce a cohesiveness/unity through consistent design.
  * **Objective 4.1:** New industrial, commercial and office development should be designed with a consistent level of architectural detail, innovative design and high quality materials.
    > **Action 4.1.1:** Require infill development to be consistent with the use, design, size, scale, materials and color palette of adjacent structures.
    > **Action 4.1.2:** Develop design standards for new "greenfield" development adjacent to the airport as well as future airport property (see Airport Influence Area).
  * **Objective 4.2:** Enhance views from major streets to the Airport.
    > **Action 4.2.1:** Consider upgrading Oliver Street to a parkway that may include a landscaped median, gateways at the 1st Street Intersection and airport entrance and other enhancements.

- **Goal 5:** All development will incorporate sustainable design as outlined in the ReNewton Plan and the EWK Sustainability Master Plan (refer to Chapter 3 for specific Sustainability land use objectives and actions).

7.3 FUTURE LAND USE GUIDE

The Land Use Map (see **Figure 7-1**) and categories (described in this section) are intended to serve as the official guide for future development adjacent to the airport by outlining recommended uses and required infrastructure. These categories are represented on a Land Use Map by color designations. These designations do not represent elements of zoning or even a set of desired future land uses. Rather, the Land Use Plan represents a guideline for future development.

7.3.1 LAND USE CATEGORIES

Industrial/Business Park

These areas comprise approximately 390-acres and are primarily intended for industrial uses that may include distribution, warehousing and light manufacturing, and related office park development in a campus setting. Generally buildings have less than three floors and can have large footprints. These areas are intended to promote the economic viability of industrial uses; encourage employment growth; and limit the encroachment of unplanned residential development surrounding the airport. Development within these areas should be a part of a larger master plan that identifies future uses, collective greens space, trails and amenities. An example of a master plan for this area is shown in **Figure 7-2**.

Primary Uses

- Light manufacturing and assembly
- Warehouse and distribution
- Office park development in a campus setting

Secondary Uses:

- Ancillary services such as restaurants, conference facilities, etc.
- Public facilities (future fire station, community services, etc.)
- Open space, trails, etc.

Prohibited Uses

- All residential uses

Required Infrastructure:

- Municipal water and sanitary sewer preferred
- Defined internal road network and future utility easements
- Dedicated turn lane from First Street or Oliver Street
- Stormwater improvements to capture and treat all runoff from the site. Stormwater improvements should be part of a larger master plan for the area

Commercial

These areas comprise approximately 20-acres and are primarily intended to provide goods and services to the airport and surrounding development. Ideally, these uses should be targeted at major intersections along major arterials.

Primary Uses:

- Convenience retail uses including drug stores, banks, gas/convenience stations
- Restaurants.

Secondary Uses:

- Professional office and support services

Prohibited Uses:

- All residential uses.

Required Infrastructure:

- Municipal water and sanitary sewer
- Dedicated turn lane from First Street
- Stormwater improvements to capture and treat all runoff from the site.

Airport Influence Area

The Airport Influence Area (AIA) comprises approximately 227-acres contiguous to the existing airport. These areas are intended for future airport expansion and/or compatible businesses and uses. Prospec-tive property

Figure 7-1 Land Use Plan Map

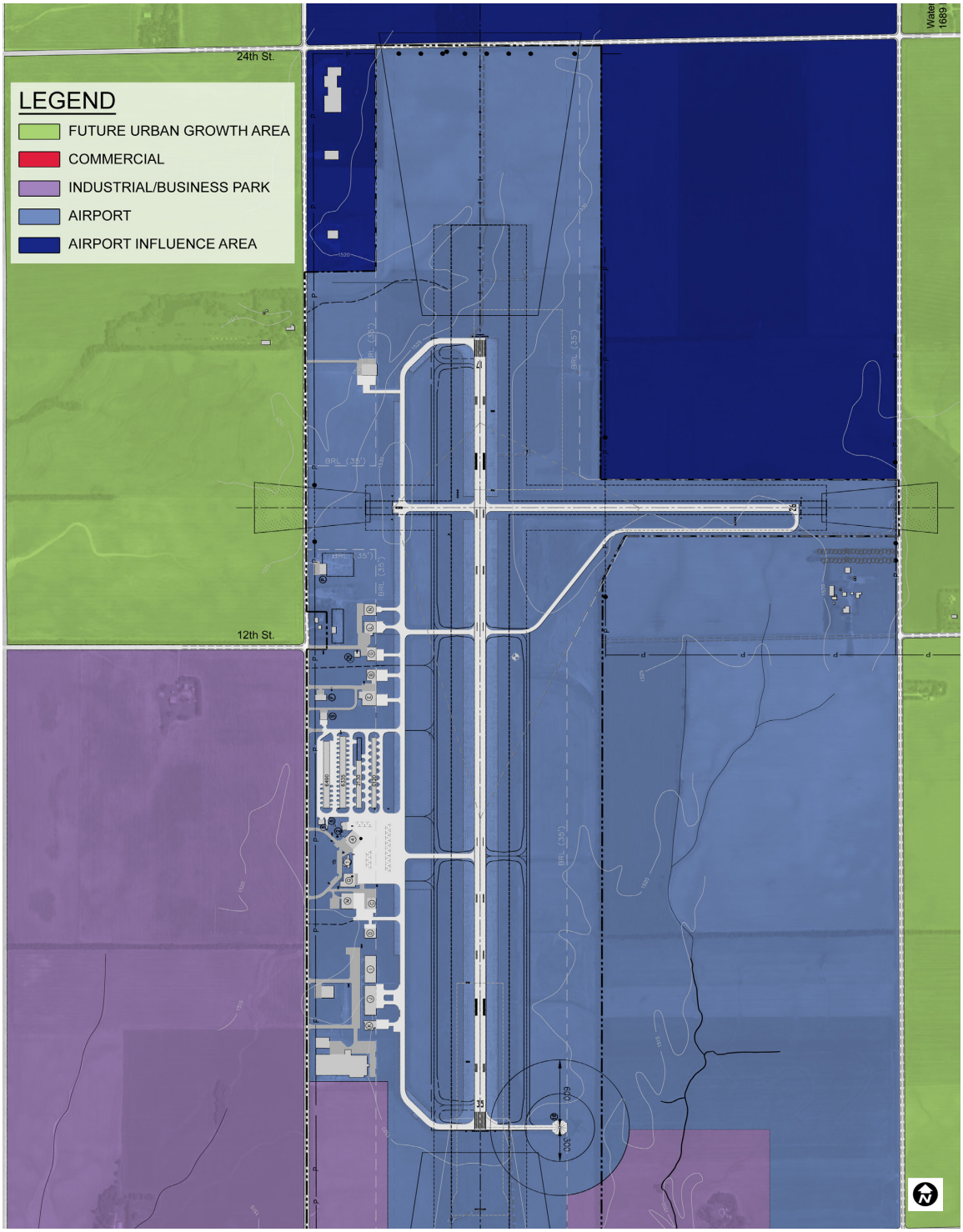


Figure 7.2 Industrial/Business Park Master Plan Example



owners, developers and residents within this area should be informed of potential airport expansion.

Primary Uses:
- Future airport expansion
- Airport-related commercial/retail

Secondary Uses:
- Light manufacturing and assembly
- Warehouse and distribution
- Ancillary office
- Agriculture; one single-family use associated with existing Agricultural operation

Prohibited Uses:
- All residential uses not associated with an existing agricultural operation

Part 77 Approach Surfaces
Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace, define a series of five imaginary surfaces surrounding airports. The limits of these five surfaces were identified for EWK based on ultimate runway lengths and are illustrated in **Appendix G**. These five imaginary surfaces are the primary, approach, transitional, horizontal, and conical surfaces. Part 77 surfaces are overlaid onto a topographic map to correlate existing features and elevations with the proposed surfaces.

Any object or structure which would penetrate any of these imaginary surfaces is considered by the FAA to be an obstruction to air navigation. Therefore, height restrictions on proposed developments within the airport area in accordance with FAR Part 77 is an essential element of development control in assuring safety of the airport and the public.

Runway Projection Zone (RPZ)
The purpose of the RPZ is to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway center line. Uses are limited by height and other factors including but not limited to visual obstruction, interference with navigation aids, lighting and flammable materials.

Primary Uses:
- Agriculture
- Open space/vacant land

Prohibited Uses:
- Any residential use
- Places of public assembly (churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons).
- Unless directly related to the operation of aircraft, above ground storage of large quantities of flammable materials or other hazardous materials shall not be permitted.

Future Urban Growth Area
This area is based on an urban growth boundary based on areas suitable for long-term development based on assessment of water and sewer extension service areas, environmental constraints, and existing road network. As part of the ReNewton process, the revised urban growth boundary for 2030 was extended eastward to accommodate potential growth associated with EWK and new opportunities near the Kansas Logistics Park. Although there are not specific recommended land uses within these areas, ReNewton policies emphasize that these areas are intended for orderly expansion of urban growth and infrastructure. These areas may remain agriculture for the near term. However, upon extension of infrastructure, these areas will develop into higher intensity uses compatible with industrial/business park development on and adjacent to the airport.

7.3.2 NOISE CONTOURS

Aircraft noise is the single largest generator of airport-related complaints. For compatibility planning, noise levels are expressed in terms of the yearly Day-Night Average Sound Level (DNL). DNL noise levels are computed for the Average Annual Day (AAD) of operations for the year. DNL noise levels are calculated by using FAA's authorized noise model, the Integrated Noise Model (INM). The noise level is "averaged" over a period of at least 24 hours. The FAA's Integrated Noise Model

(INM) will generate noise contours (lines of equal averaged noise value) around an airport. The noise contours are very useful when trying to define airport planning boundaries. Noise exposure levels of less than 65 DNL are generally compatible with residential and other noise-sensitive land uses. Most of the area adjacent to the airport is planned for Industrial/Business Park or Commercial uses, which are generally compatible with the noise levels forecast around the airport. Please refer to Chapter 8, Section 8.2.3 for a description of EWK's noise analysis.

7.4 DESIGN GUIDELINES

The physical appearance of development is a significant factor in determining public perceptions of an area. The following Design Guidelines provide a framework for quality development. These guidelines will be used by the City of Newton Planning Commission, the Harvey County Planning Commission and the Airport Commission for design review of proposed development projects within and surrounding the airport.

Landscape
The character and image of the Plan Area can be significantly affected by the quality and consistency of the landscape design and level of maintenance provided. All development proposals should provide a landscape plan. At a minimum, the plan should show the following:

- Plant materials that are well suited to the South-Central Kansas climate should be used.
- Use of low maintenance native landscape is encouraged.
- If more formal landscape is used, a selection of evergreen and/or deciduous plant material is encouraged for year-round ornamental qualities and visual interest.
- Plant material should be arranged to emphasize building entrances, circulation routes, gathering spaces, and major roadway intersections.

Open Space
Open space, including pocket parks, plazas and courtyards should be integrated throughout areas planned for Industrial/Business Park.

- Design open spaces to not pond or collect water that may attract concentrations of birds and other wildlife that may interfere with airport operations.
- Open space areas must be accessible from a sidewalk or trail.
- Open space areas such as pocket parks, courtyards and green spaces are to be an integral part of the overall building and site design.
- Open space areas should be designed to be safe, attractive and inviting by incorporating pedestrian lighting, landscaping, trees, benches, trash receptacles, and other amenities.
- Open spaces and rain gardens should be considered within part of the site design to mitigate stormwater run-off and serve as an amenity.

Parking
Convenient and accessible parking should be made available to serve the needs of property owners, businesses, patrons, and visitors.

- Parking lots for office buildings should provide a combination of perimeter and interior landscaping to screen the lot from the street, soften the area and facilitate safe pedestrian connections from the lot to adjacent buildings and amenities.
- Parking lots are encouraged to be located behind or beside adjacent buildings.
- Where parking lots abut the street edge, buildings, landscaping and/or low decorative fencing or walls should be used to screen the parking from the road.
- Parking areas should incorporate stormwater management techniques such as vegetated areas and bioretention swales to slow stormwater whenever possible.

Architectural Character and Materials
Building design, the quality of detailing and architectural materials provide for a consistent design within a development that relates to adjacent uses and provides variety, interest and a sense of place.

- Architectural materials should complement the character of the existing airport development through use of high quality, durable materials. The main entrance of facilities should address the street in orientation and be clearly articulated and identified.
- Use of sustainable architectural materials is encouraged. These materials are manufactured or fabricated locally, are not resource intensive and may consist of post-consumer use recycled materials.
- Green (LEED certified) architecture is encouraged for new large-scale industrial, commercial and office buildings. See Chapter 3 for specific guidelines and recommendations.
- All buildings on and adjacent to the airport should be a consistent color to reinforce the idea of an airport campus.
- Rooftop screening of mechanical and electrical equipment should be used with materials consistent with the rest of the building.
- When loading doors occur on street-facing facades, they should be set back from the main building plane and articulated in a manner that compliments the overall façade.
- Buildings facing 1st Street and Oliver Road should integrate architectural details to enhance the street edge. Suggested materials and details include but are not limited to corner elements, awnings, windows, etc.

Lighting
Effective lighting strategies promote a safe, inviting and attractive area. There are many types of lighting elements including natural lighting, street lights, parking lot lights, lights for signs and buildings, and decorative lights.

- All development and redevelopment proposals should provide a lighting plan to promote safety and security.
- Limit outdoor lighting for new development to prevent light from projecting directly onto an existing runway or taxiway or in the Airport Approach Zone.
- Avoid upward reflection of lights that will interfere with airport traffic. All light fixtures should be designed as "full cutoff" to direct lights downward to illuminate site buildings and parking lots.
- At a minimum, the lighting plan should include illumination of parking areas, building entries and exits.
- Fixtures should also be designed to shield and/or mitigate excessive glare and light spillage.

Signs
Signs can enhance the existing character of the area while providing necessary information to its intended audience. Provide clear, easily understandable, coordinated method of conveying information for businesses and address identification.

- Monument signs are encouraged. Monument signs should be designed so that the base and the sign face are proportional to each other. Monument signs should be set back at least 10-feet from the property line.
- Landscaping of monument signs is encouraged. Landscape materials include trees, shrubs, ground cover and flowering plants and should complement the existing or proposed landscaping of the project.
- There should be a consistency in the design, materials and colors of all signage to reinforce the airport as a continuous campus. This includes a consistency and compatibility, but not necessarily an exact repetition of the materials on all sign faces as well as consistency in the design materials and color of the sign bases used throughout any proposed development.
- Signs should be made of high quality and durable materials such as concrete, brick, stone or metal panels.

7.5 REGULATORY RECOMMENDATIONS

As mentioned previously, the ALUP provides a guide for future development. However, to ensure that these recommendations are consistently applied and actively enforced by both jurisdictions, the following actions should be considered.

Adopt an Overlay Zone for Airport Environs
The City of Newton and Harvey County should adopt an Overlay Zone for the airport and surrounding vicinity. This zone will prohibit incompatible land uses as outlined in the ALUP recommendations.

Disclosure of Noise Contours
The City of Newton and Harvey County should require appropriate legal notice to be given to all purchasers, lessees, and renters of property that describes the potential noise impacts from airport operations when properties are located within noise contours greater than 65 DNL.

7.6 POTENTIAL EXPANSION AREAS

As outlined in the Chapter 4, the airport will continue to experience significant growth which will require improvements and in some cases expansion of existing facilities. The AIA was identified as an area that could accommodate these facilities or other airport-related development. The ALUP's land use policies provide basic guidelines to protect these areas from incompatible development, however, the Airport Commission should be consider the following proacitve measures to protect critical areas.

Land Purchase
The proactive purchase of land by the airport provides the most effective land use control, however, it is usually the most expensive. When combined with either resale for compatible uses or retention and use for a public purpose such as airport expansion, the net cost may be effectively reduced through and be found to be reasonable. Due to the cost of this approach, should be targeted to critical locations within the AIA that are most likely to be impacted by future airport operations.

Easements
An easement is a right held by one person to make use of the land of another for a limited purpose. In the context of airport compatibility planning, an easement may take several forms, such as a positive easement which allows the right of navigation and the right to make noise over someone's property, or a negative easement which prevents incompatible land uses on the property. The easement can be structured to allow for compatible uses such as agriculture or open space and can be less expensive than purchasing the property outright.

7.7 IMPLEMENTATION STRATEGY

Most of the recommendations identified in this chapter shall be implemented through the cooperative inter-jurisdictional cooperation between the City of Newton and Harvey County. Other strategies such as land and/or easement acquisition, land banking, or airport property development shall be implemented by the Airport Commission and the City of Newton as is deemed to be financially appropriate.

Administration of the ALUP
Upon approval the FAA, the Newton City Commission and Harvey County Commission should consider adopting the Airport Land Use Plan as an amendment to their respective Comprehensive Plans. The ReNewton Plan laid the groundwork for this action by referencing the Airport Master Plan. Any existing plan previously adopted by either jurisdiction will be replaced by this Land Use Plan. In that regard, it will be the responsibility of each jurisdiction to administrate and support the goals, objectives, and actions contained within this Land Use Plan.

The elements of this Land Use Plan, including the future land use designations identified on the Future Land Use Map, shall be supported and implemented by each jurisdiction. Any proposed rezoning or conditional or special use permit for development of property adjacent to the airport shall be in conformance with the land use designation shown on the Future Land Use Map. If any proposed rezoning or conditional or special use permit is not in conformance with the Future Land Use Map designations, said proposal shall be processed by the jurisdiction in which the property is located with final approval.

Amendments to the ALUP

As recommended by Kansas state law, the Land Use Plan shall be reviewed annually through the joint coordination of representatives from the City of Newton and Harvey County, with revisions and compliance changes enacted as needed. Compliance changes shall consist of those amendments to the Future Land Use Map.

CHAPTER 8 ENVIRONMENTAL OVERVIEW

8.1 INTRODUCTION

This chapter presents an environmental review of the projects proposed for development within the next 20 years at EWK. Since federal funding for at least some of these projects will be requested from the FAA, the requirements of the National Environmental Policy Act apply. Therefore, the environmental review was conducted in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.

The environmental review includes a description of potential environmental impacts that may result from the implementation of the proposed airport projects and identifies the level of environmental analysis and documentation that may be required prior to receiving federal funding.

8.2 ENVIRONMENTAL IMPACT CATEGORIES

Potential environmental impacts were reviewed for two purposes: to minimize or avoid impacts and to provide an indication of the level of analysis that would be required for future NEPA documentation. Potential environmental impacts of the proposed airport projects were considered for each environmental impact category identified in FAA Order 1050.1E. The 17 environmental impact categories are listed alphabetically in **Table 8-1**.

Information for each category was collected by reviewing various agency websites and coordinating with resource agency staff.

Table 8-1. Environmental Impact Categories

Category from FAA Order 1050.1E
Air Quality
Coastal Resources
Compatible Land Use and Noise
Construction Impacts
Dept. of Transportation Section 4(f)
Farmlands
Fish, Wildlife, and Plants
Floodplains
Hazardous Materials, Pollution Prevention, and Solid Waste
Historical, Architectural, Archeological, and Cultural Resources
Light Emissions and Visual Effects
Natural Resources and Energy Supply
Secondary (Induced Impacts)
Socioeconomic Impacts, Environmental Justice and Children's Health and Safety Risk Impacts
Water Quality
Wetlands
Wild and Scenic Rivers

Source: HNTB

Letters were sent to resource agencies requesting input regarding potential environmental effects and suggestions regarding sustainability opportunities. Responses were received from seven agencies. A copy of the letter sent to the agencies and the responses received are included in **Appendix D.** The following discussion summarizes relative agency guidance, information garnered from agency websites, and the input provided by the resource agencies.

8.2.1 AIR QUALITY

The Clean Air Act of 1970 (CAA) was enacted to protect the nation's air quality, as well as the public health. Amendments in 1970, 1977, and 1990 established Federal standards to control air pollution emissions and to delegate the implementation of such standards to the states. To implement the CAA, the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for outdoor concentrations of seven "criteria" pollutants, including: carbon monoxide (CO), nitrogen dioxide (NO_2), 8-hour ozone (O_3), sulfur dioxide (SO_2), lead (Pb) and particulate matter with aerodynamic diameters of 10 or 2.5 microns and less ($PM_{10/2.5}$).

Under the federal CAA, each state must identify non-attainment areas that do not meet the NAAQS. For any non-attainment designation, a State Implementation Plan (SIP) is developed to demonstrate future attainment of the applicable NAAQS. In summary, an attainment area is any area that meets the NAAQS, a non-attainment area is any area that does not meet the NAAQS, and a maintenance area is any area previously designated non-attainment but is in transition back to attainment.

The FAA document, *Air Quality Procedures for Civilian Airports and Air Force Bases* (Air Quality Handbook) (Addendum 2004) provides guidance on how to assess potential air quality impacts. As discussed in the Air Quality Handbook, two types of analysis may be required, conformity and NAAQS. A conformity analysis is conducted to determine whether a proposed project would be inconsistent with the SIP for a criteria pollutant.

A NAAQS assessment is conducted to determine whether the criteria pollutant concentrations at the airport would exceed the NAAQS as a result of implementing the proposed project(s). The EPA's Green Book designates current attainment/maintenance and nonattainment areas for criteria pollutants in the United States. Harvey County, Kansas is designated as in attainment for all criteria pollutants. Therefore, a conformity analysis of air emissions associated with the implementation of the proposed projects would not be required.

According to the Air Quality Handbook, a NAAQS analysis is only required if the level of general aviation and air taxi activity exceed 180,000 operations per year. Aviation activity for EWK is forecasted to be 149,500 total aircraft operations in 2030. Therefore, a NAAQS analysis would not be required.

Therefore, neither a conformity nor a NAAQS analysis would be required to complete future NEPA documentation for the proposed projects presuming that Harvey County remains in attainment for the criteria pollutants.

8.2.2 COASTAL RESOURCES

Newton City-County Airport is not located within a coastal zone management area or coastal barrier area as defined by the Federal government. Therefore, no related analysis would be required for future NEPA documentation.

8.2.3 COMPATIBLE LAND USE AND NOISE

Existing Land uses surrounding the airport are mainly agricultural/rural residential, with some residential and commercial/industrial uses. Future land use near the Airport is provided in ***Chapter 7, Land Use Plan***. The area west of the Airport is designated as Industrial/ Business Park and Urban Growth. The area adjacent to the east side of the Airport is designated as Ultimate Airport Influence and Ultimate Airport. The areas off the ends of Runway 17/35 are designated as Ultimate Airport, Ultimate Airport Influence and Urban Growth.

The compatibility of existing and planned land uses with aircraft operations is usually determined based on the extent of noise impacts around an airport. Aircraft noise is often the most noticeable environmental effect associated with aviation projects. Noise that is sufficiently loud or frequent in occurrence

may interfere with various human activities and/or be considered non-compatible with noise-sensitive land uses such as residences.

A noise analysis was conducted to determine the potential compatible land use and noise impacts that would result from the proposed projects. The noise analysis was conducted in accordance with FAA's guidance and requirements for the assessment of aircraft noise. This guidance, specified in FAA Order 1050.1E, requires that aircraft noise be analyzed in terms of the yearly Day-Night Average Sound Level (DNL) metric. In practice, this requirement means that DNL noise levels are computed for the Average Annual Day (AAD) of operations for the year of interest. DNL noise levels are calculated by using FAA's authorized noise model, the Integrated Noise Model (INM).

DNL contours representing the noise environment at EWK were calculated for the base year (2010) and future year (2030). **Figures 8-1** and **8-2** show the noise contours developed for the Base Year (2010) and Future Year (2030). The noise exposure level contours depicted on the figures range from 65 DNL to 80 DNL in 5 DNL increments. As can be seen from these figures the noise contours extend markedly further from the Airport in 2030 than in 2010. This is to be expected given the forecasted doubling of aircraft operations over the 20 year period. There is also a difference between the 2030 No Action contours and the 2030 Proposed Projects contours in **Figure 8-2**. The contours shift to the north with the proposed projects. This shift is the result of the extension of Runway 17/35 to the north. Additional information regarding the noise analysis is provided in **Appendix D**, *Noise Analysis for Newton City-County Airport Master Plan Update*.

The Federal Interagency Committee on Noise (FICON) established guidelines to address the compatibility of various land uses within an aircraft operation's induced noise environment. These guidelines provide a means to describe the potential effect of the project on land areas within the vicinity of EWK. The FAA has informally adopted the FICON guidelines regarding land use compatibility with various levels of aircraft noise. FAA noise compatibility guidelines are included in 14 CFR Part 150, *Airport Noise Planning, Land Use Compatibility Guidelines*.

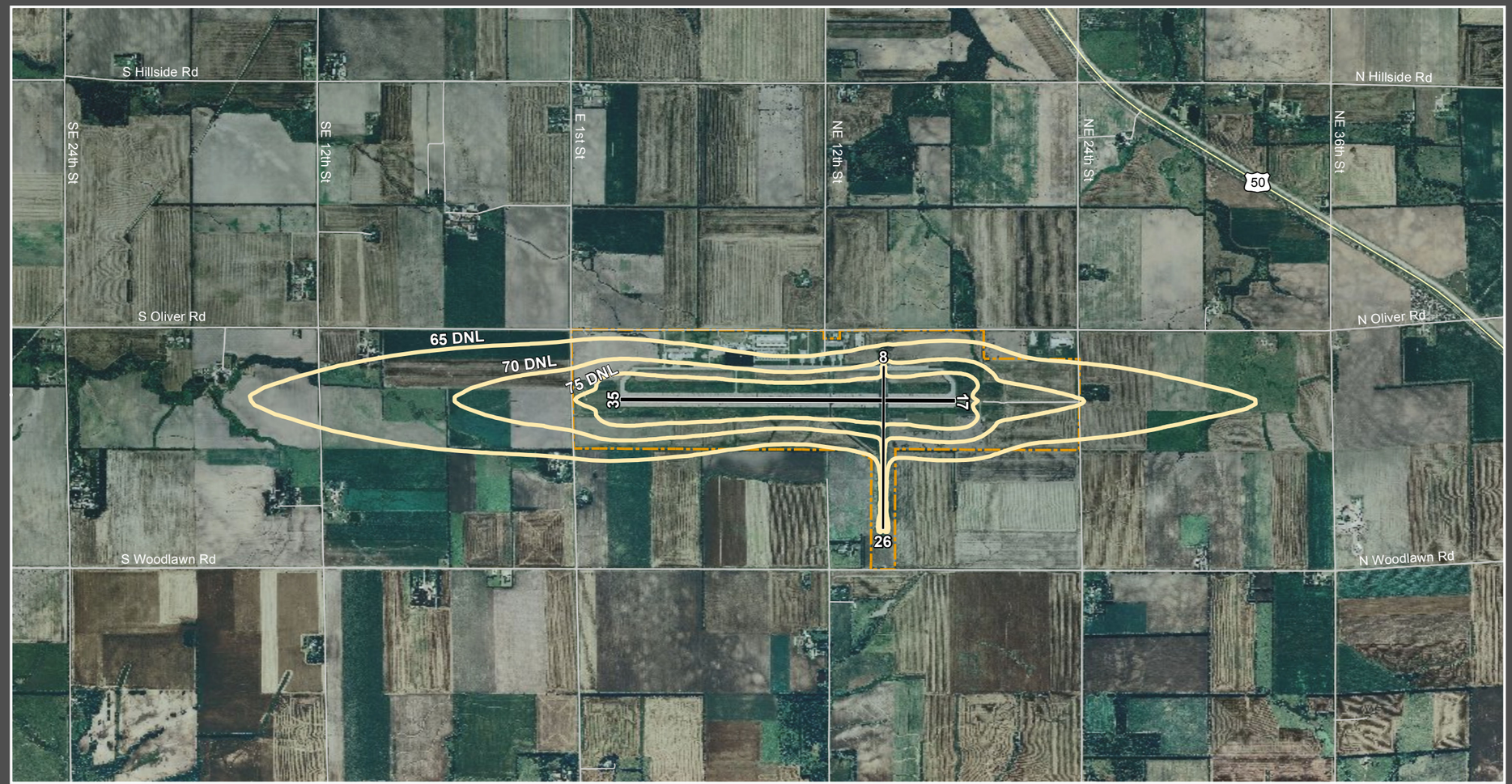
Per 14 CFR Part 150, noise exposure levels of less than 65 DNL are generally compatible with residential and other noise-sensitive land uses. FAA Order 1050.1E establishes that a change of 1.5 DNL or more at or above 65 DNL over noise-sensitive land uses due to the proposed projects, as compared to the no action scenario, is considered a significant impact.

The potential for a noise impact to exceed the threshold of significance was evaluated by comparing the 2030 65 DNL contour for the proposed projects with the 2030 65 DNL for the no action scenario. The 2030 65 DNL no action contour would extend farther beyond the Runway 35 end than the 2030 65 DNL for the proposed projects. Therefore, while there are sensitive land uses (residences) within the limits of both of the No Action and Proposed Projects 65 DNL contours, the noise exposure at these residences would likely be less with the proposed projects. Additionally, there do not appear to be any sensitive land uses in the locations where the 2030 Proposed Projects 65 DNL contour is outside of the 2030 No Action 65 DNL contour.

In accordance with the FAA's Environmental Desk Reference for Airport Actions, land use compatibility related to aviation safety should also be considered. Certain land uses such as agricultural may attract wildlife and therefore may be incompatible with aviation safety. As discussed in **Chapter 5, Facility Requirements**, wildlife incursions on the airfield are of concern at EWK. Therefore, it was recommended that a Wildlife Hazard Assessment (WHA) be completed. As part of conducting the WHA, nearby potential wildlife attractant land use could be identified and evaluated.

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Newton City-County Airport



LEGEND

- 2010 Base Year Noise Contours
- 2010 Runway Configuration
- Airport Property Line

N

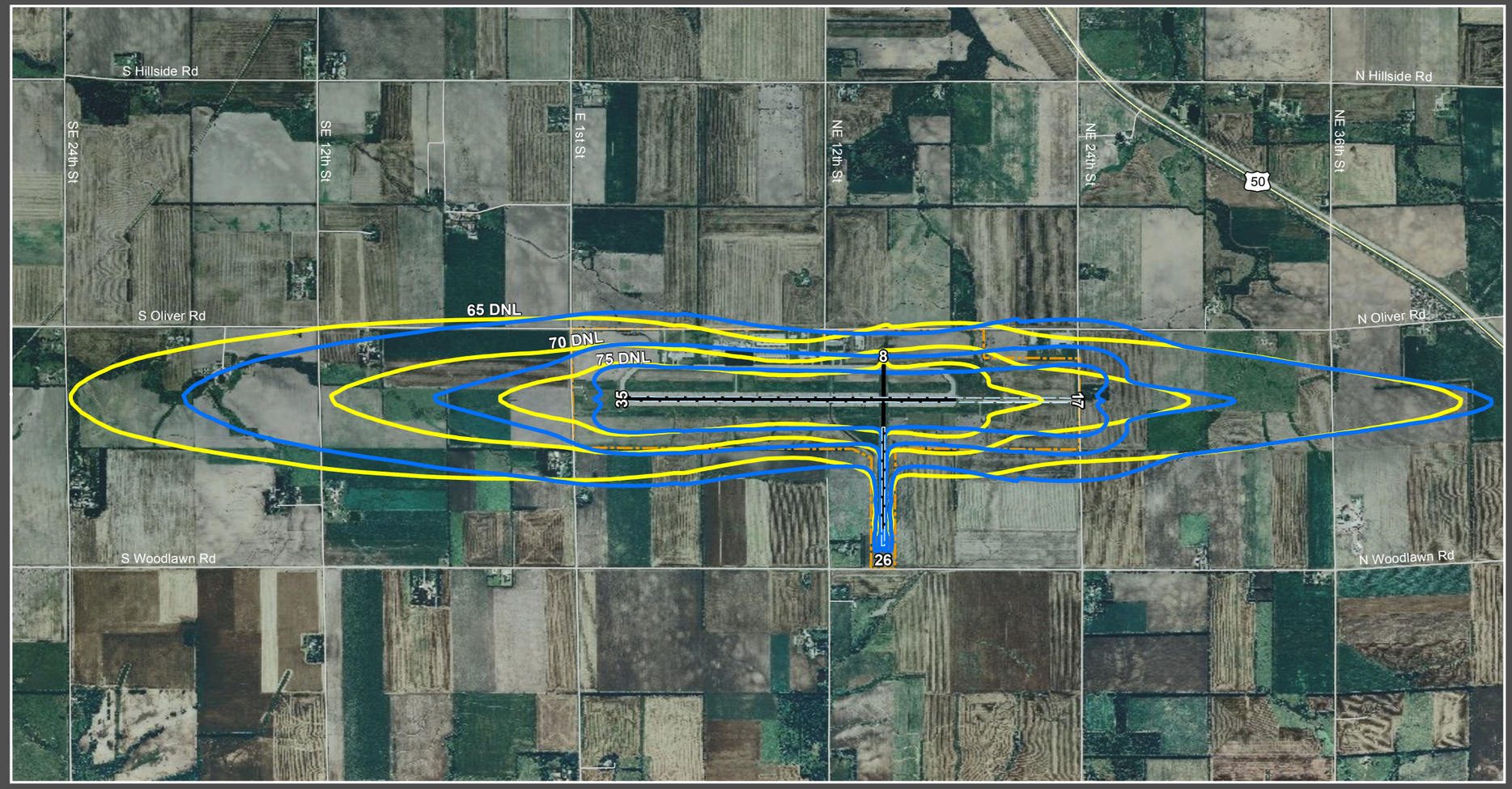
0 1,000 2,000 4,000 Feet

Figure 8-1
Base Year (2010) Noise Contours

Source: ESRI Data and HNTB Analysis

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Newton City-County Airport



LEGEND

- 2030 No Action Noise Contours
- 2030 Proposed Projects Noise Contours
- Airport Property Line
- 2030 No Action Runway Configuration
- 2030 Proposed Runway Configuration

N

0 1,000 2,000 4,000 Feet

Figure 8-2
Future (2030) No Action and Proposed Projects Noise Contours

Source: ESRI Data and HNTB Analysis

Potential wildlife attractant land use such as landfills should be identified and evaluated if:

- The wildlife attractant land use is within 10,000 feet from the airport operations area (AOA)
- The wildlife attractant land use is within five miles from the AOA and the wildlife attractant land use would cause wildlife to cross approach or departure airspace.

This information may then be used in future NEPA documentation to address land use compatibility and aviation safety.

8.2.4 CONSTRUCTION IMPACTS

Airport construction may cause various environmental effects primarily due to dust, heavy equipment emissions, storm water runoff containing sediment and/or spilled or leaking petroleum products, and noise. Thus the construction of new airport facilities may cause temporary impacts to water and air quality, ambient noise levels and local traffic patterns. Impacts from the construction of the proposed airport development would be temporary in nature, typically not lasting more than a few months at a time during varying construction stages. These impacts can be minimized with the implementation of best management practices.

8.2.5 DEPARTMENT OF TRANSPORTATION SECTION 4(F)

Section 4(f) of the Department of Transportation Act provides that no publicly owned park, recreation area, wildlife or waterfowl refuge, or land of a historic site that is of national, state, or local significance will be used, acquired, or affected by programs or projects requiring Federal assistance for implementation. Based on available information there are no publicly owned parks, recreation areas, wildlife or waterfowl refuges in the vicinity of the Airport. However, consultation with the Kansas State Historic Preservation Officer (SHPO) revealed that there may be a historic site on or near the Airport. In the event that a historic resource is found, a Section 4(f) evaluation may be required to complete future NEPA documentation. See sub-section entitled Historical, Architectural, Archeological, and Cultural Resources for more information.

8.2.6 FARMLANDS

The Farmland Protection Policy Acts (FPPA) of 1980 and 1995 regulates the conversion of important farmland to non-agricultural uses. The purpose of the FPPA is "to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses..." The FPPA protects prime, unique and locally important farmlands.

The majority of the proposed projects would occur on existing Airport property. However, additional land would be acquired for runway related development projects. Agricultural land to the north and east of current Airport property would be acquired for runway development. Acquisition of this property would constitute a conversion to nonagricultural uses. In addition, based on data from the Natural Resource Conservation Service (NRCS) Soils Web site, the soil in this area is considered "Prime Soil" and thus this land is prime farmland. Therefore, the FPPA applies and a Farmland Conversion Impact Rating form (Form AD-1006) must be submitted to the NRCS for their completion. Additional analysis and consultation may be required depending on the final score on this form.

8.2.7 FISH, WILDLIFE, AND PLANTS

Both the U.S. Fish and Wildlife Service (FWS) and the Kansas Department of Wildlife Parks and Tourism (KDWP) were consulted regarding the potential presence of federally and state listed species and their habitats. The U.S. Fish and Wildlife Service commented that the federally listed whooping crane (*Grus Americana*) may occur in the Airport vicinity. The KDWP conducted an informal review for potential impacts on crucial wildlife habitats, current state-listed threatened and endangered species and species in need of conservation. Based on a "cursory review of maps, aerials, and basic analysis using GIS

software," the KDWP stated that there are no threatened or endangered species concerns located within the vicinity or expanded area around EWK. However, the KDWP noted that they cannot conduct a formal review without detailed plans. Therefore, as part of future NEPA documentation, additional agency coordination should be conducted and potentially the project area should be surveyed by a wildlife biologist.

8.2.8 FLOODPLAINS

Floodplains are defined as lowland and flat areas adjoining waters that are subject to a one percent or greater chance of flood in any given year also referred to as the 100-year floodplain. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the airport vicinity was reviewed. The FIRM indicates that the airport is located within "Zone X", which is defined as an area outside the 100-year floodplain. Therefore, it is not anticipated that the 100-year floodplain would be impacted by the proposed projects and analysis would not be required for future NEPA documentation.

8.2.9 HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

Regulatory laws affecting airports include the Resource Conservation and Recovery Act of 1976 (RCRA). Through this legislation, the U.S. Congress directed the EPA to develop and implement programs meant to protect human health and welfare, as well as the environment from improper hazardous waste management practices. Hazardous wastes are those materials that can cause injury or death, or that can damage or pollute the air, land and water. Other pertinent legislation includes the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), a.k.a. Superfund Act, as well as the Superfund Amendments and Reauthorization Act of 1986 (SARA) that is aimed at toxic waste cleanup efforts. In accordance with CERCLA the EPA lists sites on the National Priorities List (NPL). The NPL is defined as, "the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories."[1]

Information available through the EPA's Enviromapper application was reviewed to identify potential hazardous waste sites on or near the Airport. Based on the Enviromapper information, there are no NPL sites on or near the Airport. There are a number of RCRA sites on the Airport where hazardous materials are used and/or handled. There may be additional sites such as underground storage tanks also present at the Airport. Also, there may be asbestos and led paint in the buildings to be demolished. Therefore, additional analysis will be required to determine if the proposed projects would disturb hazardous materials. It is recommended that a Phase I Environmental Site Assessment (ESA) be conducted particularly for the properties to be acquired in order to avoid liability regarding hazardous waste.

In terms of pollution prevention, the Sustainability Goals, Objectives and Actions identified and discussed in **Chapter 3, Sustainability**, go a long way toward pollution prevention. For instance under the goals for Stormwater Management one of the Actions specified is "Future airport construction projects and renovation will be designed to ensure no net increase in rate and quantity of stormwater runoff." Another example is the action item to "Avoid using fertilizers and chemicals for landscape maintenance" under the Operations and Maintenance Goal. There are many other sustainability actions that are related to pollution prevention (refer to **Chapter 3** for the full list of the sustainability action items).

Solid waste will be generated by the proposed projects. Construction, renovation, or demolition of most airside projects produce debris (e.g., dirt, concrete, asphalt) that must be disposed of properly. In addition, terminal, cargo, or maintenance facilities may involve

[1] EPA, http://www.epa.gov/superfund/sites/npl/, accessed 121/01/11.

construction, renovation, or demolition that produced other types of solid waste (bricks, steel, wood, gypsum, glass). Provided that Federal, state, and local regulations are followed when addressing the disposal of solid waste and there is sufficient capacity at appropriate accessible waste disposal sites, it is not anticipated that further analysis will be necessary regarding solid waste prior to construction.

8.2.10 HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

Historical, architectural, archeological, and cultural resources that will be affected by federally funded and licensed undertakings come under the protection of the National Historic Preservation Act of 1966 (16 U.S.C. 470), as amended. Section 106 of this Act requires Federal agencies to consider the effects of such undertakings on properties listed, or eligible for listing, in the National Register of Historic Places (NRHP).

Initial identification of potential historic resources was accomplished by reviewing the NRHP and consulting with the Kansas SHPO. A review of the NRHP indicated that there are no historic resources listed within the vicinity of the proposed development at EWK. However, there may be historic resources on or near the Airport that are eligible for listing that do not yet appear on the NRHP. Therefore, the SHPO requested that a professional archeologist survey the areas outside the current facilities' footprint because the airport is located in an area of "high and/or moderate archeological potential."

Additionally, the SHPO requested that any structures over 50 years old within the development area be assessed for NRHP eligibility. These surveys and assessments would be conducted to determine whether there are any historical, architectural, archeological, and cultural resources on acquired lands or within the vicinity of the development areas on the Airport. If it is determined that there are properties that would be eligible for listing on the NRHP, additional analysis and coordination will be required to determine if there would be an adverse effect as part of future NEPA documentation.

8.2.11 LIGHT EMISSIONS AND VISUAL EFFECTS

The primary sources of light emissions from airports are the FAA required lighting for security, obstruction clearance, and navigation. An analysis of the impact of light emissions on the surrounding environment is required when proposed projects include the introduction of new lighting that may affect residential or other sensitive land uses.

Airport improvement activities involving potential disruption of the natural environment or aesthetic integrity of the area or any activities that may affect sensitive locations such as parks, historic sites, or other public use areas are relevant visually.

The proposed projects would require additional lighting for new pavement including the extended runway, new taxiways and aprons. Also, many of the existing navigational aids (NAVAIDS) such as the Runway 17 approach lighting, the Runway End Identifier Lights (REILs), and Visual Approach Slope Indicators (VASIs) will be relocated to accommodate the changes in the locations of the runway ends. Finally, the proposed projects include installing a new approach lighting system for Runway 35. These changes in lighting, particularly the changes in approach lighting, would change light emissions near EWK. Therefore, Analysis should be conducted as part of future NEPA documentation to determine whether the changes in light emissions would affect nearby residences.

In terms of visual effects, the proposed projects at EWK are not anticipated to alter the environmental setting of the Airport or surrounding areas in a way that disrupts the aesthetic integrity of the area.

8.2.12 NATURAL RESOURCES AND ENERGY SUPPLY

The FAA requires the environmental analysis of proposed airport projects to include an evaluation of the projects effect on natural resources and energy supply. The analysis takes into account the project's energy consumption, energy conservation, and the use of natural and consumable resources required to construct and maintain the airport facilities and operations.

The proposed projects are not anticipated to use unusual materials or those in short supply. In terms of energy, additional runway lighting and NAVAIDS will increase energy consumption. Aviation fuel consumption would also increase due to the longer taxiing distance to the Runway 17 end. However, sustainability is a core theme in the development at EWK and energy efficiency is one of the sustainability goals.

All projects will be evaluated based on their alignment with these sustainability goals. Therefore, with minimal analysis, it could likely be concluded in the NEPA document that projects at EWK would not cause a substantial demand on energy or natural resource supplies, and therefore, would not result in energy demand or natural resource consumption that would exceed supply.

8.2.13 SECONDARY (INDUCED IMPACTS)

Secondary impacts include any shifts in patterns of population movement and growth, the demand for public services, and changes in business and economic activity that are influenced by airport development. According to FAA Order 1050.1E secondary impacts would not normally be significant except where there is also a significant impact to another category; particularly noise, compatible land use, or social impact.

It is not anticipated that the proposed projects would result in impacts exceeding the threshold of significance in any impact category; therefore significant secondary impacts would not be expected. However, if analysis shows that a significant impact would occur, secondary impacts should be evaluated as part of future NEPA analysis.

8.2.14 SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE AND CHILDREN'S HEALTH AND SAFETY RISK IMPACTS

To address socioeconomic impacts, airport projects are evaluated as to whether they would require relocation of residences and businesses, alter surface transportation patterns, divide established communities, disrupt orderly planned development, or create an appreciable change in employment.

The proposed projects would not result in division of communities, disruption of planned development, or appreciable changes in employment. However, they would result in relocation of a residence, acquisition of farmland, and alteration of surface transportation. One residential property and approximately 190 acres of agricultural land would be acquired to implement the proposed projects. Therefore, future NEPA documentation should indicate whether relocation housing is available and whether the acquisition of the agricultural land will cause appreciable economic hardship.

One of the proposed projects, the ultimate extension of Runway 17/35, will require the closure of North East 24th Street. Therefore, the NEPA document that includes the assessment of extending Runway 17/35 to its ultimate length must address the impacts of this closure on the surrounding community.

In terms of Environmental Justice, Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, regulates against federal actions that would result in high and adverse human health or environmental impacts that disproportionately impact minority and low income population. It is not anticipated that the proposed projects would result in impacts exceeding the thresholds of significance for any of the impact categories

and therefore it can likely be concluded that there would be no high and adverse human health or environmental impacts.

The FAA is also directed to identify and assess disproportionate impacts to children's environmental health and safety risks pursuant to Executive Order No. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. The Executive Order states that, "Environmental health risks and safety risks mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)."

Therefore, the analysis of potential impacts to children's environmental health and safety risks is linked to the analysis of potential air quality, hazardous materials, and water quality impacts. If analysis shows that a significant impact would occur, further assessment of the impacts to children's health and safety should be evaluated in the future NEPA document.

8.2.15 WATER QUALITY

The Federal Water Pollution Control Act, as amended by the Clean Water Act (CWA) of 1977, establishes water quality standards for restoring and maintaining the integrity of the nation's waters. Section 401 of the CWA requires certification by the state that the prospective federal permits comply with the state's applicable effluent limitations and water quality standards. Section 402 of the CWA established the National Pollutant Discharge Elimination System (NPDES) to limit pollutant discharges into streams, rivers and bays.

The potential impacts to surface water quality include consideration of changes to storm water quantities and content. Current storm water discharge activities at EWK are regulated under the Kansas Water Pollution Control General Permit No. S-ISWA-1111-1. As such the Airport has prepared a Storm Water Pollution Prevention Plan (SWPPP) and a Spill Prevention, Control and Countermeasure Plan (SPCCP). It is noted that the SWPPP must be amended to include the proposed projects.

The proposed projects would likely change the amount and quality of storm water run-off. Newly paved surfaces would increase the amount of impervious area. Additionally, with increased operations due predominantly to natural growth and new paved surfaces, additional de-icing activities and urea application would increase pollutant load in storm water discharge. These impacts would be minimized by applying the Sustainability Goals, Objectives and Actions identified in **Chapter 3**. The Storm Water Management Goals include actions to ensure no net increase in rate and quantity of storm water runoff and where practical, treat and re-use and/or recycle storm water on-site. It is especially important that these actions be implemented given that the EPA identified three impaired streams that receive storm water runoff from the Airport.

Surface water quality can also be temporarily impacted during construction. These impacts can be minimized with the implementation of best management practices. For construction projects greater than one acre, the Airport must have authorization to discharge storm water runoff under the Construction Stormwater General Permit. Ground water quality may be impacted by disturbance of hazardous materials. The results of the recommended Phase I ESA should indicate whether hazardous materials are present in an area to be disturbed by construction.

If design of the proposed projects is in accordance with the Sustainability Storm Water Management Goals identified in **Chapter 3** and there are no hazardous materials that would be disturbed by construction, impacts to water quality would be expected to be minor. Future NEPA documentation should include confirmation that these conditions would be met.

8.2.16 WETLANDS

Executive Order 11990, *Protection of wetlands*, requires federal agencies to minimize the destruction, loss, or degradation of wetlands resulting from their actions. Section 404 of the Clean Water Act, as amended, requires regulation of discharges or fill matter into Waters of the United States, including jurisdictional wetlands. Jurisdictional wetlands are wetlands connected or adjacent to navigable waters of the U.S. The U.S. Army Corps of Engineers (USACE) has primary responsibility for implementing, permitting and enforcing the provisions of Section 404.

A review of the FWS online Wetlands Mapper indicated that there are no wetlands within the vicinity or expanded area around the proposed development. However, the FWS noted that all construction rights of way should be surveyed for the presence of wetlands. Therefore, as part of preparing future NEPA documentation, a survey for wetlands and coordination with the USACE should be conducted.

8.2.17 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act defines river areas eligible for protection under the legislation as those that are free flowing and have "outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, and similar values."[2] River segments that qualify for inclusion in the National Wild and Scenic River System are listed on the National Inventory, compiled by the U.S. Department of the Interior.

There are no designated "Wild and Scenic Rivers" in the state of Kansas and the closest designation to EWK is the Mulberry River in Arkansas, approximately 350 miles away. Therefore there would be no impacts to these resources and no analysis would be required in future NEPA document.

2 National Wild & Scenic Rivers System. Jan. 7, 2005, http://www.nps.gov/rivers

8.3 RECOMMENDED ENVIRONMENTAL DOCUMENTATION

The proposed airport projects were reviewed in order to identify the level of environmental review that may be required prior to implementing the projects. Projects involving Federal funding or approvals constitute Federal actions and therefore are subject to environmental review in accordance with the National Environmental Policy Act (NEPA). The NEPA review is conducted in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. Order 1050.1E is used to determine the appropriate level of NEPA review.

Three levels of environmental review/ documentation exist for actions requiring Federal funding or approval: categorical exclusion (CE), environmental assessment (EA) or environmental impact statement (EIS). A CE is appropriate when the proposed airport project is included in the list of categorically excluded actions in Chapter 3 of FAA Order 1050.1E. This list includes those types of actions that the FAA has found to not normally require an EA or EIS except in the case of extraordinary circumstances. "Extraordinary circumstances" exist when the proposed project involves any of the circumstances listed in paragraphs 304a through 304k of FAA Order 1050.1E, and may have a significant effect.

If the proposed airport project is not included in paragraphs 307 thru 312 of FAA Order 1050.1E, an EA or EIS must be prepared. If the proposed airport project is included in the list of categorically excluded actions and does not involve extraordinary circumstances, the project is exempted from environmental review. However, if the proposed airport project is included in the list of categorically excluded actions but would result in extraordinary circumstances, an EA or EIS must be prepared.

The decision of whether to prepare an EA or an EIS is based on the likelihood of significant impacts and the potential for mitigation of those significant impacts. An EA is prepared when the proposed action is not expected to result in significant impacts. An EA may also be prepared if there are significant impacts but mitigation can be incorporated into the proposed action such that the level of impact is reduced below the level of significance.

Table 8-2 shows the recommended level of environmental review/documentation for each phase of proposed Airport projects. The recommended level of environmental review/documentation is based on FAA Order 1050.1E and consideration of the potential for environmental impacts as discussed in the preceding sections.

Table 8-2. Recommended NEPA Review/Documentation by Phase of Proposed Projects

Phase	Generalized Descriptions of Projects	Recommended Review and/or Documentation	Comments
Phase I 2010-2015	Runway rehabilitation/reconstruction Apron and taxilane construction/reconstruction Land acquisition Hangar construction	EA	While the types of projects included in Phase I are listed in paragraph 310 of Order 1050.1E, there are many unknowns in terms of extraordinary circumstances. For instance it is not known if historic resources exist or if threatened and endangered or their habitat are present on the Airport or the land to be acquired. Therefore, without further study and coordination it is not possible to rule out extraordinary circumstances.
Phase II 2016-2020	Runway safety area improvement/construction Taxiway, taxilane, and apron construction/reconstruction Oliver Road paving Reconstruct entrance road Parking expansion Hangar construction/re-construction	Potentially a CE	Provided the parking expansion is not considered a substantial expansion, the types of projects included in Phase II are listed in paragraphs 309 and 310 of Order 1050.1E. With completion of the EA and related study /coordination for Phase I, it is likely that the extent of environmental resources will be known. Therefore, it may be possible to rule out extraordinary circumstances based on previous study and coordination.
Phase III 2021-2025	Runway reconstruction/shift Taxiway, taxilane, and apron construction/reconstruction Land acquisition Hangar construction	Potentially a CE	The types of projects included in Phase III are listed in paragraph 309 and 310 of Order 1050.1E. With completion of the EA and related study /coordination for Phase I, it is likely that the extent of environmental resources will be known. Therefore, it may be possible to rule out extraordinary circumstances based on previous study and coordination.
Phase IV 2026-2030	Runway extension Taxiway, taxilane, and apron construction/reconstruction Land acquisition Underground fuel storage tank replacement MALSR installation/relocation Hangar construction/reconstruction	EA	The installation of the MALSR on the Runway 35 end (off Airport property) does not qualify for a CE. See paragraph 401j of Order 1050.1E. In addition the runway extension may be considered a major extension. Therefore, an EA is recommended.

Source: FAA Order 1050.1E, Environmental Impacts: Policies and Procedures, HNTB analysis, 2011.

Chapter Nine
CAPITAL IMPROVEMENTS PROGRAM

9.1 INTRODUCTION

This chapter of the Master Plan Update report details the 20-year development plan for EWK and identifies the proposed schedule for its implementation.

Chapter 9 is for planning purposes only. The City of Newton, Harvey County, and the FAA are not obligating themselves to fund any projects called for within the development plan. The airport development program is designed to provide for a logical and cost-effective plan based upon the needs identified in the Master Plan Update report.

Cost information was collected from HNTB's recent airport construction project experience at EWK and similarly sized airports in the four-state FAA Central Region. Cost estimates for each planning period are presented in 2011 dollars and include construction cost contingencies for all projects.

The improvements recommended for EWK are organized into four phases and represent development which will yield a safe, efficient, unconstrained, and attractive public facility. A total cost overview for the 20-year plan period is given in **Table 9-1**.

Funding for airport improvement projects would primarily come from the FAA, the City of Newton and Harvey County. Additional sources of funding may include KDOT Division of Aviation and private enterprise. **Figure 9-1.** presents a breakdown of the amount of Federal/State and local funding needed per phase.

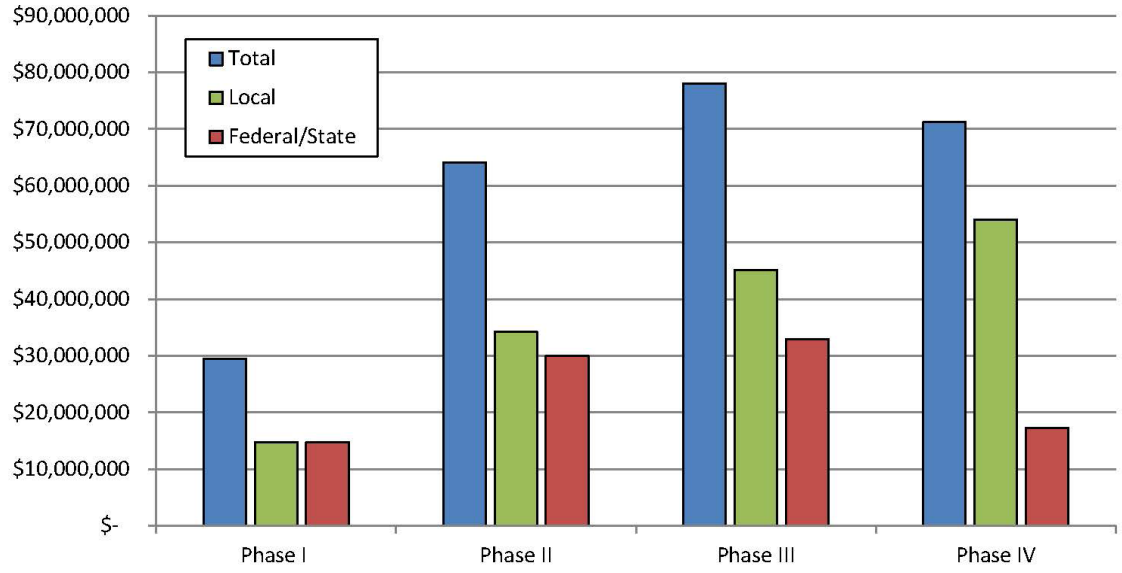
In the 20-year Airport Capital Improvement Program, there are more than 70 individual airport infrastructure and hangar/building projects. Detailed cost estimates for each project are included in **Appendix F.**

Table 9-1: Summary of Airport Capital Improvement Costs (Present to 2030)

Phase	Infrastructure Improvements		Hangar Construction		Total Phase	Percent of Total
	Federal/State	Local	Federal/State	Local		
Phase I	$12.5	$2.2	$9.9	$4.9	$29.5	12.1%
Phase II	$22.7	$7.3	$21.8	$12.4	$64.1	26.4%
Phase III	$28.1	$4.8	$26.1	$19.1	$78.0	32.1%
Phase IV	$14.2	$3.0	$35.9	$18.0	$71.2	29.3%
Subtotal	**$77.5**	**$17.2**	**$93.7**	**$54.3**	**$242.8**	**100%**

Source: HNTB

Figure 9-1: Comparison of Funding Types Required per Phase



Source: HNTB

Chapter Ten
AIRPORT LAYOUT PLAN

10.1 INTRODUCTION

Typically the most recognized part of airport documentation, more than the master plan report itself, is the set of drawings which graphically depict the existing and ultimate facilities at the airport, airspace associated with the runway system, land use, and airport property data. Commonly referred to as the Airport Layout Plan (ALP) set, these federally-approved drawings serve to guide airport development over the 20-year planning horizon.

The ALP Set for the Newton City-County Airport (EWK) Master Plan Update consists of the following 15 drawings:

1. Cover
2. Airport Data
3. Airport Layout Drawing
4. Airport Airspace Drawing – Inner Surfaces
5. Runway 17 Approach Surface Drawing And Profile
6. Runway 35 Approach Surface Drawing And Profile
7. Runway 8-26 Approach Surface Drawing And Profile
8. Runway 17 Inner Portion Of Approach Surface Drawing
9. Runway 35 Inner Portion Of Approach Surface Drawing
10. Runway 8-26 Inner Portion Of Approach Surfaces Drawing
11. Runway 17-35 Departure Surfaces Drawing
12. Runway Centerline Profiles Drawing
13. Terminal Area Drawing
14. Airport Land Use Drawing
15. Airport Property Map

Until the FAA approves the proposed airspace for the airport based upon the ALP set, the drawings are considered to be in draft form. Once meeting a variety of requirements, the elements depicted on the document are considered to be conditionally approved, based upon aviation demand levels and funding availability.

The ALP set has been prepared in accordance with FAA Advisory Circular 150/5300-13, Airport Design, and FAA Advisory Circular 150/5070-6B, Airport Master Plans.

The subsequent sections of this chapter will present a brief discussion on each of the 15 drawings in the Newton City-County ALP set. Full-size drawings are produced at 22" x 34" size with a half-size 11" x 17" ALP set contained in Appendix G.

10.2 DESCRIPTION OF DRAWINGS

Drawing 1: Cover Drawing

This drawing is the cover to the ALP set and includes basic information such as the list of drawings included in the ALP set and airport location and vicinity maps.

Drawing 2: Airport Data

This drawing contains several data tables containing pertinent data regarding the existing and ultimate airport features such as airport facility, runway and wind data. The wind data indicates prevailing wind observations as collected by National Oceanic and Atmospheric Administration (NOAA), which influences runway alignment and the need for crosswind runway construction. Additional data tables indicate coordinate survey data denoting the airport location in a geospatial environment. Other tables include any known deficiencies with proposed resolutions.

Drawing 3: Airport Layout Drawing

The Airport Layout Drawing is arguably the most important piece of the master plan as most people identify an airport in association with this specific drawing of the ALP set. The drawing is used to illustrate factual information about the airport as it exists today and future improvements proposed to accommodate future demand and to correct situations that are not in compliance with current FAA standards. The FAA and the City of Newton will use the information presented on the Airport Layout Drawing (and other drawings in the ALP set) to program future funding assistance and to monitor the airport's compliance with design standards and federal grant assurances. A number of projects are identified for the full program period, i.e., 2010 through 2030 (refer to Chapter 9). Typically, the master plan and its associated ALP set are updated regularly every 5-10 years.

Drawing 4: Part 77 Airspace Drawing

Airport imaginary surfaces surround all airports in the United States. Their purpose is to notify the airport of any proposed construction within the airspace limits which could result in the object being considered a hazard to air navigation. As defined by the FAA, a hazard to air navigation is defined as any obstruction, natural or man-made, that penetrates an imaginary surface to a point that a "substantial adverse effect" on air navigation occurs.

The criteria used to prepare the airspace drawing, and to regulate/mitigate obstructions within the vicinity of the airport, are contained in Title 14, Code of Federal Regulations - Part 77. These regulations establish standards for determining obstructions to navigable airspace, set forth the requirements for notice to the FAA Administrator of certain proposed construction or alterations, provide for aeronautical studies of obstructions to air navigation, and determine their effect on the safe and efficient use of airspace. The Part 77 Airspace Drawing may also be utilized to establish municipal height zoning documents and policies to protect the airport environs by precluding any future development adjacent the airport.

Based on Part 77 criteria, this drawing illustrates the limits of these five imaginary surfaces and associated elevations of the EWK airport based upon ultimate runway lengths. These five imaginary surfaces are the primary, approach, transitional, horizontal, and conical surfaces. Part 77 surfaces are overlaid onto a topographic map to correlate existing features and elevations with the proposed surfaces.

Drawings 5, 6 and 7: Runway Approach Surface Plan and Profile Drawings

These drawings depict plan and profile views of the existing and ultimate runway centerline elevations as well as the profiles of each runway approach surface. Runway approach surfaces are overlaid onto a topographic map to correlate existing features with the proposed Part 77 approach surface. The runway approach surface profiles illustrate the features and terrain along the extended runway centerline and objects that penetrate said surfaces. These objects are numbered and correspond to the objects listed on Drawing 4, Airport Airspace Drawing.

Drawings 8, 9 and 10: Inner Portion of Approach Surface Drawings

In order to provide a complete illustration of the approaches to the runway, a plan and profile drawing is prepared for Runway 17, Runway 35, and Runways 8-26. These drawings are intended to depict the immediate areas surrounding each runway end and to what degree these areas should be protected. The plan view depicts the approach surfaces from a "bird's eye view" showing the land below the approach surface. The profile portion of the drawing shows a side-view of the approach surface and topography that helps determine the elevation of the approach surface at any given point below the approach surface, such as runway protection zones, approach zones and surfaces, existing obstructions.

These drawings also contain tables documenting the following information for

obstructions; obstruction height, amount of penetration above or clearance below the approach surface, and propose the measures that will be taken to mitigate obstruction disposition the of each object.

Drawing 11: Runway 17-35 Departure Surfaces Drawing

Similar to the approach surfaces drawings, these drawings depict existing and ultimate departure surfaces, in plan and profile views, of each runway end required by FAA criteria that utilize departure surfaces.

Drawing 12: Runway Centerline Profiles Drawing

This drawing depicts profiles of existing and ultimate runway centerline elevations. Profile percentage gradients of the runway centerline are also shown. The runway centerline profile is used to identify any line-of-sight issues between various points along the runway. There are no line-of-sight issues for either runway at EWK.

Drawing 13: Terminal Area Plan

The Terminal Area Plan represents a larger-scale drawing for the staged construction of landside facilities and airside facilities to meet existing and future requirements. This drawing presents general plans for those facilities located within the portion of the airport defined as the terminal area. Since EWK is a general aviation facility, major facilities within the terminal area include the Administrative Building, terminal apron, public vehicle access and parking, aircraft fueling facilities, and airport maintenance areas. The primary feature of this plan is the depiction of aircraft parking (tiedowns) and hangar facilities in close proximity to the terminal apron.

Drawing 14: Land Use Plan

This plan identifies land uses adjacent to the airport and future on-airport aviation and nonaviation land uses where they are planned. The purpose of the land use plan is to guide future development on the airport and, to the extent feasible, provide for an orderly transition between airport activities and activities adjacent to the airport. The plan focuses on identifying the best spatial arrangements of airport activities so that the land on the airport is used most effectively and efficiently. Generally, activities of a similar nature should be placed adjacent one another with certain areas of the airport identified to separate activities that may lead to airside delay, terminal or landside congestion.

While the plan focuses on the relationships between airport property and surrounding land uses, the long term viability of an airport may be threatened by incompatible land uses located in airport approaches and sometimes adjacent to the airport. The land use plan provides a mechanism to identify adjacent relationships and for the airport owner to proactively engage with surrounding municipalities to develop planning that best addresses the transition from airport to off-airport land uses. Graphically, the airport land use plan designates general types of land uses both on- and off airport.

Drawing 15: Exhibit A Property Map

This drawing presents information showing legal property ownership or interest in each tract within the existing and ultimate airport boundaries. Property acquisition is usually required for proposed facilities such as navigational or visual aid relocation due to runway extensions. Such acquisition is usually advised to provide adequate protection of the approaches to the airport.

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TO:	City-County Commission
FROM:	Chris Ciardella
DATE:	June 9, 2026
SUBJECT:	E. 1st Improvements: Extending Project Limits

PURPOSE:
Background:

The City had a traffic study completed in September, 2025 in response to the growth in the industrial park. The traffic study recommended changing the existing 2-lane roadway to a 3-lane roadway and adding a shared use path along E. 1st street for bicyclist and pedestrian safety and to meet both existing and projected traffic volumes. A 3-lane configuration increases capacity and safety by pulling mainline left turn traffic out of the through lanes and providing space for side street traffic to perform a two-stage left turn onto E. 1st Street. The more immediate need is widening the section of E. 1st street from Spencer to Hillside, to address the existing conditions and needs of currently known active developments. E. 1st street will need to be widened to a 3-lane roadway further east of Hillside in the near future if any developments should become active east of Hillside or at the Airport.
In response to the study was required improvements from Spencer to Hillside, there was also recommendations that would extend these improvements to Oliver. The expansion of improvements to Oliver would allow for the continued growth at the Airport and for industries to be able to expand. First street in this area is shared ownership by the City and County and the partnership approach to design and construction improvement projects has enabled both entities to leverage grant funding while enabling each to maintain ownership.

The required improvements, from Spencer to Hillside also noted as Phase 1 have been the basis for many conversations between staff and Commissioners from both City and County as funding options have been sought. In 2025, the City and County agreed to split the design costs of up to $250,000 each for the Phase 1 project while City staff applied for State Cost Share dollars. As of June 2, 2026 two applications have been denied funding.

In continued searching for funding options and with interest in continued industrial growth at the Airport, the City along with Harvey County EDC are looking at applying for an Economic Development grant that would be tied to development to the Airport and would be able to have

the full E. 1st Street improvements from Spencer to the east side of the Airport included. This grant would be a 75/25 split requiring only a 25% local match. This is triggered as we have a current tenant that is requesting a north/south road approximately 1/4 mile along the east edge of the airport at an estimated cost of $300,000.

Next Steps:

In order to move forward with the required improvements on 1st street to serve our already existing industries, the City is actively seeking funding options from all sources. Since this opportunity to apply for Economic Development Grant funds has come up as an option, the City is asking to continue our partnership to improve 1st Street for Airport growth.

The first request is for our design consultant, Garver to design the expanded E. 1st Street improvements from Oliver to the east property line of the airport for an additional $87,298 that could be split by both the City and County. These plans then could be ready when submitting for any additional funding opportunities that arise.

EXHIBIT #1
1ST STREET PROJECT PHASES 1-4

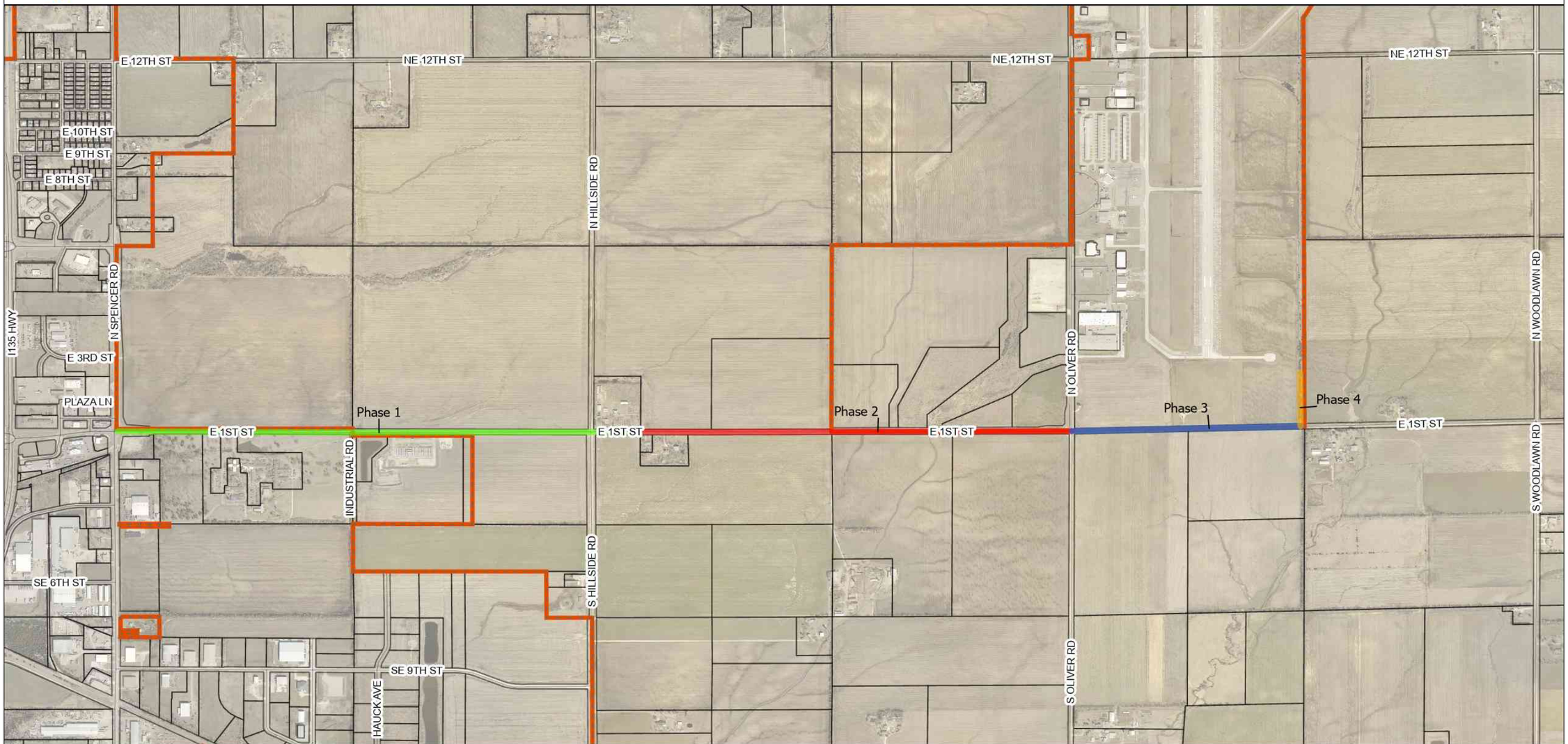
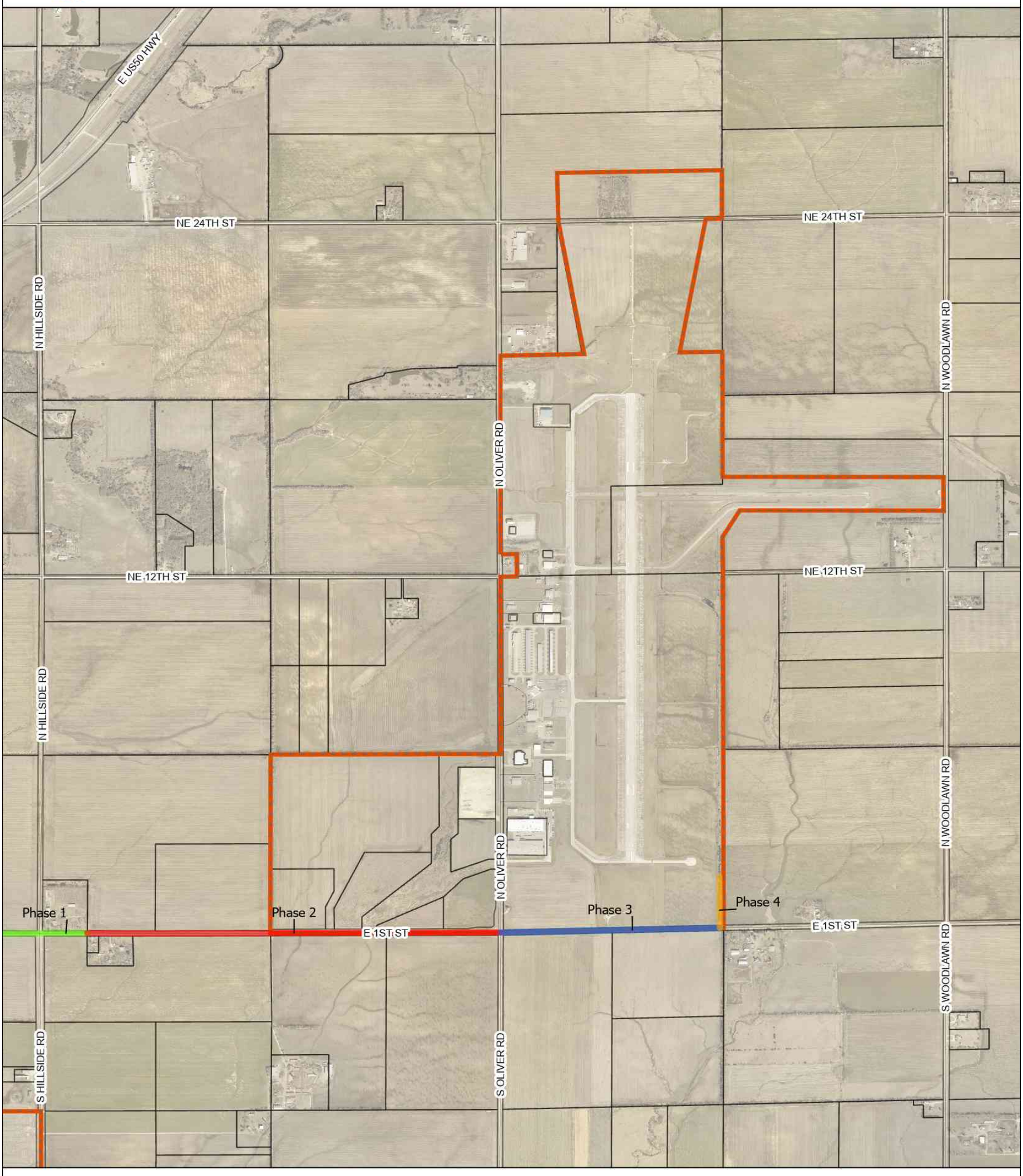
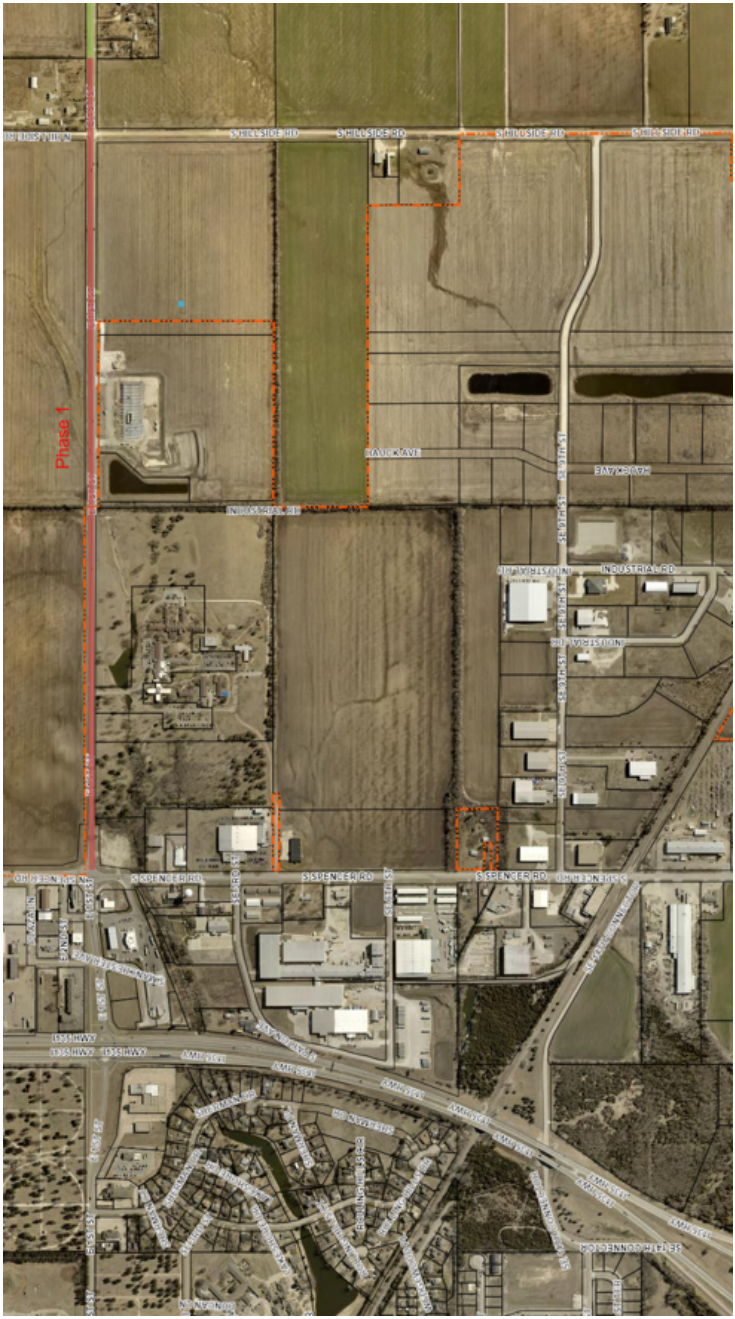


EXHIBIT #2

1ST STREET PROJECT PHASES 1-4



Phase 1
Phase 2
Phase 3
Phase 4


Phase 1
S HILLSIDE RD
INDUSTRIAL RD
S SPENCER RD
HAUCK AVE
BAYSHORE
AMHERST
HOLDEN CONNECTOR


OLIVER RD
S OLIVER RD
S OLIVER RD
Phase 2
S HILLSIDE RD
S HILLSIDE RD
S HILLSIDE RD
S HILLSIDE RD
SE 9TH ST

N OLIVER RD
E 6TH ST
E 5TH ST
Phase 2
Phase 3
Phase 4

TO:	City of Newton & Harvey County Work Session
FROM:	Harvey County
DATE:	June 9, 2026
SUBJECT:	County-SW 14th County Bridge

PURPOSE:
Bridge Narrative

In 2025 Harvey County submitted an application for funding in the Kansas Local Bridge Improvement Program (KLBIP) for the replacement of bridge I-19.7, and was selected. The competitive program for $20 million resulted in Harvey County being one of eleven counties chosen for funding.

The bridge is located on SW 14th Street, just to the west of N. Anderson. It is a 253 foot long concrete & steel, 5-span bridge built in 1960. It rated POOR in our last Biennial Bridge Inspection report.

The grant will cover a percentage of the construction costs and the project must be under contract by September of 2027.

The city of Newton received a Carbon Reduction Program grant for a bike path extension from the Sand Creek dam on the north to SW 14th on the south. The project design was started by PEC. The pathway will terminate at the R. Michael Rhodes Wetland on the west side of the creek. However, the City discussed partnering with the County to add a separated bike lane to the new bridge on SW 14th Street when it is replaced to further tie the bike path into the existing pathway on the south side of SW 14th, on the east side of the bridge that connects to the Sand Creek Station Golf Course.

Engineering firm PEC is working on the City pathway and approached Harvey County knowing that the 14th Street bridge replacement would be integral to the continuation of the bike path project. Suzanne Loomis with PEC suggested that inclusion of the bike pathway on the bridge grant application might help in the grant process.

The replacement of the bridge and the addition of the separated bike path on the bridge benefit the City and the County. The county is seeking a sharing of the cost not covered by the grant.