AIRPORT MASTER PLAN UPDATE

OXFORD COUNTY REGIONAL AIRPORT (81B)

OXFORD, MAINE

AIP PROJECT NO. 3-23-0033-11-2016

OCTOBER 2020







BACS
BALLANTINE AVIATION CONSULTING SERVICES, PLLC
BACS@maine.rr.com Portland, ME www.ballantineaviation.com ~ Serving Our Nation's Airports Since 1987 ~

Airport Master Plan Update

Oxford County Regional Airport (81B)
Oxford, Maine

AIP Project No. 3-23-0033-11-2016

October 2020



Prepared by:

BALLANTINE AVIATION CONSULTING SERVICES, PLLC

(207) 400-6037 • 66 Montrose Avenue • Portland, ME 04103 • BACS@maine.rr.com

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~ INFORMATION SHEET ~

Airport Master Plan Update

Oxford County Regional Airport (81B)

Prepared for

County of Oxford, Maine
26 Western Avenue
South Paris, Maine

Prepared by

Ballantine Aviation Consulting Services, PLLC
66 Montrose Avenue
Portland, Maine 04103
bacs@maine.rr.com
www.ballantineaviation.com

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CHAPTER 1

~ CHAPTER 1 ~
INVENTORY

1.1 GENERAL

Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, outlines the necessary steps in the development of an Airport Master Plan (AMP). The initial step, inventory, is the collection of data pertinent to the Oxford County Regional Airport and the area it serves. The objective of the inventory task is to provide background information for subsequent phases of analysis. This data was obtained through an on-site investigation of the airport, and the collection and analysis of previous reports and studies. The inventory is described in the following major sections:

- Airport Setting and History
- Airside Facilities
- Landside Facilities
- Maintenance, Snow Removal and Fire Suppression Equipment
- Financial Baseline
- Legal Baseline
- Socioeconomic Data

Throughout this chapter and, subsequently, throughout the entire report, reference will be made to facilities located on either the east or west side of the airport. The east side of the airport is anything east of Runway 15-33, while the west side of the airport is anything west of Runway 15-33.

A drawing of the existing airport facilities is included *Chapter 7 - Airport Plans.*

1.2 AIRPORT SETTING AND HISTORY

This section provides a brief and general description of the Oxford County Regional Airport's location, airport access, airport security, and history. The airport's location in 1908 and 2019 is depicted below.





1.2.1 LOCATION

The Oxford County Regional Airport is located in southwestern Maine in Oxford County. The Airport is situated on 70 acres between the Maine coast and the Maine/New Hampshire border, within the Town of Oxford, which is approximately two miles southwest of the airport.

The airport is located northeast of Thompson Lake, the Little Androscoggin River, and the central business district of the Town of Oxford, and east of the Oxford Plains Speedway and the St. Lawrence and Atlantic Railroad tracks. The airport is located east of Maine State Route 26 and north of Town Road Number Six.

The airport elevation is 345 feet above Mean Sea Level (MSL), and the Airport Reference Point (ARP), i.e. the geometric center of the runway, is situated at North latitude 44° 09' 26.726" and West longitude 070° 28' 52.678".

Commercial air service is available approximately 40 miles north-northeast at the Augusta State Airport (AUG) in Augusta, Maine; and approximately 40 miles south-southeast at the Portland International Jetport (PWM) in Portland, Maine. Other public use general aviation airports in the region include: the Auburn-Lewiston Municipal Airport (LEW) located approximately 15 miles south-southeast; the Bethel Regional Airport (0B1) located 25 miles north-northwest; and the Eastern Slope Regional Airport (IZG) located approximately 30 miles south- southwest. Twitchell's Airport (3B5), a privately-owned airport but open to the public, is located approximately 25 miles north-northeast in the Town of Turner.

Figure 1.2.1-1 shows the roadway system around the airport.



Figure 1.2.1-1 Airport Location Map

Figure 1.2.1-2 shows the local roadway system in the airport vicinity.

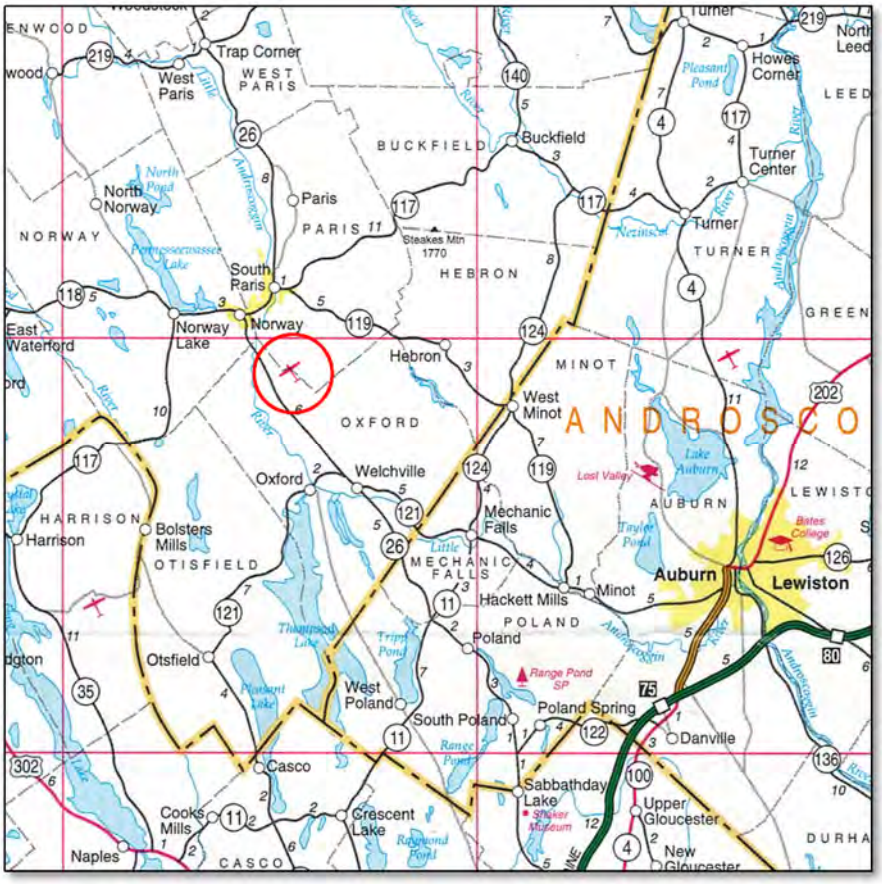


Figure 1.2.1-2 Airport Vicinity Map

1.2.2 AIRPORT ACCESS

Figure 1.2.2-1 shows that the only public access to the airport is from Airport Road, which is accessible from Maine State Route 26 and then Town Road No. 6. This entrance is on the west side of the airport and provides access to the terminal building and to a conventional hangar located at the south end of the terminal apron.

Because Town Road No. 6 intersects with Route 26 at an acute angle, Town Road No. 6 Extension was constructed between 2004 and 2006 to provide a safer perpendicular intersection at Route 26. Town Road No. 6 Extension connects to Town Road No. 6 approximately 0.3 miles west of the Airport Road.

It is recommended that Town Road No. 6 Extension should be signed and utilized as the primary access route to the airport.

Airport Road was extended north past the airport terminal building in 2012 to provide access to land belonging to the Schiavi Leasing Corporation which abuts the northwest side of the airport property.

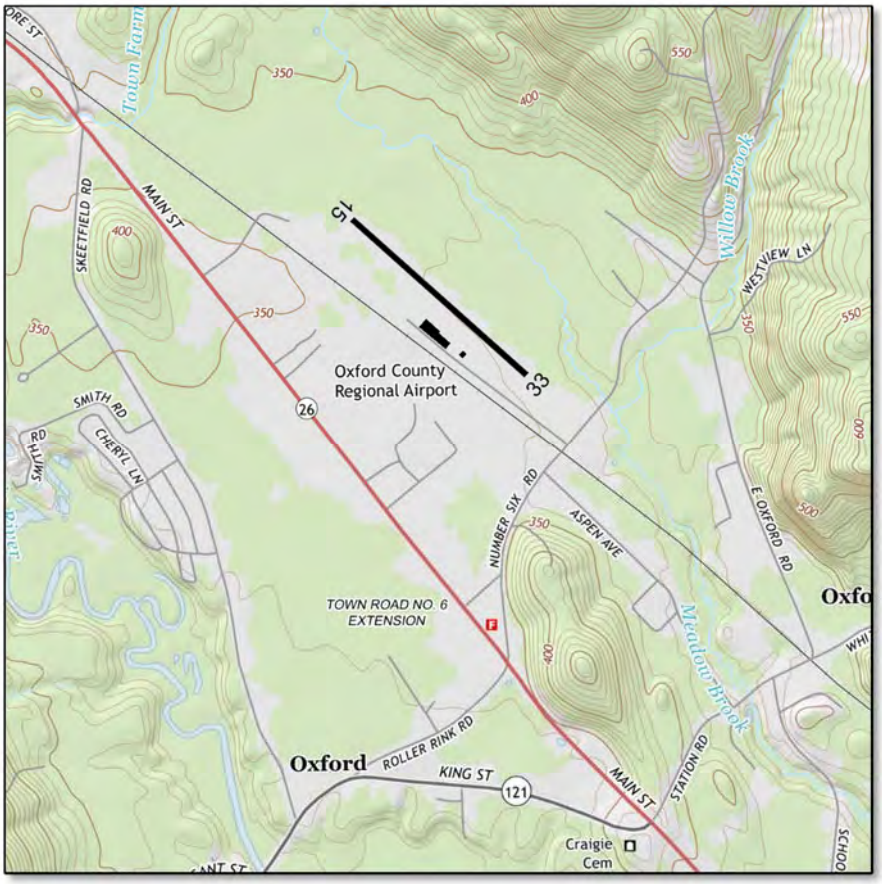


Figure 1.2.2-1 Airport Access Map

1.2.3 AIRPORT SECURITY

A chain-link perimeter fence extends around approximately one-half of the airport beginning at the southeast corner of the airport near the approach end of Runway 33. The fence extends southerly to Town Road No. 6, then westerly along the road to Airport Road. The fence then continues north along Airport Road terminating at the southwest corner of the terminal building.



The perimeter fence continues north from the northwest corner of the terminal building along the edge of the terminal apron and west of the airport's aviation fuel tanks, and it terminates approximately 500 feet north of the end of Runway 15.

The remainder of the airport along its north and east sides is not fenced. The fenced area has two personnel gates located at the north and south ends of the terminal building which provide pedestrian access and one

motorized gate at the south end of the terminal apron for vehicle access.

The location of the airport rotating beacon and its electrical service panel and meter is enclosed by 120 feet of chain-link fence and a personnel gate.

1.2.4 AIRPORT HISTORY

A majority of this airport history section was compiled from the 1991 AMP completed by Hoyle, Tanner and Associates, Inc. (HTA) and Oest Associates, Inc., and from the 2003 Airport Master Plan Update prepared by Hoyle, Tanner and Associates, Inc., supplemented by the airport consultant's personal and historic knowledge of the airport.

In March 1972, a group of local citizens formed Oxford Plains Airways, Inc. to transfer land to Oxford County to construct the Oxford County Regional Airport. The airport and its 3,000-foot asphalt runway, 77,600 square foot apron, and 135-foot stub taxiway were dedicated on October 15, 1973.

Also in 1973, a 75-foot by 1,000-foot grass landing strip was constructed west of Runway 15-33 and between Airport Road and the terminal apron; however, this grass strip was abandoned in 1992/1993 and is no longer available.

In 1974 Schiavi Construction built a 3,880 square foot fixed base operator (FBO) hangar. In 1979 Bancroft Contracting Corporation constructed a 3,000 square foot conventional hangar located south of the FBO hangar. John Schiavi also constructed a conventional hangar on his abutting property and a taxiway to access the runway. He entered into an informal verbal through-the-fence agreement with Oxford County in 1988.

In 1989, the Oxford County Commissioners selected Oxford Aviation, Inc. as the FBO which initially operated out of the original 1974 FBO hangar until 2014.

A 7,000 square foot addition to the FBO hangar was constructed in 1991 and connected to the south side of the FBO hangar.

In 1992 a new 16,000 square foot terminal building and hangar, including an aircraft paint shop, was constructed and connected to the north side of the FBO hangar.

In 1992 the terminal apron was reconstructed and expanded including two stub taxiways connecting it to the runway and two aircraft turnarounds at each end of the runway.

In 1996 a second 16,000 square foot hangar was constructed and connected to the south side of the 1991 addition.

In 2007, easements to help protect the Runway 15 and Runway 33 approaches were donated to the County.

In 2013, a new lease was negotiated between Oxford Aviation and the County.

In 2014, Oxford Aviation was evicted from the airport after a lengthy court battle with the County, and the County took possession of the Oxford Aviation buildings and equipment that remained. Also in 2014, a 150-acre parcel abutting the east side of the airport was donated to the County. The County dedicated eight acres of the parcel for airport use adjacent to the airport's easterly property line.

In 2016, Mosher Aviation began operations as the FBO in the hangars formerly occupied by Oxford Aviation.

1.2.5 OPERATIONAL CONTROL

The Oxford County Regional Airport is a county owned airport, operated by the Oxford County Commissioners from the county seat in South Paris, Maine.

The Oxford County Regional Airport is under the planning jurisdiction of the Androscoggin Valley Council of Governments (AVCOG), which was originally formed in 1962 as the Androscoggin Valley Regional Planning Commission. In 1980, the Commission became a Council of Governments, offering expanded services to the Androscoggin, Franklin, and Oxford Counties of Maine.

Following initial development of the Oxford County Regional Airport beginning in 1973, many federally funded capital improvement projects were undertaken. These projects were initiated and funded under the following federal grant programs:

- Federal Aid to Airports Program (FAAP)
- Airport Development Aid Program (ADAP)
- Airport Improvement Program (AIP)

The AIP program is the current major capital funding source for aviation projects.

Table 1.2.3-1 summarizes the historical development that has occurred since the 1991 AMP at the Oxford County Regional Airport. The table also includes project funding that has been received from local, state, and federal funding sources other than the FAA.

Table 1.2.3-1 Airport Development - 1989 to Present

Project Number	Date of Grant	Local Funds	State Funds	Federal Funds	Private/Other Funds	Remark
AIP 3-23-0033-01	1989					Prepare Airport Master Plan
N/A	1991	Exact amount and funding sources unknown				Refurbish obstruction lights on east side of airport
N/A	3/1991				Exact Amount Unknown	Construct a 7,000 square foot addition to the terminal building
SAIP11.3029(5)	11/19/91	$36,915.50	$36,915.50			Engineering & design for construction of apron
AIP 3-23-0033-02	9/29/92	$45,128.00	$45,128.00	$635,106.00		Construct apron, Taxiway Bravo (B), relocate rotating beacon, construct automobile parking area, construct turnarounds at runway ends, and install taxiway lighting and signage
N/A	04/92				$634,250.00 [4]	Construct a 16,000 square foot hangar
N/A	1992/1993	Exact amount and funding sources unknown				Abandon the turf runway, remove underground fuel storage tanks and replace with above ground
SAIP11.6029(6)	6/7/94	$7,500.00	$7,500.00			Engineering assessment for runway extension
SAIP11.6029(7)	7/26/94	$6,535.94	$58,823.42			Overlay runway
N/A	07/96				$945,762.00 [4]	Construct a 16,000 square foot hangar
SAIP11.6029(8)	7/31/96	$6,316.00	$25,262.00			Reimburse FAA for displaced itinerant tiedowns
N/A	1997			100 percent federal funds but exact amount unknown		Implement GPS approach to Runway 33
SAIP11.7029(9)	9/30/98	$665.46	$2,957.60			Crack seal runway
SAIP11.7029(10)	8/9/00	$4,569.18	$18,211.62			Install 6-foot chain link fence
SAIP11.7029(11)	1/26/01	$2,801.74	$11,206.97			Crack seal runway, taxiways and apron
N/A	01/01		$80,000.00			Oxford County Runway Extension Study
SAIP11.7029(12)	8/7/02	$1,604.37	$12,834.98			Pave airport access road
AIP 3-23-2300-02	8/7/02	$6,725.00	$6,725.00	$121,050.00		Master plan update

Project Number	Date of Grant	Local Funds	State Funds	Federal Funds	Private/Other Funds	Remark
N/A	2003			100 percent federal funds but exact amount unknown		Implement GPS approach to Runway 15
AIP 3-23-0033-03	2003	$1,450	$1,450	$26,100		Rehabilitate Runway (Pavement design)
AIP 3-23-0033-04	2004	$5,963	$5,963	$87,033		Rehabilitate Runway
AIP 3-23-0033-05	2005	$6,227	$6,227	$112,100		Conduct Environmental Study
AIP 3-23-0033-06	2007	$4,148	$4,148	$74,675		Acquire Easement for Approaches
AIP 3-23-0033-07	2008	$78,673	$78,673	$1,416,130		Remove Ground Obstructions; Rehabilitate Runway; and MIRLs
AIP 3-23-0033-08	2009	$11,186	$11,186	$201,362		Rehabilitate Runway
AIP 3-23-0033-09	2011	$13,466	$13,466	$242,397		Remove Obstructions
AIP 3-23-0033-10	2013	$10,750	$10,750	$193,500		Phase 1 Perimeter Fence
AIP 3-23-0033-11	2016	$10,055	$10,055	$180,990		Airport Master Plan Update
AIP 3-23-0033-12	2017	$11,350	$11,350	$204,300		Phase 2 Perimeter Fence and Motorized Vehicle Gate
AIP 3-23-0033-13	2018	$11,928	$11,928	$214,710		Archaeological Study and Phase 3 Perimeter Fencing

Sources: Oxford County Regional Airport, Oxford County Commissioners, Federal Aviation Administration and Maine Department of Transportation

Notes:

1. Projects listed as SAIP plus numbers are State funded projects, while projects listed as AIP plus numbers are Federally funded projects, in which the state also provides funding.
2. Funding sources left blank indicate that funding for the listed project was not available from that entity.
3. The increase in FAA funding is reflected by the addition of a parking lot, 50 percent each state and local, combined with the Federal grant. This shows an additional amount of' $1,632.50 from the balance of the FAA project plus $8,212.50.
4. Funded through the Department of Economic Development Administration.
5. Typically the Federal government assumes 100 percent of the cost associated with GPS approach implementation.

1.2.6 AVIATION SERVICES

1.2.6.1 FBO ACTIVITY

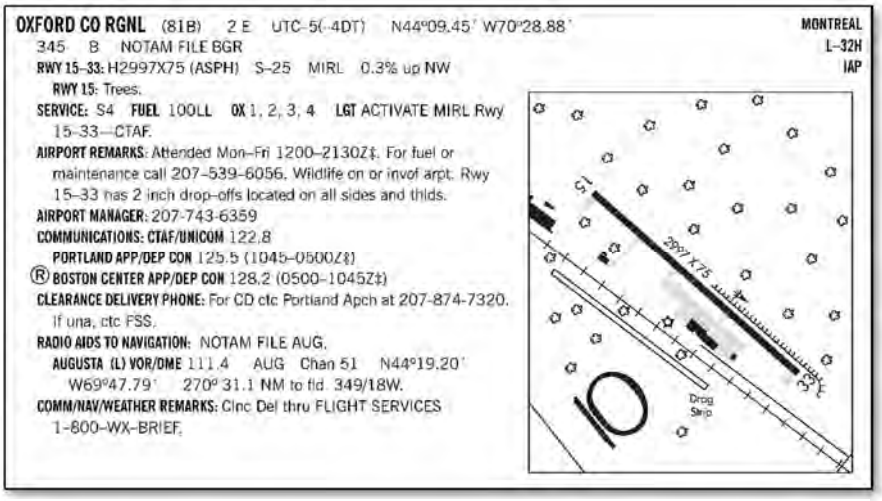
Oxford County has contracted with several FBOs since 1974 to provide various aircraft services at the airport. Oxford Aviation, Inc. discontinued its operations in 2014, and the terminal building and hangars remained largely unoccupied until Mosher Aviation Services, LLC began aircraft maintenance operations in 2016. Mosher Aviation currently provides the following services:

- Aviation fuel (Jet A/100LL)
- Aircraft parking (apron/tiedown)
- Flight school/flight training
- Aircraft rental
- Aircraft cold storage in hangars
- Refreshments/vending machine
- Aircraft maintenance
- Aircraft modifications
- Aircraft painting/refinishing
- Aircraft interiors
- Avionics service
- Pilots' lounge

Oxford Aviation, Inc. discontinued its operations in 2014, and the terminal building and hangars remained largely unoccupied until 2016 when Mosher Aviation Services, LLC began aircraft maintenance operations in 2016. Mosher Aviation provides many of the aircraft maintenance services listed above.

1.3 AIRPORT FACILITIES

This section describes the airport's existing airport facilities in terms of location, configuration, size, and use characteristics. Figure 1.3.0-1 summarizes the airport facilities as of April-May 2019.



OXFORD CO RGNL (81B) 2 E UTC-5(-4DT) N44°09.45' W70°28.88' MONTREAL
345 B NOTAM FILE BGR L-32H
RWY 15–33: H2997X75 (ASPH) S-25 MIRL 0.3% up NW IAP
RWY 15: Trees.
SERVICE: S4 **FUEL** 100LL **OX** 1, 2, 3, 4 **LGT** ACTIVATE MIRL Rwy 15–33—CTAF.
AIRPORT REMARKS: Attended Mon–Fri 1200–2130Z‡. For fuel or maintenance call 207–539–6056. Wildlife on or invof arpt. Rwy 15–33 has 2 inch drop–offs located on all sides and thlds.
AIRPORT MANAGER: 207-743-6359
COMMUNICATIONS: CTAF/UNICOM 122.8
PORTLAND APP/DEP CON 125.5 (1045–0500Z‡)
Ⓡ **BOSTON CENTER APP/DEP CON** 128.2 (0500–1045Z‡)
CLEARANCE DELIVERY PHONE: For CD ctc Portland Apch at 207-874-7320. If una, ctc FSS.
RADIO AIDS TO NAVIGATION: NOTAM FILE AUG.
AUGUSTA (L) VOR/DME 111.4 AUG Chan 51 N44°19.20' W69°47.79' 270° 31.1 NM to fld. 349/18W.
COMM/NAV/WEATHER REMARKS: Clnc Del thru FLIGHT SERVICES 1–800–WX–BRIEF.

Figure 1.3.0-1 Airport/Facility Directory Data (04/25/2019)

1.3.1 RUNWAY

One runway serves the Oxford County Regional Airport. Runway 15-33 is 3,000 feet long by 75 feet wide. The runway is oriented southeast-northwest. It rises 7.4 feet in elevation from south to north giving it an effective gradient of +0.25% to the northwest.



Originally constructed in 1973, Runway 15-33 was overlaid in 1994. Crack sealing was completed in January 2001, and the runway and stub taxiways were reconstructed in 2008. The runway pavement is currently in good condition with minor cracking.

Table 1.3.1-1 provides a summary of runway data for the Oxford County Regional Airport.

Table 1.3.1-1 Runway 15-33 Data

Feature	Runway 15	Runway 33
Length	3,000’	
Width	75’	
Traffic Pattern	Left	Left
Runway Threshold Latitude and Longitude	44^0 09' 36.548" N 070^0 29' 08.024" W	44^0 09' 16.918" N 070^0 28' 37.201" W
Threshold Elevation	345.3’ MSL	337.9’ MSL
Surface Material and Condition	Asphalt - good condition	
Weight Limitation [1]	SWL - 25,000 pounds	
Runway Markings and Condition	Nonprecision Instrument/Fair	Nonprecision Instrument/Fair
Signs	Holding Position Location	
Runway Edge Lighting	Medium Intensity Runway Lights (MIRL)	
Other Navigational and Visual Aids	Wind cone assembly and segmented circle Airport rotating beacon	
Instrument Approach Procedure	GPS [2]	GPS [2]
Existing Approach Slope (Obstruction Clearance slope)	26:1	20:1

Sources: Oxford County Regional Airport 2007 Airport Layout Plan
FAA 5010 Form https://www.gcr1.com/5010web
FAA Terminal Procedures https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dtpp

Notes:

1. Runway weight data is a realistic estimate of the airport's pavement strength at an average level of airport activity. The acronyms pertain to the landing gear type of an aircraft and are as follows: SWL = single wheel; DW = dual wheel; DTW = dual-tandem wheel
2. A GPS is a satellite based global positioning system, nonprecision instrument approach procedure (IAP)
3. A 20:1 approach slope clearance is minimum required slope according to FAR Part 77, Objects Affecting Navigable Airspace. The 26:1 slope indicates that the existing slope exceeds the minimum requirements.

1.3.2 TAXIWAYS

A taxiway is a defined path established for the taxiing of aircraft from one part of an airport to another. A taxilane is defined as the portion of the aircraft parking area used for access between taxiways and aircraft parking positions. Taxiways and taxilanes provide aircraft access to the tiedown areas and the aircraft fueling facility.

The Oxford County Regional Airport has two active taxiways. Taxiways Alpha (A) and Bravo (B) are used by aircraft moving between the terminal apron and Runway 15-33. The Schiavi taxiway that formerly provided through-the-fence access to a private hangar off airport property is currently in disrepair and is closed to traffic.

Taxiways A and B were reconstructed in 2008 as part of the Runway 15-33 reconstruction project, and they connect Runway 15-33 to the terminal apron. Taxiway A is 40 feet wide, while Taxiway B is 25 feet wide. Both Taxiways A and B are approximately 145 feet long. The surface material is asphalt, which is in good condition with some surface cracking. Taxiway A connects Runway 15-33 to the terminal apron from a location 1,000 feet from the Runway 33 threshold. Taxiway B connects Runway 15-33 to the terminal apron from a location 1,250 feet from the Runway 15 threshold.



Taxiways A and B have medium intensity taxiway edge lights (MITLs), taxiway location signs, and runway holding position signs.

Taxiways A and B do not meet current FAA design standards because they allow access directly from an apron to the runway without requiring the pilot to make a turning movement on the taxiway. The taxiway pavement edges also use curved fillets rather than tapered fillets which might not provide the proper distance between the landing gear and the pavement edge.



The Schiavi taxiway is 25 feet wide by approximately 250 feet long. It connects to Runway 15-33 approximately 750 feet from the Runway 15 threshold, and it has a runway holding position sign.



The taxiway pavement is in poor condition with surface cracking and a severely heaved culvert. The taxiway formerly provided access to a private hangar off airport property, but the hangar is no longer used for aircraft storage or aviation purposes. Because the FAA does not allow such “through-the-fence” agreements, either written or verbal, the taxiway has been crossed by the airport’s chain-link perimeter fence thus preventing future aircraft movements and thereby making the airport compliant with current FAA regulations and grant assurances. Because of the heaved culvert, the County has recently barricaded access to the taxiway from the runway in order to prevent the potential for damage to aircraft and propellers.

The central portion of the terminal apron is actually a 750-foot long taxiway between Taxiways A and B, generally referred to as a partial parallel taxiway because it is parallel to the runway for a portion of the runway length. The taxiway continues south of Taxiway A to the south edge of the terminal apron providing access to aircraft tiedown locations and the Bancroft hangar. The apron markings are now barely visible and of no practical use to pilots.

1.3.3 AIRCRAFT TURNAROUNDS



Because there are no parallel taxiways to the ends of Runway 15-33, pilots must back-taxi on the runway to get to the runway ends for takeoff. At each end of the runway is a paved turnaround measuring 80' wide and 150' long which provides a safe location for pilots to complete their before-takeoff checklist while the runway remains open to other traffic. The turnarounds were originally constructed in 1992 as part of the terminal apron construction project, and they were designed to connect to future parallel taxiways connecting to the terminal apron.

The turnarounds are marked with runway holding position markings and signs, and the pavement edges are lighted with medium intensity taxiway edge lights (MITLs). The turnarounds were reconstructed in 2008 and the pavement is in good condition.

Table 1.3.3-1 provides a summary of taxiway and turnaround data.

Table 1.3.3-1 Taxiway and Turnaround Data

Feature	Taxiway A	Taxiway B	Schiavi Taxiway	Runway 15 Turnaround	Runway 33 Turnaround
Length	150'	150'	300'	150'	150'
Width	40'	25'	25'	80'	80'
Material	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt
Condition	Good	Good	Poor	Good	Good
Markings	Centerline Holding Position	Centerline Holding Position	Centerline Holding Position	Centerline Holding Position	Centerline Holding Position
Signs	Holding Position Location	Holding Position Location	Holding Position	Holding Position	Holding Position
Lighting	MITL	MITL	None	MITL	MITL

Sources: BACS Site Investigation

1.3.4 TERMINAL APRON AND AIRCRAFT TIEDOWN AREAS



The Oxford County Regional Airport has one aircraft apron, generally referred to as the terminal apron, which was originally constructed in 1973 and reconstructed and expanded in 1992. The terminal apron is located east of the terminal building, west of Runway 15-33, and it measures approximately 220,000 square feet, or approximately 5 acres. The surface material is asphalt, which is in fair to poor condition with extensive surface cracking. Crack sealing was completed in 2001, but the cracks have reopened and expanded, and new cracks have developed.

The existing terminal apron was designed and constructed in 1992 to provide 42 designated spaces for aircraft tiedown parking. Two spaces were eliminated by the 1996 construction of Charlie Hangar at the south end of the terminal building and hangar complex, and two more spaces were eliminated by the installation of the aviation fuel tanks resulting in 38 remaining available tiedown spaces.



The tiedown space at the northwest corner of the apron should not be used for aircraft parking because it provides direct access to the runway without requiring the pilot to make a turning movement.

There are also two tiedown spaces located in close proximity to the hangar doors of the south terminal building hangar and the Bancroft hangar. Aircraft parked on these two spaces could obstruct taxiing aircraft from safely accessing these hangars.

Table 1.3.4-1 provides a summary of apron and aircraft tiedown data for the Oxford County Regional Airport.

Table 1.3.4-1 Aircraft Tiedown Areas

Apron	Size (Square Feet)	Surface Material	Condition	Aircraft Tiedown Capacity
Terminal Apron	220,000	Asphalt	Fair to poor	38

Source: BACS Site Investigation

Table 1.3.4-2 provides a summary of the based aircraft typically using the aircraft tiedown area.

Table 1.3.4-2 Based Aircraft Fleet

Aircraft Make and Model	Approach Category Speed (Knots)	Wingspan	Length	Height	Airport Reference Code
Piper PA-28R-180	78	30' 0"	23' 6"	7' 4"	A-I
Piper PA-28R-180	78	30' 0"	23' 6"	7' 4"	A-I
Maule MT-7-235	45	32' 9"	23' 6"	6' 3"	A-I
Maule MT-7-260	45	32' 11"	23' 6"	6' 4"	A-I
Cessna 150	55	33' 2"	23' 11"	8' 6"	A-I
Beechcraft V35B	72	33' 6"	26' 5"	7' 7"	A-I
Cessna 180	64	35' 10"	25' 8"	7' 9"	A-I
Cessna A185E	64	35' 10"	25' 9"	7' 9"	A-I
Taylorcraft BC12D	44	36' 0"	22' 0"	6' 8"	A-I
Cessna TR182	64	36' 0"	29' 0"	9' 4"	A-I
Cessna 172I	62	36' 1"	27' 2"	8' 11"	A-I
Cessna 401A	90	44' 2"	36' 5"	11' 5"	A-I
Beechcraft G18S	87	49' 8"	35' 3"	9' 4"	A-II

Source: Oxford County, FAA Aircraft Characteristics Database, and
FAA AC 150/5300-13 Airport Design Appendix 12 Airplane Data

1.3.5 AVIATION FUEL FACILITIES

The aviation fueling facility is owned by Oxford County, and it was installed in 2012 to replace the aviation fueling facility that was owned and operated by Oxford Aviation, Inc.



The Oxford County Regional Airport has storage capacity for 5,000-gallons of 100 octane low lead (100LL) aviation gasoline (Avgas) and 5,000-gallons of Jet-A fuel. Avgas fuel is used by reciprocating piston engine aircraft, and Jet-A fuel is used by jets and other turbine engine aircraft including turboprops and helicopters. Jet-A fuel is not currently available for sale at the airport.

The fuels are stored in a single "split" tank located 100 feet north of the terminal building inside the airport perimeter fence. The tanks are filled by pumping fuel from delivery trucks that park on the apron. The fueling facility is self-service and uses a credit card reader to activate the system. The fuel tank is aboveground in a containment vessel, and it is in excellent condition.

As discussed above, Mosher Aviation started service at the airport in 2016. Since then, annual fuel sales have steadily increased from 7,069 gallons in 2016 to 13,082 gallons in 2019.

Table 1.3.5-1 summarizes the historical fuel flowage at the airport.

Table 1.3.5-1 Historical Aviation Fuel Flowage

Year	Jet A Annual Total (Gallons)	100 LL Annual Total (Gallons)	Year	Jet A Annual Total (Gallons)	100 LL Annual Total (Gallons)
1998	0	8,099	2009	Unknown	Unknown
1999	0	9,265	2010	Unknown	Unknown
2000	1,503	13,002	2011	Unknown	Unknown
2001	2,762	15,408	2012	0	0
2002	7,158	14,749	2013	0	0
2003	Unknown	Unknown	2014	0	0
2004	Unknown	Unknown	2015	0	0
2005	Unknown	Unknown	2016	0	3,534
2006	Unknown	Unknown	2017	0	7,881
2007	Unknown	Unknown	2018	0	8,478
2008	Unknown	Unknown	2019	0	13,082

Source: Oxford County

Note: 2016 100LL fuel sales commenced in October

1.3.6 Airport Wind Analysis

In previous studies, the Oxford County Regional Airport has used current and historical wind data compiled by the U.S. Weather Bureau Station in Auburn Maine, to develop and determine their runway wind coverage values and ultimately to develop the wind rose. Typically, airports will use the wind data from on-site airport weather stations or from nearby airports/weather stations to compile their data.

The wind data available from the 2003 ALP included all weather wind observations, which include both visual flight rule (VFR) and instrument flight rule (IFR) conditions compiled from 80,669 observations from 1993 to 2002. For the purpose of this airport master plan update, new wind data was obtained from observations at the Auburn Municipal Airport (LEW) to update the wind data that had been used in the 2003 Airport Layout Plan (ALP) Update.

The updated wind data compiled between 2009 and 2018 consists of 213,879 All Weather observations including 177,999 Visual Flight Rule (VFR) Observations and 35,998 Instrument Flight Rule (IFR) observations.

According to AC 150/5300-13A, *Airport Design*, runway orientation and usage is based on wind coverage and minimum crosswind components. Wind conditions affect all airplanes in varying degrees. Generally,

the smaller the aircraft, the more it is affected by wind, particularly crosswind components which are often a contributing factor in small aircraft accidents.

The minimum desirable wind coverage for a runway is 95 percent coverage based on crosswinds not exceeding:

- 10.5 knots for Airport Reference Codes A-I and B-I
- 13 knots for Airport Reference Codes A-II and B-II
- 16 knots for Airport Reference Codes A-III, B-III, and C-I through D-III
- 20 knots for Airport Reference Codes A-IV through D-VI.

The 95 percent coverage goal takes into account the various factors that influence operations and the economics of providing the coverage. The Oxford County Regional Airport currently has an ARC of B-I. Therefore, the wind analysis is based on a crosswind component of 10.5 knots.

Table 1.3.6-1 summarizes the wind coverage at the Oxford County Regional Airport.

Table 1.3.6-1 Wind Data Summary

Weather	Crosswind Component	Runway 15	Runway 33	Combined Runway 15-33
All Weather	10.5 knots	95.64%	88.55%	97.04%
VFR Weather	10.5 knots	95.92%	87.92%	97.22%
IFR Weather	10.5 knots	94.10%	92.54%	95.90%

Source: BACS Analysis

The wind observation data is typically presented graphically in the form of a windrose. The standard windrose consists of a series of concentric circles and radial lines. The perimeter of each concentric circle represents the division between successive wind speed groupings in knots. Radial lines are drawn so that the area between each successive segment is centered on the direction of the reported wind. Therefore, each segment of the windrose represents a wind direction and speed grouping.

The recorded directions and speeds of the wind summary are converted to a percentage of the total observations. The resulting observation calculations are rounded to the nearest one-tenth of 1 percent and entered into the appropriate segment of the windrose.

Figure 1.3.6-1 depicts the All Weather windrose for the Oxford County Regional Airport.

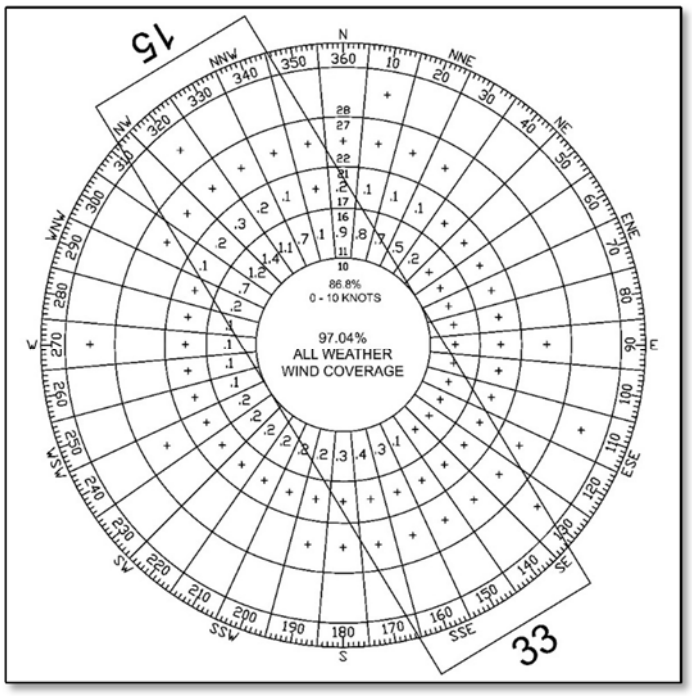


Figure 1.3.6-1 Runway 15-33 All Weather Windrose

1.3.7 VISUAL AND NAVIGATIONAL AIDS

Visual aids assist airborne pilots with airport location, runway orientation, wind direction, and guidance to landing. The primary visual aids at a general aviation airport consist of an airport rotating beacon and lighted wind cone and segmented circle. Other visual aids that are common at general aviation airports are runway end identifier lights (REILs) and precision approach path indicator (PAPI) lights.

Navigational aids (NAVAIDs) include various types of visual or electronic devices, either airborne or on the ground, that provide point-to-point guidance information and/or position data to pilots and aircraft.

The Oxford County Regional Airport provides the following visual and navigation aids:

1.3.7.1 RUNWAY EDGE LIGHTS



Medium intensity runway edge lights (MIRLs) are installed on Runway 15-33. The runway edge lights are installed approximately 200 feet apart along each side of the runway, and they include threshold lights at each end of the runway. Runway edge lights are fitted with colored glass lenses to emit either white, amber, red, or green light depending on the direction that the light is viewed. The light colors provide basic information to pilots about the length, width, and location of the runway.

Runway edge lights are mounted on frangible couplings which are designed to break when hit by an aircraft, thereby neither damaging or endangering the aircraft. The FAA requires all above grade light fixtures that are located within the Runway safety area (RSA) to be mounted on frangible couplings.

The runway lights were installed in 2008 and they are in good condition with the electrical wiring and isolation transformers directly buried in the ground. The runway edge lights are powered by a 10 kilowatt (KW) regulator located in the airport electrical vault. The runway edge lights can be remotely activated through the common traffic advisory frequency (CTAF) of 122.8 MHz using an aircraft radio or a handheld aviation radio to communicate with the airport's radio controller equipment in the airport electrical vault. The radio controller equipment was installed in 1992 as part of the terminal apron construction project, and it is fair condition often requiring electrical and mechanical repairs.

1.3.7.2 TAXIWAY EDGE LIGHTS



Medium intensity taxiway edge lights (MITLs) are installed on Taxiways A and B and on the Runway 15-33 turnarounds. The MITLS emit blue light and they are on the same circuit as the MIRLs and airfield guidance signs. The taxiway edge lights were installed in 2008 and they are in good condition.

1.3.7.3 Airfield Guidance Signs

There are five airfield guidance signs installed on the west side of the runway. The signs are internally lighted and include runway holding position and taxiway location sign panels. Airfield signs assist in the safe and efficient operation of an airport. The signs identify runway holding positions on taxiways and the most direct route to exit the runway or to access a desired destination such as the aircraft parking apron, fueling area, or a runway end.



The lighted runway holding position signs are located on Taxiways A and B, the Schiavi taxiway, and the Runway 15-33 turnarounds. The signs are on the same electrical circuit as the runway and taxiway edge lights. The signs are visible, well maintained, and in good condition. Because the signs are located within the runway object free area (ROFA) and the taxiway object free area (TOFA) they are mounted on frangible couplings. The runway holding position sign panels do not meet the current FAA design standards because the runway numerals are not outlined in black.

1.3.7.4 Wind Cone and Segmented Circle

A segmented circle and internally lighted wind cone assembly is located in a low area on the east side of the airport directly opposite the terminal and 1,000 feet from the end of Runway 33. The wind cone assists pilots by indicating the direction of the wind and identifying which runway end the wind is favoring. The segmented circle assists airborne pilots in identifying the location of the wind cone. The wind cone is lighted for nighttime visibility and it is powered from the airport electrical vault. The wind cone and segmented circle are in good condition with one damaged segment. The low terrain and the proximity of trees to the east of the wind cone could affect the wind cone's ability to reliably indicate crosswinds from the east.



1.3.7.5 Runway Markings

The runway is painted with nonprecision white markings including runway threshold markings, runway end identification numbers, and runway centerline markings. The runway markings were installed as part of the 2008 runway reconstruction project. By 2016 they had become faded and stained and were in fair condition. The County repainted the runway markings in 2019 to improve their visibility and enhance aviation safety.



1.3.7.6 Taxiway and Turnaround Markings

The taxiways and turnarounds are painted with yellow markings including taxiway lead-in lines, taxiway centerline markings, and runway holding position markings. The markings were installed in 2008 as part of the runway reconstruction project, and they are in good condition. The taxiway and taxilane centerline markings on the terminal apron are in poor condition and barely visible.



1.3.7.7 Rotating Beacon

A 36-inch diameter airport rotating beacon is located on airport property 200 feet northwest of the terminal building on a 51-foot tall steel frame tower. A rotating beacon provides the pilot with the location of the airport at night and during times of low visibility by projecting alternating white and green beams of light 180 degrees apart. Rotating at a speed to produce between 24 to 30 white and green flashes of light per minute, the beacon needs to be mounted high enough so the beam sweep aimed two degrees or higher above the horizon is not blocked by natural or manmade objects. The rotating beacon and tower were constructed in 1992. The tower is in good structural condition, but the rotating beacon is in fair condition often requiring electrical and mechanical repairs.



1.3.7.8 HILLTOP OBSTRUCTION LIGHTS

Four obstruction lights are located on four hills east of the airport. The obstruction lights were constructed in 1974-1975 and refurbished in 1992 to include metal platforms at the tops of the wood poles to provide a safe working space during maintenance of the lights.

Three of the obstruction lights are inoperable because their overhead power lines and poles are badly damaged and vandalized.

The County abandoned the three obstruction lights in 2014 after the FAA determined that it was not necessary to mark and light the hills.



1.3.7.9 NAVIGATION EQUIPMENT

There are no navigational aids installed at the airport. Navigational aids provide electronic guidance and/or position information to aircraft in flight. These aids are either ground based or satellite based navigational systems. The nearest ground based navigational aid is the Augusta VOR/DME-A, a very high frequency omni-directional range (VOR) facility equipped with distance measuring equipment (DME). A typical VOR/DME installation is depicted.



1.3.7.10 WEATHER EQUIPMENT

There is no weather reporting equipment installed at the airport. General aviation airport weather equipment typically consists of an Automated Weather Observing System (AWOS). An AWOS automatically measures, records and broadcasts the meteorological weather conditions at the Airport. The AWOS receives input from several sensors that record atmospheric pressure, wind speed and direction, temperature, dew point, cloud ceiling height, etc. A typical AWOS installation is depicted. Other similar weather reporting systems are also available for installation at airports.



1.3.7.11 Security and Surveillance Cameras

There are no security or surveillance cameras at the airport. In addition to enhancing security, cameras can be used to create and maintain a database of aircraft that use the airport including listing the date, type, and tail number of the aircraft. A camera at the vehicle entrance gate would photograph vehicles and visitors entering and leaving the airport property.

1.3.7.12 Instrument Approach Procedures

There are two published area navigation (RNAV) global positioning system (GPS) nonprecision instrument approach procedures to Runway 15 and Runway 33. The global positioning system is a satellite-based navigational aid available to aircraft that are equipped with GPS receivers. The GPS satellites provide position information through a compact receiver that is mounted in the cockpit of the aircraft.

Figures 1.3.7.12-1 and 1.3.7.12-2 depict GPS instrument approach procedures for Runway 15-33.

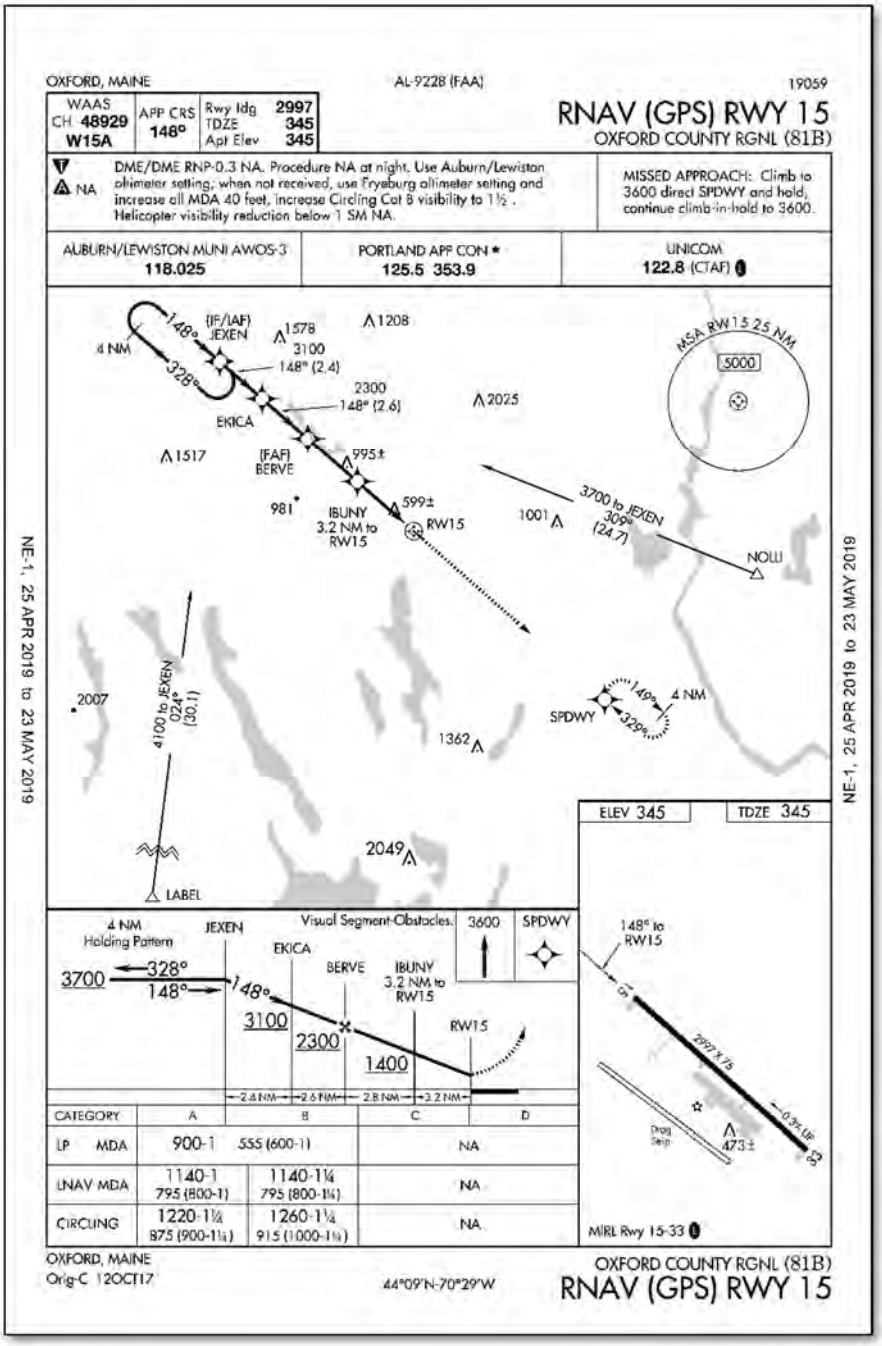


Figure 1.3.7.12-1 Runway 15 Nonprecision Instrument Approach Procedure

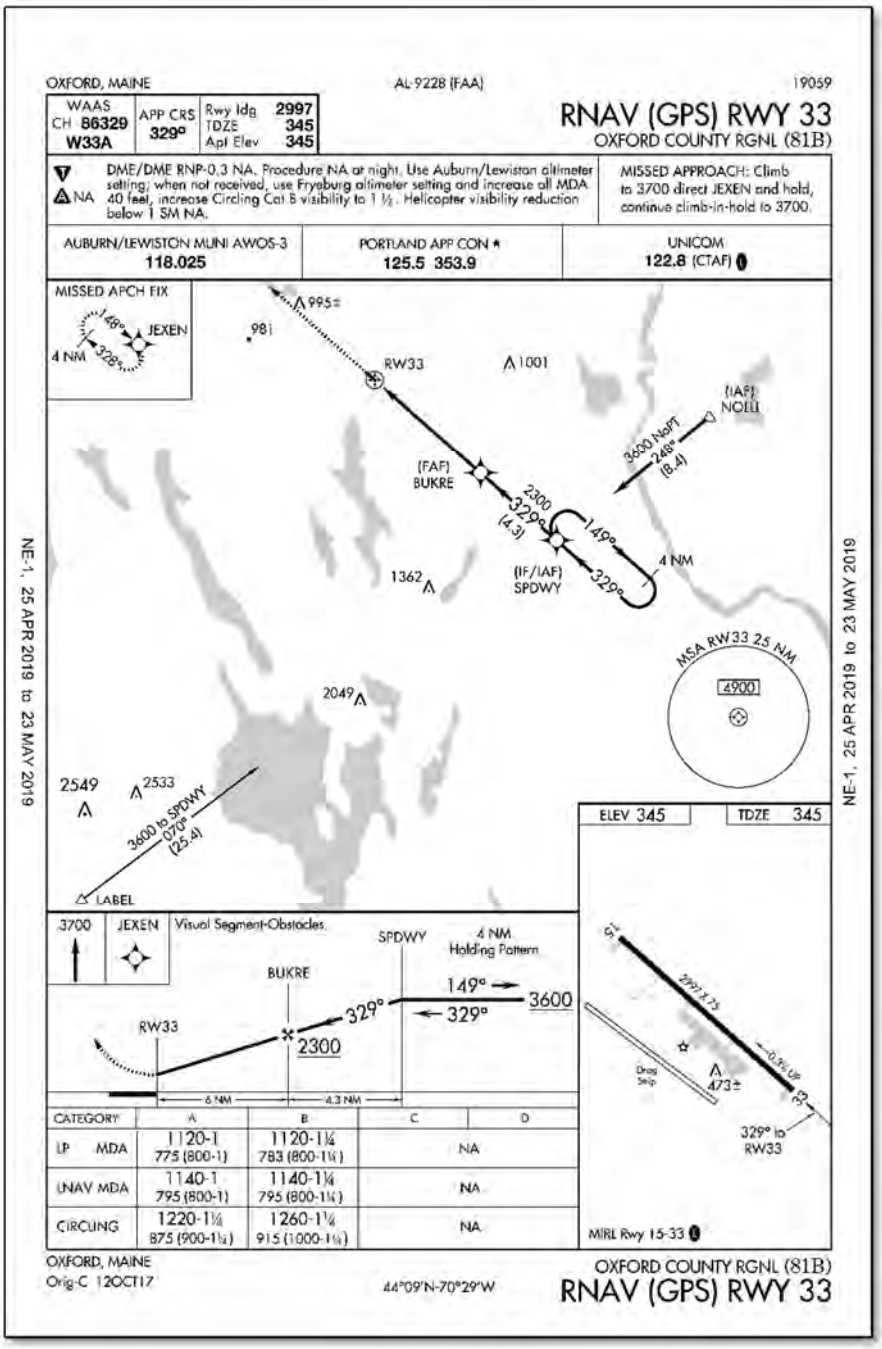


Figure 1.3.7.12-2 Runway 33 Nonprecision Instrument Approach Procedure

1.3.8 AIRSPACE

The Oxford County Regional Airport is a non-towered airport. The airport has a designated universal communication (UNICOM) air-ground radio communication facility that uses a common traffic advisory frequency (CTAF) of 122.8 megahertz (MHz). Pilots utilize this frequency to announce their position and intentions to other pilots in the area for safety purposes.

The airspace surrounding the Oxford County Regional Airport is designated as Class G, uncontrolled airspace, up to 700 feet above the surface. The Oxford County Regional Airport's Class E airspace begins at 700 feet above the surface. Class E airspace is defined as controlled airspace that extends upward from the surface or from a designated altitude, which is 700 feet for the Oxford County Regional Airport, to the overlying, or adjacent, controlled airspace. Class E airspace is any airspace that is not defined or designated as Class A, B, C or D.

Figure 1.3.8-1 depicts the United States airspace system.

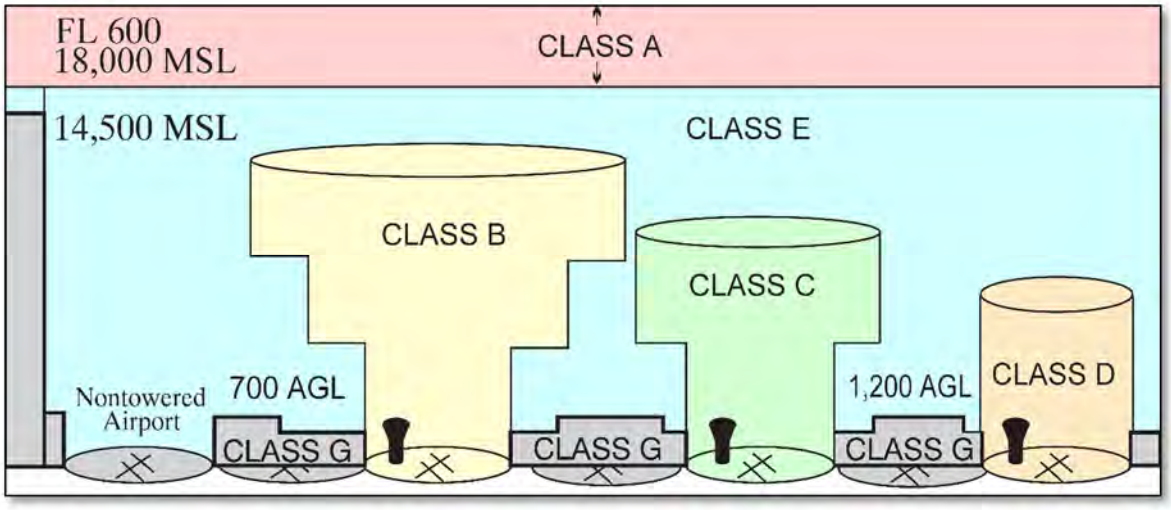


Figure 1.3.8-1 United States Airspace System

Instrument flight rule (IFR) operations are coordinated through Portland Control Tower from 5:45AM to 12:00AM on 125.5 MHz, which is the Portland Approach/Departure Control frequency. IFR operations are coordinated through Boston Center from 12:00AM to 5:45AM on 128.2 MHz, which is the Boston Center Approach/Departure Control frequency.

There is one low altitude Victor Airway in the vicinity of the Oxford County Regional Airport. A Victor Airway is a fixed air route system established for air navigation purposes above 1,200 feet Above Ground Level (AGL). It connects navigational aids, such as VHF (Very High Frequency) Omni-directional Radio-range beacons (VOR), to facilitate air navigation from one point to another. Victor Airway V3-39 is oriented southwest to northeast, and it passes within approximately 11 miles southeast of the airport at its nearest point as depicted in Figure 1.3.8-2.



Figure 1.3.8-2 Montreal Sectional Chart and Victor Airways V3-39

1.3.9 AIRPORT TRAFFIC PATTERN

Air traffic at the Oxford County Regional Airport uses a standard left-hand traffic pattern conducted at 1,345 feet MSL or 1,000 feet AGL (i.e. above the airport elevation). Because the airport uses a standard left-hand traffic pattern, the segmented circle does not include traffic pattern indicators.

Figure 1.3.9-1 depicts the various elements and terminology associated with a left-hand traffic pattern at a non-towered general aviation airport with the wind coming out of the north.

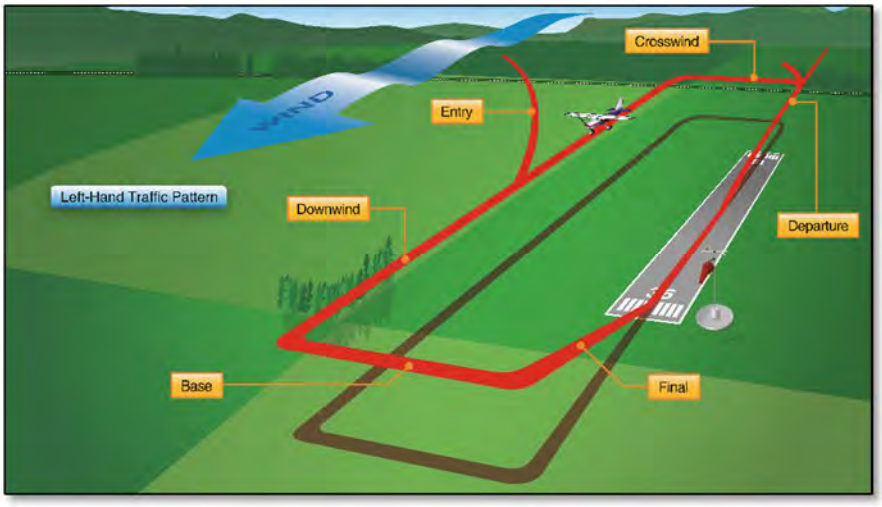


Figure 1.3.9-1 Typical Airport Left-Hand Traffic Pattern

1.3.10 AIRSPACE SURFACES AND OBSTRUCTIONS

1.3.10.1 FAR PART 77 AIRSPACE IMAGINARY SURFACES

Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace* (Part 77) establishes imaginary surfaces above airports in an effort to protect navigable airspace from objects that could penetrate airspace surrounding our nation's airports. According to Part 77, obstructions could be manmade objects; objects of natural growth, such as trees or brush; or terrain.

The following describes the imaginary surfaces associated with the Oxford County Regional Airport as defined in FAR Part 77, *Objects Affecting Navigable Airspace:*

- **Primary Surface**: A rectangular shaped surface longitudinally centered on the runway and extending 200 feet beyond each end of the runway. The width of the primary surface is defined by the most precise approach procedure, either existing or planned, for either end of the runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.
- **Approach Surface**: A trapezoidal shaped surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of the runway based on the most precise type of approach procedure available for the runway end. The inner edge of the approach surface is the same width as the primary surface. The outer width and length of the approach surface is based on the approach procedure available for the type of runway (i.e. either utility or non-utility) and the type of approach (i.e. visual approach, nonprecision approach, or a precision approach).
- **Horizontal Surface**: A horizontal surface 150 feet above the established airport elevation. Arcs set the plan dimensions of the horizontal surface from the end of the primary surfaces, which are connected by tangents.
- **Transitional Surface**: The transitional surface extends outward and upward at right angles to the runway centerline at a slope of 7 (horizontally) to 1 (vertically) from the sides of the primary surface and from the sides of the approach surfaces until these surfaces intersect the horizontal surface.
- **Conical Surface**: A surface extending at a slope of 20 (horizontally) to 1 (vertically) upward and outward from the edge of the horizontal surface for a horizontal distance of 4,000 feet.

Figure 1.3.10-1 depicts all of the FAR Part 77 imaginary surfaces that might exist at any airport. The figure depicts an example airport with two intersecting runways, and the different surface types are color coded to aid in identifying their extents and to distinguish them from adjacent surfaces.

A graphic depiction of the airport imaginary surfaces is included in *Chapter 7 - Airport Plans*.

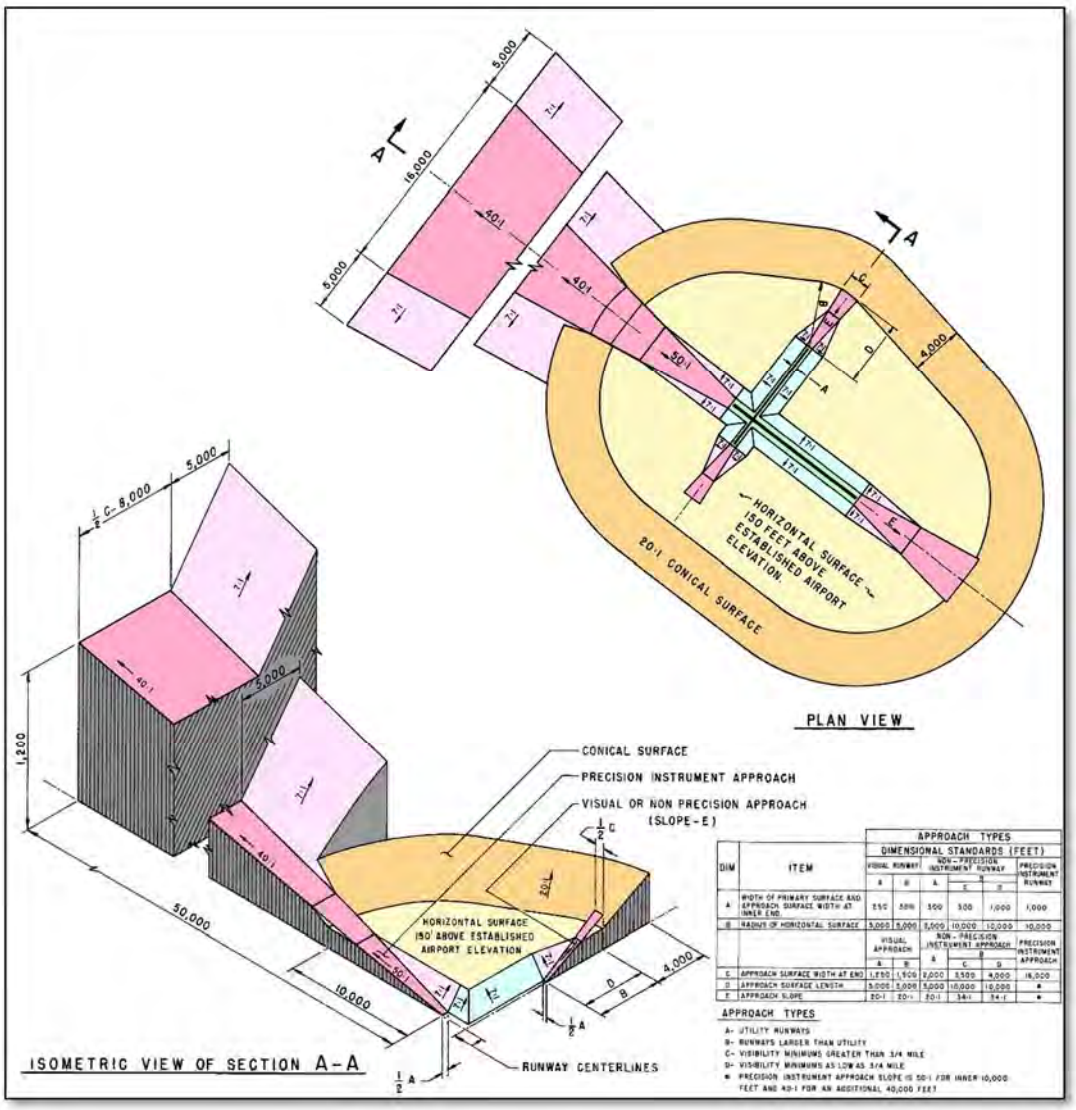


Figure 1.3.10-1 FAR Part 77 Imaginary Surfaces

Table 1.3.10-1 summarizes the imaginary surfaces which are based on the existing classification of Runway 15-33 and the existing nonprecision instrument approach procedures at the Oxford County Regional Airport.

Runway 15-33 is a utility runway, which is a runway that is constructed for, and intended to be used by, propeller driven aircraft of 12,500 pounds maximum gross weight or less (i.e. small airplanes).

The dimensions of the imaginary surfaces for a nonprecision instrument approach runway are larger than those associated with a visual runway in order to provide greater safety margins for operations in instrument weather conditions. The location of future airport facilities and improvements could be constrained by the FAR Part 77 imaginary surfaces..

Table 1.3.10-1 Existing FAR Part 77 Airspace Surfaces

Airport Data	Runway 15	Runway 33
Runway Classification	Utility	Utility
Approach	Nonprecision	Nonprecision
Airport Elevation (MSL)	345’	345’
Airport Imaginary Surfaces	**Runway 15**	**Runway 33**
Primary Surface		
Length beyond runway end	200’	200’
Width	500’	500’
Approach Surface		
Horizontal Distance	5,000’	5,000’
Inner Edge Width	500’	500’
Outer Edge Width	2,000’	2,000’
Slope (Horizontal:Vertical)	20:1	20:1
Horizontal Surface		
Horizontal Surface Elevation (MSL)	495’	495’
Horizontal Surface Radius	5,000’	5,000’
Conical Surface		
Horizontal Distance	4,000’	4,000’
Slope (Horizontal:Vertical)	20:1’	20:1’
Transitional Surfaces (Horizontal:Vertical)	7:1	7:1

Source: FAR Part 77 Objects Affecting Navigable Airspace

1.3.10.2 AIRSPACE OBSTRUCTIONS

During a site visit to the Oxford County Regional Airport, very few imaginary surface obstructions were noted, and the airspace at and around the airport is generally free of obstruction hazards.

The County terminal building and hangars and the Bancroft hangar all penetrate the west 7:1 transitional surface. These penetrations resulted from the implementation of the Runway 15-33 GPS approaches which changed the runway from a visual runway to a nonprecision runway, which in turn increased the width of the primary surface from 250 feet to 500 feet. Moving the west edge of the primary surface 125 feet closer to the hangars resulted in the elevation of the 7:1 transition surface over the hangars decreasing by 17.86 feet. Consequently, the hangars now penetrate the 7:1 transitional surface, and they should be lighted with red obstruction lights.

The County has removed many on-airport tree and brush obstructions during annual maintenance activities. After trees and brush have been removed, the runway primary surface needs to be maintained to prevent brush and shrub growth from becoming penetrations. Tree and brush removal maintenance operations should be conducted when the ground conditions can support the maintenance equipment in order to prevent damage to wetlands.

Recent obstruction removal projects on airport property and on private property with avigation easements have eliminated the tree and ground obstructions to the Runway 15-33 primary surface and approach surfaces. The crowns of a few isolated trees on abutting property might continue to grow and then overhang the airport property line. The County should continue to remove these trees if they become obstructions to the right edge of the Runway 33 approach surface.



In 2013, with the cooperation of the abutting land owner, the County removed tree obstructions to the 7:1 transitional surface along the airport's west property line to facilitate the construction of a section of the airport perimeter fence. The County does not have an avigation easement over this property, and some of the remaining trees on this property continue to penetrate the 7:1 transitional surface.



In 2014, the County acquired a large parcel of land abutting the east side of the airport. Prior to donating the land to the County, the land owner removed many of the trees on the property, thus reducing the extent of tree obstructions to the 7:1 transitional surface. The County can continue to remove trees that penetrate the 7:1 transitional surface on this newly acquired property. However, the FAA no longer requires clearing of the 7:1 transitional surfaces because the FAA now considers these surfaces to be "Notification Surfaces" only.

Hilly terrain to the east of the airport penetrates the horizontal surface and conical surface. These ground penetrations were lighted with four obstruction lights:

- Obstruction Light No. 1 - Rock-O-Dundee Hill
- Obstruction Light No. 2 - Sam Rowe Hill
- Obstruction Light No. 3 - No Name Hill
- Obstruction Light No. 4 - Whitney Hill

The County owns easements to access the obstruction lights which include the right to construct and maintain the lights and the overhead power lines and poles. Three of the obstruction lights are located on steep and rocky terrain that is extremely difficult to access and traverse. The fourth beacon, on Whitney Hill, is in a more easily accessible location and the obstruction light is operational.



The obstruction lights were refurbished in 1992, but they are again in poor condition and inoperable. The overhead power lines have been badly damaged, and some of the wood poles have fallen over. Some of the electrical service panels and other electrical equipment have been damaged and vandalized, and some of the meters have been removed. The inoperable obstruction lights were abandoned in 2014 after the FAA determined that it was not necessary to mark and light the hills.



Figure 1.3.10.2-1 depicts the locations of the four obstruction lights and the approximate locations of the easements.

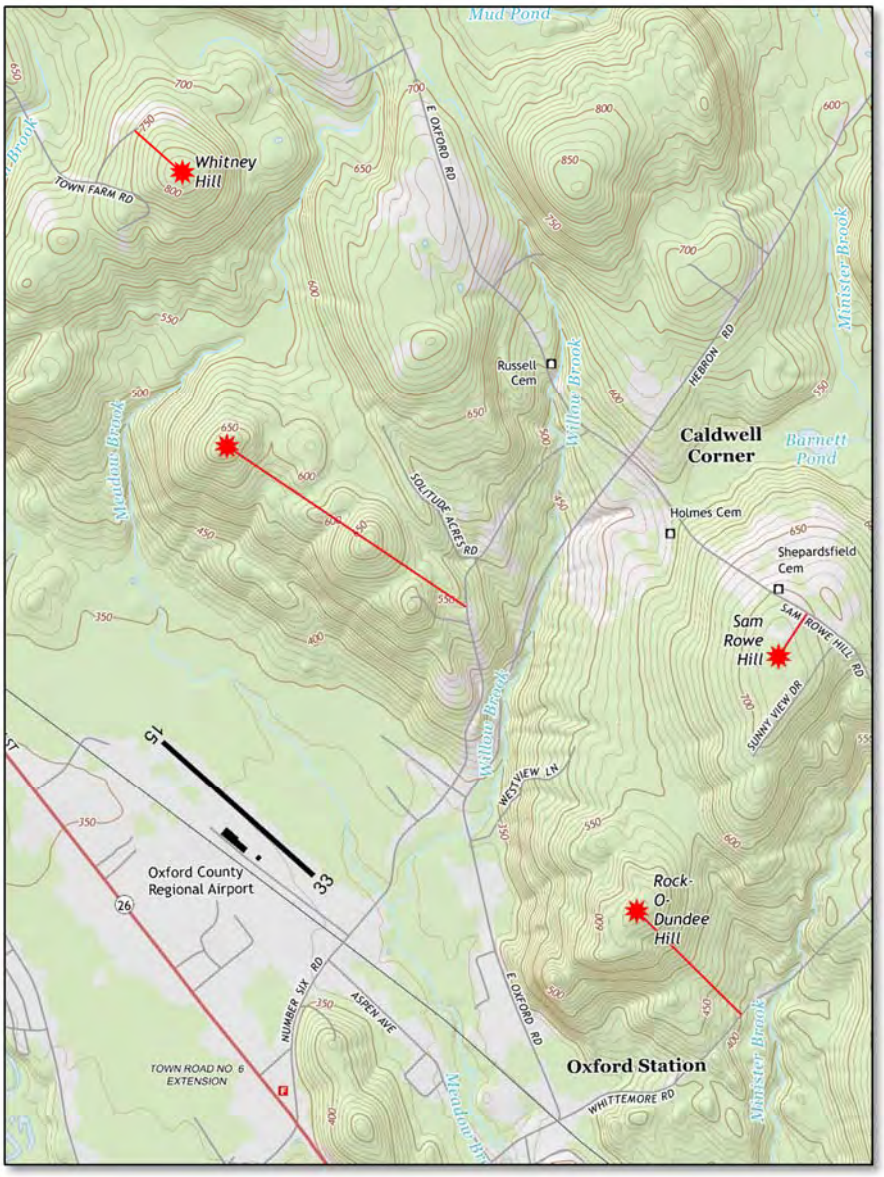


Figure 1.3.10.2-1 Obstruction Light and Easement Locations

1.3.11 AIRPORT DRAINAGE

The Oxford County Regional Airport has drainage swales and ditches located on either side of Runway 15-33. Stormwater runoff and melting snow drains into these swales and ditches which empty into surrounding soils, streams and wetlands located on the north and east sides of the airport. The water that does not percolate into the groundwater table is conveyed through a series of ditches and culverts to the east side of the Airport. These swales and ditches were constructed when the airport was constructed in 1974. The ditches and swales have gradually filled in with sediment and other natural vegetation debris since their construction, and they no longer function as well as they were intended due to the very flat terrain surrounding the airport and the failure of the culvert beneath the runway.



There are two 15-inch diameter culverts installed side-by-side under Taxiway B and two 12-inch diameter culverts under the Schiavi taxiway. These culverts are intended to drain to a 24-inch diameter culvert located under Runway 15-33 midway between Taxiway B and the Schiavi taxiway. These culverts were all installed as part of the 2008 runway reconstruction project. Perennial high ground water conditions at the airport required that these culverts be installed at very shallow depths. Consequently, over the years they have heaved due to frost action and they do not perform their function properly.



The runway culvert has heaved and stormwater cannot pass through the culvert. The top of the culvert is visible at the surface of the runway shoulder, and the culvert is causing a crack and a bump in the runway pavement.



The culverts under the Schiavi taxiway should be removed, along with the taxiway pavement, so that drainage flow in this area is not impeded by the taxiway. The taxiway appears to be acting as a dam and causes water to pond which can be a hazardous bird attractant. Removing the taxiway will also reduce the amount of impervious surface area on the airport which is environmentally desirable for stormwater quality and quantity.

There is one drain manhole in the terminal apron located 40 feet north of the northeast corner of the terminal building. The manhole is connected to two 12-inch diameter culverts that collect water from the turfed area north of the apron and from the turfed area west of the aviation fuel system. A third 12-inch diameter culvert drains the manhole to the swale located along east edge of the terminal apron.



1.3.12 WETLANDS

The airport property and the surrounding vicinity have several areas of wetlands that are subject to federal, state and local jurisdiction. Wetlands receive stormwater runoff from the paved surfaces and act as collection and detention areas for the stormwater where it can percolate and/or evaporate.

The locations of wetlands are depicted on both the Existing Airport Plan and Ultimate Airport Layout Plan (UALP) located in *Chapter 7, Airport Master Plan Drawings*.



1.3.13 GROUND WATER MONITORING WELLS

A review of the Maine Department of Environmental Protection (MDEP) records for underground fuel storage tanks at the airport indicates that manual ground water monitoring was required, although there are no indications as to the location of any monitoring wells.

A 2-inch diameter white PVC pipe ground water access point appears to exist at the southwest corner of the airport property, but the installation is not identified as a monitoring well with a typical cast iron monitoring well cover. This installation should be protected if it is the airport's ground water monitoring well.



1.3.14 STORMWATER POLLUTION PREVENTION PLAN

The airport's stormwater pollution prevention plan (SWPPP) provides a summary of actual and potential environmental, functional, social and economic issues as they relate to stormwater pollution. It identifies potential sources of pollution that could affect the quality of the stormwater and melting snow discharges that are associated with industrial activity at the Oxford County Regional Airport, and it assesses the significance of the impacts of stormwater. The SWPPP provides recommendations regarding measures and best management practices that will minimize and control pollutants which could empty into surrounding soils, streams and wetlands located on and around the airport.

1.4 LANDSIDE FACILITIES

Landside facilities at the Oxford County Regional Airport include airport buildings (i.e. the terminal building and three attached hangars), automobile parking, airport road signage, utilities, and tenants.

1.4.1 AIRPORT BUILDINGS

This section includes an overview of the airport buildings located at the Oxford County Regional Airport. All buildings are located on the west side of the airport and they abut the terminal apron, west of Runway 15-33, and east of Airport Road.

Currently, there are two buildings located on airport property. On-airport buildings include one 3,000 square foot conventional hangar and the terminal building and its associated attached hangars which cover a combined total of 42,880 square feet, or approximately 1 acre.

Table 1.4.1-1 lists the airport buildings at the Oxford County Regional Airport.

Table 1.4.1-1 Airport Buildings as of 2019

Building Type	Date	Size	Owner	Material and Condition
Conventional Hangar	1979	3,000 SF	Bancroft Contracting	Wood/Good
Terminal Building	1992	5,000 SF	Oxford County	Metal/Good
Conventional Hangar – Alpha	1992	11,000 SF	Oxford County	Metal/Good
Conventional Hangar – Bravo	1974	3,880 SF	Oxford County	Metal/Good
Conventional Hangar –North	1991	7,000 SF	Oxford County	Metal/Good
Conventional Hangar – Charlie South	1996	16,000 SF	Oxford County	Metal/Good

Source: 2003 Oxford AMPU

1.4.1.1 CONVENTIONAL HANGAR

The 3,000 square foot conventional hangar is a privately-owned hangar built and owned by Bancroft Contracting Corporation on land leased from Oxford County. The hangar is located at the southwest corner of the terminal apron. The hangar has bifold aircraft doors on its east and west sides, and it is capable of storing up to three single-engine aircraft.



1.4.1.2 TERMINAL BUILDING AND HANGARS

Facilities in the terminal building include office space for one FBO, an FBO counter; public rest rooms (ADA, or disability/handicap accessible facilities), pilot classroom/workspace to log flight activity; vending machines; and a public waiting room used as a central meeting place and waiting space for pilots, visitors and passengers. These areas are not currently accessible by the public when the airport is not attended.



The original building, now referred to as Bravo Hangar, consists of a 3,880 square foot, one-story, metal frame structure which was built in 1974 by Schiavi Construction.

A 7,000 square foot addition to the 1974 building was completed in 1991 and connected to the south side of the building. This addition forms the north half of Charlie Hangar.

In 1992 a 16,000 square foot addition, comprised of a 5,000 square foot office area and an 11,000 square foot hangar, was constructed and connected to the north side of the 1974 building. The hangar is referred to as Alpha hangar and it included space for aircraft painting and finishing facilities and a waste handling area. Two Reznor direct fired make-up air units provide heat to Alpha Hangar through its north wall. The air units are located outside the hangar and are connected to the propane tanks located 80 feet north of Alpha Hangar.

In 1996 an additional 16,000 square foot hangar was constructed and connected to the south side of the 7,000 square foot 1991 addition. This addition forms the south half of Charlie Hangar.

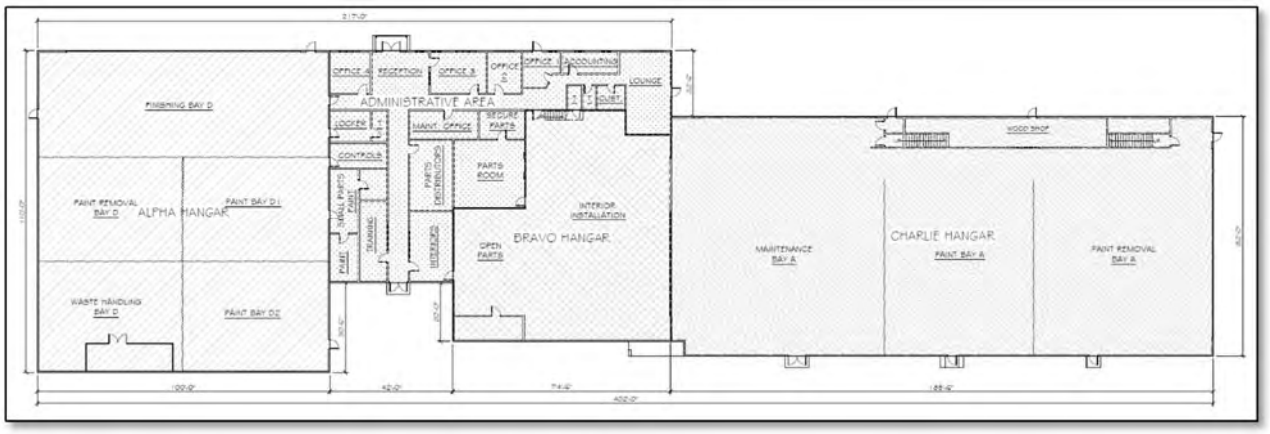


Figure 1.4.1.2-1 Terminal Building and Hangar Complex Floor Plan

The County-owned buildings are in good structural condition with some minor cosmetic damage to the metal siding and doorway canopies. The bifold hangar doors are functional but often need adjustments due to their size, weight and age. Some of the roofs are in need of repairs and/or replacement in order to prevent leaks, and the County has recently undertaken a roof maintenance project. The Planning Advisory Committee (PAC) that was organized to oversee the 2003 master plan update indicated that the 1974 building needed an interior upgrade which has not yet occurred.

1.4.2 VEHICLE PARKING

The Oxford County Regional Airport provides two paved automobile parking areas located on either side of Airport Road west of the terminal building.



Currently, there are 22 marked automobile parking spaces on the east side of Airport Road including one accessible vehicle parking space. The parking area on the west side of Airport Road is unmarked, but it can accommodate approximately 42 automobiles for a total of 64 parking spaces for the use of employees, visitors, pilots, and passengers. The gravel area north of the parking area is used for the parking and storage of contractor mowing and snow removal equipment.



Two parking spaces on the east side of Airport Road are marked as “No Parking” because of their proximity to propane tanks that were located at the side of the building. The propane tanks have been removed, and the parking spaces could be repainted to allow parking.



The one parking space which is marked and signed as an accessible vehicle parking space is sufficient to meet the *Americans with Disabilities Act* (ADA) minimum requirements for public parking areas. However, the adjacent parking space at the terminal building entrance should be marked and signed as a van-accessible parking space to meet the ADA requirements.

When the west side parking area is marked, it should include two accessible parking spaces opposite the terminal building entrance including one van-accessible parking space.

1.4.3 AIRPORT SIGNAGE

Airport directional signage consists of three signs which are located in the following areas:

- Intersection of Maine State Route 26 and Town Road No. 6 Extension, northbound
- Intersection of Maine State Route 26 and Town Road No. 6 Extension, southbound
- Intersection of Town Road Number Six and the Airport Access Road, northbound



For highway safety considerations, the airport signage on Route 26 is intended to encourage users to access the airport using Town Road No. 6 Extension. The airport can still be accessed by the original Town Road No. 6 acute intersection 0.2 miles south which runs behind the Oxford Public Safety Building.

An airport "Welcome" sign is located on airport property at the intersection of Town Road No. 6 and Airport Road.

1.4.4 UTILITIES

Utilities at the airport include electricity, water, a septic system and leach field, and propane gas. Several underground utility lines and structures underlie the area around the terminal building and vehicle parking areas and along the west side of Airport Road.

1.4.4.1 ELECTRICITY

Electricity is supplied by Central Maine Power with power feeds on the west side of Airport Road supplying power to the terminal building, hangars, and airport electrical vault. The airport electrical vault provides power to the runway and taxiway lights and signs and to the lighted wind cone. Some of the underground electric lines are indicated by red witness stakes.



An unmetered 110 volt AC exterior electrical outlet exists on a wood post at edge of the apron approximately 100 feet south of the southwest corner of Charlie Hangar. The outlet draws power from the electrical outlet located inside the southwest corner of Charlie Hangar near the hangar door. The wood post is located directly opposite an aircraft tiedown parking space, and the outlet provides a convenient power source for a pilot's use.



The rotating beacon has a separate electrical service and meter located inside the rotating beacon perimeter fence. The underground electrical line is marked with a red witness stake.

The rotating beacon is not part of the runway lighting system, and it cannot be controlled remotely by the airport's radio controller equipment or by aviation radios.

The beacon is controlled by a photocell which allows the beacon to operate from dusk to dawn and during temporary periods of darkness or poor visibility.



1.4.4.2 WATER

Water is supplied by the Oxford Water District. An 8-inch municipal water line from the Town of Oxford provides water to the terminal building and to three fire hydrants located along Airport Road.



The fire hydrants are located:

- at the northeast intersection of Airport Road and Town Road No. 6
- 655 feet south of the Bancroft hangar and 230 feet west of the Runway 33 turnaround
- 70 feet from the southwest corner of Charlie Hangar on the west side of Airport Road

1.4.4.3 SEWERAGE AND SEPTIC SYSTEMS

The airport buildings are not connected to a public sanitary sewer system.

The airport has an on-site septic system and leach field that was originally constructed in 1991 as part of the terminal building and Alpha Hangar project. A review of the 1991 subsurface wastewater disposal system application and the record drawings for the 1992 apron construction project indicates that a 1,000 gallon septic tank and a lift station are located beneath the apron pavement. The manhole covers for these two structures are visible 25 feet north of the northeast corner of Alpha Hangar. The pump and a 2-inch diameter force main transfer waste to a 15-foot by 56-foot leach field located approximately 150 feet north of Alpha Hangar on the east side of the Airport Road extension. There are no visible indications of the leach field or distribution box at this location (e.g. access covers, vent pipes or raised mounds).

The airport septic system was expanded in 2006 with the installation of a second 1,000 gallon septic tank and a 32-foot by 48-foot leach field. There are no visible indications of the leach field, distribution box, or septic tank at the locations depicted in the 2006 subsurface wastewater disposal system application. It appears that the easterly half the 2006 leach field was paved over by the 2013 extension of Airport Road.

The approximate locations of the 1991 and 2006 leach fields is depicted below.



Some of the septic system sewer line locations are indicated by green witness stakes. A subsurface site investigation should be able to locate the two leach fields and their distribution boxes. Because the area has underground electric and gas lines, ground penetrating radar (GPR) equipment should be used to locate the septic system components rather than excavating or probing the area.

There are currently no publically accessible bathroom facilities in the terminal building. The airport provides a portable toilet which is located at the northeast corner of the automobile parking area and which is well maintained on a weekly basis by a reputable local business.

1.4.4.4 GAS

Natural gas is not available at the airport. Propane gas is provided by a local business, and it is stored on-site in three 1,000 gallon above ground propane tanks located 80 feet north of Alpha Hangar. Underground gas lines connect the tanks to the terminal building and its hangars. The gas line locations are indicated by yellow witness stakes although one witness stake is damaged.



1.4.4.5 HEATING

The Alpha, Bravo and Charlie hangars are heated by propane gas radiant heaters.

The terminal building office area was originally heated by a forced hot water heating system that used No. 2 fuel oil. The fuel oil was stored in a 1,000 gallon underground tank located at the terminal building entrance. The two furnaces are currently damaged, disabled and unused, and the fuel tank was removed in 2020. As a result, the terminal building office area does not currently have a heating source.



1.4.4.6 TELEPHONE, CABLE TV AND INTERNET

There is no public-use telephone, cable television, or internet access at the airport. Consolidated Communications currently provides telephone, cable television, and high-speed internet service access to both residences and businesses in the Oxford area. Business services also include high-security internet service, email, and web hosting.

Cellular telephone coverage for the Oxford area is provided by Verizon, AT &T, T-Mobile, Sprint, and US Cellular.

1.5 MAINTENANCE, SNOW REMOVAL, AND FIRE AND RESCUE EQUIPMENT

Airport maintenance and snow removal are the responsibility of Oxford County which contracts mowing and snow removal to local businesses using a public bidding process. Consequently, the airport does not own snow removal equipment, fire and rescue equipment, or other maintenance equipment such as trucks, tractors, and mowers.



The Town of Oxford supplies all public safety services such as fire, rescue, and police.

The Oxford Public Safety Building is located south of the intersection of State Route 26 and Town Road No. 6 Extension less than one mile from the airport terminal building.



A 20-foot wide motorized vehicle gate located near the Bancroft hangar provides the only vehicle access point onto the airport operational areas.

Fire, rescue, and police personnel, vehicles and equipment can access the airport property through the motorized vehicle gate by using the keypad controller and entering the public safety access code.

The gate is also used by contractors to mow grass and remove snow and by 18-wheel fuel trucks delivering aviation fuel.



1.6 FINANCIAL BASELINE

An analysis of the Oxford County Regional Airport's operating budget is discussed in *Chapter 6 – Financial Analysis and Implementation.*

1.6.1 NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS

The FAA designates the Oxford County Regional Airport as a publicly owned, publicly used facility. Under the Airport and Airways Improvement Act, the Secretary of Transportation is required to publish a national plan for the development of public-use airports. The plan is published as the National Plan of Integrated Airport Systems (NPIAS) and includes the Oxford County Regional Airport. Development planned to receive federal funding is identified in the NPIAS for each eligible public-use airport based on an airport's role.



The NPIAS defines an airport's service level and role by the type of public service the airport provides to its community. The Oxford County Regional Airport's service level is defined as a general aviation (GA) airport. According to the FAA, a general aviation airport is defined as an airport largely intended to serve all facets of aviation except for air carrier (i.e. the carriage of passengers or cargo for hire or compensation), and military operations.

The NPIAS and FAA asset levels are discussed in more detail *Chapter 2 Aviation Forecasts*.

Projects for general aviation airport's that are determined to be eligible under the NPIAS receive 90 percent funding from the FAA. The MDOT provides 5 percent of the total cost of federally eligible airport improvement projects. Oxford County, as the local sponsor, funds the remaining 5 percent of the project's cost. Projects, or project components, that are ineligible for FAA funding must be funded by state, county/airport or private entities, such as airport businesses or private developers, or by a combination of funds from those entities.

The airport has also received federal grants from the Department of Commerce, Economic Development Administration (EDA) for public works projects that create jobs. These projects included the 1991 and 1996 projects to design and construct the terminal building and Alpha and Charlie hangars to support aviation business use of the airport.

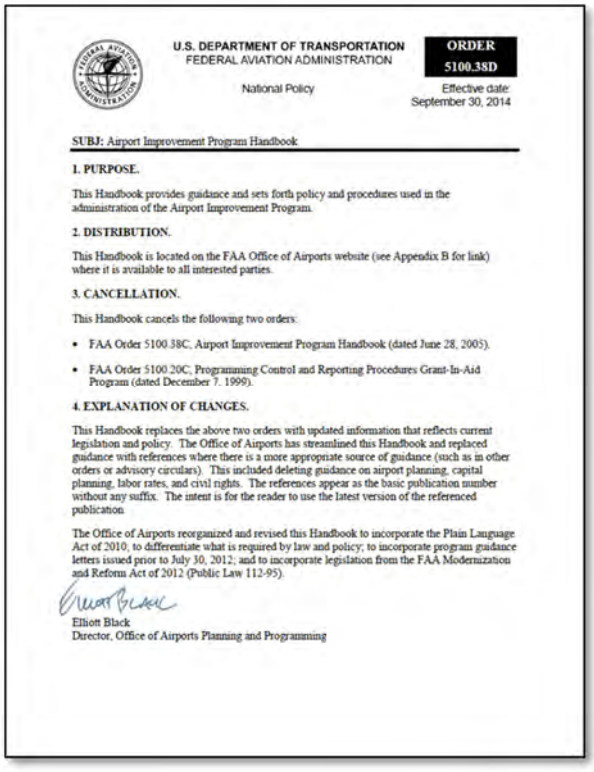
1.7 LEGAL BASELINE

Oxford County does not have written rules, regulations or minimum standards applicable to the operation of the Oxford County Regional Airport. The County defers to Federal, State and County statutes for the regulation of airport operations.

At the Federal level, the County is subject to the regulations of the United States Department of Transportation (USDOT) and the FAA. To accomplish this, the County complies with the federal grant assurances that are outlined in FAA Order 5100.38D, *Airport Improvement Program Handbook*.

At the State level, Maine Statutory Law, *Maine Aeronautics Act*, *Title 6, Aeronautics*, regulates aeronautical activities by adopting and applying state regulations that are consistent with federal regulations.

Public safety and zoning are also regulated through the State of Maine as well as locally through the Town of Oxford.



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

ORDER
5100.38D

National Policy

Effective date:
September 30, 2014

SUBJ: Airport Improvement Program Handbook

1. PURPOSE.

This Handbook provides guidance and sets forth policy and procedures used in the administration of the Airport Improvement Program.

2. DISTRIBUTION.

This Handbook is located on the FAA Office of Airports website (see Appendix B for link) where it is available to all interested parties.

3. CANCELLATION.

This Handbook cancels the following two orders:

- FAA Order 5100.38C, Airport Improvement Program Handbook (dated June 28, 2005).
- FAA Order 5100.20C, Programming Control and Reporting Procedures Grant-In-Aid Program (dated December 7, 1999).

4. EXPLANATION OF CHANGES.

This Handbook replaces the above two orders with updated information that reflects current legislation and policy. The Office of Airports has streamlined this Handbook and replaced guidance with references where there is a more appropriate source of guidance (such as in other orders or advisory circulars). This included deleting guidance on airport planning, capital planning, labor rates, and civil rights. The references appear as the basic publication number without any suffix. The intent is for the reader to use the latest version of the referenced publication.

The Office of Airports reorganized and revised this Handbook to incorporate the Plain Language Act of 2010, to differentiate what is required by law and policy; to incorporate program guidance letters issued prior to July 30, 2012; and to incorporate legislation from the FAA Modernization and Reform Act of 2012 (Public Law 112-95).

Elliott Black
Director, Office of Airports Planning and Programming

1.7.1 AIRPORT LEASES

The County currently has two leases under development at the airport. The FAA has reviewed the leases to ensure that the terms of the leases comply with FAA Order 5100.38D.

The County is developing a lease for the 42,880 square foot terminal building and three attached hangars with Mosher Aviation Services, LLC.

The County has leased airport land to the Bancroft Contracting Corporation for its 3,000 square foot conventional hangar since 1979.

An informal through-the-fence verbal agreement to access the airport from the privately owned Schiavi hangar has been discontinued in accordance with FAA regulations and grant assurances.

The airport leases are discussed further in *Chapter 6 – Financial Analysis and Implementation.*

1.7.2 OFF AIRPORT LAND USE

The Oxford County Regional Airport is bordered by land that is zoned as Rural on its north, east and south sides according to the current Town of Oxford Zoning Map dated June 9, 2018. The Rural District comprises the majority of the generally low density residential areas in the Town. It is the intent of this District to maintain the area's general rural nature.

The airport's west boundary is bordered by land that is zoned as Mixed Use, primarily along the Route 26 corridor. The Mixed Use District is intended to provide for commercial and residential uses. Commercial uses are general retail sales, services and business space within the Town. Services may include

assembly or fabrication of materials when there is no exterior storage and no noticeable noise, vibration or odors at the property line. The locations of the Mixed Use District will be capable of conveniently servicing community wide and regional trade areas and of providing for residential development.

The Town of Oxford Zoning Map is depicted in Figure 1.7.2-1 with the airport location circled.

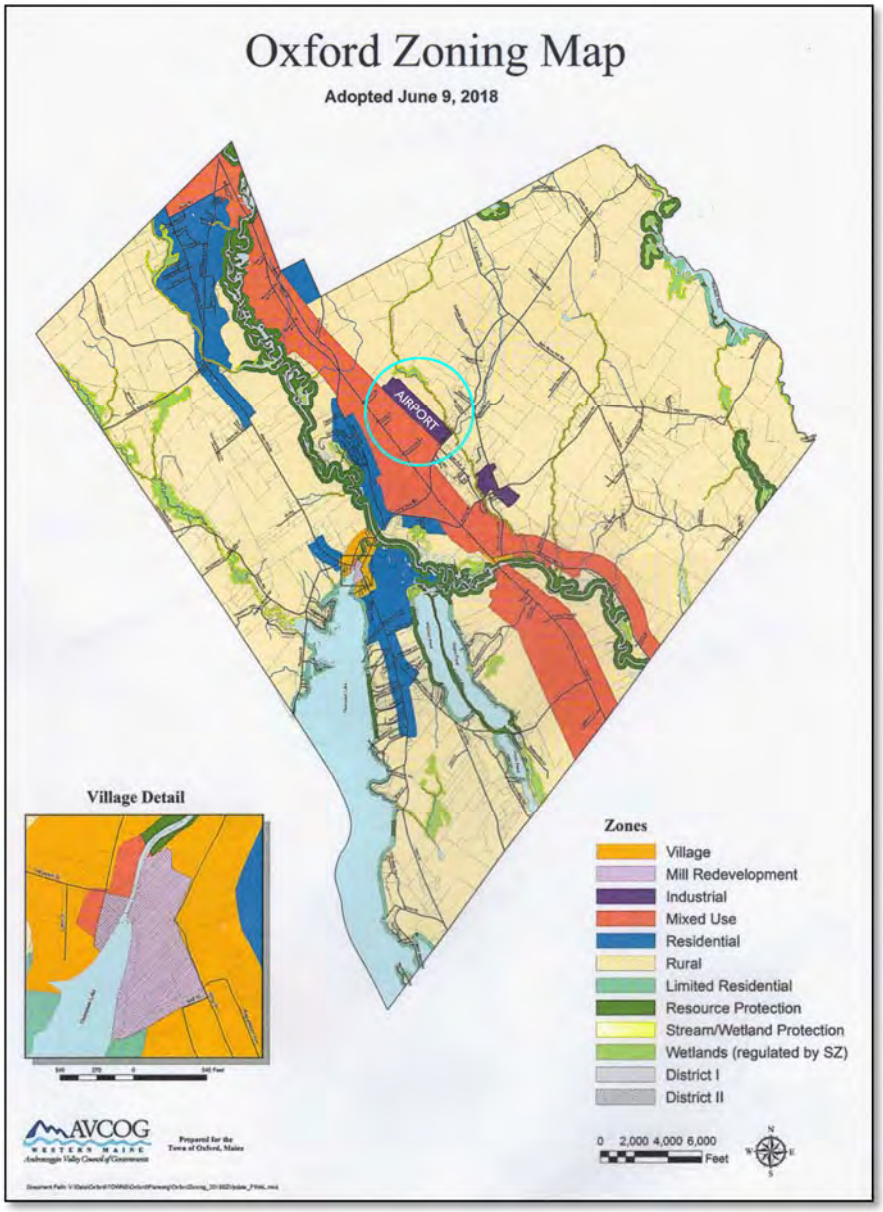


Figure 1.7.2-1 Oxford Zoning Map

1.7.3 On Airport Land Use

The Oxford County Regional Airport property is zoned as Industrial. The Industrial District provides for existing areas of, or areas suitable for, manufacturing, processing, treatment, research, warehousing, distribution, and other industrial activities. Proposed land use activities in the Industrial District require a site plan review permit issued by the Town of Oxford Planning Board.

The airport location and the zoning districts surrounding the airport are depicted in Figure 1.7.3-1.

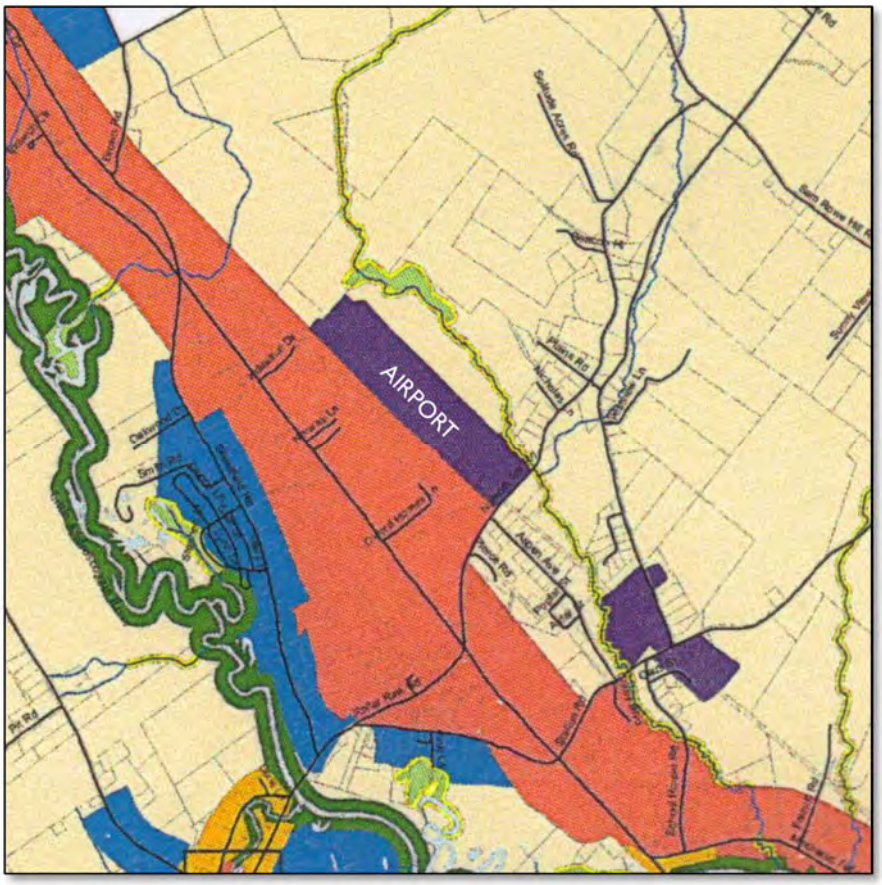


Figure 1.7.3-1 Airport and Vicinity Zoning Map

1.7.4 Airport Overlay Zone

The Town of Oxford has incorporated airport-related zoning known as the Airport Protection Overlay District which includes an Airport Overlay Zone. According to the zoning ordinance, the purpose of the Airport Overlay Zone is to minimize manmade obstructions within the critical approach zones of the Oxford County Regional Airport.

The Airport Protection Overly District is not depicted on the official Town zoning map, but it is described dimensionally in the Town zoning ordinance dated April 2, 2016.

State zoning regulations can also be implemented under Maine Statutory Law, Maine Legislature, *Maine Aeronautics Act Title 6, Chapter 13, Airport Zoning.* The state has not enacted zoning regulations for the Oxford County Regional Airport, relying on the local zoning regulations enacted by the Town.

1.7.5 HEIGHT ZONING

While the FAA utilizes Federal Aviation Regulation (FAR) Part 77 and Terminal Instrument Procedures (TERPS) to define the criteria to control the height of structures, objects, and trees that might penetrate navigable airspace, the FAA also relies on state and local zoning regulations to provide additional airspace protection. Airport zoning enhances the safety of the airspace around the airport by limiting encroachment into the airport's operating surfaces and protected airspace, and easements provide the airport with the rights to remove obstructions and to preclude obstructions from developing.

The Town of Oxford has implemented airport zoning regulations to protect the airspace of the Oxford County Regional Airport. However, the current April 2, 2016 zoning ordinance reflects airspace dimensional criteria that changed after they were initially included in the ordinance. The airport elevation has decreased from 346' MSL to 345' MSL as a result of the 2008 Runway 15-33 reconstruction project, and the approach surface dimensions have changed from visual runway dimensions to nonprecision runway dimensions as a result of the implementation of the GPS instrument approach procedures to Runways 15 and 33.

There are other FAA protected airspace surfaces in addition to the FAR Part 77 surfaces, such as the 40:1 runway departure surface and the 20:1 visual area surface. These surfaces, and others that might be or might become applicable to the Oxford County Regional Airport, could have more restrictive height limitations than the FAR Part 77 Surfaces.

Consequently, the Town of Oxford zoning ordinance should be revised to reflect the current dimensions and elevations of the FAR Part 77 imaginary surfaces and other airspace surfaces that might be applicable to the airport.

1.7.6 AVIGATION EASEMENTS

The County has purchased seventeen avigation easements over abutting and nearby private properties. The primary purpose of these easements is to provide the County with the right to mitigate penetrations to the airport's protected airspace before the penetrations become hazards to air navigation and aviation safety. Mitigation measures typically include requiring the property owner to remove objects that penetrate the airspace and allowing the County to remove such objects if the property owner does not.

The airport's property interests, including easements, are depicted on the airport's Exhibit A property map in *Chapter 7 – Airport Master Plan Update Drawings*.

1.8 SOCIOECONOMIC DATA

A variety of historical data and socioeconomic data from the Oxford County area have been collected for use in various elements of this Master Plan update study. Socioeconomic data collected include economic, employment, and population data, which are presented in the following sections. This information may be used as one means of forecasting aircraft activity at the airport.

1.8.1 ECONOMIC BASE

Professional services, manufacturing, and retail trade primarily drive the economy in the State of Maine and in Oxford County. The 2001 employment data by major industry division for the State of Maine and Oxford County is summarized in Table 1.8.1-1.

The updated 2018 data in Table 1.8.1-2 continues to reflect services, transportation and public utilities, and manufacturing as the primary drivers of the State of Maine and Oxford County economies. Between 2001 and 2018 the State of Maine showed a 3.7% increase in total employment and Oxford County showed a 6.9% decrease. Between 2001 and 2018, this change in the County's employment was due to decreases in Manufacturing, Mining and Construction, Transportation and Public Utilities, Finance, Insurance and Real Estate; steady numbers in Public Administration and increases in Services. The change in distribution of industry divisions between 2001 and 2018 for the County was a primarily a shift from Manufacturing to Services.

Table 1.8.1-1 2001 Employment Data by Major Industry Division

Industry Division	State of Maine		Oxford County	
	Average Annual Employment	Percent of Total Employment	Average Annual Employment	Percent of Total Employment
Manufacturing	78,169	13.2	3,740	20.7
Mining and Construction	38,671	6.5	1,451	8.0
Services	284,733	48.0	8,678	48.0
Transportation and Public Utilities	130,051	21.9	3,102	17.2
Finance, Insurance and Real Estate	34,099	5.7	509	2.8
Public Administration	27,029	4.6	602	3.3
Unclassified	284	<0.1	0	0
Total	593,036	100.0	18,082	100.0

Source: Maine Department of Labor

Table 1.8.1-2 2018 Employment Data by Major Industry Division

Industry Division	State of Maine		Oxford County	
	Average Annual Employment	Percent of Total Employment	Average Annual Employment	Percent of Total Employment
Manufacturing	57,555	9.4	2,207	13.1
Mining and Construction	38,956	6.3	1,366	8.1
Services	335,215	54.5	9,236	54.9
Transportation and Public Utilities	124,435	20.2	2,991	17.8
Finance, Insurance and Real Estate	30,346	4.9	422	2.5
Public Administration	27,018	4.4	604	3.6
Unclassified	1,747	0.3	0	0
Total	615,272	100.0	16,826	100.0

Source: Maine Department of Labor

1.8.2 EMPLOYMENT AND PER CAPITA INCOME

According to the Maine Department of Labor, Division of Labor Market Information Services, in cooperation with the U.S. Bureau of Labor Statistics, the overall average unemployment rate in Oxford

County was 6.13 percent and 4.09 percent overall in the State of Maine in 2002. The current unemployment rates are 4.5% for Oxford County and 3.4% as of May 2019.

Table 1.8.2-1 illustrates the historical relationship of personal (i.e. per capita) income between Oxford County, the State of Maine, and the United States according to the 2003 Oxford AMPU.

Table 1.8.2-1 Per Capita Income Comparison

Entity	1998	1999	2000	1998 – 2000 Change
Oxford County	$19,061	$19,462	$20,388	+6.96%
Maine	$23,404	$24,268	$25,380	+8.44%
United States	$26.893	$27,843	$29,469	+9.58%

Source: 2003 Oxford AMPU (United States Department of Commerce/Bureau of Economic Analysis)

Table 1.8.2-2 illustrates the latest available relationships of personal (i.e. per capita) income between Oxford County, the State of Maine, and the United States as of 2018. Per Capita Income has increased more strongly in the US, followed by the State of Maine, and then by Oxford County in the 1998 – 2000 period and the 2016 – 2018 period.

Table 1.8.2-2 Per Capita Income Comparison

Entity	2016	2017	2018	2016 – 2018 Change
Oxford County	$35,071	$36,245	$37,999	+8.35%
Maine	$44,839	$46,570	$48,905	+9.07%
United States	$49,870	$51,885	$54,446	+9.18%

Source: United States Department of Commerce/Bureau of Economic Analysis

1.8.3 POPULATION

Oxford County, the State of Maine, and the United States population have shown increases from 1980 to 2010 as depicted in Table 1.8.3-1. Population has increased more strongly in the US, followed by the State of Maine, and then by Oxford County in the 2000 – 2018 period.

Table 1.8.3-1 Population Comparison

Entity	1980	1990	2000	2010	2018	2000-2018 Change
Oxford County	49,102	52,748	54,822	57,779	57,618	+5.10%
Maine	1,247,554	1,253,040	1,247,923	1,327,632	1,338,404	+7.25%
United States	226,545,805	248,709,873	276,059,000	309,326,085	327,167,434	+18.51%

Source: 2003 Oxford AMPU (U.S. Census Bureau) for 1980 – 2000. U.S. Census Bureau for 2010 and 2018.

CHAPTER 2

~ CHAPTER 2 ~
AVIATION FORECASTS

2.1 GENERAL

The purpose of this chapter is to present a forecast of anticipated aviation activity at the Oxford County Regional Airport.

Aviation forecasts are an important element of an airport master plan because they identify a level of demand in terms of activity (e.g. based aircraft, aircraft operations, fuel flow, etc.) for the 5, 10, and 20 year planning periods. Whether activity levels would actually increase as reflected in the forecast will depend on whether the airport sponsor chooses to increase airport capabilities and facilities to accommodate such growth.

The following activity elements are key factors for planning an airport's development:

- **Based Aircraft**
  - Total
  - Fleet Mix
- **Aircraft Operations**
  - Total Operations
  - Runway Operations
  - Local Operations
  - Itinerant Operations
  - Touch-and-Go Operations
  - Daytime/ Nighttime Operations
  - Visual Flight Rules Operations
  - Instrument Flight Rules Operations
- **Critical Aircraft**
- **Aviation Fuel Flowage**

At an uncontrolled airport such as the Oxford County Regional Airport, aviation forecasts are difficult to quantify accurately. First, the process of estimating the number and type of existing aircraft operations is inexact because without an operating control tower or other reliable method to record aircraft operations, there is no accurate data base of operations. Second, the growth rate of future aviation activity is often tied to other events that can affect aviation activity, but which can be difficult to forecast accurately, such as local and regional economic growth, aviation fuel prices, and aircraft insurance rates.

Because there is no well-documented local history of operations at the Oxford County Regional Airport, existing or baseline activity is usually estimated by people working day-in and day-out at the airport or by referring to the FAA Terminal Area Forecasts. The FAA TAF for an airport contains a listing of historic numbers of based aircraft and operations by type. This historic information is typically obtained from the FAA Form 5010-1 Airport Master Record as depicted in Figure 2.1-1. The FAA TAF for a low-activity,

non-towered airport such as the Oxford County Regional typically projects levels of activity with no change from the last historic year. As was mentioned in the Inventory chapter, there was a significant decrease in activity levels at the airport in the 2014 – 2016 timeframe due to FBO issues. Since that time, a new FBO has commenced service at the airport, and levels of activity and levels of interest in locating at the airport are increasing. Therefore, it is reasonable to expect that future levels of activity at the airport will continue to increase.

The levels of activity that may occur at an airport depend on the facilities and services that are offered and the resultant levels of activity that are occurring at "competing airports". Competing airports are those airports that are sufficiently close to a subject airport where an aircraft operator, passenger, or business lessee, etc. may have a realistic choice of alternative airports to use.

Because the Oxford County Regional Airport will need to be prepared to react to various changing levels of future airport activity and needs, this master plan forecast presents three possible scenarios:

- Terminal Area Forecast: Little to no growth increase from the existing conditions.
- Growth Scenario 1: Somewhat strong increase in growth in the short-term 5-year future; then maintain that level for the remainder of the 20-year forecast period. This master plan will be developed by focusing on Growth Scenario 1 as this is a level of growth that can be reasonably expected to occur.
- Growth Scenario 2: Somewhat strong increase in growth in the short-term 5-year future and maintained for 10 years; then additional growth in the 11-14 year intermediate-term future, and again in the 15 – 20 year long-term future. Growth Scenario 2 is included to reflect a reasonable level of growth which could occur. It is treated as long-range demand (probably beyond the 20-year master plan term). However, it is important that nothing is done in accommodating Growth Scenario 1 which could preclude or hinder longer-term improvements needed to accommodate Growth Scenario 2 demand.

This proposed concept would facilitate planning to prepare capital improvement plans, to mitigate environmental impacts, and to provide facilities to accommodate the existing airport conditions and the low levels of growth, but also would reserve areas of the airport and prepare development plans so that short-term improvements do not impede a higher level of future growth should it occur. With this protocol, there is no need for excessive facility planning and capital budgeting, and the approved development plans will not limit or inhibit some level of unexpected future growth.

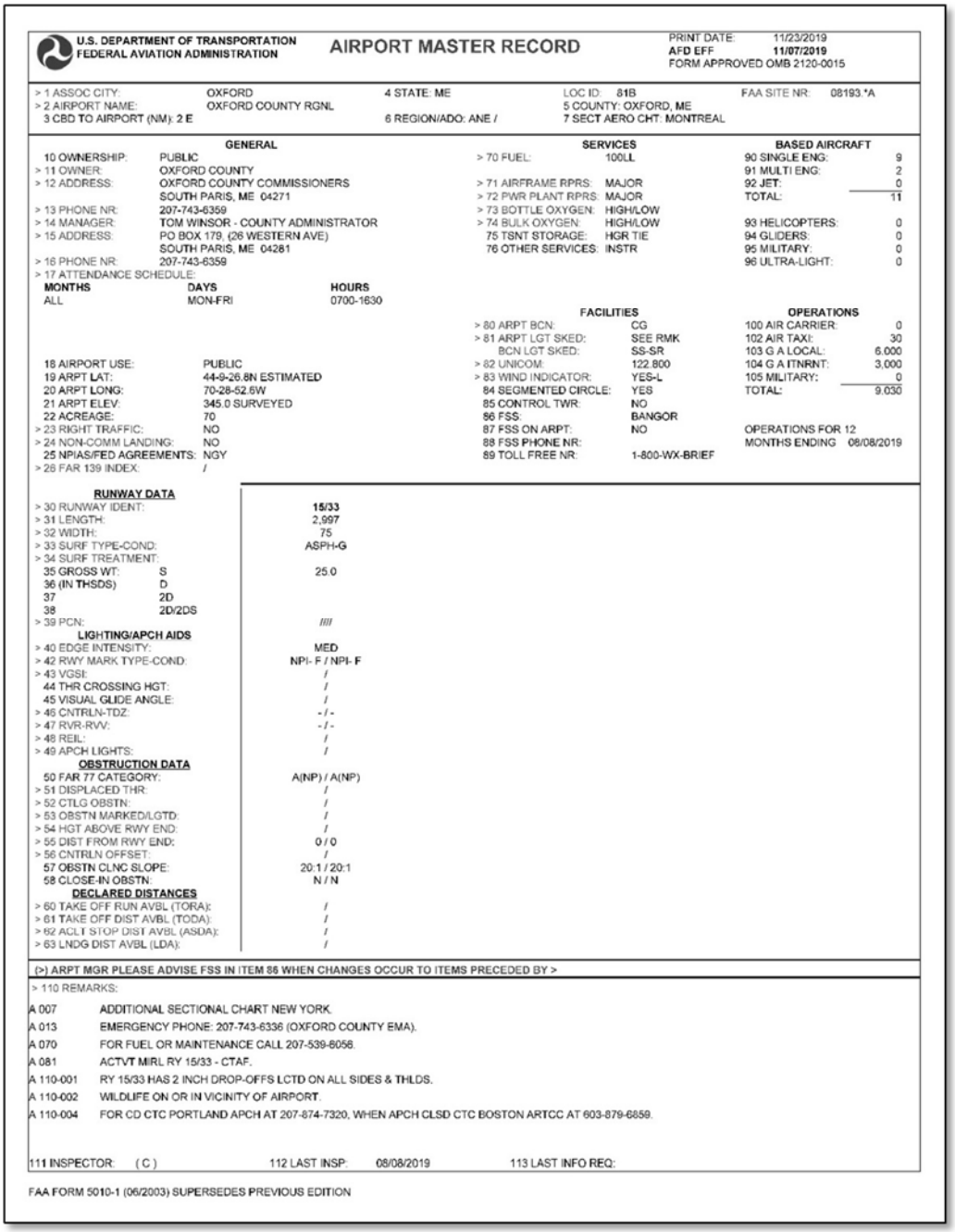
2.2 TERMINAL AREA FORECASTS

The Terminal Area Forecast (TAF) Summary contains historical and forecast data for enplanements, airport operations, TRACON operations, and based aircraft. The data covers FAA-towered airports, towered airports under FAA contracts, terminal radar approach control (TRACON) facilities, and non-FAA airports.



The TAF is prepared annually to assist the FAA in meeting its planning, budgeting, and staffing requirements. In addition, state aviation agencies and other aviation planners use the TAF data as a basis for planning airport improvements.

The TAF forecasts presented below for the Oxford County Regional Airport will update and replace the forecasts that were presented in the *2003 Airport Master Plan Update* prepared by Hoyle, Tanner and Associates, Inc.



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AIRPORT MASTER RECORD

PRINT DATE: 11/23/2019
AFD EFF 11/07/2019
FORM APPROVED OMB 2120-0015

> 1 ASSOC CITY: OXFORD — 4 STATE: ME — LOC ID: 81B — FAA SITE NR: 08193.*A
> 2 AIRPORT NAME: OXFORD COUNTY RGNL — 5 COUNTY: OXFORD, ME
3 CBD TO AIRPORT (NM): 2 E — 6 REGION/ADO: ANE / — 7 SECT AERO CHT: MONTREAL

GENERAL

10 OWNERSHIP: PUBLIC
> 11 OWNER: OXFORD COUNTY
> 12 ADDRESS: OXFORD COUNTY COMMISSIONERS
SOUTH PARIS, ME 04271
> 13 PHONE NR: 207-743-6359
> 14 MANAGER: TOM WINSOR - COUNTY ADMINISTRATOR
> 15 ADDRESS: PO BOX 179, (26 WESTERN AVE)
SOUTH PARIS, ME 04281
> 16 PHONE NR: 207-743-6359
> 17 ATTENDANCE SCHEDULE:

MONTHS	DAYS	HOURS
ALL	MON-FRI	0700-1630

18 AIRPORT USE: PUBLIC
19 ARPT LAT: 44-9-26.8N ESTIMATED
20 ARPT LONG: 70-28-52.6W
21 ARPT ELEV: 345.0 SURVEYED
22 ACREAGE: 70
> 23 RIGHT TRAFFIC: NO
> 24 NON-COMM LANDING: NO
25 NPIAS/FED AGREEMENTS: NGY
> 26 FAR 139 INDEX: /

SERVICES

> 70 FUEL: 100LL
> 71 AIRFRAME RPRS: MAJOR
> 72 PWR PLANT RPRS: MAJOR
> 73 BOTTLE OXYGEN: HIGH/LOW
> 74 BULK OXYGEN: HIGH/LOW
75 TSNT STORAGE: HGR TIE
76 OTHER SERVICES: INSTR

FACILITIES

> 80 ARPT BCN: CG
> 81 ARPT LGT SKED: SEE RMK
BCN LGT SKED: SS-SR
> 82 UNICOM: 122.800
> 83 WIND INDICATOR: YES-L
84 SEGMENTED CIRCLE: YES
85 CONTROL TWR: NO
86 FSS: BANGOR
87 FSS ON ARPT: NO
88 FSS PHONE NR:
89 TOLL FREE NR: 1-800-WX-BRIEF

BASED AIRCRAFT

90 SINGLE ENG:	9
91 MULTI ENG:	2
92 JET:	0
TOTAL:	11
93 HELICOPTERS:	0
94 GLIDERS:	0
95 MILITARY:	0
96 ULTRA-LIGHT:	0

OPERATIONS

100 AIR CARRIER:	0
102 AIR TAXI:	30
103 G A LOCAL:	6,000
104 G A ITNRNT:	3,000
105 MILITARY:	0
TOTAL:	9,030

OPERATIONS FOR 12 MONTHS ENDING 08/08/2019

RUNWAY DATA

> 30 RUNWAY IDENT:		15/33
> 31 LENGTH:		2,997
> 32 WIDTH:		75
> 33 SURF TYPE-COND:		ASPH-G
> 34 SURF TREATMENT:		
35 GROSS WT:	S	25.0
36 (IN THSDS)	D	
37	2D	
38	2D/2DS	
> 39 PCN:		////

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:	MED
> 42 RWY MARK TYPE-COND:	NPI- F / NPI- F
> 43 VGSI:	/
44 THR CROSSING HGT:	/
45 VISUAL GLIDE ANGLE:	/
> 46 CNTRLN-TDZ:	- / -
> 47 RVR-RVV:	- / -
> 48 REIL:	/
> 49 APCH LIGHTS:	/

OBSTRUCTION DATA

50 FAR 77 CATEGORY:	A(NP) / A(NP)
> 51 DISPLACED THR:	/
> 52 CTLG OBSTN:	/
> 53 OBSTN MARKED/LGTD:	/
> 54 HGT ABOVE RWY END:	/
> 55 DIST FROM RWY END:	0 / 0
> 56 CNTRLN OFFSET:	/
57 OBSTN CLNC SLOPE:	20:1 / 20:1
58 CLOSE-IN OBSTN:	N / N

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA):	/
> 61 TAKE OFF DIST AVBL (TODA):	/
> 62 ACLT STOP DIST AVBL (ASDA):	/
> 63 LNDG DIST AVBL (LDA):	/

(>) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS:

A 007 ADDITIONAL SECTIONAL CHART NEW YORK.
A 013 EMERGENCY PHONE: 207-743-6336 (OXFORD COUNTY EMA).
A 070 FOR FUEL OR MAINTENANCE CALL 207-539-8056.
A 081 ACTVT MIRL RY 15/33 - CTAF.
A 110-001 RY 15/33 HAS 2 INCH DROP-OFFS LCTD ON ALL SIDES & THLDS.
A 110-002 WILDLIFE ON OR IN VICINITY OF AIRPORT.
A 110-004 FOR CD CTC PORTLAND APCH AT 207-874-7320, WHEN APCH CLSD CTC BOSTON ARTCC AT 603-879-6859.

111 INSPECTOR: (C) 112 LAST INSP: 08/08/2019 113 LAST INFO REQ:

FAA FORM 5010-1 (06/2003) SUPERSEDES PREVIOUS EDITION

Figure 2.1-1 FAA Airport Master Record Form 5010-1

2.3 TAF Forecast for Oxford County Regional Airport

Forecasts are projections of future aviation activity levels based largely on past aviation trends and on other indicators such as population growth and income growth that historically track closely with aviation activity. Aviation forecasts use different methodologies depending on the type or size of an airport.

The TAF forecasts of passenger enplanements and commercial operations at FAA-facility airports with more than 100,000 annual enplanements are generally based on domestic enplanements. Enplanements are forecasted by generating origin and destination (O&D) market demand data to model future passenger flow. The O&D passenger demand forecasts are based on regression analysis using fares, regional demographics, and regional economic factors.

The TAF forecasts of passenger enplanements at FAA-facility airports with fewer than 100,000 enplanements are generally based on an analysis of historic trends. Commercial operations forecasts are based on the enplanement forecasts, trend analysis, and enplanements per operation. The commercial forecasts for these airports may be prorated in comparison to national forecast trends by category. The forecasts of itinerant general aviation operations and local civil operations at these airports are based primarily on time series analysis. As mentioned previously, the TAF projection for non-towered, low-activity airports such as the Oxford County Regional is typically to maintain existing levels of activity at a no-growth rate throughout the planning period.

The data available from non-towered airports often depends on estimates made by the airport manager, airport tenants, and local pilots. Mechanical and acoustical counters can be helpful in recording aircraft activity, but they too have their limitations and can be inaccurate. Consequently, historical annual operations data for non-towered general aviation airports is often unreliable or not readily available.

The definitions relevant to a TAF forecast are:

- Local Operations: Airport operations performed by an aircraft that remain in the local traffic pattern, execute simulated instrument approaches or low passes at the airport, and operations to or from the same airport within a designated practice area within a 20-mile radius of the airport.
- Itinerant Operations: Operations performed by an aircraft, either IFR or VFR, that land at an airport arriving from outside the airport area or that depart from an airport and leave the airport area. Itinerant operations are divided among air carriers, commuters and air taxis, general aviation, and military.
- Air Carrier Operations: The sum of domestic and international revenue passenger enplanements on mainline US commercial air carriers plus international revenue passenger enplanements on mainline foreign flag air carriers. Data includes both scheduled and non-scheduled enplanements as reported to the US Department of Transportation (DOT), Bureau of Transportation Statistics (BTS) on Form T-100 reports.
- Commuter Operations: These are defined scheduled operations conducted at a frequency of operations of at least five round trips per week on at least one route between two or more points according to the published flight schedules' on airplanes (other than turbojet-powered airplanes) having a maximum passenger-seat configuration of 9 seats or less, and a maximum payload capacity of 7,500 pounds or less. All scheduled and non-scheduled operations that use aircraft with 10 or more seats to transport commuter (i.e. regional)

passengers must report on Form T-100. Historic enplanement statistics include originating passengers on scheduled commuter or regional carriers as reported on DOT Form 41 and 298-C with adjustments made to include connecting passengers. Historically, Form 298-C included carriers operating at least five scheduled round trips per week whose fleet consists of aircraft having 60 or fewer seats.

- Air Taxi Operations: From on-demand air carriers. The data are reported voluntarily on the Airport Activity Survey, FAA Form 1800-31.
- General Aviation Operations: Takeoffs and landings of all civil aircraft, except for air carriers or air taxis.
- Military Operations: Operations by all classes of military takeoffs and landings
- Based Aircraft: An aircraft that is operational and airworthy and is based at an airport for most of the year. Types of based aircraft projected are:
    - Single - Single Engine General Aviation Aircraft
    - Multi - Multiengine General Aviation Aircraft
    - Jet - Turbojet and Turbofan General Aviation Aircraft
    - Helicopter - Helicopter General Aviation Aircraft
    - Other Aircraft (e.g., Gliders, Military, Ultra-Light)

Table 2.3-1 provides a summary of the TAF forecast operations at the Oxford County Regional Airport for the short, intermediate, and long-term planning periods. The TAF forecast data is summarized in the "Based Aircraft" and "Operations" sections of the FAA Form 5010-1. These TAF figures are generally held constant for the entire TAF forecast period unless documented changes are approved by the FAA (e.g. newly based aircraft).

Table 2.3-1 TAF Forecast Operations 2019 - 2039

Planning Period Years	Itinerant Operations					Local Operations			Total Operations
	Air Carrier	Air Taxi Commuter	GA	Military	Total	Civil	Military	Total	
2019 - 2023	0	30	3,000	0	3,030	6,000	0	6,000	9,030
2024 - 2029	0	30	3,000	0	3,030	6,000	0	6,000	9,030
2030 - 2039	0	30	3,000	0	3,030	6,000	0	6,000	9,030

Source: FAA TAF Summary Fiscal Years 2018-2045

The TAF projection for based aircraft at the Oxford County Regional Airport is shown in Table 2.3-2.

Table 2.3-2 TAF Forecast Based Aircraft 2019 - 2039

Planning Period Years	Based Aircraft					
	Single-Engine Piston	Multi-Engine Piston	Turbine/ Jet	Helicopter	Other	Total
2019 - 2023	9	2	0	0	0	11
2024 - 2029	9	2	0	0	0	11
2030 - 2039	9	2	0	0	0	11

Source: FAA TAF Summary Fiscal Years 2018 - 2045

2.4 NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS/SURROUNDING AIRPORTS

The National Plan of Integrated Airport Systems (NPIAS) was discussed in Chapter 1 Section 6.1. The FAA now uses five categories of GA asset levels in the NPIAS as shown in Table 2.4-1.

The level of activity that occurs at an airport is based in large part on competition among alternative modes of transportation, competition among alternative airports, and socioeconomic conditions in the airport area. For the purposes of this study, the Oxford County Regional Airport (81B) impact area was determined to be as far as a 60-minute driving time from the airport. The airport's market area (within which most of the airport's users may originate) would be within a 30- to 40-minute driving time from the airport, due to competition from other airports within the impact area. Airports further than a one-hour drive from 81B were judged to have minimal if any impact on the airport's activity.

Table 2.4-1 Definition/Criteria for NPIAS Level and FAA Asset Level

NPIAS Level [1] Airport Category	**Definition**
Commercial Service: Primary	Publicly owned airports that have at least 10,000 passenger boardings each calendar year and receive scheduled passenger service.
Commercial Service: Non-Primary	Publicly owned airports that have at least 2,500 but less than 10,000 passenger boardings each calendar year and receive scheduled passenger service.
Reliever	Airports designated by the FAA to relieve congestion at Commercial Service Airports and to provide improved general aviation access to the overall community. These may be publicly or privately-owned.
General Aviation	Public-use airports that do not have scheduled service or have less than 2,500 annual passenger boardings (49 USC 47102(8)). Approximately 88 percent of airports included in the NPIAS are general aviation.
Non-NPIAS	Airports that are not part of the FAA National Plan of Integrated Airport Systems (NPIAS).
FAA Asset Level [2] Asset Level: Purpose	**Definition**
National: Supports the national and state system by providing communities with access to national and international markets in multiple states and throughout the United States.	• 5,000+ instrument operations , 11 based jets, 20+ international flights, or 500+ interstate departures; or • 10,000" enplanements and at least 1 charter enplanement by a large certificated air carrier, or • 500+ million pounds of landed cargo weight.
Regional: Supports regional economies by connecting communities to statewide and interstate markets.	• Metropolitan Statistical Area (MSA) (Metro or Micro) and 10+ domestic flights over 500 miles, 1,000+ instrument operations, 1+ based jet, or 100+ based aircraft; or; • The airport is located in a metropolitan or micropolitan statistical area, and the airport meets the definition of commercial service.
Local: Supplements communities by providing access to primarily intrastate and some interstate markets.	• 10+ instrument operations and 15+ based aircraft; or • 2,500+ passenger enplanements.
Basic: Links the community with the national airport system and supports general aviation activities (e.g., emergency services, charter or critical passenger service, cargo operations, flight training and personal flying).	• 10+ based aircraft; or • 4+ based helicopters; or • The airport is located 30+ miles from the nearest NPIAS airport; or • The airport is identified and used by the U.S. Forest Service, or U.S. Marshals, or U.S. Customs and Border Protection (designated, international, or landing rights), or U.S. Postal Service (air stops), or has Essential Air Service; or • The airport is a new or replacement facility activated after January 1, 2001; or • Publicly owned or privately owned and designated as a reliever with a minimum of 90 based aircraft.
Unclassified:	Facilities that do not fit into one of the categories.

1/ https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/categories/
2/ General Aviation Airports: A National Asset, May 2012, FAA.

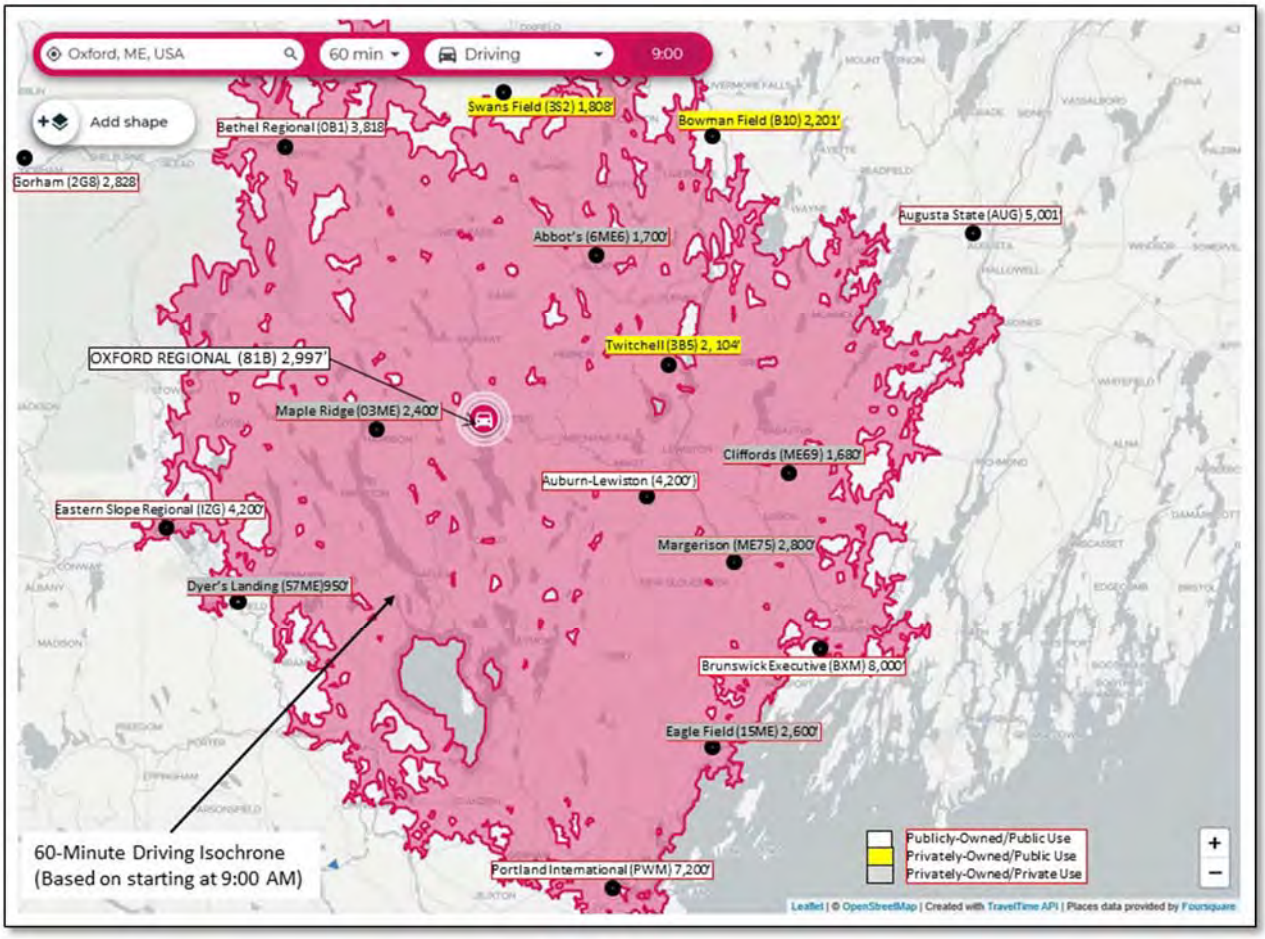
Airports within a 60-minute driving time of 81B are listed in order of owner and use in Table 2.4-2, and their locations are depicted in Figure 2.4-1. There are seven publicly-owned airports of which two provide Commercial Service and five are General Aviation. All of the seven publicly-owned airports are part of the NPIAS. Of the five publicly-owned General Aviation airports, Oxford County Regional has a GA Asset Level of “Basic”; Auburn-Lewiston and Augusta State are “Regional”; and the remaining three are “Local”. Among the seven NPIAS airports, 81B currently has the shortest runway, fewest based aircraft, and second fewest annual operations.

Within the 60 minute drive time area are three privately-owned airports that are open to the public, and five airports that are privately-owned for private use, with none of the eight being part of the NPIAS. The Oxford County Regional Airport compares to these non-NPIAS airports by having the longest runway. Currently, Bowman Field (B10) and Twitchell (3B5) have more based aircraft than Oxford and Twitchell has more annual operations.

Table 2.4-2 Definition/Criteria for NPIAS Level and FAA Asset Level

Public Airport	Airport ID Code	Driving Time to 81B	Use	NPIAS Level	FAA GA Asset Role	Longest Runway	Based Aircraft	Annual Operations
Auburn-Lewiston Municipal	LEW	0:26	Public	Reliever	Regional	5,001’	57	52,750
Augusta State	AUG	1:10	Public	Comm. Service: Non-Primary	Regional	5,001'	44	21,355
Bethel Regional	0B1	0:50	Public	General Aviation	Local	3,818'	17	4,750
Brunswick Executive	BXM	1:10	Public	General Aviation	Local	8,000'	41	16,000
Eastern Slope Regional	IZG	1:00	Public	General Aviation	Local	4,200'	34	33,680
Oxford County Regional	81B	0	Public	General Aviation	Basic	2,997'	11	9,030
Portland Intl. Jetport	PWM	1:00	Public	Comm. Service: Primary	n/a	7,200'	41	58,182
Private Airport	**Airport ID Code**	**Driving Time to 81B**	**Use**	**NPIAS Level**	**FAA GA Asset Role**	**Longest Runway**	**Based Aircraft**	**Annual Operations**
Bowman Field	B10	0:55	Public	Non-NPIAS	n/a	2,201'	15	2,500
Swan's Field	3S2	1:00	Public	Non-NPIAS	n/a	1,808'	7	512
Twitchell	3B5	0:35	Public	Non-NPIAS	n/a	2,104'	60	12,000
Private Airport	**Airport ID Code**	**Driving Time to 81B**	**Use**	**NPIAS Level**	**FAA GA Asset Role**	**Longest Runway**	**Based Aircraft**	**Annual Operations**
Abbot's	6ME6	0:26	Private	Non-NPIAS	n/a	1,700'	5	Unknown
Clifford's	ME69	0:55	Private	Non-NPIAS	n/a	1,680'	6	Unknown
Dyer's Landing	57ME	1:00	Private	Non-NPIAS	n/a	950'	1	Unknown
Eagle Field	15ME	0:50	Private	Non-NPIAS	n/a	2,600'	1	Unknown
Maple Ridge	03ME	0:28	Private	Non-NPIAS	n/a	2,400'	4	400
Margerison	ME75	0:45	Private	Non-NPIAS	n/a	2,800'	3	Unknown

Source: Data from https://www.airportiq5010.com/5010web/
Driving time from www.googlemaps.com based on leaving 81B at 9:00AM



Source: Base map from https://app.traveltimeplatform.com/

Figure 2.4-1 60 Minute Drive Time Isochrone for Oxford County Regional Airport (81B)

2.5 MASTER PLAN FORECASTS FOR OXFORD COUNTY REGIONAL AIRPORT

2.5.1 ANNUAL OPERATIONS

During the planning process, there was discussion regarding approximately 10 additional aircraft owners who would readily base their aircraft at the Oxford County Regional Airport if hangar space were available. Such growth has not yet occurred, and it may or may not materialize eventually, but its possibility should be considered. As noted in Chapter 1 Inventory Section 1.6.1, the previous FBO ceased operations in 2014, and the number of annual operations decreased significantly with no FBO services being available at the airport. Mosher Aviation, LLC began providing FBO services at the airport in 2016, and the County began selling 100LL Avgas fuel in May 2016. Fuel sales have increased significantly since then as shown on Table 2.5.1-1.

Table 2.5.1-1 Recent Annual Fuel Sales

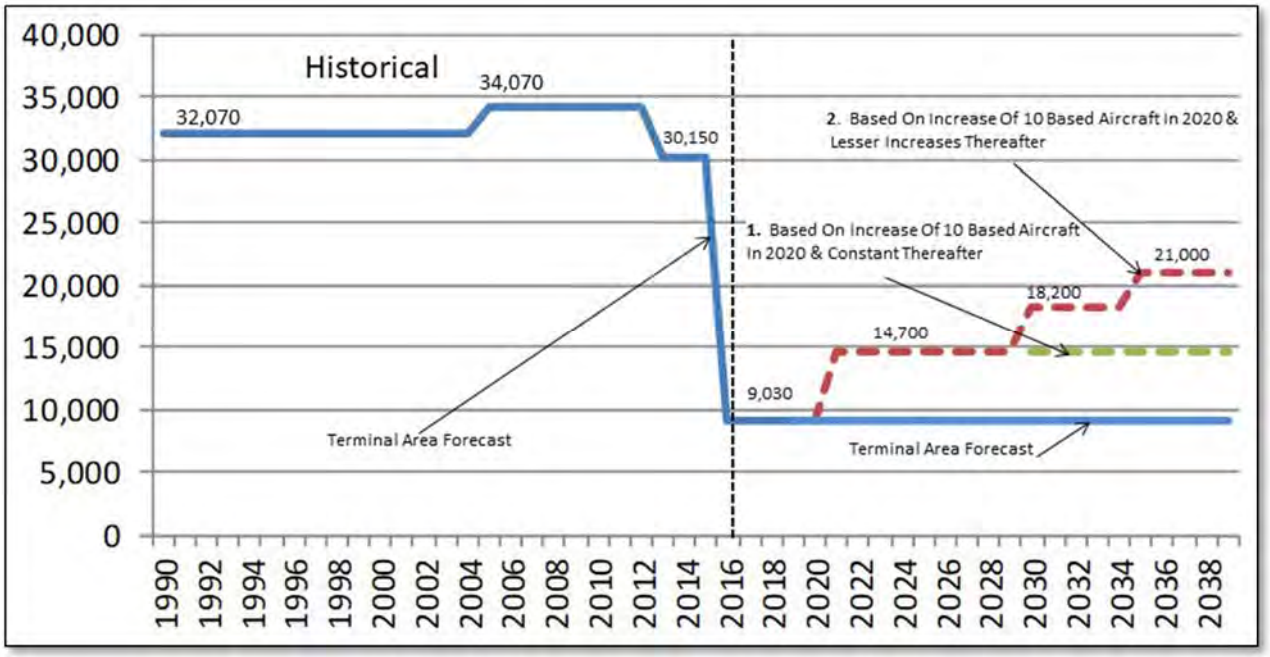
Year	Months Included in Fuel Records	Gallons Sold	Pro-Rated Annual Gallons Sold	Annual Increase
2016	May – December (6)	3,534	7,069	n/a
2017	January – December (12)	7,882	7,882	11.5%
2018	January – December (12)	8,476	8,476	7.5%
2019	January – October (10)	10,902	13,082	54.3%

Source: Oxford County aviation fuel sales records

Figure 2.5.1-1 shows historical number of operations since 1990 and the TAF projection from Table 2.3-1 with two “growth” scenarios added.

Growth Scenario 1 assumes 10 additional based aircraft and resultant additional 5,670 operations by 2020 with no further changes in the long-term 20-year planning period.

Growth Scenario 2 assumes 10 additional based aircraft and an additional 5,670 operations in 2020 and two smaller increases of 3,500 and 2,800 operations later in the planning period. The projected annual operations are shown in Table 2.5.1-2.



Source: FAA TAF Summary Fiscal Years 2018-2045 and BACS analysis

Figure 2.5.1-1 Historical and Forecast Annual Operations

Table 2.5.1-2 Projected Annual Operations

Planning Years	Annual Operations
Terminal Area Forecast	
2019 - 2023	9,030
2024 - 2029	9,030
2030 - 2039	9,030
Growth Scenario 1	
2019 - 2023	14,700
2024 - 2029	14,700
2030 - 2039	14,700
Growth Scenario 2	
2019 - 2023	14,700
2024 - 2029	18,200
2030 - 2039	21,000

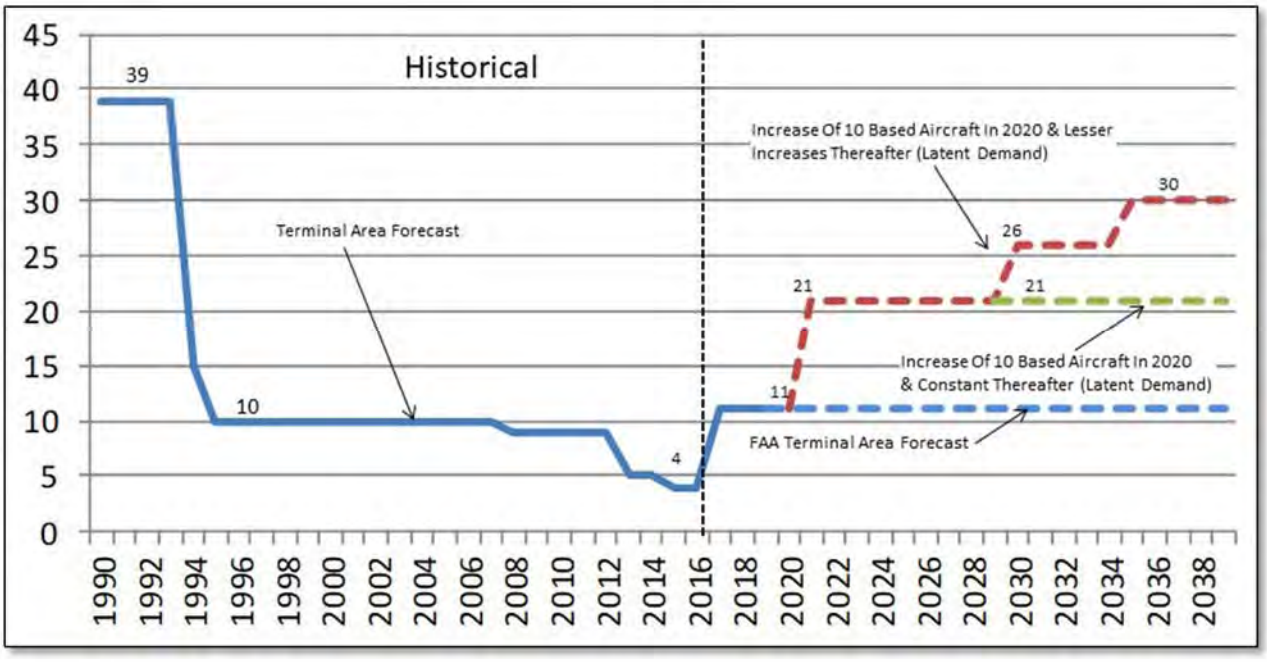
Source: FAA TAF Summary Fiscal Years 2018-2045 and BACS analysis

2.5.2 BASED AIRCRAFT FORECAST

Based aircraft are active general aviation aircraft that use an airport as a home base at least half of the year and are not registered at another airport. [1] An active aircraft is one that flies at least one hour during the year. As summarized in Chapter 1, there are currently 11 based aircraft registered at the Oxford County Regional Airport.

General aviation aircraft typically consist of single-engine or multi-engine aircraft with either piston engines or turbine engines. Fixed-wing piston aircraft comprise the largest segment of the general aviation aircraft fleet which also includes helicopters, experimental aircraft, light sport aircraft, gliders, and lighter-than-air aircraft.

Figure 2.5.2-1 shows historical number of based aircraft since 1990 and the TAF projection. Two "growth" scenarios were added. Growth Scenario 1 assumes 10 additional based aircraft in 2020 with no further changes in the period. [2] Growth Scenario 2 assumes 10 additional based aircraft in 2020 and two smaller increases of five and four late in the planning period. The based aircraft forecast results are shown in Table 2.5.2-1.



Source: FAA TAF Summary Fiscal Years 2018-2045 and BACS analysis

Figure 2.5.2-1 Historical and Forecast Based Aircraft

[1] For FAA purposes, "based aircraft" does not include light sport aircraft, or lighter than air aircraft.
[2] At a master plan review meeting on December 19, 2019 there were many of expressions of a desire for more individual hangars at the airport. Collectively, there was a desire for 10 more aircraft hangar spaces.

Table 2.5.2-1 Based Aircraft Forecast 2019 - 2039

Planning Period Years	Single Engine - Piston	Multi-Engine-Piston	Turbo-prop/Jet	Helicopter	Other	Total
Terminal Area Forecast						
2019 - 2023	9	2	0	0	0	11
2024 - 2029	9	2	0	0	0	11
2030 - 2039	9	2	0	0	0	11
Growth Scenario 1						
2019 - 2023	19	2	0	0	0	21
2024 - 2029	19	2	0	0	0	21
2030 - 2039	19	2	0	0	0	21
Growth Scenario 2						
2019 - 2023	19	2	0	0	0	21
2024 - 2029	22	3	1	0	0	26
2030 - 2039	25	3	1	1	0	30

Source: FAA TAF Summary Fiscal Years 2018-2045 and BACS analysis

2.5.3 RUNWAY END USE

The 2003 Airport Master Plan Update noted that the estimated runway end use was 80% for Runway 33 and 20% for Runway 15. In 2003, there was a published GPS nonprecision straight-in instrument approach procedure to the Runway 33 end. Since that time, a published GPS nonprecision straight-in procedure was added for the Runway 15 end.

The current FBO estimates that the Runway 33 end continues to be used most of the time. Therefore, this study will use the same runway end use estimates as the 2003 Airport Master Plan Update. The projected aircraft operations are summarized in Table 2.5.3-1.

Table 2.5.3-1 Projected Aircraft Operations per Runway End

Planning Period Years	Runway End	Runway 15	Runway 33
	Runway End Use	20%	80%
Terminal Area Forecast	Operations	Runway 15	Runway 33
2019 - 2023	9,030	1,810	7,220
2024 - 2029	9,030	1,810	7,220
2030 - 2039	9,030	1,810	7,220
Growth Scenario 1	Operations	Runway 15	Runway 33
2019 - 2023	14,700	2,940	11,760
2024 - 2029	14,700	2,940	14,700
2030 - 2039	14,700	2,940	14,700
Growth Scenario 2	Operations	Runway 15	Runway 33
2019 - 2023	14,700	2,940	11,760
2024 - 2029	18,200	3,640	14,560
2030 - 2039	21,000	4,200	16,800

Source: 2003 Airport Master Plan Update and BACS analysis

2.5.4 LOCAL - ITINERANT AND AIRCRAFT TYPE OPERATIONS

The current FBO estimates that local and itinerant operations for the Oxford County Regional Airport were at 20% and 80% respectively, which is close to the previous FBO's estimate of 25% and 75% in the 2003 Airport Master Plan Update. The FAA TAF data reflects a split of 67% and 33% for local and itinerant operations.

The FAA defines local operations as operations performed by aircraft that:

- Operate in the local traffic pattern or within sight of the airport;
- Are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the airport; or
- Are executing simulated instrument approaches or low passes at the airport

According to the FAA, itinerant operations are considered to be all operations (general aviation, military, air carrier, or air taxi) other than those listed above. All operations at the Oxford County Regional Airport are general aviation. There are no military or air carrier operations; and there are approximately four to five air taxi (i.e. charter) operations per year. The share of air taxi operations could possibly increase with outreach and joint marketing efforts with the local attractions in the area.

The current FBO estimate of the local - itinerant split is used for this study. Assuming no change in the local - itinerant split or the share of operations by type of operation, the projected operations are shown in Table 2.5.4-1.

Table 2.5.4-1 Local - Itinerant and Aircraft Type Operations

Planning Period Years	Itinerant Operations					Local Operations			Total Operations
	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	
Terminal Area Forecast/Master Plan Forecast [1]									
2019 - 2023	0	30	7,190	0	7,220	1,810	0	1,810	9,030
2024 - 2029	0	30	7,190	0	7,220	1,810	0	1,810	9,030
2030 - 2039	0	30	7,190	0	7,220	1,810	0	1,810	9,030
Growth Scenario 1 [2]									
2019 - 2023	0	10	11,750	0	11,760	2,940	0	2,940	14,700
2024 - 2029	0	10	11,750	0	11,760	2,940	0	2,940	14,700
2030 - 2039	0	10	11,750	0	11,760	2,940	0	2,940	14,700
Growth Scenario 2 [2]									
2019 - 2023	0	10	11,750	0	11,760	2,940	0	2,940	14,700
2024 - 2029	0	15	14,545	0	14,560	3,640	0	3,640	18,200
2030 - 2039	0	20	16,780	0	16,800	4,200	0	4,200	21,000

1/ Reflects the local and itinerant split of 67% - 33% from the FBO to TAF projection of annual operations.
2/ Reflects the local and itinerant split estimate of 20% - 80% from the FBO.

Source: FAA TAF Summary Fiscal Years 2018-2045 and BACS analysis

2.5.5 TOUCH-AND-GO OPERATIONS

The FBO estimates that approximately 25% of current local operations are touch-and-go operations. This indicates a relatively high level of pilot training. Table 2.5.5-1 shows the projected number of touch-and-go operations for the Oxford County Regional Airport.

Table 2.5.5-1 Projected Touch-and-Go Operations

Year	Percent of Total	Touch-and-Go Operations	Total Local Operations
Terminal Area Forecast/Master Plan Forecast [1]			
2019 - 2023	25%	452	1,810
2024 - 2029	25%	452	1,810
2030 - 2039	25%	452	1,810
Growth Scenario 1 [2]			
2019 - 2023	25%	740	2,940
2024 - 2029	25%	740	2,940
2030 - 2039	25%	740	2,940
Growth Scenario 2 [2]			
2019 - 2023	25%	740	2,940
2024 - 2029	25%	910	3,640
2030 - 2039	25%	1,050	4,200

1/ Reflects the local and itinerant split estimate of 20%/80% from the FBO.
2/ Reflects the local and itinerant split estimate of 20%/80% from the FBO.

Source: FAA TAF Summary Fiscal Years 2018-2045 and BACS analysis

2.5.6 OPERATIONS BY TYPE AIRCRAFT

There are no records maintained for operations at the Oxford County Regional Airport by type aircraft (e.g. single-engine piston, multi-engine piston, turboprop, jet, or helicopter), and this is typical at comparable airports.

The current FBO estimates that nearly all local operations are single-engine piston aircraft and that itinerant operations by aircraft type are:

- Single-Engine Piston: The remainder of Itinerant operations.
- Multi-Engine Piston: Two per month.
- Turboprop: Mostly charter. A single-engine PC-12 charter occurred about once per year.
- Jet: Two in the last three years.
- Helicopter: One every two years for service.

Based on the FBO's estimate and a review of based aircraft type, the following is the estimate of existing annual operations by type aircraft by numbers of operations and share of Local or Itinerant operations:

- Local Operations: 1,810 (100.00%)
  - Single-Engine Piston: 1,806 (99.78%)
  - Multi-Engine Piston: 4 (0.22%)
- Itinerant Operations: 7,220 (100.00%)
  - Single-Engine Piston: 7,164 (99.22%)
  - Multi-Engine Piston: 48 (0.66%)
  - Turboprop: 4 (0.06%).
  - Jet: 2 (0.03%)
  - Helicopter: 2 (0.03%)

The above shares were applied to the projected numbers of local and itinerant operations. However, the share of multi-engine piston operations of local operations for the 2024 – 2029 period and the 2030 – 2039 period were doubled because the number of multi-engine piston aircraft is projected to increase in these periods for Growth Scenario 2. The results are shown in Table 2.5.6-1.

Next, the numbers in Table 2.5.4-1 were combined by type aircraft to show the numbers of total annual operations by type aircraft, with the results shown in Table 2.5.6-2. The numbers are rounded to the whole number which infers a level of accuracy that is not present, but which is used here because a number of turboprop, jet, helicopter and some multi-engine operations are less than 10.

Table 2.5.6-1 Annual Operations by Type Aircraft (Local and Itinerant Operations)

Planning Period Years	Itinerant						Local			Total Operations
	Single Engine Piston	Multi Engine Piston	Turboprop	Jet	Helicopter	Itinerant Total	Single Engine Piston	Multi Engine Piston	Local Total	
Terminal Area Forecast [1]										
2019 - 2023	7,164	48	4	2	2	7,220	1,806	4	1,810	9,030
2024 - 2029	7,164	48	4	2	2	7,220	1,806	4	1,810	9,030
2030 - 2039	7,164	48	4	2	2	7,220	1,806	4	1,810	9,030
Growth Scenario 1										
2019 - 2023	11,669	78	7	3	3	11,760	2,934	6	2,940	14,700
2024 - 2029	11,669	78	7	3	3	11,760	2,934	6	2,940	14,700
2030 - 2039	11,669	78	7	3	3	11,760	2,934	6	2,940	14,700
Growth Scenario 2										
2019 - 2023	11,669	78	7	3	3	11,760	2,934	6	2,940	14,700
2024 - 2029	14,447	97	8	4	4	14,560	3,624	16	3,640	18,200
2030 - 2039	16,699	112	9	5	5	16,800	4,182	18	4,200	21,000

Note: Numbers are rounded to the whole number. This infers a level of accuracy that is not present but is used because a number of turboprop, jet, helicopter and some multi-engine operations are less than 10.

1/ The FBO estimate of Local - Itinerant split is used rather than the split reflected in the TAF data.

Source: BACS analysis

Table 2.5.6-2 Annual Operations By Type Aircraft (Total Operations)

Year	Single Engine–Piston	%	Multi-Engine Piston	%	Turbo-prop	%	Jet	%	Helicopter	%	Total Operations
Terminal Area Forecast [1]											
2019 - 2023	8,970	99.34%	52	0.58%	4	0.04%	2	0.02%	2	0.02%	9,030
2024 - 2029	8,970	99.34%	52	0.58%	4	0.04%	2	0.02%	2	0.02%	9,030
2030 - 2039	8,970	99.34%	52	0.58%	4	0.04%	2	0.02%	2	0.02%	9,030
Growth Scenario 1											
2019 - 2023	14,603	99.34%	84	0.57%	7	0.05%	3	0.02%	3	0.02%	14,700
2024 - 2029	14,603	99.34%	84	0.57%	7	0.05%	3	0.02%	3	0.02%	14,700
2030 - 2039	14,603	99.34%	84	0.57%	7	0.05%	3	0.02%	3	0.02%	14,700
Growth Scenario 2											
2019 - 2023	14,602	99.34%	85	0.62%	7	0.04%	3	0.02%	3	0.02%	14,700
2024 - 2029	18,071	99.29%	113	0.62%	8	0.04%	4	0.02%	4	0.02%	18,200
2030 - 2039	20,851	99.29%	130	0.62%	10	0.05%	5	0.02%	5	0.02%	21,000

Note: Numbers are rounded to the whole number. This infers a level of accuracy that is not present but is used because a number of turboprop, jet, helicopter and some multi-engine operations are less than 10.

1/ The FBO estimate of Local - Itinerant split is used rather than the split reflected in the TAF data.

Source: BACS analysis

2.5.7 NIGHTTIME - DAYTIME OPERATIONS

The 2003 Airport Master Plan Update estimated that 5% of total operations were conducted during nighttime hours between 10 PM and 7 AM. The results of applying that same factor to the projected operations are summarized in Table 2.5.7-1.

Table 2.5.7-1 Projected Operations (Nighttime Versus Daytime Operations)

Nighttime (10 PM - 7 AM)			Daytime (7 AM - 10 PM)		
Year	Percent of Total	Operations	Percent of Total	Operations	Total Operations
Terminal Area Forecast/Master Plan Forecast					
2019 - 2023	5%	450	95%	8,580	9,030
2024 - 2029	5%	450	95%	8,580	9,030
2030 - 2039	5%	450	95%	8,580	9,030
Growth Scenario 1					
2019 - 2023	5%	730	95%	13,970	14,700
2024 - 2029	5%	730	95%	13,970	14,700
2030 - 2039	5%	730	95%	13,970	14,700
Growth Scenario 2					
2019 - 2023	5%	730	95%	13,970	14,700
2024 - 2029	5%	910	95%	17,290	18,200
2030 - 2039	5%	1,050	95%	19,950	21,000

Source: 2003 Airport Master Plan Update and BACS analysis

2.5.8 VISUAL FLIGHT RULES - INSTRUMENT FLIGHT RULES OPERATIONS

The 2003 Airport Master Plan Update estimated that visual flight rules (VFR) operations comprised 97% of total operations. The results of applying that same factor to the projected operations are summarized in Table 2.5.8-1.

Table 2.5.8-1 Projected Operations (VFR versus IFR)

	VFR		IFR		
Year	Percent of Total	Operations	Percent of Total	Operations	Total Operations
Terminal Area Forecast					
2019 - 2023	97%	8,760	3%	270	9,030
2024 - 2029	97%	8,760	3%	270	9,030
2030 - 2039	97%	8,760	3%	270	9,030
Growth Scenario 1					
2019 - 2023	97%	14,260	3%	440	14,700
2024 - 2029	97%	14,260	3%	440	14,700
2030 - 2039	97%	14,260	3%	440	14,700
Growth Scenario 2					
2019 - 2023	97%	14,260	3%	440	14,700
2024 - 2029	97%	17,650	3%	550	18,200
2030 - 2039	97%	20,370	3%	630	21,000

Source: 2003 Airport Master Plan Update and BACS analysis

2.6 CRITICAL AIRCRAFT

Airports need to be developed and maintained according to the characteristics of the most demanding aircraft that is expected to use the airport on a regular basis. The aircraft with the most critical approach speed and wingspan and the number of annual operations determines the most demanding aircraft. The FAA defines a "regular basis" as at least 500 operations per year. This aircraft is referred to as the "critical aircraft." The FAA, in current Advisory Circular (AC) 150/5300-13A *Airport Design* has established the Airport Reference Code (ARC) as the method of determining airport design criteria. The FAA airport design criteria is based on the critical aircraft's approach speed and wingspan, as follows:

Aircraft Approach Category (AAC)

Category A	Speed less than 91 knots
Category B	Speed 91 knots or more but less than 121 knots
Category C	Speed 121 knots or more but less than 141 knots
Category D	Speed 141 knots or more but less than 166 knots
Category E	Speed 166 knots or more

Airplane Design Group (ADG)

Group I	Wingspan up to but not including 49 feet
Group II	49 feet up to but not including 79 feet
Group III	79 feet up to but not including 118 feet
Group IV	118 feet up to but not including 171 feet
Group V	171 feet up to but not including 214 feet
Group VI	214 up to but not including 262 feet

Taxiway Design Group (TDG)

The taxiway design group (TDG) relates to the undercarriage dimensions of the aircraft. The taxiway/taxilane width and pavement edge fillet standards, and in some instances, the runway to taxiway and taxiway/taxilane separation requirements, are determined by TDG.

The *1995 Airport Layout Plan (ALP) Update* completed by Oest Associates, Inc. identified the airport design code for the Oxford County Regional Airport as B-I based on the twin-engine Cessna 310 as the critical aircraft having an approach speed of 95 knots and a wingspan of 36 feet.

The *Oxford County Regional Airport Runway Extension Study*, completed by Washington Infrastructure Services, Inc. identified the airport design code for the Oxford County Regional Airport as B-II in order to accommodate the increased operations by larger aircraft which it forecasted would occur if the runway were extended. The Cessna Citation II jet was chosen as the design aircraft having an approach speed of 108 knots and a wingspan of 52 feet.

The focus of the 2003 Airport Master Plan Update was to meet the aviation demand within the constraints of existing facilities based on review of the aircraft fleet mix in the *FAA Aerospace Forecasts, Fiscal Years 2002-2013* which projected a strong growth in jet aircraft. The 2003 AMPU noted that although jet aircraft activity did not occur at the Oxford County Regional Airport on a "regular basis", small jet aircraft occasionally utilized the airport and were anticipated to do so in the future. Also, a jet aircraft was projected to be based at the airport. The 2003 AMPU included a comparison of the FAA design criteria

for B-I versus B-II aircraft to accommodate a potential change to B-II and, thus, a change to small jet aircraft. However, the 2003 AMPU ultimately recommended to maintain the critical aircraft type as B-I due to:

1. the speculative nature of small business jets becoming the critical aircraft, and
2. changing to B-II would increase the runway centerline distance to an aircraft parking area from 200 feet to 250 feet which would cause the loss of 17 existing tiedown spaces along the easterly edge of the terminal apron.

As indicated in Chapter 1 Inventory Table 3.4-2, the Oxford County Regional Airport has 11 based aircraft including two twin-engine piston aircraft; ten of the based aircraft are A-I and one is A-II. A review of Table 2.5.6-2 shows that the number of multi-engine piston, turboprop, and jet annual operations may increase up to 130, 10, and 5 respectively for a total of 145 annual operations.

A review of the current FAA Aircraft Characteristics Database indicates that:

- Most small twin-engine-piston aircraft are ARC B-I with a few being ARC A-1
- Most turboprop aircraft are AAC B with about half as many being A-I
- Most jet aircraft are B-II or larger, but most of the Beechjets, small Cessna jets, and small Embraer Phenom jets are B-I

There is projected to be an increase in the share and number of B-I operations but not at the level of 500 annual operations.

Therefore, the based Cessna 401A (Airport Reference Code A-I) is determined to be the existing Critical Aircraft to represent the group of aircraft that can reasonably be expected to regularly utilize the airport.

2.7 FUEL FLOWAGE

Fuel sales can be an indication of growth at an airport, and they can identify the rates of growth occurring in the turbine aircraft sector (i.e. as indicated by jet fuel sales) and in the single-engine piston and multi-engine piston sectors (i.e. as indicated by 100 LL Avgas sales). Recent fuel sales at the Oxford County Regional Airport are shown in Table 2.5.1-1. The sale of Jet-A fuel had been provided in the past by the previous FBO, but only Avgas is currently being sold at the airport primarily due to the low levels of turbine aircraft activity. If it is determined that the sale of Jet A fuel would be feasible at the airport, then the existing Jet A fuel tank equipment can be utilized.

Despite relatively consistent levels of aircraft activity in recent years, fuel sales at the airport have increased substantially such that the recent growth rate in fuel sales should not be expected to continue through the future. In 2019, 100 LL Avgas fuel sales were approximately 13,000 gallon compared to 9,030 annual operations which yields an average of 1.44 gallons per operation. Applying the 1.44 factor to the projected annual operations results in the fuel sales projections summarized in Table 2.7-1.

Table 2.7-1 Fuel Flowage Projections

Year	Annual Operations	100 LL Avgas Yearly Total (In gallons)
Terminal Area Forecast		
2019 - 2023	9,030	13,000
2024 - 2029	9,030	13,000
2030 - 2039	9,030	13,000
Growth Scenario 1		
2019 - 2023	14,700	21,170
2024 - 2029	14,700	21,170
2030 - 2039	14,700	21,170
Growth Scenario 2		
2019 - 2023	14,700	21,170
2024 - 2029	18,200	26,210
2030 - 2039	21,000	30,240

Source: BACS Analysis

2.8 FORECAST SUMMARY

Based on the preceding analyses, Tables 2.8-1, 2.8-2, and 2.8-3 summarize the forecasts for the FAA TAF Forecast, Growth Scenario 1, and Growth Scenario 2 respectively. These forecasts are an integral part of the planning process, and they are the basis for determining the airport's facility requirements to accommodate future needs and development at the Oxford County Regional Airport.

Table 2.8-1 Forecast Summary – Based on FAA Terminal Area Forecast

Forecast Activity Element	2019 - 2023	2024 - 2029	2030 - 2039
Based Aircraft:			
Single-Engine Piston	9	9	9
Multi-Engine Piston	2	2	2
Turboprop/Jet	0	0	0
Helicopter	0	0	0
Other	0	0	0
Total Based Aircraft	11	11	11
Annual Operations:			
Total Annual Operations	9,030	9,030	9,030
Local/Itinerant Operations:			
Local	1,810	1,810	1,810
Itinerant	7,270	7,220	7,220
Touch-and-Go Operations•	452	452	452
Night/Day Operations:			
Nighttime	450	450	450
Daytime	8,580	8,580	8,580
VFR Operations:	8,760	8,760	8,760
IFR Operations:	270	270	270
Critical Aircraft:	Multi-Engine Piston	Multi-Engine Piston	Multi-Engine Piston
Airport Reference Code (ARC)	A-I	A-I	A-I
Fuel Sales:			
Jet A (gallons)	0	0	0
100 LL Avgas (gallons)	13,000	13,000	13,000

Source: BACS analysis

Table 2.8-2 Forecast Summary – Based on Growth Scenario 1

Forecast Activity Element	2019 - 2023	2024 - 2029	2030 - 2039
Based Aircraft:			
Single-Engine Piston	19	19	19
Multi-Engine Piston	2	2	2
Turboprop/Jet	0	0	0
Helicopter (HE)	0	0	0
Other	0	0	0
Total Based Aircraft	21	21	21
Annual Operations:			
Total Annual Operations	14,700	14,700	14,700
Local/Itinerant Operations:			
Local	2,940	2,940	2,940
Itinerant	11,760	11,760	11,760
Touch-and-Go Operations•	740	740	740
Night/Day Operations:			
Nighttime	730	730	730
Daytime	13,970	13,970	13,970
VFR Operations:	14,260	14,260	14,260
IFR Operations:	440	440	440
Critical Aircraft:	Multi-Engine Piston	Multi-Engine Piston	Multi-Engine Piston
Airport Reference Code (ARC)	A-I	A-I	A-I
Fuel Sales:			
Jet A (gallons)	0	0	Possible Need
100 LL Avgas (gallons)	21,170	21,170	21,170

Source: BACS analysis

Table 2.8-3 Forecast Summary – Based on Growth Scenario 2

Forecast Activity Element	2019 - 2023	2024 - 2029	2030 - 2039
Based Aircraft:			
Single-Engine Piston	19	22	25
Multi-Engine Piston	2	3	3
Turboprop/Jet	0	1	1
Helicopter (HE)	0	0	1
Other	0	0	0
Total Based Aircraft	21	26	30
Annual Operations:			
Total Annual Operations	14,700	18,200	21,000
Local/Itinerant Operations:			
Local	11,760	14,560	16,800
Itinerant	2,940	3,640	4,200
Touch-and-Go Operations•	740	910	1,050
Night/Day Operations:			
Nighttime	13,970	17,290	1,050
Daytime	13,970	17,290	19,950
VFR Operations:	14,260	17,650	19,950
IFR Operations:	440	550	630
Critical Aircraft:	Multi-Engine Piston	Multi-Engine Piston	Multi-Engine Piston
Airport Reference Code (ARC)	A-I	B-I	B-I
Fuel Sales:			
Jet A (gallons)	0	Possible Need	Possible Need
100 LL Avgas (gallons)	21,170	26,210	30,240

Source: BACS analysis

CHAPTER 3

~ CHAPTER 3 ~
FACILITY REQUIREMENTS

3.1 GENERAL

An inventory of airport facilities and the projections of aviation activity at the Oxford County Regional Airport were presented in *Chapter 1 Inventory* and *Chapter 2 Aviation Forecasts*, respectively. The inventory and forecasts serve as the basis for planning the facilities needed to meet the Airport's aviation demand. The purpose of this chapter is to determine the capability of the Airport's existing facilities to meet existing levels of demand, and then to determine the capability of those existing facilities to meet projected demand. Facility replacement, enhancement, and/or addition will be recommended where existing or projected demand is not accommodated, and facility surpluses if any will be noted.

As in the Airport Master Plan Update (AMPU) that was finalized in 2007, the Airport's operational capacity levels as calculated in the Federal Aviation Administration (FAA) *Capacity Manual* are not an issue at current and future operations levels.

The following elements were examined, as they are key elements of an airport's development:

- Facility Requirements
  - Airside
  - Landside
- Snow Removal Equipment Requirements

3.2 FACILITY REQUIREMENTS

This section analyzes airside and landside facility requirements for the Oxford County Regional Airport. Airside facilities are analyzed in terms of airport design criteria (i.e. runway design criteria, runway length, width, strength, pavement condition, pavement marking, separation distances, and taxiway design standards). Visual and navigational aids, runway approach types, and airside obstructions are also analyzed. Landside facilities examined include terminal facilities, airport directional signage, aircraft storage hangars, aircraft tiedown parking, aprons, automobile parking, aircraft fueling facilities, airport security, and perimeter fencing.

Subsequent chapters will review methods and make recommendations for airside and landside layout options to upgrade facilities identified in this chapter to meet FAA and local design criteria, projected activity levels and the goals and objectives of the Oxford County Commissioners and the Planning Advisory Committee (PAC).

3.3 AIRSIDE REQUIREMENTS

The following sections examine the ability of the airport's airside facilities to accommodate projected activity levels. These airside facilities include runways and their related elements.

3.3.1 AIRPORT DESIGN CRITERIA

Chapter 2 Aviation Forecasts discussed critical aircraft. The Inventory chapter noted that at present, there are 11 based aircraft, two of which are multi-engine piston. One of the multi-engine aircraft (i.e. the Cessna 401-A) is a Design Group A-I and the other (i.e. the Beechcraft G18S) is Design Group A-II. [1] The Beechcraft G18S has a maximum gross takeoff weight (MTOW) of 9,150 pounds. Runway 15-33 is a utility runway, which is a runway that is constructed for, and intended to be used by, propeller driven aircraft of 12,500 pounds maximum gross weight or less.

A review of FAA AC 150/5300-13A *Airport Design* shows that design criteria for A-I and B-I aircraft is identical. The design criteria that has been used at the Airport since it was established by the 2007 AMPU is B-I. Due to the decrease in operations from the 2007 timeframe, the design criteria for the current critical aircraft should be A-I.

Chapter 2 Aviation Forecasts described two growth scenarios. It is reasonable to expect that the numbers and percentages of twin-engine aircraft will increase in the future.

Table 3.3.1-1 shows that the design criteria is the same for A-I and B-I with the small aircraft designation as discussed in Chapter 2. [2] Figure 3.3.1-1 depicts the A-I/B-I (i.e. small aircraft) design criteria for the ROFZ, the ROFA, and runway holdline positions. The existing conditions at the Airport meet these criteria.

Figure 3.3.1-1 also depicts the same design criteria for Runway-to-Aircraft Parking Area showing that this criteria is also met by applying the small aircraft designation.

[1] FAA AC 150/5300-13A shows that the upper limit of Airplane Design Group "I" is 49 feet. The largest based Multi-Engine aircraft is A-II due to its wingspan of 49'-8".

[2] Small Aircraft are defined in FAA AC 150/5300-13A Paragraph 102 as "An aircraft with a maximum certificated takeoff weight of 12,500 lbs. (5670 kg) or less."

Table 3.3.1-1 Airport Design Criteria

Design Elements	Design Groups A-I and B-I Small Aircraft Design Criteria
Runway:	
Width	60’
Shoulder Width	10’
Crosswind Component	10.5 Knots
Runway Safety Area (RSA):	
Length Beyond Departure Runway End	240’
Length Prior to Threshold	240’
Width	120’
Runway Obstacle Free Zone (OFZ):	
Length Beyond Runway End	200’
Width	250’
Runway Object Free Area (OFA):	
Length Beyond Runway End	240’
Length Prior to Threshold	240’
Width	250’
Approach Runway Protection Zone (RPZ):	
Length	1,000’
Inner Width	250’
Outer Width	450’

Source: FAA Advisory Circular 150/5300-13A *Airport Design*

Table 3.3.1-1 Airport Design Criteria (Continued)

Design Elements	Design Groups A-I and B-I Small Aircraft Design Criteria
Taxiway/Taxilane:	
Width	25’
Taxiway Safety Area	49’
Taxiway Object Free Area	89’
Taxilane Object Free Area	79’
Taxiway Centerline to Fixed or Moveable Object	44.5’
Taxilane Centerline to Fixed or Moveable Object	39.5’
Taxiway Edge Safety Margin	49’
Taxiway Shoulder Width	10’
Taxilane Object Free Area Width	79’
Runway Separation Standards:	
Runway Centerline to Hold Line	125’
Runway Centerline to Taxiway/Taxilane Centerline	150’
Runway Centerline to Aircraft Parking Area	125’
Taxiway/Taxilane Separation Standards:	
Taxiway Centerline to Parallel Taxiway/Taxilane Centerline	70’
Taxiway Centerline to a Fixed or Moveable Object	44.5’
Taxilane Centerline to Parallel Taxilane Centerline	64’
Taxilane Centerline to a Fixed or Moveable Object	39.5’

Source: FAA Advisory Circular 150/5300-13A *Airport Design*



Figure 3.3.1-1 A-I/B-I Small Aircraft Design Criteria for ROFZ, ROFA and Holdlines-Aircraft Parking Area

Utilizing the small aircraft designation does not exclude A-I / B-I large aircraft [3] from operating at the airport. Because large aircraft are not expected to operate at the Airport at a minimum level of 500 operations per year, a large aircraft is not expected to become the critical aircraft. Therefore, applying the small aircraft A-I / B-I design criteria will not restrict operations at the Airport.

A review of the FAA Aircraft Characteristics Database shows 320 aircraft models that are either A-I or B-I. Of these 320 aircraft, only 21 models (6.6%) are large aircraft.

The Runway Design Code (RDC) would be A-I-5000 for:

- Approach speed less than 91 knots.
- Wingspan of less than 49 feet and tail height of less than 20 feet.
- Approach visibility of not less than one mile.

Taxiway design group (TDG) 1A is recommended based on the outer-to-outer main gear width (MGW) and the cockpit to main gear distance (CMG). [4] TDG 1A is recommended because:

- There are 278 aircraft listed as RDC A-I or B-I and TDG-1A, 1B, or 2 of which only 12 are TDG-2, mostly turboprops that infrequently operate at the Airport.

[3] Large Aircraft are defined in AC 150/5300-13A Paragraph 102 as "An aircraft with a maximum certificated takeoff weight of more than 12,500 lbs"

[4] FAA AC 150/5300-13A *Airport Design*.

- There are only 10 TDG-2 aircraft (most popular of which are the Falcon 10 and Phenom 100 jets) with the remaining 256 aircraft being TDG-1A.

The Approach Reference Code (APRC) as stated in FAA AC 150/5300-13A is "a code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to landing operations." It is determined by the Runway Design Code and the current centerline separation between a runway and a parallel taxiway.

- Runway Design Code of A-I-5000
- Runway 15-33 separation with the current apron taxilane of 220 feet.
- The resultant APRC is B/I/(S)/5000. However, the criteria for A-I and B-I aircraft are the same in Table 3-7 in the AC so only Aircraft Approach Category "B" is shown in Table 3-7 in the AC.

The Departure Reference Code (DPRC) as stated in FAA AC 150/5300-13A "represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under particular meteorological conditions with no special operational procedures necessary." The DPRC is similar to the APRC, but it does not include approach visibility minima. The DPRC is based on the Aircraft Approach Category and the Airplane Design Group from Table 3-8 in the AC.

- Airport Approach Category "A". Since AAC "A" and "B" are the same in this instance, criteria for "A" is not shown in Table 3-7 of the AC.
- Runway 15-33 separation with the current apron taxilane of 220 feet.
- The resultant DPRC is A/I/(S).

3.3.2 Runway Length

A runway extension study was prepared by Washington Infrastructure Services, Inc. and discussed in detail in Chapter 3 Paragraph 2.12 of the 2007 Airport Master Plan Update and in its Appendix A. The findings of the 2007 planning process included a determination that the existing 3,000-foot runway length was adequate to accommodate the fleet of aircraft that was forecasted to utilize the airport's existing facilities. Consequently, a runway extension was not justified.

Similarly, because the existing 3,000-foot runway remains adequate to accommodate the current aviation forecast, a runway extension is not being considered in this AMPU.

3.3.3 Runway Width

As indicated in Table 3.3.1-1, a minimum runway pavement width of 60 feet is required for A-I / B-I ARC design criteria. The current runway width of 75 feet for Runway 15-33 exceeds the minimum design criteria. The runway was originally constructed in 1973 at 75 feet wide under the FAA ADAP program, and it was reconstructed in 2009 at 75 feet wide under the AIP program.

Because there is no crosswind runway available at the Airport, the recommendation is to maintain the 75-foot width to allow a modest safety margin during crosswind landings and takeoffs. The additional 15 feet would benefit small single-engine piston aircraft which are more susceptible to crosswinds and which are the majority of aircraft using the airport.

3.3.4 RUNWAY PAVEMENT STRENGTH AND LOAD BEARING CAPACITY

An airport pavement is a complex engineering structure that is designed and constructed to provide adequate support for the loads imposed by airplanes and airport maintenance vehicles and equipment. Flexible pavement design for small aircraft (i.e. less than 12, 500 pounds) involves the interaction of four components: the subgrade (naturally occurring soil), the paving materials (surface layer, base, and subbase), the characteristics of applied loads (aircraft and vehicles), and climate.

The aircraft types and the critical aircraft that are expected to regularly use the airport determine the required pavement strength, or the load bearing capacity, of airport pavements. Pavement design and load distribution assumptions can be found in FAA AC 150/5320-6 Airport Pavement Design and Evaluation which states that pavement should be designed for the maximum anticipated takeoff weight of the design aircraft.

The Runway 15-33 pavement was reconstructed in 2009 based on the Cessna 310 which has a single wheel landing gear configuration and a maximum takeoff weight of 5,500 pounds. However, the snow removal equipment and vehicles that are used at the Oxford County Regional Airport weigh considerably more than the general aviation aircraft that are anticipated to use the pavements. Consequently, the airport pavements must be designed and constructed to accommodate the heavier vehicles. Frost must also be considered when designing airport pavements

The resulting pavement design yields a pavement structure that can support heavy equipment and vehicles. Because snow removal equipment have many wheels, which are much larger than aircraft wheels, the resulting wheel loads that are imparted onto the pavement are equivalent to the wheel loads that are imparted by a 25,000 pound single wheel aircraft.

The runway pavement structure reconstructed in 2010 consists of 3 inches of bituminous concrete pavement surface and 6 inches of crushed aggregate base on the existing granular subbase material. The Runway 15-33 pavement structure is capable of supporting single wheel aircraft loads up to 25,000 pounds. The runway pavement is not designed to support dual wheel landing gear aircraft or dual tandem wheel aircraft both of which are large heavy aircraft that will not utilize the runway. Table 3.3.4-1 summarizes the load bearing capacity for Runway 15-33.

Table 3.3.4-1 Oxford Count Regional Airport Runway Load Bearing Capacity

Runway	Single Wheel (SWL)	Dual Wheel (DWL)	Dual Tandem Wheel (DTW)
15-33	25,000 lbs	N/A	N/A

Source: FAA Form 5010 *Airport Master Record*, and the 1991 Airport Master Plan

Because the critical design aircraft for Runway 15-33 remains the Cessna 310, the runway pavement structure is adequate to support future airplane loads. The critical aircraft is not necessarily the heaviest aircraft that may use the runway at Oxford County Regional Airport. Limited operations by aircraft that are heavier than the critical aircraft may be permissible assuming that the 3,000-foot runway length also accommodates such landings and takeoffs.

3.3.5 RUNWAY PAVEMENT CONDITION

The airport pavement condition is reported as a numerical designation from 1 to 100 called the pavement condition index (PCI). The PCI range indicates the runway's relative condition as presented in Table 3.3.5-1.

Table 3.3.5-1 Typical PCI Legend

PCI Range	Pavement Condition
86-100	Good
71-85	Satisfactory
56-70	Fair
41-55	Poor
26-40	Very Poor
11-25	Serious
0-10	Failed

Source: PAVER Version 7.0.8 User Manual

After Runway 15-33 was reconstructed in 2010, the Maine DOT completed runway pavement condition index surveys at the Oxford County Regional Airport in 2012, 2014, 2016, and 2018 as summarized in Table 3.3.5-2. In 2018, PCI surveys were also conducted on the taxiways, turnarounds and apron.

Table 3.3.5-2 Runway 15-33 PCI Survey Results

Year	PCI
2010	100
2012	100
2014	100
2016	97
2018	88
2020	87

Source: Maine DOT

Although the current condition of the runway is good, inevitable deterioration in the pavement will occur, and the 2018 survey projected the condition would decrease to satisfactory in 2020. The FAA estimates runway pavement to last 20 years with proper maintenance. Basic pavement maintenance practices

such as crack sealing and crack repairs should be sufficient maintenance to preserve the integrity of the runway.

3.3.6 RUNWAY SAFETY AREA

The runway safety area (RSA) is a graded, rectangular area, centered on the runway centerline, and extended beyond the runway ends and runway edges. The RSA should be capable of supporting airport mobile equipment, rescue equipment, and the occasional passage of aircraft under dry conditions. The RSA must be cleared, appropriately graded and drained. The RSA must be free of objects, except those that need to be located within the RSA due to their function such as runway and taxiway edge lights, airfield signs, and navigational aids. Any object located within the RSA higher than three inches must be installed on frangible supports, with the frangible point no higher than three inches above grade.

According to the A-I / B-I ARC design criteria, the FAA requires a safety area width of 120 feet and a length beyond the runway end of 240 feet. The maximum permissible longitudinal grade requirement for the first 200 feet of the RSA beyond the runway ends is between 0 and 3 percent sloping downward. The downward grade ensures that no part of the RSA penetrates the approach surface for that runway. The maximum permissible longitudinal grade for the remainder of the safety area is a downward slope of 5 percent.

The Runway 15-33 RSAs were regraded in 2010 as part of the runway reconstruction project to comply with these requirements. The outline of the Runway 15-33 safety area is depicted in Figure 3.3.6-1.



Figure 3.3.6-1 Runway Safety Area

3.3.7 Runway Obstacle Free Zone and Runway Object Free Area

The runway obstacle free zone (OFZ) is defined as a volume of airspace centered above the runway centerline. Taxiing and parked aircraft are precluded from the OFZ which must remain free of obstacles and penetrations except for objects that need to be located within the OFZ due to their function such as edge lights and signs. With the small aircraft designation, the airport meets the A-I / B-I OFZ design criteria of a width of 250 feet (i.e. 125 feet either side of runway centerline) and a length of 200 feet beyond each runway end.

The runway object free area (OFA) requires clearing of above ground objects that protrude above the RSA elevation except for airfield equipment such as lights and signs. With the small aircraft designation, the airport meets the A-I / B-I design criteria of a width of 250 feet (i.e. 125 feet either side of runway centerline) and 240 feet beyond runway end. The ROFA is depicted in Figure 3.3.1-1.

3.3.8 Runway Holdlines

Runway holdlines are comprised of double solid and double dashed painted yellow lines. The solid lines are nearest the runway. Runway holdlines indicate where an aircraft can hold without affecting other aircraft that are on approach, landing, or taking off.

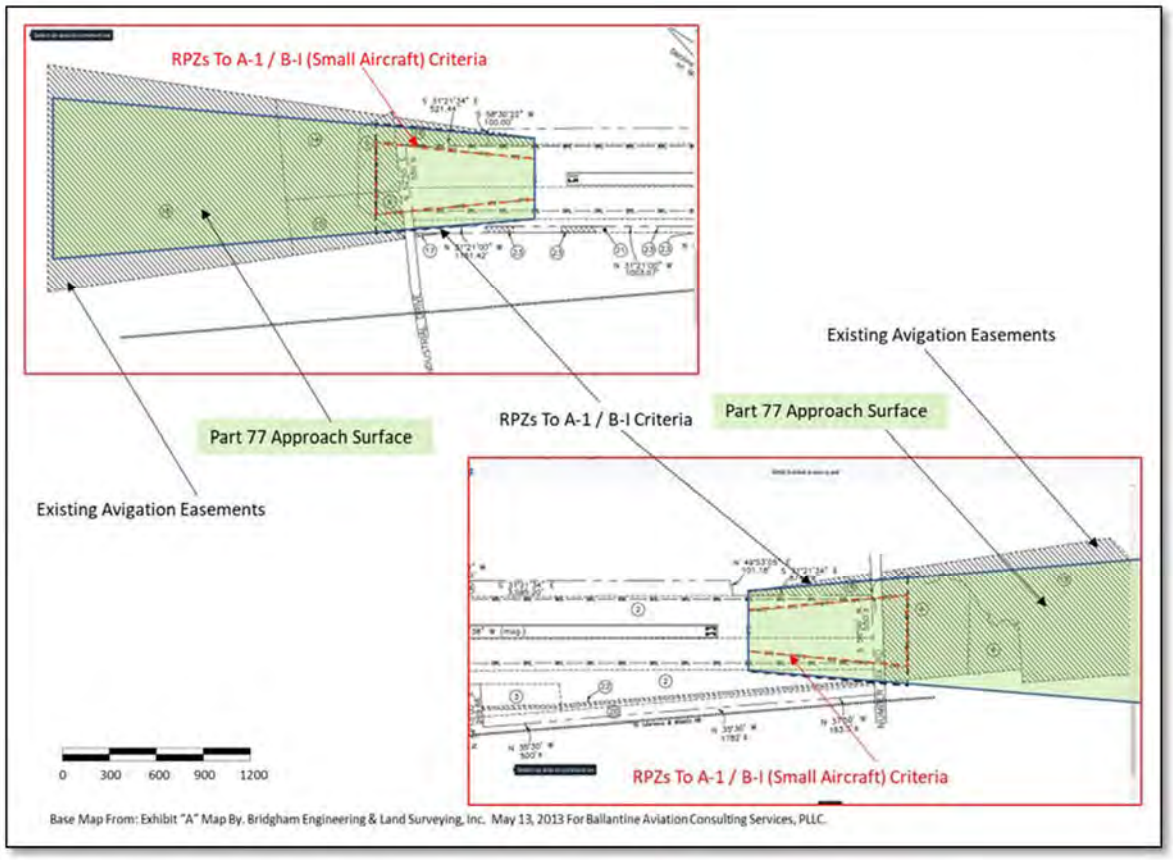
The Runway 15-33 holdlines on Taxiway A, Taxiway B, and the turnarounds at the runway ends are located 125 feet from the runway centerline, and their locations meet the A-I / B-I criteria with the small aircraft designation.

3.3.9 Runway Protection Zone

The runway protection zone (RPZ) is a trapezoidal surface centered on the extended runway centerline and beginning 200 feet from the end of the runway pavement. For public safety, FAA AC 150/5300-13A, *Airport Design,* recommends that certain land uses, such as residences and buildings used for public assembly, should be prohibited within the RPZ. Also recommended is the exclusion of land uses that attract wildlife into the RPZ. If the RPZ extends onto land that is not owned or controlled by the airport, then the airport should either acquire the property or acquire easements that allow the airport to control the land uses and heights of objects within the RPZ.

Runway 15 and Runway 33 are non-precision instrument runways with visibility minima of not less than one mile. The Runway 15-33 RPZ dimensions that were established in the 2007 AMPU were based on B-I aircraft and have an inner width of 500 feet, an outer width of 700 feet, and a length of 1,000 feet. The recommended RPZ dimensions for the A-I / B-I small aircraft designation have an inner width of 250 feet, an outer width of 450 feet, and a length of 1,000 feet. The existing and recommended RPZs are depicted on Figure 3.3.9-1.

Within the Runway 15 RPZ, the airport property extends northerly to the southerly side of the Industrial Drive right-of-way. Within the Runway 33 RPZ, the airport property extends southerly to the northerly side of the Town Road Number Six right-of-way. The County of Oxford owns avigation easements for the both the A-I / B-I and the A-I / B-I (Small Aircraft) RPZs where they extend beyond airport property line.



Source: Base Map from 2003 Airport Master Plan.

Figure 3.3.9-1 Runway Protection Zones

The design criteria for the FAR Part 77 approach surfaces are also shown on Figure 3.3.9-1.

As shown, the A-I / B-I small aircraft RPZs are entirely within the existing airport property or an existing airport avigation easement.

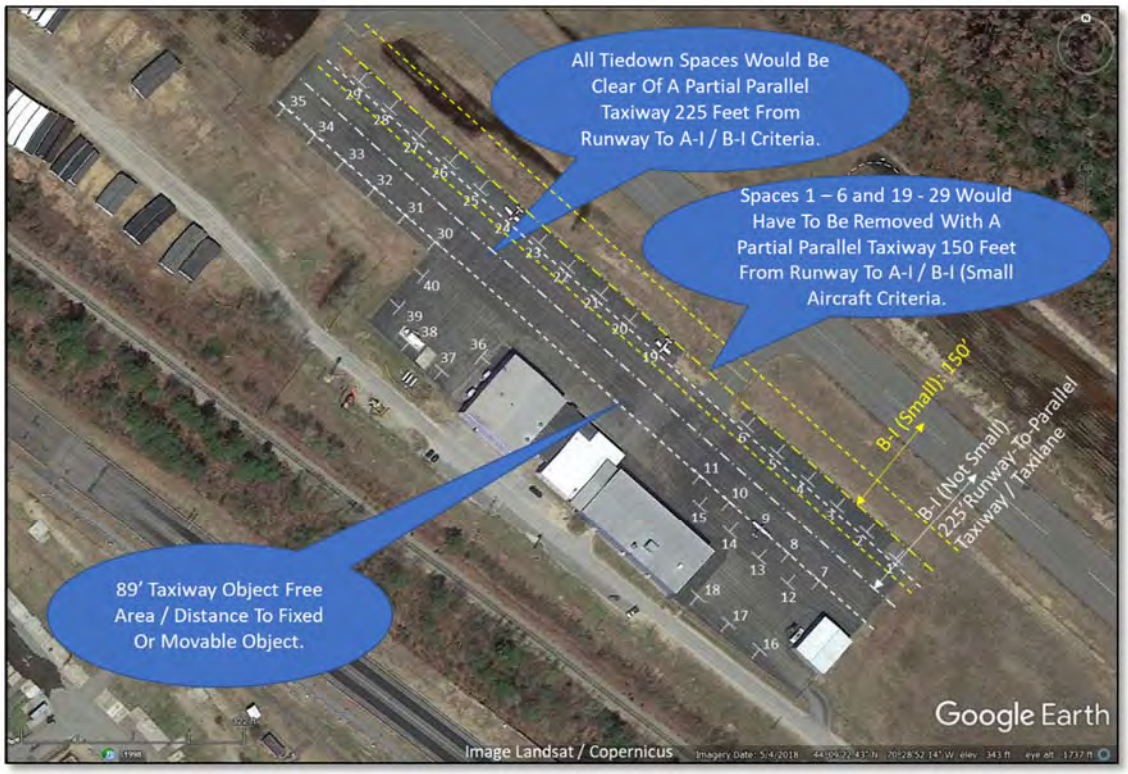
3.3.10 RUNWAY-TO-TAXIWAY SEPARATION STANDARDS

The current runway-to-taxiway centerline separation standard is 150 feet for the A-I / B-I small aircraft designation as depicted in Figure 3.3.10-1.

If the airport were to construct a parallel taxiway using the A-1/B-1 small aircraft separation standards, it would require the abandonment of 17 tiedowns along the easterly edge of the apron because the centerline of the parallel taxiway would be located at the current edge of the apron.

However, the existing partial parallel taxiway and apron taxiway could remain in its current location on the apron at 225 feet from the runway centerline without affecting the existing tiedowns. If some or all of the 17 edge tiedowns become unnecessary, they could be removed to reduce the amount of apron pavement.

Therefore, it is recommended that the partial parallel taxiway/taxilane should remain in its current location on the apron 225 feet from the runway centerline. If a partial parallel taxiway is extended north or south of the apron to access hangar development areas, then it could be aligned with the 225-foot separation or shifted to the 150-foot separation to accommodate the hangar size and its distance from the runway centerline.



Source: Base Map from 2003 Airport Master Plan

Figure 3.3.10-1 Runway-to-Taxiway Separation

3.3.11 TAXIWAYS, TAXILANES AND OBJECT FREE AREAS

The Oxford County Regional Airport has two active stub taxiways as indicated in *Chapter 1 — Inventory.* Taxiway Alpha (A) is directly opposite the FBO hangar, and Taxiway Bravo (B) is at the north end of the apron. A third taxiway connected the runway to a hangar on the adjacent private property, but the hangar is no longer used for aircraft storage and the taxiway was fenced off in 2013 and access to it from Runway 15-33 has been barricaded.

A minimum taxiway pavement width of 25 feet is required for A-I / B-I small aircraft design criteria with a 49-foot wide taxiway safety area. Taxiway A is 40 feet wide, and Taxiway B is 25 feet wide. Both taxiways were reconstructed with new taxiway edge lighting as part of the 2010 Runway 14-33 reconstruction project.

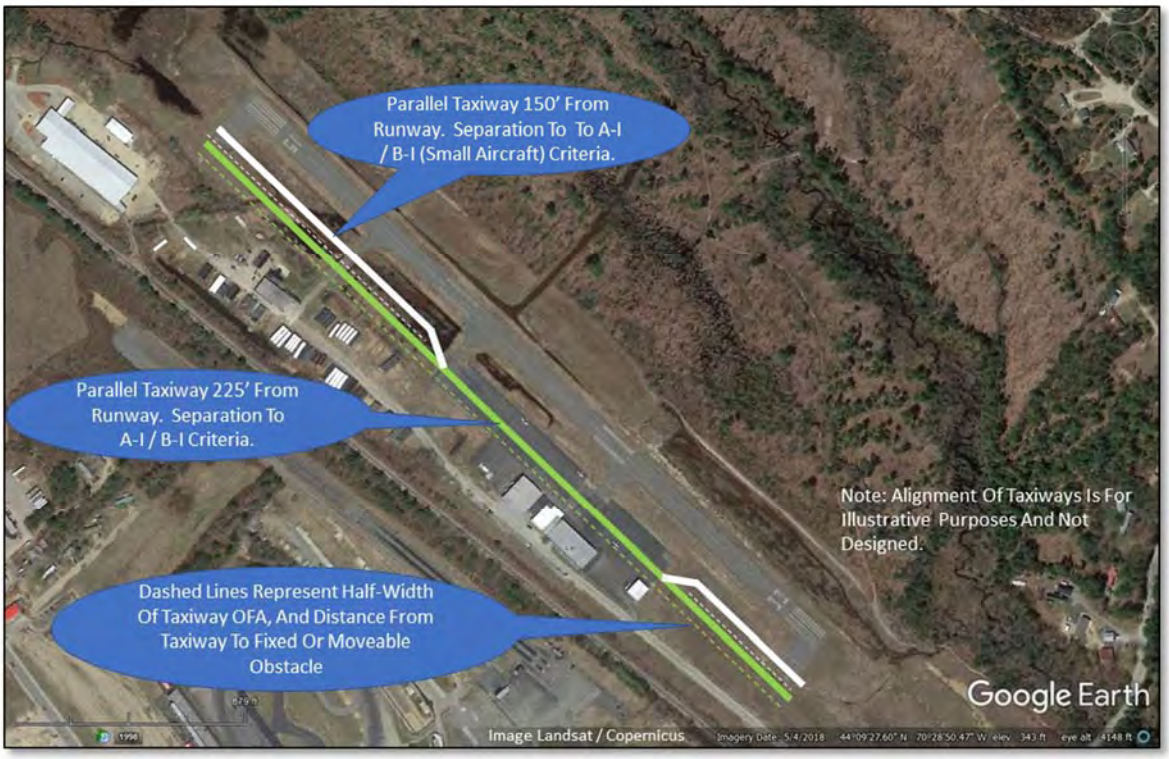
Although the width of Taxiway A exceeds the design criteria of 25 feet, it is recommended that the existing width should be maintained until such time as the taxiway needs to be reconstructed or the lighting system is upgraded or replaced. At that time, a cost analysis should be performed to assist in determining if the Taxiway A pavement width should be reduced.

The unnamed taxiway pavement should be removed including the two culverts and the holding position sign. The area should be regraded and returned to a turf area to minimize the amount of impervious surface, to improve drainage, and to prevent inadvertent access by aircraft.

A 750-foot long taxilane with the required 39.5-foot taxilane centerline to fixed or moveable object distance connects Taxiway A and Taxiway B through the apron. If this taxilane is maintained at the recommended 225-foot distance from the runway centerline, then it would have no impact on the tiedown positions because the distance between the two easterly rows of tiedowns meets the 79-foot wide taxilane object free area criteria for A-I / B-I small aircraft.

Except for this taxilane, there are no taxiways that access the approach end of either runway. Consequently, pilots must back-taxi on the runway approximately 1,200 feet from Taxiway B to the Runway 15 end or 1,000 feet from Taxiway A to the Runway 33 end.

As mentioned in Section 3.3.10, 25-foot wide partial parallel taxiways could be extended from the terminal apron to the runway ends either at a 225-foot separation or a 150-foot separation as depicted in Figure 3.3.11-1. However, a full-length parallel taxiway is not anticipated to be required for this planning period.



Source: Base Map from 2003 Airport Master Plan.

Figure 3.3.11-1 Partial Parallel Taxiway and Taxilane Locations

3.3.12 RUNWAY HOLDING BAYS

The runway holding bays at either end of the runway, also referred to as turnarounds, were described in Chapter 1. Each turnaround can accommodate one aircraft, and no additional turnarounds are required. The holdlines on the turnarounds are 125 feet from the runway centerline and they meet the A-I / B-I small aircraft criteria.

If a partial parallel taxiway were to be constructed to the runway ends at a 225-foot separation, then the turnarounds would need to be extended approximately 27.5 feet to connect to the edge of the taxiway pavement. The turnarounds would not need to be extended if a connecting partial parallel taxiway was constructed at a 150-foot separation. The excess pavement on the aircraft turnarounds (assuming the taxiway extension) could then be removed.

3.3.13 AIRPORT VISUAL AIDS AND NAVIGATIONAL AIDS

Airport visual aids and navigational aids (NAVAIDs) include any visual or electronic devices, either airborne or on the ground, that provide point-to-point guidance information or position data to aircraft. Table 3.3.13-1 summarizes the FAA guidance based on the Airport's approach visibility of not less than one mile.

Table 3.3.13-1 Required and Recommended Visual Aids

Visual Aid	FAA	Currently In-Place at 81B?
High Intensity Runway Lights (HIRLs), Medium Intensity Runway Lights (MIRLs), or Low Intensity Runway Lights (LIRLs)	Required for nighttime runway use	Yes - MIRLs
Runway Markings	Non-Precision	Yes
Holding Position Signs and Markings	Non-Precision	Yes
Taxiway Markings	Required	Yes
Rotating Beacon	Required for nighttime runway use	Yes
Runway End Identifier Lights (REILs)	Recommended [5]	No
Precision Instrument Path Indicator (PAPI) Lights for Runway 15 and Runway 33	Recommended [6] [7]	No
Approach Lighting System	Recommended	No
Approach Lighting System	Recommended	No

Sources: FAA AC 150/5300-13A, *Airport Design*

[5] Paragraph 623 in FAA AC 150/5300-13A recommends REILs to provide rapid identification of the end of the runway at a non-towered airport for non-towered runways with "a preponderance of other lighting or lacking contrast with surrounding terrain".

[6] Paragraph 317.a.(4) recommends for runway ends with instrument approach procedures "In the absence of any identified benefits or safety enhancement from an approach light system, airport operators should at least consider installing lower cost visual guidance aids such as Runway End Identifier Lights (REIL) or Precision Approach Path Indicator (PAPI)."

[7] The suitability of the applicable PAPI Obstacle Clearance Surface (OCS) and Light Signal Clearance Surface (LSCS) off the runway ends described in FAA Order 8200. ID and Engineering Brief 95 dated 12/19/2017 would have to be determined.

Table 3.3.13-2 lists airport visual aids that should be upgraded or established within this planning period.

Table 3.3.13-2 Upgrade/Establishment of Other FAA-Recommended/Required Airport Visual Aids

Visual Aid	Recommendation
Rotating Beacon	The FAA estimates a 15 to 20-year life for airport rotating beacons. The beacon was installed in 1992. Therefore, this beacon reached its 20-year life in 2012, and it should be replaced or rehabilitated within the short-term planning period.
Obstruction Lights	Three of the four hazard beacons on surrounding hills are inoperable. The FAA granted permission for their abandonment in 2014, and the three beacon installations should be removed from their rights-of-way including the beacon structures, wooden poles and overhead wires after which the easements will likely revert to the current property owners.
Apron and Taxiway Markings	The taxiway and taxilane centerline markings and the aircraft tiedown markings should be repainted due to the faded paint in order to clearly delineate the safe taxiing routes on the apron leading to aircraft parking spaces and the hangar doors.
Windsock	A segmented circle and internally lighted wind cone assembly is located in a low area on the east side of the airport directly opposite the terminal and 1,000 feet from the end of Runway 33 and is in good condition. The windsock portion should be replaced on a regular basis.

Source: BACS analysis

3.3.14 AIRSIDE OBSTRUCTIONS AND IMAGINARY SURFACES

Airspace surfaces and obstructions were discussed in Chapter 1, Section 3.10. The airport elevation is 345 MSL. A recent obstruction survey has not been done. The most recent obstruction removal projects were ground obstruction removal in 2010 and tree obstruction removal in 2012. The County of Oxford performs mowing, brush clearing, and selective tree removal as annual maintenance activities in accordance with its 2003 Vegetation Management Plan (VMP).

The FAA Digital Obstacle File (DOF) [8] released on April 21, 2020 was consulted to identify the manmade obstructions in the vicinity of the airport's airspace surfaces. Data for the Town of Oxford and ten surrounding towns [9] revealed 11 towers in six towns between 5 and 11 miles from the airport:

- Minot.....Three towers at 128', 154' and 260' AGL (885', 909' and 1,001' MSL)
- Norway.....Two towers at 150' and 199' AGL (970' and 995' MSL)
- Paris.....One tower at 190' AGL (1,839' MSL)
- South Paris.....Two towers at 175' and 183' AGL (567' and 668' MSL)
- West Paris.....Two towers at 258' and 383' AGL (1,208' and 1,578' MSL)
- West Poland.....One tower at 505' AGL (1,362' MSL)

These eleven towers do not obstruct or penetrate the Airport's FAR Part 77 surfaces or TERPS surfaces, although the two towers in Norway are close to the Runway 15 extended centerline.

[8] https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dof/

[9] Data for Oxford and the towns of Norway, Paris, Hebron, Minot, Mechanic Falls, Poland, Otisfield, South Paris, West Paris, and West Poland were reviewed to determine if there are obstructions in the airport vicinity.

As indicated in *Chapter 1 Inventory*, several hills around the Airport penetrate the FAR Part 77 horizontal surface and the 20:1 conical surface. Four hills easterly of the airport had obstruction lights installed in 1992, and three of the lights are inoperable and abandoned in place. The fourth obstruction light on Whitney Hill remains operational. The locations and elevations of the three unlighted hills should be indicated on the Runway 15 and 33 non-precision GPS instrument approach procedures.

While the Runway 33 20:1 approach surface is largely free of obstructions, the Runway 15 20:1 approach surface has some scattered brush obstructions. Because Runway 15 end of the airport is frequently wet due to wetlands and a high ground water level, it is difficult to maintain this area with heavy machinery. The brush obstructions should be removed either by hand during wet conditions or with machinery during dry conditions in accordance with the recommendations of the 2003 VMP. The vegetation management plan should be updated to reflect the current conditions and best management practices (BMPs).

There are tree and brush obstructions to the 7:1 transitional surfaces for Runway 15-33. Tree and brush obstructions are located at the edge of the primary surface on the east side of the airport, mostly on newly acquired County property, and they affect the 7:1 transitional surface for the full length of the runway. The tree obstructions on County property should be removed in accordance with the 2003 VMP and current FAA requirements regarding 7:1 transitional surface clearance requirements. The crowns of trees at the southeasterly corner of the airport property on private property within the avigation easement tend to encroach on the easterly edge of the Runway 33 approach surface as the trees grow. Such trees should be removed at ground level after coordinating with the property owner.

Some tree obstructions are located on the private properties that are adjacent to the westerly side of the airport. The County does not own avigation easements in this area. These trees affect portions of the 7:1 transitional surface, and they should be removed in accordance with the applicable FAA requirements after coordinating with the property owner.

The FBO hangar and the Bancroft hangar were constructed when Runway 15-33 had visual approaches to both runway ends, and the hangars did not penetrate the 7:1 transitional surface. When the Runway 33 GPS instrument approach procedure was implemented, Runway 15-33 became a non-precision runway and the FAR Part 77 runway primary surface width increased from 250 feet wide to 500 feet wide. This increase moved the edges of the 7:1 transitional surfaces 125 feet further away from the runway centerline. This shift resulted in the FBO hangar and the Bancroft Hangar becoming obstructions to the 7:1 transitional surfaces. Obstruction lights should be installed on the hangars to identify the proximity and height of the hangars.

3.3.15 AIRPORT DRAINAGE AND STORMWATER POLLUTION PREVENTION PLAN

As indicated in *Chapter 1 Inventory*, the Oxford County Regional Airport has drainage swales located on either side of Runway 15-33. Stormwater runoff from the runway and apron drains into these swales which empty into surrounding soils, streams and wetlands located on the east side of the airport.

There are also two 12” diameter culverts located beneath the unnamed taxiway which connect to a 24” diameter culvert located beneath the runway midway between Taxiway B and the unnamed taxiway. Runoff from the unnamed taxiway drains into these culverts and empties into the same surrounding soils, streams and wetlands located on the east side of the airport.

A stormwater pollution prevention plan (SWPPP) has been prepared for the airport, and it is available for review through the Oxford County Commissioners Office in South Paris, Maine. The SWPPP provides a

summary of environmental, functional, social and economic issues as they relate to storm water pollution. It identifies sources of pollution affecting the quality of stormwater and snow melt discharges associated with industrial activity at the Oxford County Regional Airport, and it assesses the significance of the impacts to stormwater. The SWPPP provides recommendations regarding best management practices and measures that can minimize and control pollutants which empty into surrounding soils, wetlands and streams located on the airport.

3.4 LANDSIDE REQUIREMENTS

The following sections identify the ability of the airport's landside facilities to accommodate the projected aviation activities. These landside facilities include terminal facilities, airport directional signage, aircraft storage hangars, aircraft tiedown parking, aprons, aircraft fueling facilities, airport security and security fencing, and automobile parking.

3.4.1 TERMINAL FACILITIES

As indicated in *Chapter 1 — Inventory,* Oxford County Regional Airport's terminal building is located on the west side of the airport.

The terminal building consists of the FBO office, offices of Mosher Aviation, Inc., and three attached hangars owned by Oxford County and leased to Mosher Aviation. The Mosher Aviation offices consist of a 3,880 square foot, one-story, metal frame structure built in 1974. The terminal building is in good condition with extensive repairs and maintenance having been recently completed, and the County intends to make additional repairs and upgrades.

The terminal facilities include: office space for Mosher Aviation and FBO counter; public restrooms (ADA, or disability/handicap accessible facilities); pilot classroom/workspace to log flight activity; vending machines; and a small public waiting room used as a central meeting place and waiting space for pilots, visitors and passengers. These areas are currently available to the public only when the airport is attended.

Because the terminal building was designed and constructed in 1992 to suit the specific businesses operations of the former FBO, the interior of the terminal building is in need of renovations to adapt the space to public use.

Although the terminal provides the facilities needed within a terminal building/FBO, the design of the facility does not provide an open floor plan for easy circulation and access between the main landside entrance, airfield entrance, waiting room, office facilities, public restrooms and eating facilities. Currently, the waiting room exists between the FBO counter and Mosher Aviation's offices. Public restrooms, pilot classroom and workspace to log flight activity, and vending machines/eating facilities are separated from this area by Mosher Aviation’s offices.

The public waiting room is the central meeting and waiting space for passengers, pilots, visitors, and airport employees. The waiting room should be the focal point of the building which should merge with other required spaces such as FBO offices, eating facilities, and public restrooms. Currently, the terminal building is only open Monday through Saturday from 7:30 AM to 5:00 PM and closed on Sundays, thus not providing 24-hour access. This means that pilots and passengers arriving at the airport after the close of business cannot gain access to the terminal building. However, Mosher Aviation can staff the building with proper prior notice, thereby providing 24-hour access. Mosher Aviation is in the process of

developing and expanding its services at the airport, and their use of the terminal building is evolving. As such, no specific recommendations will be made concerning the functional layout of the terminal building space.

3.4.2 AIRPORT DIRECTIONAL SIGNAGE

As indicated in *Chapter 1 — Inventory,* the airport directional signage consists of three signs located on Maine State Route 26. All signs are visible and provide direction to the airport.

One of the signs is a Federal Highway Administration (FHWA) standard green highway direction guidance sign consisting of an airport symbol sign with a direction arrow. This sign is located on Maine State Route 26 approximately 285 feet southerly of the intersection with Town Road Number 6 Extension.

Two of the signs are FHWA standard blue road user services guidance signs consisting of an airport symbol sign with a direction arrow. One of these signs is located approximately 250 feet northerly of the intersection with Town Road Number 6 Extension. This blue sign should be replaced with a standard green highway direction guidance sign consisting of an airport symbol sign with a left-pointing direction arrow.

The other blue road user services sign is located approximately 150 feet southerly of the skewed intersection with Town Road Number 6 which was previously the main access to Airport Road. This sign should be removed and travelers should use the perpendicular intersection with Town Road Number 6 Extension as the preferred access from State Route 26 to Airport Road.

An unlighted airport destination “Welcome” sign is installed on airport property inside the perimeter fence at the intersection of Town Road Number 6 and Airport Road. The sign is large and visible, although the perimeter fence might reduce its visibility during nighttime hours.

3.4.3 AIRCRAFT TIEDOWN PARKING, APRONS AND STORAGE HANGARS

FAA design criteria, particularly the runway OFA, the runway OFZ, and the distance between the runway and the aircraft parking areas, affects the amount of apron required for tiedowns and itinerant aircraft parking. Aircraft cannot be parked in locations that would result in a part of the aircraft encroaching on the runway object free area (ROFA) or the runway object free zone (ROFZ).

The existing tiedowns on the terminal apron are numbered for reference as shown in Figure 3.4.3-1.

When the small aircraft designation is applied to the A-I / B-I design criteria, the 17 tiedown spaces numbered 1-6 and 19-29 along the easterly edge of the apron could be used for aircraft parking because they do not obstruct the ROFA or the ROFZ.

FAA Order 5100.38D *Airport Improvement Program Handbook*, Table C-2, Row 36 indicates that the 50 feet of apron pavement immediately in front of an ineligible building is ineligible for FAA funding presumably because this area would be used exclusively for hangar entrance and exit by the hangar tenants and not available for use by the general public. These potentially ineligible apron pavement areas are represented in Figure 3.4.3-1 by the blue-shaded areas.

The portion of the apron southerly of Taxiway A has a total of 18 tiedown spaces. Tiedown spaces 1-6 are located along the easterly edge of the apron, and tiedown spaces 7-18 are located in the vicinity of Charlie Hangar and the Bancroft hangar.

Aircraft cannot be parked in locations that would result in a portion of an aircraft encroaching on a taxiway or taxilane object free area (TOFA). Therefore, tiedown spaces 8, 9, 12 and 13 should be eliminated because a parked aircraft would encroach on the taxilane OFA that leads to the southerly door of Charlie Hangar and the westerly door of the Bancroft hangar. Tiedown spaces 16 and 18 should also be eliminated because a parked aircraft would obstruct these doors. Tiedown spaces 14 and 15 should be eliminated because an aircraft cannot access these spaces under power along a taxi route; the spaces can only be accessed by tugging or pushing the aircraft into place. The remaining 4 tiedown spaces on the apron (i.e. 7, 10, 11 and 17) should remain.

This results in a total of 10 existing tiedown spaces (i.e. 1-6 and 7, 10, 11 and 17) which would be available for use by the FBO and the general public, including itinerant aircraft, on the portion of the apron southerly of Taxiway A.

Itinerant aircraft tiedown spaces should be located nearest the terminal building portion of the FBO building in locations that would not obstruct hangar access or taxiway/taxilane OFAs. The area in front of the terminal building could accommodate one or two new tiedowns, possibly with access to electricity provided from the building. The addition of these tiedowns would provide 11-12 tiedown spaces which would be adequate to meet the 11 tiedown requirement that is proposed in Growth Scenario 1.

Because an adequate number of tiedown spaces can be provided on the southerly portion of the apron to meet the tiedown requirements of Growth Scenario 1, tiedown spaces 19 through 35 can be eliminated and their pavement can be eliminated to within 12.5’ of the taxiway centerline.

Tiedown spaces 37 and 38 are inaccessible to aircraft because of the proximity of the fuel system and bollards. Tiedown spaces 36, 39 and 40 should be eliminated because aircraft parked in these locations would obstruct the taxilane OFA for aircraft attempting to access the fuel pumps.



Source: BACS analysis

Figure 3.4.3-1 Aircraft Parking Locations

Based on discussions with the FBO, it is assumed the FBO facility (including administration area and hangars) will be used for the FBO's aircraft service business and will not continue to be available for based aircraft storage. [10] The FBO did mention that the hangar portion could be made available for itinerant aircraft parking which would be an attractive benefit for itinerant travelers willing to pay for such storage. The remaining hangar is the private Bancroft hangar capable of storing three aircraft.

[10] Conversation with FBO Mosher Aviation, LLC.

Table 3.4-1 Existing Landside Hangar/Tiedown Facilities

Facility	Number of Hangar Facilities	Existing Base Aircraft Capacity
Hangars		
Standard T-hangar Spaces	0	0
Conventional Hangars	1	3
Total Hangar Capacity	1	3
Tiedowns		
Paved Based		10
Paved Itinerant		0
Unpaved		0
Total Tiedown Capacity		10
Total Aircraft Capacity (Based and Itinerant)		13

Sources: BACS Analysis

The existing capacity versus projected demand for aircraft storage for itinerant and based aircraft tiedowns, and based aircraft hangar storage will be discussed below. The existing level of use was based on FBO observations.

3.4.3.1 ITINERANT AIRCRAFT STORAGE

The FBO estimates the highest number of itinerant parking spaces occupied at the same time was three but one space on average should be sufficient. For planning purposes, an existing requirement for 1 itinerant space is assumed. This number was then increased at the same rate as numbers of annual aircraft operations from Table 2.5.1-2 Projected Annual Operations as shown in Table 3.4.3-1 below.

If the number of itinerant spaces is not sufficient for the levels of future growth, then additional spaces could be provided by reclaiming spaces that are recommended to be removed.

Table 3.4-2 Itinerant Parking Spaces

Based on Forecast Scenario from Chapter 2	Existing Capacity	Projected Demand	Surplus / (Deficit)
Terminal Area Forecast			
2019 - 2023	2	1	1
2024 - 2029	2	1	1
2030 - 2039	2	1	1
Growth Scenario 1			
2019 - 2023	2	3	(1)
2024 - 2029	2	3	(1)
2030 - 2039	2	3	(1)
Growth Scenario 2			
2019 - 2023	2	3	(1)
2024 - 2029	2	4	(2)
2030 - 2039	2	5	(3)

Source: FBO estimate and BACS projections

3.4.3.2 BASED AIRCRAFT STORAGE

The FBO estimated at most 10 based aircraft tiedown spaces have been occupied with the average being six or seven. For planning purposes, an existing requirement of eight spaces is assumed. [11] The existing hangar capacity of three spaces (i.e. Bancroft Hangar) then matches the current demand of three, as there are currently 11 based aircraft.

It has been stated that there is strong demand for approximately 10 additional based aircraft storage spaces. [12] For Growth Scenario 1 and 2, it was then assumed that the hangar demand of 13 spaces for the 2019 - 2023 timeframe would be increased at the same rate as projected based aircraft from Table 2.5.2-1. Future demand for tiedown spaces was then estimated by subtracting projected hangar demand from projected numbers of based aircraft and the results are shown in Table 3.4.3.2-1 below.

If the number of tiedown spaces is not sufficient for the levels of future growth, then additional spaces could be provided by reclaiming spaces that are recommended to be removed.

Table 3.4-3 Based Aircraft Spaces (Tiedowns and Hangars)

Based on Forecast Scenario from Chapter 2	Tiedowns			Hangars		
	Existing Capacity	Projected Demand	Surplus / (Deficit)	Existing Capacity	Projected Demand	Surplus / Deficit
Terminal Area Forecast						
2019 - 2023	10	8	2	3	3	0
2024 - 2029	10	8	2	3	3	0
2030 - 2039	10	8	2	3	3	0
Growth Scenario 1						
2019 - 2023	10	8	2	3	13	(10)
2024 - 2029	10	8	2	3	13	(10)
2030 - 2039	10	8	2	3	13	(10)
Growth Scenario 2						
2019 - 2023	10	8	2	3	13	(10)
2024 - 2029	10	10	0	3	16	(13)
2030 - 2039	10	11	(1)	3	19	(16)

Source: FBO estimate and BACS projections

[11] This appears appropriate as there are currently 11 based aircraft, three of which are in the Bancroft hangar, leaving eight at tiedowns.

[12] Planning Advisory Committee (PAC) meeting December 18, 2019.

3.4.3.3 APRONS

The last apron pavement maintenance treatment appears to have been crack sealing in 2001. There are numerous cracks across the entire apron area which need to be sealed or patched.

Having been originally designed and constructed to accommodate 42 aircraft, the existing apron is of sufficient size to support the existing and forecasted needs. Several surplus aircraft tiedown spaces and their associated pavement are recommended to be removed. [13] The southerly portion of the apron would continue to be used for tiedown spaces, itinerant parking, hangar frontage, taxilane access to the apron, and taxilane OFAs.

The northerly portion of the apron would be used for access to the public aircraft fueling area and the connection to Taxiway B. The westerly side would be used for access to facility expansion as discussed in Chapter 4 Alternatives. The pavement along the easterly side of the apron, northerly of Taxiway A, should be removed. A recommended layout of existing and proposed facilities is discussed in Chapter 4.

[13] Abandoned pavement within or near aircraft movement areas could become a source of foreign object debris (FOD) if the pavement is not maintained.

3.4.4 AUTOMOBILE PARKING

As discussed in Chapter 1 Inventory, there are 22 existing automobile parking spaces between Airport Road and the FBO building, and 42 paved but unmarked parking spaces along the west side of Airport Road directly across from the FBO Building.

Because the business that is located adjacent to the west side of the Airport hauls large mobile home trailers on Airport Road to Number Six Road, it is recommended that the primary airport automobile parking area should be located on the easterly side of Airport Road. The 42 unmarked parking spaces on the westerly side of Airport Road can contribute to the Airport's parking capacity including long term parking for airport users and parking for airport users' very large vehicles.

Due to the present low level of activity, it is assumed that the current demand for airport-related automobile parking is 15 spaces. This number was then increased at the same rate as numbers of annual aircraft operations from Table 2.5.1-2 as shown in Table 3.4.4-1 below.

Table 3.4-4 Automobile Parking Spaces

Based on Forecast Scenario from Chapter 2	15 Spaces Easterly of Airport Road			15 Spaces Easterly of Airport Road and 42 Spaces Westerly of Airport Road		
	Existing Capacity	Projected Demand	Surplus / (Deficit)	Existing Capacity	Projected Demand	Surplus / (Deficit)
Terminal Area Forecast						
2019 - 2023	22	15	7	64	15	49
2024 - 2029	22	15	7	64	15	49
2030 - 2039	22	15	7	64	15	49
Growth Scenario 1						
2019 - 2023	22	24	(2)	64	24	40
2024 - 2029	22	24	(2)	64	24	40
2030 - 2039	22	24	(2)	64	24	40
Growth Scenario 2						
2019 - 2023	22	24	(2)	64	24	40
2024 - 2029	22	30	(8)	64	30	34
2030 - 2039	22	35	(13)	64	35	25

Source: BACS Analysis

3.4.5 AIRCRAFT FUELING FACILITIES

As discussed in Chapter 1, a "split" tank provides storage capacity for 5,000 gallons of Jet-A fuel and 5,000 gallons of 100LL Avgas fuel. The Jet-A section is not being used due to a lack of demand, and Jet-A fuel has never been introduced to the system. A future market might exist for Jet-A fuel sales if turboprop and turbine engine fixed wing aircraft and helicopters begin to utilize the Airport in greater numbers.

The Table 2.7-1 showed the Avgas fuel flowage projections. It is assumed that Avgas could be delivered to the airport on a two-week basis. Because the capacity of the Avgas fuel tank is approximately half the capacity of a typical aviation fuel truck, the County generally combines its aviation fuel purchases with those of another airport in the region. [14] The projections of Avgas fuel storage capacity and demand are shown in Table 3.4.5-1.

Table 3.4.5-1 Avgas Demand and Storage Capacity

Based on Forecast Scenario from Chapter 2	Annual Fuel Flow (Gallons)	2-Week Demand (Gallons)	Existing Capacity (Gallons)
Terminal Area Forecast			
2019 - 2023	13,000	500	5,000
2024 - 2029	13,000	500	5,000
2030 - 2039	13,000	500	5,000
Growth Scenario 1			
2019 - 2023	21,170	810	5,000
2024 - 2029	21,170	810	5,000
2030 - 2039	21,170	810	5,000
Growth Scenario 2			
2019 - 2023	21,170	810	5,000
2024 - 2029	26,210	1,010	5,000
2030 - 2039	30,240	1,160	5,000

Source: BACS Analysis

[14] Fuel will be delivered only of there is sufficient need at the storage facility to warrant the trip to the airport by the fuel distributor. Fuel vendors often try to coordinate partial load deliveries to low-activity airports.

3.4.6 AIRPORT PERIMETER FENCING

Although airport security fencing is not required under current FAA regulations for the Oxford County Regional Airport, it is advised by the FAA that the nation's airports should provide perimeter fencing as public protection in order to mitigate wildlife hazards and inadvertent entry onto airport movement areas (e.g. runways, taxiways and safety areas) by unauthorized persons or vehicles.

The Airport has been installing perimeter fencing under a multi-phased project since 2013. The Airport currently has chain link perimeter fence installed along its westerly and southerly sides. A 660-foot section of perimeter fence has also been installed along the Airport's southeasterly property line. A perimeter fence project currently underway will install approximately 1,000 feet of chain link perimeter fence across the northerly end of the airport and along a section of the Airport's northeasterly property line.

The property located easterly of the Airport is owned by the County. It is a wooded area which should be cleared and fenced to connect the northeasterly and southeasterly sections of perimeter fence thus completing the multiphase project and enhancing safety on the airport from wildlife intrusions and inadvertent access by people.

3.5 SNOW REMOVAL EQUIPMENT REQUIREMENTS

The County awards public contracts for airport snow removal services on a three-year schedule. The successful bidder provides their own staff and snow removal equipment (SRE) including plow trucks, snow blowers, and sweepers.

This approach to snow removal eliminates the need for the County to acquire and operate snow removal equipment along with the need for the County to construct a building to house the equipment. The County expects the practice of contracting out for snow removal services to continue throughout the planning period.

CHAPTER 4

~ CHAPTER 4 ~
DEVELOPMENT ALTERNATIVES

4.1 GENERAL

Chapter 3 – *Facility Requirements* contained the analysis of the base year and projected requirements in terms of the maintenance and upgrades to the existing facilities and the enhancement and right-sizing of those facilities anticipated to meet the projected demand. The analysis was based on accepted design criteria.

This chapter contains an analysis of how best to, or whether to, accommodate projected demand with consideration of existing airport property and possible property acquisition utilizing the design criteria established in Chapter 3, and it addresses the following three basic concepts:

- Alternative 1: Maintain existing conditions with maintenance and upgrades of facilities but no expansion / addition of facilities.
- Alternative 2: Accommodate projected demand and regulatory requirements within existing airport property.
- Alternative 3: Acquire property as needed to accommodate projected demand and regulatory requirements.

Alternative 1 activities relate to maintenance and upgrades of existing facilities and are common to all three alternatives. The three alternatives will be discussed, the concepts compared, and an alternative will be recommended.

Chapter 2 – *Forecasts* discussed three scenarios:

- Terminal Area Forecasts (TAF): No growth and no change in activity from present.
- Growth Scenario 1 (GS-1): Increase within the 10-year future, and then no increase thereafter. In this chapter "GS-1" is termed "Future Growth".
- Growth Scenario 2 (GS-2): Increase within the 10-year future, and then two smaller increases within the 10 to 20-year future. In this chapter, "GS-2" is termed "Ultimate Growth".

The analyses and recommendations in this chapter will be relative to accommodating Future Growth with an outlook as to how alternatives would be able to accommodate Ultimate Growth should future activity reach those levels.

Figures of each alternative are included at the end of the chapter.

4.2 DESCRIPTION OF ALTERNATIVES

4.2.1 ALTERNATIVE 1

Alternative 1 is limited to maintenance and upgrades of existing facilities and responding to any conformance issues. See Figures 4.2-1 through 4.2-4. The following key activities are assumed to be part of Alternative 1:

- Extend the security fence on the east side of the airport.
- Reconstruct the runway, taxiway, and apron pavements as needed. Apron reconstruction will achieve needed remarking of the apron.
- Remove aircraft parking spaces whose use would obstruct hangar frontage, fueling area, apron taxiing, or taxilane OFAs.
- Remove three of the four hazard beacons and related power cables and poles that have been abandoned southeast, east, and northeast of the airport.
- Correct the portion of the septic system that is under Airport Road.
- Install red obstruction lights on the critical face of all airport buildings that penetrate the Part 77 7:1 transitional surface.
- Construct fuel truck access to the fuel system from Airport Road so the delivery truck would not have to drive on the aircraft apron.
- Install hangar obstruction lights, REILs and PAPIs, improve airport lighting, and airport signage.
- Map obstructions to airport surfaces, particularly within the Runway 15-33 Instrument Departure Surfaces. The most efficient time to map Instrument Departure Surfaces would be when the Approach Surfaces are mapped.
- Reserve up to a 50-foot depth of the apron in front of each hangar per FAA Order 5100.38D, Appendix 1 referred to as hangar frontage. Hangar frontage is the larger of a 50-foot depth or the distance between the hangar door and the taxiway or taxilane OFA. The hangar frontage is assumed to be for the exclusive use of the hangar operator, and it is typically included in land leases. Hangar frontage pavement is not funded by FAA-AIP because it is not available for public use.

Figure 4.2-1 shows existing airport property, avigation easements, and Instrument Departure Surfaces. [1] The departure surface is 1,000 feet wide at the runway end, widens at 15° either side of the 1,000-foot width for a length of 10,200 feet (i.e. 1.7 nautical miles), and inclines at an upward slope of 40:1 (horizontal:vertical). Obstructions to the departure surface may require an adjustment in published departure climb gradient, reduction in useable runway length for instrument departures, and/or revision to ceiling and visibility minima for instrument departures. [2]

Previous airport master plans for the airport included the recommendation for a full-length parallel taxiway. Paragraph 405 in FAA AC 150/5300-13A states that “In addition, a full-length parallel taxiway is required for instrument approach procedures with visibility minimums below one mile and recommended for all other conditions”. There are currently straight-in instrument approach procedures to the Runway 15 end and the Runway 33 end with visibility minima of 1 mile for Runway 15 (Category A and B) and 1 mile for Category A and 1¼ mile Category B [3] for the Runway 33 end. Therefore, a full-length parallel taxiway is not included in the recommendations for future improvements for this master plan update.

[1] As part of an Obstruction Review of a northerly fence extension, FAA advised that a section of the proposed northerly fence extension would obstruct the Runway 33 Instrument Departure Surface off the Runway 15 end. (December 09, 2019). Instrument Departure Surface are described in FAA Order 8260.3B *Terminal Instrument Procedures*.

[2] Chapter 2, Order 8260.46G, *Departure Procedure (DP) Program*.

[3] Category A is approach speed less than 91 knots. Category B is approach speed 91 knots or more but less than 21 knots. Section 5.4.7, *Airman’s Information Manual*.



Figure 4.2-1 Alternative 1A - Existing Facilities

The October 1993 construction record drawings for the 1992 apron reconstruction project (i.e. AIP Project No. 3-23-0033-01) indicated a "taxiway/taxilane" painted centerline marking located 219.5 feet from the Runway 15-33 centerline along the full-length of the apron. The centerline markings are barely visible and they should be repainted to clearly delineate the safe taxi route on the apron. The discussion below concerns whether to term this centerline marking a partial parallel taxiway or a partial parallel taxilane.

The FAA airport design advisory circular defines "taxilane" as "a taxiway designed for low speed and precise taxiing". Low speed and precise taxiing end-to-end on the apron is required because the apron could be congested during busy times and the apron is the busiest area of the airport.

As noted in the 1993 record drawings, and shown in Figures 4.2-2 and 4.2-3, the facing rows of tiedown anchors are 99 feet apart. The aircraft tiedown spaces that were constructed under the 1992 apron project are numbered in the figures for illustration purposes. The row of tiedowns along the easterly side of the apron (i.e. Spaces 1-6 and 19-29) are 49.5 feet from centerline as are the facing tiedowns to the west (Spaces 7-11 and 30-35). From Chapter 3, the applicable design criteria (A-I / B-I) for distance from centerline to object for a taxiway is 44.5 feet and for a taxilane is 39.5 feet. The largest aircraft in terms of wingspan that routinely use the airport would be the Cessna 401A and the Beechcraft G18S (44.17 feet and 49.67 feet respectively) which are both based at the airport. The required distances from centerline to object for a taxiway and a taxilane for these two aircraft can be calculated as follows:

- Taxiway:
  - Cessna 401A: (0.7 X 44.17') + 10' = 40.92 feet
  - Beechcraft G18S: (0.7 X 49.67') + 10' = 44.77 feet
- Taxilane:
  - Cessna 401A: (0.6 X 44.17') + 10' = 36.50 feet
  - Beechcraft G18S: (0.6 X 49.67') + 10' = 39.80 feet

Aircraft are usually tied down with ropes that are attached to the tiedown anchor in the apron pavement and to the aircraft at a point approximately mid-wing (e.g. a wing strut) as well as a rope attached at the tail. The nose on a Cessna C-152 aircraft extends approximately seven feet forward of the wing axis. [4] Placing this aircraft in either of the two rows of tiedowns would reduce the distance from the taxi route centerline to the nose of the aircraft to:

- 49.5 feet (centerline to tiedown anchor) minus 7 feet (aircraft length forward of the mid-wing axis) = 42.5 feet

Even with such small aircraft at the tiedowns, the required criteria for taxiway distance from centerline to object for A-I / B-I in general of 44.5 feet or the Beechcraft G18S specifically of 44.77 feet would not be met.

Longer aircraft at the tiedowns would result in even less clearance. Therefore, to meet the requirements for the low speed precise taxiing and for the maximum centerline clearance to an object, it is recommended that the centerline marking on the apron should be considered as a taxilane rather than a taxiway. If pavement was ever extended to either of the runway ends, then that pavement beyond the end of the apron would be considered to be a taxiway with the appropriate design criteria.

[4] The tiedown to nose distance on the C-152 and other aircraft was estimated by referring to aircraft side-view drawings with aircraft length provided and then scaling the distance on the same view between tiedown point and aircraft nose.

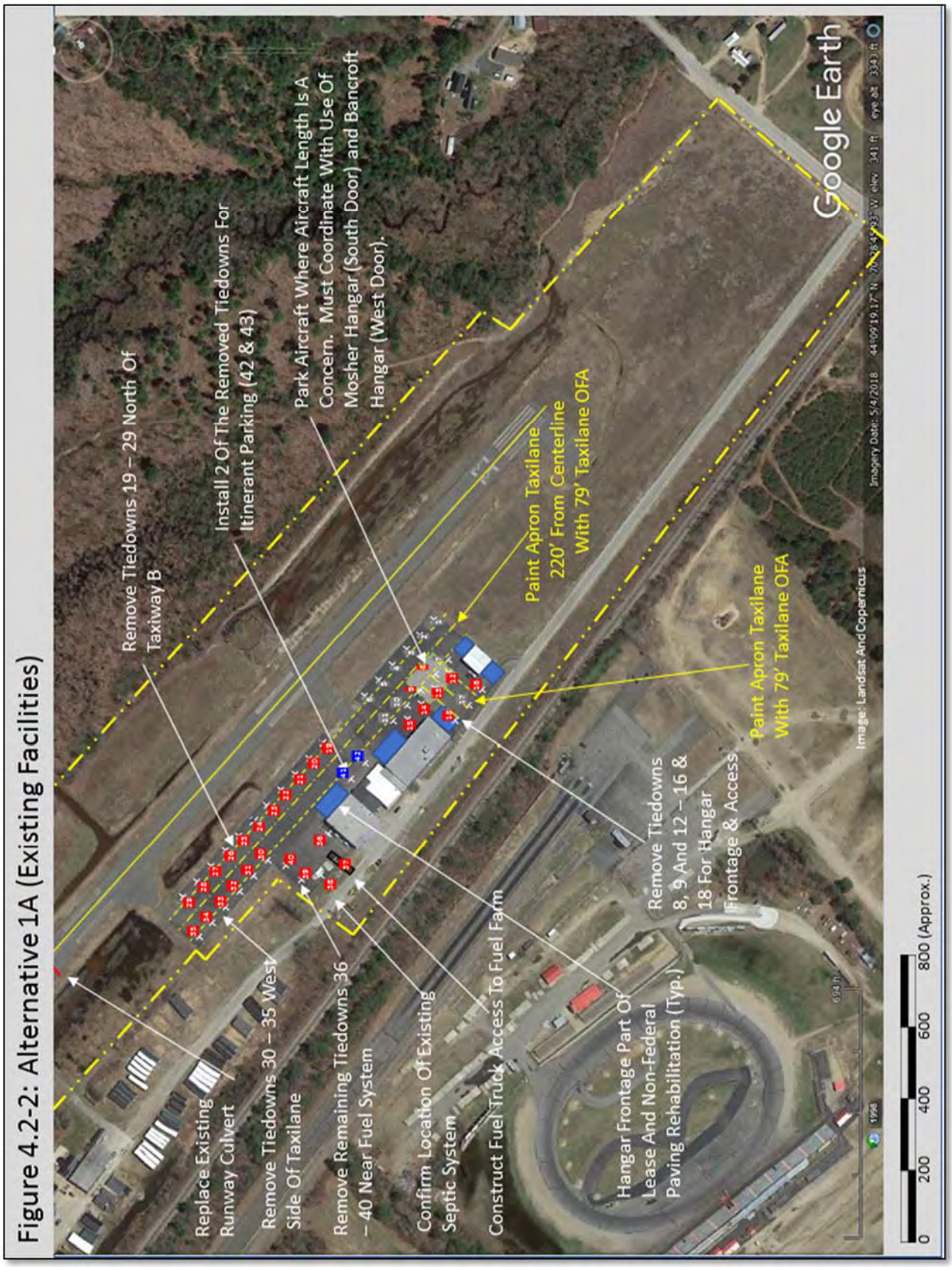


Figure 4.2-2 Alternative 1A – Existing Facilities

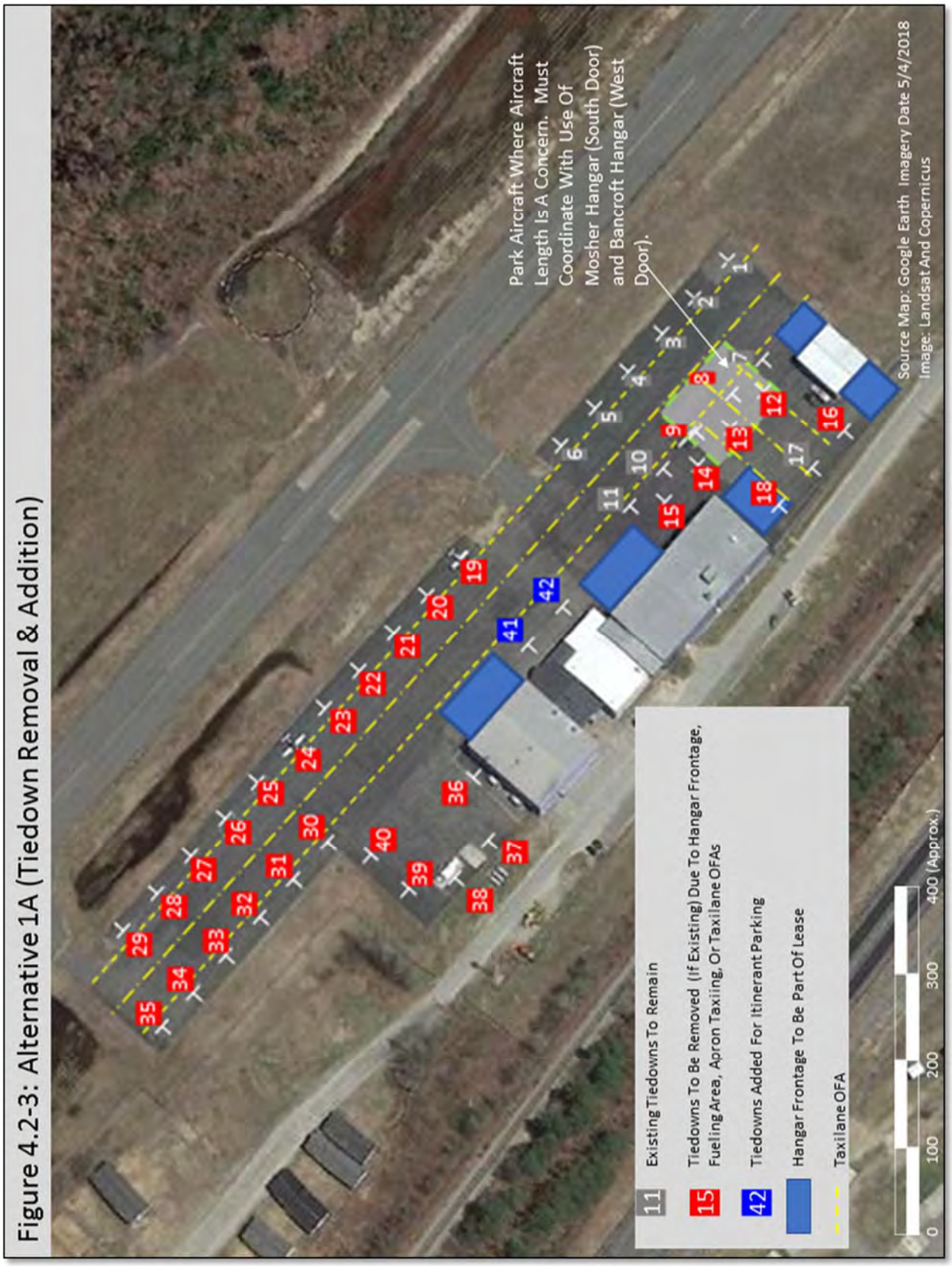


Figure 4.2-3 Alternative 1A – Tiedown Removal and Addition

The existing 49.5-foot centerline to tiedown anchor spacing was reviewed to determine if the A-I / B-I and the G18S required taxiway centerline to object spacing requirements with various aircraft at the two rows of tiedowns can be met.

Table 4.2.1-1 Taxilane Centerline to Object Clearance

Aircraft	Approach Speed Category	Aircraft Length	Distance From Mid-Wing To Nose ±	Aircraft Wingspan	Required Taxilane to Object Clearance a/	Taxilane to Object Clearance Provided	Surplus Deficit)
Cessna C-152	A	24.1’	7.1’	33.3’	39.8’	42.4’	2.6’
Cessna C-172	A	27.2’	8.8’	36.9’	39.8’	40.7’	0.9’
Beechcraft B58 Baron	B	29.8’	10.7’	37.8’	39.8’	38.8’	(1.0)’
Piper Malibu	A	28.8’	11.4’	43.0’	39.8’	38.1’	(1.7)’
Beechcraft G18S	A	35.3’	12.1’	49.7’	39.8’	37.4’	(2.4)’
Cessna 401A	A	36.4’	13.7’	44.2’	39.8’	35.8’	(4.0)’
a/ Requirement for A-I / B-I is 39.5 feet and for the Beechcraft G18S is 39.8 feet.							

Source: FAA *Aircraft Characteristics Database*. Side views of aircraft from the internet. Consultant estimates.

Table 4.2.1-1 shows the required taxilane-to-object clearance for A-I / B-I in general and for the G18S specifically would not be met if an aircraft much longer than the C-172 was tied down at either side of the taxilane. This analysis results in three recommendations:

- Caution should be used with parking twin-engine, turboprop, or jet aircraft at the two rows of tiedowns as the nose of such aircraft could obstruct the required taxiway centerline-to-object distance for the based Cessna 401A or Beechcraft G18S aircraft.
- Twin-engine, turboprop, or jet aircraft should be parked between the Bancroft Hangar and the FBO hangar. Use of this space would need to be coordinated with access to the west face of the Bancroft hangar and the south face of the FBO hangar. Sufficient space is not available north of the FBO hangar for such aircraft where their length is a concern due to the location of the existing fuel system.

Table 2.5.6-2 shows that even with Growth Scenario 2 (i.e. Ultimate Growth), the share of operations by twin-engine, turboprop, or jet aircraft at the airport would be 0.62%, 0.05%, and 0.02% respectively. Parking those twin-engine, turboprop, or jet aircraft which may be of concern should result in minimal, if any, inconvenience or inefficiency on the apron’s utilization.

Since their installation in 1992, some of the tiedown spaces have been eliminated, such as Tiedowns 36 through 40 (red-shaded numbers) near the aviation fueling area in order to accommodate the change in use of the apron pavement. Figures 4.2-2 and 4.2-3 show proposed maintenance, removal, and addition of tiedowns to accommodate demand with consideration for hangar frontage and taxilane OFAs. Tiedowns 1-7, 10, 11, and 17 (gray-shaded numbers) should remain because they would not be within any taxilane OFAs. Spaces 41 and 42 (blue-shaded numbers) should be added for itinerant parking

because they are closest to the FBO Hangar. Tiedown spaces 19-40 should be abandoned and removed. A 25-foot wide taxilane is proposed between the FBO Hangar and Bancroft Hangar to guide aircraft to and from both hangars and to ensure taxiing aircraft would remain clear of public tiedown spaces 7 and 10.

Demand for Future Growth is 11 spaces (8 tiedown and 3 itinerant), and 12 spaces would be provided (10 tiedowns and 2 itinerant). One of the "extra" tiedowns could be used for itinerant if needed. Four more spaces for a total of 16 (11 tiedowns and 5 Itinerant) would accommodate Ultimate Growth. Spaces 19-22 or others elsewhere along the easterly edge of the apron could be reclaimed if additional spaces become necessary.

Figure 4.2-4 identifies sections of the apron pavement that should be rehabilitated assuming that tiedown spaces were abandoned and/or added as shown in Figure 4.2-3. This is shown as the selection and implementation of an alternative discussed in this chapter that has funding implications for the expected funding entities (i.e. FAA, MaineDOT, Oxford County, and private individuals or firms). The AIP handbook generally provides for FAA–AIP funding of public use areas and for private-use areas if such areas are impacted by an FAA–AIP project.

The figure shows the following:

- Green-shaded areas show pavement abandonment and removal based on recommended tiedown abandonment and removal.
- Red dot bordered areas reflect tiedown removal, pavement abandonment/removal, tiedown, and public fueling areas that would be funded by FAA – AIP.
- Solid red bordered areas show the limits of proposed apron taxilanes, the length of the apron, and between the two hangars funded by FAA – AIP.
- The gray shaded area between the hangars would be used to park the larger aircraft where length would be a concern funded by FAA – AIP.
- The solid blue shaded areas note the hangar frontage areas to be made part of update leases and not FAA-AIP funded.
- The blue hatched areas note access that would be required between the private hangar frontage and the edge of the taxilanes. These lessee access areas would also not be FAA – AIP funded as each access would serve a particular hangar and would be privately used (by individual hangar operators). FAA and MaineDOT funding may be possible if additional pavement was provided to link the individual access to each hangar. Then, the access would be used by more than just one individual hangar operator. [5]
- Not shown but assumed is that Runway 15-33, Taxiway A and Taxiway B are public use and would be FAA – AIP funded.

The projects depicted on Figures 4.2-1 through 4.2-4 for Alternative 1 are maintenance and upgrade projects for existing facilities with no facility expansion or addition and would be common to Alternative 2 and Alternative 3 discussed below.

[5] There has been strong preference expressed at the airport for individually-owned and individually-operated hangars.

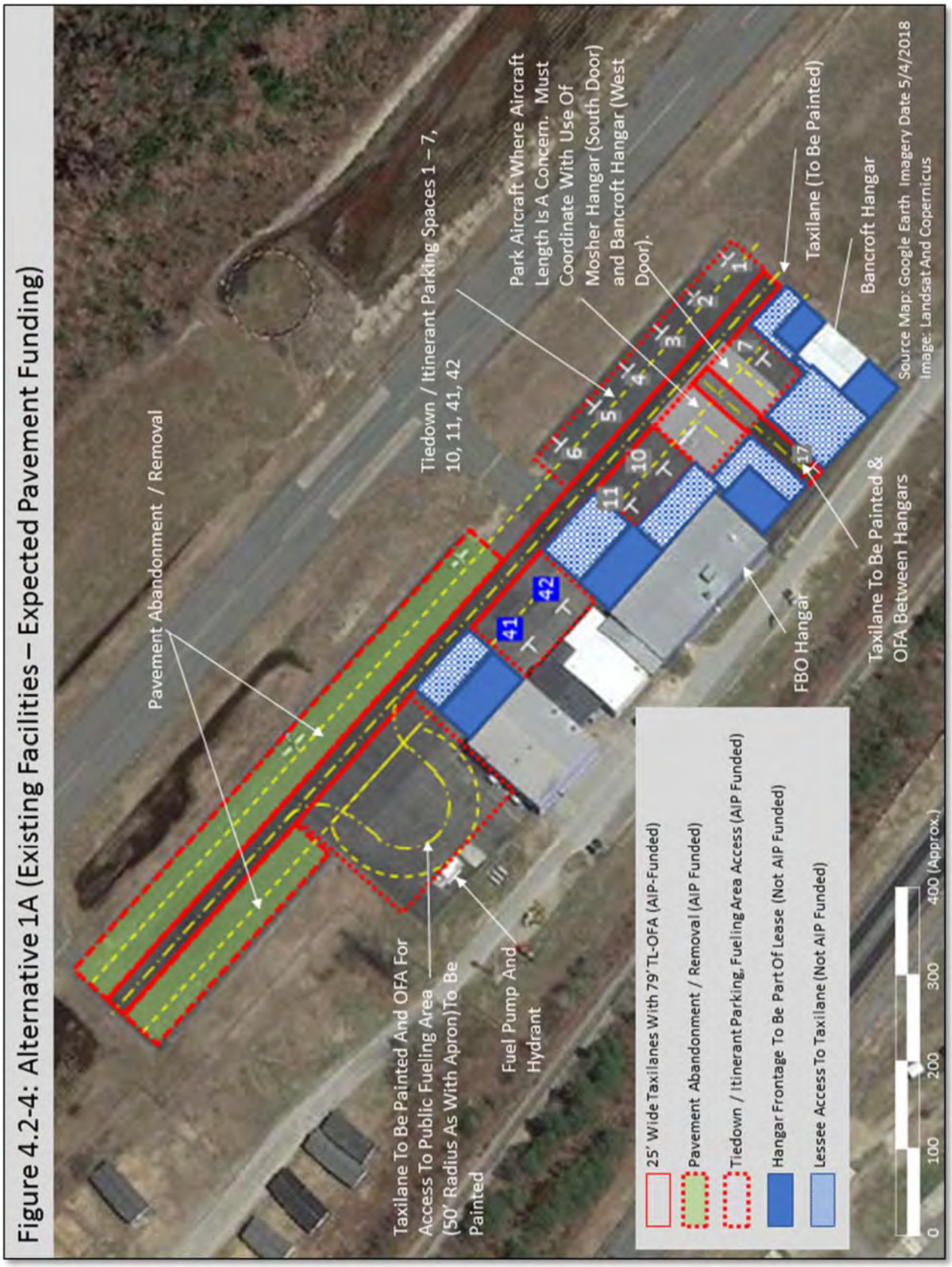


Figure 4.2-4 Alternative 1A – Existing Facilities Expected Pavement Funding

4.2.2 ALTERNATIVE 2

The goal of Alternative 2 is to accommodate the projected Future Growth demand and regulatory requirements within the existing airport property.

During the December 2019 PAC review meeting, a discussion ensued concerning the existing demand for approximately 10 additional hangar spaces. It was expected that most of this demand would be for individual hangar spaces. [6] Airport property is basically long in the northwest-southeast direction (i.e. aligned with the runway) and narrow in the southwest-northeast direction (i.e. perpendicular to the runway). Consequently, the airport property width provides minimal property for additional hangar and tiedown space once required clearances from the runway and taxilanes are considered. To optimize the available airport property, two concepts for Alternative 2 were prepared.

Alternative 2A is shown on Figure 4-2.5. There are 10 connected box hangars (two 5-space hangar buildings) south of and in line with the Bancroft hangar. [7] For planning purposes, each hangar is assumed to be 50 feet deep and 42' to 48' wide (orange rectangles). The hangar spaces would probably be constructed by a developer on land leased from the County, and the developer would lease out the individual spaces.

The 45-foot depth in front of the hangars would be reserved and made a part of each hangar space (blue rectangles). The apron taxilane, hangar frontage, and hangar access to the taxilane would need to be extended to the southeast 520 feet at a 70-foot width to provide aircraft access from these hangars (blue dot-pattern rectangles). This would provide extension of the apron taxilane as needed. It is recommended that this pavement be extended further to the southeast by 105 feet to allow connection of the apron taxilane to the Runway 33 turnaround. This would provide a partial parallel taxilane for more than half of the runway length. A rectangular parking lot would serve both buildings, connected to Airport Road at both ends.

The connected box hangars and their parking lots at their nearest points would be 48 feet and 9 feet from the edge of Airport Road. The Town of Oxford, Maine Zoning Ordinance Section 15.A.2 generally requires a minimum setback of 50 feet from edge of a road right-of-way in the Industrial Zone. However, Footnote no. 4 to the Setback Standards Table states that "Road setbacks for aircraft hangars at the Oxford County Airport may be reduced to allow the hangars to be set back to the greatest practical extent from the runway".

There should be a sufficient number of tiedowns and itinerant parking spaces for the planning period, but additional spaces may be needed for Ultimate Growth. If additional spaces are required, then as many as nine additional spaces could be provided by adding pavement to the easterly edge of the extended taxilane south of Tiedowns 1–6.

[6] Individual spaces could either be individual lots with a single hangar or each space or could be separate adjoining spaces in a single building.

[7] Box hangars would need a separate door for each hangar as opposed to a door the width of a building as with a conventional hangar.

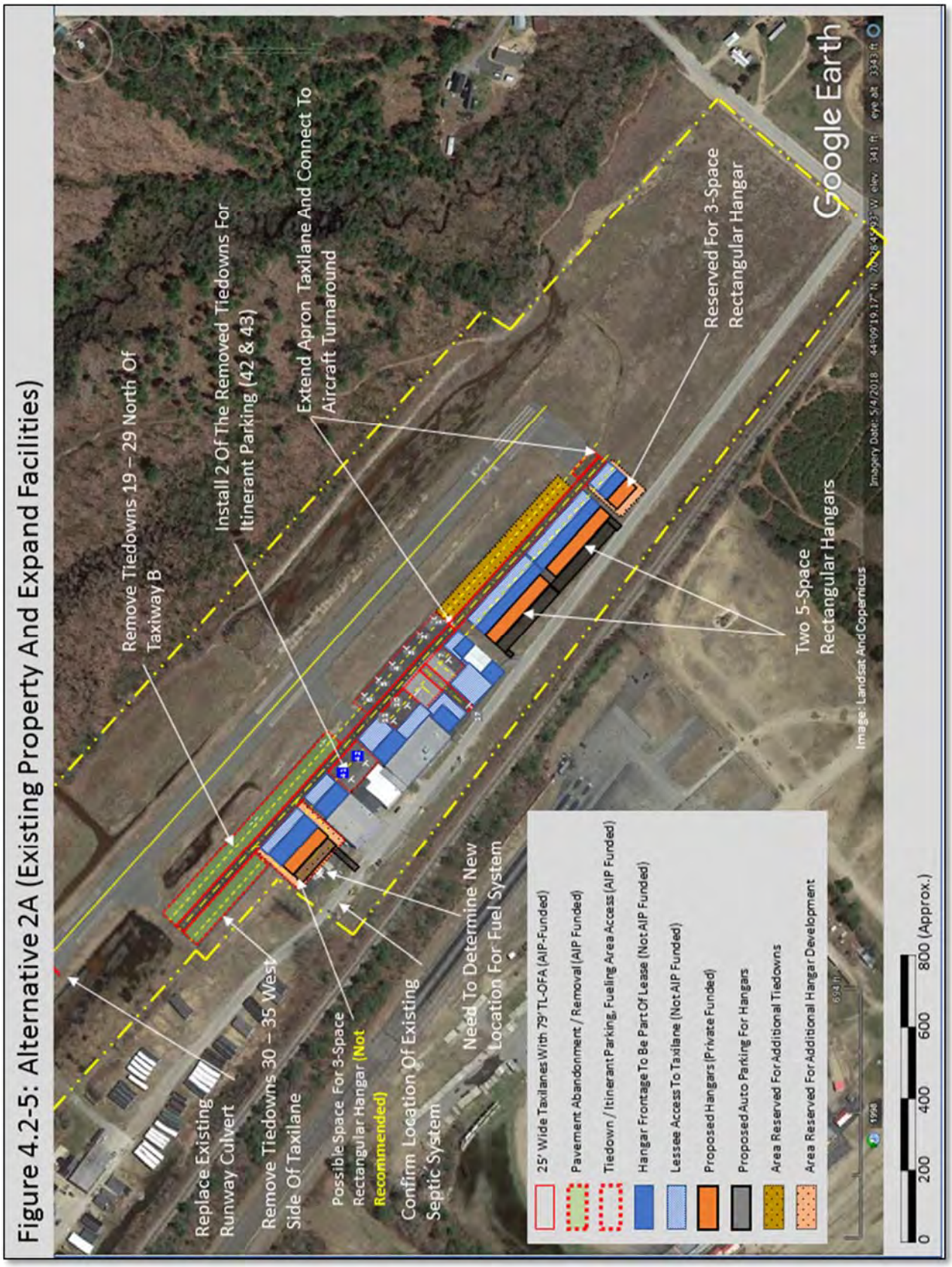


Figure 4.2-5 Alternative 2A – Existing Property and Expand Facilities

A total of 13 hangar spaces would be provided [8], thus meeting demand for Future Growth but requiring an additional six spaces to meet Ultimate Growth. There would be an area reserved for two additional connected box hangars at the Runway 33 end. There could also be an area for two additional connected box hangars where the fuel system is currently located. However, this would require the relocation of the fuel system, and a suitable alternative location was not identified so hangar development in this location is not recommended. With the construction of the additional two spaces reserved near the Runway 33 end, there would be 16 hangar spaces, four less than needed to accommodate Ultimate Growth.

Alternative 2B is shown on Figure 4-2.6. Five connected box hangar spaces, rather than the 10 spaces in Alternative 2A, would be provided to the south. This would require a 280-foot extension of the taxilane, hangar frontage, and access for the 5-space hangar. At this time, it is not recommended to extend the apron and apron taxilane approximately 345 feet further to the southeast to connect to the Runway 33 turnaround. An area would be reserved south of the 5-space box hangar for a second 5-space box hangar and 3-space box hangar in the same location as in Alternative 2A. Sufficient tiedown and itinerant parking spaces would be provided, and an area would be reserved along the easterly side of the extended taxilane south of Tiedown spaces 1-6 for an additional five tiedown spaces if they become needed.

Eight hangar spaces would be provided, so at least five additional hangar spaces would be required to meet Future Growth and an additional six spaces would be required to meet Ultimate Growth.

The aviation fuel system and the propane tanks would remain in-place at the north end of the apron. A 6-space box hangar would be constructed at the northwest corner of the apron where existing tiedown spaces 30–36 are located. This hangar would abut the existing apron pavement and would require site work between the pavement edge and the property line. There would be no area available for auto parking for this hangar. The nearest available auto parking would be approximately 300 feet to the south along the westerly side of Airport Road. Hangar frontage between the hangar face and the taxilane OFA would be approximately 20 feet which is not sufficient for an aircraft to exit the hangar and remain clear of the taxilane OFA. **Therefore, this hangar development is not recommended.**

With no hangar construction north of the fuel system, the second 5-space box hangar to the south would need to be constructed providing a total of 13 hangar spaces which is sufficient for Future Growth. If the second 5-space box hangar is to be constructed, then it **would be** recommended to extend the apron and apron taxilane approximately 345 feet further to the southeast to connect to the Runway 33 turnaround.

The discussion on Alternative 2A and Alternative 2B shows that without some amount of land acquisition, there would not be sufficient space for any hangar construction north of the FBO Hangar.

[8] A total of 13 hangar spaces would be provided by adding the existing three spaces in the existing Bancroft Hangar to the additional 10 spaces. Three aircraft storage spaces in the Bancroft Hangar are assumed for all alternatives.

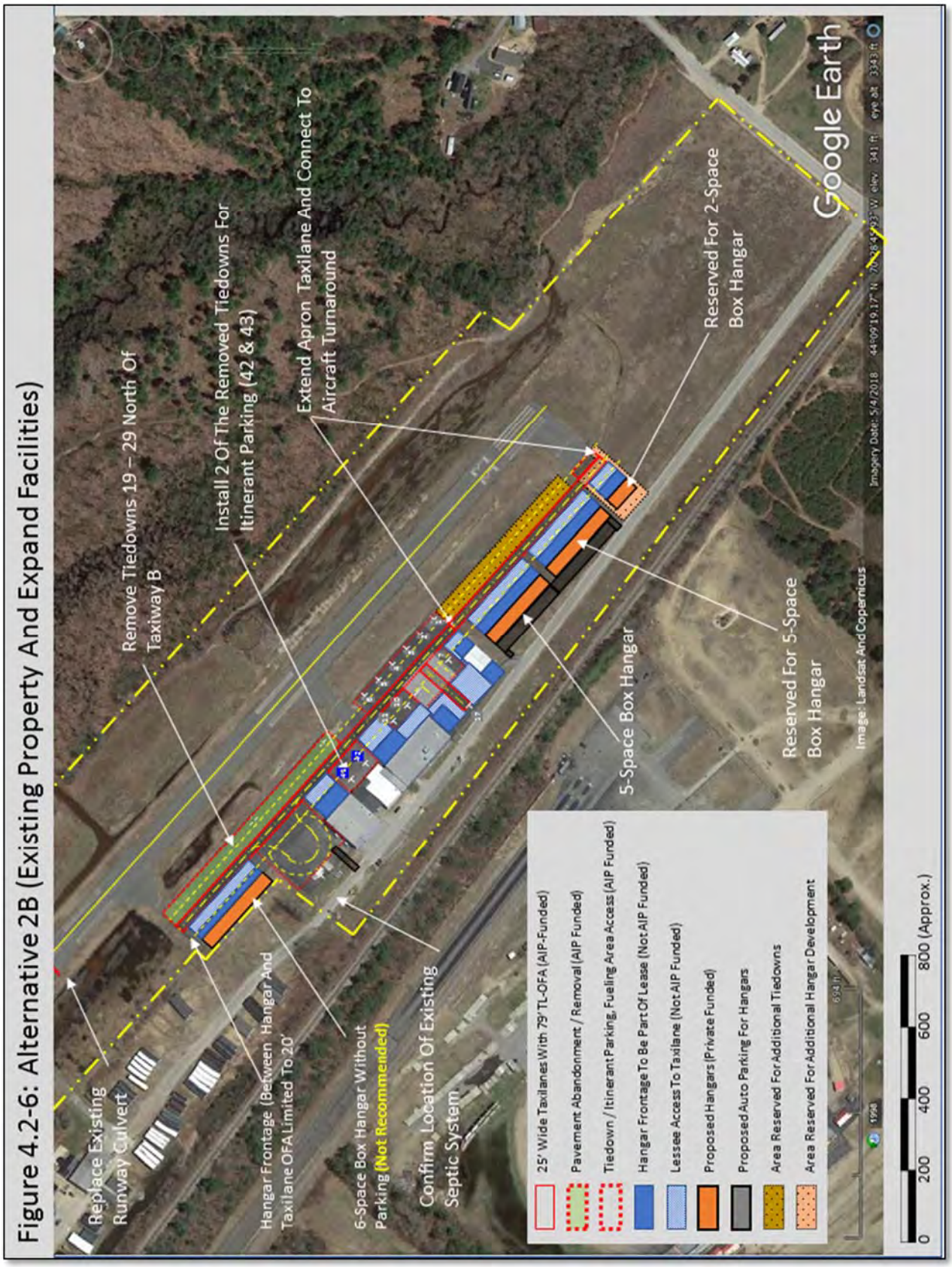


Figure 4.2-6 Alternative 2B – Existing Property and Expand Facilities

4.2.3 ALTERNATIVE 3

The goal of Alternative 3 is to accommodate the projected Future Growth demand and the regulatory requirements within both the existing property and property to be acquired.

Alternative 3A is shown on Figure 4.2-7. All of the hangar development is to take place on the north end of the apron. It begins with the acquisition of approximately 1.1 acres of abutting property and the construction of 10 nested T-hangar spaces with sufficient hangar frontage to allow aircraft to taxi west, north, and east of the hangar and with hangar access to reach the apron taxilane without obstructing the apron taxilane OFA [9]. Auto parking would be provided beyond the taxilane OFA between the hangar and the Airport Road extension. The existing apron taxilane would need to be extended north approximately 35 feet so it could connect with the hangar taxilanes.

Alternative 3A would provide 13 hangar spaces which is sufficient to meet Future Growth but six fewer than would be required for Ultimate Growth. Consequently, another area would be reserved for a second land acquisition of approximately 0.9 acres further to the north. This would provide an area for a second nested T-hangar with 6 spaces. There would be sufficient hangar frontage for aircraft to taxi west, south, and east of this hangar. A dual-lane taxilane would be provided between the 10-space T-hangar and the 6-space T-hangar to allow efficient taxiing to/from the east side of the hangars. The apron taxilane would need to be extended an additional 240 feet to the north to serve the 6-space T-hangar.

There would not be sufficient space between the hangar and Airport Road extension to allow for automobile parking, so parking would need to be added to the north of the 6-space T-hangar. Paved hangar access (blue dot-pattern) to connect with the apron taxiway is shown along the length of the 10-space and 6-space T-hangars. There is not sufficient width for a dual-lane taxilane east of the hangars so aircraft leaving the east face of the T-hangars would need to taxi directly to the apron taxiway.

Twelve tiedown/itinerant parking spaces would be provided accommodating Future Growth but five fewer than would be required for Ultimate Growth. Five or six additional tiedown/itinerant parking spaces could be provided by reclaiming the area shown east of the apron taxilane north of Taxiway A

Alternative 3B is depicted on Figure 4.2-8. Alternative 3B differs from the other alternatives in that it provides for development south of the apron on existing property and development north of the apron on property to be acquired, and it provides for three different types of hangars.

Alternate 3B proposed box hangars as with the other alternatives, but the box hangars on the south end are individual buildings which would be leased on individual sites. Approximately 0.6 acres of property would need to be acquired north of the fueling area to accommodate a 21,500 SF conventional hangar that could accommodate approximately eight small aircraft along with space for automobile parking, hangar frontage, and access to the apron taxilane.

Further to the north is reserved a 1-acre area for a 6-space nested T-hangar. There would be hangar frontage to accommodate aircraft taxiing west, south, and east of this hangar. A dual-lane taxilane would be provided between the conventional hangar and the 6-Space nested T-hangar to allow for efficient access to/from the west face of the T-hangar. The apron taxilane, hangar frontage and access to the apron taxilane would need to be extended to the north approximately 225 feet to connect to the T-hangar.

[9] Nested T-hangars are configured so spaces along one side of the T-hangar are adjacent without the back section of the opposite-facing spaces in between. The latter configuration is called standard T-hangars.



Figure 4.2-7 Alternative 3A – Acquire Property and Expand Facilities

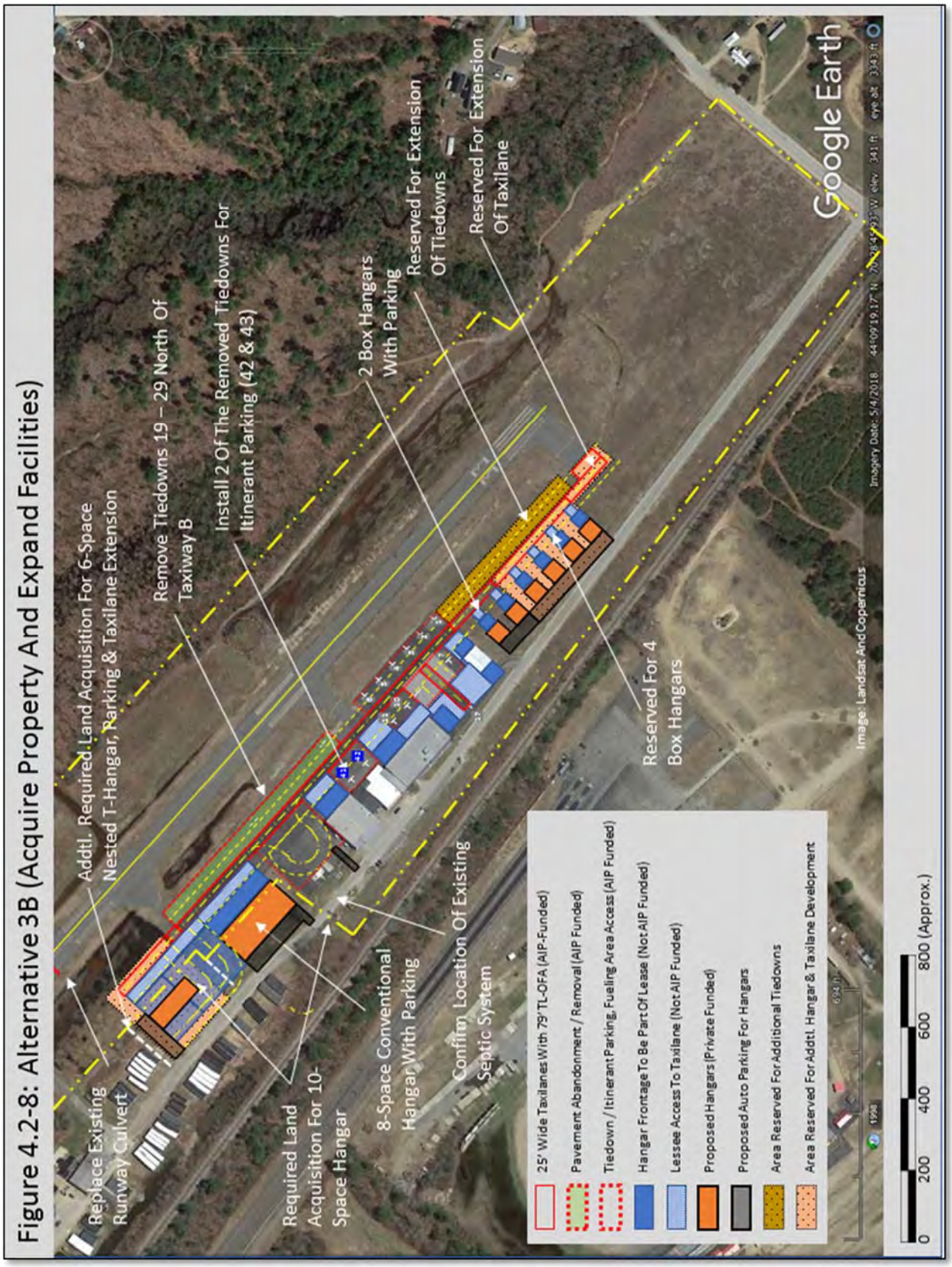


Figure 4.2-8 Alternative 3B – Acquire Land and Expand Facilities

South of the Bancroft Hangar would be two box hangar sites with area reserved for an additional four box hangar sites further to the south. The apron taxiway, individual hangar frontage, and access to the apron taxilane would need to be extended approximately 165 feet to the south for the first two box hangars. The apron taxiway, individual hangar frontages, and access to the apron taxilane would need to be extended an additional 310 feet further to the south if the additional four box hangars were constructed. If the four box hangars were to be constructed, then an extension of the apron taxilane to the Runway 33 aircraft turnaround would be recommended.

Fifteen hangar spaces would be provided with the addition of the 8-space conventional hangar to the north and the two 2-space box hangars to the south. This would accommodate Future Growth and would be one space short of accommodating Ultimate Growth. If hangar spaces over and above Future Growth are required, then they could be provided in areas that are reserved for a 6-space nested T-hangar to the north and/or up to four 2-space box hangars to the south.

Twelve tiedowns would be provided thus meeting the demand for the Future Growth but being short of Ultimate Growth by four spaces. Additional tiedowns could be provided by reclaiming the tiedowns that are recommended to be removed between Taxiway A and Taxiway B and/or constructing tiedowns east of the box hangars along the east side of the extended apron taxilane.

4.2.4 ALTERNATIVE 4

Alternative 4 shown on Figure 4.2-9, was created to both maximize development on the south end and to accommodate actual growth before considering land acquisition and detailed plans to accommodate growth that may occur in the more distant future.

Six 50’ X 50’ 2-space Box Hangars are proposed south of the Bancroft Hangar. With the Bancroft Hangar, a total of 15 aircraft hangar spaces would be provided. Chapter 3 showed an ultimate demand for 19 spaces (four more than would be provided in this alternative). Along with funding each Box Hangar, the developer would also fund the hangar frontage, access to the apron taxilane, and extension of the apron taxilane. When the sixth (southernmost) Box Hangar is constructed, the County would extend the taxilane the remaining 150 feet to connect to the Runway 33 turnaround. This in effect would provide a partial parallel taxiway/taxilane for approximately 60% of the runway.

Tiedowns would be arranged as described for Alternative 3B. If additional tiedowns are required, then the tiedowns that were abandoned along the easterly edge of the apron could be reclaimed. A parking lot would be constructed between the Box Hangars and Airport Road with access along the easterly edge of Airport Road.

Northerly of the fuel farm would be two areas (Phase 1 and Phase 2) within an 11.84-acre parcel abutting the airport to be reserved for additional hangar development. When and if property is to be acquired within this area, property acquisition is recommended to extend from existing airport property westerly to the St. Lawrence and Atlantic Railroad property. County-owned Airport Road extends north to the existing airport property line; therefore, as with Alternative 3A and Alternative 3B, County land acquisition would have to include the extension of Airport Road.

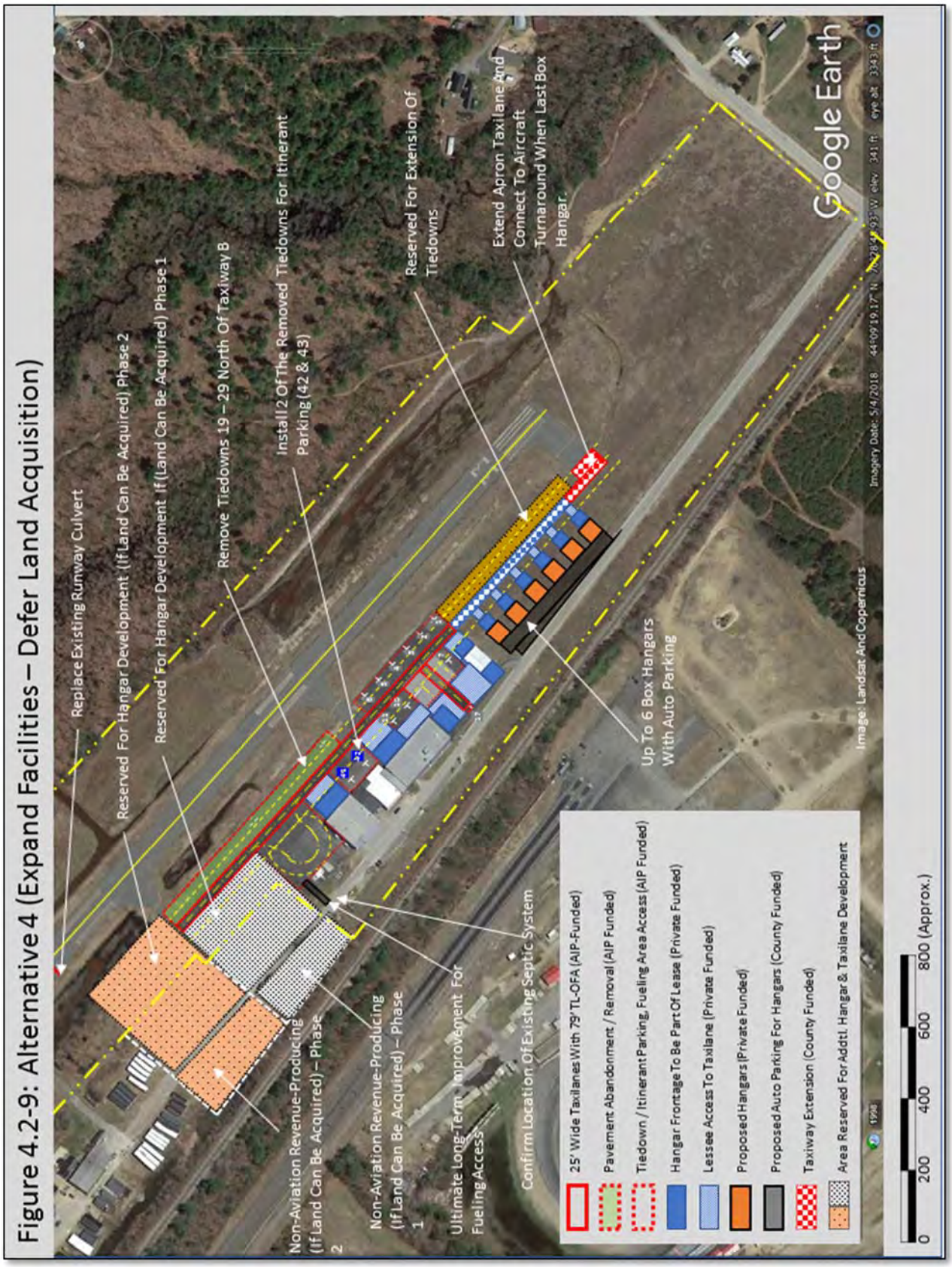


Figure 4.2-9 Alternative 4 – Expand Facilities and Defer Land Acquisition

The Phase 1 area is comprised of a 2.1 acre area, and it is shown in Alternative 3B to accommodate an 8-space Conventional Hangar. [10] The Phase 2 area is comprised of a 2.1 acre hangar area and it is shown in Alternative 3B to accommodate a 6-space Nested T-Hangar. [11] In addition to hangar development, there are many other potential non-aviation uses of the two areas such as offices, manufacturing, transportation, shipping, etc.

4.3 COST COMPARISON

Any airport projects that are currently underway, or that have already been identified as needed to improve the Airport's existing conditions, would not be affected by the proposed development improvements that are recommended to meet the forecasted needs and future demand. Such projects have been included as Alternative 1 projects, and they are depicted in Figures 4.2-1 through Figure 4.2-4 and shown in Table 4.3-1.

All of the Alternative 1 projects would be common to all of the alternatives. Most of the projects are self-evident but some require further discussion. Airspace obstructions should be mapped, and easements should be acquired within the 40:1 Instrument Departure Surface within the area where obstructions may be a concern but at least beyond the runway ends to the length of the existing avigation easements. To present a quantity and cost in the table, it has been assumed that easements would be acquired between existing airport property and the edges of the Instrument Departure Surface [12].

The project cost estimates are based on comparable project costs and adjusted to 2019 costs by applying the Construction Cost Index (CCI) for construction projects or the Consumer Price Index (CPI) for non-construction projects. [13] The figures in Tables 4.3-1 through 4.3-5 include a 15% increase for planning, environmental, and contingency on construction. Key inputs for stakeholders are the master plan period (i.e. 20-years) costs. The development costs were then broken out based on the expected project funding sources:

- FAA Airport Improvement Program (AIP) funding: typically, 90% FAA, 5% MaineDOT, and 5% Oxford County for projects or portions of projects that are expected to be eligible for funding under the FAA-AIP. Such projects would typically include land acquisition, tiedown spaces, access to the apron taxilane, the aircraft parking area between the FBO and Bancroft hangars to accommodate large aircraft, aircraft access to the public fueling area, removal of abandoned tiedown spaces and related pavement, airfield lighting and equipment, obstruction removal, etc.
- Most maintenance items and project costs are paid 100% by the County.
- Reconstruction of hangar frontage and hangar access to the apron taxilane for existing hangars would not be FAA-AIP funded and is assumed to be funded by the County.

[10] A different use, other than an 8-space Conventional Hangar may be appropriate at such time as the Phase 1 area is acquired.

[11] A different use, other than a 6-space Nested T-Hangar may be appropriate at such time as the Phase 2 area is acquired.

[12] It is not expected that avigation easements would be acquired to the lateral limits of the Instrument Departure Surface and out the same distance from runway end as existing easements. The actual area required cannot be determined until a survey review of the Departure Surface is done.

[13] Year 2020 CCI and CPI are not available, so the yearly average has been used to estimate project costs.

- All hangar development, including new hangars and related frontage and access to the apron taxilane, would be funded by private developers. Projects such as hangars, aprons, and automobile parking lots related to those hangars would be privately funded as well.

The cost comparison for the alternatives includes only those costs for Alternative 1 and the costs for Future Growth for each alternative (around which the recommended Airport Layout Plan would be prepared) and do not include Ultimate Growth (which may or may not occur).

Costs for land acquisition by avigation easement to protect the Runway 15-33 Instrument Departure Surfaces or in fee simple to accommodate hangar construction would be based on subsequent land appraisal and negotiation, and these estimated costs are not appropriate for publishing at this time.

Alternative 1 funding shares are:

	Future Growth	Ultimate Growth	Total
FAA	$1,021,080	$0	$1,021,080
MaineDOT	$56,950	$0	$56,950
Oxford County (AIP funded)	$56,370	$0	$56,370
Oxford County (non-AIP funded)	$253,500	$0	$253,500
Private	$0	$0	$00
Alternative 1 Development Total	**$1,387,900**	**$0**	**$1,387,900**

As mentioned before, it is assumed that the Alternative 1 projects are common to all of the other alternatives. The detail in Table 4.3-1 is collapsed into one line at the top of Tables 4.3-2 to 4.3-6 and included as part of Alternatives 2A and 2B, Alternatives 3A and 3B, and Alternative 4.

Alternative 2A (i.e. constructing improvements on both the south end and on the north end within the existing airport property) is depicted in Figure 4.2-5 with costs shown on Table 4.3-2. Table 4.3-2 shows funding shares to be:

	Future Growth	Ultimate Growth	Total
FAA	$1,021,080	$107,600	$1,128,600
MaineDOT	$56,950	$6,000	$62,950
Oxford County (AIP funded)	$56,370	$5,900	$62,270
Oxford County (non-AIP funded)	$352,400	$0	$352,400
Private	$2,041,000	$361,300	$2,402,300
Alternative 2A Development Total	**$3,527,800**	**$480,800**	**$4,008,600**

Alternative 2B (i.e. constructing improvements on both the south end and on the north end within the existing airport property but with more focus on the north end than Alternative 2A) is depicted in Figure 4.2-6 with costs shown on Table 4.3-3. Table 4.3-3 shows funding shares to be:

	Future Growth	Ultimate Growth	Total
FAA	$1,105,880	$107,600	$1,213,480
MaineDOT	$61,650	$6,000	$67,750
Oxford County (AIP funded)	$61,120	$5,900	$67,020
Oxford County (non-AIP funded)	$253,500	$98,900	$352,400
Private	$1,132,050	$1,378,500	$2,510,550
Alternative 2B Development Total	**$2,614,200**	**$1,596,900**	**$4,211,100**

Alternative 3A and Alternative 3B involve acquiring additional airport property as needed to improve the airport facilities. Alternative 3A involves all new hangars and aprons to be created north of the FBO hangar. Alternative 3B involves two small, individual hangars south of the FBO hangar and all of the remaining storage improvements north of the FBO hangar.

Alternative 3A is depicted on Figure 4.2-7 with costs shown in Table 4.3-4. Table 4.3-4 shows funding shares to be:

	Future Growth	Ultimate Growth	Total
FAA	$1,021,080	$84,800	$1,105,880
MaineDOT	$56,950	$4,700	$61,650
Oxford County (AIP funded)	$56,370	$4,750	$61,120
Oxford County (non-AIP funded)	$253,500	$0	$253,500
Private	$1,411,600	$1,244,150	$2,655,750
Alternative 3A Development Total	**$2,799,500**	**$1,338,400**	**$4,137,900**

Alternative 3B is depicted on Figure 4.2-8 with costs shown in Table 4.3-5. Table 4.3-5 shows funding shares to be:

	Future Growth	Ultimate Growth	Total
FAA	$1,021,080	$70,700	$1,091,780
MaineDOT	$56,950	$3,900	$60,850
Oxford County (AIP funded)	$56,370	$3,950	$60,320
Oxford County (non-AIP funded)	$253,500	$129,600	$383,100
Private	$1,637,700	$2,444,050	$4,081,750
Alternative 3B Development Total	**$3,025,600**	**$2,652,200**	**$5,677,800**

Alternative 4 is depicted on Figure 4.2-9 with costs shown in Table 4.3-6, to both maximize development on the south end and to accommodate actual growth before considering land acquisition and detailed plans to accommodate growth that may occur in the more distant future. Table 4.3-6 shows funding shares to be:

	Future Growth	Ultimate Growth	Total
FAA	$1,021,080	$0	$1,021,080
MaineDOT	$56,950	$0	$56,950
Oxford County (AIP funded)	$56,370	$0	$56,370
Oxford County (non-AIP funded)	$409,900	$0	$409,900
Private	$1,303,900	$0	$1,303,900
Alternative 4 Development Total	**$2,848,200**	**$0**	**$2,848,200**

For ease of comparison, Table 4.3-7 is a summary of costs and funding share for each alternative with separate figures provided for Future Growth and for Ultimate Growth

Table 4.3-1 Alternative 1 Costs

Scenario Accom-modated	Item	Quantity	Units	Development Cost 2/		FAA - AIP: FAA Share (90%)	FAA - AIP: MaineDOT Share (5%)	FAA - AIP: Oxford County Share (5%)	Non-AIP: Oxford County Share (100%)	Non-AIP: Private Share (Remainder)
	Avigation Easement									
	Property Survey & Deed Work Avigqation Easements (RW 15 & 33)	1	LS	$50,000		$45,000	$2,500	$2,500		
	Map Obstructions For Instrument Departure Surface 5,788,850 SF (133 Acres±)	1	LS	$30,000		$27,000	$1,500	$1,500		
	Acquire Avigation Easement - Runway 15	58.0	Acres	**Easement Acquisition Costs To Be Provided At A Later Date 3/**						
	Acquire Avigation Easement - Runway 33	75.0	Acres	**Easement Acquisition Costs To Be Provided At A Later Date 3/**						
	Rehabilitate Apron Pavement And Modify Drainage									
	• Reconstruct Apron Taxilanes	3,642	SY	$141,400		$127,300	$7,100	$7,000		
	• Reconstruct/Install Tiedowns / Itinerant Parking	5,162	SY	$200,500		$180,500	$10,000	$10,000		
	• Reconstruct Hangar Frontage - FBO Hangar	1,389	SY	$53,900					$53,900	
	• Reconstruct Hangar Access - FBO Hangar	1,665	SY	$64,700					$64,700	
	• Reconstruct Hangar Frontage - Bancroft Hangar	464	SY	$18,000					$18,000	
	• Reconstruct Hangar Access - Bancroft Hangar	1,064	SY	$41,300					$41,300	
	• Construct Access to Public Fueling Area	3,553	SY	$138,000		$124,200	$6,900	$6,900		
	• Abandon Tiedowns 19 - 35	16	EA	$25,200		$22,680	$1,300	$1,220	$0	$0
				$683,000		$454,680	$25,300	$25,120	$177,900	$0
	Construct Fuel Truck Access To Fueling Area From Airport Road	193	SY	$7,500		$6,800	$400	$300		
	Modifications To New Taxiway Edge Lighting And New Signs	1	LS	$30,200		$27,200	$1,500	$1,500		
	Rehabilitate Rotating Beacon	1	LS	$17,300					$17,300	
	Abandon Unused Taxiway C (Schiavi Taxiway) And Drainage Modifications	1,134	SY	$13,700		$12,300	$700	$700		
	Conduct Design Study Of Drainage In Area Of 155-Foot 21-Inch CMP Culvert Under Runway 15-33	1	LS	$84,100		$75,700	$4,200	$4,200		
	Complete Airport Fencing	1,570	LF	$45,200		$40,700	$2,300	$2,200		
	Remark Apron Taxilane (Outside of Holdlines)	700	SF	$900		$800	$50	$50		
	Install Red Obstruction Lights On Hangars	3	EA	$5,200					$5,200	
	Investigate / Repair UG Sewer System	1	LS	$8,000					$8,000	
	Remove 3 Hazard Beacons, 8,000± LF Cables And Poles	1	LS	$15,000		$13,500	$800	$700		
	Replace 1 Hazard Beacon With LED	1	LS	$3,000		$2,700	$200	$100		
	Abandon Jet-A Portion Of Fuel System	1	LS	$12,000		$0	$0	$0	$12,000	
	Replace Airport Lighting Radio Controller	1	LS	$15,800		$14,200	$800	$800		
	Install Precision Approach Path Indicators (PAPI) Runway 15 & 33	2	LS	$287,800		$259,000	$14,400	$14,400		
	Install Runway End Identifier Lights (REILs) Runway 33 End	1	LS	$24,400		$22,000	$1,200	$1,200		
	Install Lighted Supplemental Windsock Runway 33 End	1	LS	$21,700		$19,500	$1,100	$1,100		
	Improve & Install 4 Airport Signs On- and Off-Airport & Upgrade Landscaping	1	LS	$13,100					$13,100	
	Prepare Airport Security and Emergency Manual & Minimum Standards (Airport Rules & Regulations)	1	LS	$20,000					$20,000	
Total - Alternative 1				**$1,387,900**		**$1,021,080**	**$56,950**	**$56,370**	**$253,500**	**$0**

1/ CCI adjustment factor if shown. For avigation easement; the Comsumer Price Intex
2/ Development Cost includes a 15% factor for Plannning, Environmental, and Contingency.
3/ Costs for additional avigation easement acquisition to protect Instrument Departure Surface would be based on subsequent appraisal and negotiation so an estimate would not be appropriate for publishing at this time.

Source: Consultant estimates, Construction Cost Index data, Comsumer Price Index data, and Master Plan records.

Table 4.3-2 Alternative 2A Costs

							FAA - AIP			Non-AIP	
Scenario Accom-modated	Item	Area (SF)	Quantity	Units	Development Cost 2/		FAA Share (90%)	MaineDOT Share (5%)	Oxford County Share (5%)	Oxford County Share (100%)	Private Share (Remainder)
Alt 1	Total Alternative 1. Alternative 1 Totals Are Included In Future Growth Totals Below				**$1,387,900**		**$1,021,080**	**$56,950**	**$56,370**	**$253,500**	**$0**
Future Growth	Construct Two 5-Space Box Hangars (South End)										
	• Hangars	18,450	18,450	SF	$614,800						$614,800
	• Frontage	20,726	2,303	SY	$450,300						$450,300
	• Hangar Access	17,834	1,982	SY	$387,500						$387,500
	• Hangar Parking and Driveways	25,518	2,835	SY	$301,000		$0	$0	$0	$0	$301,000
					$1,753,600		$0	$0	$0	$0	$1,753,600
	Extend Apron and Apron Taxiway (South End)	13,229	1,470	SY	$287,400		$0	$0	$0	0	$287,400
	Connect Apron Taxilane Extension To Runway 33 Turnaround	4,554	506	SY	$98,900		$0	$0	$0	$98,900	$0
	Total For Future Growth				**$3,527,800**		**$1,021,080**	**$56,950**	**$56,370**	**$352,400**	**$2,041,000**
Ultimate Growth	Construct 2-Space Box Hangars (South End)										
	• Hangars	3,198	3,198	SF	$106,600						$106,600
	• Frontage	3,354	373	SY	$72,900						$72,900
	• Hangar Access	2,866	318	SY	$62,300		$0	$0	$0	$0	$62,300
					$241,800		$0	$0	$0	$0	$241,800
	Construct 9 Tiedowns Along East Side Of Extended Taxilane	11,000	1,222	SY	$239,000		$107,600	$6,000	$5,900	$0	$119,500
	Total For Utlimate Growth				**$480,800**		**$107,600**	**$6,000**	**$5,900**	**$0**	**$361,300**
Total - Alternative 2A					**$4,008,600**		**$1,128,680**	**$62,950**	**$62,270**	**$352,400**	**$2,402,300**

1/ CCI adjustment factor if shown. For avigation easement; the Comsumer Price Intex (CPI) was
2/ Development Cost includes a 15% factor for Plannning, Environmental, and Contingency.

Source: Consultant estimates, Construction Cost Index data, Comsumer Price Index data, and Master Plan records.

Table 4.3-3 Alternative 2B Costs

Scenario Accom-modated	Item	Area (SF)	Quantity	Units	Development Cost 2/	FAA - AIP FAA Share (90%)	FAA - AIP MaineDOT Share (5%)	FAA - AIP Oxford County Share (5%)	Non-AIP Oxford County Share (100%)	Non-AIP Private Share (Remainder)
Alt 1	Total Alternative 1. Alternative 1 Totals Are Included In Future Growth Totals Below				$1,387,900	$1,021,080	$56,950	$56,370	$253,500	$0
Future Growth	Construct One 5-Space Box Hangar (South End)									
	• Hangars	9,225	9,225	SF	$307,400					$307,400
	• Frontage	10,406	1,156	SY	$226,100					$226,100
	• Hangar Access	8,954	995	SY	$194,500					$194,500
	• Hangar Parking and Driveways	13,890	1,543	SY	$163,800	$0	$0	$0	$0	$163,800
					$891,800	$0	$0	$0	$0	$891,800
	Extend Apron and Apron Taxiway (South End)	6,720	747	SY	$146,000	$0	$0	$0	$0	$146,000
	Extend Apron Taxiway To Runway 33 Turnaround	8,675	964	SY	$188,500	$84,800	$4,700	$4,750	$0	$94,250
	Total For Future Growth				**$2,614,200**	**$1,105,880**	**$61,650**	**$61,120**	**$253,500**	**$1,132,050**
Ultimate Growth	Extend Apron and Apron Taxiway (South End)	6,509	723	SY	$141,400	$0	$0	$0	$0	$141,400
	Construct One 5-Space Box Hangar (South End)									
	• Hangars	9,225	9,225	SF	$307,400					$307,400
	• Frontage	10,406	1,156	SY	$226,100					$226,100
	• Hangar Access	8,954	995	SY	$194,500	$0	$0	$0	$0	$194,500
	• Hangar Parking and Driveways	11,628	1,292	SY	$137,200	$0	$0	$0	$0	$137,200
					$865,200	$0	$0	$0	$0	$865,200
	Connect Apron Taxilane Extension To Runway 33 Turnaround	4,554	506	SY	$98,900	$0	$0	$0	$98,900	$0
	Construct One 2-Space Box Hangar (South End) With No Parking									
	• Hangars	3,198	3,198	SF	$106,600					$106,600
	• Frontage	3,354	373	SY	$72,900					$72,900
	• Hangar Access	3,354	373	SY	$72,900	$0	$0	$0	$0	$72,900
					$252,400	$0	$0	$0	$0	$252,400
	Construct 9 Tiedowns Along East Side Of Extended Taxilane	11,000	1,222	SY	$239,000	$107,600	$6,000	$5,900	0	$119,500
	Total For Utlimate Growth				**$1,596,900**	**$107,600**	**$6,000**	**$5,900**	**$98,900**	**$1,378,500**
Total - Alternative 2B					**$4,211,100**	**$1,213,480**	**$67,650**	**$67,020**	**$352,400**	**$2,510,550**

1/ CCI adjustment factor if shown. For avigation easement; the Comsumer Price Intex (CPI) was
2/ Development Cost includes a 15% factor for Plannning, Environmental, and Contingency.

Source: Consultant estimates, Construction Cost Index data, Comsumer Price Index data, and Master Plan records

Table 4.3-4 Alternative 3A Costs

Scenario Accom-modated	Item	Area (SF)	Quantity	Units	Development Cost 2/	FAA - AIP: FAA Share (90%)	FAA - AIP: MaineDOT Share (5%)	FAA - AIP: Oxford County Share (5%)	Non-AIP: Oxford County Share (100%)	Non-AIP: Private Share (Remainder)
Alt 1	Total Alternative 1. Alternative 1 Totals Are Included In Future Growth Totals Below				**$1,387,900**	**$1,021,080**	**$56,950**	**$56,370**	**$253,500**	**$0**
Future Growth	Construct One 10-Space Nested T-Hangar With Parking (North End)									
	• Land Acquisition	55,300	2.5	AC	**Land Acquisition Costs To Be Provided At A Later Date 3/**					
	• Hangars	11,781	11,781	SF	$392,600					$392,600
	• Frontage	35,334	3,926	SY	$767,700					$767,700
	• Hangar Access	8,060	896	SY	$175,100					$175,100
	• Hangar Parking and Driveways	4.624	514	SY	$54,500	$0	$0	$0	$0	$54,500
					$1,389,900	$0	$0	$0	$0	$1,389,900
	Extend Apron and Apron Taxiway (North End)	1,000	111	SY	$21,700	$0	$0	$0	$0	$21,700
	Total For Future Growth				**$2,799,500**	**$1,021,080**	**$56,950**	**$56,370**	**$253,500**	**$1,411,600**
Ultimate Growth	Construct One 6-Space Nested T-Hangar With Parking (North End)									
	• Land Acquisition	41,600	2.1	AC						
	• Hangars	7,497	7,497	SF	$249,800					$249,800
	• Frontage	27,634	3,070	SY	$600,400					$600,400
	• Hangar Access	6,188	688	SY	$134,500					$134,500
	• Hangar Parking and Driveways	3,045	338	SY	$35,900	$0	$0	$0	$0	$35,900
					$1,020,600	$0	$0	$0	$0	$1,020,600
	Extend Apron and Apron Taxiway (North End)	5,950	661	SY	$129,300	$0	$0	$0	$0	$129,300
	Reclaim 6 Tiedowns	8,675	964	SY	$188,500	$84,800	$4,700	$4,750	$0	$94,250
	Total For Utlimate Growth				**$1,338,400**	**$84,800**	**$4,700**	**$4,750**	**$0**	**$1,244,150**
Total - Alternative 3A					**$4,137,900**	**$1,105,880**	**$61,650**	**$61,120**	**$253,500**	**$2,655,750**

1/ CCI adjustment factor if shown. For avigation easement; the Consumer Price Intex (CPI) was
2/ Development Cost includes a 15% factor for Plannning, Environmental, and Contingency.
3/ Costs for additional avigation easement acquisition to protect Instrument Departure Surface and land acquisition for hangar development would be based on subsequent appraisal and negotiation so an estimate would not be appropriate for publishing at this time.

Source: Consultant estimates, Construction Cost Index data, Consumer Price Index data, and Master Plan records.

Table 4.3-5 Alternative 3B Costs

Scenario Accom-modated	Item	Area (SF)	Quantity	Units	Development Cost 2/	FAA - AIP: FAA Share (90%)	FAA - AIP: MaineDOT Share (5%)	FAA - AIP: Oxford County Share (5%)	Non-AIP: Oxford County Share (100%)	Non-AIP: Private Share (Remainder)
Alt 1	Total Alternative 1. Alternative 1 Totals Are Included In Future Growth Totals Below				**$1,387,900**	**$1,021,080**	**$56,950**	**$56,370**	**$253,500**	**$0**
Future Growth	Construct One 10-Space Nested T-Hangar With Parking (North End)									
	• Land Acquisition	55,300	2.5	AC	**Land Acquisition Costs To Be Provided At A Later Date 3/**					
	• Hangars	11,781	11,781	SF	$392,600					$392,600
	• Frontage	35,334	3,926	SY	$767,700					$767,700
	• Hangar Access	8,060	896	SY	$175,100					$175,100
	• Hangar Parking and Driveways	4.624	514	SY	$54,500	$0	$0	$0	$0	$54,500
					$1,389,900	$0	$0	$0	$0	$1,389,900
	Extend Apron and Apron Taxiway (North End)	1,000	111	SY	$21,700	$0	$0	$0	$0	$21,700
	Total For Future Growth				**$2,799,500**	**$1,021,080**	**$56,950**	**$56,370**	**$253,500**	**$1,411,600**
Ultimate Growth	Construct One 6-Space Nested T-Hangar With Parking (North End)									
	• Land Acquisition	41,600	2.1	AC						
	• Hangars	7,497	7,497	SF	$249,800					$249,800
	• Frontage	27,634	3,070	SY	$600,400					$600,400
	• Hangar Access	6,188	688	SY	$134,500					$134,500
	• Hangar Parking and Driveways	3,045	338	SY	$35,900	$0	$0	$0	$0	$35,900
					$1,020,600	$0	$0	$0	$0	$1,020,600
	Extend Apron and Apron Taxiway (North End)	5,950	661	SY	$129,300	$0	$0	$0	$0	$129,300
	Reclaim 6 Tiedowns	8,675	964	SY	$188,500	$84,800	$4,700	$4,750	$0	$94,250
	Total For Utlimate Growth				**$1,338,400**	**$84,800**	**$4,700**	**$4,750**	**$0**	**$1,244,150**
Total - Alternative 3A					**$4,137,900**	**$1,105,880**	**$61,650**	**$61,120**	**$253,500**	**$2,655,750**

1/ CCI adjustment factor if shown. For avigation easement; the Consumer Price Intex (CPI) was
2/ Development Cost includes a 15% factor for Plannning, Environmental, and Contingency.
3/ Costs for additional avigation easement acquisition to protect Instrument Departure Surface and land acquisition for hangar development would be based on subsequent appraisal and negotiation so an estimate would not be appropriate for publishing at this time.

Source: Consultant estimates, Construction Cost Index data, Consumer Price Index data, and Master Plan records.

Table 4.3-6 Alternative 4 Costs

							FAA - AIP			Non-AIP	
Scenario Accom-modated	Item	Area (SF)	Quantity	Units	Development Cost 2/		FAA Share (90%)	MaineDOT Share (5%)	Oxford County Share (5%)	Oxford County Share (100%)	Private Share (Remainder)
Alt. 1	Total Alternative 1. Alternative 1 Totals Are Included In Future Growth Totals Below				**$1,387,900**		**$1,021,080**	**$56,950**	**$56,370**	**$253,500**	**$0**
Alt. 4	Construct Six Separate Box Hangar Sites (South End)										
	• Hangars	15,000	15,000	SF	$499,900						$499,900
	• Frontage	8,160	900	SY	$176,000						$176,000
	• Hangar Access	4,200	500	SY	$97,800						$97,800
	• Hangar Parking and Driveways	23,340	2,600	SY	$276,000		$0	$0	$0	$0	$276,000
					$1,049,700		$0	$0	$0	$0	$1,049,700
	Extend Apron Taxilane (South End)	12,025	1,300	SY	$254,200		$0	$0	$0	$0	$254,200
	Extend Apron and Apron Taxilane To The Runway 33 Turnaround (South End)	6,870	800	SY	$156,400		$0	$0	$0	$156,400	$0
	Total Alternative 4				$1,460,300		$0	$0	$0	$156,400	$1,303,900
Total Master Plan Recommendations (Includes Alternative 1)					**$2,848,200**		**$1,021,080**	**$56,950**	**$56,370**	**$409,900**	**$1,303,900**

1/ CCI adjustment factor if shown. For avigation easement; the Comsumer Price Intex (CPI) was
2/ Development Cost includes a 15% factor for Planning, Environmental, and Contingency.
3/ Costs for additional avigation easement acquisition to protect Instrument Departure Surface and land acquisition for hangar development would be based on subsequent appraisal and negotiation so an estimate would not be appropriate for publishing at this time.

Source: Consultant estimates, Construction Cost Index data, Comsumer Price Index data, and Master Plan records.

Table 4.3-7 Alternatives Summary of Costs

							FAA - AIP			Non-AIP	
Scenario Accom-modated	Item	Area (SF)	Quantity	Units	Development Cost 2/		FAA Share (90%)	MaineDOT Share (5%)	Oxford County Share (5%)	Oxford County Share (100%)	Private Share (Remainder)
Alt. 1	Total Alternative 1. Alternative 1 Totals Are Included In Future Growth Totals Below				**$1,387,900**		**$1,021,080**	**$56,950**	**$56,370**	**$253,500**	**$0**
Alt. 4	Construct Six Separate Box Hangar Sites (South End)										
	• Hangars	15,000	15,000	SF	$499,900						$499,900
	• Frontage	8,160	900	SY	$176,000						$176,000
	• Hangar Access	4,200	500	SY	$97,800						$97,800
	• Hangar Parking and Driveways	23,340	2,600	SY	$276,000		$0	$0	$0	$0	$276,000
					$1,049,700		$0	$0	$0	$0	$1,049,700
	Extend Apron Taxilane (South End)	12,025	1,300	SY	$254,200		$0	$0	$0	$0	$254,200
	Extend Apron and Apron Taxilane To The Runway 33 Turnaround (South End)	6,870	800	SY	$156,400		$0	$0	$0	$156,400	$0
	Total Alternative 4				$1,460,300		$0	$0	$0	$156,400	$1,303,900
Total Master Plan Recommendations (Includes Alternative 1)					**$2,848,200**		**$1,021,080**	**$56,950**	**$56,370**	**$409,900**	**$1,303,900**

1/ CCI adjustment factor if shown. For avigation easement; the Comsumer Price Intex (CPI) was
2/ Development Cost includes a 15% factor for Planning, Environmental, and Contingency.
3/ Costs for additional avigation easement acquisition to protect Instrument Departure Surface and land acquisition for hangar development would be based on subsequent appraisal and negotiation so an estimate would not be appropriate for publishing at this time.

Source: Consultant estimates, Construction Cost Index data, Comsumer Price Index data, and Master Plan records.

4.4 Environmental Impact Of Alternatives

Chapter 5 Environmental Evaluation contains a description of the protocols required for environmental processing of the recommended development alternative projects. Chapter 5 provides an opinion of the possible environmental impacts that might be imposed by the recommended development alternative projects.

4.5 Selection of Alternative

Any extension of aircraft hangars or facilities on the south end of the apron would require an extension of the apron at a sufficient width to include the existing apron taxilane as depicted by Alternatives 2A, 2B, 3B, and 4.

Alternatives 2A and 2B do not provide a suitable location for hangar development north of the FBO hangar. The Alternative 2A proposal to construct connected box hangars at the fuel farm site would incur significant costs and would require the relocation of the fuel tanks, but a suitable alternative fuel farm location could not be identified. Alternative 3B does not provide for auto parking within 300+ feet of the hangar.

Alternative 3A does not provide for development of any conventional hangars, or any development on existing property south of the Bancroft Hangar, and requires land acquisition north of the fuel farm prior to any hangar development. Alternative 3B has a small southerly extension of a portion of the apron and apron taxilane. The line of two box hangars proposed at the south end could be extended in the future based on need and funding availability. Also provided with Alternative 3B are a mix of box hangars, T-hangars, and a 21,500 SF conventional hangar to be privately funded. Land acquisition north of the fuel farm would have to occur soon after initial development of two small box hangars. Alternative 4 can meet Ultimate Growth for tiedowns and Itinerant parking with reclaiming some of the tiedowns along the east side of the apron. With full development of airport property south of the Bancroft Hangar, 15 aircraft hangar storage would be provided. This would be only four short of projected Ultimate Growth demand and would not require any land acquisition. Two areas are noted for potential land acquisition (laid out in potential detail in Alternative 3B), should that be needed in the future.

While Alternatives 3A and 3B both require land acquisition at the north end, Alternative 3B allows for a much more diverse type of facilities. However, by focusing on individual Box Hangars south of the Bancroft Hangar; projected Ultimate Growth demand can be met (except for four hangar spaces) without any land acquisition. However conceptual land acquisition is shown should it be determined to be required in the future. Therefore, Alternative 4 is the recommended development alternative for the Oxford County Regional Airport.

CHAPTER 5

~ CHAPTER 5 ~
ENVIRONMENTAL EVALUATION

5.1 PURPOSE

The purpose of this chapter is to evaluate the potential environmental impacts of the proposed airport improvement projects within the first five years of the planning period.

The anticipated short-term development projects may include some or all of the following:

- Rehabilitate Terminal Apron
- Construct Hangars and Taxilanes
- Refurbish Rotating Beacon, Airfield Signs and Radio Controller
- Install Runway End Identifier Lights (REILs)
- Improve Landscaping and Directional Signage
- Install Security Cameras and Apron Lighting
- Acquire Property Adjacent to Airport
- Prepare Airport Operation Manuals
- Install Airport Perimeter Fence
- Install GARD Airport Monitoring System
- Conduct Runway 15-33 Drainage Study
- Install Hangar Obstruction Lights

5.2 ENVIRONMENTAL IMPACT REVIEW

Airport improvement projects that are funded by the federal government must be evaluated to determine if the projects impose adverse environmental impacts. The following subsections are a brief review of the environmental impact categories listed in FAA Order 1050.1F *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* in relation to the proposed short-term airport development projects (actions) at the Oxford County Regional Airport.

5.2.1 Air Quality

Air quality assessments for proposed Federal actions may be required for compliance with the *National Environmental Policy Act* (NEPA), the *Clean Air Act* (CAA) and other environment-related regulations and directives.

A detailed air quality analysis may be needed for a project that, due to its size, scope, or location has the potential to affect air quality standards. Those standards are known as *"National Ambient Air Quality Standards"* and are present for six criteria pollutants.

In accordance with the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has established *National Ambient Air Quality Standards* (NAAQS) for six air pollutants: carbon monoxide (CO); lead (Pb); nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) for both PM_{10} and $PM_{2.5}$, and sulfur dioxide (SO_2). At airports, air pollutants and precursors of most concern include CO, NO_X, PM_{10}, $PM_{2.5}$, HC, and

sometimes SO_X. Compliance with the NAAQS means the ambient outdoor levels of these air pollutants are safe for human health, the public welfare, and the environment. Since Federal actions supporting airport development projects could increase levels or concentrations of the above pollutants, air quality impacts are often issues of concern in airport environmental documents.

Whether an air quality assessment is required depends upon the nature of the project, the size of the airport and project, and the project area's air quality classification. States are responsible for designating areas that are attainment, nonattainment, or maintenance for each of the criteria pollutants. An "attainment area" is a geographical area where the levels of all criteria air pollutants meet the NAAQS. A "nonattainment area" is a geographic area where the concentration of one or more of the criteria air pollutants is higher than the NAAQS. A "maintenance area" is an area that was previously designated "nonattainment" but has been redesignated as a "maintenance area" for continued observation and monitoring.

Direct emissions are emissions that are caused by the Federal action and which occur at the same time and place as the Federal action. They include emissions from temporary construction activities as well as emissions caused by the operation of airport facilities and aircraft. Indirect emissions are emissions that are caused by a proposed Federal action and which occur later in time and/or at a distance from the proposed action. Actions having net total direct and indirect emissions below the *de minimis* levels specified for each criteria pollutant are exempt from air quality analyses.

Other actions that are specifically listed as exempt from air quality analyses include:

- Air traffic control activities, and adopting approach, departure, and
- Enroute procedures for air operations
- Routine installation and operation of aviation navigational aids
- Routine maintenance and repair activities
- Transfers of ownership of interests, land facilities, and real property
- Administrative, planning, enforcement, and inspection activities

FAA handbook *Air Quality Procedures for Civilian Airport and Air Force Bases* is a comprehensive guide that is intended to assist the air quality analyst/environmental specialist in assessing the air quality impact of Federal Aviation Administration and United States Air Force actions at airports and air bases. It provides guidance, procedures and methodologies for use in carrying out such assessments

Many airport actions are too small to require detailed air quality analysis. The handbook states that airports with less than 180,000 operations annually do not require an air quality analysis. At Oxford County Regional Airport, the forecasted aircraft operations of 9,030 in the year 2039 is significantly below the 180,000 annual aircraft operations threshold for an air quality review. Therefore, the proposed airport improvement projects will not cause a significant increase in air emissions.

Construction emissions may represent a high proportion of the total emissions caused by a project and could trigger general conformity requirements. The construction activities associated with the airport improvement projects will be conducted in accordance with the current version of FAA Advisory Circular 150/5370-10H, *Standards for Specifying Construction of Airports; Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, and they are unlikely to exceed the *de minimis* levels.

5.2.2 Biotic Resources

The term “biotic resources” means various types of flora (plants) and fauna (fish, birds, reptiles, amphibians, marine mammals, coral reefs, etc.) that are present in a particular area. The term also means rivers, lakes, wetlands, forests, upland communities, and other habitat types supporting flora and aquatic and avian fauna.

When a Federal action would affect water resources, Section 662(a) of the *Fish and Wildlife Coordination Act* (FWCA), as amended (16 USC Section 662(a)), specifically requires consideration of biotic resources. To comply with that section, the airport sponsor must coordinate with the U.S. Fish and Wildlife Service (FWS) to assess the effects of proposed actions on aquatic areas. Consultation with the National Marine Fisheries Service (NMFS) is needed for actions affecting anadromous fish species and marine mammals.

The airport sponsor must also consult with State wildlife agencies having jurisdiction over affected biotic resources. The airport sponsor must address action impacts affecting state-listed endangered and threatened resources if those actions will cause minor permanent habitat changes or major permanent habitat changes. Major permanent habitat change determinations are needed when an alternative would remove or disturb small tracts of sensitive, important habitat.

The FAA must evaluate any airport development action that is subject to FAA approval or is funded under the Airport Improvement Program (AIP). In those instances, the FAA must determine if the proposed action or its reasonable alternatives would significantly affect biotic resources. Typical airside actions that may cause those impacts include new or expanded terminals or hangar facilities; building new or extended runways or taxiways; installing navigational aids, or expanding those facilities. Landside actions may include new or relocated access roadways, on-airport remote parking facilities or rental car lots.

Environmental permits do not necessarily cover all airport actions affecting biotic resources. Those actions that could affect migratory birds, fish, marine mammals, or sea turtles1 may require special permits. The airport sponsor must consult the FWS or NMFS to determine if permits issued under the *Migratory Bird Treaty Act* or the *Marine Mammal Protection Act*, respectively, are needed. Also, a US Army Corps of Engineers (ACOE) *Clean Water Act* Section 404 permit is required if a proposed airport development would require dredging or filling navigable waters or wetlands, collectively known as “waters of the United States.”

The airport sponsor must consult with the FWS when considering an airport action that would impound, divert, deepen, control, modify, pollute, dredge, or fill any watercourse, water body, or wetland. The airport sponsor must also coordinate with FWS and State agencies about action impacts on potentially affected biotic resources that do not occupy those waters.

If a proposed action or its reasonable alternatives would affect only previously disturbed airport property, populated areas, or farmland, the analyses would normally be minimal and straightforward. Impacts on undisturbed wildlife habitats require more analysis than that needed for already disturbed areas. Construction impacts must also be considered and must properly address temporary, constructed-related impacts on these resources.

The projects that are proposed in the short term for Oxford County Regional Airport will not be located within areas containing known biotic resources and will not adversely affect or impact the biotic resources.

5.2.3 Coastal Barriers

Barrier islands are geologically unstable formations and cannot support development. Yet, they protect the mainland by buffering storm or hurricane-driven winds or waves. As a result, these islands protect fish, wildlife, human life, and property along coasts and shorelines.

The Department of the Interior (DOI), through the FWS and the National Park Service (NPS), develops and maintains maps entitled "Coastal Barrier Resource System." Barrier islands occur along all coastlines of the United States, but the longest, best defined chains occur along the coasts of the Atlantic Ocean, the Gulf of Mexico, and the Great Lakes.

The Oxford County Regional Airport is not located within the limits of a coastal barrier resource system. Therefore, no impacts to these systems will be realized by the proposed projects at the Oxford County Regional Airport.

5.2.4 Coastal Zone Management

Coastal zones are those waters and their bordering areas in states along the coastlines of the Atlantic and Pacific Oceans and the Gulf of Mexico and the shorelines of the Great Lakes. These zones include islands, beaches, transitional and intertidal areas, and salt marshes.

State coastal zone management programs (CZMPs) contain a coastal state's objectives, policies, and standards to minimize direct effects on its coastal or shoreline resources and information the CZM agency needs to assess an action's consistency with the CZMP. This information often addresses recreational, historical, cultural, or aesthetic values.

Under most circumstances, airport actions that would occur in or affect a coastal zone of a state having an approved state CZMP must comply with that state's program to meet the requirements of the *Coastal Zone Management Act of 1972* (CZMA). This includes actions that the FAA directly undertakes (e.g., installing a radar lighting system for a proposed runway), as well as sponsor-proposed airport development actions (e.g., building or extending a runway, safety area, or an access road). The CZMA also applies to projects that would directly affect coastal resources, even if the project is not actually located within a state's designated coastal zone.

The Oxford County Regional Airport is not located within the limits of the State of Maine Coastal Zone Management Program. Therefore, no impacts to these areas will be realized by proposed projects at the Oxford County Regional Airport.

5.2.5 Compatible Land Use

Airport development actions that are funded under the Airport Improvement Program and other airport actions that are subject to FAA approval, such as Airport Layout Plan (ALP) changes, have the potential to cause off-airport land use impacts. Typical actions causing such impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids, etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities, and rental car lots; significant changes in aircraft operations; and significant construction activity.

An airport sponsor that files a grant application for an airport development project must provide the FAA with an assurance that the action is consistent with local land use planning. The airport sponsor must also provide a written assurance verifying that action has been taken or will be taken to restrict land uses next to or near the airport.

The airport sponsor should have jurisdictional control in the affairs of the community where the proposed airport action would occur, and they should use their best efforts to promote airport compatible land uses and zoning measures in airport-affected areas. These efforts focus on developing existing and future land uses next to or in the immediate vicinity of the airport that are compatible with airport operations.

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Activities that may alter aviation-related noise impacts and affect land uses subjected to those impacts typically involve:

- Airport development actions to accommodate fleet mix changes or the number of aircraft operations
- Air traffic changes
- New approaches to the airport made possible by new navigational aids

If a noise analysis concludes that there is no significant noise impact, then a similar conclusion usually can be made about compatible land uses. FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*, presents guidance for airport operators and planners to help achieve compatibility between airports and their surrounding areas.

Besides the effects of noise on land use compatibility, the airport sponsor should also consider the compatibility of land uses in the vicinity of an airport to ensure those uses do not adversely affect safe aircraft operations. Due to aviation safety concerns, information regarding land uses that may attract wildlife is critical in FAA decision making. According to FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports*, these land uses often include:

- Solid waste landfills
- Existing or proposed dredge spoil containment areas
- Wastewater treatment facilities
- Wetlands, wildlife refuges

Airport sponsors should also work with land use authorities in neighboring jurisdictions to determine if any of these wildlife attractant land uses are located within:

- 5,000 feet of an airport serving piston-powered aircraft
- 10,000 feet of an airport serving turbine-powered aircraft
- 5 statute miles of a runway end and a landfill that could cause hazardous bird species to fly across the airport's approach or departure airspace.

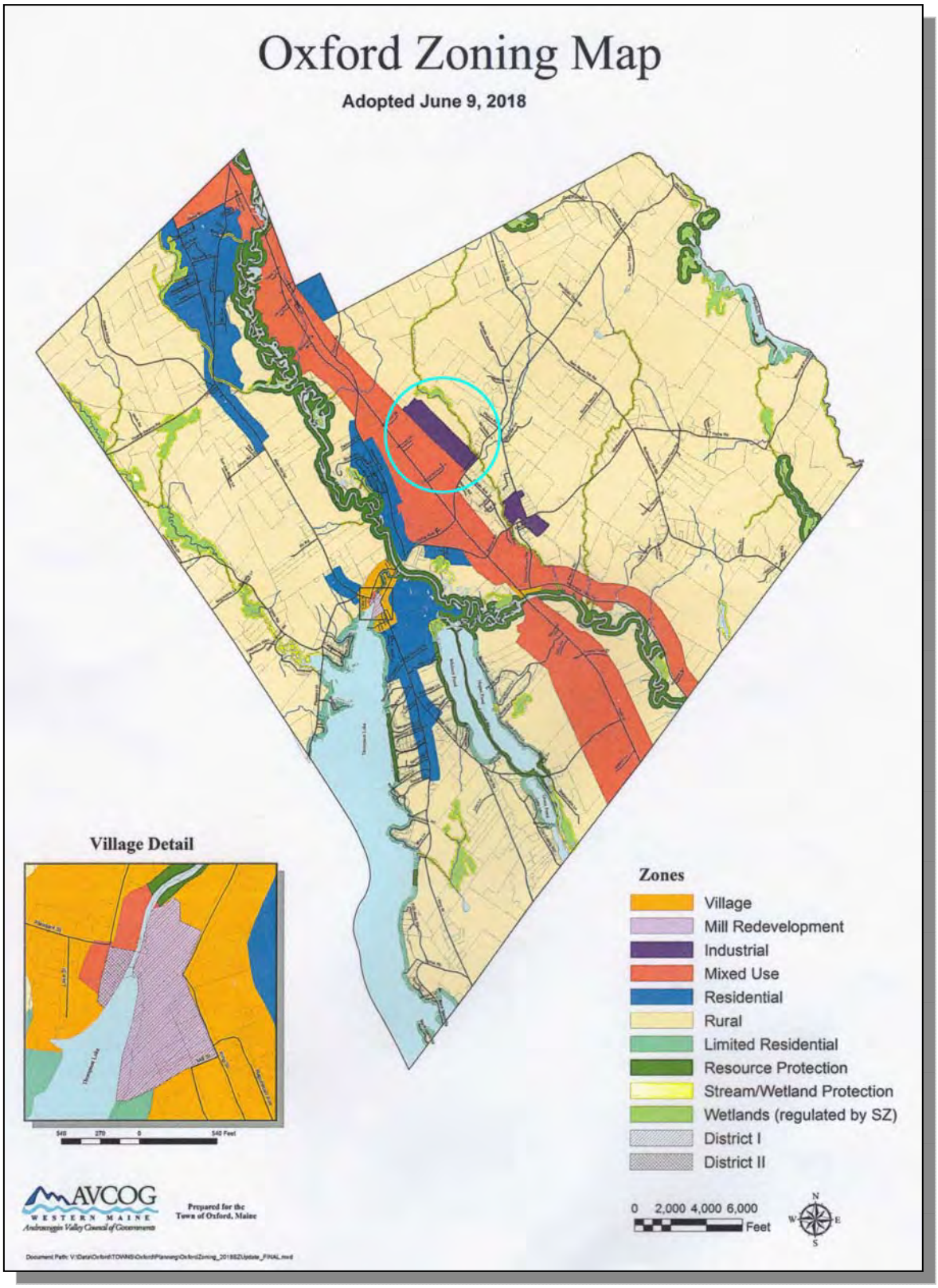
Physical land disturbances may alter existing land uses. For example, building a proposed runway may disrupt a community by taking or moving a highway or altering a wetland or biotic community. Some airport projects could affect areas supporting wildlife or farm animals (e.g., refuges, farms, or ranches). For projects where aircraft noise impacts could affect wildlife or farm animals, the airport sponsor should review published studies addressing noise effects on the species of concern.

The Town of Oxford has local zoning authority, and it has zoned the properties surrounding the Oxford County Regional Airport as Mixed Use and Rural. The Mixed-Use District is intended to provide for commercial and residential uses. The Rural District is comprised of generally low-density residential areas, and it is the intent of this District to maintain the area's rural nature. Figure 5.2.5-1 depicts the current zoning map for the Town of Oxford.

The Town of Oxford Zoning Ordinance also includes an Airport Protection Overlay Zone. The purpose of this overlay zone is to regulate airspace obstructions which would negatively impact current and future airport operations. The Airport Protection Overlay Zone appears to be based on the FAR Part 77 criteria for a visual runway. Because Runway 15-33 has nonprecision approaches to each end of the runway, the Airport Protection Overlay Zone should be revised to reflect the current FAR Part 77 criteria for a nonprecision runway.

In addition to the Town’s zoning ordinances, the County of Oxford owns avigation easements that protect the portions of the FAR Part 77 imaginary surfaces which extend beyond the airport property.

Land use ramifications include, but are not limited to noise impacts, disruptions of communities, relocation, and induced socioeconomic impacts. The airport improvement projects proposed for the Oxford County Regional Airport will not exceed the threshold of significance that has compatible land use ramifications. Noise is not currently an issue at the Oxford County Regional Airport, and the future anticipated aircraft fleet mix is not expected to change significantly. The Airport could benefit by the acquisition of abutting industrial land, but the other airport improvement projects will not require the purchase of land, residential properties, or homes. Thus, the zoning is compatible with the Airport.



Source: Town of Oxford

Figure 5.2.5-1 - Town of Oxford Zoning Map

5.2.6 Construction

Airport construction projects may cause various environmental effects in the form of dust, aircraft and heavy equipment emissions, storm water runoff containing sediment and/or petroleum products, and noise. In most cases, these effects are subject to Federal, State, or local ordinances or regulations.

Constructing new airport facilities may cause temporary impacts to wildlife and fisheries habitats, water and air quality, ambient noise levels, historic resources, and local traffic patterns. Typical airport actions causing construction impacts include: airside activities (e.g., new or expanded terminal and hangar facilities, new airports or extended runways and taxiways, navigational aids, etc.) and landside activities (e.g., new or relocated access roadways and remote parking facilities and rental car lots).

Some construction projects can cause significant short-term impacts. Significant construction impacts would most likely occur when unusual circumstances exist (e.g., excavating ecologically sensitive areas, construction-induced traffic congestion that would substantially degrade air quality). Construction equipment can increase off-site, ambient noise levels. In addition, exhaust from equipment, dust, or burning debris can degrade local air quality. Off-site local traffic patterns could also be disrupted and cause air quality impacts as well. Soil erosion during construction may degrade water quality.

Construction impacts often concern water and air quality effects and, to a lesser extent, noise. The *National Pollutant Discharge Elimination System* (NPDES) permitting program contained in 40 Code of Federal Regulations (CFR) Part 122 addresses construction disturbances of one acre or more.

Excavating one acre or more often requires the operation of equipment (i.e., bulldozers, cranes, dump trucks, etc.), disturbing or removing trees or ground cover, or filling or leveling land. According to EPA, these disturbances cause sediment runoff rates typically 10 to 20 times those of agricultural areas and 1,000 to 2,000 times the rates of forested areas. As a result, substantial adverse water quality impacts could occur when airport construction disturbs one acre or more. The storm water regulation (found at 40 CFR Section 122.26) has two provisions regarding construction activity. One provision addresses a construction activity that would disturb five or more acres. Another provision addresses a "small construction activity," disturbing one acre or more but less than five acres.

On-site construction activities must be conducted in accordance with the current version of FAA AC 150/5370-10H, *Standards for Specifying Construction of Airports*, and by using best management practices (BMPs). These measures must be considered throughout the preparation of plans and specifications for each construction project. The construction contractor should meet the adopted plans and specifications throughout the project construction period. Implementing these measures will prevent or minimize most potential construction-related impacts to the environment and surrounding community. FAA AC 150/5370-10H, Item P-156, provides further information on potential mitigation measures.

No significantly adverse construction impacts are anticipated from the development of the proposed airport improvement projects at the Oxford County Regional Airport. No hazardous materials will used during the construction of the airport improvement projects nor are there difficulties anticipated with the disposal of construction debris. There will be a temporary increase in ambient noise levels, dust, and emissions due to construction equipment operations. Limiting construction activities to the working hours of 7:00 AM to 7:00 PM will mitigate impacts that are generated by this equipment. Airport improvement projects will be conducted in accordance with the current version of FAA Advisory Circular 150/5370-10H,

Standards for Specifying Construction of Airports; Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control.

5.2.7 Section 4(f) Land

The *Department of Transportation Act of 1966* Section 4(f) concerns land that is publicly-owned land of a park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance. Section 4(f) of the *Department of Transportation Act of 1966* is currently codified as 49 USC Section 303(c). For the purposes of FAA projects and programs, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* continues to refer to Section 303(c) as "Section 4(f)."

Section 4(f) states that, subject to exceptions for *de minimis* impacts, the USDOT Secretary of Transportation may approve a project requiring the use of Section 4(f) land only if:

- There is no prudent and feasible alternative that would avoid using those resources, and
- The program or project includes all possible planning to minimize harm resulting from the use.

Typical airport actions that may cause Section 4(f) impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids, etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities, and rental car lots; significant amounts of construction or demolition activity; and a significant change in aircraft operations that results in new or changed flight tracks and accompanying noise impacts.

Section 4(f) is considered satisfied with respect to historic sites and parks, recreation areas, and wildlife and waterfowl refuges if the Secretary makes a *de minimis* impact finding. These requirements apply only to actual physical impacts, not constructive use.

The proposed airport improvement projects at the Oxford County Regional Airport will not require the use of any publicly owned land, recreation area, wildlife or waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance. Therefore, no impacts to Section 4(f) properties will be realized.

5.2.8 Federally Listed Endangered and Threatened Species

To satisfy the *Endangered Species Act of 1973* (ESA), the FAA must determine if a proposed airport action would affect a federally-listed species or habitat that is critical to that species.

An "endangered species" is any species that either the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) designates in danger of extinction throughout all or a significant portion of the species' range.

A "threatened species" is any species that either FWS or NMFS states is likely to become an endangered species within the foreseeable future throughout all or a significant portion of the species' range.

A "candidate species" is any species that either FWS or NMFS is considering for listing as "endangered" or "threatened". These species have no legal status and do not have protection under the ESA; however, their inclusion is intended to alert Federal agencies of potential proposals or listings.

A “critical habitat” is a designated area having physical and biological features essential to a listed species’ survival. Examples include nesting grounds, migration routes, wintering grounds, or other areas needed to support a life history stage. A species need not occupy an area for it to be a critical habitat.

Some airport actions do not affect federally-listed species or their critical habitats, but they may affect state-listed endangered or threatened species. Although the ESA does not protect state-protected species or habitats, the airport sponsor must ensure that the airport actions address effects on state-protected resources.

The proposed airport improvement projects at the Oxford County Regional Airport will not affect any known federally-listed, state-listed, or proposed endangered or threatened species of plants and wildlife, and there are no critical habits on airport property.

5.2.9 Energy Supplies, Natural Resources, and Sustainable Design

Airport development actions have the potential to change energy requirements or increase the use of consumable natural resources. The airport sponsor must evaluate any airport development action that is subject to FAA approval or funding under the Airport Improvement Program (AIP) to determine if the proposed action would cause significant impacts on energy supplies or natural resources.

Typical actions that could cause such impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, airfield lighting, navigational aids, etc.); land acquisition for aviation-related use, new or moved access roadways, remote parking facilities and rental car lots; significant changes in air traffic and airfield operations; and significant construction activity.

The airport sponsor should propose to conserve resources, use pollution prevention, minimize aesthetic effects, and address public sensitivity to these concerns. This approach satisfies *National Environmental Policy Act of 1969* (NEPA). NEPA requires agencies to “... use a systematic interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making.”

Proposed major changes in stationary facilities may require large demands on local existing or planned utilities. Examples of utility impacts include projected airport or terminal lighting or heating demands or water supply for terminal-related water usage and sewage disposal. There are no required permits or certifications required relative to the use of or impact on these resources. The airport sponsor should obtain letters or other documents from local public utilities and suppliers addressing their capacities to provide energy and resources to build and operate the action.

The airport sponsor should consider how the proposed changes would affect existing aircraft fuel use if aircraft ground movements or run-up times would increase substantially and thereby increase aircraft fuel consumption. Similarly, if an action would substantially increase the number of aircraft operations, then the airport sponsor should consider the increased amount of fuel consumption. If the action would substantially increase the number of on-airport service vehicles, then the airport sponsor should consider the amount of increased motor vehicle fuel consumption that these vehicles would cause.

The proposed airport improvement projects at the Oxford County Regional Airport will not have a significant impact on energy supplies or other natural resources. The proposed improvements will not result in a significant increase in the consumption of aviation or motor vehicle fuels. It is anticipated that

the proposed hangars will provide basic electrical facilities and will not be production-level repair facilities which typically require a significant amount of electrical power. Airport lighting upgrades and the addition of aviation visual aids will require additional electrical power during nighttime operations and periods of reduced visibility, but this use is expected to be nominal and well within the current supply.

5.2.10 Environmental Justice

Impacts due to aircraft noise, air quality degradation, direct and induced socioeconomic effects, degraded water quality, and effects to cultural or community cohesion, traffic, and history often affect low-income or minority populations. Environmental justice considers the potential of federal actions to cause disproportionate and adverse effects on low-income or minority populations, and it ensures that no low-income or minority population bears a disproportionate burden of effects resulting from federal actions.

A low-income population is any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who could be affected by a proposed program, policy, or activity. A minority population is comprised of Black, Hispanic, Asian-American, or American Indian and Alaskan Native individuals. When examining a population living in geographic proximity, the airport sponsor should consider areas within the governing body's jurisdiction, a neighborhood, a census tract, or other similar limit.

Any airport development action that is funded under the Airport Improvement Program (AIP) or subject FAA approval may cause environmental justice impacts. Typical actions that may involve environmental justice issues are: a new airport; airfield/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids, etc.); land acquisition for aviation-related use, new or moved access roadways, remote parking facilities, and rental car lots; significant changes in aircraft operations; and significant amounts of construction activity.

The proposed airport improvement projects at the Oxford County Regional Airport will not have an adverse impact on low-income or minority populations. The proposed projects will not adversely affect human health or historical or cultural resources, will not cause community disruptions, and will not have adverse cumulative effects.

5.2.11 Farmlands

The *Farmland Protection Policy Act* (FPPA) of 1984 (7 USC Sections 4201-4209) provides the statutory framework for considering important farmlands in federal decisions. Important farmlands include all pasturelands, croplands, and forests considered to be prime, unique, or statewide or locally important lands as defined below:

- Prime farmland is land having the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimal use of fuel, fertilizer, pesticides, or products.
- Unique farmland is land used for producing high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture necessary to produce high quality crops or high yields of them economically.
- Statewide and locally important farmland is land that has been designated as "important" by a state government, by county commissioners, or by an equivalent elected body. The State

Conservationist representing the Natural Resource Conservation Service (NRCS) must agree with the designation.

The NRCS has the final authority for designating important farmlands and keeps lists of important farmlands for each state. Usually, the lands are defined by their soil types, but sometimes, the designations are made independent of soil types and are mapped according to existing ground cover and use. The State of Maine has developed the Maine Farmland Protection Program to protect currently active and potentially productive farmland as a means to sustain economically viable agricultural communities.

Any airport development action funded under the Airport Improvement Program (AIP) or subject to FAA approval that would permanently convert an existing designated important farmland to a non-agricultural use is subject to FPPA coordination. Typical actions which could involve such coordination include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, airfield lighting, navigational aids, etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities, and rental car lots, and any other actions that would result in important farmland conversion.

The proposed airport improvement projects at the Oxford County Regional Airport will not be constructed on farmland or require the conversion of farmland as a resulting impact of the proposed projects.

5.2.12 Floodplains

Floodplains are the lowlands and relatively flat areas adjoining inland and coastal waters that are prone to the 100-year flood. The 100-year flood is a flood having a one percent chance of occurring in any given year. Floodplains often support important ecological values benefiting the human and natural environment. Examples include a floodplain's capacity to: carry and store floodwaters; sustain agriculture, aquaculture, or aquatic or terrestrial organisms; provide for groundwater recharge; provide recreation opportunities; or maintain water quality.

Typical airport actions which could result in floodplain impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways, safety area, and taxiways, navigational aids, etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities and rental car lots; and significant amounts of construction/demolition activity.

The Federal Emergency Management Agency has developed Flood Insurance Rate Maps (FIRMs) as the primary information source to determine if an action encroaches on a floodplain. Zones A and V of a flood insurance rate map encompass the area comprising the 100-year floodplain.

To meet Executive Order 11988, *Floodplains*, and U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, all airport development actions must avoid the floodplain if a practicable alternative exists. A practicable alternative is an alternative that is capable of being built within natural, social, and economic constraints (DOT Order 5650.2, Paragraph 4.m). A practicable alternative may include doing nothing.

Based on DOT policy, a significant encroachment would occur when the encroachment would result in one or more of the following impacts:

- A high likelihood of loss of human life;

- Substantial encroachment-associated costs or damage, including adversely affecting safe airport operations or interrupting aircraft services (e.g., interrupting runway or taxiway use, placing another facility such as a NAVAID out of service, placing utilities out of service, etc.); or
- A notable adverse impact on the floodplain's natural and beneficial floodplain values.

If no practicable alternatives exist outside the floodplain, then other sites located elsewhere within the floodplain may be more desirable due to their lesser impacts. Airport actions within a floodplain must be designed to minimize adverse impacts to the floodplain's natural and beneficial values. The design must minimize the potential risks for flood-related property loss and impacts on human safety, health, and welfare.

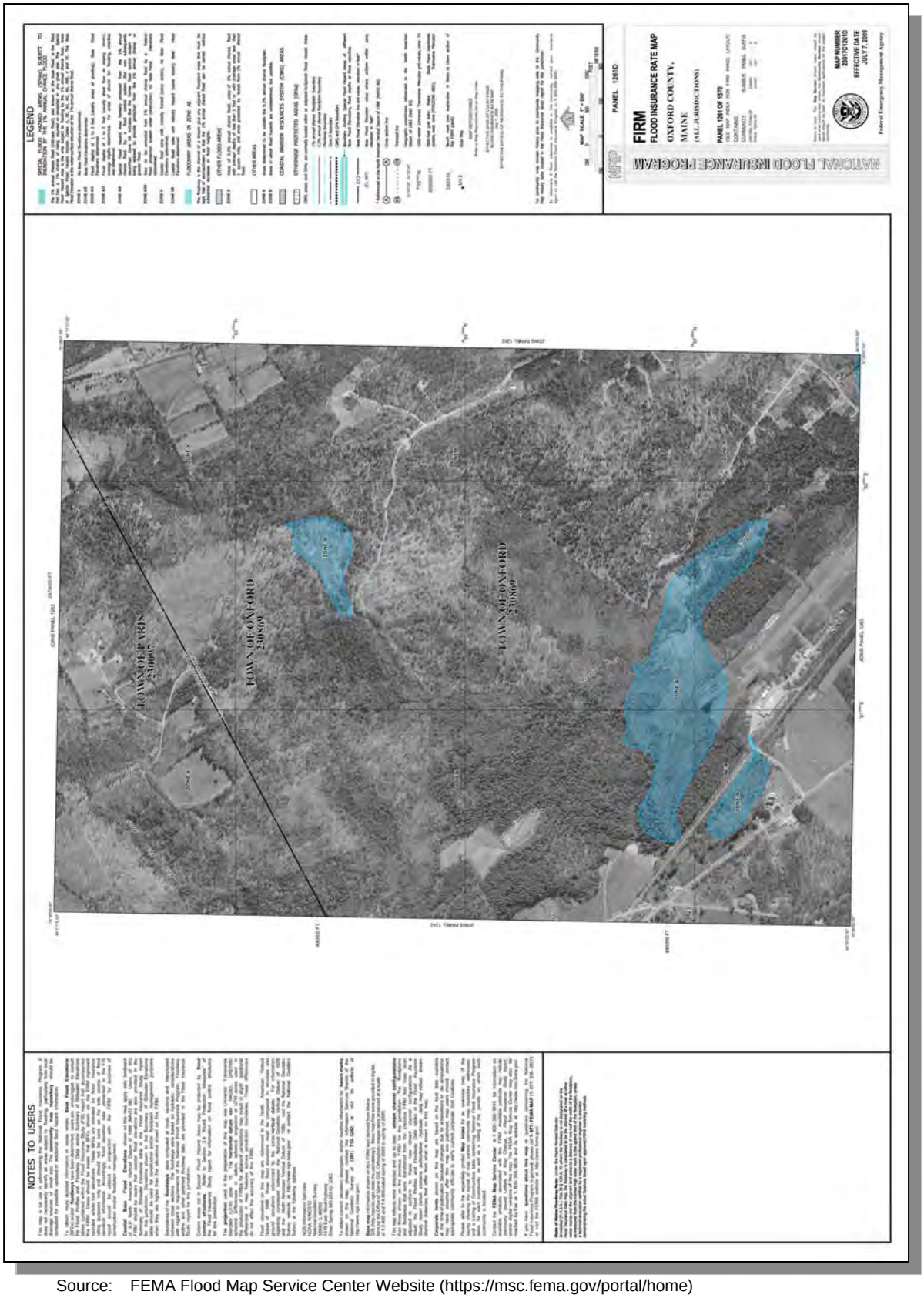
When an airport action would occur in a floodplain because there is no practicable alternative, the airport sponsor must address the action's direct and indirect floodplain impacts and the action's potential to cumulatively affect the floodplain. Improperly designed or constructed facilities in floodplains can increase upstream flood elevations, increase downstream peak flood flow volumes, or increase flood flow velocities. All of these increases have the potential to adversely affect people, their properties, and the environment.

When building within the floodplain, National Flood Insurance Program rules and regulations must be followed. This protects structures or facilities from flooding. It also minimizes changes in flood elevations that could harm the existing floodplain or upstream development. Actions within a floodplain will also require authorizations from the ACOE, FEMA, and State or local agencies.

Airport actions outside the base floodplain may also adversely affect the floodplain's natural and beneficial values. Action-related water quality impacts due to increased runoff from impermeable surfaces or changes in hydrologic patterns outside the floodplain may still affect aquatic or terrestrial populations using the floodplain.

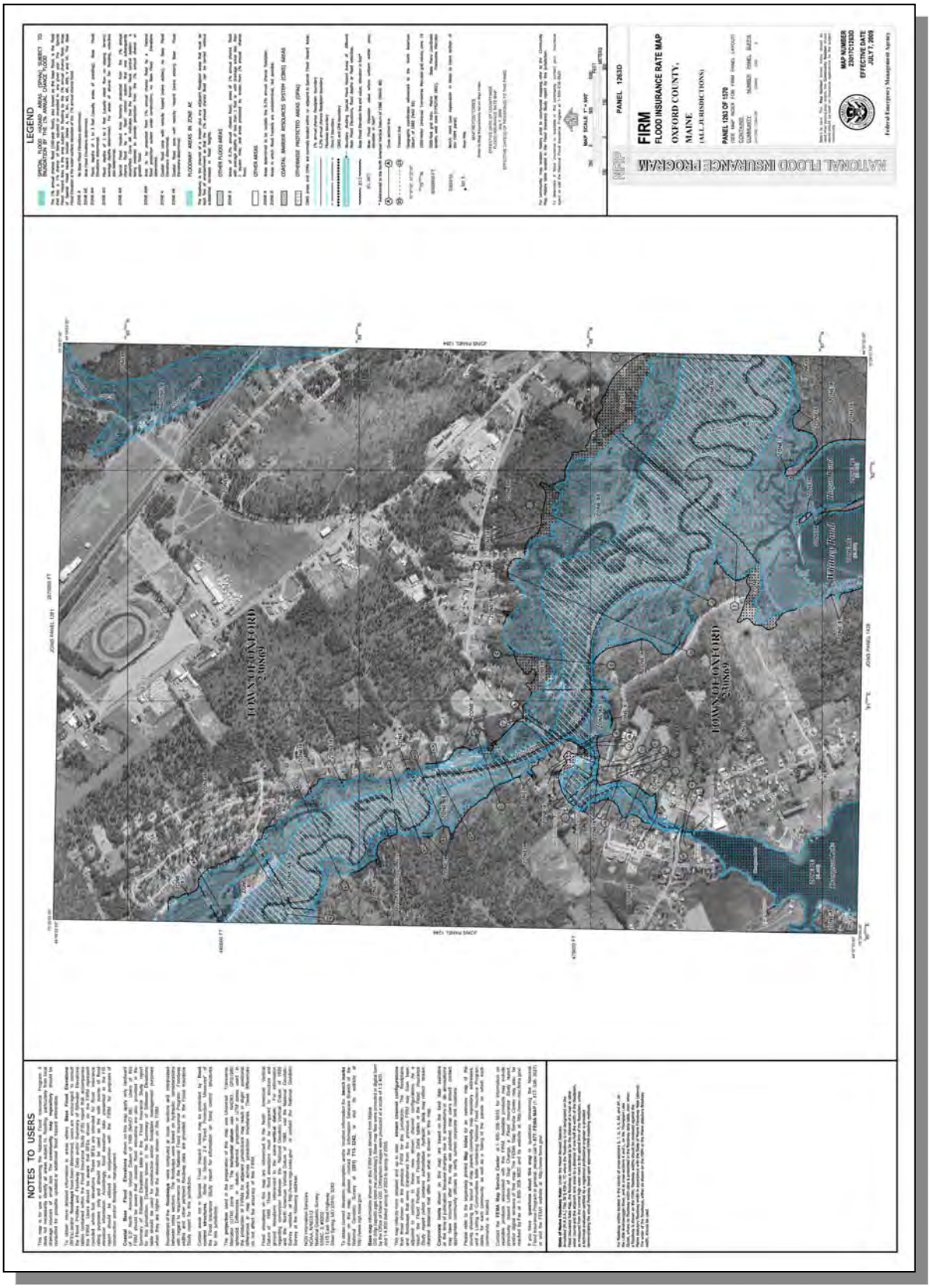
FEMA has conducted a detailed floodplain analysis in the Town of Oxford due to its proximity to the Little Androscoggin River. The results of this study and how it relates to Airport property are shown on Flood Insurance Rate Map (FIRM) panel numbers 23017C1261D and 23017C1263D in Figures 5.2.12-1 and 5.2.12-2. The FIRMs indicate that the Airport property is located in two separate flood zones which are labeled "Zone A" and "Zone X". The Zone A areas are shaded blue and they exist northerly of Runway 15 and southerly of Runway 33, primarily along Meadow Brook and its associated wetlands. Zone A areas have been determined to have a 1% chance of flooding annually, which is also known as the 100-year flood. The Zone X area has less than a 0.2% chance annually of flooding, which is also known as the 500-year flood.

The proposed airport improvement projects at the Oxford County Regional Airport will not be located within a 100-year flood zone nor will the improvements affect the function and value of the floodplain.



Source: FEMA Flood Map Service Center Website (https://msc.fema.gov/portal/home)

Figure 5.2.12-1 FEMA Flood Zone Map 23017C1261D



Source: FEMA Flood Map Service Center Website (https://msc.fema.gov/portal/home)

Figure 5.2.12-2 FEMA Flood Zone Map 23017C1263D

5.2.13 Hazardous Materials

Federal, State, and local laws regulate hazardous materials use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these materials. In addition, disturbing sites that contain hazardous materials or contaminates may cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources. Therefore, airport sponsors who purchase or develop land for airport purposes may encounter hazardous materials contamination.

Generally, the terms "hazardous materials," "hazardous waste," and "hazardous substances" are associated with industrial wastes, petroleum products, dangerous goods or other contaminates. These terms have very precise and technical meanings that are used for consistency and legal purposes

- Hazardous wastes are solid wastes that are ignitable, corrosive, reactive, or toxic (sometimes called “characteristic wastes”). In addition, The EPA maintains a list of specific types of solid wastes that it has deemed hazardous (sometimes called “listed wastes”).
- Hazardous substances include hazardous wastes, hazardous air pollutants, hazardous substances designated as such pursuant to the *Clean Water Act* and the *Toxic Substances Control Act* and elements, compounds, mixtures, solutions, or substances that pose substantial harm to human health or environmental resources.
- Hazardous materials are any substances or materials commercially transported that pose unreasonable risk to public health, safety, and property. They include hazardous wastes and hazardous substances as well as petroleum and natural gas substances and materials.

The statutory framework related to hazardous materials in Federal Aviation Administration (FAA) actions, projects, and decisions is mainly contained in the *Resource Conservation and Recovery Act* (RCRA), the *Comprehensive Environmental Response Compensation and Liability Act* (CERCLA), and the *Community Environmental Response Facilitation Act* (CERFA).

RCRA and CERCLA generally focused attention on the use, storage, and disposal of hazardous materials and the environmental threats caused by mishandling these materials. However, for environmental analysis purposes, the primary objectives are to identify and evaluate sites, facilities, or properties where hazardous materials (including environmental contamination) could hinder or affect an airport project.

An *Environmental Due Diligence Audit* (EDDA) is a systematic investigation of real property to determine if activities involving hazardous materials have occurred at a site or resulted in environmental contamination. An EDDA is also a form of pre-acquisition protection against CERCLA/RCRA liability and a defense in lawsuits addressing contaminated lands. If a Phase I EDDA indicates that the land is, was, or has the potential for such activities or occurrences, a Phase II EDDA attempts to verify and identify the existence of the materials. If necessary, a Phase III EDDA will delineate the amounts or limits of hazardous materials or contamination and provide preliminary clean-up plans and cost estimates, if applicable.

Federal actions funded under the Airport Improvement Program (AIP) or any airport project subject to FAA approval has the potential to involve or affect hazardous materials. Typical actions which could incur impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids, etc.); land acquisition for aviation-related use, new or

relocated access roadways, remote parking facilities, and rental car lots; and significant changes in aircraft operations or construction activity.

An airport sponsor should avoid hazardous waste sites and environmentally contaminated property. If avoidance isn't possible, the sponsor should minimize the use of contaminated property as much as possible. Doing so avoids or lessens the potentially excessive clean-up costs and legal liabilities. To help protect the sponsor from the costs or the liability associated with hazardous materials or contamination, the sponsor should hire a competent specialist to complete an EDDA *before* acquiring any land for airport purposes.

The FAA has issued many useful publications and materials to help airport sponsors address hazardous materials issues including:

- FAA Order 1050.10C, *Prevention, Control and Abatement of Environmental Pollution at FAA Facilities*
- FAA Order 1050.19C, *Environmental Due Diligence Audits in the Conduct of FAA Real Property Transactions*
- FAA AC 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects*
- FAA Advisory Circular (AC) 150/5320-15A, *Management of Airport Industrial Wastes*

At times, hazardous materials may be used or stored on an airport. As a result, an airport may be included in the universe of facilities to which RCRA and CERCLA apply. Therefore, airport sponsors are responsible for the appropriate management and use of hazardous materials and wastes on their airport property.

Proposed airport improvement projects will not require the use of land that is likely to contain hazardous substances or may be contaminated. No hazardous wastes will be generated as a result of the airport improvement projects, and the proposed actions will not involve the use of hazardous materials. Land acquisition of adjacent parcels should consider the possibility that a parcel could be contaminated as a direct or indirect result of past activities on the parcel.

Construction documents for the proposed projects will require that the contractor take possession of all debris and construction waste that cannot be safely incorporated into the proposed work. The contractor will be required to dispose of all waste material according to the applicable federal, state and local permits and regulations. The underground heating oil tanks near the west face of the FBO building were removed in 2020.

5.2.14 Historical Properties

The primary federal law protecting nationally important historic properties is the *National Historic Preservation Act* of 1966 (NHPA). NHPA establishes the *Advisory Council on Historic Preservation* (ACHP) and the *National Register of Historic Places* (NRHP). Sections 106 and 110 are two sections of this law having the greatest bearing on airport actions.

A historic property is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the NRHP which is maintained by the Secretary of the Interior. Properties or sites having traditional religious or cultural importance to Native American Tribes and Hawaiian organizations may qualify for inclusion in the NRHP.

Section 106 of the NHPA, as implemented through 36 CFR Part 800, is intended to require airport sponsors to consider the effects of airport actions on historic properties. In doing so, the airport sponsor must consult with the *State Historic Preservation Officer* (SHPO) or the *Tribal Historic Preservation Officer* (THPO) if one exists. The regulations protecting historic and cultural properties also require consultation and information exchanges with interested parties. As a result, the identification of historic resources, analysis of potential effects, and consultation is often a "critical path" element in managing the environmental review project.

Typical airside actions that could affect NRHP-listed or eligible resources include building or expanding terminal and hangar facilities, runways and taxiways, and installing navigational aids. Typical Landside actions that may affect these resources include building or moving access roadways, remote parking facilities, and rental car lots, or other types of activities requiring any other construction.

The proposed projects at the Oxford County Regional Airport are not anticipated to affect any currently listed historic properties. The Maine Historic Preservation Commission (MHPC), which is the State Historic Preservation Office (SHPO) for the State of Maine, should be contacted prior to commencing each project to determine if there are any newly listed resources of historic, architectural, archeological, or cultural significance located adjacent to or in the vicinity of the Oxford County Regional Airport.

5.2.15 Secondary (Induced) Impacts

Certain airport development projects could have impacts on an affected area's socioeconomic characteristics. Socioeconomic impacts are linked to other resource categories through cause-and-effect relationships. Induced socioeconomic impacts can be significant when significant impacts occur in other resource categories that are linked to socioeconomic impacts.

For example, airport projects causing noise changes or requiring more land could cause local land use changes. As a result, the changes in the distribution of residents and their housing requirements could occur. These changes could, in turn, cause impacts that alter demands on fire and police protection, educational or utility services, businesses, and job opportunities in the airport area and other areas to which the residents relocate.

Typical airport actions which could cause direct or indirect social and economic impacts include: airside/landside expansion such as new or expanded terminal and hangar facilities; new or extended runways and taxiways; navigational aids, etc.; land acquisition for aviation related use; new or relocated access roadways; remote parking facilities; rental car lots; a significant increase or change in aircraft operations; and significant amounts of construction/demolition activity.

Airport projects may require the acquisition of land or they may cause effects that alter existing land uses. For example, noise effects may cause the relocation of housing or other noncompatible land uses. Effects due to that relocation may cause substantial changes in the area's tax base and the relocation of businesses due to reduced sales levels. In addition, increases in utility demands may occur in the areas to which the displaced families move.

Therefore, the airport sponsor must evaluate a proposed airport project to determine the project's potential to cause induced or secondary socioeconomic impacts on surrounding communities such as:

- Shifts in patterns of population movement and growth
- Public service demands

- Changes in business and economic activities
- Other factors identified by the public

This impact category does not require federal permits, certifications, or approvals, but the airport sponsor should coordinate with potentially-affected jurisdictions and other interested parties located in the affected area.

The FAA may not approve federal funding for major airport development projects, unless the agency determines that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect. Major airport development projects are those that involve the location of a runway, new airport, or major runway extension.

The proposed airport improvements are not considered to be major projects and will not induce adverse secondary socioeconomic impacts.

5.2.16 Light Emission and Visual Impacts

General and specialized lighting systems are essential parts of airport operations. General lighting systems, such as runway and taxiway edge lights, are needed for the safe ground movement of aircraft. Specialized lighting systems, such as runway end identifier lights, rotating beacons, hazard beacons, approach lights, and landing visual aids, are needed for safe, efficient aircraft navigation and operations.

Airport facilities and operations cause light emissions that can affect visually sensitive land uses in an airport area. The characteristics of many runway lighting systems create potential sources of annoyance to nearby residents in the airport vicinity if light is directed towards light-sensitive land uses. Disturbing emissions may emanate from the following sources associated with a proposed action: airfield and apron lighting, visual navigational aids, terminal lighting, employee/customer parking lighting, both airborne and ground-based aircraft operations, and roadway lighting.

Airport sponsors should consider the impacts of airport lighting on local residents, on nearby light-sensitive areas such as parks or recreational areas, and on the owners or operators of potentially light-sensitive areas. Airport operators should consider ways to minimize undesirable effects without risking aviation safety or efficiency.

The airport sponsor should give special consideration to light emissions and visual effects to historic properties, national or state parks, recreation areas or other visually sensitive areas. Airport lighting or visual effects may disturb natural resources or add unwanted aesthetic effects on man-made, historic, or cultural resources.

Visual, or aesthetic, effects are inherently more difficult to define and assess because they involve subjectivity. Visual effects deal broadly with the extent to which airport development contrasts with the existing environment, architecture, historic or cultural setting, or land use planning. It is important to determine if a community or a jurisdictional agency considers visual effects to be objectionable. For example, the visual sighting of aircraft or aircraft lights at night, particularly at a distance that is not normally intrusive, may cause an adverse visual effect.

Most airport lighting systems are designed to perform a specific function and cannot be altered easily or safely. Potential mitigation measures for general airport lighting to lessen light emissions visual effects on surrounding light-sensitive land uses may include the following:

- Shielding lighting fixtures with top visors
- Angling fixtures toward the base of the mounting poles
- Directional lighting
- Using minimal pole heights or reduced wattage bulbs
- Installing timers and motion detectors

The FAA encourages airport sponsors to use the principles of good design, art, and architectural treatment to blend airport facilities with surrounding areas. FAA Order 5100.38D, *Airport Improvement Program Handbook*, Paragraph 3-62, provides guidelines for treating and promoting design, art, and architectural objectives in airport aid projects.

No permits, certifications, or approvals from Federal agencies are needed for light emissions or visual effects. However, State, regional, local agency, and Tribe approvals might be needed.

The potential projects at the Oxford County Regional Airport which may be included in the first five years of the planning period are the installation of various airport lighting improvements such as installing runway end identifier lights (REILs) and refurbishing the airport rotating beacon.

These types of lighting systems are typical for general aviation airports. The proposed installation of the Runway 15-33 REILs could result in increased light emissions and effects that are noticeable by the surrounding community. If necessary, the light emissions could be mitigated by installing baffles on the REILs. Refurbishing the rotating beacon will merely improve its operational reliability and will not create a new light source at the Airport.

5.2.17 Noise

When evaluating proposed airport projects, airport noise is often the most controversial environmental impact. Airport development actions that change airport runway configurations, aircraft operations, aircraft movements, aircraft types, or aircraft flight characteristics may affect existing and future noise levels. Airport noise analysis primarily focuses on how proposed airport actions would change the cumulative noise exposure of individuals to aircraft noise in areas surrounding the airport. Airport noise may be a concern when determining potential effects on several other environmental resources as well. These resources may include, but are not limited to, Section 4(f)-protected resources and historic and cultural sites.

Typical airport actions that could cause noise impacts include: new or extended runways and taxiways; navigational aid installation; land purchases for airport-related uses; substantial amounts of airport construction or demolition activities; and substantial changes in aircraft operations involving numbers of aircraft, aircraft types, new or revised approach or departure profiles or tracks; or new or relocated airport access roadways

The FAA has established land use compatibility guidelines relative to certain DNL noise levels in 14 Code of Federal Regulations (CFR) Part 150. Day Night Average Sound Level (DNL) is the standard Federal metric for determining cumulative exposure of individuals to noise. The FAA has adopted DNL as its primary metric to evaluate cumulative noise effects on people due to aviation activities. DNL is the 24-hour average sound level in decibels (dB) derived from all aircraft operations during a 24-hour period that represents an airport's average annual operational day.

Past and present research by the *Federal Interagency Committee on Noise* (FICON) verified that the DNL metric provides an excellent correlation between the noise level an aircraft generates and the community annoyance to that noise level. DNL adds a 10 dB noise penalty to each aircraft operation occurring during nighttime hours (10 p.m. to 7 a.m.). DNL includes that penalty to compensate for people's heightened sensitivity to noise during this period.

Although residential land uses are considered compatible with noise exposure levels below DNL 65 dB, the responsibility for determining the acceptable and permissible land uses rests with the local authorities. FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*, provides guidance for airport sponsors to help achieve compatibility between airports and their surrounding areas.

Research has shown aircraft noise may exceed levels that make certain noise sensitive land uses noncompatible with airport operations (e.g., residences, schools, churches, hospitals). As a result, FAA assesses the effects of airport development that has the potential to cause aircraft noise outside an airport's boundaries. For most actions, the airport sponsor does not need to conduct a noise analysis for airport actions whose DNL 65 dB contour lies entirely within airport boundaries.

The DNL noise are depicted on maps showing noise sensitive areas and other land uses within the airport action's noise impact area. The contours should also be compared to other land use information and population data sources to assess potential noise levels that people within in the affected area would experience.

The Part 150 guidelines should not be used to determine aviation noise impacts on wildlife. This is because the Part 150 guidelines focus on human responses to noise. Instead, the airport sponsor should use available, published information that addresses the effects of noise on the species of concern.

Airport noise is generated from aircraft operations (landings and takeoffs) and airport maintenance vehicles (snowplows and snow blowers). A 2039 projection of 9,030 annual aircraft operations is not significant enough to warrant a noise evaluation.

The FAA has outlined the threshold for a significant noise impact over sensitive areas in FAA Order 1050.1F *Environmental Impacts: Policies and Procedures,* Exhibit 4-1 Significance Determination for FAA Actions. This threshold has been established as an increase in noise of DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe. For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB.

The results of a 2003 noise analysis for the Oxford County Regional Airport is depicted in Chapter 7 Figure 7.10-1. There are no noise sensitive areas within the DNL 65 dB noise contour generated by aircraft operating at the Airport. Thus, the proposed airport improvement projects are not likely to have a significant impact on noise levels over noise sensitive areas such as schools, churches, hospitals, parks, historical sites, and wildlife refuge.

5.2.18 Social Impacts

The airport sponsor must evaluate proposed airport development actions to determine if they would cause social impacts. This evaluation should include effects on health and safety risks to children and socioeconomic impacts. Those impacts include moving homes or businesses; dividing or disrupting

established communities; changing surface transportation patterns; disrupting orderly, planned development; or creating a notable change in employment.

The *Council on Environmental Quality* (CEQ) regulations at 40 CFR Section 1508.14 state that the "human environment" addresses the relationship of people with their natural and physical environments. Since changes these environments typically do not occur without affecting people, Section 1508.14 requires that environmental documents that are prepared for federal actions must address social impacts.

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, defines the risks to children's safety that are attributable to products or substances that the child is likely to touch or ingest. Examples include the air we breathe, the food we eat, the water we drink or use for recreation, and the soil we use to grow food. Environmental documents should assess project-related impacts with the potential to have a disproportionate effect on children's environmental health or safety.

The principal socioeconomic impacts to consider are associated with relocating or disrupting a residential or business community, transportation capability, planned development, or employment. Typical airport actions that could cause social impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids, etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities and rental car lots; a significant increase or change in aircraft operations; and significant amounts of construction/demolition activity.

Typically, the airport sponsor does not need to obtain any formal federal permits, certifications, or approvals when social impacts occur. Rather, the airport sponsor should coordinate with affected municipal jurisdictions or appropriate social and/or transportation agencies that are located in the affected area. The airport sponsor should also consider the proposed action's effects on the social and economic characteristics of affected communities including changes in population, public service demands, roadway capacity, businesses, and economics.

The proposed projects at the Oxford County Regional Airport will not incur any adverse social impacts on the community or region.

5.2.19 Solid Waste

Construction, renovation, or demolition of most airside projects produces construction debris (e.g., dirt, concrete, asphalt) that must be disposed of properly. In addition, new or renovated terminal, hangar, cargo, or maintenance facilities may involve construction, renovation, or demolition that produces other types of building solid waste (bricks, steel, wood, gypsum, glass, asbestos, and lead). Solid waste may also occur during construction and operations of access roadways, parking facilities, rental car lots, or because of other on-airport activities.

Refuse can also result from construction workers, passengers, and airport workers using the terminal building. Personnel and activities in hangars and air cargo facilities may produce solid waste as well. Activities needed to maintain the airside and landside facilities produce yet other sources of waste.

As a result, when a proposed airport project would cause or change a solid waste stream, the airport sponsor should consider how the potential, associated solid waste would be handled and disposed of properly to minimize environmental effects. The airport sponsor must also determine if local disposal

facilities have the capacities to hold the solid waste volumes that the proposed airport facilities would produce during their construction or operation.

State and local agencies are often responsible for and have the most knowledge about solid waste issues in an airport area. Therefore, airport sponsors should follow federal, state, or local regulations that address solid waste. Doing so reduces the environmental effects of airport-related construction or operation.

The proposed projects at the Oxford County Regional Airport will not create significant amounts of solid waste during their construction or during their continued operation. Construction debris is expected to be minimal and typical for the nature of the proposed projects. The development of the proposed projects will consider measures to address the effects of any increased waste volume and ways to mitigate those effects. Construction activities that are associated with the airport improvement projects will be conducted in accordance with the current version of FAA Advisory Circular 150/5370-10H, *Standards for Specifying Construction of Airports.*

5.2.20 Water Quality

Many of the nation's airports are located near waterways. This is because years ago when many airports were built, the cheapest, flattest, and most desirable lands suitable for airports were located near waterways. Consequently, today's airport activities may cause water quality impacts due to their proximity to waterways.

Examples of airside airfield development projects that may cause water quality impacts include building or expanding terminals or hangars; building new or extended runways, taxiways, and aprons; and installing navigational aids. Landside development that may alter water quality includes building or moving airport access roads, remote parking facilities, and rental car lots.

Building airport facilities may temporarily or permanently affect surface waters, groundwater, or drinking water supplies. Construction often causes sediment-laden runoff to enter waterways. Aircraft operations or maintenance are other activities that may affect water quality. If not properly controlled, the resultant water quality impacts may adversely affect animal, plant, or human populations. Therefore, the airport sponsor must evaluate project-related discharges, especially those having the potential to affect navigable waterways, municipal drinking water supplies, important sole-source aquifers, or protected groundwater supplies.

Airport-related water quality impacts can occur from both point and non-point sources at airports. Point sources are stormwater or other types of discharges from wastewater treatment plants, sanitary sewer systems, collection basins, or other water collection devices that flow through a conveyance (pipe) and discharge to a waterway. Non-point sources include stormwater runoff from runways, taxiways, aprons, outdoor storage areas, or construction areas that do not flow through conveyance systems. Both point source and non-point source runoff may contain pollutants such as metals, oils, greases, hazardous materials, solids, hydrocarbons, pesticides, and herbicides. During dry weather, pollutants can accumulate on impermeable surfaces, but during storms they are washed into streams, rivers, lakes, or other waters causing potential water quality impacts.

The principal statutory framework for managing water quality in federal decisions is contained in the *Clean Water Act* (CWA) (33 USC Section 1342). There may also be various other state and local water quality permits, certifications, and approvals required to build and operate airport projects. The states

and the U.S. Environmental Protection Agency (EPA) issue *National Pollutant Discharge Elimination System* (NPDES) permits authorizing point source discharges into navigable waters of the United States under Section 402 of the *Clean Water Act* (CWA). An airport sponsor may also require a permit under Section 404 of the CWA from the Army Corps of Engineers for filling or dredging navigable waters, including jurisdictional wetlands.

An airport action has the potential to affect a public drinking water supply, a sole source aquifer, or a *Comprehensive State Groundwater Protection Program* (CSGWPP). To comply with Section 1424(e) of the *Safe Drinking Water Act*, the FAA may not approve funds for any airport action if the EPA Administrator determines the action would contaminate a sole source aquifer. Airport sponsors who propose airport actions that involve above ground facilities to store or handle oil or oil-based products must also prepare an oil recovery response plan. See Section 112(a)(2) of the *Oil Pollution Act* for more information.

Airport actions such as aircraft and runway deicing/anti-icing, fuel storage tank operation, or firefighting training activities have the potential to chemically affect the project area's water quality. The airport sponsor should determine if building, operating, or maintaining the proposed airport development action would affect project area surface water, groundwater, or drinking water sources. The airport sponsor should pay particular attention to potential physical (e.g., temperature changes, siltation, and turbidity) and chemical (e.g., changes in oxygen or nitrogen levels, pH, etc.) impacts associated with the proposed action. For most airport actions, significant impacts can be avoided by design considerations, controls during construction, and other mitigation measures.

During the development of an airport action, the airport sponsor must consider the adequacy of proposed mitigation measures, best available technologies (BATs), and best management practices (BMPs). BATs and BMPs typically are parts of the NPDES permit process. BATs refer to the best technology available to minimize water quality impacts resulting from point source discharges. Bacterial decomposition of glycol in stormwater runoff is an example of a BAT. BMPs are schedules of activities, maintenance procedures, and management practices implemented to minimize and mitigate point source discharge impacts. Examples include using good housekeeping procedures, training personnel in the proper use and handling of chemicals, or using drainage swales or similar structures to filter stormwater sediment and pollutants.

Impacts to groundwater resources are not expected as a result of any of the proposed projects at the Oxford County Regional Airport. Surface water quality impacts that are created by the proposed airport improvement projects will be minimized through compliance with federal, state, and local water quality standards and requirements. Airport development project plans and specifications will require engineering and design controls, and erosion and sediment control best management practices.

5.2.21 Wetlands

The U.S. Department of Transportation (DOT) developed and issued DOT Order 5660.1A, *Preservation of the Nation's Wetlands* to provide guidance to federal agencies regarding their actions in wetlands. The DOT Order governs the Federal Aviation Administration's (FAA's) actions and defines wetlands as:

> "Lowlands covered with shallow and sometimes temporary or intermittent waters. This includes, but is not limited to, swamps, marshes, bogs, sloughs, potholes, wet meadows,

> river overflows, tidal overflows, estuarine areas, and shallow lakes and ponds with emergent vegetation."

Areas covered with water for such a short time that there is no effect on moist-soil vegetation are not included in the definition, nor are the permanent waters of streams, reservoirs, and deep lakes. The wetlands ecosystem includes those areas which affect or are affected by the wetland area itself; e.g., adjacent uplands or regions up and down stream. An activity may affect the wetlands indirectly by impacting regions up or down stream from the wetland or by disturbing the water table of the area in which the wetland lies. Wetlands may be either jurisdictional or nonjurisdictional depending on their location, function and other intrinsic values.

Section 404 of the *Clean Water Act* (CWA) governs the dredging and filling of navigable waters of the United States. The term, "navigable waters of the United States" includes wetlands that are connected or adjacent to navigable waters. Navigable waters of the U.S. are those waters that are subject to the ebb and flow of the tide and/or are used, have been used in the past, or may be susceptible to use to transport interstate or foreign commerce (see 33 CFR Section 329.4). In carrying out Section 404, the US Army Corps of Engineers (ACOE) uses 33 CFR Parts 320 through 330 to define wetlands under its jurisdiction. Wetlands under ACOE jurisdiction are: "Areas that surface or groundwater inundate or saturate at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas." To conduct dredge or fill activities in these wetlands, the ACOE must issue a permit authorizing those activities.

Nonjurisdictional wetlands do not involve navigable waters because they are not connected to or adjacent to navigable waters of the United States. Dredge and fill activities in these wetlands do not require ACOE approvals, but these wetlands are natural resources that the airport sponsor must assess under NEPA. In addition, Executive Order 11990, *Protection of Wetlands*, sets the standard for a federal agency action involving any wetland and provides direction and instruction on assessing impacts of federal actions on nonjurisdictional wetlands.

The wetland definitions above include three basic elements: hydrology, vegetation, and soil type. A qualified wetland delineation specialist must evaluate the proposed site's characteristics to determine if an airport development action affects an area meeting either of the above definitions. The delineation must follow the *Corps of Engineers Wetland Delineation Manual* (Technical Report Y-87-1). The ACOE, the U.S. Environmental Protection Agency (EPA), and other Federal agencies use this manual to standardize wetland delineations and to govern the procedures for Federal actions affecting those ecosystems.

Executive Order 11990, *Protection of Wetlands*, and DOT Order 5660.1A, *Preservation of the Nation's Wetlands,* requires federal agencies to avoid wetlands when a practicable alternative exists that avoids wetlands. A practicable alternative is an alternative that is feasible after considering the alternative's safety aspects; has the ability to meet the action's transportation objectives; and has the ability to meet accepted design, engineering, environmental, economic, or any other applicable factors. Additional cost alone does not necessarily make an alternative impractical, since such cost may be recognized as necessary and justified to meet national wetlands policy objectives.

To satisfy the Orders protecting wetlands, the airport sponsor should ensure there are no practicable alternatives. Many airport development action locations are fixed by their function and require

construction of a facility at a specific location to ensure safe, efficient airport or aircraft operations. In other instances, airport design criteria such as runway wind coverage are essential for safe aircraft operations. In both cases, avoiding a wetland may not be practicable. As a result, when a sponsor proposes an action that would unavoidably involve a wetland, the sponsor should provide the FAA with an analysis explaining why the wetland is the only practicable location for the proposed action.

An airport action affects a wetland if it:

- Requires building a structure, facility, or other development in a wetland
- Requires dredging, filling, draining, channelizing, diking, impounding, or other direct effects on a wetland
- Requires disturbing the water table of an area in which a wetland is located
- Indirectly affects a wetland because it impacts areas upstream or downstream of the wetland or it introduces secondary development that would affect a wetland

If a proposed airport development action involves wetlands, the airport sponsor must consider potential wetland impacts. Examples of airport actions that could cause wetland impacts include: airside development associated with new or expanded terminal and hangar facilities; new or extended runways, taxiways, and aprons; and installing navigational aids. Examples of landside activities include new or relocated airport access roadways or on-airport remote parking or rental car facilities. According to DOT Order 5660.1A, *Preservation of the Nation's Wetlands*, Paragraph 4.b, new construction does not include routine repairs and maintenance of existing facilities.

If an airport action that is normally categorically excluded (e.g. FAA Order 1050-1F Paragraph 5-6.4) involves wetland dredging or filling, the airport sponsor must determine if the action affects a nonjurisdictional or jurisdictional wetland. If the action involves a nonjurisdictional wetland, the action's design must meet the design standards defined in a General Permit (General Permits include Nationwide Permits (NWP), Regional General Permits and State Program General Permits) that would have applied had the action involved a jurisdictional wetland. If the action involves a jurisdictional wetland, the action's design must meet the design standards that would qualify the action for a General Permit. Whether the action involves a nonjurisdictional or jurisdictional wetland, the airport sponsor must determine if the action involves an extraordinary circumstance (see Paragraph 5-2 of FAA Order 1050.1F or Table 6-3 of FAA Order 5050.4B). The airport sponsor must then demonstrate that the action still qualifies as a categorical exclusion. If the action qualifies for a categorical exclusion, an environmental assessment or an environmental impact study is not needed.

When the airport sponsor determines the action must occur in a wetland, it should also provide information on how the action's design would include all practicable measures to minimize unavoidable wetland impacts. The ACOE, EPA, FWS, NRCS, and NMFS are the federal agencies that might have wetlands concerns. In addition, most states have at least one agency responsible for protecting wetlands. There are local natural resource agencies that may have responsibility or concern for protecting wetlands. Also, the public may have concerns. These interested parties often have conflicting missions or differing ideas on how to minimize wetland impacts.

If there is no practicable alternative to avoiding an action affecting a wetland, consultation allows the sponsor to:

- Notify the agencies of that fact and explain why other alternatives are not practicable

- Try to resolve issues about the action's use of the wetland
- Include ways to minimize the proposed action's unavoidable impacts

Failing to address and resolve these issues may affect the start of the action and its completion because the necessary permits could be either delayed or denied.

Areas on airport property were identified as wetlands using the state and federal criteria for the identification of wetland areas. These wetland areas are identified on the Airport Layout Plan.

The proposed projects at the Oxford County Regional Airport will not be constructed within wetlands, although the perimeter fence project along the easterly property line will likely require temporary construction haul roads across wetlands to access the areas of fence construction. A wetlands permit would not be required if the area of wetland disturbance is less than 4,300 square feet.

5.2.22 Wild and Scenic Rivers

Wild and scenic rivers are those rivers having remarkable scenic, recreational, geologic, fish, wildlife, historic, or cultural values. Federal land management agencies in the Departments of the Interior and Agriculture manage the *Wild and Scenic Rivers Act*. The National Park Service (NPS) has the primary role in maintaining the *National Rivers Inventory* (NRI). The wild and scenic rivers program is more commonly referred to as the *National Wild and Scenic Rivers System* (WSRS).

The WSRS is a list of rivers that the Secretaries of the Interior or Agriculture have determined have special values. The primary purpose of the WSRS is to protect the rivers' free-flowing characteristics. Toward that end, the Federal Energy Regulatory Commission (FERC) cannot license activities that would affect the free-flowing nature of these rivers. Further, other federal agencies, such as the FAA, may not assist, by loan, grant, license, or other authorizations, an airport action that would have a direct or adverse effect on such a river. As a result, the FAA must analyze the adverse effects that a proposed airport action may have on the free-flowing nature of these rivers or on their natural, cultural, or recreational values.

The *National Rivers Inventory* (NRI) lists more than 3,400 free-flowing river segments having at least one outstanding scenic, natural, or cultural feature. It also provides information on statewide river assessments or federal agencies involved in those assessments. The federal government protects the rivers and segments that are listed on the NRI while agencies consider adding the river to the WSRS.7

A proposed airport action that may affect a WSRS or NRI river must include discussions of potential impacts to the river. Typical airport actions that could result in impacts to these rivers include: airfield/landside expansion into a river (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids, etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities, and rental car lots; or a significant increase or change in aircraft operations.

The Little Androscoggin River is not a Wild and Scenic River or a Study River.

5.3 CONCLUSION

The development projects that are proposed for the Oxford County Regional Airport during the short-term planning period are typical for general aviation airports, and they are unlikely to cause any direct or indirect adverse environmental impacts to the natural resources in the vicinity of the airport or its environs. All of the proposed projects must be designed and constructed in accordance with the applicable federal, state and local environmental regulations which will minimize, mitigate and prevent adverse environmental impacts.

The proposed projects are also unlikely to cause any direct or indirect adverse socioeconomic impacts on the residents of the local communities or on the historical or cultural values of the local communities. Each project must address such impacts on a case-by-case basis to reaffirm that there will be no adverse socioeconomic impacts on the community or its resources.

The most likely sources of environmental impacts will be light and noise resulting from the installation of new airport lighting systems. These impacts are anticipated to be minimal although light and noise impacts are largely subjective and vary widely.

Because some of the proposed projects will result in the installation of new lighting facilities at the Airport, there may be some public reaction to these new light sources. It is anticipated that the new airport lighting will be largely unnoticed by the general public because the light sources are unidirectional, (e.g. REILs), and the lights will only be used for short periods of time primarily by pilots either landing or taking off. The refurbished airport rotating beacon might be more noticeable than the malfunctioning beacon because it will be illuminated continuously during periods of darkness.

Table 5.3-1 summarizes the potential airport improvement projects and the likelihood of triggering impacts that would require additional environmental study for each of the impact categories. The proposed airport improvement projects at the Oxford County Regional Airport are largely free of environmental impacts requiring further study.

Table 5.3-1 - Potential for Environmental Impacts Requiring Additional Study

Environmental Impact Categories	Proposed Short Term Airport Improvement Projects and Likelihood of Triggering Impacts (Yes or No)											
	Rehabilitate Terminal Apron	Construct Hangars and Taxilanes	Refurbish Rotating Beacon, Airfield Signs and Radio Controller	Install Runway End Identifier Lights (REILs)	Improve Landscaping and Directional Signage	Install Security Cameras and Apron Lighting	Acquire Property Adjacent to Airport	Prepare Airport Operation Manuals	Install Airport Perimeter Fence	Install GARD Monitoring System	Conduct Runway 15-33 Drainage Study	Install Obstruction Lights on Existing Hangars
5.2.1 Air Quality	N	N	N	N	N	N	N	N	N	N	N	N
5.2.2 Biotic Resources	N	N	N	N	N	N	N	N	N	N	N	N
5.2.3 Coastal Barriers	N	N	N	N	N	N	N	N	N	N	N	N
5.2.4 Coastal Zone Management	N	N	N	N	N	N	N	N	N	N	N	N
5.2.5 Compatible Land Use	N	N	N	N	N	N	N	N	N	N	N	N
5.2.6 Construction	N	N	N	N	N	N	N	N	N	N	N	N
5.2.7 Section 4(f) Land	N	N	N	N	N	N	N	N	N	N	N	N
5.2.8 Federally Listed Endangered and Threatened Species	N	N	N	N	N	N	N	N	N	N	N	N
5.2.9 Energy Supplies, Natural Resources, and Sustainable Design	N	N	N	N	N	N	N	N	N	N	N	N
5.2.10 Environmental Justice	N	N	N	N	N	N	N	N	N	N	N	N
5.2.11 Farmlands	N	N	N	N	N	N	N	N	N	N	N	N
5.2.12 Floodplains	N	N	N	N	N	N	N	N	N	N	N	N
5.2.13 Hazardous Materials	N	N	N	N	N	N	N	N	N	N	N	N
5.2.14 Historical Properties	N	N	N	N	N	N	N	N	N	N	N	N
5.2.15 Secondary (Induced) Impacts	N	N	N	N	N	N	N	N	N	N	N	N
5.2.16 Light Emission and Visual Impacts	N	N	**Y**	**Y**	N	N	N	N	N	N	N	N
5.2.17 Noise	N	N	N	N	N	N	N	N	N	N	N	N
5.2.18 Social Impacts	N	N	N	N	N	N	N	N	N	N	N	N
5.2.19 Solid Waste	N	N	N	N	N	N	N	N	N	N	N	N
5.2.20 Water Quality	**Y**	**Y**	N	N	N	N	N	N	N	N	N	N
5.2.21 Wetlands	N	N	N	N	N	N	N	N	**Y**	N	N	N
5.2.22 Wild and Scenic Rivers	N	N	N	N	N	N	N	N	N	N	N	N

Source: BACS Evaluation

CHAPTER 6

~ CHAPTER 6 ~

FINANCIAL ANALYSIS AND IMPLEMENTATION

6.1 GENERAL

This chapter provides a summary of the County of Oxford's annual Airport revenues and expenses.

Airport revenues that are typically incurred may include:

- Leases of airport building
- Leases of airport property
- Landing fees and parking (tiedown) fees from visiting aircraft
- Vehicle parking fees
- Aviation fuel flowage fees
- Percent-of-gross fees for business that generates revenue from being located on the airport

Airport expenses may include:

- Wages and benefits of airport personnel or County personnel doing work for the airport
- Office and maintenance supplies
- Utilities and fuels
- Maintenance (e.g. equipment, mowing, snow removal, pavement crack seal, buildings, obstruction removal, drainage maintenance)
- Repair parts and services (e.g. equipment repair, fending repair, weather damage, repair of leased premises)

How airport revenues and expenses are reported, analyzed, and projected depends on whether the airport is operated under a separate fund (Airport Fund) or is part of the general operating fund (typically called General Fund). Oxford County Regional Airport is owned and operated by the County of Oxford under the General Fund concept. In the airport's case, funds to operate the airport are proposed, voted on, and adopted by the County on an annual basis as part of the General Fund. Projections of airport operating revenues and expenses were not prepared for this study because information on the Mosher Aviation lease is not available for publication at the time of this writing. [1]

This chapter also includes a Capital Improvements Plan (CIP). A CIP is a listing of recommended major improvements to the Airport, high cost maintenance activities, and other additions and improvements to the facility. The capital projects in the CIP are listed in order of priority (need) and funding availability. Typical CIP items may include:

- Runway, taxiway, and apron construction, reconstruction, and overlay
- Land acquisition in fee simple and easements
- Installation of airfield lighting and signage

[1] The prospective Mosher Aviation lease is currently being negotiated, so information is not yet available for publication.

- Acquisition of airfield maintenance equipment
- Installation of building systems such as heating, ventilation and air conditioning (HVAC)
- Construction of buildings, auto parking lots, and visitor access
- Airport facility planning, environmental planning and permitting, and engineering and construction
- Installation of approach aids and visual aids
- Environmental impact mitigation

Sources of funding for airport capital projects depend on the project and the project's eligibility for Federal and State funding. The FAA Airport Improvement Program (AIP) typically funds eligible projects at 90% of the total eligible cost. The remaining 10% non-Federal share of AIP projects is typically funded 5% by the Maine Department of Transportation and 5% by the airport sponsor, in this case the County of Oxford.

AIP funding eligibility of projects is defined in FAA Order 5100.38 D *AIP Handbook*. In addition to being defined as "eligible" in the Order, a project must also be justified based on civil aeronautical demand and it must meet Federal procurement and environmental requirements.

Currently, FAA AIP funds are made available for general aviation airports such as the Oxford County Regional Airport (81B) at a maximum amount of $150,000 per year under the Non-Primary Entitlement (NPE) Program if the running 4-year future CIP includes a total Federal funding requirement of at least $600,000. In FY2019, the FAA NPE entitlement contribution to the Oxford County Regional Airport was $95,556 because the running 4-year future entitlement requirement in the CIP was $477,778. Based on the estimated costs of the recommended improvements that are proposed in the CIP, it is assumed that the annual entitlement contribution through FY2026 will increase to $150,000 beginning in FY2021.

Federal funding for airports is also available from the AIP Discretionary Program. Airports within a state compete for discretionary funding made available to that state. The decision for awarding discretionary funding for a project is based in part on the project's priority (safety being the highest priority) and the project's need. Discretionary funding typically comes in place when the amount of required Federal funds for a critical project's funding would exceed the Airport's available Non-Primary Entitlement funding.

6.2 Revenues and Expenses

6.2.1 Operating Revenues and Expenses

The County of Oxford's airport operating revenues and expenses for calendar years 2014 – 2019 are listed in Table 6.2.1-1. Currently, the Airport's operating revenue is limited to aviation fuel sales because there is no cash revenue being derived from the FBO operation or from the one land lessee for the private hangar. As of this writing, the FBO lease is being negotiated between the County and the FBO.

Both current lessees perform services for the County at the airport, and it is expected this is reflected in their current no-revenue arrangement. A "cleaner" lease would not have lessees performing services on the airport in lieu of lease payments, but this is common at airports comparable to the Oxford County Regional Airport. If this arrangement is to continue at the airport, it is recommended that the lease state the lease rate of the leased premises (i.e. land and/or buildings), the services performed by the lessee, the value of those services, and the resultant required lease payment.

Table 6.2.1-1 Airport Revenues, Expenses and Balance

	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual
General Fund Airport Operating Revenues And Expenses						
Revenues						
Airport fuel	$ -	$ 14,303	$ 48,889	$ 51,845	$ 32,715	$ 56,500
Total Revenues	$ -	$ 14,303	$ 48,889	$ 51,845	$ 32,715	$ 56,500
Expenditures						
Wages	-	-	-	-	-	-
Electricity	6,249	6,222	6,862	8,766	10,284	14,794
Water	-	-	367	263	263	329
Security	2,913	420	420	543	420	420
Rentals	570	960	1,228	1,150	1,084	1,092
Snow removal	15,593	29,522	48,000	51,210	48,000	48,000
Grounds upkeep	16,483	9,700	9,376	14,189	19,140	7,780
Legal	33,027	-	2,490	2,811	4,602	-
Engineering	31,469	-	-	16,680	2,900	-
Insurance	2,941	2,491	2,499	1,866	1,866	3,666
Timber maintenance	1,565	696	491	811	1,041	960
Supplies	-	-	-	-	1,983	120
Aviation fuel	-	14,303	18,472	30,144	33,402	53,950
Capital Projects	-	-	-	-	-	130,243
Fuel Tanks and Systems	11,705	-	3,610	-	-	607
Electrical systems	6,376	-	5,081	10,195	-	-
Plumbing	-	-	-	1,135	-	-
Antennas	-	-	-	-	1,570	-
Records search	-	2,423	-	-	-	-
Miscellaneous	875	338	1,329	1,227	749	1,104
Total Expenditures	129,766	67,075	100,225	140,990	127,304	263,065
General Fund Transfers Out						
Transfers to FAA Grants Fund	-	-	1,301	4,439	8,342	5,222
Total General Fund Transfers Out	-	-	1,301	4,439	8,342	5,222
Total Expenditures And GF Transfers Out	129,766	67,075	101,526	145,429	135,646	268,287
Net General Fund Airport Costs	$ (129,766)	$ (52,772)	$ (52,637)	$ (93,584)	$ (102,931)	$ (211,787)
FAA Grant Fund Revenue						
FAA & MDOT Grants	-	-	$ 24,729	$ 84,347	$ 158,486	$ 99,209
Transfers in from General Fund	-	-	1,301	4,439	8,342	5,222
Total Grant Fund Revenue	-	-	26,030	88,786	166,828	104,431
FAA Grant Fund Expenditures			26,030	88,786	166,828	104,431
Net FAA Grant Fund Costs	$ -	$ -	$ -	$ -	$ -	$ -
General Fund Airport Capital Improvements						
(Included in Gen Fund expenditures above)						
Alarm systems	$ 2,186	$ -	$ -	$ -	$ -	$ -
Electrical systems	6,376	-	5,081	10,195	-	-
Tanks installation and inspection	11,705	-	-	-	-	-
Fuel service system	-	-	3,610	-	-	-
Plumbing	-	-	-	1,135	-	-
Runway Repairs	-	-	-	-	10,000	-
Roofing	-	-	-	-	-	124,793
Total General Fund Capital Improvements	$ 20,267	$ -	$ 8,691	$ 11,330	$ 10,000	$ 124,793

Source: Compilation of County records.

All revenues from aviation fuel sales accrue directly to the County because it owns the self-serve 100LL Avgas system. Fuel revenues have increased significantly as Mosher Aviation has successfully developed and increased their business since beginning its operations at the Airport in 2016.

The Airport's highest operating expenses typically are for:

- Contracted snow removal costs
- Legal expenses
- Purchases of aviation fuel
- Engineering and consultants' fees
- Contractors and construction costs

Operating expenses have fluctuated from year to year with the lowest expenses incurring in 2015 and highest expenses incurring in 2019.

Also included in the County's airport-related General Fund costs are transfers from the General Fund to the FAA Grant Fund in order to fund the County's 5% share of AIP-eligible project costs. Transfers from the General Fund ranged from a low of $0 in 2014 and 2015 to a high of $8,342 in 2018. General aviation airports comparable to the Oxford County Regional Airport also typically have annual operating deficits. The Airport's cost to the County's General Fund (shown as a deficit in Table 6.2.1-1) was $129,766 in 2014 and increased to a deficit of $211,787 in 2019.

6.2.2 Capital Revenues and Expenses

FAA Grant Fund revenue is comprised of the transfers from the County's General Fund and from reimbursement payments received from FAA and Maine DOT grants, typically at 90% and 5% shares respectively. FAA Grant Fund expenses are typically payments for:

- Consultants and contractors
- Land and equipment acquisitions
- Environmental mitigation on federally-funded projects
- Sponsor administration costs on AIP projects

The FAA Grant Fund revenues and expenses shown on Table 6.2.1-1 range from a low of $0 in 2014 and 2015 to a high of $166,828 in 2018.

Additional capital expenses are in the form of project costs that are not eligible for AIP or Maine DOT funding and which are funded 100% by the County. The County's costs for these projects are reflected in the General Fund Expenditures at the bottom of the table. Projects have included:

- Runway repairs (i.e. pavement markings)
- Aviation fuel tank installation
- Building plumbing repairs
- Building roofing repairs
- Building alarm and electrical systems

These costs have ranged from a low of $0 in 2015 to a high of $124,793 for roof repairs in 2019.

6.2.3 Airport Financial Balance

The total airport financial balance is based on aviation fuel sales (revenue) less costs for items such as wages, snow removal, insurance, capital projects, etc. (expenditures). The total airport operating balance has been a fluctuating deficit ranging from $129,766 in 2014 to $127,304 in 2018. The deficit increased significantly to $211,787 in 2019 largely due to the increase in expenditures for capital projects which had been deferred from 2014 to 2018. As with other comparable general aviation airports, the Airport's deficits are typically funded by tax revenues, which in this case are generated county-wide.

6.3 CAPITAL IMPROVEMENTS PLAN

The Aviation Forecast chapter addresses projected airport activity demand; the Demand Capacity / Facility Requirements chapter addresses the facility needs that the forecasted demand could be expected to generate; the Alternatives chapter provides a recommended layout to provide the required facilities to meet the forecasted needs and demand; and the Environmental Evaluation chapter describes the anticipated environmental impacts associated with the recommended improvements that are proposed for the short-term planning period and the protocols for mitigating the impacts. Based on this step-by-step planning analysis, the Capital Improvements Plan (CIP) provides a financial plan and an implementation schedule for the recommended capital improvements.

The schedule of recommended improvements is primarily driven by expected need, and its implementation requires funding from several sources including:

- FAA AIP Entitlement
- FAA AIP Discretionary
- Maine DOT 5% share of AIP-eligible project costs
- County 5% share of AIP-eligible project costs
- County 100% share of projects not funded by the FAA or Maine DOT
- Private funding for private development projects

The recommended CIP is shown in Table 6.3-1. The CIP covers the 20-year planning period from FY2019 to FY2038 with focus and emphasis on the six-year short-term planning period from FY2021 through FY2026. The CIP provides planning-level opinions of probable project costs, and it distributes the projects costs to the appropriate funding sources.

- The FAA NPE annual accruals and ending balances are highlighted in green. As discussed above, the FAA NPE annual accruals increased from $95,556 in FY2019 to $150,000 in FY2021 due to an increase in anticipated AIP-eligible project costs.
- The AIP-eligible project costs to be funded 90% with NPE funds are highlighted in orange. These costs deplete the accrued NPE funds without exceeding its balance.
- The AIP-eligible project costs that will require FAA AIP Discretionary funds are highlighted in purple. The estimated development costs for the recommended FY2023 AIP projects will deplete all of the Airport's accrued NPE funds resulting in a balance of $0 at the end of FY2023. The estimated amount of discretionary funding that will be required in FY2023 is $191,535 which has been allocated to the highest priority FY2023 airports AIP-eligible project costs.
- The Maine DOT 5% funding of AIP-eligible project costs is highlighted in pink.
- The County funding shares are highlighted blue. The County funding share of AIP-eligible project costs is 5%, and its funding share for ineligible AIP project costs is 100%.

Privately funded project costs are highlighted in yellow. Although privately funded projects are typically funded 100% by their proponents, the County could fund some elements of the projects (e.g. automobile parking along Airport Road and paved taxilanes to the hangars) in order to encourage and promote additional revenue generating development at the Airport.

Table 6.3-1 Capital Costs

Project Description and Entitlement Funding Timeline	Construction or Acquisition Cost	Planning, Design & Contingency Cost	Development Cost	FAA GA Entitlement Share (90%) / Balance	FAA Discretionary Share (100%)	MaineDOT Share (5%)	Oxford County Share (5%)	Oxford County Share (100%)	Private Share (100%)
FY2019 Earned FY2019 Entitlement Funds				$95,556					
FY2019 Starting Entitlement Balance				$95,556					
FY2019 Total Project Costs				$0	$0	$0	$0	$0	$0
FY2019 Ending Entitlement Balance				$95,556					
FY2020 Earned FY2020 Entitlement Funds				$95,556					
FY2020 Starting Entitlement Balance				$191,112					
FY2020 Total Project Costs				$0	$0	$0	$0	$0	$0
FY2020 Ending Entitlement Balance				$191,112					
FY2021 Earned FY2021 Entitlement Funds				$150,000					
FY2021 Starting Entitlement Balance				$341,112					
Conduct Runway 15-33 Drainage Study for 155-Foot 24-Inch RCP Culvert	$0	$30,000	$30,000	$0	$0	$0	$0	$30,000	$0
Construct Three Separate Box Hangar Sites (South End)									
• Hangars	$234,400	$65,200	$299,600	$0	$0	$0	$0	$0	$299,600
• Frontage	$49,800	$23,000	$72,800	$0	$0	$0	$0	$0	$72,800
• Hangar Access	$39,800	$12,800	$52,600	$0	$0	$0	$0	$0	$52,600
• Hangar Parking and Driveways	$139,400	$36,000	$175,400	$0	$0	$0	$0	$0	$175,400
• Extend Apron Taxilane (South End)	$128,400	$33,200	$161,600	$0	$0	$0	$0	$0	$161,600
Total Box Hangars Project Cost	$593,800	$170,200	$762,000	$0	$0	$0	$0	$0	$762,000
Install GARD System	$10,000	$0	$10,000	$0	$0	$0	$0	$10,000	$0
Improve & Install Airport Directional Signage and Landscaping	$13,200	$1,700	$14,900	$0	$0	$0	$0	$14,900	$0
FY2021 Total Project Costs	**$615,000**	**$201,900**	**$816,900**	**$0**	**$0**	**$0**	**$0**	**$54,900**	**$762,000**
FY2021 Ending Entitlement Balance				**$341,112**					
FY2022 Earned Entitlement Funds				**$150,000**					
FY2022 Starting Entitlement Balance				**$491,112**					
Rehabilitate Terminal Apron Pavement and Taxilanes									
• Design-Only	$0	$216,000	$216,000	$194,400	$0	$10,800	$10,800	$0	$0
Total Apron Rehabilitation Project Costs	$0	$216,000	$216,000	$194,400	$0	$10,800	$10,800	$0	$0
FY2022 Total Project Costs	**$0**	**$216,000**	**$216,000**	**$194,400**	**$0**	**$10,800**	**$10,800**	**$0**	**$0**
FY2022 Ending Entitlement Balance				**$296,712**					
FY2023 Earned Entitlement Funds				**$150,000**					
FY2023 Starting Entitlement Balance				**$446,712**					
Rehabilitate Rotating Beacon	$17,031	$2,300	$19,330	$17,390	$0	$970	$970	$0	$0
Replace Airport Lighting Radio Controller	$15,483	$2,100	$17,580	$15,820	$0	$880	$880	$0	$0
Rehabilitate Terminal Apron Pavement and Taxilanes									
• Reconstruct Apron Taxilanes	$167,658	$10,499	$178,160	$160,340	$0	$8,910	$8,910	$0	$0
• Reconstruct/Install Tiedowns / Itinerant Parking	$231,151	$14,884	$246,030	$29,890	$191,540	$12,300	$12,300	$9	$0
• Reconstruct Hangar Frontage - FBO Hangar	$53,281	$4,004	$57,290	$0	$0	$0	$0	$57,290	$0
• Reconstruct Hangar Access - FBO Hangar	$82,874	$4,800	$87,670	$0	$0	$0	$0	$87,670	$0
• Reconstruct Hangar Frontage - Bancroft Hangar	$13,092	$1,338	$14,430	$0	$0	$0	$0	$14,430	$0
• Reconstruct Hangar Access - Bancroft Hangar	$27,632	$3,069	$30,700	$0	$0	$0	$0	$30,700	$0
• Reconstruct Apron Access to Public Fueling Area	$122,784	$10,245	$133,030	$119,730	$0	$6,650	$6,650	$0	$0
• Repaint Apron Markings	$12,000	$908	$12,910	$11,610	$0	$650	$650	$0	$0
• Apron Lighting Modifications (Signs, Edge Lights, Reflectors)	$18,000	$1,361	$19,360	$17,420	$0	$970	$970	$0	$0
• Remove Unused Taxiway C (Former Schlavi Taxiway)	$15,712	$1,018	$16,730	$15,050	$0	$840	$840	$0	$0
• Remove Tiedowns 19 - 35	$24,772	$1,874	$26,650	$23,990	$0	$1,330	$1,330	$0	$0
Total Apron Rehabilitation Project Costs	$768,956	$54,000	$822,960	$378,030	$191,540	$31,650	$31,650	$190,090	$0
Install Taxiway Edge Lighting and New Airfield Guidance Signs	$29,675	$3,900	$33,580	$30,220	$0	$1,680	$1,680	$0	$0
Install Red Obstruction Lights On Hangars	$5,109	$700	$5,810	$5,230	$0	$290	$290	$0	$0
Prepare Security/Emergency Manual & Airport Minimum Standards	$20,000	$2,600	$22,600	$0	$0	$0	$0	$22,600	$0
Install Security Cameras and Lighting	$20,000	$2,600	$22,600	$0	$0	$0	$0	$22,600	$0
FY2023 Total Project Costs	**$876,254**	**$68,290**	**$944,460**	**$446,690**	**$191,540**	**$35,470**	**$35,470**	**$235,290**	**$0**
FY2023 Ending Entitlement Balance				**$22**					

Table 6.3-1 Capital Costs (Continued)

Project Description and Entitlement Funding Timeline	Construction or Acquisition Cost	Planning, Design & Contingency Cost	Development Cost	FAA GA Entitlement Share (90%) / Balance	FAA Discretionary Share (100%)	Maine DOT Share (5%)	Oxford County Share (5%)	Oxford County Share (100%)	Private Share (100%)
FY2024 Earned Entitlement Funds				$150,000					
FY2024 Starting Entitlement Balance				$150,022					
Runway 15-33 Pavement Rehabilitation and Maintenance	$160,000	$130,000	$290,000	$68,640	$192,360	$14,500	$14,500	$0	$0
Construct Drainage Improvements Relating to Existing Runway 15-33 Culvert	$50,000	$10,400	$60,400	$0	$0	$0	$0	$60,400	$0
FY2024 Total Project Costs	**$210,000**	**$140,400**	**$350,400**	**$68,640**	**$192,360**	**$14,500**	**$14,500**	**$60,400**	**$0**
FY2024 Ending Entitlement Balance				$81,382					
FY2025 Earned Entitlement Funds				$150,000					
FY2025 Starting Entitlement Balance				$231,382					
FY2025 Total Project Costs				$0	$0	$0	$0	$0	$0
FY2025 Ending Entitlement Balance				$231,382					
FY2026 Earned Entitlement Funds				$150,000					
FY2026 Starting Entitlement Balance				$381,382					
Construct Three Separate Box Hangar Sites (South End)									
• Hangars	$234,400	$65,200	$299,600	$0	$0	$0	$0	$0	$299,600
• Frontage	$65,800	$23,600	$72,800	$0	$0	$0	$0	$0	$72,800
• Hangar Access	$39,900	$12,600	$52,600	$0	$0	$0	$0	$0	$52,600
• Hangar Parking and Driveways	$119,500	$36,000	$155,500	$0	$0	$0	$0	$0	$155,500
• Extend Apron Taxilane (South End)	$110,000	$33,200	$143,200	$0	$0	$0	$0	$0	$143,200
Total Box Hangar Project Costs	$553,500	$170,200	$723,700	$0	$0	$0	$0	$0	$723,700
Extend Apron and Apron Taxiway To The Runway 33 Turnaround (South End)	$128,400	$0	$128,400	$115,600	$0	$6,400	$6,400	$0	$0
Install Lighted Supplemental Windsock Runway 33 End	$22,000	$2,800	$24,800	$22,300	$0	$1,200	$1,300	$0	$0
Land Acquisition - Growth Scenario No. 1	$119,300	$15,000	$134,300	$120,900	$0	$6,700	$6,700	$0	$0
FY2026 Total Project Costs	**$823,200**	**$188,000**	**$1,011,200**	**$258,800**	**$0**	**$14,300**	**$14,400**	**$0**	**$723,700**
FY2026 Ending Entitlement Balance				$122,582					
Total FY2021 - FY2026 Total Project Costs	**$2,524,454**	**$814,500**	**$3,338,960**	**$968,500**	**$383,900**	**$75,100**	**$75,200**	**$350,600**	**$1,485,700**
Additional Projects Based on Budget and Future Need									
Install Runway End Identifier Lights (REILs) on Runways 15 and 33	$80,000	$60,000	$140,000	$126,000	$0	$7,000	$7,000	$0	$0
Study and Install Precision Approach Path Indicators (PAPI) Runways 15 and 33	$60,000	$75,000	$135,000	$121,500	$0	$6,800	$6,700	$0	$0
Remove 3 Abandoned Hazard Beacons, 8,000± LF Cables and Poles and Replace 1 Hazard Beacon with LED	$125,400	$75,000	$200,000	$180,000	$0	$10,000	$10,000	$0	$0
Land Acquisition - Growth Scenario No. 2	$150,800	$15,000	$165,800	$149,200	$0	$8,300	$8,300	$0	0
Investigate / Repair Leach Field (After Land Acquisition No. 1)	$8,000	$5,000	$13,000	$0	$0	$0	$0	$13,000	$0
Complete Airport Fencing (Phase 4 Approx. 3,260')	$326,000	$74,000	$400,000	$360,000	$0	$20,000	$20,000	$0	$0
Avigation Easement for Runway 15-33 Instrument Departure Surfaces									
• Map Obstructions (Approx. 133 Acres)	$30,000	$3,900	$33,900	$30,500	$0	$1,700	$1,700	$0	$0
• Property Survey and Avigation Easements	$50,000	$6,500	$56,500	$50,900	$0	$2,800	$2,800	$0	$0
• Acquire Avigation Easement - Runway 15	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	$0
• Acquire Avigation Easement - Runway 33	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	$0
Note: Easement Acquisition Costs to be Determined at a Later Date									
Total Additional Project Costs Based on Budget and Future Need	**$829,800**	**$319,400**	**$1,144,200**	**$1,018,100**	**$0**	**$56,600**	**$56,500**	**$13,000**	**$0**
Total Airport Master Plan Improvements	**$3,354,254**	**$1,128,900**	**$4,483,160**	**$1,986,600**	**$383,900**	**$131,700**	**$131,700**	**$363,600**	**$1,485,700**

Note: Rounded to nearest 10.
Source: BACS, ENR Construction Cost index data, Consumer Price Index data, and 2009 Airport Master Plan Master Plan records.

At the bottom of Table 6.3-1 are a number of projects beyond FY2026 that were identified during the planning process as being desirable to the County and to the airport users and tenants. Although these are typical general aviation airport projects which would enhance aviation safety and operations at the Airport, it is recommended to defer implementing these projects until Federal, State and County funding becomes available and the projects are warranted based on aviation need.

6.3.1 CAPITAL IMPROVEMENTS PLAN SUMMARY

This section briefly describes the six-year short-term CIP details that are summarized in Table 6.3-1.

FY2019 and FY2020

- No federally-funded capital projects were conducted while the County accrued its NPE funds.

FY2021

- No federally-funded capital projects were conducted while the County accrued its NPE funds.
- A drainage study project to determine the recommended repair of the failing culvert beneath the runway. The recommendations from this study will be used for the design and construction of improvements in FY2022.
- Construction (based on demand) of the first group of three privately-funded box hangars southerly of the Bancroft hangar. The project would include the hangars, the hangar frontage pavement, the taxilane access pavement between the hangar frontage pavement and the apron taxilane extension, extension of the apron taxilane to the south, and construction of the automobile parking area adjacent to Airport Road.
- Two County-funded projects including a “GARD” system to record radio communications at the airport from taxiing, arriving and departing aircraft, airport maintenance vehicles; and improvements to the Airport’s aesthetics and roadway signage.

FY2022

- The only project for FY 2022 would be AIP-eligible design-only of rehabilitation of the terminal apron and taxilanes with construction under a construction grant to follow in 2023.
- The AIP funding needs in FY2022 would exceed the available NPE balance, so $372,813 of FAA AIP Discretionary would be required. FAA-AIP Entitlement at the end of FY2022 would be $0.

FY2023

- The major project is the reconstruction of the existing terminal apron including AIP-eligible and ineligible areas of pavement. Also included in this project would be the construction of the drainage improvements studied in FY2021, rehabilitation of the airport rotating beacon, replacement of the airport lighting radio controller, modifications to the taxiway edge lighting system and airfield guidance signs, removal of the former Schiavi taxiway, and installing obstruction lights on existing hangars.
- The pavement areas for apron taxilanes, aircraft tiedown spaces, itinerant parking spaces, and aircraft access to the fueling area would be AIP-funded, with the remaining pavement areas (e.g. hangar frontage and hangar access to the apron taxilane) being 100% County-funded.

- 100% County funded projects include the frontage and access areas for the existing hangars as well as preparation of a Security/Emergency Manual; Airport Minimum Standards; and installation of security cameras and lighting.
- The Security/Emergency Manual would be prepared with the assistance of the County, the airport tenants, and emergency first responders in order to have a plan for coordinating responses to incidents that might occur at the Airport, and it would recommend security items and emergency response procedures. The Airport Minimum Standards would set forth standards for aircraft fueling, leasehold size, aircraft operation, minimum services to be offered by commercial operators, etc.
- The AIP funding needs in FY2023 would use all of the Entitlement balance and would require $191,535 of FAA Discretionary funds.

FY2024

- The FY2024 project would involve pavement rehabilitation for Runway 15-33, the Runway 15 and 33 turnarounds, and Taxiways A and B to the holding position markings. This project would be AIP funded and would include crack sealing, crack repair, the application of FAA P-632 asphalt rejuvenator, and repainting the runway and taxiway markings.
- A County-funded project would be construction of the drainage improvements that were designed in FY2021.
- FY2021 NPE year-end would be $81,360.

FY2025

- There currently are no projects identified for FY2025. The FAA NPE balance would increase to $231,360.

FY2026

- The second group of three privately-funded box hangars would be constructed southerly of the first group of hangars identified in FY2021. The project would include the hangars, the hangar frontage pavement, the access taxilane pavement between the frontage pavement and the taxilane extension, the extension of the apron taxilane to the south, and the construction of the automobile parking area adjacent to Airport Road.
- There would be three FAA-AIP Entitlement funded projects to extend the apron taxilane to the Runway 33 turnaround; to install a supplemental wind cone at the Runway 33 end; and to acquire land northerly of the aviation fueling area.
- After the second group of three box hangars is constructed, there will be a short distance from the southerly end of the apron taxilane extension to the Runway 33 turnaround. Connecting the taxilane extension to the Runway 33 turnaround would effectively create a 1,750-foot long partial parallel taxiway from the end of Runway 33 to Taxiway B. Although the CIP currently identifies this connection as being 100% County funded, it could become an AIP-eligible project in the future because the taxilane connection to the Runway 33 turnaround would make the entire taxilane available for public use rather than serving only the six box hangar owners and users.

- The supplemental wind cone would assist pilots landing at or departing from the Runway 33 end by providing accurate wind information for that runway end.
- The land acquisition project would provide the first of two expansions of airport property northerly of the aviation fueling area. This acquisition would serve two purposes: 1) to provide additional area for more hangars, possibly large conventional hangars or T-hangars, and 2) to provide area to the west for non-aviation revenue-generating development or for other non-aeronautical airport needs and uses.

Table 6.3.1-1 summarizes the CIP project costs by funding source for FY 2021 – 2026.

Table 6.3.1-1 Summary of FY2021 – FY2026 Project Costs

Funding Source	Amount
Development Cost [1/]	$3,338,960
GA Entitlement	$968,500
Discretionary FAA Share	$383,900
Maine DOT	$75,100
County (for AIP-eligible project costs)	$75,200
County (for ineligible AIP project costs)	$350,600
Private	$1,485,700
[1/] May not add exactly due to rounding.	

Table 6.3.1-2 summarizes the CIP project costs by funding source for all of the recommended Airport Master Plan Update improvements, including the deferred projects listed as “Additional Projects Based on Budget and Future Need”.

Table 6.3.1-2 Summary of FY2019-FY2038 Airport Master Plan Update Improvements

Funding Source	Amount
Development Cost [1/]	$4,483,160
GA Entitlement	$1,986,600
Discretionary FAA Share	$383,900
Maine DOT	$131,700
County (for AIP-eligible project costs)	$131,700
County (for ineligible AIP project costs)	$363,600
Private	$1,485,700
[1/] May not add due to rounding.	

6.4 AIRPORT SUSTAINABILITY

From the FAA website, [2] airport sustainability planning:

- Reduces environmental impacts, and maintain high, stable levels of economic growth, and
- Helps achieve "social progress", a broad set of actions that ensure organizational goals are achieved in a way that is consistent with the needs and values of the local community.

Proper airport sustainability measures are those appropriate to the airport, can be expected to deliver suitable benefit, can be implemented within a reasonable time for reasonable cost, and whose progress toward implementation can be tracked. The list of possible sustainability actions should be limited to a number which can allow focus so they all can be implemented.

Airport sustainability is sometimes addressed in a separate document or a separate analysis in an airport master plan. For this master plan, recommended sustainability measures for Oxford County Regional will be categorized and listed. From the FAA website, airport sustainability measures can be grouped into four general categories: Operations, Economy, Community, and Environment.

Operations

- Inventory existing/baseline use of natural resources, utilities, and energy.
- Reuse, reuse, and recycle to the extent possible
- Encourage local and regional use of the airport.
- Minimize potential for wildlife hazards.
- Purchase and use recyclable materials to the extent possible.
- Develop airport property in a way that takes a long-term view so need for alteration/reconstruction is minimized.
- Maximize airport maintenance capabilities to the extent available staff and funds are allow, particularly during winter, to keep the airport open.
- To the extent possible ensure the currency and correctness of Notices To Airman issued for the airport.

Economy:

- Continue improvement of the FBO Building
- Ensure rates for lease of the County airport's aviation-use land and buildings, and possible non-aviation land are appropriate to provide appropriate return to County taxpayers for their funding of the airport.
- Focus on developing revenue generation possibilities at the airport.
- Market the airport's facilities and services.
- Ensure cost-effective purchasing and contracting.
- Increase the airport's visibility with local and regional residents and agencies.

[2] https://www.faa.gov/airports/environmental/sustainability/

- Understand the how the airport's rates, facilities, and services, compare to competing airports and competing modes of transportation.
- Increase awareness of use of creative non-aviation uses of the airport.
- Revise the content of the airport's website to "sell" its services and facilities.
- Contact air charter providers to increase their use of the airport.
- Maximize funding/implementation partnerships.

Community

- Hold "airport awareness days" to increase public understanding of the airport.
- Invite Local, County, State, and Federal officials to tour the airport, or prepare and conduct virtual meetings for the same reason.
- Provide information to the airport's abutters on upcoming airport improvement projects through website and/or newsletter.
- Increase the airport's role with emergency preparedness planning.
- Host tours of the airport by citizen groups such as Boy Scouts, Girl Scouts, and Rotary.
- Begin or increase airport representation on economic development groups such as Androscoggin Council of Governments, Oxford Hills Chamber of Commerce, and Maine Chamber of Commerce.
- Continue to improve airport appearance and signage.
- Maintain a telephone number and e-mail for local comment and address any comments promptly.

Environment

- Coordinate the scheduling of airport improvement projects to minimize the scale of and frequency of disruptions.
- Maximize use of renewable energy and energy-efficient equipment and procedures.
- Maintain an active dialogue and exchange of information with other airport regarding sustainable practices.
- Reduce waste streams as feasible.
- Maintain a telephone number and e-mail for local comment and address any comments promptly.
- Minimize surface water runoff.

This list of 32 measures although lengthy; should be discussed and reduced, enhanced, as appropriate with those capable of and responsible for implementation. Review of the list and discussion of progress on the list should be done on a periodic basis.

CHAPTER 7

~ CHAPTER 7 ~

AIRPORT MASTER PLAN UPDATE DRAWINGS

7.1 GENERAL

The findings and conclusions of the airport master planning process are depicted on a set of Airport Master Plan Update (AMPU) drawings that support the master plan document. The proposed airport improvements depicted on the airport drawings were developed through the analyses conducted throughout the planning process with input from the Planning Advisory Committee (PAC).

The airport drawings include the following:

- Title Sheet..... 1 of 9
- Airport Existing Facilities ..... 2 or 9
- Airport Layout Plan Ultimate Facilities..... 3 of 9
- Airport Layout Plan Data Sheet..... 4 of 9
- Terminal Area Plan..... 5 of 9
- Runway 15-33 Plan and Profile..... 6 of 9
- FAR Part 77 and TERPS Surfaces ..... 7 of 9
- Land Use Plan ..... 8 of 9
- Exhibit “A” Airport Property Map..... 9 of 9

The FAA, the Maine Department of Transportation (MDOT), Oxford County Regional Airport staff, Oxford County Commissioners, and other airport tenants/users refer to the AMPU drawings as a guide for future airport development. The airport drawings are planning-level drawings and they are not intended to provide engineering-level accuracy.

A brief description of each drawing is provided in the following sections.

7.2 TITLE SHEET

The Title Sheet lists the subsequent drawings within the ALP set. It also provides a map depicting the general location of the Airport within the State of Maine, the County of Oxford, and the Town of Oxford.

7.3 AIRPORT EXISTING FACILITIES

The Existing ALP is provided as both a reference document to identify existing facilities (including runways, taxiways, buildings and other structures) and a presentation document to identify a beginning point to this study. These facilities and environments include:

- Runway, taxiway and apron pavements
- Airport access roads, parking lot, and rights-of-way
- Airport/Town property lines and easements
- Runway approach surfaces and runway protection zones

- Airport and runway data tables
- Hangars and terminal building
- Airport lighting and navigational aids
- Aviation fueling facilities
- Automated weather observation system (AWOS)
- All weather wind rose
- Fences and gates
- Wetlands
- FAR Part 77 imaginary surface penetrations
- Ground contours

Important dimensions, elevations, coordinates, airport operating areas, and other data are shown on the drawing and in the data tables.

7.4 Airport Layout Plan (ALP) Ultimate Facilities

The primary drawing in the ALP set is the Ultimate Airport Layout Plan (ALP) which conveys the overall 20-year development plan for the airport. The ALP drawings also incorporate additional details that are required by the FAA in Advisory Circular (AC) 150/5070-6B *Airport Master Plans* and AC 150/5300-13A *Airport Design*.

The Ultimate ALP depicts the existing facilities as well as the proposed improvements for the preferred 20-year development plan as identified in *Chapter 4 - Alternatives Development*.

The ALP must be approved by the FAA in order for the Oxford County Regional Airport to be eligible for Federal funding for airport development projects. Likewise, the plan must be approved by the MDOT for the airport to receive State funding of eligible airport development projects.

The ALP is a signed public document that serves as a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals and budget resource planning. The ALP enables the County of Oxford, the FAA and the MDOT to plan for facility improvements at the airport and to anticipate budgetary needs. The approved ALP will also allow the County and the FAA to protect the airspace required for facility or approach procedure improvements.

The County of Oxford can use the ALP to ensure that future development will meet airport design standards and safety requirements and is consistent with airport and community land use plans.

The proposed improvements depicted on the ALP may change and additional improvements may be added to meet the needs of the Airport and its aviation community. Such changes will need to be added to the ALP as pen-and-ink revisions and must be approved by the FAA and the MDOT.

7.5 Airport Layout Plan Data Sheet

The ALP Data Sheet provides detailed aviation-related information about the Oxford County Regional Airport. The data consists of general airport data, approach slope data, property ownership data, and the all-weather and IFR wind roses.

7.6 Terminal Area Plan

The Terminal Area Plan presents an enlarged view of the airport facilities within the terminal area on the Ultimate ALP. The Terminal Area Plan was developed from the preferred features of the terminal area development alternatives.

7.7 Runway 15-33 Plan and Profile

The Runway Plan and Profile drawing depicts plan and profile views of Runway 15-33 and the approach areas immediately beyond the ends of the runway. The profile view uses an exaggerated vertical scale to depict obstacles located within the existing and ultimate approaches to the runway and its FAR Part 77 transitional surfaces and to depict runway elevation differences.

7.8 FAR Part 77 and TERPS Surfaces

The following surfaces are depicted on the FAR Part 77 Airspace Surfaces and Terminal Instrument Procedures (TERPS) Surfaces Plan.

7.8.1 FAR Part 77 Airspace Surfaces

The FAA describes imaginary airspace surfaces on and around an airport in FAR Part 77 *Obstructions Affecting Navigable Airspace.* These surfaces, when kept clear, protect aircraft from manmade and natural obstructions in the airspace around the airport.

FAR Part 77 surfaces are utilized in zoning and land use planning adjacent to the Airport to protect the navigable airspace from encroachment by hazards which would potentially affect the safety of airport operations. The FAR Part 77 Airspace Surfaces plan depicts the physical features of the area around the airport, the Part 77 surfaces, and identifies obstructions to of the surfaces.

7.8.2 Terminal Instrument Procedure (TERPS) Final Approach Surface

For clarity and simplicity, not all of the Terminal Instrument Procedures (TERPS) are depicted on this drawing. The visual portion of the final approach segment is depicted because it is a critical portion of the TERPS surfaces. The visual portion of the final approach segment needs to be protected from obstructions in order to allow safe instrument operations into the Oxford County Regional Airport.

7.9 Land Use Plan

The Land Use Plan depicts the current on- and off-airport land uses and zoning in the area around the airport. As a general reference, it also depicts the 60 and 65 DNL noise contours that were identified in 2003. (See Section 7.11 Noise Analysis)

7.10 Exhibit “A” Airport Property Map

The current version of the Exhibit “A” Airport Property Map has been included in this chapter. The Exhibit "A" depicts the Airport’s property boundary and the avigation easements that are owned by the County of Oxford. The records for each property acquisition (e.g. the Registry of Deeds Book and Page numbers) are summarized in a table on the Exhibit “A”. The Exhibit “A” must be updated to reflect any new land interests acquired by the County of Oxford which are intended to be designated as airport property.

A current FAA-approved copy of the Exhibit "A" must be on file with the FAA when the County of Oxford submits a grant application for FAA funding for construction, building, and land acquisition projects.

7.11 NOISE ANALYSIS

An updated Noise Analysis and Contour Plan was not prepared as part of this airport master plan update because the aircraft that comprise the fleet mix at the Oxford County Regional Airport and the number of operations at the Airport have changed significantly over the past several years. The current forecast critical aircraft is smaller, and the current forecast number of annual operations at the Airport has decreased from 34,070 to 9,030.

These changes in forecast aircraft and operations very likely result in less noise being generated at the Airport than in previous years. Therefore, rather than analyze the current forecast fleet mix and operations, the noise contour plan that was prepared as part of the 2003 AMPU by Hoyle, Tanner and Associates, Inc., (HTA) can be considered as a worst case scenario.

The 2003 potential noise impacts at the Oxford County Regional Airport were evaluated using the FAA Integrated Noise Model (INM) Version 6.1 software. Figure 7.10-1 depicts the 2003 HTA 60 DNL and the 65 DNL noise contours for the forecasted aviation activity at the Oxford County Regional Airport in 2021. The 65 DNL contour is the inner contour.

The INM program created noise contours representing areas of noise impact around the airport based on the runway orientation, aircraft types, forecast operations, and typical flight tracks. The noise contours depict annual average day-night sound levels (DNL). The DNL contours represent the average daily noise levels that would occur over a 24-hour period, with a 10-decibel "penalty" added to the noise levels of aircraft operating between the hours of 10:00 PM and 7:00 AM.

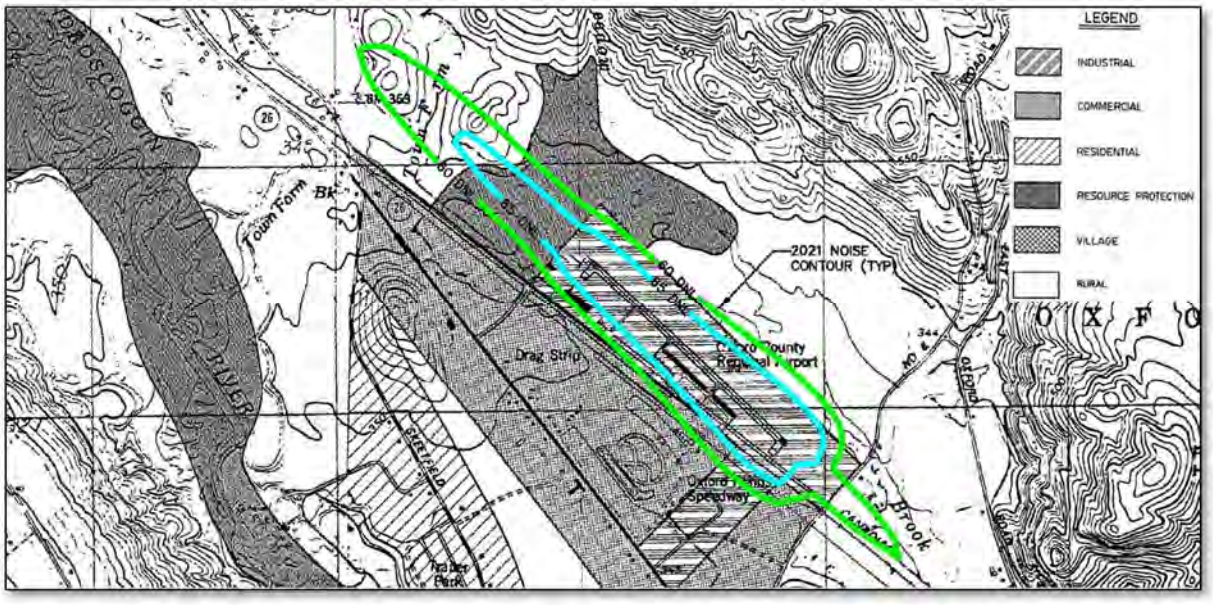


Figure 7.10-1 - 2003 Zoning and Airport Noise Contours

The DNL contours identify areas that are likely to have noise concerns. Generally, those areas that are outside the 65 DNL contour (blue) are not considered to be subject to noise disturbance. Similar to the zoning that was in effect in 2003, the airport property is zoned as Industrial. There are no residences

within the 60 DNL and 65 DNL noise contours. Thus, the 2003 AMPU noise analysis did not reveal a significant noise problem for the airport or its surrounding area.

INSERT NINE 11” X 17” AIRPORT MASTER PLAN UPDATE DRAWINGS

AS PAGES 7-6 TO 7-14

ACRONYMS

ACRONYMS

81B .....FAA Location Identifier for Oxford County Regional Airport
A/FD .....Airport/Facility Directory
AAA .....Airport Airspace Analysis
AAC .....Aircraft Approach Category
AAS-100 .....FAA Office of Airport Safety and Standards, Airport Engineering Division
AASHTO.....American Association of State Highway and Transportation Officials
ABN .....Airport Beacon
AC .....Advisory Circular
ACM .....Airport Certification Manual
ACRP .....Airport Cooperative Research Program
ADG.....Airplane Design Group
ADO.....Airports District Office
ADRM.....Airport Development Reference Manual
ADS-B .....Automatic Dependent Surveillance - Broadcast
AFTIL.....Airport Facilities Terminal Integration Laboratory
AGL .....Above Ground Level
AIM .....Aeronautical Information Manual
AIP.....Airport Improvement Program
ALP.....Airport Layout Plan
ALS.....Approach Lighting System
ALSF .....Approach Lighting System with Sequenced Flashing Lights
ALSF-1 .....ALS with Sequenced Flashers I
ALSF-2 .....ALS with Sequenced Flashers II
AOA.....Aircraft Operations Area
APRC .....Approach Reference Code
APV .....Approach Procedure with Vertical Guidance
ARC.....Airport Reference Code
ARFF .....Aircraft Rescue and Fire Fighting
ARP .....Airport Reference Point
ARSR .....Air Route Surveillance Radar
ASBL .....Approach Surface Baseline
ASDA.....Accelerate Stop Distance Available
ASDE.....Airport Surface Detection Equipment - (Radar)
ASDE-X .....Airport Surface Detection Equipment – Model X
ASOS .....Automated Surface Observing System
ASR .....Airport Surveillance Radar
ASRS.....Aviation Safety Reporting System
ASTM .....American Society for Testing and Materials International
ATC .....Air Traffic Control
ATCBI.....Air Traffic Control Beacon Interrogator

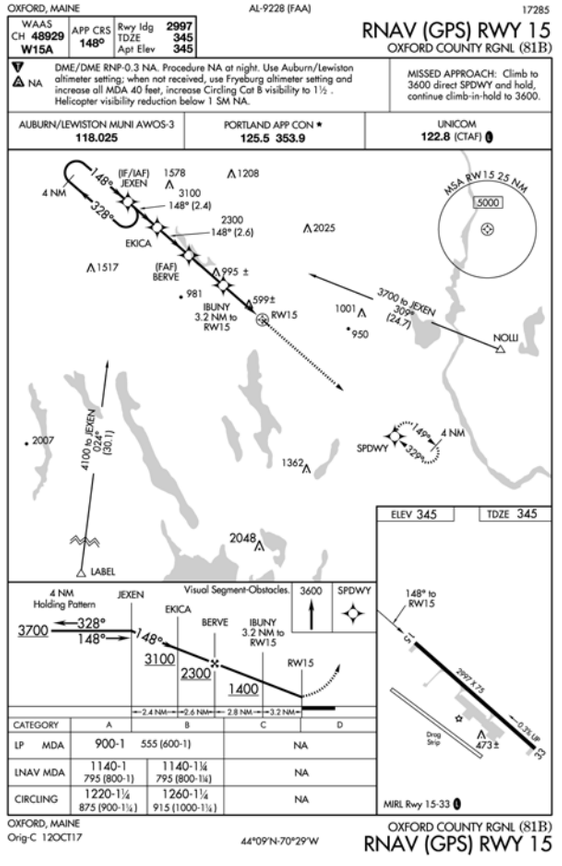
ATC-F.....Air Traffic Control Facilities
ATCRB.....Air Traffic Control Radar Beacon
ATCT.....Airport Traffic Control Tower
ATO.....Air Traffic Organization
CIP.....Capital Improvement Plan
CL.....Centerline
CWY.....Clearway
CMG.....Cockpit to Main Gear Distance
CNSW.....Communications, Navigation, Surveillance and Weather
CPA.....Continuous Power Airport
DA.....Decision Altitude
DEP.....Department of Environmental Protection
DER.....Departure End of Runway
DF.....Direction Finder
DME.....Distance Measuring Equipment
DMER.....DME Remaining
DOD.....Department of Defense
DPRC.....Departure Reference Code
EAT.....End-Around Taxiway
ECS.....Emergency Communication System
EMAS.....Engineered Materials Arresting System
ETB.....Embedded Threshold Bar
FAA.....Federal Aviation Administration
FAR.....Federal Aviation Regulations
FATO.....Final Approach and Takeoff Area
FBO.....Fixed Base Operator
FM.....Fan Marker
FOD.....Foreign Object Debris
GA.....General Aviation
GBT.....Ground Based Transceiver
GDL.....Guidance Light Facility
GIS.....Geographic Information System
GLS.....Global Navigation Satellite System (GNSS) Landing System
GNSS.....Global Navigation Satellite System
GPA.....Glide Path Angle
GPS.....Global Positioning System
GQS.....Glide Path Qualification Surface
GS.....Glideslope
GU.....General Utility
GVGI.....Generic Visual Glideslope Indicators
HAA.....Height Above Airport
HATh.....Height Above Threshold
HE.....Helicopter (Rotorcraft)
HIRL.....High Intensity Runway Lights
HSS.....Hollow Structural Section

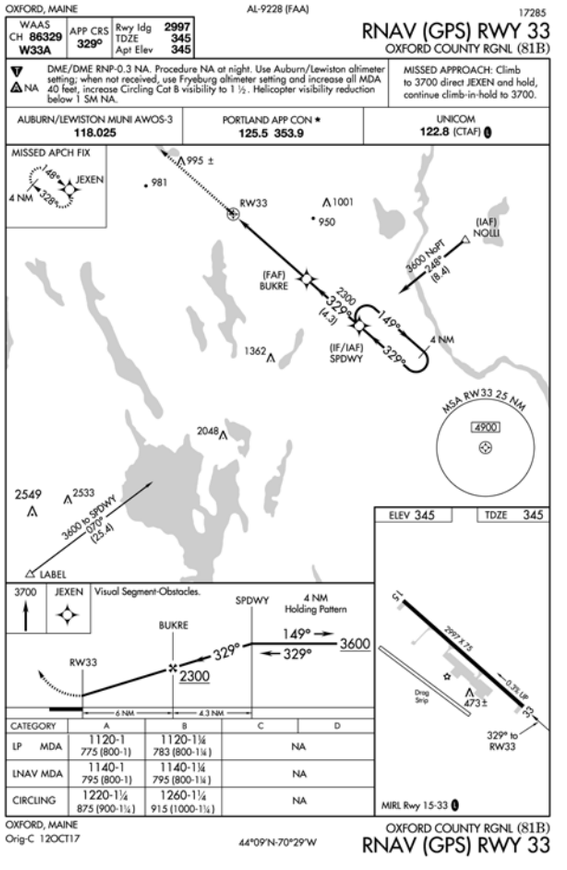
HTTP .....Hypertext Transfer Protocol
IAP.....Instrument Approach Procedures
IATA .....International Air Transport Association
IES.....Illuminating Engineering Society of North America
IFR.....Instrument Flight Rules
IFST.....International Flight Service Transmitter
ILS .....Instrument Landing System
IM .....Inner Marker
LDA .....Landing Distance Available
LDIN .....Lead-in Lighting System
LIR.....Low Impact Resistant
LIRL.....Low Intensity Runway Lights
LITL .....Low Intensity Taxiway Lights
LLWAS .....Low Level Windshear Alert System
LMM .....Compass Locator at the ILS Middle Marker
LNAV.....Lateral Navigation
LOC .....Localizer
LOM.....Compass Locator at Outer Marker
LOS .....Line of Sight
LP .....Localizer Performance
LPV.....Localizer Performance with Vertical Guidance
MALS.....Medium Intensity Approach Lighting System
MALSF .....MALS with Sequenced Flashers
MALSR.....MALS with Runway Alignment Indicator
MASP .....Maine Aviation Systems Plan
MDA .....Minimum Descent Altitude
MDEP.....Maine Department of Environmental Protection
MDOT.....Maine Department of Transportation
ME .....Multi Engine Piston
MGW .....Main Gear Width
MITL .....Medium Intensity Taxiway Lights
MM .....Middle Marker
MN.....Magnetic North
MODES .....Mode Select Beacon System
MPH .....Miles Per Hour
MSL.....Mean Sea Level
MTOW.....Maximum Takeoff Weight
NAS.....National Airspace System
NAVAID.....NAVAID Navigation Aid
NCDC.....National Climatic Data Center
NDB.....Non-directional Beacon
NEPA.....National Environmental Policy Act
NGS.....National Geodetic Survey
NPA.....Non-Precision Approach
NPDES.....National Pollution Discharge Elimination System

NPIAS.....National Plan of Integrated Airport Systems
nT .....nanoTesla
NVGS .....Non-Vertically Guided Survey
NXRAD.....Next Generation Weather Radar
OAW.....Off Airways Weather Station
OCS.....Obstacle Clearance Surface
ODALS .....Omnidirectional Airport Lighting System
OE/AAA.....Obstruction Evaluation/Airport Airspace Analysis
OFA.....Object Free Area
OFZ .....Obstacle Free Zone
OM.....Outer Marker
PA.....Precision Approach
PAPI .....Precision Approach Path Indicator
PAR .....Precision Approach Radar
PCN.....Pavement Condition Number
PFC .....Passenger Facility Charge
PIR .....Precision Instrument Runways
POFZ.....Precision Obstacle Free Zone
PRM .....Precision Runway Monitor
PSI.....Pounds per Square Inch
RAIL .....Runway Alignment Indicator Lights
RAPT.....Regional Airspace Procedures Team
RBPM.....Remote Beacon Performance Monitor
RCAG.....Remote Communication Air to Ground
RCLR.....Radio Communications Link Repeater
RCLT .....Radio Communications Link Terminal
RCO .....Remote Communications Outlet
RDC.....Runway Design Code
REIL .....Runway End Identifier Lighting
REL .....Runway Entrance Lights
RMLR .....Radar Microwave Link Repeater
RMLT.....Radar Microwave Link Terminal
RNAV .....Area Navigation
RNP.....Required Navigation Performance
ROFA .....Runway Object Free Area
ROFZ.....Runway Obstacle Free Zone
RON .....Remain Over Night
RPZ .....Runway Protection Zone
RRH.....Remote Readout Hygrothermometers
RSA.....Runway Safety Area
RTR .....Remote Transmitter/Receiver
RVR.....Runway Visual Range
RW .....Runway
RWSL.....Runway Status Lights
SACOM .....Satellite Communications Network

SAWS.....Stand Alone Weather Sensors
SE.....Single Engine Piston
SMS.....Safety Management System
SOP.....Standard Operating Procedures
SRM .....Safety Risk Management
SSALR.....Simplified Short Approach Light System with Runway Alignment
SSALS.....Simplified Short Approach Light System
SSALF .....Simplified Short Approach Light System with Sequenced Flashing Lights
SSO.....Self-Sustained Outlet
SWY .....Stopway
TACAN .....Tactical Air Navigation
TCH .....Threshold Crossing Height
TDG.....Taxiway Design Group
TDWR.....Terminal Doppler Weather Radar
TERPS .....Terminal Instrument Procedures
TESM .....Taxiway Edge Safety Margin
TH.....Threshold
THL.....Takeoff Hold Lights
TL .....Taxilane
TMLR.....Television Microwave Link Repeater
TODA .....Takeoff Distance Available
TOFA.....Taxiway and Taxilane Object Free Area
TORA .....Takeoff Run Available
TP.....Multi Engine Turboprop
TRACON .....Terminal Radar Approach Control Facility
TSA .....Taxiway/Taxilane Safety Area
TSR .....Transportation Security Regulation
TSS .....Threshold Siting Surface
TVOR .....Terminal Very High Frequency Omnidirectional Range
TW.....Taxiway
UAS.....Unmanned Aircraft Systems
USC.....United States Code
UFC.....Unified Facilities Criteria
UHF.....Ultra-High Frequency
USDA .....United States Department of Agriculture
USGS .....U.S. Geological Survey
V .....Visual
VASI .....Visual Approach Slope Indicator
VFR .....Visual Flight Rules
VGS.....Vertically Guided Survey
VGSI.....Visual Guidance Slope Indicator
VHF .....Very High Frequency
VNAV.....Vertical Navigation
VOR.....VHF Omnidirectional Range
VORTAC .....VHF Omnidirectional Range Collocated Tactical Air

VOT .....VHF Omnidirectional Range Test
WAAS.....Wide Area Augmentation System
WBDG .....Whole Building Design Group
WCAM.....Weather Camera
WEF .....Wind Equipment F-400
WME.....Wind Measuring Equipment
WRS.....WAAS Reference System





BALLANTINE AVIATION CONSULTING SERVICES, PLLC

66 Montrose Avenue
Portland, ME 04103

BACS@maine.rr.com

www.ballantineaviation.com