CITY of Waterville MAINE

Waterville Robert LaFleur Municipal Airport

AIRPORT MASTER PLAN UPDATE




December 2011

AIRPORT MASTER PLAN UPDATE

WATERVILLE ROBERT LAFLEUR MUNICIPAL AIRPORT

FINAL REPORT

Prepared for:

City of Waterville Maine
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Waterville, Maine 04901

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Introduction to the Study

Updating an Airport Master Plan (AMP) is a standard industry practice. The need may be developed based on some dramatic change at the Airport, but as a general principle, the Federal Aviation Administration (FAA) suggests that updates be considered approximately every five to ten years to maintain the currency of airport data, airport standards, and to reassess airport needs.

The Airport master plan has two primary components; the Report which documents the analytical process, and the Airport Layout Plan (ALP), which serves as the graphic representation for future development at the Airport. Ultimately, it is the ALP which is approved by the FAA and the Airport sponsor, in this case, the City of Waterville.

The last airport master plan study for Waterville Robert LaFleur Municipal Airport (WVL) was conducted in 1996, over 15 years ago. Therefore, the development of this AMP and ALP is essential to establish an understanding of existing conditions and the future direction of the Airport.

This updated planning document will be used by the City of Waterville and FAA to direct implementation of capital improvement projects at the Airport from the short term (5 year) through the long term (20 year) planning period.

Alternative use of the AMP is to serve as a guide for the City when reviewing private investment at the Airport. Similarly it can be effective for the City of Waterville when reviewing land use development around the Airport to ensure compatibility with FAA airspace requirements and the environment.

The planning activity that was involved with this project was defined by a scope of work, which followed the guidelines provided by the FAA Advisory Circular 150-5070-6B, *Airport Master Plans*. The objectives of the study were to:

- Create an effective coordination and communication process to ensure input from all affected parties;
- Prepare a comprehensive inventory of airport and environmental conditions;
- Develop forecasts to assess the Airport role and facility requirements;
- Conduct alternatives analysis to consider engineering, operational, environmental and financial factors;
- Identify the recommendations that result from the alternatives analysis;
- Develop an Implementation and Capital Improvement Plan for the Airport;
- Prepare and approve a new Airport Layout Plan; and
- Assess the management structure at the Airport.

The project was funded by the Federal Aviation Administration (FAA), the State of Maine and supplemented by matching local monies from the City of Waterville. The study was developed and funded in two phases.

The approach to this master plan update utilized the last master planning efforts, considered existing infrastructure, activity, and economic conditions; and established an understanding of the future direction of the Airport.

The first objective was achieved through the creation of a Project Advisory Committee (PAC) that was established to discuss and provide comments on technical reports and recommendations developed during the planning process. Membership of the PAC represented a broad range of stakeholders, including

airport users, local business, the community, and planning agencies. Project Documentation of these meetings is included in Appendix B of this Report.

In addition to several PAC meetings, a Public Information Meeting (PIM) was held to provide the general public with the opportunity to learn about the study and provide input into the process. Project Documentation of this meeting is also included in Appendix B.

During the course of the master plan update, several working papers were developed that addressed the project objectives. Throughout the master planning process, the PAC was afforded the opportunity to provide comments, suggestions and recommended revisions to the final working papers. This final report, although labeled "Chapters" is comprised of these working papers which are referenced throughout. The final working papers that comprise this Master Plan include the input and modifications provided by the PAC and are further supplemented by the input gained through the Public Information Meeting.

- Working Paper #1- "Baseline Conditions": Describes the Airport's location, facilities, transportation access, aircraft activity, economic activity, environmental conditions and land use.

- Working Paper #2- "Airport Role and Forecasts": Defines the Airport's role within the region and state aviation system. Develops a forecast or prediction of future aircraft activity.

- Working Paper #3- "Facility Requirements": Determines the facilities that (a) are necessary to support the forecast, (b) are necessary to meet current FAA design standards, (c) need to be replaced or rehabilitated because they have exceeded their useful (design) life, or (d) are energy inefficient or Operational & Maintenance intensive.

- Working Paper #4- "Assess Management Structure": Summarizes findings to aid the City of Waterville in choosing the best course of action for the ownership and management of the Airport.

- Working Paper #5- "Alternatives Analysis": Evaluates the proposed facility requirements while considering factors that influence the difference between "requirements" and "implementation". The results are to create a realistic and achievable plan that can be depicted on the Airport Layout Plan (ALP).

- Working Paper #6- "Environmental Review": Provides a general assessment of the environmental effects of the preferred alternative and to define the potential extent of future environmental analyses and regulatory issues that are needed to implement the airfield improvements shown on the ALP.

- Airport Layout Plan - A full set of ALP drawings to be used as a guide for future airport development.

- Airport Implementation and Financial Plan- A plan of action to finance and implement the recommendations of the Airport Master Plan

The Airport Master Plan Update is organized into the following chapters:

Waterville Robert LaFleur Municipal Airport
AIRPORT MASTER PLAN UPDATE

CHAPTER 1
BASELINE CONDITIONS

1.0 Baseline Conditions

This Chapter is comprised of Working Paper #1 and provides an overview, or inventory, of the Waterville Robert Lafleur Municipal Airport. It is a compilation of all pertinent data relative to the Airport including airfield conditions, operational activity, environmental conditions, and economic conditions.

For this Master Plan Update, data was collected from various sources. These include:

- Airport site visits;
- Tenant and user surveys;
- Airport administration records;
- FAA 5010 forms;
- WVL Airport Master Plan (1996); and
- Other pertinent data and studies from the Federal Aviation Administration (FAA), Maine Department of Transportation (MeDOT), Kennebec County, the City of Waterville and surrounding towns.

This Chapter is categorized into the following sections:

- Section 1 – Study Area;
- Section 2 – Airfield Conditions;
- Section 3 – Airspace, Approaches and Navigational Aids (NAVAIDS);
- Section 4 – Airfield Aprons;
- Section 5 – Airport Buildings;
- Section 6 – Environmental & Land Use;
- Section 7 – Historical Based Aircraft and Airport Operations
- Section 8 – Economic Conditions

The collected data and the subsequent analysis provided in this chapter will be utilized throughout the master planning process to assess the current growth, forecast the future needs of WVL Airport, provide recommendations to stimulate new air traffic and economic growth, and present an updated Master Plan and Airport Layout Plan (ALP) for the Airport. The baseline data used in the development of this Master Plan was collected in 2007 and 2008.

1.1 Study Area

The Waterville Robert LaFleur Municipal Airport opened in 1931. The airfield has two runways, one full length parallel taxiway and two stub taxiways serving the main runway, one connecting taxiway to the terminal area, two aircraft parking aprons, public and privately owned aircraft hangars, utilities and navigational aids that support aviation activity. Airport property currently consists of approximately 368 acres. The airport lies within the City of Waterville in Kennebec County, Maine. The airport elevation is 333 feet above mean sea level. According to the 2000 Census, the population of Kennebec County was 117,114 with Waterville having a population of 15,605.

Aerial of Waterville Robert LaFleur Municipal Airport

Approximately two miles west of downtown, the City owns and operates the Airport and is therefore considered a public use facility.

Property abutting the airport is currently zoned and utilized for a variety of purposes including retail business, warehousing and shipping, and residential uses. A 50-acre business park is located west of the Airport and is part of an important economic development initiative by the City of Waterville. According to the 1999 City of Waterville Zoning Map, the land uses surrounding the Airport property are shown as commercial, residential, industrial, and institutional. The Capital Solid Waste Transfer Facility is located immediately west of the Airport.

Nearby airports to Waterville include[1]:

- Central Maine Airport (Airport Identifier: KOWK), 14 nautical miles northwest in the Town of Norridgewock, Somerset County, Maine
- Augusta State Airport (KAUG), 14 nm south in the City of Augusta, Kennebec County, Maine
- Pittsfield Municipal Airport (2B7), 19 nm northeast in the Town of Pittsfield, Somerset County, Maine
- Belfast Municipal Airport (KBST), 29 nm east in the City of Belfast, Waldo County, Maine
- Dexter Regional Airport (1B0), 34 nm northeast in the Town of Dexter, Penobscot County, Maine

Ortho-Photo

The City of Waterville provided ortho-rectified aerial photogrammetry and digitized mapping of the airport environs including the runway approach areas. The ortho-rectified photo was projected on to the Maine State Coordinate System, North American Datum 1983. The City provided an electronic copy of this photo to the study team for use in this Master Plan.

1.2 Airfield Conditions

Data identified herein was collected by the study team over numerous site visits during the months of October and November 2007. Some of this data was obtained and referenced from existing documents, plans and electronic files provided by the City of Waterville, Maine DOT and the FAA.

This section describes the Airport's airside and landside facilities. The airfield consists of two runways (designated 5-23 and 14-32), aircraft parking aprons and various taxiways. The two runways intersect on the northern end of the Airport. The existing condition of runways, taxiways, aircraft parking apron, pavement surfaces, drainage, utilities, lighting and navigational aids, and landside facilities on the Airport are described on the following pages.

[1] Source: Airnav.com

Runways

The orientation, physical dimensions and effective gradient of the runways are as follows:

Table 1.1
Runway Configurations, Dimensions, and Gradient

Runway	Physical Dimensions (feet)	Runway Orientation	Effective Gradient
5-23	5,500 x 100	Northeast-Southwest	1.14 %
14-32	2,301 x 150	Northwest-Southeast	0.17%

Runway 5-23 has a bituminous asphalt concrete surface with precision instrument runway markings, and is equipped with high intensity runway edge lights (HIRLs). Runway 5-23 is the primary instrument runway and has an Instrument Landing System (ILS) approach to Runway 5. Runway 23 is equipped with runway end identifier lights (REILs). There are visual approach slope indicators (VASI) on both Runways 5 and 23. Runway 5 has a medium intensity approach lighting system with sequenced flashers (MALSF).

Runway 14-32 is paved with bituminous asphalt concrete and is equipped with medium intensity runway edge lights (MIRLs). The runway is marked with basic visual runway markings which include centerline and runway designator numerals.

The present Airport Reference Point (ARP) is located at 44° 31’ 59.74” North latitude and 69° 40’ 31.86” West longitude. The established airport elevation, defined as the highest point along any of an airport’s runways, is 333 feet above mean sea level (MSL). Runway coordinates and elevations are based on the 1996 Airport Layout Plan (ALP). As of November, 2007 the magnetic declination was 16° 40’ west with an annual rate of change of 6 minutes east per year. Pertinent data for the existing runway ends is presented on the following table.

Table 1.2
Runway Coordinates and Elevations

Runway	Elevation	North Latitude (degrees)	West Longitude degrees)
5	268.17	44° 31' 35.47"	69° 40' 50.29"
23	331.26	44° 32' 23.16"	69° 40' 13.97"
14	302.80	44° 32' 07.22"	69° 40' 44.20"
32	298.90	44° 31' 54.12"	69° 40' 18.26"

Source: WVL Airport Layout Plan dated January 1996

Taxiways

A full length parallel taxiway designated Taxiway “A” serves Runway 5-23. Taxiways “B” and “C” are stub taxiways intercepting the parallel Taxiway “A”, while Taxiways “G” and “H” connect to the runway ends. Taxiway “D” connects the Airport terminal area and the majority of private hangars, the passenger terminal, helipads, and aircraft parking aprons to the runways. All existing taxiways are constructed of bituminous concrete and have existing taxiway lights installed. The following table identifies the existing airport taxiways with minimum taxiway widths also noted:

Table 1.3
Taxiway Data

Designation	Width (feet)
A	50
B	60
C	60
D	40
G	50
H	50

Pavement Strength and Condition

Data included in the table below was obtained from the latest FAA Form 5010-1, Airport Master Record, last updated in August 2006. This data summarizes the current estimated maximum gross weight of aircraft (runway pavement strength), by aircraft landing gear configuration, as follows:

Table 1.4
Runway Strength Data

Runway	Aircraft Maximum Gross Weight (pounds)		
	Single-wheel	Dual-wheel	Dual-tandem
5-23	40,000	60,000	105,000
14-32	25,000	N/A	N/A

Runway 5-23 is 5,500 feet long and 100 feet wide. With the exception of the portion of the runway that now serves as a safety area north of the "23" threshold, this runway was last reconstructed in several phases between 1984 and 1990. The pavement condition on the Runway 23 end (end of pavement from RW 23 end to interface of newer looking pavement, prior to relocated RW 23 threshold) is in very poor condition with extensive, randomly oriented, shrinkage cracking across the full runway width with moderate-to-severe vegetation growth. The middle section of this runway, approximately 3,000 feet up to the intersection of RW 14-32, is in fair-to-good condition with some randomly oriented shrinkage cracking. The current pavement condition also includes, to a lesser extent, longitudinal paving lane joint cracking with transverse oriented shrinkage cracking. Some longitudinal paving lane joint cracking, and low frequency, moderate severity, transversely oriented shrinkage cracking of the bituminous surface is also present.

The portion of Runway 5-23 from the "5" end to the intersection of Runway 14-32 is in slightly better condition overall. It is characterized by moderately extensive lane joint cracking with a lesser amount of transverse and randomly oriented shrinkage cracking. There are also "expedient" pavement repair patches, several of which have failed over time, within this portion of the runway. Other patches that were apparently made over backfilled electrical trenches now pose further deficiencies to the runway. Runway 14-32 was last reconstructed in 1981. Its pavement exhibits high frequency, randomly oriented shrinkage cracking over the entire length and width of the runway. Some of this cracking may also be in the form of "alligator" cracking which is typically induced by weak, variable, and/or poorly drained subgrade conditions. Some spalling of the pavement along the cracks was also evident, which poses a continual foreign object debris (FOD) hazard. Extensive vegetation growth through the cracks was noted. This runway appears to be nearly unusable due to its present state of deterioration.

Currently, the Airport pavement conditions can be summarized as follows:

Table 1.5
Airport Pavement Conditions

Designation	Condition	Comment
Runway 5-23	Fair to Good	Moderate longitudinal cracking, some transverse and randomly oriented shrinkage cracking
Runway 14-32	Very Poor	Extensive shrinkage cracking
Taxiway "A"	Fair to Good	Longitudinal paving lane joint cracking
Taxiway "B"	Fair	Numerous cracks with vegetation growth
Taxiway "C"	Fair	Shrinkage cracking
Taxiway "D"	Excellent	Reconstructed in 2007
Taxiway "G"	Fair	Moderate lane joint and shrinkage cracking
Taxiway "H"	Fair	Moderate lane joint and shrinkage cracking

The condition of the bituminous pavement is generally fair to good over the entire length of Taxiway "A" which runs parallel to RW 5-23. The most prevalent distress is in the form of moderate severity, longitudinal paving lane joint cracking. Transverse shrinkage cracking also exists, along with some localized patch repairs that have been made over time.

There is very little spalling, aggregate raveling, rutting, alligator cracking, or settlements that were evident due to heavy loading, unsuitable or variable subgrade materials, or frost conditions. No settlements resulting from drainage or utility trench crossings were observed. There does not appear to be significant rutting or settlements in the surface that would indicate severe structural deficiencies within the pavement section. Taxiway shoulders and safety areas appeared to be properly graded, structurally adequate, and well maintained.

The most recent improvements to Taxiway "A" included an extension to the Runway 5 end, which was completed in 1987.

Runway Safety Areas

FAA runway safety standards require a 500-foot wide safety area that extends 1,000 feet beyond both ends of Runway 5-23. Initial inspection suggests the potential to meet this standard, however a full topographic survey is required to confirm actual grading conditions; this extensive survey effort was not included in the project scope of work. RSAs beyond runway ends consist of turf (Runway 5 end) or old bituminous pavement (Runway 23 end), are generally well graded, structurally stable, free of obstructions, and have been maintained. Runway shoulders and lateral safety areas were properly graded, firm and well maintained, with no obstructions visible at the time of the inventory.

Runway 14-32 has a 120-foot wide safety area along the entire runway length that also extends 240 feet beyond each end of the runway. Runway 14-32 safety areas beyond runway ends consist of turf and are generally well graded, structurally stable, free of obstructions, and have been well maintained.

Runway shoulders and lateral safety areas were properly graded, firm and well maintained, with no obstructions visible at the time of the inventory.

Markings, Lighting and Signage

The markings on Runway 5-23 include centerline, designator (runway numerals), threshold markings, aiming points, touchdown zone markings and side stripe markings. The markings are worn and do not provide adequate contrast against the pavement surface.

Elevated high intensity runway lights (HIRL's) on Runway 5-23 are located in grass shoulders. They were installed around 1990 and are in good condition. Some in-pavement lights have clouded lenses that may diminish light intensity. Runway holding position and distance remaining signs appear to be in generally good functional condition.

Runway 14-32 is marked with basic visual runway markings which include the centerline and runway designator. The markings are worn and do not provide adequate contrast against the faded, extensively cracked and broken pavement surface.

Elevated medium intensity runway lights (MIRL's) on Runway 14-32 are in fair to good condition. The MIRLs are located in grass shoulders and were installed in 1981. The Airport staff reported that these lights are generally reliable.

Guidance signs and concrete foundations appear to be in good or better condition. New runway holding position and destination signs are in excellent condition as they were recently installed along TW "D" in 2007.

Taxiway markings are faded, but functional. Holding position markings, with the exception of those on the new Taxiway "D", do not meet current FAA design standards for 12-inch width. The centerline stripe on the new Taxiway "D" was not yet installed at the time of the inventory.

Medium intensity taxiway Lights (MITL's) along TW "A" and stub taxiways to RW 5-23 are approximately 20 years old. These MITLs appear to be in good condition. Airport management personnel indicate the lights function reliably.

There are currently five independent airfield lighting circuits as follows: (1) Taxiway "D", (2) Runway 14-32, (3) Runway 5-23, (4) Taxiway "A" north of 14-32, and (5) Taxiway "A" south of 14-32. All five circuits are illuminated simultaneously by the pilot-activated radio controller.

1.3 Airspace, Approaches and NAVAID's

Airspace and Approaches

Runway 5 is equipped with an ILS Category I (CAT I) approach. The CAT I approach at Waterville permits landings with visibility as low as ¾ mile and 559 foot decision height (altitude, amsl). Runway 5 also has a published VORTAC (VOR) and Global Positioning System (GPS) approach. The VOR/GPS approach procedure permits landings with visibility as low as 1 mile and 760 foot decision height (altitude, amsl). Runway 23 has a published RNAV (Terminal en route Navigation) or GPS approach that permits landings with visibility as low as ¾ mile and 583 foot decision height (altitude, amsl).

Airport personnel suggest there are no significant obstructions within the protected airspace of Runway 5-23; none were obvious during the site inspections. It was reported that trees within the proximity of the Runway 14 approach and in the right-of-way of Interstate 95 will need to be removed. The City is currently working with the Maine Department of Transportation concerning this issue.

VASI

Visual Approach Slope Indicators (VASIs) on RW 23 consist of a 2-box system which is owned and operated by WVL and appear to be in good functional condition. VASIs on RW 5 consist of a 4-box system which is owned and operated by the FAA and appear to be in good functional condition. Both VASIs were installed prior to 1990.

REILs

Runway end identifier lights (REILs) located at the RW 23 approach were manufactured by Godfrey, and were installed prior to 1990. The REIL's have become unreliable in recent years and are in need of replacement.

MALSF

The MALSF (Medium intensity Approach Light system with Sequenced Flashers) system located on the RW 5 approach appears to be in good functional condition. An outage caused by an electrical storm was reported during the Airport visit. The MALSF was relocated as part of the RW 5-23 reconstruction project completed in 1990. The gravel service road to the MALSF lighting system was in good condition at the time of the inventory.

Runway 5 MALSF system

Localizer

The localizer antenna is located approximately 1,050 feet behind the relocated RW 23 threshold and appears to be in good physical condition. This air navigational aid was installed on a 48 ft. by 24 ft. elevated support platform in 1987 which has been recently re-painted and is in very good condition. The localizer shelter, located on the west side of RW 23 is 14 ft x 12 ft in size, constructed of pre-cast concrete with a metal door. It appeared to be in excellent condition with a paved service road extending from the paved runway safety area prior to the RW 23 threshold.

Glide Slope

The glide slope antenna, which supports the RW 5 precision approach, consists of a Watts End-Fire system located on the right (east) side of Runway 5. This system was installed primarily due to terrain restrictions and appears to be in good working condition. New concrete foundations were constructed in 1993. The glide slope shelter consists of a 14 ft. by 12 ft. pre-cast concrete building which appeared to be in very good condition. It is also located on the right side of RW 5.

Ceiling Light Projector (ceiliometer)

A stand alone Warren-Knight Co. ceiling light projector is located in front of the old terminal area; it was installed in 1988. This instrument did not appear to be functional as the glass cover was cracked and condensation was visible inside at the time of the on-site inventory. This instrument likely has no current value since the AWOS installed more recently measures cloud ceiling heights on a 24-hour basis and requires no operator.

Rotating Beacon and Tower

The rotating beacon and tower were furnished and installed in 2006 as part of the TW "D" and terminal area apron upgrade project. Both were in excellent functional condition at the time of the inventory of airport facilities. A paved service road to the beacon tower is in excellent condition.

Wind Cone / Segmented Circle

The existing wind cone and segmented circle are located in the vicinity of the former end of Runway 26; both were installed in 1988. The wind cone is mounted on a tip-down pole with a concrete counterweight. Both appear to be in relatively good functional condition on a well maintained site. Airport management personnel have indicated frequent wind cone lamp outages in recent years. The segmented circle markers, constructed of the typical method using steel oil drums secured to steel posts, have faded paint.

NDB

There is an NDB (non-directional beacon) site located off airport.

AWOS

An Automated Weather Observation Station (AWOS) is located east of Runway 5-23 that collects and transmits meteorological conditions at the Airport. The AWOS is owned, operated, and maintained by the FAA. This was installed in the early 1980's, similar to other sites in New England. The system has reportedly been reliable and appeared to be in good overall physical condition at the time of the visit. The ceiliometer and visibility sensors were replaced in 2006 and additional phased upgrades are planned in future years. There is an older 8 feet by 10 feet concrete shelter at the site which is not typical for AWOS systems, according to the FAA.

1.4 Airfield Aprons

There are two main aprons used for long term and short term (transient) parking. All apron surfaces are bituminous asphalt concrete and marked appropriately.

The Terminal Apron, directly in front of the main hangar, is approximately 0.6 acres in size. This area is used for temporary aircraft parking; however there are no existing markings to delineate parking spots.

General Aviation Aircraft Apron

The general aviation aircraft tie-down apron near the main hangar was completed in 2007 and is in excellent condition. This area is used for short and long term aircraft parking. There are 16 designated aircraft tie-down positions. Turf shoulders adjacent to apron pavements appear to be well graded, supportive and well maintained.

A large portion of the Terminal Apron was last reconstructed in 2007 at which time the existing subsurface materials were replaced with new granular sub-base and base courses with four inches of new bituminous asphalt surfacing. A portion of the Terminal Apron immediately adjacent to and within 60 feet of the main terminal hangar was not reconstructed at that time, and is presently in poor condition. This pavement currently exhibits many forms of distress including high frequency, randomly oriented shrinkage cracking, alligator cracking, construction joint separations, aggregate raveling, settlements, rutting, and possible frost related weakening of subsurface structural layers. Although the pavement for the Terminal Apron was recently completed in 2007, markings in the form of lead-in stripes were yet to be painted at the time of the inventory.

Apron edge lights in the vicinity of the Terminal area and general aviation aircraft tie-down aprons were installed as part of the Taxiway D and terminal area apron project completed in 2007; the lights are in excellent condition.

Guidance signs directing aircraft to and from aircraft aprons appear to be adequate, in generally good functional condition. Some aircraft tie-down anchors have become dysfunctional and create surface irregularities.

On the northwest area of the field, the aircraft apron located in the old terminal area in front of the former Telford hangar is approximately 0.9 acres in size. This pavement has been neglected for many years and is in very poor condition and is characterized by high-severity shrinkage cracking that appears to be primarily age related. Some rutting and localized alligator cracking and settlements are visible, indicating the likelihood of a less than adequate structural sub-base. Surface irregularities are also caused by movements of some old aircraft tie-down anchors on this apron over time.

Pavement markings on the Old Terminal Apron have faded to the extent that they are now non-existent. Markings on the general aviation aircraft tie-down apron have been newly painted and are in excellent condition. Apron edge lights are non-existent in the vicinity of the Old Terminal Apron.

1.5 Airport Buildings

Terminal Building & Hangar

The present day terminal hangar consists of a steel frame aircraft hangar with a corrugated steel exterior. The overall dimensions of the building are 160 feet across the front and 80 feet deep; the hangar is constructed on a concrete slab foundation. This hangar is in good condition.

Terminal Building and Hangar

The interior of the terminal building has been recently remodeled and consists of a reception area, passenger lounge, pilots lounge, conference room, pilots briefing room, and FBO[2] offices. The second floor includes FBO offices, an FBO apartment, an engineering office with adjacent plan room and several vacant rooms.

The terminal building currently has electrical and telephone service that is provided from Airport Road. Plans are underway to install wireless internet service in the terminal rooms for itinerant pilots, airport management and for general public use. There are separate water well and septic disposal facilities serving the terminal hangar. The main terminal was constructed sometime between 1972 and 1976.

North Hangar

The North Hangar is located adjacent to the old terminal apron (now the bus station) and was formerly leased to Telford Aviation from 1980 to 2000. Prior to that time, Air New England leased this hangar to store and maintain its DeHavilland Twin Otter aircraft when it provided scheduled passenger air service at WVL.

North Hangar

The North Hangar now serves as the airport maintenance and snow removal equipment (SRE) storage building. The hangar is a steel framed building with corrugated steel siding that is 90 feet across by 60 feet deep on a concrete slab floor. This hangar is in generally good condition, however the steel sliding doors have become very difficult to operate. The north hangar has electric service from Airport Road.

Blue Sky Hangar

Blue Sky Aviation occupies a hangar that is located at the end of Taxiway "D". It is a steel frame building on a concrete slab foundation which is in generally fair to good condition. The hangar has corrugated metal siding and an arched steel truss roof. The hangar is 80 feet across the front with sliding metal doors and is 100 feet deep, offering 8,000 square feet of floor space.

[2] The City of Waterville currently serves as the airport Fixed Base Operator (FBO).

This hangar was moved to its present location from its former location next to the former airport terminal (now the bus station) in the early 1980's. It is over 50 years old and appears to be in generally good structural condition although maintenance to the exterior is needed to improve its appearance. This hangar has electrical service provided from Airport Road.

Blue Sky Hangar

Metal Arch Quonset Storage Building

Immediately south of the Blue Sky Aviation hangar is a small metal quonset hut storage building, approximately 30 feet by 50 feet (1,500 square feet) with a dirt floor that was erected around 1985. This building is currently used to store airport equipment. The wooden doors have deteriorated over time.

Quonset Storage Building

Privately Owned Hangars

At the time of the inventory there were a total of eight privately-owned conventional hangars for general aviation aircraft located on the south end of Taxiway D. These are wood framed buildings, 42 feet square on concrete slab foundations with composite siding and Highfold doors. These hangars were built since 2002 and are dark green in color and uniform in appearance.

Another older hangar in the general aviation hangar area is constructed of concrete masonry blocks with a flat roof and is approximately 50 feet by 45 feet in size (2,250 square feet). It has a metal bi-fold door and appears to be in functional condition, although some exterior cracking in the mortar was noted. Most of these hangars appear to have electrical service.

Privately Owned Hangars

Old Terminal Building

This is a small, single story wood frame building with a shed roof that formerly served as the Airport passenger terminal building into the early 1980's. At times, the building has served as the bus station for the City of Waterville. Besides the bus station ticketing area, offices and waiting room, it also has an office and meeting area for the Civil Air Patrol in the basement. Another room on the other side of a built-in carport, under the same roof, formerly served as the airfield electrical vault and was vacant at the time of the inventory. The building is in functional condition overall but has been in need of cosmetic improvements for some time. This building is served by electric and telephone service from Airport Road. It also has city water and sewer service.

Old Terminal Building

Fire Training Facility

A fire training structure located at the west end of Taxiway "D" is used for smoke training by local fire departments. According to airport staff, this facility will be removed in the near future with the space to be made available for future aviation related development.

Fueling

Fuel is dispensed by airport staff and by Wiggins Airways staff on site. There are two 10,000 gallon above ground tanks for both Jet-A and 100 LL (low lead - Avgas). These tanks appear to be in excellent condition and were relocated to their present positions under the 2006 Taxiway D and Terminal Apron upgrade project.

There is a 500 gallon tank for 100LL that is mounted on a utility trailer which is used to fuel aircraft at other locations on the Airport. Avgas is generally dispensed directly from the large tanks. Another fuel truck with a 2,000 gallon tank is used for dispensing jet fuel. Jet fuel is typically dispensed from the truck to the aircraft, which allows for the fuel additive Prist to be added.

Airport Fuel Farm

Diesel fuel is dispensed from a 500 gallon tank located in front of the quonset arch storage building next to the Blue Sky hangar. This tank does not have secondary containment facilities.

Weather and Related Air Traffic Services

There is an Automated Weather Observing System (AWOS) located on the Airport that was installed during the mid-1990's under FAA contract. The AWOS is located approximately 1,900 feet from the Runway 5 end, approximately 600 feet southeast of the runway centerline. The AWOS data processing equipment is located in the terminal building. Weather information is disseminated to pilots via continuous VHF radio transmission and dial up telephone connection and to the National Weather Service by land line connections.

A UNICOM radio communication service is available at the Airport. This service provides local traffic pattern advisories but is not used for air traffic control purposes. The UNICOM frequency is 122.7 Hz and broadcasts 24 hours per day.

Airfield Utilities and Storm Drainage

Underground utilities in the airfield area consist of lighting (along the runway and taxiway edges) power and communications cables to the AWOS and other FAA equipment in the center of the airfield and various underground drainage systems. Apron and ramp areas have electrical power and control buried underground for floodlighting from fixtures mounted on poles or buildings.

Surface runoff from rainstorm events is collected in swales, ditches, and catch basins on the Airport and conveyed to the City's storm sewer system, which ultimately conveys the storm-water off the Airport. The Airport's airfield facilities include two runways, taxiways, aprons and infield grass areas. These airfield facilities generally drain by "sheet flow" to percolate in gravelly soils.

Electric Vault

The electrical vault building is located adjacent to Airport Road. It is a 14 foot by 9 foot brick building on a concrete slab foundation with a wooden truss roof. The condition of the vault building appears to be good with no evidence of leaking noted. Access to the vault is from the landside via locked metal doors. Central Maine Power Company provides service to the City for airfield and terminal facilities. In addition to metered service for the City's buildings and airfield lighting and equipment, individual tenants are metered separately for their power usage. All airfield electrical components located within the vault appeared to be in good physical condition and function reliably according to airport management personnel at the time of the facilities inventory. Electrical power serving City owned and FAA facilities on the airfield such as runway and taxiway edge lights, approach lights, REILs, VASIs, and other lighting and navigational aids is distributed via underground conductors.

The most recent upgrade of airfield electrical equipment consisted of a new 7.5 kW regulator that was installed under the Airport terminal area and TW "D" improvements project completed in 2007.

Security Fencing

Existing security fence at Waterville Airport consists of metal chain link perimeter fencing, generally eight feet high, with swing type and sliding access gates separating the airside from the landside portions of the Airport. The fence is in generally good condition, or better. In many areas the fence line has become severely overgrown with vegetation. Much of the fence near the "14" end of Runway 14-32 is only six feet in height and other portions of the fence, especially on the north end near Kennedy Memorial Drive, have no barbed wire at the top (this would generally be considered safety fence rather than security fence in airport applications) while in other areas the fence is eight feet in height with triple strands of barbed wire on stanchions (considered security fence). There are several single and double swing type

access gates for pedestrians and vehicles in various locations on the Airport. Automated motorized sliding gates are located next to the terminal building and near the former terminal building (now the bus station). The automated gates are activated by electronic card readers. Away from the Terminal and adjacent tenants, all access gates for the perimeter fence are manually operated. Gate widths vary from four feet wide for man-way or personnel access up to 20 feet for vehicle access. Vehicle gates are either single or double-leaf swing type fixtures, or slide-operated. Manway gates are configured with swing hinges, single-leaf with latch. Latches are secured with a chain and padlock, or keypad control. These gates are used for emergency vehicle access by City police and fire, and for normal access by the Airport and pilots.

Airport SRE & Maintenance Equipment

The Airport has a fleet of snow removal equipment (SRE) and other maintenance equipment. Specific equipment, age and condition were not available at the time of the inventory.

Airport Access

Convenient automobile access to the Waterville LaFleur Airport is available from both Interstate 95 and the City of Waterville's business district. Kennedy Memorial Drive is a four-lane commercial highway that connects the City center to the interstate; Airport Road connects to Kennedy Memorial Drive less than one-half mile from Interstate 95. The Airport terminal building is located approximately one mile from Kennedy Memorial Drive at the end of Airport Road, which is a two-lane paved road in excellent condition. From Airport Road, the entrance roadway provides vehicular access to the Terminal, auto parking, hangar, aircraft services and the tenants.

Automobile Parking

The Airport has 16 designated vehicle parking spaces plus one handicapped parking space located on the west side of the terminal hangar. The parking lot pavement is in good condition. Minor cracking exists in the parking lot, but many of these cracks have been sealed. There is some evidence of "ponding"; potholes have been created from standing water. There is currently no distinction between short and long term parking. No fees are presently collected for airport parking.

Automobile Parking

Utilities

Utilities for the Airport facilities include City sewer and water that serves the former terminal building from Airport Road. Electrical service is provided to the former terminal, the airfield electrical vault, the present terminal building and to most other hangars and buildings on the airfield by Central Maine Power Company from overhead service that comes in along Airport Road. Telephone service to the former and present terminal building is provided by Verizon Communications.

A water well and sanitary septic system serves the present day terminal building.

1.6 Environmental Conditions and Land Use

The Waterville Robert LaFleur Airport is situated at the top of a small hill at an approximate elevation of 333 feet above mean sea level (MSL). The terrain slopes steeply away from the eastern and northern regions of the airfield. The outlying land surrounding the Airport ranges from relatively level to moderately hilly. Groundcover on airport property is mowed regularly and is dominated by various grasses and other herbaceous species. Forested areas are located to the east and west of Runway 5-23. Existing wetlands within the property are generally associated with streams, ephemeral drainages and isolated depressions.

The City purchased 50 acres for the construction of a business park west of the airfield. At the time of this study, several elements of the project have been completed.

The Waterville Robert LaFleur Airport appears to be reaching build out capacity within its current property limits. Based upon interviews with airport officials, future activities within the Airport are likely limited to vegetation management, potential runway extensions and minor upgrades in fuel storage.

Permitting History

The following section identifies the permits, permit amendments (where applicable), and the dates of those permits received by the City, as well as the improvements completed under those State of Maine permits.

On October 27, 1982, the City received a *Site Location of Development Permit* (#L-8253-18-A-N) to upgrade the Airport. The improvements included construction of a new parallel taxiway to Runway 5-23 as well as several connecting stub taxiways.

On May 11, 1983, the City received an Amendment to the *Site Location Permit* (#L-8253-18-B-A) to remove approximately 9 acres of ground and tree obstructions at the Airport in the approach to Runway 5-23. The relocation of approximately 1,200 feet of a gravel roadway (Mitchell Road) was also included under this permit amendment.

On July 9, 1984, the City received an Amendment to the *Site Location Permit* (#L-8253-18-C-A) for reconstruction of improvements at the Airport in three phases involving approximately 120 acres. The improvements included reconstructing and extending portions of existing runways and discontinuing portions of an older runway (Runway 8-26).

On December 29, 1997, the City received a permit under the *Natural Resources Protection Act* (#L-8253-31-D-M) to develop a commercial solid waste transfer station on Telford Aviation Access Road within the planned Airport Business Park. This facility has been constructed and is operational.

On July 26, 2002, the City received and Amendment to the *Site Location Permit* (#L-8253-18-F-A) for development of an Airport Business Park adjacent to the Airport, as well as a proposed T-hangar facility along Taxiway D. The business park consists of 9 lots totaling approximately 41.5 acres with the City retaining ownership of two of the lots. A detention basin was designated for stormwater management on one of the lots retained by the City. To date, construction of the roadway, lot grading and development of one of the business park lots for the solid waste transfer station has occurred. A detention basin for stormwater management was only constructed on one of the lots retained by the City. Approximately 0.48 acres of wetland impacts were included in the permit.

On February 19, 2003, the City received a Modification to the *Site Location Permit* (#L-8253-18-g-m/l-8253-18-h-m) for alterations to developments in four of the Airport Business Park lots. Instead of four smaller developments located within the lots as conceptualized in the July 2002 permit application, a single large development was proposed. The overall proposed development footprint was approximately 2.7 acres larger than the conceptual footprint and consisted of a 50,000 s.f. building and paved parking areas to accommodate approximately 600 vehicles. To date, this development has not been constructed.

In March, 2004, the City filed an application for permit modification, pursuant to the *Site Location of Development Act, Title 38 M.R.S.A. Section 481 through 490* in anticipation of construction of airport improvements. The application included several phases. The first phase involved a 3.2 acre aircraft parking apron, construction of a new 12,000 square foot automobile parking area, and reconstruction of a portion of an abandoned runway (Taxiway D) resulting in a reduction in pavement width from 150 feet to 40 feet. The second phase of projects (to be constructed after 2005 but prior to 2008) included: reconstruction of Runway 14-32 resulting in a reduction in pavement width from 150 feet to 75 feet; the relocation of the Snow Removal Equipment (SRE) building to the terminal area; and relocation of the Fire Training Facility off-site. In addition, significant hangar development in the vicinity of Taxiway D was scheduled on an ongoing basis to accommodate hangar space as needs arise. Completion of these projects will involve approximately 6.16 acres of additional impervious area. However, due to the removal of approximately 5.42 acres of pavement from Runway 14-32 and Taxiway D, the net increase in impervious area will be approximately 0.7 acres. The proposed projects were reported to have no impact on wetland areas adjacent to the site.

In August 2006, the City submitted a *Site Application for Condition Compliance*, covering Condition #5 of the *Site Location of Development Permit* (#L-8253-18-I-M, dated May 13, 2004) which required the submission of a finalized Spill Prevention Control and Countermeasure (SPCC) Plan for the Airport. Upgrades to the fuel facility including relocation of the tanks onto concrete pads outside of wingtip clearance, and emergency shut-off switches located at a safe distance were proposed as part of the 2006 improvements. One remaining compliance goal is to remove the 500-gallon single walled Above Ground Storage Tank (AST) storing diesel fuel located on the south side of the Airport Maintenance Hangar.

Wetlands

The Airport does not have a current wetland delineation on record for any airfield improvements. A formal wetland delineation and function assessment limited to the Washington Street Extension Study Area was conducted in 1997[3]. Only 50 of the original 350 acres included in study were purchased by the City for the Airport Business Park Project. Much of the wetland assessment work done at that time does not directly apply to the Airport Master Plan or has been addressed by the business park permitting where buildings and stormwater management have been addressed.

The project involved the identification of 21 wetlands based on classification. The wetlands within the study area contained a wide assemblage of emergent, scrub-shrub and forested wetlands within hillside drainage-ways, stream bottoms, beaver impoundments, and isolated wetlands. A variety of functions and values were found to be present at the documented wetlands including wildlife habitat which was highlighted as particularly important.

The wetland delineation was approved for the Airport Business Park project west of the airfield for which a Department of the Army Programmatic General Permit was issued in 2003 (Permit No. 200201969) for the filling and alteration of 0.48 acres of wetlands for the purpose of roadways and site work associated with the development. This completed work did not require wetland mitigation as the impact was less

[3] Permit Modification Application for Waterville Airport Business Park. Prepared by Dufresne-Henry, Inc. November 2002.

than 20,000 s.f. Principal functions of the impacted wetlands were limited to sediment retention and wildlife habitat.
As previously stated, the majority of the Airport property has not been delineated and surveyed in accordance with Army Corps of Engineers wetland delineation standards. Existing sources of information (e.g., USGS topographic maps, US Fish and Wildlife Service National Wetlands Inventory maps, and hydric soils mapping by the Natural Resources Conservation Service) along with limited field reconnaissance were utilized to identify approximate locations of streams and associated wetlands.

Hydric soils, including Ridgebury fine sandy loam and Scantic silt loam, are found within the site. The limited field reconnaissance indicated the presence of emergent and scrub-shrub wetland areas in drainages and small depressions between the existing southern terminus of Runway 5-23 and Webb Road. Drainage in this area flows to a willow-dominated swamp at the southeastern extent of the property that connects to an existing roadside ditch.

Wild and Scenic Rivers

The Wild and Scenic Rivers Act (16 U.S.C. 1271 as amended) protects rivers designated for their wild and scenic values from activities which may adversely impact those values. There are no designated Wild and Scenic Rivers in Waterville, and therefore no designated rivers at WVL.

Coastal Zone Management

The Coastal Management Resource Council (CRMC) claims jurisdiction over projects within 200 feet of a coastal feature. The CRMC also claims jurisdiction over projects that affect freshwater wetlands that are contiguous with a coastal feature, and any project resulting in 20,000 square feet of impervious area located in a designated watershed of poorly flushed estuaries. Finally, CRMC technical staff reviews some specific projects due to their potential impact on coastal areas regardless of where in the state they are located (power plants, petroleum storage facilities of 2,400 barrel capacity or greater, chemical or petroleum processing, minerals extraction, desalination projects, etc.).

FAA Order 5050.4B requires that Federal actions be consistent with the objectives and purposes of approved State coastal zone management programs, if in effect.

WVL is not located in a coastal area.

Coastal Barriers

As stated in Section 47.3.(14) of FAA Order 5050.4B, the Coastal Barriers Act of 1982 applies to some areas on the shores of the Atlantic Ocean.

WVL is not located within a coastal zone area.

Water Resources and Stormwater Management

The Airport and the Airport Business Park are not located within or near any municipal drinking water supply sources.[4] The Kennebec Water District (KWD) supplies its service municipalities of Waterville, Winslow, Fairfield, Benton, and Vassalboro with water for domestic, commercial, and fire protection purposes and also serves as the source of supply for AquaMaine in the town of Oakland. KWD uses

[4] http://www.kennebecwater.org/index.html

China Lake as its sole source of supply. It filters and treats the China Lake water in its Vassalboro filtration facility, a state-of-the-art plant placed online in August 1993.

For purposes of previous stormwater management analyses, four watersheds were identified within the Airport property.[5] Runoff from three of the watersheds on the site (Watersheds 2, 3 and 4) is directed to the southeast via a series of drainage-ways within the southeastern portion of the site. Stream flow enters the Lower Kennebec River approximately 6,000 feet southeast of the Airport. The Lower Kennebec River is a sensitive and threatened watershed.[6] Watershed 1, contains the business park and the northwest portion of the Airport. Runoff within Watershed 1 enters a stream channel which flows north to south within the western portion of the site and also later joins the Lower Kennebec River.

In 2004, permit requirements for upgrades to the Airport apron and automobile parking lot required the removal of at least 40% of the total suspended solids (TSS) in stormwater runoff to meet the sliding scale TSS standard. These improvements also involved the use of dry swales to reduce the water temperature of runoff by passing it through solid filters and undergrounds drain lines. This is intended to help prevent the runoff from having any thermal impact of the small brook draining to the Lower Kennebec River.

Groundwater

The Airport and the Airport Business Park are situated in an area with moderate to low or no potential groundwater yield and are not located over or near any mapped sand and gravel aquifer which could be utilized as a municipal groundwater supply. All current and future development at the Airport will utilize municipal water supply and wastewater disposal systems. Small quantities of petroleum products or other potential groundwater contaminants are stored within the T-hangar or cube hangar units[7]. The hangars are built upon concrete slabs and no floor drains are present. The fueling facility at the Airport is addressed in a revised Spill Prevention Control and Countermeasure (SPCC) Plan (see Fuel Storage).

Topography and Geology

The Airport and the Airport Business Park are situated on a hill comprised of glacial till with moderate to low or no potential groundwater yield. The surficial material underlying the Airport property is designated as Qt (till) which is heterogeneous mixture of sand, silt, clay and stones that generally overlies bedrock or sand and gravel. The property is primarily comprised of upland soils formed in firm stony glacial till including Woodbridge fine sandy Loam, Hollis fine sandy loam, Paxton-Charlton fine sandy loam and Scio very fine sandy loam. Wetland areas within the property are mapped as poorly drained Scantic silt loam and Ridgebury fine sandy loam. The extent of the hydric soils will be better refined during future detailed wetland delineations. Future stormwater management structures will involve the drainage classification and percolation rate of the soil, and the siting of structures will involve the loading capability of the soils.

Bedrock mapping within the vicinity of the Airport includes stratified rock of the Silurian age, specifically the Waterville Formation (Sw), the Sangerville Formation (Ss), and an unnamed sulfidic pelite (Sur).

[5] Application for Permit Modification. March, 2004. Prepared by Dufresne-Henry, Inc.
[6] State of Maine Department of Environmental Protection SLDA Permit No. L-8253-18-I-M. Page 3 of 7.
[7] Spill Prevention Control and Countermeasure Plan. Waterville Robert Lafleur Airport. August 2006. Prepared by Stantec Consulting Services Inc.

Wildlife Habitat

The Airport provides habitat for a variety of wildlife. As previously stated, groundcover on airport property is mowed regularly and is dominated by various grasses and other herbaceous species. Forested areas are located to the east and west of Runway 5-23. Forested habitat consists primarily of hardwood species including quaking aspen (*Populus tremuloides*), red maple (*Acer rubrum*), white ash (*Fraxinus americana*), and birch (*Betula spp*). White pines (*Pinus strobus*) are interspersed throughout mixed hardwood stands. Sapling and scrub-shrub wetland vegetation consisting of speckled alder (*Alnus rugosa*), willow (*Salix spp.*), quaking aspen, and larch (*Larix laricina*) is prominent in the southwestern corner of the airport property. Mixed-forest stands, mowed fields, and wetlands provide habitat for a variety of species including white-tailed deer and wild turkey which are occasionally seen on airport property[8]. Additionally, aviation reports indicate frequent sightings of gulls within the vicinity of the Airport.[9] Gulls are likely drawn to the area by the refuse from multiple restaurants located on Kennedy Memorial Drive.

Although a chain-link security fence encompasses the airfield, the fence does not completely restrict the wildlife, including larger mammals such as deer, from entering the Airport property.[10] The fence is reported to be in good general condition however, the fence is damaged along the southernmost limit of airport property. Additionally, the fence traverses through dense vegetation in many regions of airport property.

Vegetation Management

In April, 2006, the City produced a *Vegetation Management Plan* as a preliminary planning document to address compliance with *Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace (FAR Part 77)*. The report cited the need for a complete wetland delineation of the Airport and surrounding properties containing protected airspace as well as aerial photogrammetry work. The report identified areas suspected to require cutting although a comprehensive airspace analysis would be required to determine actual limits of obstructions.

Implementing vegetation management strategies and maintaining obstruction free approaches is critical to airport operations not only from a safety standpoint but for economic reasons as well. In April, 2006, a Vegetation Management Plan[11] (VMP) was produced in order to provide guidance with the implementation of a long-term vegetation maintenance program for the Airport. As a preliminary planning document utilizing existing information, this report identified problem areas and concluded the plan needs to be updated with more comprehensive aerial photogrammetry and wetland delineation data. Further analysis is necessary to determine whether vegetative obstructions or penetrations (vegetation growing within 15 feet of protected airspace) occur within wetlands on or off airport property. Wetland delineation will be required on the entire airport property and runway approaches on surrounding properties. If necessary, the appropriate permits must be obtained prior to initiating vegetation management efforts within wetlands.

Vegetation growing near or against the fence has compromised the effectiveness of the fence as a wildlife barrier.[12] The 2006 VMP recommends that fence repairs should be conducted on an ongoing basis, as well as vegetation management measures to prevent damage. Wildlife currently enters the Airport

[8] Vegetation Management Plan for Waterville Robert LaFleur Airport. April, 2006. Prepared by Dufresne-Henry, Inc.
[9] Personal Communication. Greg Thibeault, Assistant Airport Manager. October 19, 2007.
[10] Ibid.
[11] Vegetation Management Plan for Waterville Robert LaFleur Airport. April, 2006. Prepared by Dufresne-Henry, Inc.
[12] Ibid.

through damaged portions of the fence. Also, the fence does not currently protect the Airport from trespass and therefore presents a security risk.

Endangered Species

The Airport is not contained within the updated protected species habitat mapping.[13] Two bald eagle nests (a stated-listed threatened species) are located more than 3 miles from the Airport property. Current airport operations are not currently in conflict with these protected areas.

Hazardous Materials and Petroleum Products

A revised Spill Prevention Control and Countermeasure (SPCC) Plan[14] was submitted to the Maine Department of Environmental Protection's Division of Land Resources Regulation in 2006 (Site Location of Development Permit L-8253-18-I-M). The fueling facility at the Airport includes two 10,000 gallon tanks and one 1,000 gallon tank.

The 10,000 gallon low-lead tank is a single walled AST situated within a steel dike containment possessing 110% tank capacity (11,000 gallons). The Jet-A 10,000 gallon tank is a double-walled tank located adjacent to the 10,000 gallon low-lead tank on gravel fill on the south side of Taxiway D. The 1,000 gallon diesel tank is double-walled and located east of the 10,000 gallon tanks. One 750 gallon fuel truck is located at the Airport and is normally parked on the west side of the FBO hangar.

Upgrades to the fuel facility including relocation of the tanks onto concrete pads outside of wingtip clearance and emergency shut-off switches located at a safe distance were proposed as part of the 2006 improvements. Previously, the shut off switches were not located at a safe distance. One remaining compliance goal is to remove the 500-gallon single walled AST storing diesel fuel located on the south side of the Airport Maintenance hangar. This tank has yet to be removed or replaced with a tank with appropriate containment in order to satisfy SPCC regulatory requirements. The existing SPCC Plan dated August, 2006 contains further information in regard to fuel storage and equipment maintenance practices, material inventory, employee training, preventative maintenance, spill prevention, spill response, and other safety measures.

Air Quality

The U.S. Environmental Protection Agency (EPA) defines ambient air in Code of Federal Regulations 40, Part 50, as "that portion of the atmosphere, external to buildings, to which the general public has access". In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Amendments (CAAA), the EPA has promulgated ambient air quality standards and regulations. The National Ambient Air Quality Standards (NAAQS) were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the EPA has established NAAQS for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), ozone (O_3), nitrogen dioxide (NO_2), and lead (Pb).

There are two types of standards: primary and secondary. Primary standards are designed to protect sensitive segments of the population from adverse health effects, with an adequate margin of safety, which may result from exposure to criteria pollutants. Secondary standards are designed to protect human health and welfare and, therefore, in some cases, are more stringent than the primary standards. Human

[13] Maine Geographic Information Systems Essential Wildlife Habitat Viewer. http://megisims.state.me.us/website/mdifweh/viewer.htm
[14] Spill Prevention Control and Countermeasure Plan. Waterville Robert Lafleur Airport. August 2006. Prepared by Stantec Consulting Services Inc.

welfare is considered to include the natural environment (vegetation) and the manmade environment (physical structures). Areas that are below the standards are in "attainment," while those that equal or exceed the standards are in "non-attainment."
Although the EPA has the ultimate responsibility for protecting air quality, each state and local government has the primary responsibility for air pollution prevention and control. The CAA requires that each state prepare and submit a plan (State Implementation Plan) describing how the state will attain and maintain air quality standards in non-attainment areas. In order for projects to comply with the CAA and the CAAA, they must conform to attainment plans documented in the State Implementation Plan.

The region surrounding WVL is largely residential and commercial. There are no obvious air pollution emission sources located in proximity to the Airport with non-point air pollution from automobile and airplane exhaust most likely the main source of air pollution emissions in the area. It is not anticipated that these emissions are of a level that warrants concern.

Given that WVL is a non-commercial service airport and it is anticipated that annual general aviation operations through the forecast period will be less than 180,000, in accordance with FAA Order 5050.4B, *Airport Environmental Handbook* (Section 47.e.(5)(c)1a), an air quality assessment for long term impacts is not required for proposed projects that will not increase these passenger and operations numbers. The FAA thresholds are based on an understanding that relatively small airports with limited operations have been found to have little or no impact on air quality.

Cultural and Historical Resources

Section 106 of the National Historic Preservation Act of 1966, as amended (Section 106), requires the Federal Aviation Administration (FAA) to evaluate potential effects on properties listed or eligible for listing in the National Register of Historic Places (National Register) prior to an undertaking. An undertaking means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including, among other things, processes requiring a Federal permit, license, or approval. In this case, the undertaking is the WVL Airport Master Plan. Potential effects associated with improvements proposed in this Master Plan may include those resulting from ground disturbance, construction, or subsequent operation of the Airport.

Historic properties are cultural resources listed or eligible for listing in the National Register. Historic properties represent things, structures, places, or archaeological sites that can be either Native American or Euro-American in origin. In most cases, cultural resources less than 50 years old are not considered eligible for the National Register. Cultural resources also have to have enough internal contextual integrity to be considered historic properties. For example, dilapidated structures or heavily disturbed archaeological sites may not have enough contextual integrity to be considered eligible.

Section 106 also requires that the FAA seek concurrence with the State Historic Preservation Officer (or SHPO on any finding involving effects or no effects to historic properties, and allow the Maine Historic Preservation Commission an opportunity to comment on any finding of effects to historic properties. If Native American properties have been identified, Section 106 also requires that the FAA consult with interested Indian tribes that might attach religious or cultural significance to such properties.

During previous Site Location of Development Act permits, no cultural or historical resources were identified by the State Historic Preservation Office for the Waterville Robert LaFleur Airport property.

Energy and Natural Resources

FAA Order 5050.4B notes that airport energy use typically falls into one of two categories:

- That which relates to stationary sources such as a terminal buildings, airfield lighting, etc.
- That which involves the movement of aircraft or ground vehicles.

FAA Order 5050.4B states that use of natural resources may become an issue warranting discussion only if the Airport requires use of unusual materials in short supply.

Light Emissions

The Airport utilizes runway and taxiway lights and Runway 5/23 is outfitted with a Medium Approach Lighting System with Sequenced Flashers. The Airport's runway and taxiway lights are available to pilots at night on an as needed basis by clicks of the pilot's radio microphone. In addition there is an airport beacon that is illuminated during night time and Instrument Flight Rules conditions.

Solid Waste

The Airport's daily generation of solid waste is relatively minor and well within the capabilities of the current waste management system utilized by the City. Trash is removed and disposed on a regular basis.

1.7 Historical Based Aircraft and Airport Operations

Generally speaking, the most accurate source of information is obtained from City records. Nevertheless, historical based aircraft data and aircraft operational data were collected from various sources. This information is important for developing the future aviation activity forecast and facility requirements that will be presented in future Working Papers. It is essential for understanding past activity, and how past activity compares to current and future activity. This historical data will be used, in part, to develop forecasts for future based aircraft and operations. The following sources of historical based aircraft and aircraft activity were referenced:

- City / airport records – November, 2007
- 2001 Maine Aviation System Plan Update Phase III – 2001 MASP
- FAA Airport Master Record / Form 5010 – October, 2007
- FAA Terminal Area Forecast / TAF – December, 2006

City-provided airport fuel sale logs were also used to supplement based aircraft and operational data obtained from conventional sources.

Based Aircraft

City records obtained thus far do not include a listing of historical based aircraft previous to 2007. City records obtained for the year 2007 indicates a total of 29 based aircraft. The current Airport Master Record / FAA 5010 Form indicates a total of 24 based aircraft. The FAA's Terminal Area Forecast, issued in December 2006 indicates a total of 55 based aircraft. This information is summarized in **Table 1.6** and is, listed by aircraft type as shown on the FAA 5010 Form:

Table 1.6
2007 Based Aircraft

Source / AC Type	City Records (Attachment A)	FAA 5010 Form (Attachment C)	FAA TAF-2006 (ref Attachment D)
Single Engine	24	22	N/A
Multi-Engine	5	2	N/A
Jet	0	0	N/A
Total	29	24	55

Source: As noted

There is a significant discrepancy between city-provided information and the FAA's 5010 Form and TAF. The data obtained from City records is considered more reliable.

Various sources were used for determining the total number of historical based aircraft. The 2001 MASP includes historical based aircraft by year from 1985 to 2001. Based aircraft data listed for 1985 to 1994 was obtained from the 1995 MASP, aircraft data listed for 1994 to 2001 was obtained from the 2001 MASP inventory effort. Besides the current listing of 2007 data obtained from the Airport, no other records were found for a listing of annual based aircraft for the years 2002 through 2006. The MeDOT MASP data for historical based aircraft is listed in **Table 1.7** and compared with FAA TAF data:

Table 1.7
Historic Based Aircraft (source as noted)

Year	Based AC	MeDOT/OPT	FAA TAF
1985	41	1995 MASP	40
1986	41	1995 MASP	40
1987	41	1995 MASP	40
1988	43	1995 MASP	40
1989	43	1995 MASP	41
1990	41	1995 MASP	57
1991	38	1995 MASP	57
1992	35	1995 MASP	55
1993	31	1995 MASP	55
1994	28	1995 MASP	55
1994	34	2001 MASP	55
1995	34	2001 MASP	55
1996	34	2001 MASP	55
1997	37	2001 MASP	55
1998	37	2001 MASP	55
1999	24	2001 MASP	55
2000	24	2001 MASP	55
2001	15	2001 MASP	55

Source: As Noted

Data for the year 1994 is presented twice by MeDOT in the 2001 MASP. Note the discrepancy in total based aircraft; the 1995 MASP indicates 28 total aircraft while the 2001 MASP indicates 34. Also note the discrepancy between the data presented by MeDOT and the forecast data from the FAA's TAF. The data obtained from the MeDOT 2001 MASP is considered more reliable.

Aircraft Operations

As mentioned in the project's scope of work, aircraft operational data at general aviation airports is highly unreliable. Airports with air traffic control towers can rely on FAA personnel or private contractors to supply this data. In the absence of a control tower, it is nearly impossible to ascertain an accurate count of aircraft movements; this is particularly true for aircraft operating under visual flight rules (VFR).

An aircraft operation is counted as either a landing or takeoff. A touch-and-go operation is considered two operations, one landing and one takeoff. Operations are divided into two categories: local operations and itinerant operations. According to the FAA definition, local operations are those arrivals or departures performed by aircraft that remain in the Airport traffic pattern or are within sight of the Airport. This generally covers an area within a 20-nautical mile radius of the airfield. Itinerant operations are arrivals or departures other than local performed by transient aircraft. **Table 1.8** presents a summary of aircraft operations information obtained from the FAA TAF.

Table 1.8
Historic Aircraft Operations

Year	Total Operations
1996	36,400
1997	36,400
1998	36,400
1999	36,400
2000	36,400
2001	36,400
2002	36,400
2003	36,400
2004	36,400
2005	36,400
2006	36,400

Source: FAA TAF

A complete breakdown of this information is presented in FAA TAF data, which lists operations in groups by "itinerant" and "local", and also by "scheduled enplanements" for commercial passenger service that was previously available at WVL. Itinerant and local operations are further subdivided into GA (General Aviation) and MIL (Military).

The TAF also includes a column for total "Instrument" operations, although no information is listed in the forecast. Nevertheless, actual IFR instrument approach procedure statistics in **Table 1.9** reveal the following activity from Jan. 1, 2007 through Oct. 25, 2007:

Table 1.9
2007 Instrument Operations at WVL by Aircraft Type (Arrivals, thru 10/25/07)

Type of Aircraft	Number of Operations	Percentage of Total
Single Engine Piston	96	19.8%
Multi-Engine Piston	33	6.8%
Single Engine Turbine	9	1.9%
Multi-Engine Turbine	228	47.0%
Jet Aircraft	117	24.1%
Helicopter	2	0.4%
Totals	485	100.0%

Source: FBO Web IFR flight tracking data; ASG Nov. 2007

Without further analysis and evaluation, and grossly assuming the "arrivals" depart WVL, the number of total instrument operations through 10/25/07 represents approximately 970 (485+485) landings and takeoffs.

1.8 Economic Conditions

This section identifies the economic conditions and related information of the Waterville Robert LaFleur Municipal Airport (WVL) at the time of this master plan effort. These conditions come in many sets of data that give you a snapshot of the Airport operation, capital expenditure history, financial arrangements of existing operations, and the general economic conditions surrounding the Airport and the Region. This effort discusses this information in five main areas that include:

1. Airport Financial Data;
2. Capital Improvement Funding History;
3. Airport Leases, Rates and Charges;
4. Economic Impact of the Airport; and;
5. Central Maine Economy

General aviation airports typically do not turn a profit and often are a financial burden to the local sponsor. While this is often the case, the goal of a general aviation airport should be to breakeven or better with fair and equitable rates and charges to the Airport users. Recent Airport financial data for WVL is presented in the table below.

Table 1.10
WVL Year End 06-07 Financial Summary

Category		Budget	Actual
FBO Operations	Revenue	$270,755	$229,602
	Expenses	(270,755)	(194,598)
	Net FBO Operations	**$0**	**$35,004**
Airport Operations and Maintenance*	Revenue	$7,100	$11,183
	Expenses	(108,610)	(100,072)
	Net Airport Maintenance	**($101,510)**	**($88,889)**
Capital Improvements	Revenue	$0	$0
	Expenses	(43,750)	(43,750)
	Net Capital Improvements	**($43,750)**	**($43,750)**
	Total Airport	**($145,260)**	**($132,639)**

*** Received a transfer in from the General Fund of $145,260.**
Source: City of Waterville

With the loss of the Fixed Base Operator a few years ago, WVL has seen turbulent financial times. As you can see from the financial information presented in the table above, the Airport FBO Operations turned a profit for the recently completed fiscal year 2006-07, while the other areas are typically expense burdens. As the table indicates, the FBO operations provide the highest level of revenue for the Airport. To further analyze these revenues, **Table 1.11** categorizes major WVL revenue sources.

Table 1.11
WVL Revenues 2006-07

Category	Budget	Actual
Aviation Fuel FBO	$228,000	$220,553
Hangar Rental FBO	9,000	7,230
Hangar Land Leases	2,000	2,790
Rental Income-Bus Terminal	5,100	6,123

Source: City of Waterville

As the table indicates, through FBO operations, aviation fuel sales are currently the single highest revenue generator for the Airport.

Capital Improvement Funding History

Airports require intensive capital improvements to maintain the extensive airside and landside facilities required for a safe and efficient airport. In recognition of these high capital costs, the Federal Aviation Administration (FAA) provides grants through the Airport Improvement Program (AIP). Under the latest federal Authorization, these grants can provide funding for up to ninety-five (95%) of eligible projects with the remaining non-federal share being split by the State of Maine and the City of Waterville. According to a recently completed study[15], Maine DOT invests approximately $500,000 to 750,000 annually in public use airports across the State. A similar investment by the local airport sponsors leverages an average of $19 million annually from the FAA AIP program.

[15] *Economic Impacts of Airports in Maine.* November 2006. Maine Department of Transportation, Office of Passenger Transportation.

The following table is a history of capital improvement grants at WVL and their respective funding levels.

Table 1.12
Summary of Capital Improvement Funding

Year	Project	FAA Share	State Share	City Share	Total Costs
1987	Extend, mark & light Taxiway "A" (approximately 1,950' x 50'); install security fencing (approximately 4,000')	$690,000.00	$38,334.00	$38,333.00	$766,667.00
1988	Phase 3 reconstruction of Runway 5-23 (approximately 2,600' x 100') including marking & lighting	3,015,000.00	167,500.00	167,500.00	3,350,000.00
4/1994	Phase 3 reconstruction of Runway 5-23 (approximately 2,600' x 100') including marking & lighting	3,124,538.96	173,585.50	173,585.50	3,471,709.96
10/1994	Airport Master Plan Update	67,320.00	3,740.00	3,740.00	74,800.00
10/1996	Install approximately 5,000' of chain link fence	0.00	35,548.90	8,887.22	44,436.12
12/1996	Install approximately 5,500' of chain link fence as the second & final phase of the fencing project	0.00	36,024.90	9,006.22	45,031.12
1998	Crack seal Runways 14-32 & 5-23, approximately 85,000l.f.	0.00	21,500.00	5,375.00	26,875.00
7/2001	Revisions to Airport Layout Plan; Exhibit "A" airport property map; & environmental services for Storm Water Pollution Prevention Plan (SWPPP)	0.00	34,139.20	8,534.80	42,674.00
8/2001	Acquire land in the approach & transitions to Runway 5	124,200.00	6,900.00	6,900.00	138,000.00
2002	Snow removal equipment - dual engine, all wheel drive, all wheel steer, chassis mounted 2500 ton/hour snow blower unit	291,150.00	16,175.00	16,175.00	323,500.00
2003	Construct Aircraft Parking Apron (final design)	249,300.00	13,850.00	13,850.00	277,000.00
5/2005	Acquire Telford Aviation building for airport snow removal equipment building	124,200.00	6,900.00	6,900.00	138,000.00
7/2005	Acquire land in the approach transition to Runway 5 (approximately 27 acres)	204,250.00	5,375.00	5,375.00	215,000.00
7/2005	Construct Aircraft Parking Apron & Install Airport Rotating Beacon & Tower	754,300.00	19,850.00	19,850.00	794,000.00
2006	Reconstruct Taxiway "D" (approximately 1,755' x 40')	2,175,500.00	57,250.00	57,250.00	2,290,000.00
	Totals:	$10,819,758.96	$636,672.50	$541,261.74	$11,997,693.20

Airport Leases / Rates and Charges

An important part of the revenue stream to an airport is set through lease arrangements with tenants of the Airport. Leases can range from monthly aircraft tie-down agreements to long-term leases of land or buildings. In addition, it is important that the Airport sets fair and equitable market rates for the leases, not undercharging or overcharging, to assure they meet the FAA's grant assurances[16].

Further, the establishment of leases, especially long-term leases aid in the decision making process for future development at the Airport. The length of a lease and the associated revenue stream derived from that lease provides a measure of stability in assessing the sustainability of a capital investment with the resulting revenue available to support the increased operation and maintenance cost associated with such development.

Leases at WVL mainly consist of land leases for the hangar facilities. Currently, there are 13 land leases that have a 30-year term with different expiration dates. The leases have Consumer Price Index (CPI) adjustments every five years. These leases currently range from $105 to $572 in annual revenue for the Airport. The difference in rental rates is associated with the size of the parcel leased and any CPI adjustments that have been made based on the term of the lease.

The Airport's 2007 Rates and Charges are identified below:

▪ Fuel – 100LL	$4.50 per gallon
Fuel – Jet A	$4.45 per gallon
Fuel – Auto Gas	$3.55 per gallon (87 octane)
▪ Tie-Downs	$30.00 per month
	$15.00 per week
▪ Hangar Rental (Small)	$180.00 per month (Nov-Apr)
	$150.00 per month (May-Oct)
	$10.00 per night
Hangar Rental (Large)	$600.00 per month (Nov-Apr)
	$500.00 per month (May-Oct)
	$25.00 per night
Hangar Rental (Jets)	$100.00 per night
▪ Landing Fees	$25.00 Jets/Turbo Prop (waived w/100 gal)
	$20.00 Heavy Twin (waived w/20 gal)
	$10.00 Light Twin (waived w/20 gal)

The assessment of these rates and charges should be completed in the development of the business planning effort for WVL.

[16] FAA Airport Improvement Program Grant Assurances. http://www.faa.gov/airports_airtraffic/airports/aip/grant_assurances/

Economic Impact of the Airport

The State of Maine completed a study in 2006 to assess the economic benefits of airports across the State that included 36 publicly owned airports[17]. The information in this section is taken directly from the study results.

To assess the benefits of an airport four major areas are reviewed: Airport Businesses or Tenants; Airport Capital Improvement Projects; Airport Visitors; and Aviation Multipliers (i.e. the measure of someone directly employed by the Airport spends their paycheck in the local community). These areas are all reviewed and cycled through an economic model to determine the economic impact of each of the airports. The results are usually presented by: total employment; total payroll; and total output.

The report states "There are currently almost 21,000 jobs in Maine that are in some way connected to the public airports and their activities. These jobs have an annual estimated payroll of $487.9 million. When all economic activities are considered, total annual economic activity or output associated with the 36 public commercial service and general aviation airports is estimated at over $1.5 billion."

Table 1.13 summarizes the study results for WVL. As the study indicates, WVL has a significant impact to the local, regional and state economies.

Table 1.13
Summary of Economic Impacts

Airport Name	Total Employment	Total Payroll	Total Output
Waterville Robert LaFleur	39	$1,101,700	$2,875,700
General Aviation (GA) Airports	1,532	$39,436,200	$103,752,300
WVL Percent of GA:	2.5%	2.8%	2.8%

Source: Economic Impacts of Airports in Maine, Executive Summary, 2006.

In addition, the study survey data indicated the Airport draws approximately 2,330 visitors each year, while the Airport typically accommodates nonstop flights in private aircraft from New England and Mid-Atlantic states but also was visited by corporate jets from the mid-west, west and southern states[18].

Central Maine Economy

The economy plays a key role in the future of an airport and the Airport can play a key role in the future of an economy. The economy of the Central Maine Region is an important asset for determining how WVL will be utilized and what benefits can be reaped by the Airport and the Region. Coordinating this activity and information is crucial to success. Currently, WVL has two agencies working to support the local economy. These agencies include the Central Maine Growth Council and the Mid-Maine Chamber of Commerce.

These agencies are working to foster the economy of Central Maine and are best represented in this Master Plan by stating their Mission Statements.

[17] *Economic Impacts of Airports in Maine, Executive Summary*. November 2006. Maine Department of Transportation, Office of Passenger Transportation.
[18] *Economic Impacts of Airports in Maine.* November 2006. Maine Department of Transportation, Office of Passenger Transportation.

*The mission of the **Central Maine Growth Council** is to foster a robust regional economy fueled by a genuine collaboration among governments, businesses and residents, resulting in a highly desirable multi-town community in which to live, work and raise a family.*

*The **Mid-Maine Chamber of Commerce** is dedicated to promoting and protecting the free enterprise system, enhancing the economic growth and well-being of its members and the region, and providing membership value to those it serves.*

The Central Maine 2006-07 Annual Economic Review will be used to aid in the development of projecting future Airport activity utilizing the extensive socioeconomic data that is presented therein. Utilizing this type of report will provide for consistent data elements, along with providing close coordination of local economic development activities.

An important component to the development of a general aviation airport is its relationship with the business community. The Review discussed above listed the following Top 20 Major Employers for Central Maine.

Table 1.14
Top 20 Central Maine Employers

Rank	Employer	Town	Employee Range	Description
1	MaineGeneral Health	Waterville/Augusta	1001-1250	General medical and surgical hospital
2	Colby College	Waterville	501-750	Post secondary school
3	T-Mobile	Oakland	501-750	Wireless communications
4	Huhtamaki Packaging	Waterville	251-500	Converted paper product mfg.
5	HealthReach Network	Waterville	251-500	Home healthcare services
6	Wal-Mart Super Center	Waterville	251-500	Discount department store
7	Inland Hospital	Waterville	251-500	General medical and surgical hospital
8	Hannaford Supermarket	Waterville	251-500	Supermarket
9	L.L. Bean	Waterville	251-500	Mail-order / catalog sales
10	Waterville School Department	Waterville	251-500	Elementary and secondary schools
11	MSAD 47	Oakland	251-500	Elementary and secondary schools
12	Central Maine Railroad	Waterville	101-250	Transportation services
13	Kennebec Behavioral Health	Waterville	101-250	Mental Health services
14	Shaw's Supermarket's Inc.	Waterville	101-250	Supermarket
15	Mid-State Machine	Winslow	101-250	Machine products
16	Shridan Corp.	Fairfield	101-250	Construction/Engineering
17	Thomas College	Waterville	101-250	Post secondary school
18	Northeast Laboratory Services	Winslow	101-250	Laboratory
19	Care & Comfort	Waterville	101-250	Home healthcare services
20	Home Depot USA Inc.	Waterville	101-250	Home center supplies

Source: Central Maine 2006-07Annual Economic Review (Maine Department of Labor and the Central Maine Growth Council, Mid-Maine Chamber of Commerce)

Additionally, the Central Maine Region is host of summer time camp's that attract visitors from around the world. Area camps that have had visitors use WVL in the past include the following:

- Camp Caribou for Boys
- Camp Manitou
- Camp Matoaka
- Camp Modin
- Camp Runoia

As part of this master plan effort, appropriate camps, employers, and other business entities were contacted to discuss the Airport's involvement and support of each of their respective business models.

Economic Summary

Understanding the economic condition and activity of an Airport and its surrounding community is critical to developing a master plan. This information provides a key foundation to the development of the WVL master plan and will provide key inputs into the overall study process. The Central Maine Growth Council and the Mid-Maine Chamber of Commerce were utilized extensively to further understand the region and to reach out to local business contacts.

Interviews with the business community were facilitated by the project team to better understand why they use or do not use the Airport; does the Airport directly benefit; or indirectly benefit their organization, etc.

In addition to projecting future activity at WVL by utilizing data obtained from these organizations, additional data and anecdotal information was obtained through airport user questionnaires enabling the project team to develop future airport development scenarios and what would be required should those scenarios come to fruition.

Ground Survey Not in Contract / to be provided by City

In this task, the City of Waterville will obtain a ground survey of critical airport features for use in developing the base mapping as well as for use with future analysis of the line-of-sight runway approach surfaces. The ground survey effort will include a cursory "scan" of approach areas from the runway surface to approximate the location and elevation of existing controlling obstructions. The City will locate the following airport features (location & elevation):

- Runway centerline ends (both runways)
- Line-of-sight analysis for vegetation within approach areas
    - 3 highest points for four approach areas – LT, CL, RT
    - Part77 approach surfaces only (no THSC or TERPS)
- NAVAIDS (GS & LOC only)
- Buildings (four corners + highest point)
- Other on-airport structures (antenna towers, fence corners, etc.)

Conclusions and Issue Identification

As mentioned at the beginning of this report, Chapter 1 (Working Paper #1) is intended to provide factual data and observations of existing facility conditions. Each section of this report describes various airport features in detail, which is presented with other statistical data collected and organized by the Consultant.

Baseline Drawings

This Master Plan Update Study will include development of baseline drawings depicting the existing airfield facilities, major environmental features and adjacent land use. These two initial drawings will be titled Existing Airport Facilities Plan and Environmental and Land Use Base Plan. Development of these drawings is a combined effort of the City and the consultant. The City will provide an aerial ortho-rectified digital photo and coordinating ground survey. The Consultant will use this information to develop drawings that clearly identify major facilities and features for public review. As the Master Plan Study advances, these drawings will be further refined by the Consultant and combined with additional drawings to form a new Airport Layout Plan (ALP) which will depict future airport development.

Waterville Robert LaFleur Municipal Airport
AIRPORT MASTER PLAN UPDATE

CHAPTER 2
AIRPORT ROLE AND FORECASTS

2.0 Airport Role and Forecasts

Forecasts of aviation activity at the Waterville Robert LaFleur Municipal Airport will be used as a basis for determining the type and magnitude of aviation facilities required to accommodate the aviation needs of the study area for a twenty year period or through the year 2027. These forecasts are applied to several areas of the Master Plan Study. The primary function of forecasts is to analyze the demand capacity of the airfield facilities with respect to infrastructure needs. Additionally, forecasts are used to evaluate the airport's role in the regional, state, and national airport system. Consequently, the need for new or improved navigational systems is also evaluated.

Due to the cyclical nature of the economy, aviation forecasts are developed to reflect operational activity levels on a growth curve in five, ten and twenty year periods. While a single line is often used to express the anticipated growth, it is important to state that actual growth may fluctuate within a range both below and above this line. Forecasts are prepared in terms of a base case, as well as a medium range and high range forecast. This format helps understand the airport's needs under varying conditions and therefore is less sensitive to a specific change in an airport or industry condition. It is also effective where the historical data is more difficult to assemble for various reasons. **An essential point to remember is that forecasts serve only as guidelines, and planning must remain flexible around those guidelines to be responsive to a dynamic environment.**

The systematic development of aviation activity forecast involves both analytical and judgmental processes. Mathematical relationships are tested to establish statistical logic rationale for projected growth. In cases where accurate and reliable historical data is unavailable, professional experience and knowledge introduces the component of judgment which is essential to the final subjective determination of the recommended forecast.

The forecast for WVL involved multiple processes. It includes: analysis of the Maine State Aviation Systems Plan Update (March 2006), identification of the service area, analysis of the historical data at WVL, business community interviews, airport user surveys, evaluation of the relationship between the number of based aircraft and the level of operations (take-offs and landings), state aviation taxes, business trends within the area, and new and emerging technologies in general aviation.

2.1 Forecast Methodologies and Data

Choosing the appropriate forecasting methodology is equally as important as developing different forecasting scenarios to properly plan the future. The general approach often used to develop forecasts is to identify specific historical relationships between state/facility specific aviation operational and based aircraft data and socioeconomics. Due to the unreliable accuracy of WVL's historical data it is difficult to make accurate quantitative forecasts. Forecast scenarios developed for WVL still consider historical operational data but rely largely upon expert judgment.

This methodology results in more qualitative forecasts which for facilities like WVL tend to be more realistic. As previously stated, it should be understood that aviation forecasting is not an "exact science" so experienced aviation judgment and practical considerations ultimately influence the level of detail and effort required to establish a reasonable forecast and the development decisions that result from them. A qualitative forecast will give an explanation, understanding, or interpretation of current airport conditions and explain why future development scenarios are justifiable. Forecasting scenarios for WVL were developed by examining the meaningful and symbolic content of qualitative data and coupling it with FAA Form 5010 data. The Federal Aviation Administration Advisory Circular 150/5070-6B, Airport Master Plans, dated July 29, 2005, outlines the six standard steps in the forecasting process that include:

- Identifying aviation activity measures;
- Reviewing previous airport forecasts;
- Gathering the various types of data;
- Selecting the forecasting methodology;
- Applying the forecast methods and evaluate the results; and
- Comparing the forecast results with the FAA's Terminal Area Forecast.

The FAA has outlined several acceptable forecasting methodologies and the selected methodology should be representative of the airport's unique characteristics and the validity of the historical data. Some common forecasting methodologies include:

- **Regression analysis** – A statistical technique that ties aviation demand to economic measures. Regression analysis should be restricted to relatively simple models with independent variables for which reliable forecasts are available.
- **Trend analysis and extrapolation** – Typically the historical pattern of an activity and projects this trend into the future. This approach is useful where unusual local conditions differentiate the study airport from other airports in the region.
- **Market share analysis or ration analysis** – This technique assumes a top-down relationship between national, regional, and local forecasts. Local forecasts are a market share percentage of regional forecasts, which are a market share percentage of national forecasts. Historical market shares are calculated and used as a basis for projecting future market shares.
- **Smoothing** – A statistical technique applied to historical data, given greater weight to the latest trend and conditions at the airport; it can be effective in generating short-term forecasts.
- **Expert Judgment** – This effort simply looks to utilize a combination of the methods presented above, but applies a level of expert judgment from local, regional and national aviation industry knowledge.

Considering historical airport data inaccuracies and gaps, the forecast methodology used for this master plan effort will incorporate Market Share analysis and Expert Judgment.

Over the life of a forecast, unanticipated events (trend breakers like September 11, 2001, Severe Acute Respiratory Syndrome, Avian Flu, etc.) may take place that impact the anticipated activity levels at the airport. It is critical that WVL consistently review the developed forecast to determine how those unanticipated events impact the need for new or expanded facilities. The WVL Master Plan forecasts were developed using:

- Historical operations, instrument operations, and based aircraft data;
- Federal Aviation Administration Aerospace Forecasts FY 2007-2020;
- FAA Terminal Area Forecasts (TAF); and
- Maine State Aviation Systems Plan Update (MSASPU) forecast March 2006.

For airports with greater than 100,000 total annual operations, or 100 based aircraft the five and ten year forecast must be approved by FAA prior to proceeding to the Facility Requirements analysis. The forecasts developed for WVL will likely not attain those levels and therefore the FAA will only need to review the forecasts and not formally approve them.

2.1.1 Airport Service Area

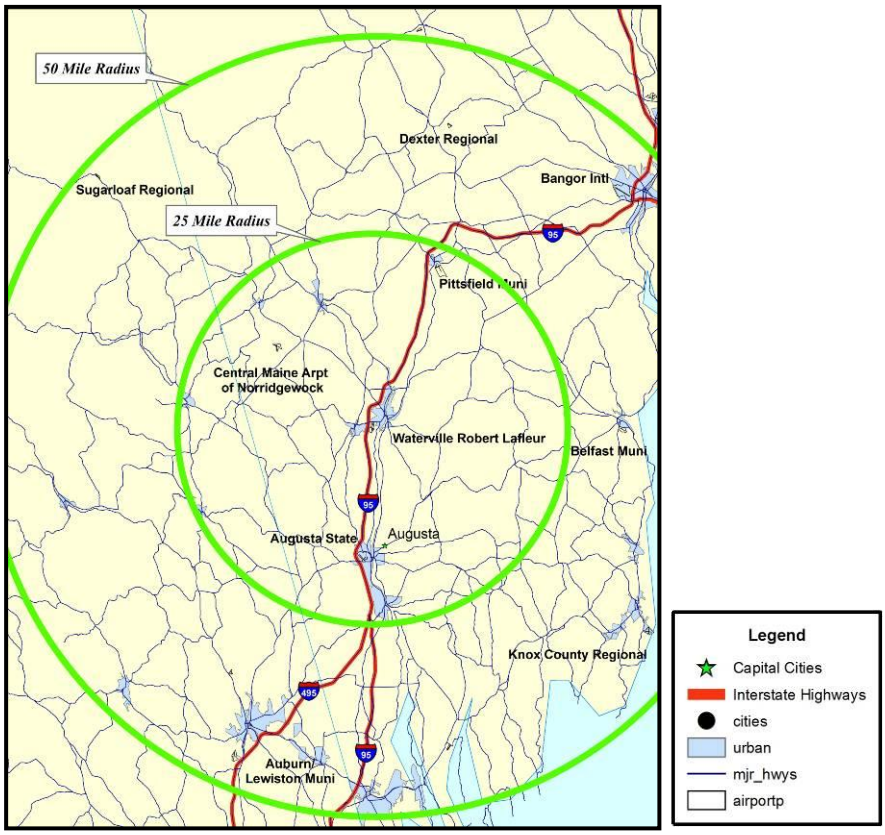
The airports within Maine's air transportation system contribute to the state's transportation and economic needs at varying levels. For the purpose of making reasonable estimates of the future activity at WVL it is essential to consider two major forecast elements, the type of aviation activity and the level of annual aviation activity. These elements contribute to the establishment of an airport's market area.

The market area served by WVL is designated in this report as the "airport service area". The airport service area is defined by its proximity to other airports serving the needs of the general aviation community. Aviation demand corresponds with local and regional growth trends related to economic and demographic characteristics, geographic attributes, aviation related factors and other factors that may influence the demand for airport services. Aviation activity levels result from the interaction of demand and supply factors. Industry practices use various methods to determine an airport's market area.

The previous Master Plan completed in 1996 by Hoyle, Tanner and Associates referred to the general aviation market or service area for WVL, as those airports within the 15-mile "easily travelled" access radius of Waterville. Encompassing twelve towns, this region included the following airports as defined in the 1996 Master Plan: Norridgewock, Pittsfield, Augusta, "and others". The Maine Aviation Systems Plan Update refers to aviation service areas for state specific airports as those airports encompassed within a 30 minute drive time distance from each facility.

Through local and regional research as well as airport user survey data, a service area has been established for this master plan effort and is shown in the figure below. The green circles show a 25 and 50 statute mile radius from WVL and show airports within these areas that experience similar type aviation activity, and provide facilities and services comparable to those offered at WVL. A 25 and 50-statute mile radius is used to estimate an approximate ground travel time of 30 and 60 minutes respectively. Further, the inner circle may see shorter drive times as a result of Interstate 95 dissecting the area and WVL's close proximity to the highway.

Figure 2.1
WVL Service Area Map



Airport data specific for the facilities in WVL's airport service area is shown in the table below. This data was gathered from published FAA 5010 records and analyzed for market share and operational comparison purposes.

Table 2.1
GA Airport Market Surrounding WVL

Airport Name	Longest Runway (feet)	Instrument Approach Procedures	Based Aircraft	% of Total	Annual GA Operations	% of Total	Local GA Operations	% of Total	Local Ops per Based
Waterville Robert LaFleur Muni	**5,500 x 100**	**3**	**29**	**8%**	**13,600**	**6%**	**7,500**	**8%**	**259**
Augusta State Airport	7,504 x 150	9	46	12%	33,800	14%	14,000	14%	304
Central Maine Airport of Norridgewock	3,999 x 90	3	63	16%	9,824	4%	6,900	7%	110
Belfast Muni	4,000 x 100	3	18	5%	9,501	4%	4,100	4%	228
Knox County Regional	3,900 x 100	4	62	16%	55,694	23%	17,000	17%	274
Auburn Lewiston Muni	5,001 x 100	4	91	24%	70,300	29%	24,915	25%	274
Pittsfild Muni	4,000 x 100	2	40	10%	8,700	4%	3,600	4%	90
Bangor International *	11,440 x 200	13	42	11%	26,162	11%	10,109	10%	241
Dexter Regional	3,009 x 80	1	23	6%	6,963	3%	6,340	6%	276
Sugarloaf Regional	2,800 x 75	0	10	3%	6,000	2%	3,500	4%	350
		Totals:	384	100%	240,544	100%	97,964	100%	255

* Data does not include Military Based Aircraft, Military Operations or Air Carrier Operations.

Source: FAA 5010 data, AirNAV, and consultant calculations.

FAA 5010 data for WVL indicated 24 based aircraft; however more accurate data obtained directly from the Airport suggests 29 based aircraft. For the purpose of this study, the more accurate number of 29 based aircraft will be used to develop the forecast scenarios that result from various assumptions and calculations within this section.

Considering the market area established for this study, WVL holds 8% of the based aircraft market, as well as 6% of Annual GA operations and 8% of local GA Operations as shown in the table above. Further, WVL based aircraft on average produce 259 annual local operations per based aircraft, slightly more than the 255 average of the 10 airports in the service area.

WVL's based aircraft at 29 is lower than all of its closest competitors with Augusta at 46, Central Maine at 63, and Pittsfield at 40. This indicates that WVL may have an opportunity to compete for additional market share of these based aircraft; this will be addressed in the forecast assumptions.

2.2 General Aviation

General Aviation (GA) is one of two major categories of civil aviation. GA is defined as the operation of civilian aircraft for purposes other than commercial passenger transport, including personal, business and instructional flying. GA provides vital services to individuals, families, churches, hospitals, colleges, small businesses and thousands of communities throughout America. In addition, GA also provides advantages to the personal and business traveler with direct access to over 5,000 airports in the United States. Due to GA's popularity, the majority of the world's air traffic is classified as GA operations. Specific trends related to GA activity are identified in terms of the number of manufacturer shipments, changes in active fleet mix and utilization of GA aircraft. It should be noted that the GA population could be served by the smallest piston aircraft to a large jet.

Operations are categorized as Itinerant, Local or Instrument Flight Rules (IFR).

- **Itinerant** means an operation is arriving from outside the traffic pattern or departs the airport traffic pattern.
- **Local** means an operation that stays within the traffic pattern airspace (non-itinerant).
- **IFR** means an operation that is conducted under Instrument Flight Rules.

IFR operations are a sub-category of the total number of operations as they can be either Local or Itinerant. Total Operations equal Itinerant Operations plus Local Operations.

2.2.1 National, State and Local Trends

Prior to August of 1994, there was no time limitation on product liability for GA aircraft manufacturers. As a result, manufacturers were required to seek broader liability insurance policies, which led to increased insurance premiums and ultimately drove up the cost of new aircraft. Due to the high purchase price of aircraft, GA aircraft deliveries significantly decreased. In August of 1994, Congress enacted the General Aviation Revitalization Act, which established an 18-year Statute of Repose in the manufacture of all GA industry aircraft and their components, in terms of liability. This change has led to several advances in the development of fixed-wing aircraft including:

- New GA aircraft manufacturers entering the marketplace;
- Construction of new aircraft manufacturing facilities;
- Expansion of existing manufacturing facilities; and
- Increased expenditures on research and development of aircraft and avionics to make flying safer and easier to learn.

As a result, GA manufacturers experienced increased aircraft deliveries, flight safety, and popularity. The positive trends associated with the GA industry as a result of this Congressional Act are anticipated to last well into the future.

Contrary to the anticipated positive trends, the state of Maine's "use tax" may have a negative effect on the number of operations in the State. In the case of airplanes, the current law allows the state to collect a 5 percent use tax from anyone who did not pay state sales tax on an airplane but brings the airplane to the state for more than 20 days in the first year of ownership. There have been no quantitative studies of this sales tax impact on owners' decisions to base their aircraft in the State or on operations.

2.2.2 FAA Terminal Area Forecast: State of Maine

Each year the FAA updates and publishes a Terminal Area Forecast (TAF) to include air carrier, air taxi/commuter, general aviation, and military operations. The purpose of the TAF is to provide the aviation community with data that indicates aviation demand at U.S. Airports. The activity forecasts are prepared for all towered airports and include both itinerant and local operations. The TAF is available for all regions within the FAA, including a specific state or airport. For non-towered airports such as WVL which rely solely on Form 5010 data for activity levels (estimated by FAA inspectors and/or state and local airport officials), operations levels are held constant unless otherwise specified by a local or regional FAA official. Because WVL is a non-towered airport, the TAF only carries forward the last reported year's activity levels for the forecasted years. Therefore, the master plan forecast effort for WVL will utilize the TAF for the State of Maine which gives an estimated general aviation growth rate. This is a normal practice for airports similar to WVL.

Table 2.2
2007 FAA Terminal Area Forecast - State of Maine

Year	Itinerant GA Operations	Local GA Operations	Total GA Operations	Total Inst. Operations	Based Aircraft
2006	226,788	317,831	702,919	195,129	980
2025	232,116	310,373	730,891	257,604	1,034
AAG	**0.1%**	**-0.1%**	**0.2%**	**1.6%**	**0.3%**
Note: AAG = Average Annual Growth Rate					

Source: FAA Maine Terminal Area Forecast, Issued December 2007 and consultant calculations.

The TAF for the State of Maine indicates that the total GA operations for the State will increase by an average annual growth rate of 0.2% to 2025 as indicated in the table above. The forecast also indicates that based aircraft will increase by an average annual growth rate of 0.3% from 980 to 1,034 over that same time period.

Overall, the TAF has forecasted GA operations to grow minimally within the State of Maine. Notably, total instrument operations have the largest growth rate at 1.6% annually.

2.2.3 FAA Active GA and Air Taxi Forecasts

The FAA's Aerospace Forecast is another source of information that details a variety of forecasts for the aviation industry. The FAA annually develops forecasts in this document related to economic activity, commercial aviation, air cargo, commercial space transportation and general aviation to indicate aviation demand and activity. The FAA publishes this document to indicate industry trends and help guide the FAA to adjust policy accordingly. In this particular forecast, the FAA has included a new classification of aircraft titled "Sport Aircraft", which is not currently included in the FAA's registry counts. This

classification was created in 2005 and the forecast assumes that registration of over 13,500 aircraft by 2017 will occur for the 12-year period. The FAA defines the sport aircraft classification as an aircraft with a maximum gross takeoff weight of less than 1,320 pounds for aircraft designed to operate from land; a maximum airspeed in level flight of 120 knots; either one or two seats; a fixed pitch or ground adjustable propeller; and a single reciprocating engine. An example of an aircraft in this classification of aircraft includes the Piper Cub.

Table 2.3
FAA U.S. Active General Aviation and Air Taxi Aircraft Forecast

Year	FIXED WING				ROTOCRAFT					
	PISTON		TURBINE							
	Single Engine	Multi-Engine	Turbo Prop	Turbo Jet	Piston	Turbine	Exper-imental	Sport Aircraft	Other	Total
2005*	144,530	17,481	8,030	8,628	2,760	4,835	22,300	-n/a-	6,027	214,591
2007	145,660	17,520	8,430	9,520	3,460	5,095	22,900	2,295	5,965	220,845
2012	148,005	17,605	9,430	13,165	4945	5,820	24,350	10,940	5,820	240,080
2017	149,670	17,690	10,430	17,270	6,025	6,660	25,730	13,625	5,675	252,775
AAG	**0.3%**	**0.1%**	**2.2%**	**6.0%**	**6.7%**	**2.7%**	**1.2%**	**-n/a-**	**-0.5%**	**1.4%**

*** denotes estimation, Source: FAA Aerospace Forecasts, FY 2007-2017**

As indicated in the table above, the active general aviation fleet is forecasted to increase at an average annual rate of 1.4% over the next 12 years. The largest amount of growth will occur in the fixed wing turbo jet classification. The anticipated turbo jet growth would effectively double the fleet (100.2%) over the forecasting period. Piston type aircraft (single/multi-engine) are anticipated to experience negligible growth; however turbine aircraft (fixed-wing and rotorcraft) are anticipated to increase by 4.9% annually over the forecasting period.

2.2.4 Maine Aviation Systems Plan Update

As with the historical operations data for WVL, reliable historical data was not readily available in forecasting aeronautical activity within the Maine Aviation Systems Plan Update. The systems plan used a top down methodology that examined the State's share of the nations projected general aviation fleet as well as a socioeconomic approach based on county employment projections developed by the Maine State Planning Office.

Estimates of operations per based aircraft (OPBA) were used to develop estimates of activity levels at many of the State's system airports. Often, this methodology overstates or understates airport operational levels, but when there is poor historical data this is often the best methodology. Historical data from 2001 used in the Systems Plan forecast showed that Waterville's 15 based aircraft at the time represented 1.7% of the states total number of based aircraft. This resulted in 17 based aircraft projected for 2011 and 18 based aircraft projected for 2021.

The most current FAA Form 5010 data for WVL shows 24 based aircraft however, even the more accurate based number of aircraft at 29 still supports the previous statement that forecasts of aviation activity levels using OPBA can overstate or understate future activity levels. The two socioeconomic methodologies used in the State Systems Plan were based on county population projections and county employment projections. Based aircraft growth based on population was 0.7 % while growth based on employment projections was 1.7 %.

2.3 Demand Factors

Future airport demand is driven by many factors, including the local and regional economy, competing airports, and new and emerging technologies. For the purposes of this Study, analyses of the following were performed to gain insight into the demand factors affecting WVL:

- Based aircraft owner survey;
- Transient aircraft owner survey;
- Business community interviews;
- Other outside influences (e.g. state tax structure & user fees, etc.)

2.3.1 Based Aircraft Owner Survey

An airport user survey was developed to identify user needs and concerns with respect to WVL's facilities. The surveys were sent to based aircraft owners and airport business owners at WVL. A return rate of 46% was realized, based on the distribution of 24 surveys (some of the 29 based aircraft have the same owner) and 11 returned.

The survey focused on obtaining based aircraft owner's feedback regarding primary factors in choosing WVL as a home base for their aircraft, their current and planned aviation activity, typical destination airports, and likes/dislikes of WVL in general. With the exception of one twin piston engine aircraft owner, all respondents were owners of single engine aircraft such as the popular Cessna 172 or aircraft with similar performance capabilities. All but two of the respondents expect to keep operating the same aircraft in the near future. Of the two respondents that might possibly change the type or model of the aircraft they currently base at WVL, one single engine aircraft owner is considering upgrading to a twin engine aircraft and the other may consider basing an experimental or seaplane aircraft either in lieu of, or in addition to, their current Cessna 172.

Five of the 11 respondents have considered basing their aircraft at another airport mainly due to the lack of aircraft services offered, such as aircraft mechanic services or self service fuel resources. Five of the 11 respondents perform less than 20 flight operations at WVL on a monthly basis whereas the other 6 respondents perform between 21 and 60 flight operations per month. Seven of the 11 plan to maintain their same level of operations per month, while 3 plan to increase their number of operations. One respondent plans to decrease his/her number of operations due to more frequent seaplane flying.

Specific likes and dislikes of WVL were consistent with the overwhelming issue at the airport being the lack of an FBO and the availability of aviation fuel after hours. The most frequent response when asked about what they liked about the airport was the helpful and friendly personnel.

2.3.2 Transient Airport User Survey

A second survey was developed and placed at the airport to evaluate the needs and concerns of transient users with respect to WVL's facilities. Seven surveys were completed by transient aircraft operators. The limited number of responses could be a result of limited transient activity at the airport during the survey period due to inclement weather and/or seasonal aviation activity trends at WVL.

The type of transient activity ranged from that of a single engine Cessna 172 flying for recreation with only the pilot aboard to a Cessna Caravan with 6 passengers conducting charter operations. Other transient activity obtained as a result of the survey included that of a Beechcraft King Air carrying four passengers en route to Sugarloaf to conduct business and a Cessna Citation Ultra corporate jet dropping

off one passenger for business in Waterville. Overwhelmingly, the primary reason for using WVL as a destination airport was convenience.

With the exception of two aircraft landing at WVL for the first time, the transient operators who completed the survey visit WVL approximately 4-5 times per year. Six of the 7 survey respondents indicated that they might use the airport more frequently or would definitely use the airport more often if the airport offered overnight aircraft hangar storage. Those aircraft that indicated this also indicated that they require either catering services, aircraft oxygen services, courtesy car/rental car services, aircraft deicing services, computerized weather service, or any combination of these services.

Regarding the quality of airfield pavement, lighting, and navigational equipment, transient operators gave these areas average ratings on a scale of 1-5. When asked to compare the number of services, quality of services and terminal/apron security to other destination airports users once again mostly rated these areas average.

Transient users who completed the survey originated their flights from cities including: Bedford Massachusetts, Suffolk Virginia, Holland Virginia and Traverse City Michigan.

Additional comments from transient users included the need for hangar space, crew cars, a pilot lounge and wireless internet service. Like based aircraft operators, transient users also indicated an appreciation for friendly airport staff.

2.3.3 Business Community Interviews

To determine how the greater Waterville business community views the Airport and the extent to which local businesses use the facility, interviews were scheduled in coordination with the Mid-Maine Chamber of Commerce. Almost a dozen interviews were conducted from a cross-section of area businesses and revealed some valuable information that can be applied to forecasting and development scenarios.

All interviewees viewed the Airport as a valuable asset to the City and Region and many of the interviews revealed worldwide business, education, and recreational connections to the Central Maine Region that often require international travel to all parts of the world.

The dialogue focused around the following major themes:

Airport Use – While almost everyone interviewed was aware of the Airport facilities, most do not use the Airport on a day-to-day basis as a result of needing scheduled airline flights for their business travel. Airports utilized for this travel include Augusta, Portland, Manchester, and Boston-Logan (for international and access to more direct domestic flights). Some interviewees mentioned use of WVL by local colleges and summer camps, celebrities, as well as area resort users/owners. It was indicated that these users are utilizing their own corporate type aircraft, or a charter company such as NetJets (www.netjets.com).

Airport/Community Image – There was various discussions regarding the quality and appearance of the Airport facilities. For those that use the Airport for traveling to and from the Central Maine Region, the Airport serves as the gateway or entrance, and is usually the last image of the Region when departing the area. While specific improvements were not cited, most agreed that improvements to the existing facilities are needed. Some suggestions included aesthetic changes to the Terminal facility, signage like "Welcome to the City of Waterville and the Central Maine Region", coordination with the Maine Office of Tourism (www.visitmaine.com), airport user events such as "Airport Day", to name a few.

2.3.4 Fixed Base Operator (FBO)/Airport Management

Telford Aviation, the last FBO to operate on the Airport was discussed with many interviewees. Most remembered the Airport doing well while Telford existed on the Airport and indicated that their departure left the Airport in a vulnerable state. Some indicated that they thought the City of Waterville should not be managing the Airport directly and felt there could be efficiencies with an Authority type structure, another FBO on the Airport, or some combination of both. Others indicated that the Airport should develop a realistic Business Plan to aide in the future decision making process and to achieve regional support from the surrounding communities.

2.3.5 Other Outside Influences

New aircraft technology can profoundly impact aviation operations. The new aircraft technology that is of interest with regard to the WVL Master Plan is the introduction of the microjet. These new aircraft are currently being developed by several manufacturers and are small, relatively inexpensive to own and operate, and are designed to operate at airports with capabilities less than typical air carrier airports. One of these microjets is the Eclipse Aviation 500 Jet, shown here. This six-passenger aircraft uses state-of-the-art technology in its manufacture to provide enhanced performance and reduced operational costs when compared with conventional corporate jets.

Source: http://www.news.com/2300-11398_3-6065909-1.html?taq=ne.qall.pq

Microjets are still in their infancy. Of all the microjets currently in development, the Eclipse 500 is the first microjet certified by the FAA. Production of the Eclipse began in 2007, with deliveries taking place today. In some cases, these airplanes will replace older business jets of similar capacity, and in other cases, the microjets may replace older turboprop aircraft. While less expensive than other jets (assuming the current cost estimate is maintained), the close to $1 million price tag will generally limit potential owners to those who already fly jets or turboprops. Charter operators may use the airplane, but again this will generally be to replace the existing fleet.

2.4 Airport Role

The role of the airport influences its design and determines the type of aircraft the airport can accommodate. An airport's role is also determined by the level of services the airport provides. There are three airport roles associated with commercial service, reliever and general aviation airports. These roles are basic utility, general utility and transport. These definitions are clarified below.

Basic Utility: Basic Utility airports are small airports designed primarily for single-engine and some light twin-engine aircraft. Precision approaches are not anticipated.

General Utility: General Utility airports are designed for a broader spectrum of general aviation aircraft than are basic utility airports. The airports can accommodate air-taxi and scheduled commuter services. General Utility airports will accommodate most air-taxi and commuter aircraft with 20 seats or less and some business jet aircraft with low approach speeds. General Utility airports can serve as reliever airports when substantial use by jet or large corporate aircraft is not anticipated. Precision instrument approaches may be anticipated at some General Utility airports.

Transport: Transport airports are designed for use by aircraft that cannot be accommodated by a General Utility airport. Commercial service airports are designed as Transport airports. Transport airports also serve large corporate aircraft and business jet aircraft with higher approach speeds. Precision approaches are provided at Transport airports designated as commercial service level and at some Transport airports with a Reliever or General Aviation service level.

2.4.1 Airport Reference Code (ARC)

The Airport Reference Code (ARC) is a coding system used to relate airport design criteria to the operational and physical characteristics of the aircraft intended to operate at the airport. The airport reference code has two components pertaining to the airport design aircraft. The first component, depicted by a letter, is the aircraft approach category and relates to the aircraft approach speed, an operational characteristic. The second component, depicted by a roman numeral, is the aircraft design group and relates to the aircraft wingspan, a physical characteristic.

Basic guidelines for airport design are set forth in the FAA's Advisory Circular (AC) 150/5300-13 Airport Design. Each airport can be classified based on the aircraft which it is designed to serve using the Airport Reference Code (ARC). The ARC is established by two separate factors: Approach Category which group aircraft based on approach speed and Design Group which group aircraft based on wingspan.

Aircraft approach categories are defined as follows:

- 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 groups are defined as follows:

- Group I: Up to but not including 49 feet (with a subcategory for small aircraft).
- Group II: 49 feet or more, but less than 79 feet.
- Group III: 79 feet or more, but less than 118 feet.
- Group IV: 118 feet or more, but less than 171 feet.
- Group V: 171 feet or more, but less than 214 feet.

- Group VI: 214 feet or more, but less than 262 feet.

Operations at WVL are characterized by single and twin-engine piston aircraft, along with turbo prop and small to medium size jet activity. Previous studies identified the airport as typically serving aircraft from Category C, and Design Group II. Considering the above mentioned standards and review of the Airport activity in recent years, **WVL's current role is that of a General Utility Stage II Airport having an Airport Reference Code of C-II.**

2.4.2 Design Standard

The airport roles of Basic Utility, General Utility and Transport are refined further into runway design standards. The design standards are defined as follows.

Basic Utility Stage I. This type of runway serves 75 percent of the small (12,500 pounds or less) single-engine and twin-engine aircraft in Aircraft Approach Categories A and B used for personal and business purposes. Precision approach operations are not anticipated. This runway type is usually designed for aircraft in Airport Reference Code A-1.

Cessna 172
Sample A-I Aircraft

Basic Utility Stage II. This type of runway serves 95 percent of the small (12,500 pounds or less) single-engine and twin-engine aircraft in Approach Categories A and B. This includes all aircraft served by Basic Utility Stage I runways, plus some small business and air-taxi twin-engine aircraft. Precision approach operations are not anticipated. This type of runway is usually designed for aircraft in Airport Reference Code B-1.

Beechcraft Baron
Sample B-I Aircraft

General Utility Stage I. This type of runway serves 100 percent of the small (12,500 pounds or less) single-engine and twin-engine aircraft in Aircraft Approach Categories A and B. Precision approach operations are not anticipated. This type of runway is usually designed for aircraft in Airport Reference Code B-II.

Beechcraft King Air
Sample B-II Aircraft

General Utility Stage II. This type of runway serves all aircraft included in General Utility Stage I, plus most of the large aircraft (60,000 pounds or less) in Aircraft Approach Categories A and B. The runway may have the capability for precision-approach operations. This type of runway is normally designed for aircraft in Airport Reference Code B-II or C-II.

Cessna Caravan
Sample B-II Aircraft

Canadair CL-600
Sample C-II Aircraft

Transport. This type of runway serves all the aircraft accommodated by Basic and General Utility runways, plus general aviation aircraft in Aircraft Approach Categories C and D. This type of runway is normally designed for aircraft in Airport Reference Code C-III or D-II or III.

Gulfstream IV
Sample D-II Aircraft

Boeing 737
Sample C-III Aircraft

2.4.3 Design Aircraft

Choosing the design aircraft for an Airport is based on the family of aircraft currently and forecasted to use the facility. A review of historical IFR operations revealed that there are various aircraft in the B and C, and I and II categories utilizing the IFR capabilities of WVL. Based on the IFR information and other material obtained in this study there are no indications that the type of aircraft operating at WVL will change over the planning period.

Therefore, it can be concluded that the family of aircraft anticipated to be served by WVL during the forecast period is Approach Category C and Design Group II or an **ARC designation of C-II**. This means that the airport is designed to serve aircraft that have an approach speed of 121 knots or more, but less than 141 knots, and a wingspan of 49 feet or more, but less than 79 feet. Representative aircraft in this category can include anything from the Beechcraft King Air to the Canadair CL-600 (both shown above).

The forecasts in the next section and the facility requirements of this study will review the adequacies of the airport in serving C-II type aircraft now and throughout the planning period of 2027.

2.4.4 Projected Airport Services

The FAA Advisory Circular (AC) 150/5300-13, Airport Design, recommends the applicable design parameters critical for airports to consider during the master planning process. It is based on an airport's classification and design aircraft, which in turn is related to current and future demand. Services and design features to be considered include the runway, taxiway, apron, service facilities, and life safety systems of the airport.

For the purposes of this study, service and life safety support facilities are defined as the terminal and hangar facilities, fuel farm, maintenance storage facilities, aircraft parking, and the electrical vault.

2.5 Activity Forecasts

Activity forecasts of the master plan represent a range of annual aviation activity that WVL may experience through 2027. The forecasted activity levels are presented in five, ten and twenty year periods.

Operational forecasting provides the basis for evaluating the type of facilities needed to meet demand. By comparing the existing facilities at the airport with the facilities needed to meet future demand, timely and cost effective improvements can be planned. Federal Aviation Administration Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS), dated December 4, 2000, declares that forecasts should be:

- Realistic;
- Based on the latest available data;
- Reflect the current conditions at the airport;
- Supported by information in the study; and
- Provide an adequate justification for the airport planning and development.

The forecasts presented in this section reflect an analysis conducted on historical and forecasted data representative of both the airport and various regional, state and local indicators. An analysis was conducted to determine the number of based aircraft and the airport's total operations.

2.5.1 Historical Activity and Industry Review

Reviewing historical figures and examining the outside influences to an airport's forecast is critical to its validity. Certain trends, correlations and growth figures were obtained and applied to developing the forecast. In WVL's case, historical data such as based aircraft, total operations, the TAF for the State of Maine, and the current Maine Aviation Systems Plan Update were examined. In review, the following are the Average Annual Growth (AAG) rates for the forecasted period:

- FAA TAF State of Maine – GA Operations.....0.2%
- FAA TAF State of Maine – Based Aircraft.....0.3%
- Maine Aviation Systems Plan – Based on Population 0.7%
- FAA U.S. Active General Aviation Forecast 1.4%
- FAA TAF State of Maine – Instrument Operations 1.6%
- Maine Aviation Systems Plan – Based on Employment 1.7%

2.5.2 Forecasting Scenarios

In developing the forecast for WVL, three different forecasting scenarios were produced. These scenarios present the airport's total based aircraft and total airport operations over the forecasting period (2012, 2017 and 2027). It should be noted that the realistic period is the short range period (2012). After that period the forecast should be reassessed to track against the medium and long rang projections. Also, it should be noted that development at WVL would typically occur as the projection is realized, not at the forecasted year.

Each forecasting scenario represents a different level of growth depicting a baseline, medium, and a high growth forecast. Each of the three scenarios indicates potential strategies and assumptions for WVL's projected growth. Facility requirements will be developed that properly address the recommended forecasted growth scenario and will be included within the Master Plan.

Forecast Scenario One (Baseline)
Assumptions for this forecast include:

1. City continues to provide FBO services.
2. Assumes growth rates similar to TAF and Maine Aviation Systems Plan.
3. Level and number of services remain unchanged (status quo).
4. Limited instrument approach improvements.
5. Airport operation hours remain unchanged.
6. No investment in hangar storage space for overnight turboprop and jet aircraft.

Applies a judgment growth rate of 0.5% annually to based aircraft and operations and does not attract any additional aircraft from the WVL airport service area in the planning period.

Forecast Scenario Two (Medium)
Assumptions for this forecast include:

1. City solicits and obtains an FBO to provide services with existing facilities.
2. Once FBO in place, attracts 5 new based aircraft customers by year 5 (2012).
3. Improvement to level and number of airport services as a result of FBO.
4. Instrument approach improvements.
5. Improved airport operation hours.
6. More overnight hangar space is provided by offsetting storage of existing small aircraft to smaller hangar facilities.

Applies a judgment growth rate of 1.5% annually to based aircraft and operations and attracts 5 new single engine aircraft from the WVL airport service area by the 5th planning year (2012).

Forecast Scenario Three (High)
Assumptions for this forecast include:

1. City solicits and obtains an FBO to provide services with additional/new facilities, hangar(s).
2. City and Region gateway image is improved significantly.
3. Improved airport operation hours.
4. Improvement to level and number of airport services as a result of FBO (e.g. oxygen, deicing, catering, crew car, etc.).
5. Once FBO in place, attracts 7 new based aircraft customers by year 5 (2012).
6. New facilities attract 3 new turbo prop/jet based customers by year 10 (2017).
7. Self-serve fueling island is provided for 100LL.
8. Instrument approach improvements.

Applies a judgment growth rate of 2.5% annually to based aircraft and operations, attracts 7 new single engine aircraft from the WVL airport service area by the 5th planning year (2012), and 3 new turbo prop/jet based customers by the 10th planning year (2017).

Applying the assumed average annual growth rates and assumptions stated above, the **Table 2.4** provides a summary of the anticipated activity levels under each Scenario.

Table 2.4
Forecast of Future Activity at WVL

Scenario's	Activity	2007	2012	2017	2027
Scenario One (AAG 0.5%)	Based Aircraft	29	30	31	32
	Additional Market Share[1]		-	-	-
	Operations	13,600	13,900	14,300	15,000
	Additional Market Share[1]		-	-	-
Scenario Two (AAG 1.5%)	Based Aircraft	29	36	39	45
	Additional Market Share[1]		5	-	-
	Operations	13,600	15,900	17,200	19,900
	Additional Market Share[1]		1,295	-	-
Scenario Three (AAG 2.5%)	Based Aircraft	29	40	48	61
	Additional Market Share[1]		7	3	-
	Operations	13,600	17,200	20,200	25,900
	Additional Market Share[1]		1,295	518	-

[1] Includes increases from forecast assumptions for each scenario.
Operations increase assumed at historical 259 local ops per based aircraft.

Figure 2.2
Graph of Forecasted Based Aircraft

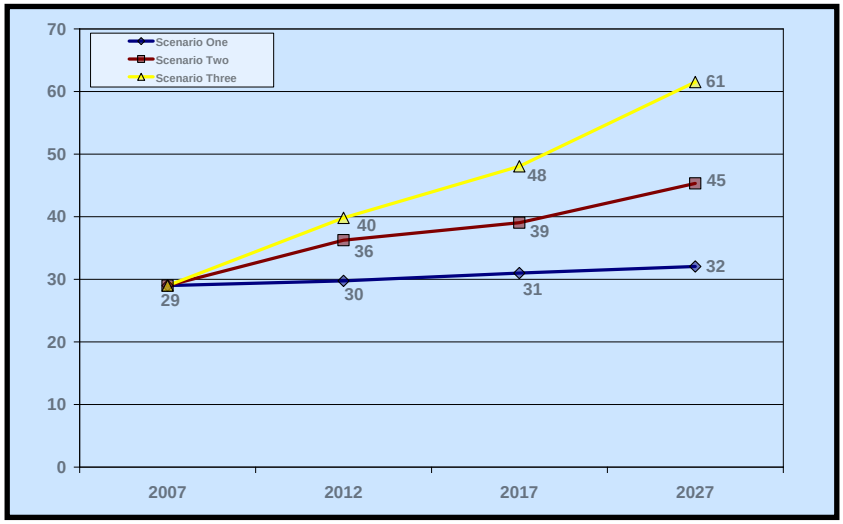
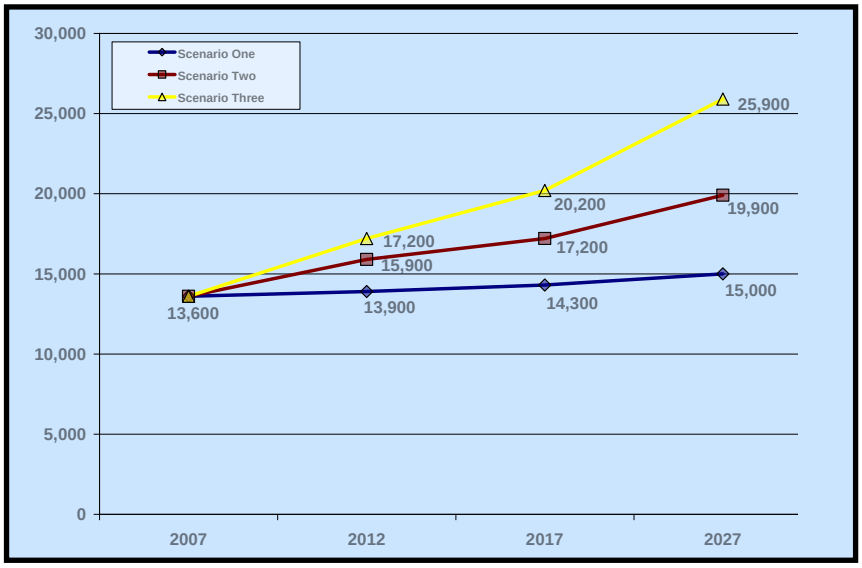


Figure 2.3
Graph of Forecasted Aircraft Operations



2.6 Summary (Recommended Forecast)

As previously discussed, published forecasts from the FAA and State of Maine System Plan project modest increases in based aircraft and total operations. In addition, FAA and industry trends predict more use of microjet aircraft. Review of the survey responses and competing airports in the area, suggest that WVL can attract more based aircraft and operations with policy changes such as increased hours of operation, contracting with an FBO, making higher quality services available to pilots and passengers and infrastructure improvements.

For these reasons, the recommended forecast for the planning period is Scenario Two – Moderate Growth. By utilizing this Scenario, the facility requirements and alternatives analysis completed later in this study, will provide Waterville with a comprehensive assessment of the needs to meet this demand for the planning period. Further, achieving the activity in this Scenario also requires meeting the stated assumptions. Utilizing Scenario Two as the recommended forecast also provides the Airport with a plan that can be adjusted, high or low, based on how the actual activity at the facility plays out over the planning period.

As a general reminder, airport forecasts are an estimate of future activity, and infrastructure expansion will only be implemented when the demand exists.

Waterville Robert LaFleur Municipal Airport
AIRPORT MASTER PLAN UPDATE

CHAPTER 3
FACILITY REQUIREMENTS

3.0 Facility Requirements

The facility analysis was completed consistent with the guidelines and standards established in FAA Advisory Circulars. This effort was conducted without consideration of any constraints, that is, to understand the requirements under an ideal situation. The physical, financial, and environmental impacts that may ultimately constrain the ability for achieving the requirements are considered in the future Alternatives Analysis Working Paper in Task 6. For those areas that are determined to be inadequate, the master plan update project will identify the required facilities to meet the demand, and identify the alternative methods to provide the necessary capacity.

The major elements of this Chapter that's comprised of Working Paper 3 analyzed the following:

- Airfield System including Design Aircraft
- General Aviation (GA) and Support Facilities
- Access Road and Automobile Parking
- Business Park

3.1 Airfield System Analysis

This section of the Paper will detail facility requirements for Design Aircraft, Design Standards, Wind Coverage, Runway Safety Areas, Pavement, Pavement Markings, Airport Fencing and Runway Length.

Design Aircraft

As stated in Chapter 1, the current Airport Reference Code (ARC) for Waterville Airport is C-II. ARC C-II is based on the most demanding aircraft type that uses the airport. This indicates that aircraft with a wingspan of less than 117 feet and approach speeds slower than 140 knots (i.e. 161 mph) are the primary users of Runway 5-23. Runway 5-23 currently has the length and FAA dimensional standards to meet C-II requirements; Runway 14-32 meets ARC B-I requirements.

After reviewing the types of aircraft in Table 3.1below that currently use and are forecast to use the airport, and the existing dimensional layout of features such as runways, taxiways, and safety areas, it was determined that the ARC for Runway 5-23 will likely remain C-II throughout the planning period. For Runway 14-32, the ARC remains B-I. Therefore, no increase in the ARCs is recommended at this time.

Table 3.1
Aircraft Types

Aircraft	ARC	Aircraft	ARC
Dassault Falcon 10	B-I	Beech King Air C90B	B-II
Beech Baron 58	B-I	Hawker Horizon	B-II
Dassault Falcon 20	B-II	Gulfstream III	C-II
Dassault Falcon 50	B-II	Beech King Air 350	C-II
Dassault Falcon 900	B-II	Hawker 800XP	C-II
Dassault Falcon 2000	B-II	Bombardier Challenger CL-600	C-II
Cessna Citation II	B-II	Bombardier Challenger CL-601	C-II
Beech King Air B200	B-II	Bombardier Challenger CL-604	C-II

Although much less frequent, a number of other large corporate aircraft nonetheless use WVL including the Bombardier Global Express (ARC C-III), the Gulfstream G-IV (ARC D-II) and the Gulfstream G-V (ARC D-III), but their current and forecast operations do not justify changes in the ARC.

Design Standards

The forecasts, inventory assessment and review of current design standards will determine the runway and taxiway improvements needed. FAA Advisory Circular 150/5300-13 entitled, *Airport Design*, sets forth recommended runway and taxiway design standards for all reference code airports. The design standards for the current and future airport facilities are set forth in **Table 3.2**. Included in this table are the existing conditions and future runway dimensions for the design aircraft. Also included are the existing conditions and the dimensions required for the recommended forecast scenario.

Table 3.2
Airfield Requirements – Airport Design Standards

	RW 5-23				RW 14-32			
FAA Geometric Design Standard	Existing		Future		Existing		Future	
	WVL	FAA	WVL	FAA	WVL	FAA	WVL	FAA
Approach Category and Design Group End	C-II	C-II	C-II	C-II	B-I	B-I	B-I	B-I
Runway Width (feet)	100	100	100	100	150	60	60	60
Runway Safety Area Width (feet)	400	500	400	500	120	120	120	120
Runway Safety Area - Length (feet)	1,000	1,000	1,000	1,000	240	240	240	240
Runway Object Free Area Width (feet)	800	800	800	800	500	250	500	250
Runway Object Free Area – Length Beyond Runway End (feet)	1,000	1,000	1,000	1,000	240	240	240	240
Runway Centerline to Taxiway Centerline Distance (feet)	400	300	400	300	NA	150	NA	300
Taxiway Width (feet)	50	35	50	35	NA	25	NA	25
Taxiway Safety Area Width (feet)	79	79	79	79	NA	49	NA	49
Taxiway Object Free Area Width (feet)	131	131	131	131	NA	89	NA	89
Taxiway Centerline to Fixed or Moveable Object (feet)	65.5	65.5	65.5	65.5	65.5	44.5	NA	44.5

Runway edge and threshold lighting consists of high intensity lighting (HIRLs) on Runway 5-23 and medium intensity lighting (MIRLs) on Runway 14-32. HIRLs are consistent with FAA standards for precision instrument runways like Runway 5-23. The lighting systems have been well maintained over the years and are generally reliable but need replacement due to age and continued deterioration. Portions of the Runway 5-23 lighting system were last replaced in 1984 and in 1987 when the runway was extended. In-pavement light foundations have become corroded and have settled into the asphalt and need replacement. The lighting system serving Runway 14-32 is in excess of 25 years old.

The present taxiway configuration at WVL is generally adequate to serve the present level of aircraft operational activity. All existing taxiways currently meet or exceed required dimensional standards for the projected planning period.

A full-length parallel taxiway to the runway is desirable for safe, efficient aircraft movement on an airport. Currently, Taxiway "A" is a full-length parallel taxiway for Runway 5-23 with intermediate connecting access (stub) taxiways designated as Taxiways "B" and "C". At the ends of Taxiway "A", the stub taxiways that connect to the present runway "5" and "23" thresholds are designated "G" and "H", respectively. As the primary instrument runway, Runway 5-23 should adequately be served with a parallel taxiway during the planning period of the Master Plan.
The infrequent use of Runway 14-32 does not currently support an immediate need for a parallel taxiway system although for safety reasons, back taxiing on a runway should be eliminated. Additional safety enhancements could be realized by widening the "throat" at the intersection of Taxiways "A" and "D" and Runway 14-32. The widened throat would increase the clearance from the runway and possibly reduce the potential conflict of taxiing aircraft inadvertently entering the runway environs, causing what the FAA terms a "runway incursion". Existing aircraft movements to or from the Runway 5 end to the terminal hangar area are inefficient and could be improved with a new access taxiway connection between Taxiway "D" and Taxiway "A". Additional taxiway improvements will be vetted in the Alternatives Analysis.

Taxiway lights serving the parallel taxiway "A" and stubs connecting it with Runway 5-23 are generally in good condition but will be due for replacement during the planning period. Taxiway lighting for Taxiway "D" and in the area of the terminal apron were installed new in 2006 and are not expected to require more than normal maintenance. The north apron does not currently have edge lighting but a significant increase in nighttime operations may warrant adding reflectors or lighting to better delineate the apron pavement and enhance aircraft safety. Both future taxiways should be constructed with provisions for medium intensity edge lighting to maintain the consistent coverage and enhance the safety of aircraft movements on the airfield.

Table 3.3 summarizes WVL taxiway requirements. Taxiway "D" was reconstructed in 2007 to a width of 40 feet. This dimension is greater than the FAA standard for Design Group II aircraft; it is presumed that the width was established for the most demanding aircraft anticipated to use the terminal apron. As taxiways are rehabilitated or reconstructed in future years, the City should consider 50-foot wide pavement widths for critical connecting taxiways of Runway 5-23 to the terminal area to preserve accommodations for Design Group III aircraft that generally have wider main gear undercarriages and wider turning radii.

Table 3.3
Taxiway Requirements

	Pavement Width (feet)			Lighting	
Taxiway Designation	Current	FAA	Future	Current	Future
A	50	35	50	Yes	Yes
B	60	35	50	Yes	Yes
C	60	35	50	Yes	Yes
D	40	35	40	Yes	Yes
G	50	35	50	Yes	Yes
H	50	35	50	Yes	Yes

Wind Coverage

Historical wind data collected from the airport's AWOS was utilized to develop new wind roses for WVL. The wind roses provide a graphical tool to analyze wind coverage of the two runways. Wind coverage is the availability of runway orientation that maximizes use by landing and departing aircraft in a variety of wind conditions at WVL. Aircraft operate more safely when landing and taking off into the wind. When wind is not in the direction or orientation of the runway, wind coverage analysis also includes "crosswinds" that affect aircraft performance.

The orientation of the primary runway, Runway 5-23, has wind coverage for over 99% of VFR and IFR operations at WVL. Combined runway coverage is 100%. Refer to the wind rose analysis graphics attached to the end of this Chapter.

FAA Advisory Circular 150/5300-13, Change 1, *Airport Design*, recommends that a crosswind runway should be made available when the primary runway orientation provides less than 95 percent wind coverage for any aircraft forecast to use the airport on a regular basis. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (12 mph) for ARC A-I and B-I; 13 knots (15 mph) for ARC A-II and B-II; and 16 knots (18 mph) for ARC A-III, B-III, and C-I through D-II; and 20 knots (23 mph) for ARC C-III through D-IV. Thus, Runway 5-23 has adequate wind coverage; an additional runway strictly for crosswind purposes is not necessary. However, Runway 14-32 is adequate for the smaller single and multi-engine general aviation aircraft that utilize the airport. As previously noted small, piston-engine aircraft are more susceptible to crosswinds greater than 10.5 knots (12 mph). The Runway 5-23 wind analysis includes typical operating conditions of small aircraft; the wind coverage is 93.59% for VFR, 98.72% for IFR and 94.30% for all weather conditions in crosswinds of 10.5 knots. Crosswind runways are often made available for arriving or departing aircraft as an alternate for smaller aircraft or to ease capacity. Since capacity is not a constraint at WVL, the City may want to consider maintaining Runway 14-32 as the alternate runway for small aircraft of ARC A-I or B-I operations only.

Runway Safety Area

Runway safety area dimensions are shown in the previous table. The existing Runway 5-23 RSA is 400 feet by 1,000 feet long on each runway end. These dimensions match those recommended in FAA guidelines for C-II aircraft, the Design ARC for Runway 5-23 at WVL. The FAA guidelines allow a smaller width, 400 feet, for C-II aircraft. The existing Runway 14-32 RSA is 120 feet by 240 feet long on each runway end. Since the ARC is not changing for either runway, the standard dimensions of the RSA are the same for the existing and future ARC.

Pavement

Except for the newly reconstructed pavements on Taxiway "D", all other airfield pavements require future rehabilitation during the planning period to continue to serve the design aircraft. All the pavements require annual maintenance including crack sealing and spot repairs. These pavement surfaces are fairly old and have weathered significantly, and there are numerous cracks developing in the pavement due to weathering and thermal stresses. It is recommended that the existing cracks on the airport pavements be repaired or sealed as early as possible. The current airport pavement conditions and rehabilitation recommendations are summarized as follows:

Table 3.4
Pavement Conditions and Recommendations

Designation	Condition	Comment
Runway 5-23	Fair to Good	Repair immediately; Reconstruct in 5-10 years
Runway 14-32	Very Poor	Reconstruct immediately
Taxiway "A"	Fair to Good	Rehabilitate in 10-15 years
Taxiway "B"	Fair	Rehabilitate in 5-10 years
Taxiway "C"	Fair	Rehabilitate in 5-10 years
Taxiway "D"	Excellent	Rehabilitate in 20 years (Reconstructed in 2007)
Taxiway "G"	Fair	Rehabilitate in 5-10 years
Taxiway "H"	Fair	Rehabilitate in 5-10 years

It is further recommended that a maintenance program of crack sealing and minor repairs be implemented as required until such time as the cost of repair makes further maintenance impractical.

The current estimated maximum gross weight of aircraft (runway pavement strength), by aircraft landing gear configuration, are as follows:

Table 3.5
Runway Pavement Strengths

Runway	Aircraft Maximum Gross Weight (pounds)		
	Single-wheel	Dual-wheel	Dual-tandem
5-23	40,000	60,000	105,000
14-32	25,000	N/A	N/A

Runway 5-23 and connecting taxiways and parking aprons must be designed to meet the most demanding airplane (critical aircraft) which is currently using or is projected to use the facility on a regular basis (defined as 500 operations per year, or more). The existing Runway 5-23 pavement is rated to support single gear aircraft with a gross weight of 40,000 pounds or dual-wheel gear aircraft with a gross weight of 60,000 pounds. These types of aircraft provide the greatest number of operations at WVL. The following table presents representative aircraft and gross take off weights of larger corporate aircraft:

Table 3.6
Corporate Aircraft Take Off Weights

Representative Aircraft [ARC]	Max. Takeoff Weight (pounds)
Bombardier Challenger 600 [C-II]	43,100
Cessna Citation X [C-II]	36,100
Gulfstream G-III [C-II]	67,700
Gulfstream G-V [D-III]	90,500
Beech King Air 350 [C-II]	15,100
Hawker 800 [C-II]	28,000

The Gulfstream G-V was used as the critical aircraft for the pavement strength design of the 2007 Taxiway "D" and terminal area pavements. The pavement strength for dual-tandem gear aircraft is 105,000 pounds, but the aircraft listed in the table above use the airport infrequently. None of these

individual aircraft currently use or are forecast to use the airport at a level of 500 operations per year. However, these heavier aircraft represent a group of corporate aircraft that should be considered in future pavement design for Runway 5-23 and associated taxiways. Anecdotal evidence suggests that limited operations of heavier aircraft can operate without damage or a significant reduction in the pavement's service life. Nevertheless, the city should continue to monitor the frequency of heavier aircraft and consider pavement strengthening in future projects.

Beyond strength requirements, the presence of frost susceptible soils at WVL also needs consideration in future pavement designs. Differential frost heaving of Runway 5-23, which is evident just north of the runway-runway intersection, will need to be addressed and corrected.

The inspection of Runway 14-32 conducted under the facilities inventory revealed that the asphalt pavement has extensively deteriorated over time to the extent that the runway has become virtually dysfunctional. The presence of rutting along with the high frequency alligator cracking also indicates that the structural base of the pavement may be inadequate. The thickness of the pavement section and/or the quality of the materials used may be insufficient to accommodate the loadings imposed on the runway. A more comprehensive pavement evaluation would be completed as part of a future design effort prior to reconstruction of Runway 14-32.

As previously discussed, the future ARC for Runway 14-32 is expected to be limited to B-I due to constraints on the runway length. Most aircraft in the B-I category typically weigh less than 12,500 pounds, therefore requiring no change in the current pavement strength rating. However the potential weight of loaded snow plow trucks on this runway will likely govern the pavement strength design for a future Runway 14-32 upgrade.

With regard to taxiway pavements, the newest taxiway to be reconstructed is designated "D" and was completed in 2007. The pavements of Taxiways "A", "B", "C", "G", and "H" remain in generally fair to good condition at the present time but have aged to the extent that they require regular maintenance and periodic repairs to keep them safe and functional. Future reconstruction of these taxiways should be designed with strength capacities of the respective design aircraft, with consideration to the existing frost susceptible subgrade conditions on the airfield as well as the weight of snow removal equipment expected to maintain these pavement surfaces.

The terminal area pavement was reconstructed in 2007 and is in excellent condition. However the area within 60 feet of the front of the terminal aircraft hangar was not reconstructed and exhibits extensive cracking. Therefore reconstruction of this pavement is recommended during the planning period.

Pavement Markings

Pavement markings need to be repainted on Runway 5-23 to increase conspicuity and conformity with current FAA advisory circular 150/5340-1J standards. Runway holding position markings, with the exception of those on TW "D", need to be repainted with 12-inch wide lines in conformance with current standards.

The markings on Runway 14-32 are very faded while markings on the north ramp are almost non-existent. Other markings on the parallel taxiway system were functional at the time of the inspection. Markings on Taxiway "D" in the terminal area were installed new in 2007. Adding precision or non-precision approach capability to either runway will require improving the current markings accordingly.

Runway Length

The runway length required for an airport is based on standards presented in FAA AC 150/5300-13, Chapter 3 and FAA AC 150/5325-4A, Runway Length Requirements for Airport Design. The recommended length for a primary runway at an airport is determined by considering either the family of airplanes having similar performance characteristics, or a specific aircraft requiring the longest runway. This need is based on the aircraft or family of aircraft that use the airport on a regular basis, where "regular basis" is typically defined as a minimum 500 operations per year. Additional factors considered include critical aircraft approach speed, maximum certificated takeoff weight, useful load and length of haul, the airport's field elevation above sea level, the mean daily maximum temperature at the airfield, and typical runway surface conditions, such as wet and slippery.

The runway length analysis for WVL was performed using FAA Airport Design Computer Program 4.2D and procedures outlined in FAA AC 150/5300-13. The program includes an aircraft fleet profile designed to be representative of the small and large aircraft that comprise the general aviation aircraft fleet in the United States.

For WVL the program identified a recommended maximum runway length for the major aircraft (i.e., 100% of the aircraft fleet) as follows:

- 3,650 feet for small aircraft (less than 10 passenger seats)
- 4,170 feet for small aircraft (10 or more passenger seats).
- 5,800 feet will accommodate 100 percent of large aircraft (60,000 pounds or less) at 60 percent useful load. There are occasions however, when the payload of a specific aircraft may be higher than 60 percent, and may even approach the maximum practical payload of 90 percent.

The term useful load for this planning purpose refers to the difference between the maximum allowable structural gross weight and the operating empty weight of the aircraft in question. FAA guidelines require the selection of 60 percent or 90 percent useful load to be based on the length of haul and service needs of the critical design aircraft, and note that the 60 percent useful load table is to be used for those airplanes operating with no more than a 60 percent useful load factor. For this planning effort, it is assumed that most aircraft will be operating at or near the 60 percent useful load factor.

The following table defines the runway length requirements developed using the FAA program and reflects runway lengths for small airplanes and large airplanes (with both 60 percent and 90 percent useful loads). Using the "Airport Input Data" noted in the table, the runway length requirements produced by the FAA computer program shows that the existing 5,500 foot length of the primary Runway 5-23 was adequate to accommodate 100% of the small aircraft fleet.

Table 3.7
Aircraft Runway Length Requirements

Airport Input Data	
Airport Elevation (MSL)	333 feet
Mean daily temperature of the hottest month	81.0 F degrees
Maximum difference in runway centerline elevation	63 feet
Runway Length Recommended for Airport Design	
Small airplanes with less than 10 passenger seats: 75% of these small airplanes 95% of these small airplanes 100% of these small airplanes	 2,520 feet 3,060 feet 3,650 feet
Small airplanes with 10 or more passenger seats	4,170 feet
Large airplanes of 60,000 pounds or less: 75% of these large airplanes at 60 percent useful load 75% of these large airplanes at 90 percent useful load 100% of these large airplanes at 60 percent useful load 100% of these large airplanes at 90 percent useful load	 5,260 feet 6,750 feet 5,800 feet 8,300 feet
Airplanes of more than 60,000 pounds (500 mi. length of haul) Airplanes of more than 60,000 pounds (1000 mi. length of haul) Airplanes of more than 60,000 pounds (1500 mi. length of haul)	 5,130 feet 6,090 feet 6,970 feet

Source: FAA Airport Design Computer Program 4.2D.

As a result of the above findings, the runway length calculation from the FAA program for small aircraft was checked against the runway requirements for the Airport's family of critical aircraft (ARC C-II), to determine if special circumstances would require additional runway length. C-II aircraft are those aircraft with approach speeds of 121 knots or more, but less than 141 knots and wingspans 79 feet or more, but less than 118 feet.

Table 3.8
Runway Length Requirements – WVL Representative Aircraft

Aircraft	Approximate Runway Required (feet)[1]
Beech 99	2,500
Bombardier Learjet 60	5,450
Bombardier Challenger 850	6,295
Beechcraft Hawker 850XP	5,032
Dassault Falcon 50	4,890
Cessna 172 Skyhawk	1,685
Raytheon King Air B-200	2,579
Eclipse 500 Micro Jet	2,342
Cessna Citation CJ1	3,250
[1] Runway length assumes sea level elevation, standard temperature and maximum landing weight	

Source: Manufacturer Data

As the table indicates, all representative aircraft operating under standard conditions (sea level, 59.0°F, and barometric pressure of 29.92) can operate in and out of WVL with the current runway length. Poor weather and hotter temperatures will increase the runway length required and may limit the length of haul or aircraft weight.

Currently, there is no demand at WVL to consider lengthening either runway during the planning period of this Master Plan.

Instrument Approaches

Airport navigational aids, or NAVAIDS, provide electronic navigational assistance to aircraft for approaches to an airport. NAVAIDS are either, visual approach aids or instrument approach aids. The types of approaches available at an airport are based on the NAVAIDS that are provided.

Instrument approaches are generally designed such that an aircraft, in poor weather conditions, by means of a radio, Global Position System (GPS), or an internal navigation system and with no assistance from air traffic control, can navigate to and land safely at an airport. Approach procedures are classified into various categories to include a precision approach, precision Approach Procedure with Vertical guidance (APV) and non-precision approaches. A precision approach is an instrument approach that provides the pilot with both lateral and vertical guidance information. An APV approach is an instrument approach that provides the pilot both course and vertical path guidance information, but does not conform to ILS system performance standards. A non-precision approach provides the pilot with course information only. By moving towards greater levels of precision and approach lighting an airport can improve the margin of safety for aircraft operating in adverse weather conditions.

Several types of precision instrument approach technologies are available to airports. They include systems such as an Instrument Landing System (ILS), Microwave Landing System (MLS), GPS (with vertical navigation via Wide Area Augmentation System (WAAS)/Local Area Augmentation System

(LAAS)). APV approach technologies include the WAAS based Localizer Performance with Vertical Guidance (LPV), Lateral Navigation/Vertical Navigation (LNAV/VNAV) and Barometric Vertical Navigation (Baro-VNAV) approaches. Non-precision approach technologies include the VHF Omni-directional Radio Range (VOR), Non-Directional Beacon (NDB), Localizer (LOC), LDA Simplified Directional Facility (SDF) or Radio Navigation (RNAV). All of these technologies have allowed the Federal Aviation Administration (FAA) to design a variety of approach procedures to help ensure the safety of aircraft during various phases of flight and poor weather conditions.

FAA funding for a new NAVAID and approach procedure is based upon demonstrating the associated need, practicality, safety benefits, and expected aviation activity at the airport. In developing a new approach procedure, the FAA considers the accuracy of the navigational aid, penetrations to the Part 77 and TERPS airspace surfaces, an airport's landing surface (runway length, lighting, markings, design criteria, etc.), and other factors as outlined in the FAA's Advisory Circular 150/5300-13, Airport Design. It is important to note that the FAA indicates a significant reduction in minima (i.e. ¼ mile reduction in visibility and/or 50 foot reduction in decision altitude or minimum descent altitude) would constitute a new approach procedure.

The following table identifies WVL's instrument approaches, as well as the visibility minimums required for each approach.

Table 3.9
WVL Instrument Approaches

Runway	Instrument Approach	Visibility Minimums
5	Precision ILS	¾ mi. (all aircraft categories)
5	VOR/DME/GPS	Category A or B Aircraft: 1 mile Category C Aircraft: 1 ¼ miles Category D Aircraft: 1 ½ miles
23	RNAV (GPS)	Category A or B Aircraft: 1 mile Category C Aircraft: 1 ¼ miles Category D Aircraft: 1 ½ miles

Source: Airnav.com

GPS and other GPS augmented technology (WAAS/LAAS) can ultimately provide the airport with the capability of establishing new instrument approaches at minimal cost since there is not a requirement for the installation and maintenance of costly ground-based transmission equipment. To accommodate these type approaches, the airport landing surface must meet specific standards as outlined in FAA AC 150/5300-13, Airport Design. The FAA requires that the airport must have a minimum runway length of 3,200 feet, but states that airports having runways as short as 2,400 feet could support an instrument approach if the lowest HAT (Height Above Threshold) is based on clearing a 200-foot obstacle within the final approach segment. A more precise approach system usually results in lower operating minimums. Essentially, lower operating minimums are achieved by increasing precision of the navigational system.

As mentioned, the primary runway at WVL provides more than 95% wind coverage and the current crosswind runway at 2,301 feet in length does not meet the FAA's typical criteria for the installation of a precision instrument approach. With these considerations, the upgrade or addition of instrument approaches for Runway 14-32 is not a priority at this time.

Due to poor maintenance or obsolescence, the VASIs on Runway 5-23 should be replaced with current FAA standard PAPIs. Based on survey comments and stakeholder interviews, the airport should consider upgrading the existing MALSF approach light system to a MALSR for two major reasons - the MALSR provides additional safety thresholds for pilots and it will improve approach minimums (e.g. ½ mile visibility) thereby enhancing aircraft operational safety. It also offers a similar instrument approach procedure consistent with nearby airports, making WVL an alternative airport for pilots choosing the central Maine region for their destination. It should be noted however that the FAA recently indicated such an upgrade is unlikely in the near term.

The following table summarizes NAVAID requirements during the planning period for the Waterville Airport. They are based on guidance contained in 150/5300-13, *Airport Design*, and FAA Order 7031.2C, Airway Planning Standards Number One-Terminal Air Navigation Facilities and Air Traffic Control Services.

Table 3.10
NAVAID Requirements

NAVAID's	Analysis Comment
VASI[1]	Replace RW 23 2-box system with PAPI system. Installed prior to 1990 Replace RW 5 4-box system with PAPI system. Installed prior to 1990.
REILs	Replace RW 23 system. Installed prior to 1990.
MALSF	Monitor condition and maintain. Consider upgrade to MALSR
Localizer	Monitor condition and maintain
Glide Slope	Monitor condition and maintain
Wind cone & segmented circle	Replace non-functional wind cone lighting components. Segmented circle markers need repainting to improve conspicuity[2].

[1]The VASI units are being phased out by the FAA to be replaced with Precision Approach Path Indicators (PAPI) units. The VASIs are now obsolete and should be replaced with the newer PAPI systems at the earliest opportunity. The PAPIs have a greater visible range for pilot use than the VASIs and comply with current Federal standards.

[2]The installation of a supplemental wind cone may be desirable in the future to provide pilots with a continuing visual indication of wind conditions at the Runway 5 end in accordance with FAA advisory circular 150/5340-30C.

Airport Fencing

Metal chain link fencing surrounds the airfield and is generally in good condition. However, the fence does not meet FAA standards as airport security fencing. The existing fence is less than eight feet in height in many areas and is not topped with barbed wire in some areas. The fence has become severely overgrown with vegetation along much of its length. Extensive clearing of the fence will be needed along both sides of the fence to improve its visibility from outside the airport. Some localized repairs will be needed to repair holes and broken wire and stanchions. Signage along the fence line is also recommended to warn potential intruders of the adverse consequences associated with trespassing. Improvements to the fencing would also provide an added advantage of reducing wildlife incursions, thereby reducing the risk of aircraft-wildlife incidents.

Approximately 20,000 linear feet of airport fence improvements should be programmed during the planning period. The needed improvements consist of clearing existing and future fence lines, replacing existing fence segments that are currently undersized, relocation of existing fence to maximize airport land use, making fence repairs, and upgrading selected existing access control gates. The airport should focus initially on clearing fence lines and making needed fence repairs. Future upgrades of the fence and gates should be prioritized and completed in phased projects pursuant to airport development priority and funding availability.

Land Acquisition

Airports occasionally need to acquire land for the expansion of the airport or for the protection of runway approaches. Waterville currently maintains standard Runway Safety Areas (RSAs) within the existing airport property and airport facility requirements have demonstrated no need for runway extensions for either runway at WVL. The existing footprint of airport property provides adequate acreage to meet the forecasted apron and hangar area requirements throughout the planning period.

Land acquisition or easements may be considered in the alternatives analysis should land or easements be needed to clear obstructions or maintain standard runway protection zones for each runway end. Since zoning is controlled around the airport via the City's Airport Zoning Ordinance, any development should remain below these surfaces that mirror FAR Part 77 protected surfaces, thereby reducing or eliminating the need to clear or mark obstructions. Upgrading the MALSF to a MALSR would also require land acquisition or easements on the Runway 5 approach area.

3.2 General Aviation (GA) and Support Facilities Analysis

This analysis examines GA Support components such as; aircraft parking (apron), terminal/administrative requirements, and hangar space. This analysis will provide an estimate of the facility demand and compare it with existing facilities to determine future needs for:

- GA Terminal Building
- Apron and Hangar Space Requirements
- Fuel Storage Facilities

GA Terminal Building

As mentioned within the inventory chapter, the interior of the terminal building has been recently remodeled and consists of a reception area, passenger lounge, pilots lounge, conference room, pilots briefing room, and FBO offices. The second floor includes FBO offices, an FBO apartment, an engineering office with adjacent plan room and several vacant rooms.

The FAA has developed methods of estimating general aviation terminal requirements. The method, found in FAA A/C 150/5300-13, Airport Design, relates peak period activity to the size of functional areas within the building. The following table sets forth the recommended square footage requirements per pilot/passenger.

Table 3.11
General Aviation Terminal Building Area Requirements

Terminal Functional Areas	Area Per Peak Hour Pilot / Passenger (sq. ft)
Waiting Lounge	15.0
Management/Operations	3.0
Public Conveniences	1.5
Concession Area	5.0
Circulation, Storage, HVAC	24.5
Total	**49.0**

Using the standards in the **Table 3.11**, the recommended terminal building size was determined and is presented in the following table. The peak hour was determined by taking the average of the peak month total, dividing it by 31 days, and using the generally accepted level of peak hour operations of 15% of the design day operations. The peak hour pilot/passengers were derived by assuming 1.5 passengers and pilots per peak period operation, which is a reasonable assumption for airports such as WVL.

Table 3.12
Recommended Terminal Building Area Requirements

Year	Peak Hour Operations	Peak Hour Pilot and Passengers	Terminal Building Area (sq. ft)
2007	8	12	588
2012	9	14	686
2017	10	15	735
2027	12	18	882

The existing terminal square footage data was unavailable during the development of this working paper, however, once obtained, the existing value will be analyzed in the Alternatives Analysis and compared to the forecast calculations to determine if the current terminal facility meets the facility objectives set forth by the FAA. Currently, it would appear that the existing terminal space is adequate to handle the aeronautical activity that the airport experiences today. Aside from size requirements, business community interviews and pilot survey results indicated that improvements were needed to the condition of the existing facility to provide a more positive "gateway" image to the community.

Aircraft Apron Parking Requirements

The apron area requirements shown in this section were developed according to the recommendations given in FAA AC 5300-13, "Airport Design". Consideration must be made in the overall apron requirements for aircraft parking, taxilanes, adjacent taxiways, proximity to buildings and fueling areas. The apron layout should be designed to accommodate all aircraft using the airport, including turbo-prop and jet aircraft. A planning criterion of 300 square yards per based aircraft and 360 square yards per transient aircraft was used.

Currently, the aprons are divided into three areas:

- The Terminal Apron, directly in front of the main hangar, is approximately 0.6 acres in size (2,900 square yards). This area is used for temporary (transient) aircraft parking.

- The general aviation tie-down apron, located near the main hangar has 16 designated aircraft tie-down positions (approximately 4,800 square yards). This apron is used for both short and long term (based) aircraft parking.

- On the northwest area of the field, the aircraft apron located in the old terminal area in front of the former Telford hangar is approximately 0.9 acres in size (4,356 square yards). This pavement has been neglected for many years and is in very poor condition and is not currently used to park aircraft.

These aircraft parking aprons total approximately 12,056 square yards.

A parking apron should provide for the number of locally based aircraft that are not stored in hangars, and for those air taxi, training and itinerant aircraft anticipated to use the facility.

For planning purposes, 50 percent of the based aircraft total will be used to determine the parking apron requirements of based aircraft.

The aircraft apron parking requirements for based and itinerant aircraft are calculated in the tables below. These numbers are derived by using the medium growth forecast scenario (scenario 2) in order to determine potential facilities required to meet projected demand.

Table 3.13
Based Aircraft Apron Parking Requirements

Based Aircraft	2007	2012	2017	2027
Single-Engine	29	36	39	45
Requirements @ 300 sq. yds. * 50%	4,350	5,400	5,850	6,750

Source: The Louis Berger Group, Inc. Calculations

To derive the itinerant aircraft apron parking requirements, the Average Day of the Peak Month was used. July was determined to be the peak month, averaging 12% of the annual operations. This percentage was applied to the existing and future operations numbers and then divided by 31 to represent a Peak Day. Based on a split between historical local and Itinerant operations data, Itinerant Peak Day operations were assumed to be 45% of the operations. It was then assumed that approximately 50% of the Peak Day Itinerant traffic will need parking space. The results are shown in the table below.

Table 3.14
Itinerant Aircraft Apron Parking Requirements

Year	Average Peak Day Itinerant Operations	Average Peak Day Itinerant Aircraft	Required Itinerant Apron (sq yds)[1]
2007	24	12	4,320
2012	28	14	5,040
2017	30	15	5,400
2027	35	18	6,480

[1]Apron area shown provides 360 sq. yds/aircraft

Source: The Louis Berger Group, Inc. Calculations

Table 3.15

Based and Itinerant Aircraft Apron Parking Requirements

	2007	2012	2017	2027
Based Aircraft Apron Requirements (sq. yds)	4,350	5,400	5,850	6,750
Itinerant Aircraft Apron Requirements	4,320	5,040	5,400	6,480
Sub-total	8,670	10,440	11,250	13,230
Existing Area	12,056	12,056	12,056	12,056
Surplus(+)/Deficiency(-)	**+ 3,386**	**+ 1,616**	**+ 806**	**-1,174**

Source: The Louis Berger Group, Inc. Calculations

These aircraft apron requirements will be used when considering future hangar development. In addition, it is important to note that the ample apron area stated through 2017 in the table above includes the 4,356 square yards of apron on the northwest area of the field. Although the northwest apron is not currently used due to its poor condition, the facility analysis in this Working Paper considers all available apron areas regardless of condition, therefore calculations are unconstrained. The usefulness of this area, the need for rehabilitation, and operational efficiency of its location will be considered in the Alternatives Analysis. The Alternatives Analysis will also evaluate the efficiency of the apron layout, orientation and overall maneuvering space.

Hangar Space Requirements

Utilization of hangar space varies as a function of local climate, security, and owner preferences. The trend in general aviation aircraft (single or multi-engine) is toward more sophisticated and consequently, more expensive aircraft. Therefore, many aircraft owners prefer enclosed hangar space to outside tie-downs. This is particularly true for cold-weather climates like Maine.

The demand for aircraft storage hangars is dependent upon the number and type of aircraft expected to be based at the airport in the future. For planning purposes, it is necessary to estimate hangar requirements based upon forecasted operational activity. Hangar space requirements by aircraft type can be found in the table below.

Table 3.16
Hangar Requirements by Aircraft Type

Aircraft Type	SF per Aircraft	% of Aircraft to Require Hangar Space
Single Engine	1,200	50%
Multi-Engine	1,400	100%
Turboprop	1,800	100%
Turbojet	3,500	100%

Currently, WVL has four types of hangars that are used for aircraft storage. The hangars are:

- The Terminal hangar (approximately 12,800 square feet), located adjacent to the GA terminal;
- The Blue Sky Hangar (approximately 8,000 square feet), located at the end of Taxiway "D";

  The North Hangar (approximately 5,400 square feet), located adjacent to the old terminal apron. This hangar currently serves as the airport maintenance and snow removal equipment (SRE) storage building; and

- Private Conventional Hangars (1,764 square feet each). There are currently 8 hangars of this type that provide a total of 14,112 square feet of hangar space.

Total hangar space at WVL is 40,312 square feet.

Using the results of the user survey, combined with experience at other airports, the number of aircraft that will use hangars was estimated. It is assumed that larger higher value aircraft are more likely to be stored in a hangar, as well as 100% of the based multi-engine aircraft fleet.

Determining the needs for Itinerant aircraft storage can be difficult at most airports, since conditions can vary drastically from one airport to the next. It is hard to establish a realistic relationship between itinerant operations and the need for hangar space. Considering an IFR fleet mix established for WVL that includes high priced sophisticated aircraft, along with severe winter conditions in the form of heavy ice or snow that the airport experiences, requirements for hangar storage throughout the forecast period were estimated and provide 7,500 square feet of itinerant storage by 2017.

As was the case with existing apron area, the existing hangar area includes hangar space on the airport that is not currently used to store aircraft, i.e.; the North Hangar. The following table shows the deficiencies or surplus of hangar space as it relates to the forecast based and itinerant aircraft numbers.

Table 3.17
WVL Based and Itinerant Aircraft Hangar Requirements

	2007	2012	2017	2027
Based Aircraft Hangar Requirements - single-engine (sq. ft)	14,400	18,000	19,200	22,800
Based Aircraft Hangar Requirements - multi-engine	7,000	8,400	9,800	11,200
Itinerant Hangar Requirements	3,500	5,000	7,500	7,500
Sub-total	24,900	31,400	36,500	41,500
Existing Area	40,312	40,312	40,312	40,312
Surplus(+)/Deficiency(-)	**+ 15,412**	**+ 8,912**	**+ 3,812**	**-1,188**

Source: The Louis Berger Group, Inc. Calculations

Fuel Storage Facility

Chapter 1 identified existing on-airport fuel storage capacity. Typically, fuel storage requirements are based on the average forecasted number of operations and a fuel ratio estimated by analyzing fuel flowage data. Dividing the annual consumption by the estimated annual operations results in the estimated average fuel consumption per operation. Accurate historical operations data that differentiates the number of jet operations from the number of piston driven aircraft operations was unavailable. However, complete fuel data for 2006 was available for analysis.

Fuel records indicated that a total of 13,787 gallons of Av Gas and 43,260 gallons of Jet A fuel were sold for the 2006 calendar year. Although calculations cannot be made that compute an average amount of fuel sold per operation, 2006 fuel sales data indicates that the current fuel capacity a WVL is sufficient to accommodate the number of forecasted operations throughout the planning period. Airport survey results revealed that there have not been any issues concerning the lack of fuel quantities at the airport in recent history. However recent interviews with airport operations personnel indicated that WVL has run out of JET A during isolated, specific peak period events and that airport staff sometimes struggle to manage deliveries because of the available storage capacity verses the gallons required to purchase full loads of fuel. Such events include Parent's Weekend and Commencement weekend for Colby College. Although additional capacity for Jet A may be ideal, the cost for upgrading the facility could be unrealistic in the short term. Nevertheless, the City should monitor this situation closely; proper planning of additional (temporary) resources may suffice as a short-term measure in order to satisfy the demands of WVL's corporate aircraft users. This issue should also be considered when updating airport minimum standards, and particularly when hiring a new FBO.

Airport user survey results also uncovered the need for a self fueling station to dispense 100 LL Av Gas fuel on the airport. Experience at airports similar to WVL suggests that this would be a beneficial service to its customers, however this issue should be considered in the context of hiring a future FBO. Providing the airport successfully monitors consumption levels, schedules fuel deliveries based on projected demand and institutes on-demand operational contingencies, the existing tank capacities should be capable of accommodating short-term future demand. However any significant increase in jet or turbine aircraft activity will require reassessment of Jet A storage. Finally, the City should continue to monitor fuel storage issues as it relates to local, state and federal regulatory requirements for environmental protection and fuel storage safety.

Airport Rescue and Firefighting (ARFF) Equipment and Garage

All ARFF equipment resides at the City of Waterville central fire station located at 7 College Avenue, approximately 3.5 miles from the airport. Probable response time to WVL according to the fire department is five minutes, day or night. Dedicated, on-airport ARFF equipment will probably not be needed during the planning period unless the airport desires to move toward FAA certification under FAR Part 139 for scheduled passenger service. Part 139 compliance requires dedicated ARFF equipment and personnel to meet response times. Currently, there is no on-airport building that is suitable for housing ARFF equipment other than hangars intended for aircraft storage.

Snow Removal Equipment (SRE) and Airport Maintenance Equipment

The City provided a list of SRE equipment to the consultant however condition ratings were not assessed at the time of this writing. The airport staff is currently assisted by the City of Waterville public works department to perform snow removal functions at WVL. Equipment that is dedicated for airport use includes the snow blower with carrier vehicle, a dump truck with a plow and a pickup with plow.

Another dump truck with sander belongs to the City and is used on the airport periodically but is not dedicated for airport use.

The airport's snow blower will likely need to be replaced during the planning period. Other equipment currently used for snow removal at WVL is also used by the City for highway snow removal and is stored at the City public works garage which is more than 3 miles from the airport.

The airport is eligible to receive Federal funding assistance for snow removal equipment. The following equipment would likely be eligible under AIP and could improve snow removal efficiencies at the airport:

- Class II Snow Blower
- Front End Loader
- Ramp plow blade attachment
- Snow bucket attachment
- Broom attachment
- Material spreader attachment

An updated and reliable dump truck with front and side mounted snow plow blades is also needed to rapidly remove snow from the primary runway and connecting taxiways. A snow blower should efficiently remove snow piles and windrows from the edges of airfield pavements. After snow has been plowed from the airfield pavements, the snow blower is needed to blow the snow piles and windrows up and over the edge lights and guidance signs and to ensure that accumulated snow piles and windrows do not obstruct protected airspace adjacent to the runways or adversely affect aircraft movements. As an alternative, a loader can remove windrows away from lights and signs.

The City of Waterville does not have an adequate and dedicated facility on the airport to store and maintain its snow removal equipment. This equipment is temporarily being stored in the North Hangar (formerly the Telford Aviation hangar) until such time as this facility is again used for aircraft.

The only other (marginally) suitable storage building presently on the airport not intended for aircraft that is used to store SRE items is a corrugated metal arch building located on the south side of the former Blue Sky Aviation hangar at the end of Taxiway "D". This building is not insulated and has a dirt floor with wooden doors that are not weatherproof. The size of this building (approximately 30 feet by 50 feet) and its current condition limits its use for SRE storage; it is not suitable as a long term solution.

Other airport maintenance such as mowing and general airfield repairs are currently provided by the City of Waterville Public Works Department. There are currently no facilities on the airport to store such maintenance vehicles and/or equipment that are needed and may be acquired in the future.

Airport Utilities

The airport terminal building currently draws domestic water from an on-site well and utilizes a stand alone on-site septic system. The existing City water and sewer utilities along Airport Road currently terminate at the former airport terminal building (now the bus station). As such, and with consideration to additional future sewer effluent disposal needs from aircraft lavatory carts, the airport should evaluate a fee structure for extending the City water and sewer services to the terminal hangar.

The terminal building is currently and adequately served with electrical, and communications utilities which include Wifi and DSL connections for resident staff and airport users.

The north hangar currently has overhead electrical service from Airport Road.

The recently constructed general aviation hangars off of Taxiway "D" are served by underground electrical power that is fed along Mitchell Road from the south. Observations by airport staff note that upgrades to this electrical infrastructure will be required as additional privately owned hangars on either side of Taxiway "D" are contemplated during the planning period.

As the airport develops, it will be necessary to extend the utilities to service the new facilities. In order to plan an orderly development of the airport, a Utility Master Plan should be prepared that shows the location and size of all required utilities.

3.3 Access Road and Automobile Parking Analysis

As stated in the Baseline Conditions, convenient automobile access to the Waterville LaFleur Airport is available from both Interstate 95 and the City of Waterville's business district. Current access provides sufficient ingress and egress to and from the airport's existing facilities as well as the Airport Business Park. Issues have been revealed through this master plan process concerning the lack of adequate traffic signals at the intersection of Kennedy Memorial Drive and Airport Road. Additionally, considering the current location of the airport terminal building, improved signage is needed along the ingress route to the airport terminal building if the terminal is to remain in its current location.

Automobile Parking

Currently, the airport provides 16 vehicle parking spaces and one handicapped parking space located west of the terminal building. Through airport visits and airport user interviews, current auto parking capacity is sufficient to accommodate the existing demand at the airport. Increased aeronautical activity and future airport development is often directly related to the number of vehicle spaces required at various locations surrounding the facility. General Aviation user accommodations should provide sufficient on-site customer and tenant vehicle parking spaces based on the type of activity proposed. For instance, consideration should be given to corporate aircraft needs such as loading and off-loading passengers and cargo, and for potential future rental car space. These issues should be explored further in the Alternatives Analysis.

3.4 Business Park Analysis

In 2002, the City received a Permit for the development of an Airport Business Park adjacent to the Airport. The business park consists of 9 lots totaling approximately 41.5 acres. The City retained ownership of two of the 9 lots. In terms of economic development, the Airport Business Park continues to be a high priority to the City. Key points relating to the Business Park development and cited on the City's website include:

- A location with close proximity to Interstate 95
- Developed Infrastructure (power, water, sewer)
- Discounted Site Sales
- Public Private Partnerships
- Proactive Municipal Government
- Adjacent to a Free Trade Zone

Airport Business Parks are typically designed for Corporate Headquarters, Technology, Light Industrial, and Research and Development (R&D) type businesses, however, this Master Plan scope is limited to

addressing businesses that have an aeronautical function and could reasonable occupy space in the Airport Business Park. Non-aviation type businesses are not considered as part of this effort. At this point in the master plan process, there are no pending proposals for development in the Airport Business Park.

The demand for space at the Airport Business Park may be impacted by the nearby First Park (www.firstpark.com) initiative which is coined as Maine's Premier Business and Technology Park. While it appears that these two business park's may be competing with each other, the type of activity that these parks are designed for are different. From an aviation perspective in this master planning process, aviation type business that may occupy the Airport Business Park could include, but are not limited to:

- Aircraft Interior/upholstery services
- Avionic sales and repair
- Pilot Supply shop
- Catering services
- Aircraft Mobile Detailing headquarters

Many of these types of operations require a nearby airport for demand, but do not necessarily need to be located on airfield accessible property. Airfield accessible space is mostly reserved for aviation businesses that are directly related to aircraft use; their service prefers direct access or contact to aircraft. Such businesses include: flight training schools, aircraft maintenance shops, aircraft sales, aircraft painting, etc. Unfortunately, the proximity of the airport business park to active aeronautical surfaces (e.g. taxiways) as well as site topography and severe wetlands constraints make it extremely difficult to develop aeronautical use that requires aircraft access to the airfield. Therefore, it would appear that future development of the airport's business park for aviation use is limited; it offers more opportunity for non-aeronautical use.

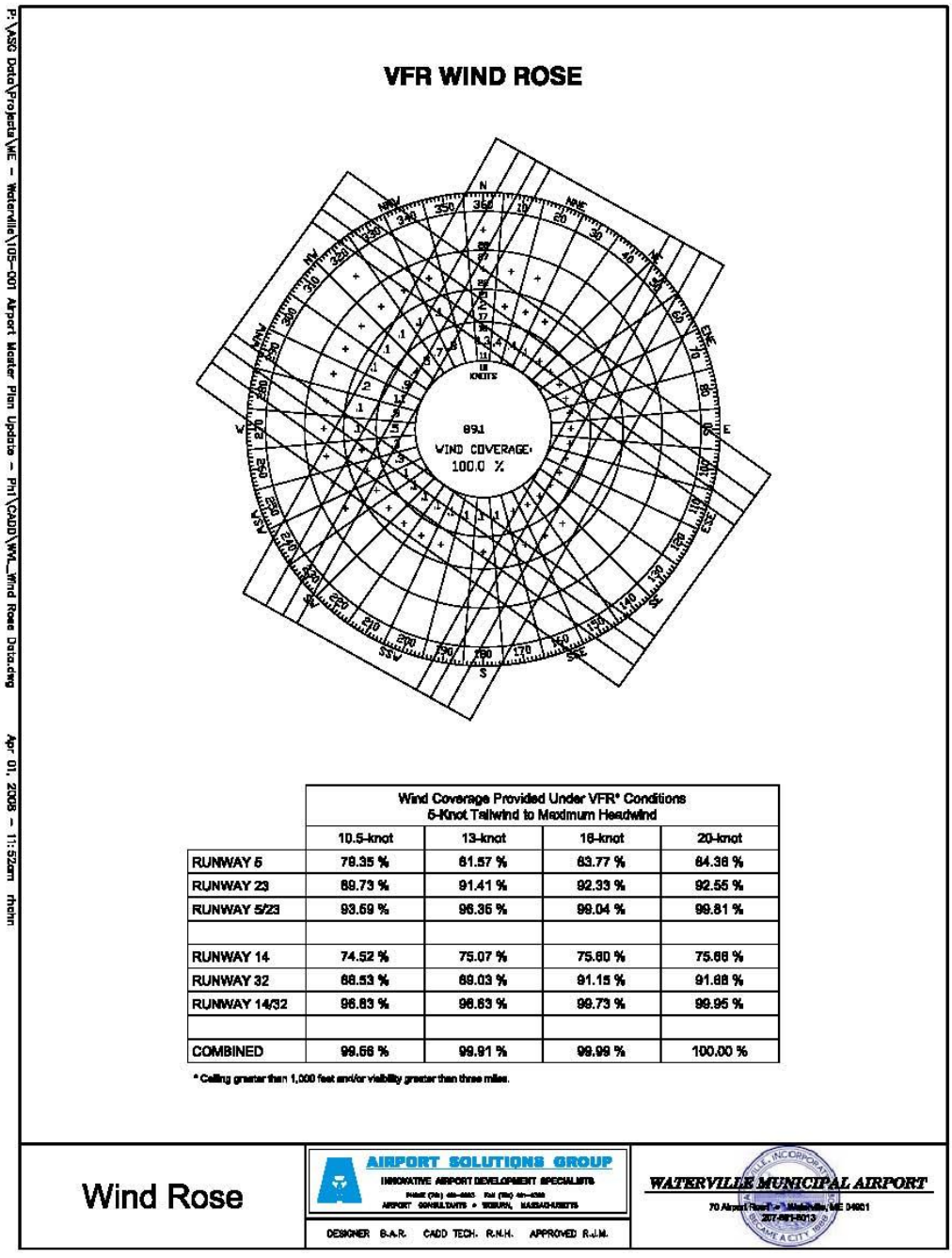
Leasing activity and revenue that may be derived from this activity is difficult to predict. While there are no current proposals for development, future development proposals may include incentives based on the type of development, activity and associated number of jobs that the proposal would bring to the area.

Summary of Facilities Analysis

Based on the Facility Analysis of this Chapter, the following improvements will be considered in the future Alternatives Analysis Working Paper. These are listed in no particular order:

- Additional Taxiways
- Airfield Lighting Rehabilitation
- Runway and Taxiway Pavement Rehabilitation
- Pavement Markings Improvements
- NAVAID Replacements and Upgrades
- New Perimeter Fencing and Upgrades
- Terminal Building Location and Expansion Consideration
- Apron Space Location and Rehabilitation
- Utility Upgrades
- Hangar Space Location and Use
- Snow Removal Equipment Building
- Obstruction Removal, Easements and Maintenance
- Corporate aircraft requirements

Wind Rose Graphics



	Wind Coverage Provided Under VFR* Conditions 5-Knot Tailwind to Maximum Headwind			
	10.5-knot	13-knot	16-knot	20-knot
RUNWAY 5	78.35 %	81.57 %	83.77 %	84.36 %
RUNWAY 23	89.73 %	91.41 %	92.33 %	92.55 %
RUNWAY 5/23	93.69 %	96.36 %	98.04 %	99.81 %
RUNWAY 14	74.52 %	75.07 %	75.60 %	75.66 %
RUNWAY 32	88.53 %	89.03 %	91.15 %	91.68 %
RUNWAY 14/32	96.83 %	96.83 %	99.73 %	99.95 %
COMBINED	99.56 %	99.91 %	99.99 %	100.00 %

* Ceiling greater than 1,000 feet and/or visibility greater than three miles.

Wind Rose

AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS

DESIGNER B.A.R. CADD TECH. R.N.H. APPROVED R.J.M.

WATERVILLE MUNICIPAL AIRPORT

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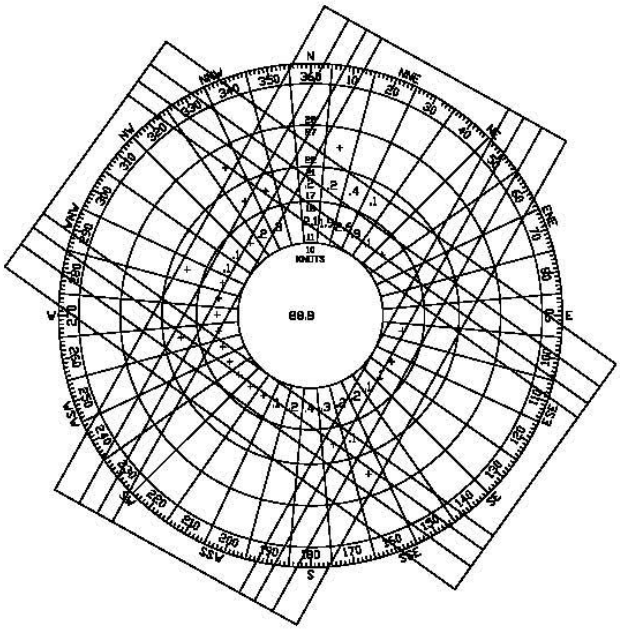

	Wind Coverage Provided Under IFR* Conditions 5-Knot Tailwind to Maximum Headwind			
	10.5-knot	13-knot	16-knot	20-knot
RUNWAY 6	85.71 %	86.13 %	86.43 %	86.50 %
RUNWAY 23	84.36 %	86.48 %	87.19 %	87.30 %
RUNWAY 5/23	98.72 %	99.44 %	99.88 %	99.97 %
RUNWAY 14	86.50 %	88.59 %	90.63 %	90.92 %
RUNWAY 32	75.71 %	76.61 %	77.41 %	77.59 %
RUNWAY 14/32	91.89 %	95.83 %	99.23 %	99.91 %
COMBINED	99.79 %	99.97 %	100.00 %	100.00 %

* Ceiling less than or equal to 1,000 feet and/or visibility less than 3 miles and ceiling greater than or equal to 250 feet and visibility greater than or equal to 0.75 miles.

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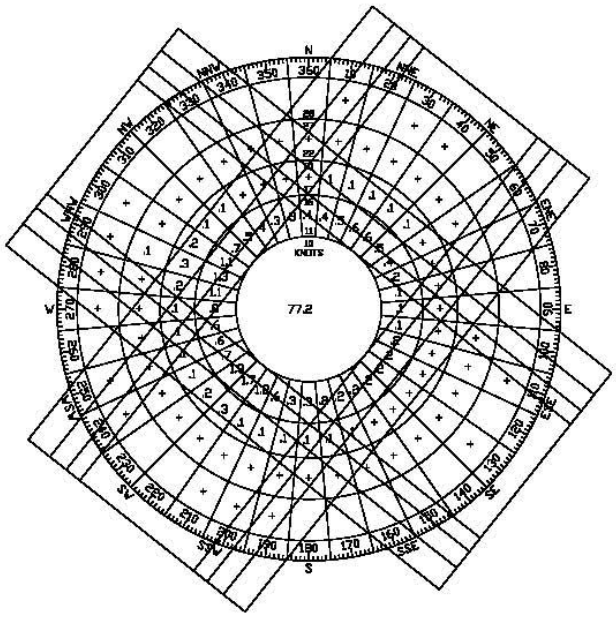
ALL-WEATHER WIND ROSE



	Wind Coverage Provided Under All-Weather Conditions 5-Knot Tailwind to Maximum Headwind			
	10.5-knot	13-knot	16-knot	20-knot
RUNWAY 5	80.50 %	82.48 %	84.42 %	84.95 %
RUNWAY 23	89.43 %	91.11 %	91.99 %	92.19 %
RUNWAY 5/23	94.30 %	96.77 %	99.14 %	99.82 %
RUNWAY 14	76.48 %	77.18 %	77.85 %	77.94 %
RUNWAY 32	85.47 %	87.72 %	89.84 %	90.13 %
RUNWAY 14/32	96.31 %	98.30 %	99.99 %	99.93 %
COMBINED	99.57 %	99.92 %	99.98 %	100.00 %

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WATERVILLE MUNICIPAL AIRPORT

Waterville Robert LaFleur Municipal Airport
AIRPORT MASTER PLAN UPDATE

CHAPTER 4
ALTERNATIVES ANALYSIS

4.0 Alternatives Analysis

Chapter 1 accumulated the baseline of existing airport data, Chapter 2 presented the outlook for the future in terms of forecasting operational activity, and Chapter 3 defined the facilities that would be needed assuming the Airport could provide them. Phase II of this Master Plan Update calls for an "Alternatives Analysis", which takes all the previous information and assesses what can be provided in terms of Airport development. Unlike the Facility Requirements which were unconstrained, the Alternatives Analysis considers any limiting factors associated with potential future development. Within this Working Paper, alternatives are identified and evaluated for Runway and Taxiway Systems, Aircraft Parking Aprons, as well as Supporting Airport Infrastructure such as NAVAIDs, Land Acquisition FBO Development, Hangar Development and Airport Equipment Storage Buildings.

In assessing alternatives, it is important to consider: Engineering Feasibility, Environmental Impacts, Land Use impacts and the Financial Costs versus the operational and safety benefits a specific alternative may provide to the Airport. It is the difference between "requirements" and "reality". The objective is to create a realistic and achievable plan of improvements that can be depicted on the Airport Layout Plan (ALP) and ultimately implemented to meet the projected aeronautical activity forecasted for the Airport. This assessment uses the general descriptions provided below.

- **Operational Efficiency and Safety:** How well the alternative functions from an airport operations and safety standpoint. This section may also include a discussion of the timing for future CIP improvements such as runway reconstruction, including an evaluation of alternatives for the cross wind runway. For instance, the cross-wind Runway 14-32 is in noticeably worse condition than the primary ILS Runway 5-23. The analysis will consider the benefits of closing the crosswind runway to more efficiently use project funding to rehabilitate Runway 5-23.

- **Engineering Feasibility and Cost:** To ensure that the alternatives satisfy FAA design standards and are practical from an engineering and construction standpoint, alternatives will consider the level of engineering and costs associated with each alternative.

- **Environmental Impacts:** Each alternative will be broadly evaluated to identify potential environmental impacts that must be assessed in detail in a subsequent environmental study.

- **Land Use Impacts:** Property acquisition or easement requirements, and potential land use or zoning changes shall be identified. Possible alternative uses of available land include Industrial Use, Business/Corporate Development, Commercial Use, and Recreational Use.

The physical arrangement of future airport facilities is determined through an analysis of alternative airport layouts. The purpose is to identify how projected facility requirements can be developed and accommodated within the physical constraints of the Airport environment. In order to clearly identify each alternative, the alternatives are labeled throughout this working paper as follows:

- Runway Alternatives – R1, R2, R3, etc.
- Taxiway Alternatives – T1, T2, T3, etc.
- Apron Area Alternatives – A1, A2, A3, etc.
- FBO Alternatives- F1, F2, F3, etc.
- Hangar Alternatives – H1, H2, H3, etc.
- Support Facility Alternatives – S1, S2, S3, etc.
- Land Acquisition Alternatives – L1, L2, L3, etc.

4.1 Airport Runway System Alternatives

Working Paper 1, *Baseline Conditions* identified the Crosswind Runway 14-32 as exhibiting a high frequency of pavement shrinkage, cracking and extensive vegetation growth through the cracks over the entire length and width of the Runway. Consequently, Runway 14-32 is temporarily closed due to its current state of disrepair.

The alternatives considered for the Runway system include:

- R0: "Do Nothing" Alternative.
- R1: Rehabilitate Runway 14-32 and reduce width from 150 ft. to 60 ft. See Figure R1.
- R2: Permanently close Runway 14-32 and consider various development options that would require portions of the runway to be removed and/or replaced for alternate aeronautical uses. See Figure R2

R0: "Do Nothing" Alternative

Considering only the runways at WVL, in a "Do Nothing" scenario, the Airport would continue to operate at its current state. Runway 14-32 would remain closed until it can be rehabilitated to a useable state. Future airport development would consider the airspace limitations imposed by Runway 14-32.

R1: Rehabilitate Runway 14-32 and reduce width from 150 ft. to 60 ft.

- In this scenario Runway 14-32 will remain open and maintain B-I (ARC) standards. By maintaining B-I standards, the same aircraft that currently utilize Runway 14-32 can continue to do so.

- By reducing the width of the Runway, the rehabilitation of Runway 14-32 will be significantly less expensive than rehabilitating the Runway to its current width.

- Reducing the width of Runway 14-32 affords the Airport the ability to pursue Aircraft Apron Expansion with limited impact to the total amount of impervious surface currently at the Airport.

- Reducing the width of Runway 14-32 will decrease the amount of impervious surface at WVL and result in lower volumes of storm water runoff via overland flow. Decreasing the impervious surface area may also improve surface water quality. In general, lower levels of surface water pollutants (e.g. petroleum, metals, bacteria etc.) are directly related to storm water runoff caused by impervious surfaces.

- Keeping Runway 14-32 open would require the Airport to address and improve any known Airspace issues associated with the approach and departure ends. This may include, but is not limited to, Obstruction Analysis, land or easement acquisition, and Obstruction Removal.

R2: Permanently close Runway 14-32, and use it for future development

- Permanently closing the Runway would avoid the need for the Airport to invest in expensive rehabilitation and maintenance costs. Closing this runway will also reduce any noise impact to nearby residential receptors at the RW32 end.

- Currently, Runway 14-32 isn't long enough to serve the full fleet mix at WVL, considering that

Runway 5-23 provides for over 94% wind coverage, closing Runway 14-32 would have only a limited effect on airport operations. Nevertheless, closing the runway would adversely impact aircraft that routinely use the runway.

- The Runway would be closed by installing runway closure markings ("X") and by issuing appropriate NOTAMS as well. Portions of runway pavement would be removed only when necessary to offset the impervious surface associated with any future Apron development, or should portions of the runway be converted to a taxiway, pavement would be removed to meet FAA design standards.

Table 4.1
Runway Alternatives Analysis

Analysis Factor	Impact
R0: "Do Nothing"	
Engineering	No Change
Operational	No Change, Runway remains closed
Environmental	No Change
Land Use	No change
R1: Rehabilitate Runway 14-32 and reduce width from 150 ft. to 60 ft.	
Engineering	Significant Costs associated with Runway Rehabilitation
Operational	No Change, Runway maintains B-I category
Environmental	Improvement- Decreases the amount of impervious surface
Land Use	No change
R2: Permanently close Runway 14-32	
Engineering	Limited related to Xing out the Runway
Operational	Limited considering that RWY 5-23 has over 94% wind coverage
Environmental	Improvement, decrease the amount of impervious surface should portions of the runway be removed.
Land Use	Eliminates noise impacts and Object Height Restrictions off of Runway ends

Runway Alternatives Conclusion

The Airport received overwhelming support for keeping Runway 14-32 open, thereby choosing Alternative R-1. Airport users indicated Runway 14-32 was essential for light aircraft operations and training. FAA design guidelines will mandate that the runway width will be reduced from 150 feet to 60 feet wide; the Airport should receive credit for the reduced impervious surface. Alternative R-1 has additional cost impacts, namely land and/or easement acquisition required for airspace protection, which also involves off-airport vegetation removal.

4.2 Airport Taxiway System Alternatives

The Airport's taxiway system should provide for free movement and direct routing to and from the runways, terminal area and aircraft parking areas. It should allow for smooth aircraft taxiing requiring minimum changes in aircraft speed. Principles for designing taxiways include:

- Providing each runway with a parallel taxiway or the capability of a parallel taxiway.
- Build taxiways to provide as direct a route as possible.
- Provide bypass capability or multiple access to runway ends.
- Avoid crossing runways as much as possible.

As stated in the facility requirements, the present taxiway configuration at WVL is generally adequate to serve the present level of operational activity at the Airport. Runway 5-23 is served by a full-length parallel taxiway which allows for safe and efficient aircraft movement to and from Runway 5-23. The infrequent use of Runway 14-32 and the potential closure of Runway 14-32 in the future does not support a parallel taxiway alternative to Runway 14-32. However, there are a number of taxiway alternatives that could provide the Airport with more direct routes to airport facilities such as: The current Terminal Area, Aircraft Tie-Down Areas, Fueling Facilities, and Hangar Facilities.

Regarding the present Taxiway configuration at WVL, if an aircraft is taxiing north on Taxiway 'A", with the current Hangar Area or the Terminal Facility Area as their destination, a nearly 135 degree left-hand turn onto taxiway "D" is required. From a planning and operational perspective, this current situation appears to be the most significant issue associated with the Airport's taxiway system.

In order to provide the most direct routes as possible, to and from the Terminal area, as well as potential taxiways associated with the closure of Runway 14-32, Taxiway Alternatives include:

- T0: No-Build (Status Quo)
- T1a: Construct New Taxiway "E" that connects Taxiway "D" to Taxiway "A"
  See Figure T1a.
- T1b: Construct New Taxiway "E" that connects Taxiway "D" to Taxiway "A"
  See Figure T1b.
- T1c: Construct an extension of Taxiway "B" that connects it to Taxiway "D"
  See Figure T1c.
- T2: Should Runway 14-32 close permanently, use a portion of Runway 14-32 to create an additional stub taxiway between taxiways "B" and "C".
  See Figure T2.

T0: No Build (Status Quo)

The no-build scenario will result in no enhancements to the current taxiway system. Aircraft travelling north on Taxiway "A" will continue to be required to make a sharp left turn should their destination be the current Terminal Area or the facilities adjacent to Taxiway "D".

T1a: Construct New Taxiway "E"

- Alternative T1a would eliminate the need for pilots exiting Runway 5-23 via Taxiway "B" to make the 135 degree turn onto Taxiway "D" that leads to the terminal area. Existing aircraft movements to or from the Runway 5 end to the terminal hangar area are inefficient and would be significantly improved with constructing a Taxiway "E". The T1a alternative is most efficient should the Airport decide to construct Phase II of the Terminal Apron. As Figure T1a shows, this location of Taxiway "E" would provide for direct access to the Phase II Terminal Apron, however it does restrict future development along TW "D".

- Since the Phase II Terminal Apron has already been designed to support Gulfstream type aircraft, constructing Taxiway "E" in this location would provide transient and corporate jet aircraft with convenient direct access to the Phase II parking area.

- Placing Taxiway "E" in this location would result in a 390 foot long taxiway.

T1b: Construct New Taxiway "E"

- Alternative T1b is similar to T1a in that it would also provide more direct access to the current terminal area, and would eliminate aircraft taxiing north on Taxiway "A" having to make a sharp turn onto Taxiway "D" to access the terminal area.

- As opposed to a direct route to the potential Phase II Terminal Apron, T1b provides for a route that terminates directly in front of the existing Terminal Apron, which also brings small based aircraft closer to their hangar destination, however it does restrict future development along TW "D".

- Constructing Taxiway "E" further south results in the taxiway having to be 600 foot long as opposed to 390 feet in scenario T1a, thereby increasing future construction and maintenance costs.

T1c: Construct an extension of Taxiway "B" that connects it to Taxiway "D"

- Allows for aircraft exiting Runway 5-23 via Taxiway "B" to continue directly to the terminal area without having to turn right onto Taxiway "A".

- Would maintain the current width of Taxiway "B" (50 ft.) unless the FAA suggests otherwise.

- Would require the Airport to acquire land located outside of the current Airport Property Line.

- Provides the most direct route to the current Terminal area of all taxiway alternatives; however this option requires a longer taxiway (approximately 700 feet).

T2: Use a portion of Runway 14-32 to create an additional stub taxiway between taxiways "B" and "C"

- Provides an additional stub taxiway off of Runway 5-23 at approximately the mid-point, thereby preserving this taxi operation for small aircraft.

- For those aircraft with the capability to land within half the length of Runway 5-23, this stub taxiway would provide the most direct access to the current Terminal Area, Hangar Area and fuel facilities.

- The most cost-effective method of construction is to incorporate this taxiway within the current pavement limits of Runway 14-32.

- Since the proper sub-grade already exists, engineering requirements are less substantial than building a brand new taxiway from the "ground up".

- Requires portions of Runway 14-32 to be removed.

Table 4.2
Taxiway Alternatives Analysis

Analysis Factor	Impact
T0: No Build (Status Quo)	
Engineering	Not Applicable
Operational	No improvement to safety and efficiency.
Environmental	None – no change.
Land Use	None – no change.
T1a: Construct New Taxiway "E"	
Engineering	Limited – requires design
Operational	Significant – increases efficiency
Environmental	Limited – increases impervious surface.
Land Use	None – no change.
T1b: Construct New Taxiway "E"	
Engineering	Limited – requires design, costs more than T1a (longer)
Operational	Significant – increases efficiency
Environmental	Limited – increases impervious surface
Land Use	None – no change
T1c: Construct an extension of Taxiway "B" that connects it to Taxiway "D"	
Engineering	Limited – requires design, costs more than all other taxiway alternatives
Operational	Significant – Highest operational benefit for larger aircraft, maybe jet blast issue for aircraft traveling east
Environmental	Limited – Increases impervious surface
Land Use	Significant – Requires Land Acquisition
T2: Use a portion of Runway 14-32 to create an additional stub taxiway between taxiways "B" and "C"	
Engineering	Limited – Requires design, pavement rehabilitation and removal
Operational	Significant operational benefits for most current based aircraft
Environmental	Improvement – Decreases the amount of impervious surface
Land Use	None – No change

Taxiway Alternatives Conclusion

Of the four alternatives, the City chose Alternative T-1a, which exits in front of the Phase II terminal apron; it is also the shortest in length of the three concepts and the least expensive. Alternative T-2 was eliminated as a result of keeping Runway 14-32 open. Alternative T-1a has minor design challenges with respect to proposed grading between Taxiway A and the terminal ramp area. The City has indicated that Alternative T-1a is considered a long term improvement.

4.3 Apron Area Alternatives

Aircraft parking aprons provide parking for aircraft and also provide access to terminal facilities, aircraft fueling areas and surface transportation. Typically, there are two types of aprons to be considered in a master plan:

- Transient Aprons
- Based Aircraft Aprons

Aprons used for based aircraft should be located separately from those used for transient aircraft. Since the actual number and type of based aircraft is known, the area needed for each based aircraft is smaller than for that of transient aircraft. Airport design criteria set forth in Advisory Circular 150/5300-13 recommends 300 square yards of apron for each based aircraft and 360 square yards for each transient aircraft. The 300 square yards requirement is considered adequate for all single and light twin airplanes.

The analysis considered the locations of the current based aircraft and transient aircraft aprons and how those locations meet future parking and operational needs. The space needs outlined in Chapter 3, *Facility Requirements* were used to size alternative apron expansions proposed to fulfill the anticipated unconstrained aircraft parking deficiencies over the study period.

However, since the facility requirements considered all apron areas regardless of their condition, Chapter 3 suggested that the WVL currently has enough aircraft apron area to support the forecasted based and transient aircraft through the year 2017. Since the Alternatives Analysis is constrained, the alternatives must take into consideration the actual condition of existing infrastructure and assess which areas are currently usable and determine what needs rehabilitation.

Since the Telford Apron is not available for use due to its poor condition, the total area of the Telford Apron has been subtracted from the surplus shown in the Facility Requirements and added to the deficiency. These calculations reveal that a total of approximately 16 to 19 tie-down spaces or 5,530 square yards of apron space may be needed by 2027. Cumulative aircraft parking apron deficiencies are forecasted as follows:

- 2007 – 970 sq. yds (approx. 3 to 4 tie-down spaces)
- 2012 – 2,740 sq. yds (approx. 8 to 10 tie-down spaces)
- 2017 – 3,550 sq. yds (approx. 10 to 12 tie-down spaces)
- 2027 – 5,530 sq. yds (approx. 16 to 19 tie-down spaces)

The Alternatives to be considered include:

- A0: No-Build (Status Quo)
- A1: Construct phase II of the current terminal area apron. **See Figure A1**
- A2: Rehabilitate the former Telford apron. **See Figure A2**
- A3: Expand current Terminal Apron to accommodate Based Aircraft. **See Figure A3**
- A4: If Runway 14-32 closes, and Corporate Hangar or FBO Development occurs, expand and use the approach end of Runway 14 for Apron construction. **See Figure A4**

A0: No-Build (Status Quo)

Continues an undesirable situation where the Airport operates with a deficiency of useable paved parking area compared to existing and forecasted airport activity.

A1: Construct Phase II of the current Terminal Apron Area

- Phase II of the Terminal Apron has already been designed and provides for 6,600 sq. yds of apron area capable of supporting large corporate aircraft.

- This project is considered "Shovel Ready" and should be eligible for stimulus funding.
- The construction of 6,600 sq. yds of apron, depending on aircraft parking configuration may be capable of accommodating WVL's apron requirements through 2017.

- Phase II of this Terminal Apron is compatible with the T1a Taxiway alternative that provides direct access to the Terminal Area from Taxiway "A".

- Supports further FBO development in this area.

A2: Rehabilitate the former Telford Apron

- The former Telford Apron is located in the northwest quadrant of the Airport and consists of approximately 4,356 square yards of apron space. As stated in the inventory section, this pavement has been neglected for many years and unless this pavement is rehabilitated, it will remain unusable for aviation use.

- Rehabilitation of this apron will provide enough apron area to meet forecasted aircraft parking requirements through the year 2017.

- Although the rehabilitation would likely meet the Airport's aircraft parking needs for the foreseeable future, it would essentially serve as a remote parking facility since FBO services are currently provided in the northwest quadrant of the Airport only.

A3: Expand current Terminal Apron to accommodate Based Aircraft.

- This apron would essentially double the current area for based aircraft tie-downs at the Airport without construction of the A1 alternative.

- Should this apron be constructed, reconfiguring the tie-downs in a "nested" configuration would provide for enough tie-down area to accommodate the forecasted demand at the Airport through the year 2027. (50% of 39 forecasted based aircraft).

- The "tear drop" shaped grassy area the construction of this apron would form may subsequently provide the Airport with an area for drainage improvements resulting from the grading this project would require.

A4: If Corporate Hangar or FBO Development occurs, expand and use the approach end of Runway 14 for Apron construction.

- Would be needed only if Corporate Hangar Development or FBO facility Development occurs off of the approach end of the current Runway 14 approach end.

- Development would provide for close proximity to ground access.

- Would require current runway removal, taxiway design and rehabilitation to provide access from Taxiway "A".

- By initially developing facilities on the western most portion of Runway 14-32, future aviation development could then "fill in" the areas north and south of the associated taxiway.

Table 4.3
Apron Alternatives Analysis

Analysis Factor	Impact
T0: No Build (Status Quo)	
Engineering	Not Applicable
Operational	No improvement to Airport efficiency.
Environmental	None – no change.
Land Use	None – no change.
A1: Construct Phase II of the current Terminal Apron Area	
Engineering	Already designed, expensive construction cost (for large AC)
Operational	Significant benefit- Satisfies the Facility Requirements through 2017 Adjacent to Existing Terminal/FBO operations.
Environmental	Limited – increases impervious surface.
Land Use	None – no change.
A2: Rehabilitate the former Telford Apron	
Engineering	Requires design, less expensive than new construction
Operational	Satisfies Facility requirements through 2017 but far from Existing Terminal/FBO operations.
Environmental	No Change
Land Use	No Change
A3: Expand current Terminal Apron to accommodate Based Aircraft	
Engineering	Requires design, more expensive than rehabilitation
Operational	Limited – Satisfies tie-down requirements through 2017
Environmental	Limited – Increases impervious surface
Land Use	No Change
A4: Expand and Use the Approach End of Runway 14 for Apron Construction.	
Engineering	Requires design for Taxiway, Apron and access road design; significant construction costs required by all three components.
Operational	Significant operational benefits for Corporate Flight Department or New FBO development
Environmental	Limited – impervious surface likely to be offset by Runway 14-32 removal.
Land Use	None – No change

Apron Alternatives Conclusion

Of the four original alternatives, the City chose to proceed with Alternative A-1. However it should be noted that state funding guidelines require a new "design" for this area since the existing design has far exceeded the 2-year "shelf life" allowed by the State of Maine. Alternative A-2 was eliminated due to the combination of development constraints of the Airport property boundary and limitations associated with Runway 5-23 airspace. Alternatives A-3 and A-4 were eliminated as a result of keeping Runway 14-32 open.

In addition to Alternative A-1, the City also expressed an interest in developing the so-called Area "G", which is located due north of the intersection of Runway 14 and Taxiway A. This area was previously considered for future corporate development and provides reasonably good potential for future apron space. Therefore the City has decided to proceed with future apron development identified by Alternative A-1 as well in Area G.

4.4 Airport Terminal / FBO Alternatives

The FAA provides guidelines on Terminal Facility buildings and Fixed Based Operator (FBO) facilities at General Aviation airports. The Terminal/Administration building accommodates the general public, pilots, passengers, visitors and also the Airport manager's office, while FBO facilities usually provide space for the commercial activities, maintenance and repair of aircraft, such as air charter, air cargo operations and the like.

Citing the FBO and/or Terminal building adjacent to aircraft parking aprons offers convenience for both based and transient pilots. Apron frontage provides high value to an airport and such areas require sound judgment when planning the future layout of an airport. Typically, an airport's administration building is located separately from the FBO; however, since Waterville currently operates both Administration and FBO services from the same location, it is of great importance that when providing alternatives for such facilities, a practical transition is considered should the Airport acquire the services of a separate FBO.

In the early stages of the planning period for WVL, it is assumed that the City will continue to provide FBO services at the Airport. Nevertheless, it is important to identify specific areas on the Airport to accommodate future development for this type of aviation activity. The consultant's goal is to recommend future development scenarios that are practical, operationally efficient and reasonably cost-effective.

Alternatives considered for Terminal/FBO development include:

- F0: No-Build (Status Quo)
- F1: Construct New FBO connected to Phase II of Terminal Apron. **See Figure F1.**
- F2: Upgrade and Utilize Old Telford location for FBO operations. **See Figure F2.**
- F3: Develop FBO facilities off of existing Runway 14 approach end. **See Figure F3.**

F0: No-Build (Status Quo)

The "No-Build" or status quo scenario suggests that the Airport continues to operate out of its current terminal and hangar facility. Although this scenario is considered "No-Build", it does suggest that the Airport continue to make cosmetic upgrades to the existing facility interior and improve services to satisfy existing airport activity for the near term.

F1: Construct New FBO connected to Phase II of Terminal Apron

- This alternative suggests a new FBO facility on the western perimeter of the Phase II Terminal Apron Development (Alternative A-1).

- This alternative preserves FBO activities in the southwest quadrant of the Airport, in close proximity to aircraft fueling operations. Combined with the existing aircraft parking apron, this alternative offers sufficient aircraft parking space for forecast demand nearly through the year 2017 (11 parking spaces – 7 large AC, 4 small AC).

- The Airport would continue to provide administrative services out of the current terminal location.

F2: Upgrade and Utilize Old Telford location for FBO operations

- Rather than build an entirely new FBO facility, this alternative requires investment to upgrade and rehabilitate the former FBO facility.
- Requires the relocation of the Airport's current Snow Removal Equipment (SRE) facility.
- Requires the former Telford apron to be rehabilitated (Apron rehab eligible for AIP funds, thus a private developer would not be responsible for apron rehabilitation costs).
- Current FBO hangar inadequate in size to accommodate large corporate type aircraft.
- With access improvements, this alternative offers convenient ground access for FBO clients.

F3: Develop FBO facilities off of existing Runway 14 approach end

- Requires significant infrastructure development including a ground access road, aircraft apron and taxiway design and construction.
- Would "set the tone" for future airport development along the required associated taxiway.

Table 4.4
General Aviation Terminal/FBO Alternatives Analysis

Analysis Factor	Impact
F0: No-Build (Status Quo)	
Engineering	Not Applicable.
Operational	Limited – There may be space constraints in the long-term.
Environmental	None – no change.
Land Use	None – no change.
F1: Construct New FBO connected to Phase II of Terminal Apron	
Engineering	Requires design and construction of new conventional hangar and redesign of adjacent stormwater facilities; Apron A-1 is eligible for federal and state funding under AIP
Operational	Maintains FBO activity in a "campus" type environment
Environmental	Additional impact on stormwater and associated impacts from building footprint
Land Use	None – no change.
F2: Upgrade and Utilize Old Telford location for FBO operations	
Engineering	Somewhat significant, Requires total apron rehab and limited access improvements. Apron is eligible for federal and state funding under AIP.
Operational	Limited Improvement- Fueling Operations remain south of Runway 14-32. Segregates corporate AC from general aviation use
Environmental	No-Change
Land Use	None – no change.
F3: Develop FBO facilities off of existing Runway 14 approach end	
Engineering	Significant construction cost required by taxiway, ramp areas, access road and development of utilities to support alternative.
Operational	Separates activity from existing fueling; somewhat isolated. Segregates corporate AC from general aviation use
Environmental	Additional impact on stormwater and associated impacts from building footprint
Land Use	Converts closed runway area to developable airport property.

Terminal / FBO Alternatives Analysis Conclusion

Alternative F-1 offers several benefits including the fact that the Phase II apron (Alternative A-1) was designed for heavy aircraft including Portland cement concrete pads intended as "hard stands" for the static loading of the Gulfstream G-V and other similar heavy aircraft. Another benefit of this alternative is that a future developer only needs to invest in an FBO building and not the apron, which is eligible for AIP funding from the FAA. Alternative F-2 is associated with Alternative A-2 which was eliminated from further consideration. Alternative F-3 was eliminated as a result of keeping Runway 14-32 open. Therefore the City chose to proceed with Alternative F-1 as well as future aviation development in Area "G" as well.

4.5 Aircraft Hangar Alternatives

T-hangars are single-unit aircraft hangars, while conventional hangars are generally large multi-aircraft structures. T-hangars and private box type hangars differ from larger conventional hangars in that they do not generally need very much apron-front access. As mentioned, apron frontage is a premium airport space and should be judiciously used. T-hangars need taxiway or taxilane access and can be arranged in rows with a taxilane between every two rows. Rows of T-hangars for small aircraft require 75 ft. of separation for one way traffic between them and 125 ft. for two way traffic. In citing hangars, attention

must be given to the level of site preparation required, availability of automobile access and parking, utilities, and access to the taxiway system.

The availability of T-hangars at a general aviation airport is important to users who want to protect their aircraft from the weather elements and preserve their investment. This development is a revenue generator for the Airport and attracts owners of high-end aircraft. When airport owners or sponsors accept funds from FAA-administered airport financial assistance programs (AIP), they must agree to certain obligations (or assurances). These obligations require the recipients to maintain and operate their facilities in accordance with specified conditions. Assurances state that leases to private investors to develop T-hangars should include a general provision requiring the building(s) to revert to the Airport at the end of the lease or amortization period.

Chapter 3, *Facility Requirements*, reviewed the hangar space needs and concluded that WVL currently has a total of 40,312 Square Feet of Hangar Space. This total square footage included the North Hangar (i.e. Telford Hangar) which is located adjacent to the old terminal apron and currently serves as the airport maintenance and snow removal equipment building, and the Blue Sky hangar, both of which are not available for use because of their condition and current use. Therefore, a total of approximately 13,400 square feet of hangar space is not readily available. Consequently, the hangar alternatives will consider that the actual current useable hangar space at the Airport is 40,312 Sq. Ft. minus 13,400 Sq. Ft. with is the combined area for the North and Blue Sky hangars.

Facility Requirements for WVL determined that the current available hangar space is sufficient through the year 2007. However, in a "do nothing" (No-Build) scenario, by the year 2012 there is an estimated 4,488 sq. ft. deficiency in hangar space, and by 2027 this deficiency climbs to 14,588 sq. ft.

As stated in the Airport Inventory, the old North hangar (former Telford Hangar) and Blue Sky hangar are presently considered unavailable for aircraft storage due to their condition and current function. Based on the Facility Requirements the following surpluses and deficiencies have been calculated for each year indicated:

- 2007 + 2,012 square feet
- 2012 – 4,488 square feet
- 2017 – 9,588 square feet
- 2027 – 14,588 square feet

The hangar alternatives considered include:

- H0 – No-Build (Status Quo)
- H1 – Build 8 Unit T-Hangars. **See Figure H1.**
- H2 – Build 100 ft. Corporate Hangars. **See Figure H2.**
- H3 – Southern expansion of existing Box Hangar development. **See Figure H3.**
- H4 – Expansion of Box Hangars on each side of Taxiway "D". **See Figure H4.**
- H5 – Build 100 ft. Cargo Hangar west of Taxiway "D". **See Figure H5.**
- H6 – Build 100 ft. Cargo Hangar of Runway 14-32 End. See **Figure H6.**
- H7 – Build 100 ft. Corporate Hangar adjacent to old Telford Building. **See Figure H7.**

H0: No-Build (Status Quo)

In the no build scenario, Waterville would continue to operate with the same amount of available hangar space which becomes a shortage by the year 2012. In its current state, beyond 2012, the Airport would likely experience a deficiency of hangar space.

H1: Build 8 Unit T-Hangars

- This scenario provides for four 8 unit T-hangars on the western side of Taxiway "D" adjacent to the existing fuel facility and across from the existing box hangars.
- Hangar units would begin at the edge of the Object Free Area (OFA) associated with Taxiway "D" and extend to the north.
- This alternative could be constructed in phases and would require the construction of associated taxilanes to provide access to Taxiway "D".
- This scenario can be constructed within airport property and would provide ample based aircraft storage into the foreseeable future.
- The area identified for this alternative (i.e. west of TW D) is prime real estate and appears ready for development, although it will involve further analysis of stormwater management improvements.

H2: Build 3 10,000 sq. ft. Corporate Hangars

- This alternative provides for the development of corporate hangars in the same vicinity as alternative H1.
- With dimensions of 100 ft. x 100 ft. these hangars would be sufficient to support corporate flight operations and have the capability to store at least two small corporate jet aircraft, or one large corporate jet aircraft depending on wingspan specifications. , This alternative could also be built in phases with construction beginning adjacent to the existing fuel facility and extend westward.
- Requires somewhat extensive apron frontage development (two possible scenarios are shown).
- This scenario can also be developed within airport property.

H3: Southern expansion of existing Box Hangar development

- This scenario continues the development of private 1,764 sq. ft. box hangars in the same vicinity as the existing private hangars in the northwest quadrant of the Airport.
- If built to the extent shown on Figure H3, this alternative would provide for 24 additional private box hangars.
- The feasibility of this alternative is contingent on the Airport acquiring an area of land, outside the Airport property line.
- This alternative is not the most efficient use of land for developing hangar options; however it does offer separate stand-alone units in lieu of a shared-building arrangement which may be of interest to some aircraft owners.
- This alternative also complicates ground access issues (e.g. access road development, airport security, etc.) to the hangar units.

H4: Expansion of Box Hangars on each side of Taxiway "D"

- This scenario would also continue the development of private 1,764 sq. ft. box hangars in the same vicinity as the existing private hangars as well as the opposite side of Taxiway "D", in the northwest quadrant of the Airport.

- If built to the extent shown on Figure H4, this alternative would provide for 20 additional private box hangars.

- This alternative is feasible within airport property and would not require any land acquisition.

- This alternative impacts potential corporate development on the west side of Taxiway "D", adjacent to the existing terminal and the Blue Sky hangar.

H5: Build 10,000 sq. ft. Cargo Hangar north of Taxiway "D"

- This scenario supports airport development in the northwest quadrant of the Airport and considers air cargo operations, particularly as it relates to the current Wiggins/UPS operation.

- Similar to corporate hangar development in alternative H2, the dimensions of the hangar depicted in this scenario is 100 ft. x 100 ft, however the ultimate size of this facility would be dependent on ground handling operations, on-site cargo storage and vehicle parking requirements.

- Southwest of the existing fuel facility, this area may contain potential drainage issues.

- This alternative could possibility impact T-hangar development in the vicinity west of Taxiway "D".

H6: Build 10,000 sq. ft. Cargo Hangar off of Runway 14-32 End

- Should Runway 14-32 close, this alternative further supports development in the former approach end of Runway 14.

- Requires extensive taxiway development and runway removal to provide access to Taxiway "A"

- Requires access road construction to provide landside ground access to the cargo hangar.

H7: Build 10,000 sq. ft. Corporate Hangar adjacent to old Telford Building

- This alternative supports corporate development adjacent to the old Telford apron in the northwest quadrant of the Airport.

- Limited land acquisition is required before development in this area could occur.

- Possible airspace issues exist in this area in that building heights would be determined by the Building Restriction Line (BRL) associated with Runway 5-23.

Table 4.5
Hangar Alternatives Analysis

Analysis Factor	Impact
H0: No-Build (Status Quo)	
Engineering	None – no change.
Operational	May not be able to meet hangar demand, loss of revenue.
Environmental	None – no change.
Land Use	None – no change.
H1: Build 8 Unit T-Hangars	
Engineering	Associated building and taxilane design.
Operational	Maximizes efficient development in southwest quadrant.
Environmental	Drainage improvements needed for buildings & taxilanes.
Land Use	No Change.
H2: Build 100 ft. Corporate Hangars	
Engineering	Associated building and ramp design.
Operational	Inefficient development in southwest quadrant, however serves corporate need proximate to existing terminal building.
Environmental	Drainage improvements needed for buildings & ramps.
Land Use	No Change.
H3: Build 42 ft. Box Hangars	
Engineering	Associated building and taxilane design.
Operational	Moderately efficient development in southwest quadrant; poses challenges with ground access (to box hangars) and airport security.
Environmental	Drainage improvements needed for buildings & taxilanes.
Land Use	Requires property acquisition.
H4: Build 42 ft. Box Hangars on each side of Taxiway "D"	
Engineering	Associated building and taxilane design.
Operational	Maximizes efficient development for box hangars in southwest quadrant south of TW D, however moderately efficient development north of TW D.
Environmental	Drainage improvements needed for buildings & taxilanes.
Land Use	No Change.
H5: Build 100 ft. Cargo Hangar north of Taxiway "D"	
Engineering	Associated building design.
Operational	Improves cargo handling operations, may impact development north of TW D.
Environmental	Drainage improvements needed for building and parking.
Land Use	No Change.
H6: Build 100 ft. Cargo Hangar off of Runway 14-32 End	
Engineering	Associated building, taxiway and roadway design.
Operational	Isolated development; separates different operations.
Environmental	Drainage improvements needed for building, AC ramp and access roadway.
Land Use	Converts closed runway area to developable airport property.
H7: Build 100 ft. Corporate Hangar adjacent to old Telford Building	
Engineering	Associated building design.
Operational	Isolated development; separates different operations.
Environmental	Drainage improvements needed for buildings and ramps.
Land Use	No Change.

Hangar Alternatives Conclusion

The north side of Taxiway D is considered "prime real estate" for hangar development. Alternative H-1 proved to be the most efficient use for storing small aircraft; a total of 32 aircraft can be stored in this arrangement. Alternatives H-2a and H-2b were therefore eliminated in favor of using the more efficient arrangement offered by Alternative H-1. Alternative H-3 was eliminated from short term consideration in favor of keeping future development options open and partially because of the (long term) need to purchase a small triangular piece of land tucked between Taxiway A and D.

Alternative H-4 was eliminated for the same reasons Alternatives H-2a and H-2b were eliminated. Alternative H-5 was eliminated because it competed with Alternative S-1, which is a preferred site for a future SRE building because of its proximity to both the landside and airside. Alternative H-6 was dismissed as a result of keeping Runway 14-32 open. Alternative H-7 was eliminated for similar site constraints associated with Alternatives A-2 and F-2.

Therefore, the City chose to move forward with Alternative H-1 and Alternative H-4. A decision was also made to depict a general area of aviation development for Area "G".

4.6 Snow Removal Equipment (SRE) Building Alternatives

To protect and service expensive equipment used to control the snow and ice on the airfield, specifically designed maintenance buildings with adequate storage areas are needed. These buildings should be designed to support the Airport's operational needs to ensure efficient snow removal activities as well as equipment service and repair. These buildings are to be located on an airport to provide easy access to snow clearing crews, as well as a convenient location for repairing, servicing and fueling equipment. In the interest of airport safety, citing factors for SRE buildings should address the following:

- A location such that airfield movements associated with the facility, such as egress/ingress by snow clearing crews, employees, and deliveries do not hamper aircraft taxiing operations.

- A location that provides snow clearing crews with direct access to taxiways and runways instead of using perimeter roads or circuitous routes to reach runways and taxiways.

- A location that mitigates runway incursions by eliminating the need for employee, private and service vehicles to cross runways or taxiways to reach the building.

- A location that takes into consideration its affect on other existing facilities, such as cargo facilities and fueling areas. When the operating efficiency of the snow crews is not impaired, the building location should avoid existing and future revenue-producing areas, such as ramps and hangar areas.

Currently, the Airport does not have an adequate facility on the Airport to store and maintain its snow removal equipment. As stated in the aircraft hangar analysis, WVL currently uses the North Hangar to store and maintain the Airport's snow removal equipment (SRE). The hangar is in fair condition and consists of a steel framed building on a concrete slab floor with corrugated siding. The hangar measures 90 ft. wide by 60 ft. deep, or 5,400 sq. ft.

The considered snow removal equipment building alternatives include:

- S0 – No-Build (Status Quo)

- S1 – Located adjacent to the existing terminal, west of existing fuel tanks. **See Figure S1.**
- S2 – Located adjacent to the existing box hangars, across from existing terminal apron. **See Figure S2.**
- S3 – If Runway 14-32 closes, SRE building located off the approach end of Runway 14. **See Figure S3.**

S0: No-Build (Status Quo)

A no-build scenario would result in the Airport operating at its current state. Snow removal equipment storage and maintenance facilities will continue to be inadequate. Potential new equipment acquisition through AIP Funding could be affected by the lack of storage area at the Airport.

S1: Located adjacent to the existing terminal, west of existing fuel tanks

- Relationship to existing terminal provides easy response by snow removal personnel.
- Location has convenient access to landside areas and offers security benefit by allowing ground access to the Airport entrance road with airside access to the terminal ramp and taxiways.
- Close proximity to existing fueling area.
- Location does not interfere with aircraft ground movement.
- No impact to potential corporate, cargo, T-hangar development or future revenue producing areas.
- Location eliminates the need for personnel to cross any taxiways.

S2: Located adjacent to the existing box hangars, across from existing terminal apron

- Requires personnel to cross Taxiway "D".
- Potential impacts to future revenue producing areas.
- Provides for no landside ground access.
- Fueling would require snow removal equipment to cross Taxiway "D".

S3: If Runway 14-32 closes, SRE Bldg. located off the approach end of Runway 14

- Provides for convenient landside ground access.
- Potential for runway incursions should aviation development occur east and west of Runway 14-32.
- Impacts a possible future revenue producing area.
- Significant distance away from airport personnel headquarters.
- Significant distance from existing fueling location.

Table 4.6
Snow Removal Equipment Building Alternatives Analysis

Analysis Factor	Impact
S0: No-Build (Status Quo)	
Engineering	None – No Change.
Operational	Existing operations continue out of North Hangar, which is not ideal setup
Environmental	None – No Change.
Land Use	None – No Change.
S1: Located adjacent to the existing terminal, west of existing fuel tanks	
Engineering	Potential drainage & electrical issues.
Operational	Close to existing operations
Environmental	Drainage associated with building footprint.
Land Use	None – No Change.
S2: Located adjacent to the existing box hangars, across from existing terminal apron	
Engineering	Typical building design on existing open area.
Operational	Requires the crossing of Taxiway Delta.
Environmental	Drainage associated with building footprint.
Land Use	Area identified for potential apron or taxiway development.
S3: Located off the approach end of Runway 14	
Engineering	New building design and associated utility and access improvements.
Operational	Isolated from fueling and airport operations.
Environmental	Drainage associated with building footprint.
Land Use	Area identified for potential hangar development.

SRE Building Location Alternatives Conclusion

Although the immediate site is constrained and may limit the size and future expansion of a building in the subject location, Alternative S-1 offers very convenient access to both airside and landside facilities, which is an important consideration for siting an SRE building. It also eliminates the need for airport personnel or visitors to cross an active aircraft movement area.
Alternative S-2 has greater expansion potential but it was eliminated because of a safety concern for access by personnel and ground vehicles having to cross the taxiway, and it also restricts future aviation development south of Taxiway D. Alternative S-3 was eliminated as a result of keeping Runway 14-32 open.

A new alternative for a proposed SRE building located just north of the existing North Ramp offers convenient ground access and proximity to existing utilities. Therefore the City chose to show two locations on the ALP: Alternative S-1 and the new concept alternative for an SRE Building near the North Ramp.

4.7 Land Acquisition Alternatives

L1: Approach End Runway 5

As stated in the Facility Requirements, based on survey comments and stakeholder interviews, upgrading to a MALSR approach lighting system to Runway 5 would bring a significant safety threshold benefit as well as operational benefit to the Airport. From a pilot perspective, improving the approach minimums to Runway 5 down to ½ mile visibility would make WVL more competitive with neighboring airports of similar capabilities and a more attractive destination than other nearby airports with less precise landing

minimums. However, before WVL could move forward with this upgrade, the acquisition of property off of the approach end of Runway 5 is necessary. **Figure L1** shows the limits of the inner approach OFZ (Obstacle Free Zone) surface for a future MALSR system at the Runway 5 end. Owning this area in fee simple is most desirable in order to maintain unobstructed airspace surrounding this NAVAID; however the Airport could also pursue a combination of proposed easements and property interests necessary to achieve this upgrade to the Airport's navigational system.

L2: Northwest and North East Quadrant

Regarding near and long term development for the Airport, several initial alternatives shown herein include scenarios in which land acquisition is necessary should they be determined as "preferred" alternatives.

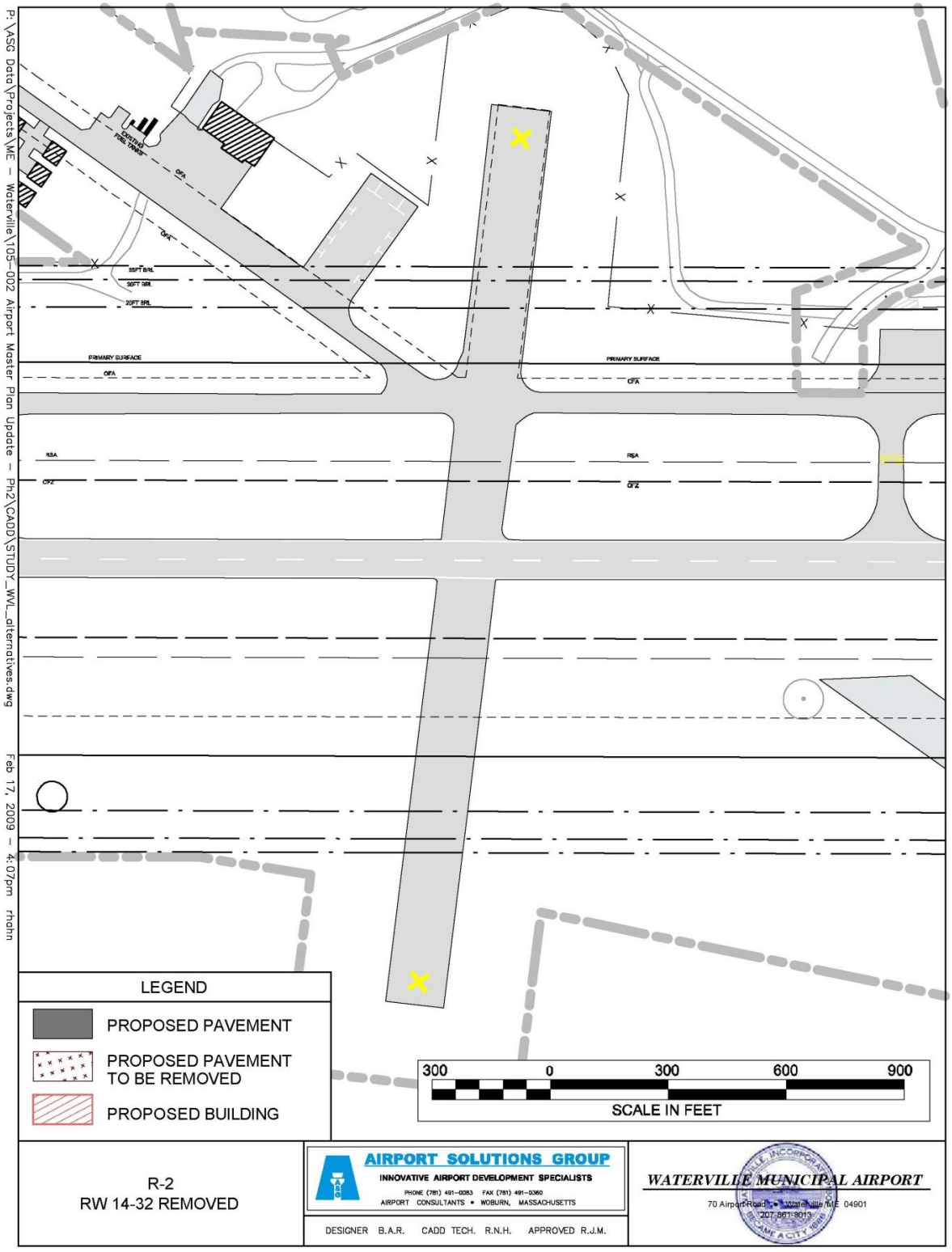
Alternative T1c shows an extension of Taxiway "B" leading directly to the current terminal apron area and Alternative H3 suggests expanding the development of the exiting box hangars to the southeast; these alternatives can only occur if the Airport were to acquire property in the southwest quadrant of the Airport. This triangular area can be seen on **Figure L2.**

Although it is suggested that initial airport development should occur in the southwest quadrant of the Airport, it is still important to look beyond the near term for airport development opportunities. As shown in Alternative H7, the northwest quadrant of the Airport, adjacent to the old Telford hangar, may allow for significant additional long term development. However, in order to proceed with any development initiatives such as H7 that are west of the old Telford apron, the Airport would need to acquire the land in the northwest quadrant. This is also shown on **Figure L2.**

Land Acquisition Conclusion

Alternative L-1 is consistent with previous recommendations from this study for obtaining better instrument approach procedures; a new MALSR system is one way to achieve this goal. Both components of Alternative L-2 are necessary to achieve previously recommended alternatives. Therefore, the City chose to include all three alternatives on the ALP.

The following pages include the Alternatives Figures referenced herein.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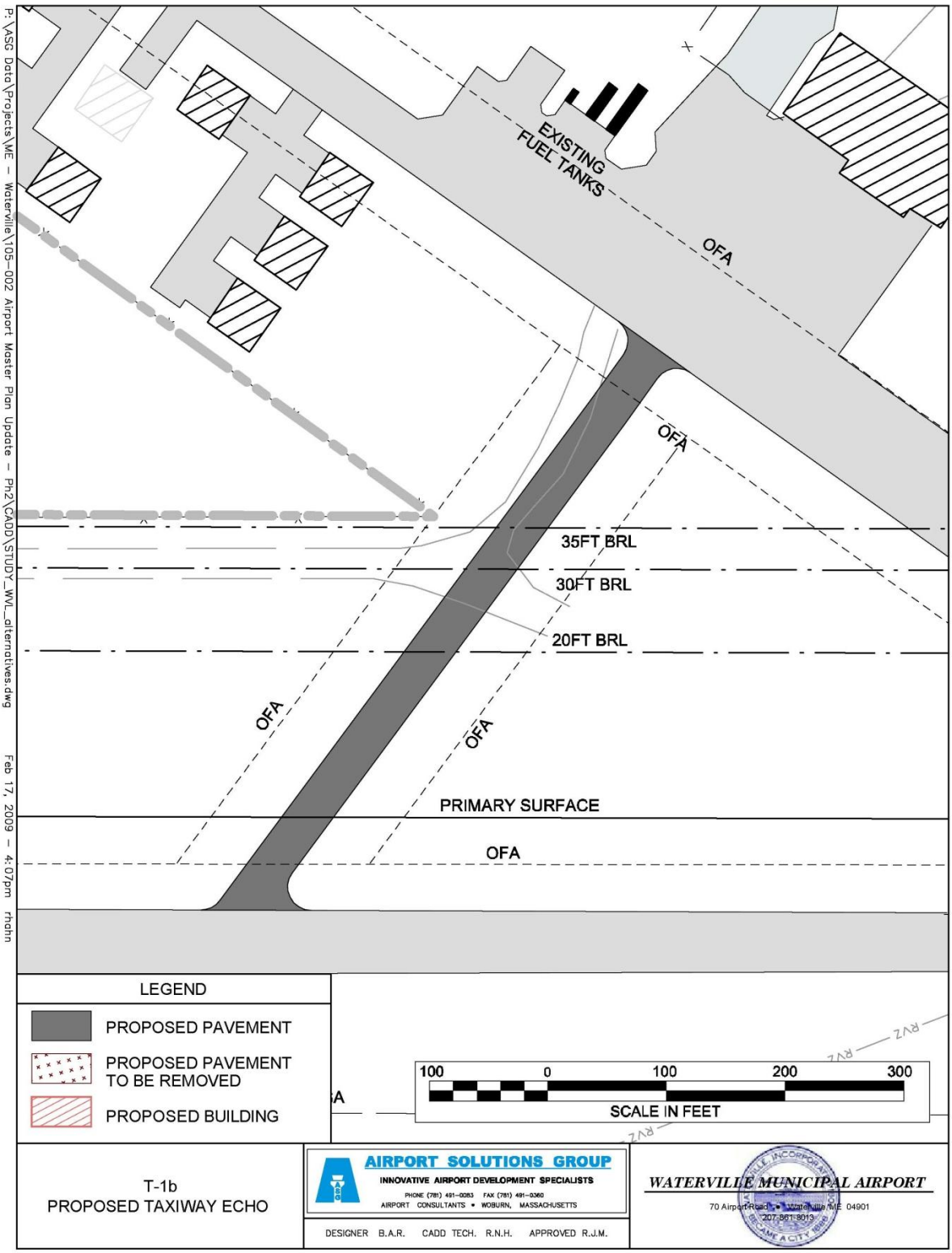
EXISTING FUEL FARMS
OFA
55FT BRL
30FT BRL
20FT BRL
PRIMARY SURFACE
RSA
OFZ
LEGEND
PROPOSED PAVEMENT
PROPOSED PAVEMENT TO BE REMOVED
PROPOSED BUILDING
300 0 300 600 900
SCALE IN FEET
R-2
RW 14-32 REMOVED
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
PHONE (781) 491-0083 FAX (781) 491-0360
AIRPORT CONSULTANTS • WOBURN, MASSACHUSETTS
DESIGNER B.A.R. CADD TECH. R.N.H. APPROVED R.J.M.
WATERVILLE MUNICIPAL AIRPORT
70 Airport Road • Waterville ME 04901
207-861-8013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EXISTING FUEL TANKS
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OFA
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20FT BRL
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OFA
PRIMARY SURFACE
OFA
LEGEND
PROPOSED PAVEMENT
PROPOSED PAVEMENT TO BE REMOVED
PROPOSED BUILDING
100 0 100 200 300
SCALE IN FEET
T-1b
PROPOSED TAXIWAY ECHO
AIRPORT SOLUTIONS GROUP
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AIRPORT CONSULTANTS • WOBURN, MASSACHUSETTS
DESIGNER B.A.R. CADD TECH. R.N.H. APPROVED R.J.M.
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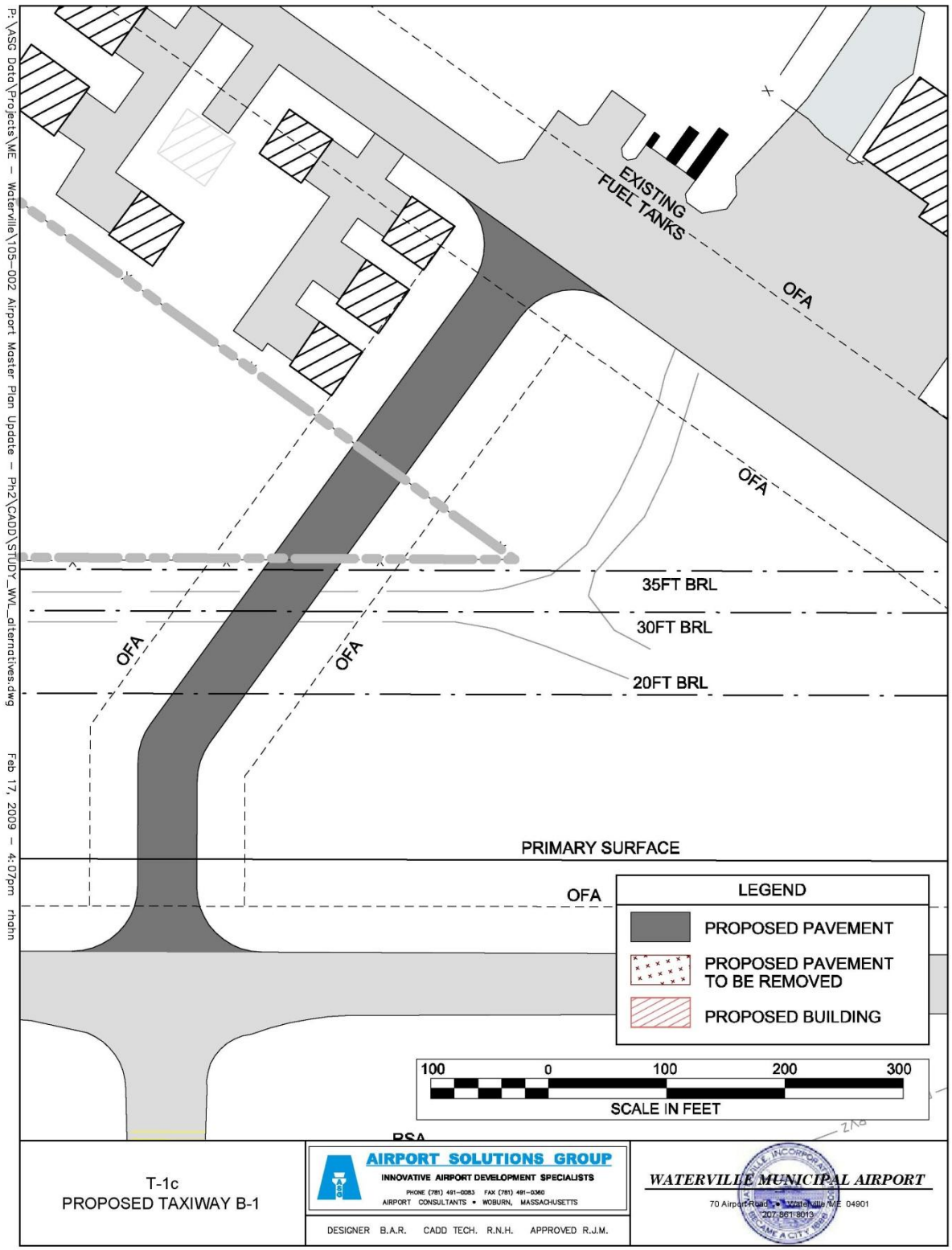
207-861-9013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EXISTING FUEL TANKS
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30FT BRL
20FT BRL
PRIMARY SURFACE
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PROPOSED PAVEMENT
PROPOSED PAVEMENT TO BE REMOVED
PROPOSED BUILDING
100 0 100 200 300
SCALE IN FEET
T-1c
PROPOSED TAXIWAY B-1
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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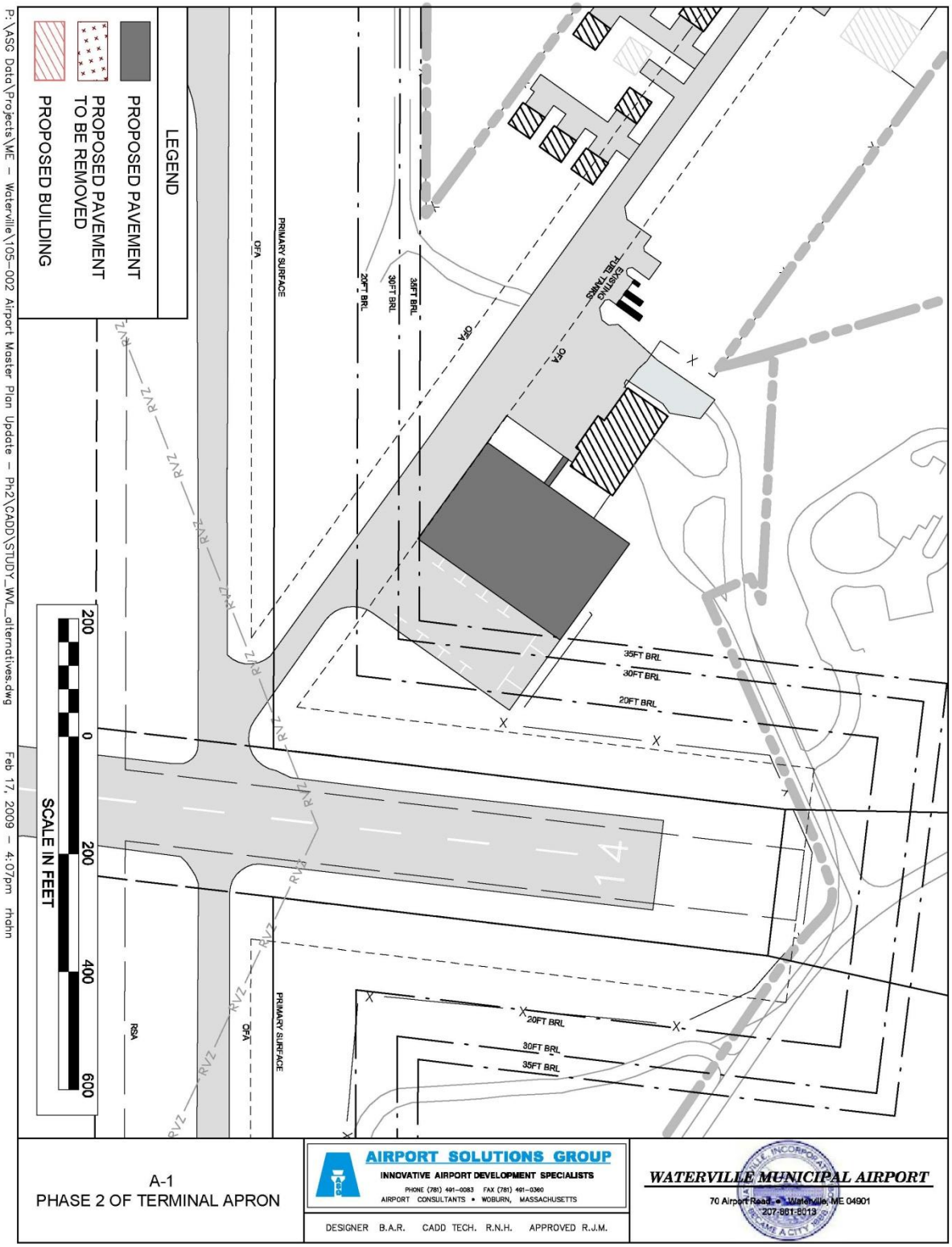
207.861.8013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PROPOSED BUILDING
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RSA
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30FT BRL
35FT BRL
RVZ
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SCALE IN FEET
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A-1
PHASE 2 OF TERMINAL APRON
AIRPORT SOLUTIONS GROUP
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AIRPORT CONSULTANTS • WOBURN, MASSACHUSETTS
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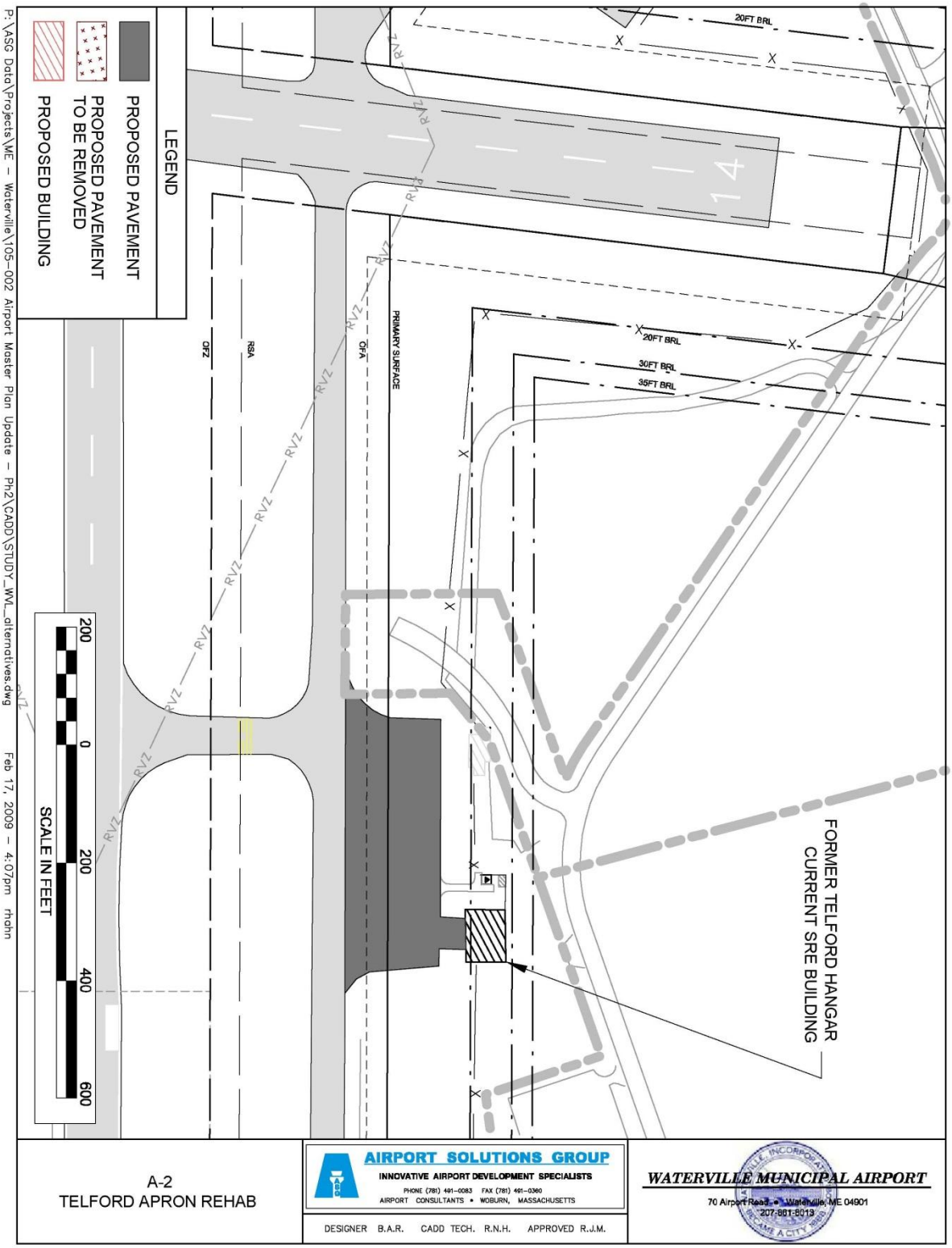
WATERVILLE MUNICIPAL AIRPORT
70 Airport Road - Waterville, ME 04901
207-861-8013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PRIMARY SURFACE
FORMER TELFORD HANGAR
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SCALE IN FEET
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A-2
TELFORD APRON REHAB
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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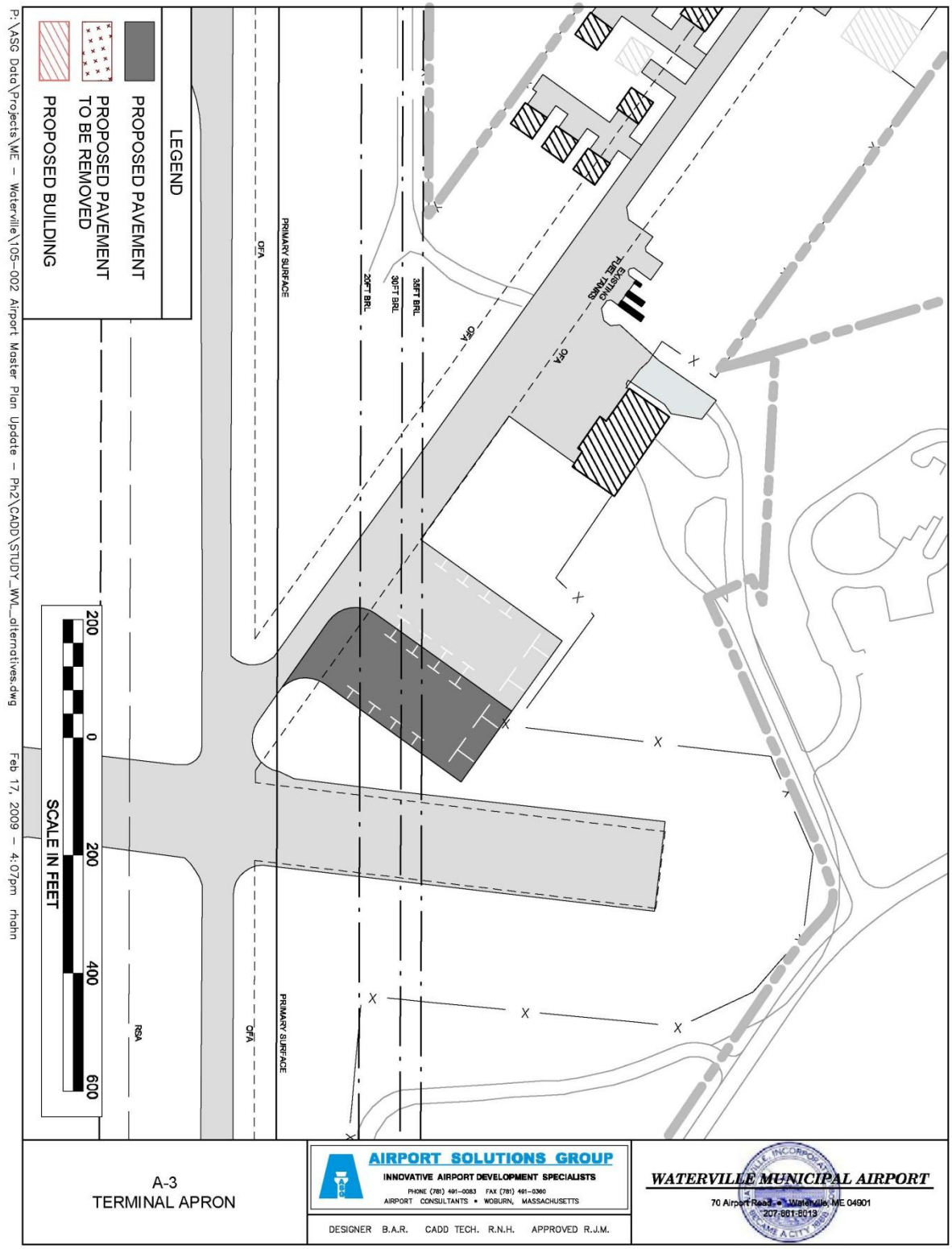
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PROPOSED PAVEMENT TO BE REMOVED
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PRIMARY SURFACE
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EXISTING FUEL FARMS
A-3
TERMINAL APRON
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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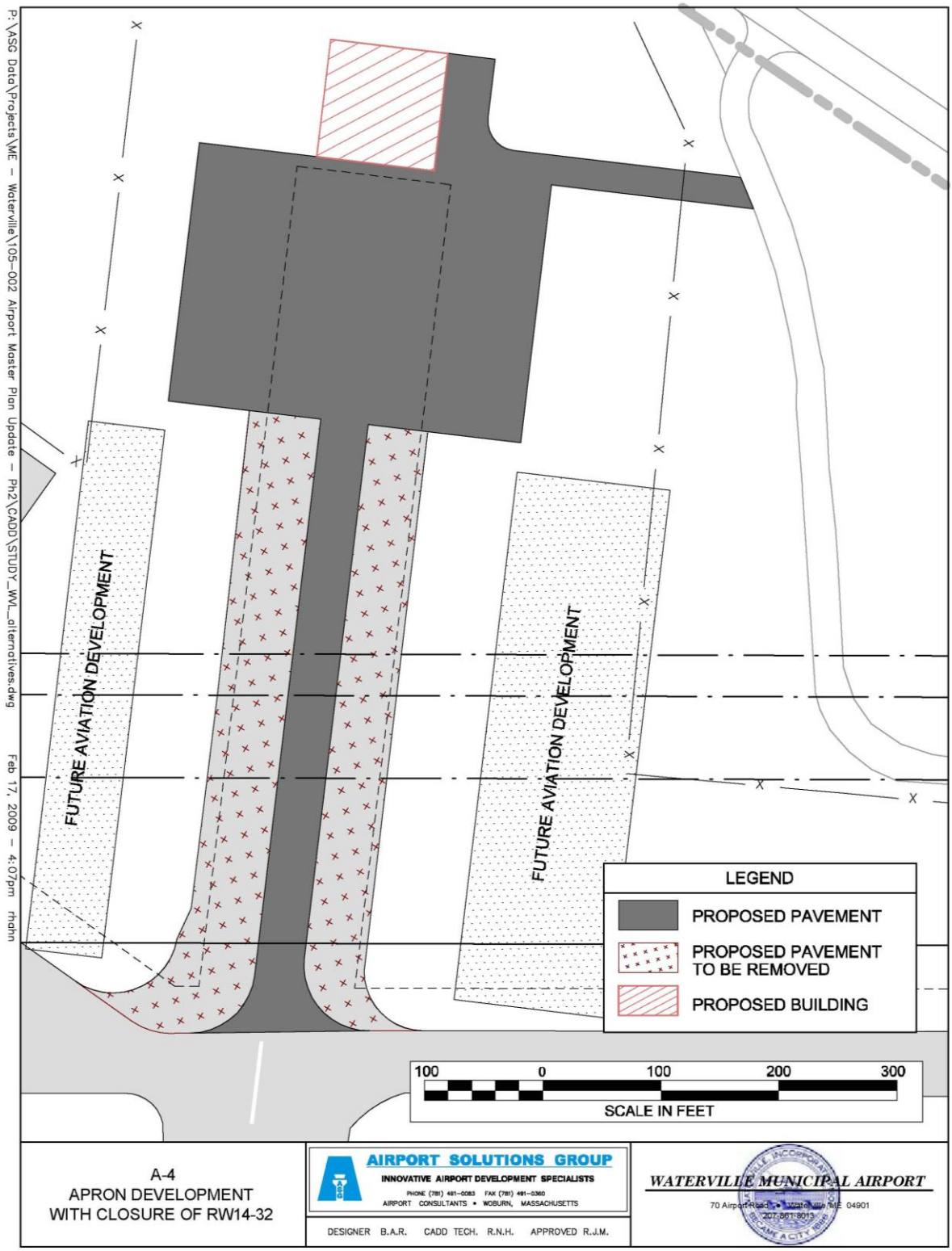
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FUTURE AVIATION DEVELOPMENT
FUTURE AVIATION DEVELOPMENT
LEGEND
PROPOSED PAVEMENT
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100 0 100 200 300
SCALE IN FEET
A-4
APRON DEVELOPMENT
WITH CLOSURE OF RW14-32
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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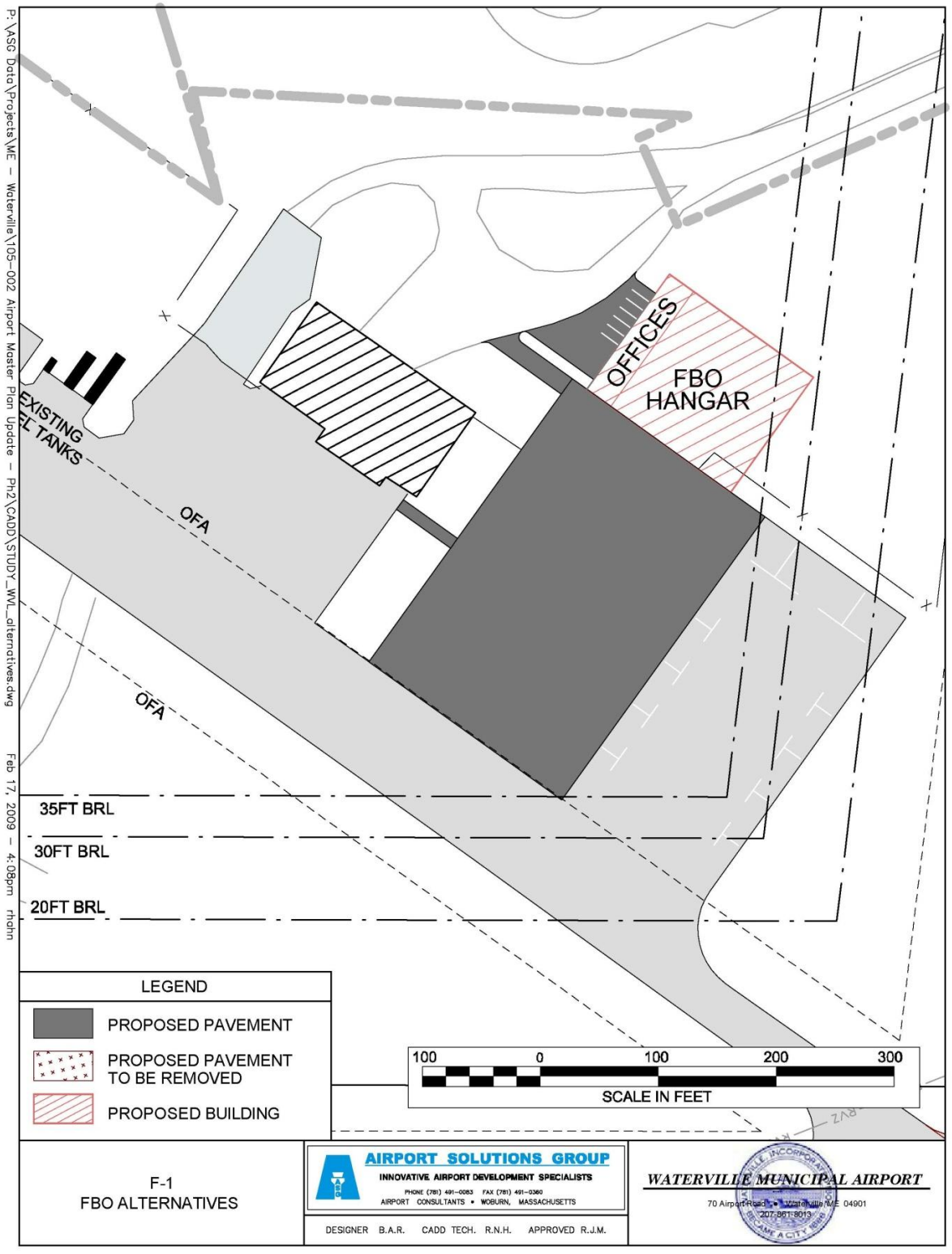
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OFFICES
FBO HANGAR
EXISTING FUEL TANKS
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LEGEND
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PROPOSED PAVEMENT TO BE REMOVED
PROPOSED BUILDING
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SCALE IN FEET
F-1
FBO ALTERNATIVES
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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AIRPORT CONSULTANTS • WOBURN, MASSACHUSETTS
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WATERVILLE MUNICIPAL AIRPORT
70 Airport Road • Waterville ME 04901
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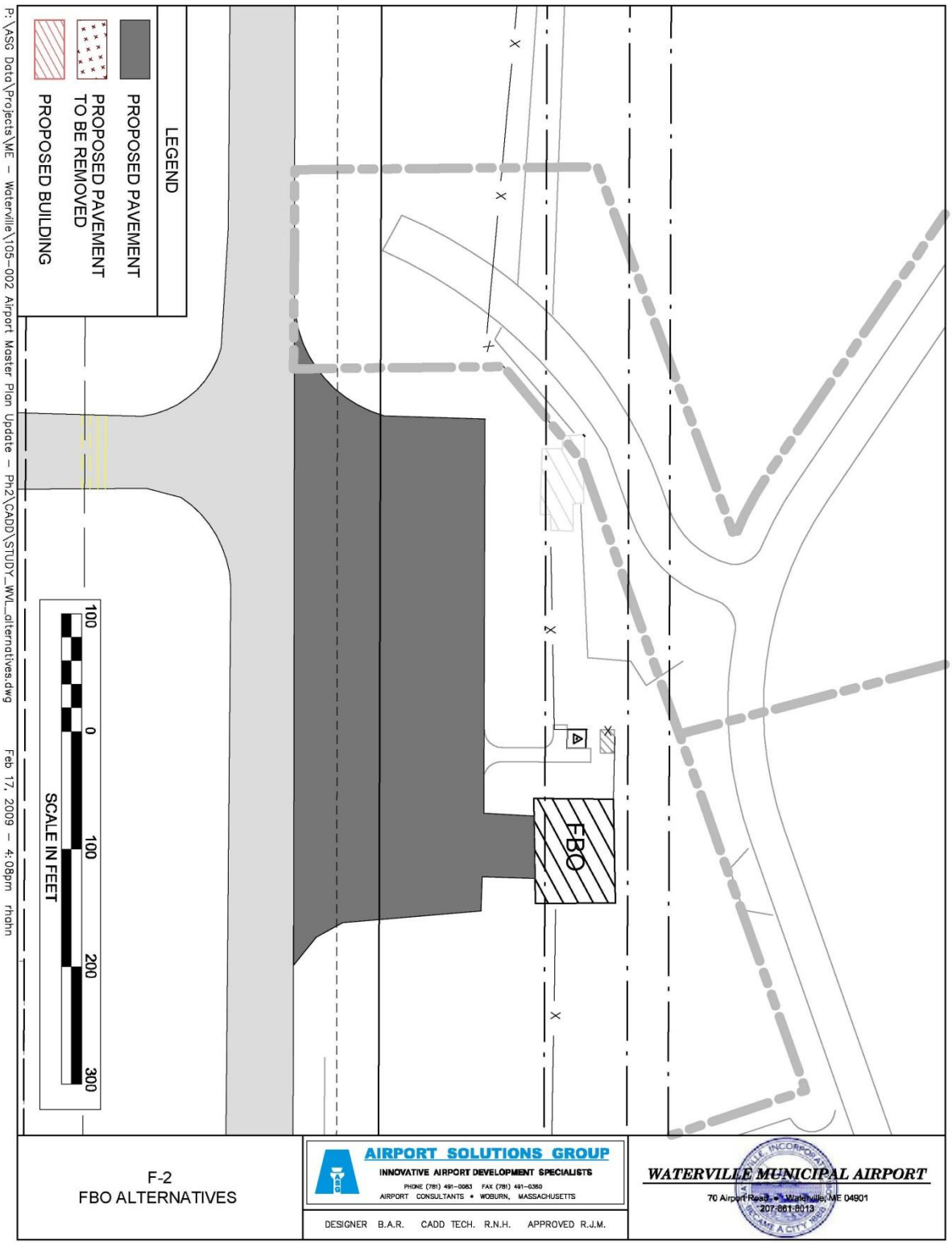
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F-2
FBO ALTERNATIVES
AIRPORT SOLUTIONS GROUP
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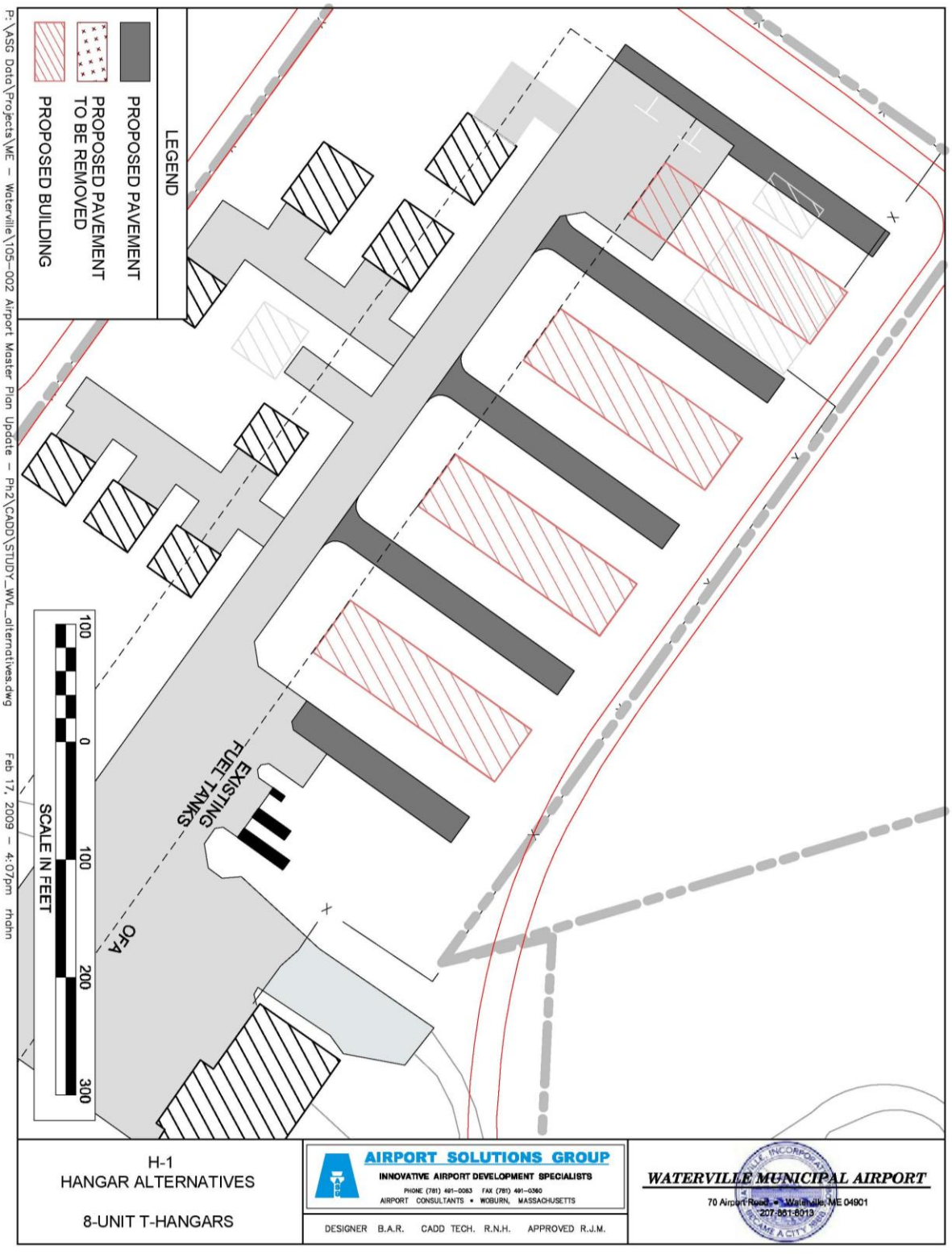
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H-1
HANGAR ALTERNATIVES
8-UNIT T-HANGARS
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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LEGEND
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PRIMARY SURFACE
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EXISTING FUEL TANKS
SCALE IN FEET
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400
600
H-2
HANGAR ALTERNATIVES
100FT CORP. HANGARS (TYP)
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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AIRPORT CONSULTANTS • WOBURN, MASSACHUSETTS
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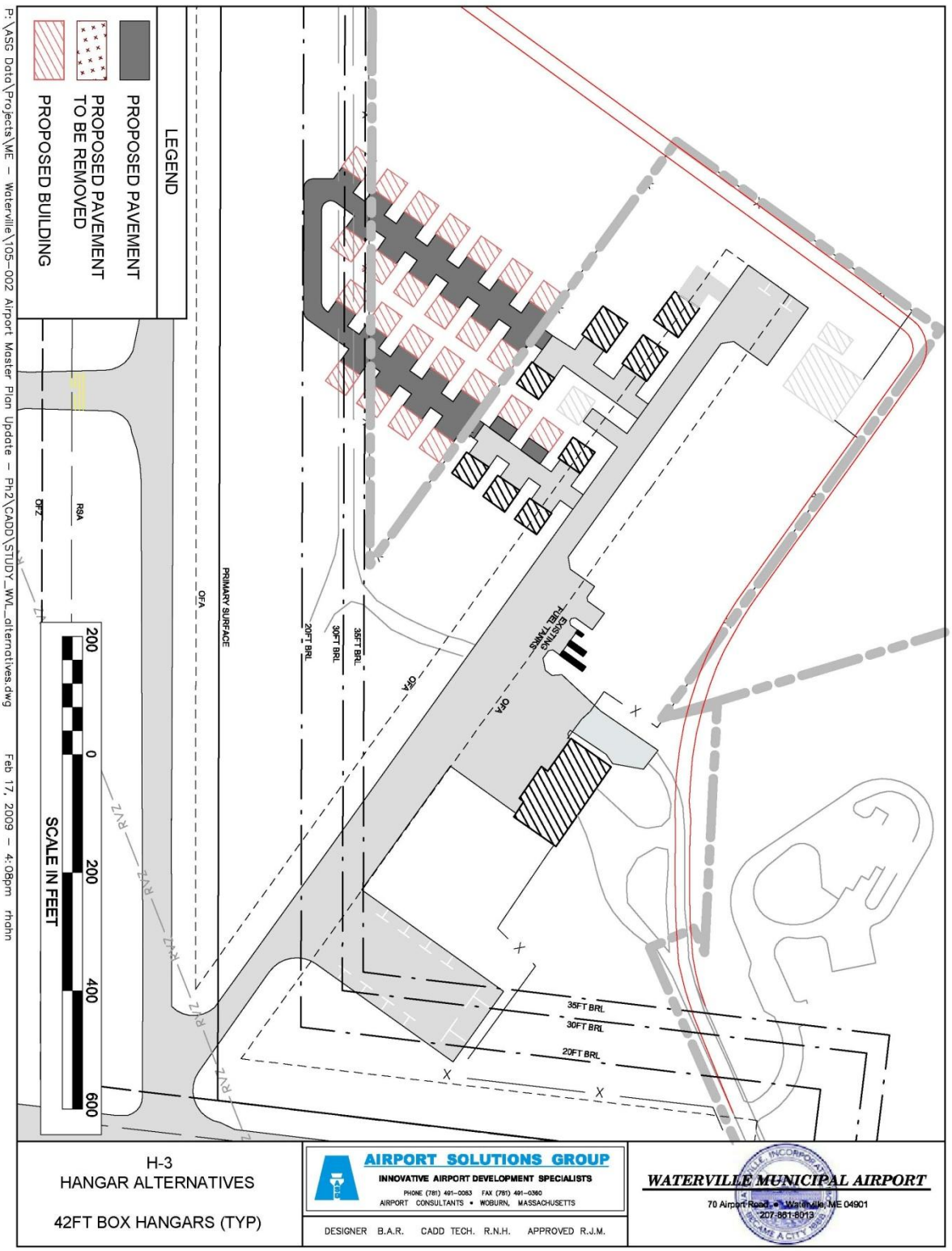
LEGEND
PROPOSED PAVEMENT
PROPOSED PAVEMENT TO BE REMOVED
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SCALE IN FEET
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0
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PRIMARY SURFACE
OFA
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20FT BRL
30FT BRL
35FT BRL
EXISTING PCN 71/R/A/W/T
H-3
HANGAR ALTERNATIVES
42FT BOX HANGARS (TYP)
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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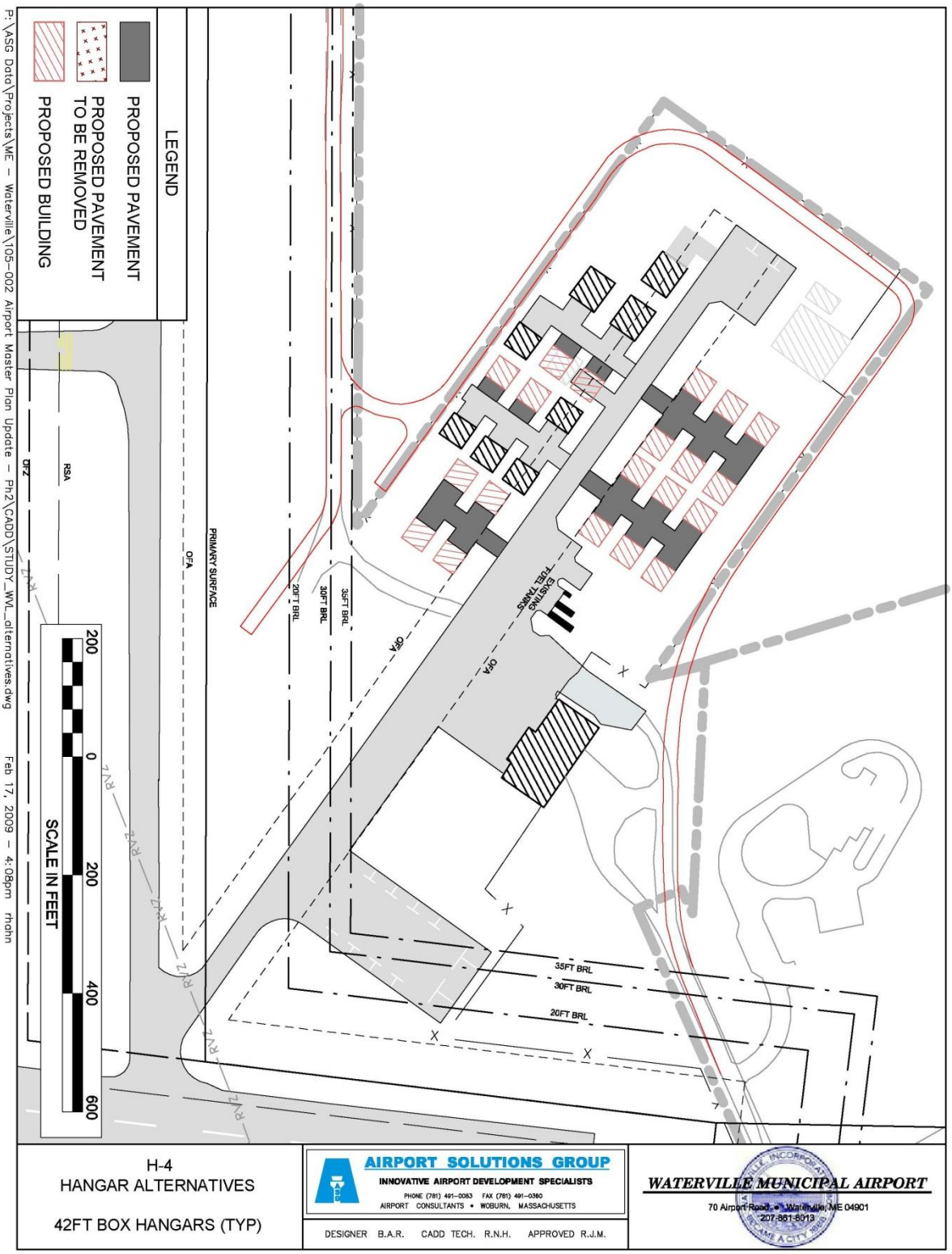
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EXISTING FUEL TANKS
SCALE IN FEET
200
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400
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H-4
HANGAR ALTERNATIVES
42FT BOX HANGARS (TYP)
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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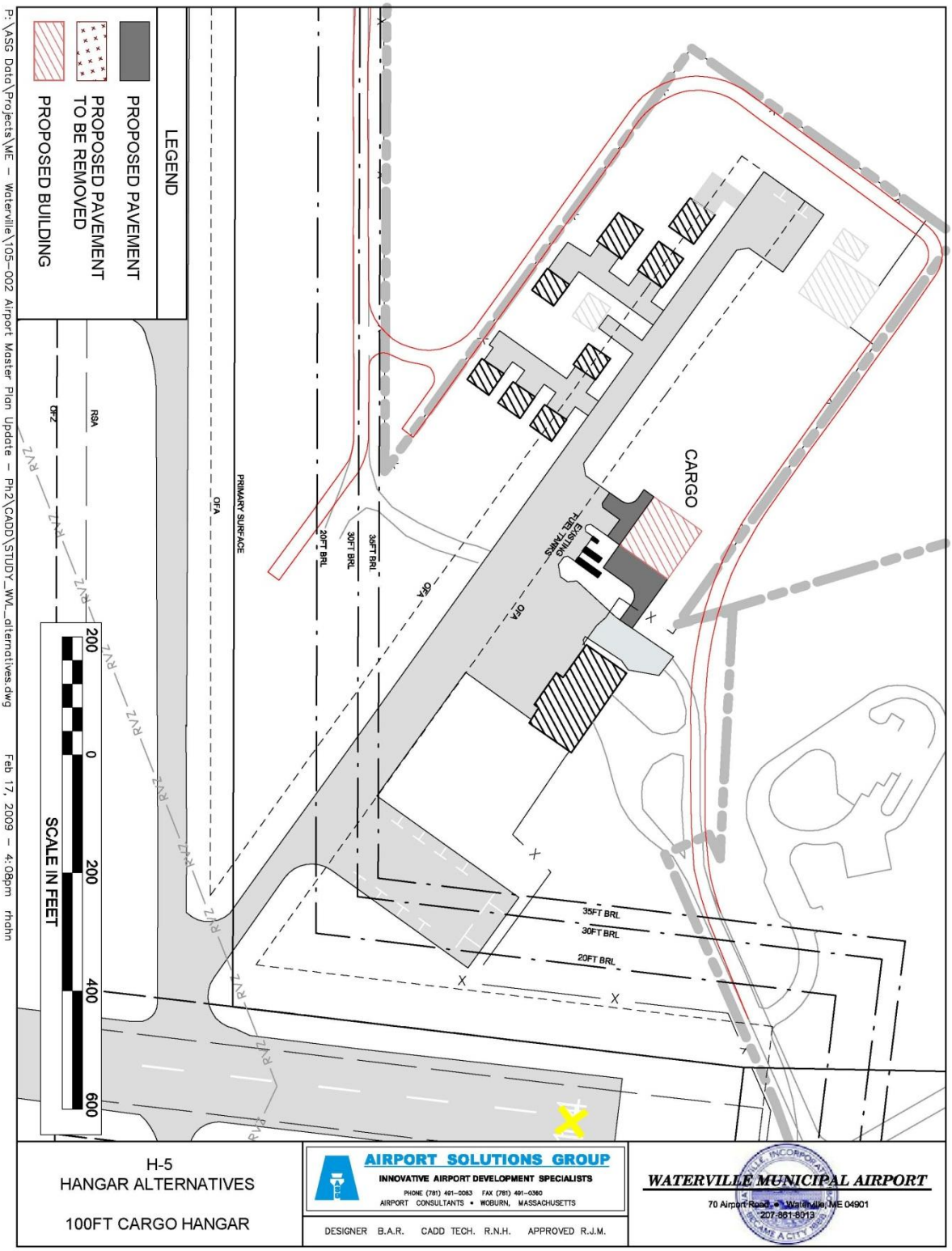
LEGEND
PROPOSED PAVEMENT
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PROPOSED BUILDING
CARGO
EXISTING FUEL TANKS
PRIMARY SURFACE
OFA
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RSA
20FT BRL
30FT BRL
35FT BRL
SCALE IN FEET
200 0 200 400 600
H-5
HANGAR ALTERNATIVES
100FT CARGO HANGAR
AIRPORT SOLUTIONS GROUP
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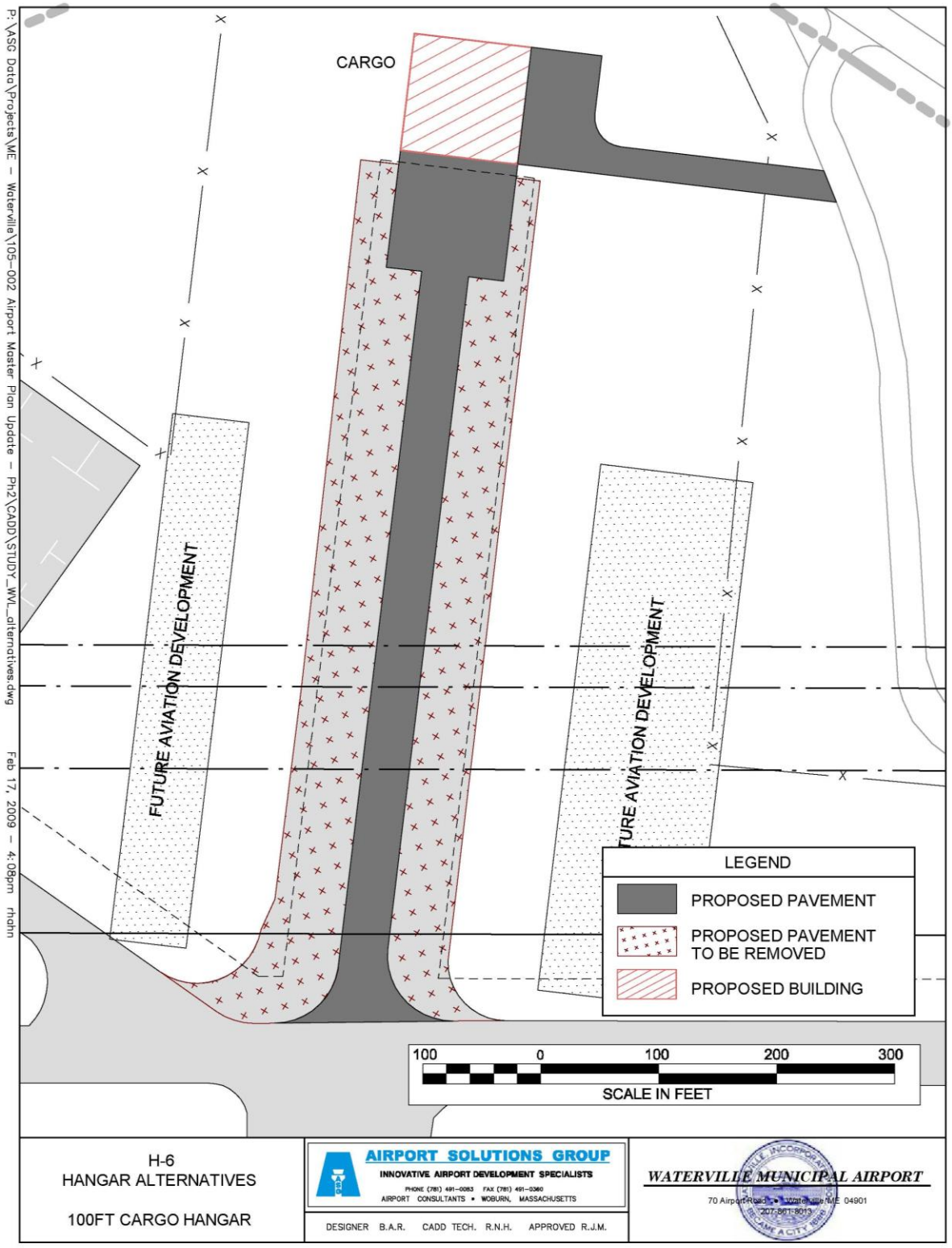
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CARGO
FUTURE AVIATION DEVELOPMENT
FUTURE AVIATION DEVELOPMENT
LEGEND
PROPOSED PAVEMENT
PROPOSED PAVEMENT TO BE REMOVED
PROPOSED BUILDING
100 0 100 200 300
SCALE IN FEET
H-6
HANGAR ALTERNATIVES
100FT CARGO HANGAR
AIRPORT SOLUTIONS GROUP
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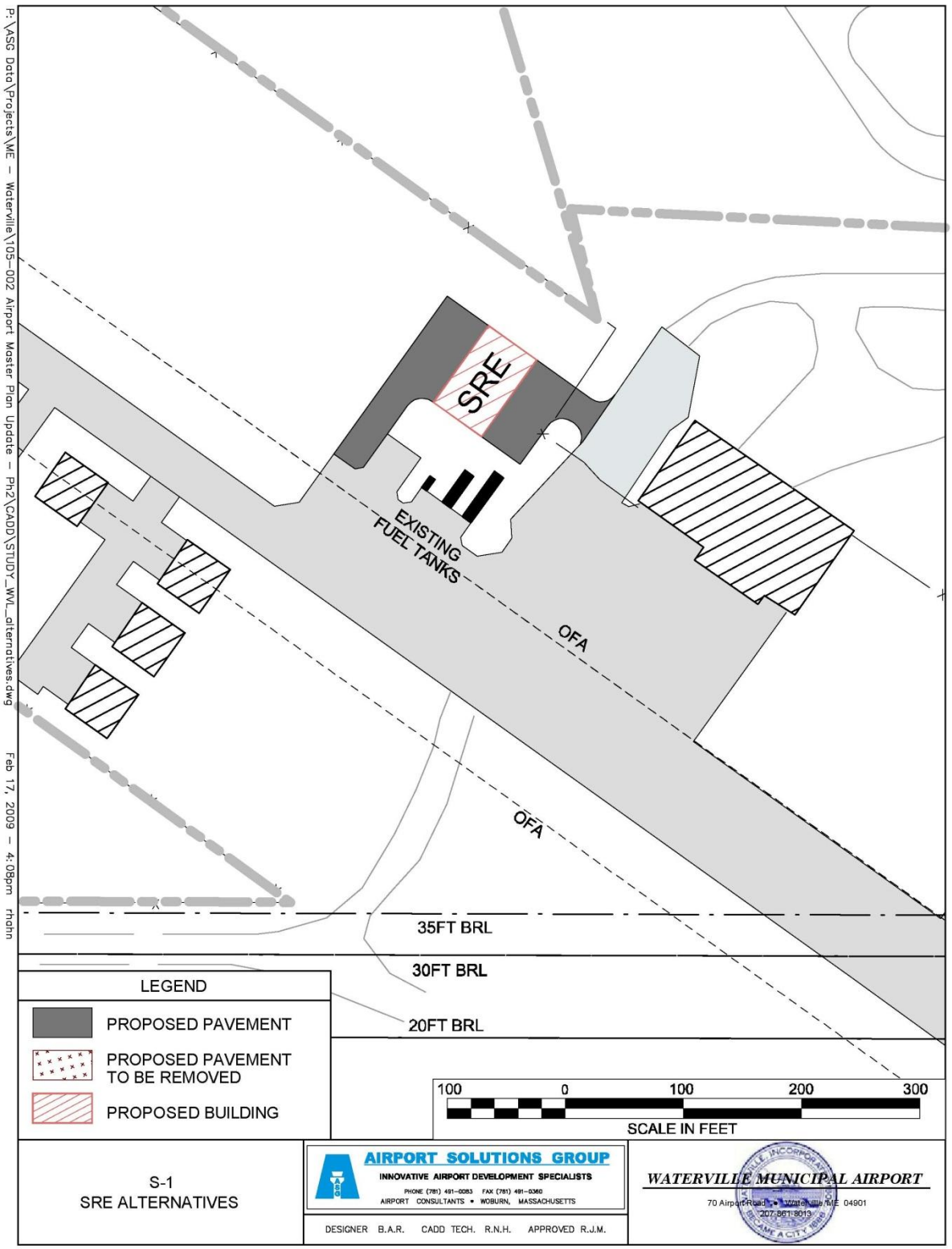
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SRE
EXISTING FUEL TANKS
OFA
OFA
35FT BRL
30FT BRL
20FT BRL
LEGEND
PROPOSED PAVEMENT
PROPOSED PAVEMENT TO BE REMOVED
PROPOSED BUILDING
100 0 100 200 300
SCALE IN FEET
S-1
SRE ALTERNATIVES
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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AIRPORT CONSULTANTS • WOBURN, MASSACHUSETTS
DESIGNER B.A.R. CADD TECH. R.N.H. APPROVED R.J.M.
WATERVILLE MUNICIPAL AIRPORT
70 Airport Road • Waterville ME 04901
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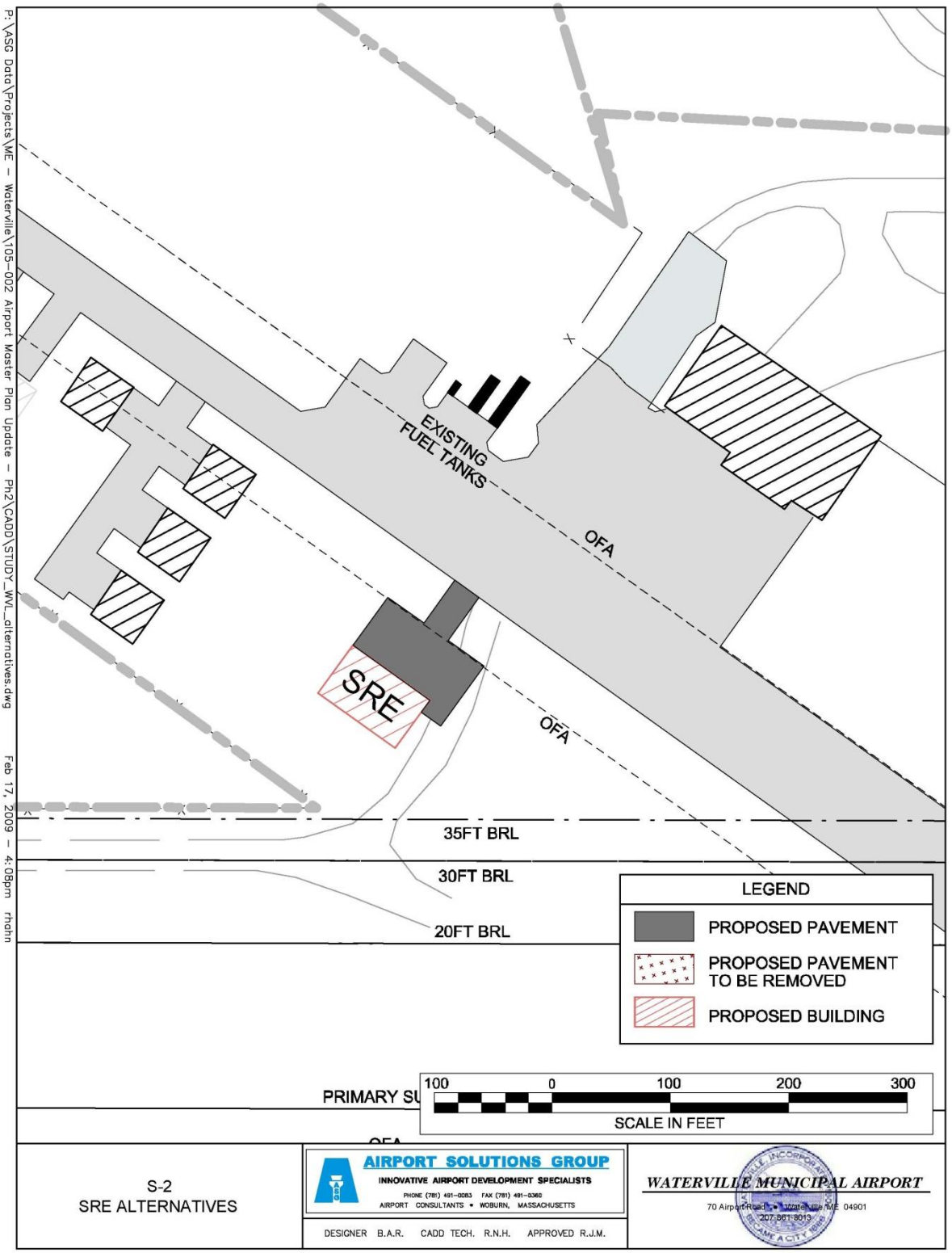
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EXISTING FUEL TANKS
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SRE
OFA
35FT BRL
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PRIMARY SU
LEGEND
PROPOSED PAVEMENT
PROPOSED PAVEMENT TO BE REMOVED
PROPOSED BUILDING
100 0 100 200 300
SCALE IN FEET
S-2
SRE ALTERNATIVES
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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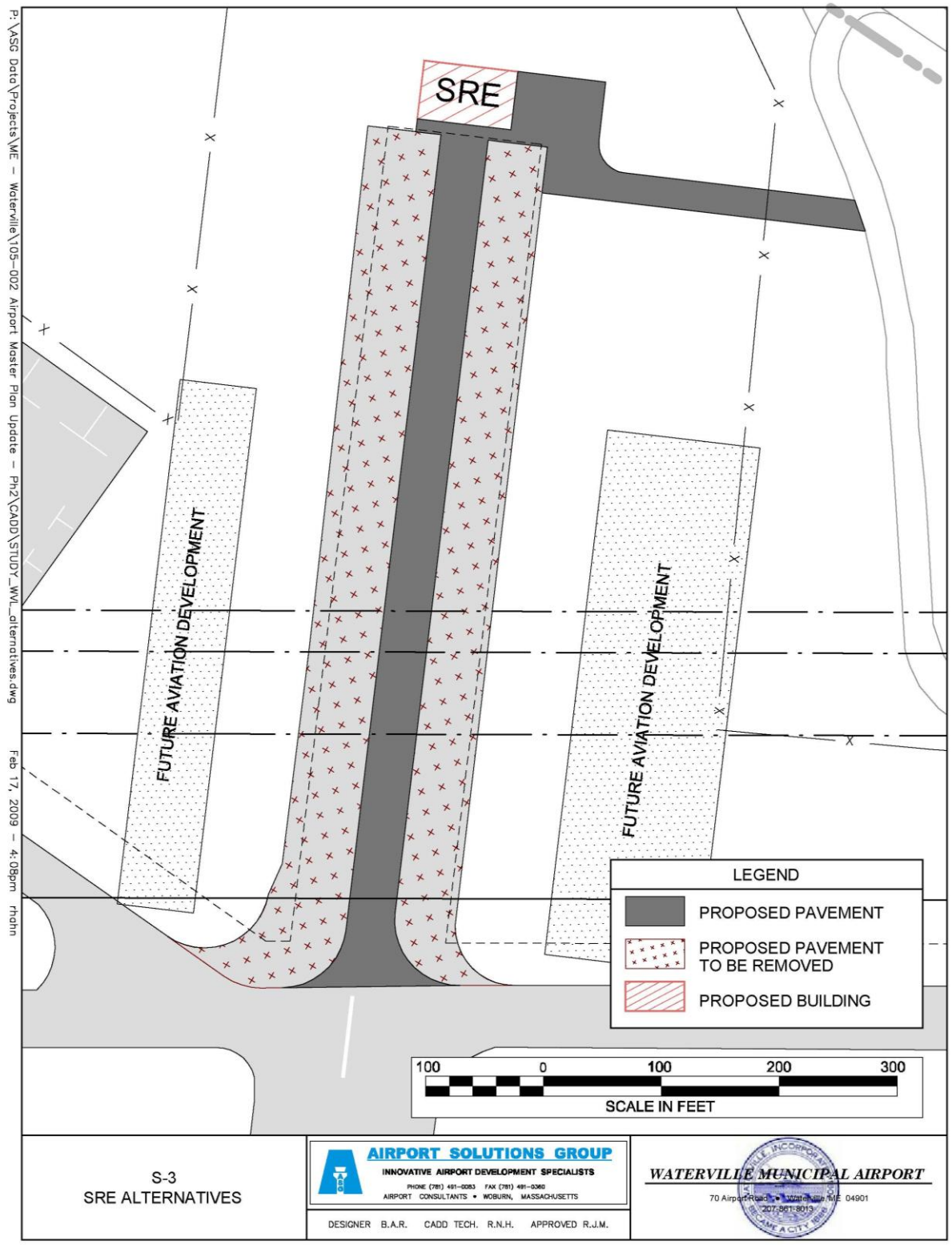
AIRPORT CONSULTANTS • WOBURN, MASSACHUSETTS
DESIGNER B.A.R. CADD TECH. R.N.H. APPROVED R.J.M.
WATERVILLE MUNICIPAL AIRPORT
70 Airport Road • Waterville ME 04901
207-861-8013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SRE
FUTURE AVIATION DEVELOPMENT
FUTURE AVIATION DEVELOPMENT
LEGEND
PROPOSED PAVEMENT
PROPOSED PAVEMENT TO BE REMOVED
PROPOSED BUILDING
100 0 100 200 300
SCALE IN FEET
S-3
SRE ALTERNATIVES
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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DESIGNER B.A.R. CADD TECH. R.N.H. APPROVED R.J.M.
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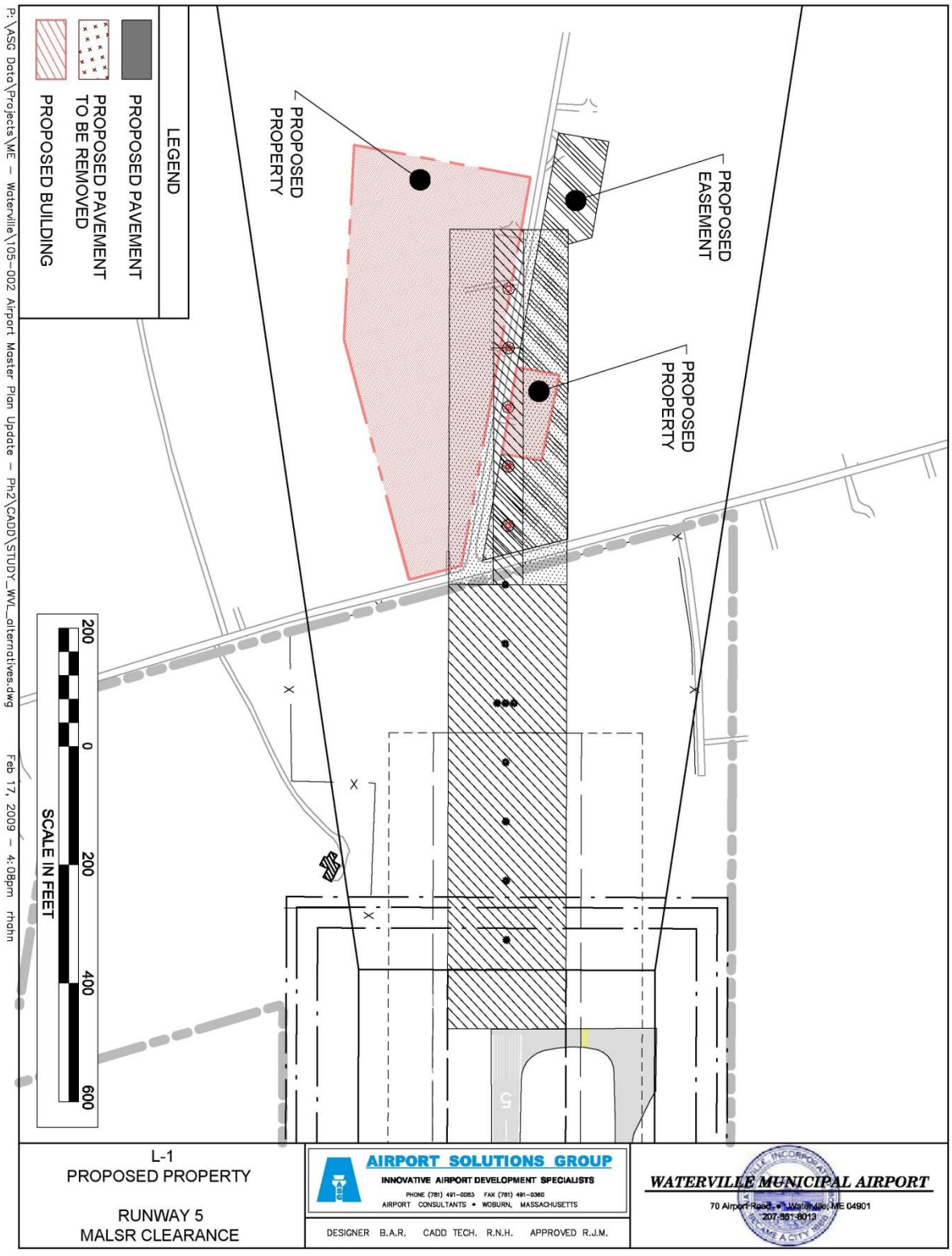
LEGEND
PROPOSED PAVEMENT
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P:\ASG Data\Projects\ME – Waterville\105-002 Airport Master Plan Update – Ph2\CADD\STUDY_WVL_alternatives.dwg Feb 17, 2009 – 4:08pm rhahn
L-1
PROPOSED PROPERTY
RUNWAY 5
MALSR CLEARANCE
AIRPORT SOLUTIONS GROUP
INNOVATIVE AIRPORT DEVELOPMENT SPECIALISTS
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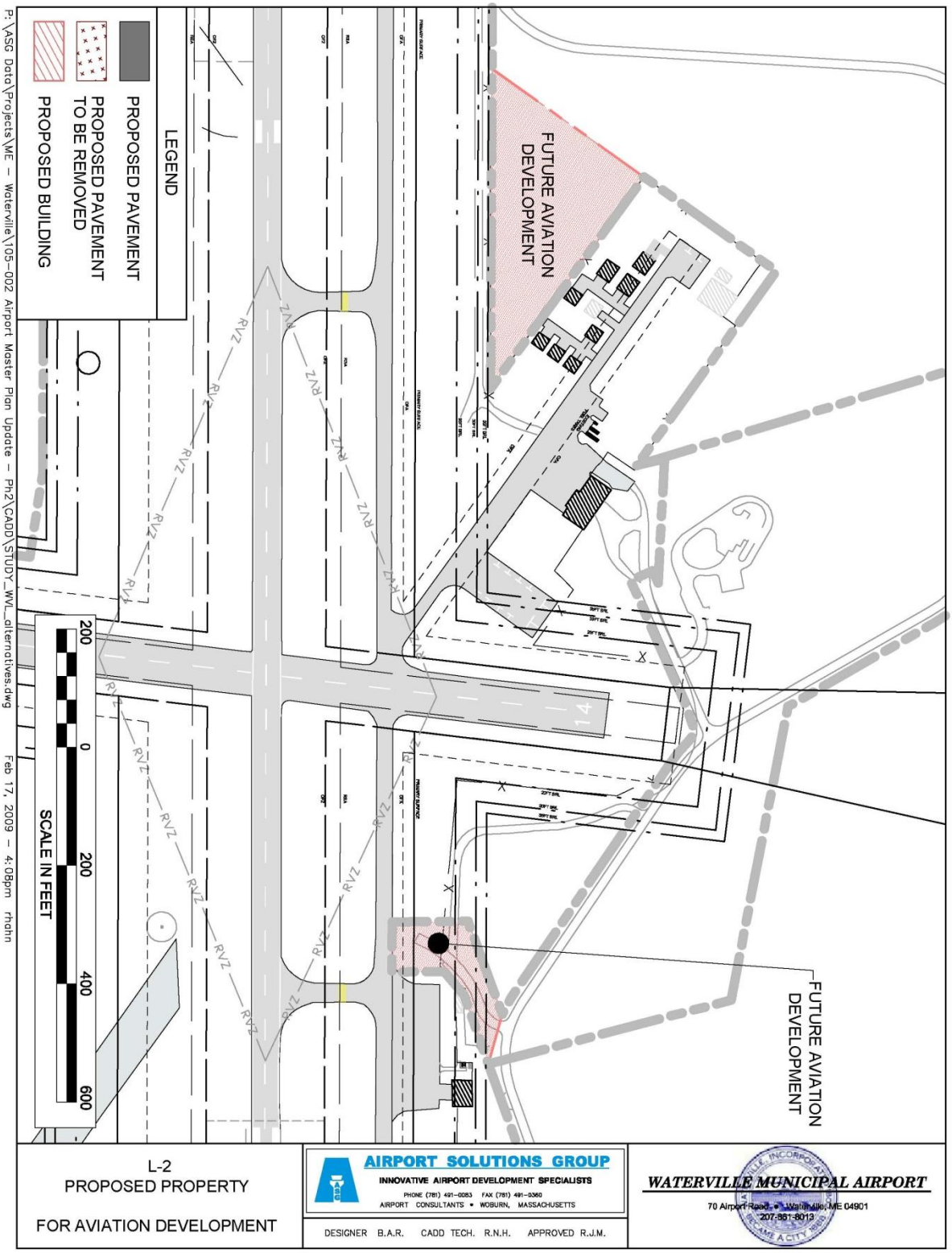
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Waterville Robert LaFleur Municipal Airport
AIRPORT MASTER PLAN UPDATE

CHAPTER 5
ENVIRONMENTAL REVIEW

5.0 Environmental Review

Just as airport development can be held up by financial or engineering constraints, the environmental impacts associated with proposed airport improvement projects can also halt development. Therefore, the potential environmental effects of the project alternatives are an important consideration. This chapter provides a preliminary environmental review of the proposed project alternatives for the Waterville Robert LaFleur Municipal Airport.

While not a formal environmental assessment (EA), which is a detailed, in-depth examination of the expected environmental effects of a proposed action, this preliminary review provides a high level analysis of the environmental elements described in Federal Aviation Administration (FAA) Advisory Circular 150/5070-6B, FAA Order 5050.4B, Airport Environmental Handbook, and in consideration of relevant State of Maine environmental regulations and procedures as they relate to the preferred alternative. Furthermore, this chapter evaluates the proposed airport improvement projects with respect to conditions that could exempt a project from a categorical exclusion from environmental assessment. Unless otherwise identified as "Categorically Excluded" per FAA Order 5050.4B, Section 602, an EA in accordance with the National Environmental Protection Act (NEPA) is required for the proposed improvement projects on the Airport Layout Plan (ALP) that are anticipated to be implemented in the short-term (5 year) planning period (Phase I)

Many projects at general aviation airports are categorically excluded from requiring environmental assessment under NEPA. Categorical exclusion is defined as a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a federal agency in implementation of NEPA and for which, therefore, neither an environmental assessment or an environmental impact statement is required (40 C.F.R. 1508.4).

Although the FAA does not perform formal approval of all aspects of airport master plans, they do require that sponsors seeking a grant for airport improvements have the proposed improvement shown on an FAA-approved ALP. Unless the improvements consist solely of items that are categorically excluded, an EA in accordance with NEPA and FAA Order 5050.4B must be completed.

The purpose of this chapter is to conduct a general assessment of the environmental effects of the preferred alternatives described for all the projects in the 20-year planning period and to define the potential extent of future environmental analyses that is needed to implement the airfield improvements shown on the ultimate ALP. This review will also identify any possible mitigation measures or modifications to the Draft ALP to avoid, minimize or mitigate any environmental impacts.

This chapter includes the following sections:

- Section 5.1 – Noise Impacts
- Section 5.2 – Land Use
- Section 5.3 – Air Quality
- Section 5.4 – Water Quality
- Section 5.5 – U.S. Department of Transportation Act Section 4(f) Lands
- Section 5.6 – Historic, Architectural, Archaeological, and Cultural Resources
- Section 5.7 – Biotic Communities
- Section 5.8 – Threatened or Endangered Species of Flora and Fauna
- Section 5.9 – Wetlands
- Section 5.10 – Floodplains

- Section 5.11 – Coastal Zone Management
- Section 5.12 – Coastal Barriers
- Section 5.13 – Wild and Scenic Rivers
- Section 5.14 – Farmland
- Section 5.15 – Energy Supply and Natural Resources
- Section 5.16 – Light Emissions
- Section 5.17 – Solid Waste Impact
- Section 5.18 – Environmental Justice
- Section 5.19 – Summary

The Preferred Alternatives for WVL include the following improvement projects:

Short Term:

- Airport obstruction removal.
- Alternative R1- Narrow the existing crosswind runway (14-32) from 150 feet to 60 feet;
- Alternative A1- Construct an aircraft apron adjacent to the existing terminal apron; and
- Alternative H1/H6 - T Hangar and/or Box Hangar Development east of taxiway "D".

Long Term:

- Alternative T1a - Construct a new taxiway "E" which will connect taxiway "D" to taxiway "A";
- Land acquisition east of taxiway "D" and off of the approach end of runway 5;
- Alternative S1- Snow-Removal Equipment (SRE) building construction in the vicinity of the existing terminal;
- Alternative F1- FBO development behind and abutting the new terminal apron; and
- Upgrade the approach lighting system for runway 5 to a MALSR.

5.1 Noise Impacts

Aircraft noise is the most common environmental impact associated with airports, largely because aviation noise transcends airport property, and has the potential to disrupt communities adjacent to airports. Consequently, noise from airport projects is often the public's primary concern. To address this problem and understand its effects, standard noise models have been developed that help implement measures to alleviate noise problems where they exist around an airport.

The purposes of the projects proposed in the Waterville Airport Master Plan are to improve the reliability and safety of the existing infrastructure, and to improve the efficiency of aircraft operations. They are not designed to generate any significant changes in the type, size or number of aircraft operating to or from the Airport. As a result, off- airport noise impacts are not anticipated. However, a thorough review of any potential noise impacts will be included in a subsequent (EA) process.

During construction, short term increases in noise levels associated with standard construction activities will occur in the project areas during standard daylight working hours due to the use of equipment that may include bulldozers, loaders, and dump trucks. Increased noise levels are only expected on a temporary basis, and are not expected to occur beyond the project's completion. Minimal increase in noise levels may occur should the construction of new T-hangars take place as a result of private interest.

5.2 Land Use

All of the proposed improvement projects are primarily located on Airport property and are consistent with aviation uses. The projects are not growth inducing, meaning they will not expand much beyond the existing airport property boundary and will not have significant land use ramifications, such as disruption of communities or relocation. The proposed land acquisition south of Webb Road to upgrade the approach lighting system for Runway 5 may cause minor changes in aircraft traffic patterns and the potential increase in traffic volume across Webb Road is expected to be minimal. Consequently, no potential adverse effect is anticipated.

5.3 Air Quality

An air quality assessment for long term impacts is not required for projects that will not increase the current operations numbers above FAA thresholds. The FAA thresholds are based on an understanding that small airports with limited operations like WVL have been found to have essentially no impact on air quality.

The proposed projects would have a potential, albeit temporary, effect on air quality as a result of use of fresh asphalt necessary for construction of the new taxiway, aircraft aprons and dust emissions during the narrowing of Runway 14-32. Additional construction vehicle traffic and activity would also have a temporary impact on air quality resulting from fugitive dust emissions as well as short-term emission of air pollutants originating as the by-product of construction equipment fuel combustion during the construction and demolition phases. Air pollutant emissions would be minimized by the relatively short duration of the proposed projects and the limited amount of earth disturbance associated with each project. In addition, air quality impacts are not expected to extend beyond the immediate vicinity of each project area and no impacts are expected following completion of the projects.

The appropriate mitigation measures identified in FAA AC 1505370-10, *Standards for Specifying Construction at Airports*, should be followed during the proposed projects. In addition, FAA specifications included in FAA AC 1505370-10, Item P-156 *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control* should be included in the project contract documents to ensure that construction impacts to air quality be minimized.

5.4 Water Quality

Any new development, such as the construction of new aprons or hangars will require that water runoff be properly collected and treated. As such, the proposed improvement projects at WVL would require consultation with federal, state, and local agencies as well as adherence to Maine Department of Transportation (DOT) *Best Management Practices for Erosion and Sedimentation Control* with respect to water quality. The coordination process requires that a description of the proposed development be sent to the appropriate agencies requesting a determination of water quality impacts. This coordination will occur for any short term projects requiring an EA. As per FAA Order 5050.4B, once approved, an EA is valid for 3 years. Consequently, the anticipated projects for WVL with the likelihood of occurring within 3 years of an approved EA, having the potential to affect water quality, and therefore require an EA include:

- Airport obstruction removal;
- Alternative R1- Narrow the existing crosswind runway (14-32) from 150 feet to 60 feet;
- Alternative A1- Construct an aircraft apron adjacent to the existing terminal apron;

Obstruction removal could have potential impacts on water quality due to the potential for increase erosion and sediment loading to surface water resulting from vegetation removal.

5.4.1 Surface Water

Section 401 of the Federal Clean Water Act (1972) requires applicants for Federal permits for projects that result in a discharge to waters (including wetlands) of the State of Maine to obtain a State Water Quality Certification (WQC). Applicable activities that likely will require a State Water Quality Certification (WQC) include those involving any filling of wetlands and/or the waters of the State of Maine. The only proposed projects that may impact wetlands are obstruction removal on/in the vicinity of the Airport and apron and hangar development which may increase surface water runoff. Since erosion controls will be maintained throughout the duration of any proposed projects, and these projects will be implemented in a manner intended to minimize impacts on water quality, adverse impacts to surface water are not expected to occur during or following completion of the proposed projects.

5.4.2 Ground Water

As identified in the baseline conditions, the Airport is situated in an area with moderate to low or no potential groundwater yield and is not located over or near any mapped sand and gravel aquifer which could be utilized as a municipal ground water supply. All proposed development will utilize municipal water supply and wastewater disposal systems where discharge of water or pollutants to groundwater is not anticipated. Therefore, no new sources of groundwater contamination are expected as a result of any proposed development.

5.4.3 Drinking Water

There will be no change in the use of petroleum or other chemicals in paved areas or other areas of the Airport as a result of any proposed project. Increased impervious surface within a specific watershed at Waterville Airport could result in slightly less direct recharge to underlying subsurface materials. Based on the lack of significant adverse effects to surface water and groundwater described in Sections 5.4.1 and 5.4.2, no significant adverse impacts to drinking water on the Airport property or its vicinity are anticipated as a result of any proposed projects.

5.4.4 Stormwater

Stormwater produces runoff that begins when rainfall has no place else to go, when soil and vegetation can no longer absorb and store stormwater. Maine receives approximately 42 inches of precipitation a year (MaineDOT BMP for Erosion and Sediment Control), in the form of rain or snow and the volume and rate of runoff is directly related to the duration and intensity of this precipitation. The State of Maine recommends using Best Management Practices (BMPs) in conjunction with Low Impact Development to minimize the volume and rates of runoff leaving a site.

Additionally, airport operations are regulated by the U.S. Environmental Protection Agency under the National Pollutant Discharge Elimination System (NPDES) authorized by Section 402 of the Clean Water Act. The NPDES permit program controls water pollution by regulating “point sources,” i.e., pipes, man-made ditches and so on, that discharge pollutants into waters of the United States.

As described in previous airport development permit applications (Application for Permit Modification for Airport Improvement Projects, March 2004), the Airport uses several drainage areas to model stormwater runoff. Watershed 1 contains the business park and the north-west portion of the Airport. All runoff generated in Watershed 1 drains to a stream that traverses the site from north to south. Watersheds

2, 3 and 4 are located on airport property around Taxiway 'D.' Watershed 2 generated runoff drains northerly off airport property. Runoff in Watershed 3 drains westerly to a drainage ditch before leaving the Airport property. Runoff in Watershed 4 drains southerly to a wide, shallow swale and then leaves airport property. All three Watersheds 2 through 4 eventually drain to the same stream that drains Watershed 1. The stream in turn empties into the Kennebec River at a location about 1.5 miles in a eastern direction from the Airport.

It was determined in the environmental permit referenced above, that the proposed reduction in pavement from Runway 14-32 will mitigate any increases in on-site stormwater runoff resulting from previously identified airport projects, including T hangars in the vicinity of taxiway "D". At that time, it was determined that the proposed development met the standards for stormwater management. However, since the projects identified in the 2004 permit do not exactly match those of the current proposed improvement projects and some of the proposed development specified in the 2004 permit application has not occurred, the proposed improvement projects will be subject to future determination and/or require an additional Application for Permit Modification that identifies if the proposed projects meet the current Maine DEP standards.

The impacts to pervious surface related to all proposed development result in the addition of approximately, 218,000 SF of pavement. These projects include:

- A new taxiway "E" which will connect taxiway "D" to taxiway "A";
- An aircraft apron adjacent to the existing terminal apron;
- FBO building development abutting the new aircraft apron;
- A SRE building in the vicinity of the existing terminal; and
- T hangar development.

Alterations to stormwater flow at the Airport could result from increasing the amount of impervious surface, however, the proposed narrowing of Runway 14-32 would offset this by approximately 165,000 SF, and the reclamation of the abandon pavement in the east quadrant of the Airport would additionally offset this by approximately 140,000 SF. Therefore, the construction of all proposed development in conjunction with pavement removal results in an additional pervious surface of approximately 87,000 SF, or nearly 2 acres, which could result in improving the overall drainage at the Airport.

It is anticipated that as airport projects progress, the impacts of additional impervious surface will concurrently be offset by the narrowing of Runway 14-32 and/or the removal of the abandoned pavement.

Furthermore, with the addition of the dry swale west of the proposed development along taxiway "D", it is also anticipated that the required total suspended solids (TSS) removal standards associated with proposed development will be met. Actual stormwater impacts will be investigated further, and determined in a subsequent environmental analysis.

5.5 U.S. Department of Transportation Act Section 4(f) Land

It appears that no adverse impacts to Section 4(f)/6(f) properties (publicly owned parks, recreation areas or wildlife refuges) will occur as a result of the preferred alternative and, therefore, no measures to mitigate potential impacts resulting from the proposed action appear warranted.

5.6 Historic, Architectural, Archaeological, and Cultural Resources

Maine DEP recognizes the importance of preserving unusual natural areas for educational and scientific purposes. As such, any proposed development should reasonably ensure that the preservation of any historic or archeological resources will not be adversely affected. Additionally, Maine DEP states that proposed development sites should also minimize the disturbance of adjacent archeological sites.

As stated in previous Site Location of Development Act permit application materials (2004), no cultural or historic resources were identified by the State Historic Preservation Office for the Waterville Airport. With the exception of future vegetation clearing, all of the proposed short term improvements are located within areas that were previously developed. It is not anticipated that any development identified within the preferred alternative will have impacts to any historic or archeological site.

5.7 Biotic Communities

The Airport consists of previously cleared and developed lands, runways, roads, and support structures. The majority of the vegetation found within the developed area of the Airport consists of mowed grasslands. Although there are natural habitats including managed grasslands and wetlands surrounding the Airport property, the proposed projects would be largely confined to developed areas of the Airport, thereby avoiding large impacts on natural areas.

Wildlife species that congregate around the Airport are typically highly mobile and may be temporarily displaced or disturbed during future development. Although it is expected that obstruction removal will have a minimal impact to biotic communities, this impact is not expected to be adverse.

5.8 Threatened or Endangered Species of Flora and Fauna

As stated in the baseline conditions chapter, the Airport is not contained within any protected species habitat mapping. Therefore, the preferred alternative is not anticipated to be in conflict with these protected areas.

5.9 Wetlands

As stated above in Section 5.4.1, the only proposed improvement project that would be located directly within areas of known wetlands is obstruction removal.

The known wetlands that would be impacted are comprised of forested wetland. Tree species in the forested wetland include red maple, elm, green ash, balsam fir, white birch, willow, and eastern hemlock. However, since the majority of the Airport property has not been delineated and surveyed in accordance with Army Corps of Engineers wetland delineation standards, all wetlands in the vicinity of the proposed obstruction removal will need to be flagged prior to clearing.

The wetland vegetation management minimum performance standards apply to all delineated wetlands, unless the DEP determines that the functions and values of the wetlands will not be impacted by the removal of vegetation. Additionally, if initial obstruction removal results in areas of bare soil or minimally vegetated cover, the areas of bare soil must be allowed to re-vegetate naturally, where practicable.

It is expected that a functional assessment of wetland impacts will be completed in a subsequent EA, however, considering the amount of obstruction removal required within existing wetlands, it is

anticipated that obstruction removal will result in only a minimal effect on the wetlands' functions and values.

5.10 Floodplains

According to the latest available FEMA Flood Insurance Rate Maps for the Town of Waterville (May 2001) there are no FEMA designated floodplains or flood hazard areas on or in proximity to the Airport, that include areas of future vegetation removal. Furthermore, the addition of new impervious area over the 20 year planning period as part of the proposed improvement projects is expected to be offset by the narrowing of Runway 14-32. Therefore, potential effects on the occurrence and frequency of flooding on the Airport and within the Airport environs are not expected. However, engineering controls would still be implemented to eliminate the potential effects of any increased impervious surface, including increased peak stormwater runoff as part of the proposed improvement projects.

5.11 Coastal Zone Management

The Waterville Airport is not located within a coastal zone area, therefore coastal zone management practices do not apply to the proposed improvement projects.

5.12 Coastal Barriers

Since the Waterville Airport is not located within a coastal zone area, the proposed improvement projects is therefore exempt from review under the Coastal Barriers Resource Act of 1982 (PL. 97-348) which prohibits most federally financed projects from occurring within the Coastal Barriers Resource System along the Atlantic or Gulf coasts. The proposed projects will not have an effect on coastal barriers.

5.13 Wild and Scenic Rivers

The only river designated by The Wild and Scenic Rivers Act, in the state of Maine is the Allagash River which is a tributary of the St. John River, in northern Maine. Since this river is not in the Airport vicinity, the preferred alternative will not have any significant effect on Wild and Scenic Rivers.

5.14 Farmland

The Federal Farmland Protection Act is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assists in ensuring that Federal programs are administered to be compatible with state and local government, and private programs and policies to protect farmland.

Farmland is broken into the following categories by the Federal Farmland Protection Policy Act: prime farmland (which is present on Airport property in the form of Paxton and Woodbridge soils), unique farmland, and land of statewide or local importance. Since Airport property is primarily comprised of Paxton and Woodbridge soils, the preferred alternative may affect soils protected under the Federal Farmland Protection Act.

Generally, prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, or fiber, and is available for these uses. The landuse identified in the vicinity of the proposed approach lighting system upgrade that extends south of Webb Road consists mainly of "Pasture/Hay" and "Cultivated crops".

If it is determined that the proposed developments impact designated farmland soils, it may be necessary to contact the U.S. Natural Resources Conservation Service (NRCS) for completion of a Farmland Conversion Impact Rating Form. Based on the impact rating score developed by the NRCS, the NRCS may recommend consideration of alternate project sites. The NRCS recognizes farmland soils are a valuable resource and evaluates the potential conversion of farmland soils in the context of regionally available farmland soils. However, the need for completing this form is contingent on the local zoning within the proposed project area since prime farmland does not include land already in or committed to urban development. Areas zoned for commercial, industrial, or high-density residential use may be exempt from this requirement.

5.15 Energy Supply and Natural Resources

The use of energy to support the preferred alternative would largely involve the use of additional fuels in construction and excavation machinery. The proposed airport improvement program does not require use of unusual materials in short supply; therefore, energy supplies and natural resources are not affected by the proposed airport improvement program.

5.16 Light Emissions

The Maine DEP recognizes the need to minimize light pollution and glare from illumination caused as a result of any development. Changes to airport lighting associated with the preferred alternative could occur as a result of the upgrade of the approach lighting system from a MALSF to a MALSR. When the Airport implements the MALSR upgrade; care will be taken to ensure that light emissions avoid unreasonable impacts to the natural environment. This includes any impacts to wildlife, contribution to artificial illumination of the night sky, hazards to drivers, and impacts to adjacent communities. It is anticipated that appropriate mitigation measures will be considered by using appropriately shielded lights and other measures.

5.17 Solid Waste Impact

It is anticipated that minimal amounts of solid waste will be generated from the daily operations of the proposed development. Waste disposal during project implementation will be managed separately from normal airport solid waste management operations. There will be temporary solid waste management impacts during the narrowing of Runway 14-32. Depending on the actual level of necessary obstruction removal in the Airport vicinity, low to moderate amounts of removed vegetation will be generated. It is anticipated that where possible, this vegetation be disposed of on-site through chipping, and the remainder worked into the soil, in compliance with Solid Waste Management Regulations of the state of Maine. Overall, the preferred alternative will not significantly increase long term solid waste volumes; therefore, solid wastes are not expected to be adversely affected by the proposed airport improvement program. Furthermore, it is also anticipated that the Airport will recycle pavement waste from the narrowing of Runway 14-32, for use in future/concurrent airport pavement projects.

5.18 Environmental Justice

The development on the Airport has few off-airport impacts. In addition, there are no known areas of minority and/or low-income residents in the Airport vicinity. Therefore, environmental justice requirements as described in the U.S. Department of Transportation *Order to Address Environmental Justice in Minority Populations and Low-Income Populations* are not applicable here.

5.19 Summary

The recommended projects for the 20 year planning period do not appear to have a significant impact on the surrounding community or environment. There will be a need, however, to complete coordination with federal, state, and local agencies when the recommended projects are initially designed. This coordination can be done on a per-project basis or as a group, and will most likely be in the form of an Environmental Assessment. An Environmental Assessment will be conducted for both short and long term development.

Considering the above analysis, a summary of assumptions include:

- The proposed projects will not have any adverse affects to noise, land use, or air quality;
- The proposed projects will not cause unreasonable erosion of soil or sediment;
- The proposed projects will not adversely impact wetlands or water quality or adversely interfere with the natural flow of surface waters that would cause flooding;
- The proposed projects will not affect biotic communities, archeological sites or endangered species;
- The proposed projects will not impact coastal zones, coastal barriers, or wild and scenic rivers; and
- The proposed projects will not have any significant solid waste, or light emission impacts.

These assumptions will be further confirmed as part of the follow-on EA for the Phase I Implementation Plan identified in the AMP. The following summary table is a preliminary assessment of the environmental permits that may be required for completion of the proposed projects. Further review of applicability of permits would necessary prior to the commencement of the proposed projects and would be completed as part of a NEPA EA.

TABLE 1
SUMMARY OF APPLICABLE ENVIRONMENTAL PERMITS
WATERVILLE ROBERT LAFLEUR MUNICIPAL AIRPORT

PERMITS THAT APPLY	PERMITS THAT DO NOT APPLY	PERMITS FOR WHICH FURTHER INFORMATION IS REQUIRED FOR DETERMINATION OF APPLICABILITY:
State of Maine Clean Water Act Section 401 Water Quality Certification	Coastal Zone Management Act Federal Consistency Review	Possible Endangered Species Act Section 7 consultation with USFWS over potential impacts to threatened and endangered species
Maine DEP Stormwater Construction General Permit (MEPDES)	USACOE permit authorizing actions under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act	Possible Endangered Species Program consultation with Maine Department of Inland Fisheries and Wildlife Endangered Species Program
Maine Natural Resources Protection Act Permit	Consultation regarding applicability of Marine Mammal Protection Act of 1972 (MMPA) and a possible need to apply for a MMPA Incidental Harassment Authorization (IHA)	Maine DEP Air Emission License
	USACOE Consolidated Dredging-Dredged Material Reuse/Disposal Application	Maine DEP Hazardous Waste Genrator Permit
	USEPA (NESHAP) Asbestos Abatement Regulations	
	Maine DEP Subsurface Wastewater Disposal and Waste Discharge Licensing	
	Maine DEP Asbestos Management Regulations	

DEP – Department of Environmental Protection
MEPDES – Maine Pollution Discharge Elimination System
USFWS – U.S. Fish and Wildlife Service

Waterville Robert LaFleur Municipal Airport
AIRPORT MASTER PLAN UPDATE

CHAPTER 6
AIRPORT LAYOUT PLAN

6.0 Airport Layout Plan

As part of the overall Airport Master Plan process an update to the Airport Layout Plan (ALP) was conducted for the Waterville Robert LaFleur Municipal Airport. The ALP is a graphical depiction of the Airport's existing conditions including building facilities, pavements, airspace and obstructions as well as proposed future development for the twenty year planning period. The ALP is intended to provide guidance for the Airport, federal and state agencies and consultants to guide short-term and long-term capital improvement projects at the Airport.

Airport Layout Plan Drawing Sheets

The ALP is comprised of the following drawings:

- Title Sheet
- Exhibit 1 - Existing Airport Layout Plan
- Exhibit 2 - Ultimate Airport Layout Plan
- Exhibit 3 - Technical Data Plan
- Exhibit 4 - Terminal Area Plan
- Exhibit 5 - Airport Airspace Drawing (FAR Part 77)
- Exhibit 6 - Plan and Profile – Runway 5-23
- Exhibit 7 - Plan and Profile – Runway 14-32
- Exhibit 8 - Land Use Plan

Airport Layout Plan Drawing Sheet Descriptions

The following is a discussion of each sheet within the ALP set. An updated ALP set is provided at the end of this chapter.

- **Title Sheet** – Provides general information such as project title, AIP number, an index of drawings and location map. There is also a signature box for approvals by local, state and FAA representatives.

- **Exhibit 1 - Existing Airport Layout Plan –** Depicts the existing conditions at the Waterville Robert LaFleur Municipal Airport, current as of the Airport Master Plan Update project. Information such as existing property boundary, pavement surfaces, buildings, NAVAIDS, airspace, safety areas, and easements are shown. Off-airport local road and building infrastructure as well general topography are also displayed. A legend, list of abbreviations and inventory of airport facilities are included as tables on this sheet.

- **Exhibit 2 – Ultimate Airport Layout Plan –** Depicts the proposed projects for the 20-year planning period as discussed in Chapter 4, Alternatives Analysis. The proposed projects will be constructed based on the Airport's priorities and funding availability and are categorized as short term (0-5 years) and long term (10-20 years). Table 6.1 lists the short-term and long-term proposed projects. In addition to the information shown on the existing ALP, the Ultimate ALP sheet also includes a Summary of Airport Design Data table, existing and future Airport Facilities table and Agency Approval Signature Blocks.

Table 6.1
Proposed Projects

Short Term
Reconstruct Runway 14-32 and Obstruction Removal
Purchase Avigation Easements - Short Term
Environmental Assessment for Avigation Easements
Design Only - Reconstruct Runway 5-23
Reimbursement for Avigation Easements
Easement Tree Clearing
Phase I - Reconstruct Runway 5-23
Phase II - Reconstruct Runway 5-23
Taxiway 'A' Pavement Repairs
Construct SRE Building & Purchase Snow Blower
Construct New T-Hangar Development (North TW D)
Long Term
Terminal Apron Expansion - Phase II
Airport Master Plan Update (incl. Utility MP)
Construct New FBO Expansion
Construct Airfield Fencing Improvements
Construct Taxiway "E"
Develop Area G / North Quadrant
Purchase Land / Easements for MALSR Upgrade
Upgrade the RW5 Approach Lighting System to a MALSR
Reconstruct Taxiway A
Purchase Avigation Easements - Long Term
Land / Easement Acquisition South of T/W D - 6.4 Acres
Reconstruct Taxiway D

- **Exhibit 3 – Technical Data Plan –** Includes Summary of Airport Design Data Table, Wind Rose Data Table, Modifications to Standards Table, Location Map and Airport Vicinity Map.

- **Exhibit 4 – Terminal Area Plan –** Includes a large scale plan of the proposed development within the Terminal and TW D area, as wells as the proposed corporate aviation development north of Runway 14-32. The plan depicts the location and configuration of the terminal building, existing and proposed development including airfield pavements, hangars and parking areas.

- **Exhibit 5 – Airport Airspace Drawing (FAR Part 77) –** Depicts the FAR Part 77 Imaginary Surfaces, including primary, approach, transitional, horizontal and conical surfaces, with a USGS Quadrangle map as background information. Also shown are existing and proposed Part 77 Dimensional Criteria tables, Off-Airport Obstruction Table, generic detail of Part 77 Surfaces and Legend.

- **Exhibit 6 – Plan and Profile – Runway 5-23 –** Depicts the approach plan and profile views for the Runway 5 and 23 ends. For the Approach Plans, each inset is a 1"=400'scale horizontal view of the FAR Part 77 approach surface in relation to the runway end showing airfield pavement limits and general topography. For the Approach Profiles, each inset is a 1"=400' (horizontal) and 1"=40' (vertical) profile view of the FAR Part 77 approach surface in relation to the runway end. A table of obstructions, if applicable, and key map are also included on this sheet. Obstruction data was supplied by the City of Waterville.

- **Exhibit 7 – Plan and Profile – Runway 14-32 –** Depicts the approach plan and profile views for the Runway 14 and 32 ends. For the Approach Plans, each inset is a 1"=400'scale horizontal view of the FAR Part 77 approach surface in relation to the runway end showing airfield pavement limits and general topography. For the Approach Profiles, each inset is a 1"=400' (horizontal) and 1"=40' (vertical) profile view of the FAR Part 77 approach surface in relation to the runway end. A table of obstructions, if applicable, and key map are also included on this sheet. Obstruction data was supplied by the City of Waterville.

- **Exhibit 8 – Land Use Plan –** Depicts the land use proximate to the Airport and surrounding area. Land use information was taken from zoning maps obtained from the City of Waterville and the Town of Oakland.

The following pages, although not to scale, are an 11 x 17 version of the ALP sheet set. The actual 24 x 36 scaled version of the ALP sheet set has been provided to the FAA and the client for official approval.

Waterville Robert LaFleur Municipal Airport
AIRPORT MASTER PLAN UPDATE

CHAPTER 7
AIRPORT MANAGEMENT STRUCTURE ASSESSMENT

7.0 Airport Management Structure Assessment

This Chapter comprised of Working Paper #4 - "Assessment for Creating an Airport Authority": Summarizes findings to aid the City of Waterville in choosing the best course of action for the ownership and management of the Airport.

7.1 Review Current Management Structure

As with Phase 1 of the Master Plan, the scope of work for this task involved the collection of data for the purpose of evaluating the City's current Airport management structure. Based on information provided by the City, other data collection efforts, interviews with City personnel, Airport tenants and other Airport users, the objective was to:

- Evaluate how well the Airport is currently being managed as a city entity, both the Airfield Management and the FBO management. This effort will include a review and assessment of the Airport manager's role & responsibilities, staffing issues, airfield operations, and budget requirements.

- Identify any (obvious or potential) problem areas in the current management structure.

This task of the working paper focuses primarily on assessing the facility's Airport management structure. The Phase II Master Plan Update discusses business planning issues as part of the Airport's future implementation plan.

Airport Management

Historically, there was no legislative requirement in the State of Maine for cities or towns to provide a formal, full-time Airport manager. Title 6 of the Maine state statutes requires general aviation commercial Airports to have at least a part-time Airport manager[1]. Budgeting issues, municipal resources, aviation market demands and regional competition are just some of the factors that influence municipal leaders when considering the best management option for their Airport. With ever-increasing economic pressures and considering the nature of the state Airport system in Maine, in particular the relatively high number of Airports compared to the low number of based aircraft resulting in a diluted client base, it is not surprising that many host communities opt to manage their Airports with part-time personnel; in some cases there simply is not enough activity to warrant, or local resources to support, a full-time Airport manager. In other instances based aircraft numbers are higher, more transient activity occurs, Airport leasing potential is greater, and other development opportunities exist, which contribute to revenue streams that support more staff. This AMPU study addresses many of these issues as it relates to the Waterville Airport.

[1] MRS Title 6 § 102.2 Airport Managers, paragraph A.

The City of Waterville, Maine recently updated its Airport Ordinance in March 2007, which authorizes the City Manager to appoint an Airport Manager. Below is the full text of the city ordinance.

ARTICLE I. ADMINISTRATION

Sec. 1-1. Airport Manager.

The City, through its City Manager, will appoint a person to act as the Airport Manager. Responsibilities of this position will vary according to whether or not the City has a Fixed Based Operator (FBO) stationed at the Airport. At a minimum, the Airport Manager will be responsible for all operational and planning needs of the Airport. This could include the supervision of personnel, the purchase of equipment and supplies, preparation of the annual budget and planning for Capital Improvement projects. In addition, this person will be the contact person for all State and Federal regulatory agencies on matters pertaining to the Airport.

Besides this ordinance, there was no official job description provided for the *Airport Manager* position. However, a complete position description was obtained for the *Assistant Airport Manager*. An overview of this position is described as follows:

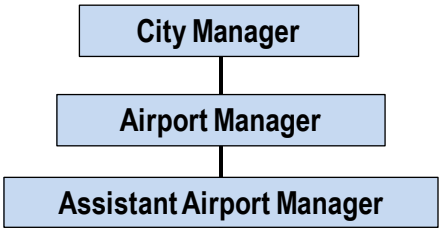
Position Title: ASSISTANT AIRPORT MANAGER

This position involves assisting the Airport Manager in the operation of the municipal Airport owned and operated by the City of Waterville. Work is performed under the supervision of the Airport Manager. Duty hours shall vary. This position will require on call status as well as scheduled hours outside of the normal M-F, 8 am to 5 pm work week.

In summary, the *Airport Manager* reports to the City Manager. Among other responsibilities, the city ordinance authorizes the *Airport Manager* with oversight and supervision of Airport personnel including the *Assistant Airport Manager*. The *Assistant Airport Manager* also has supervisory responsibilities for "a crew of laborers and/or equipment operators assigned to the Airport." The city employs part time help to assist the *Assistant Airport Manager* with airfield operations & maintenance activities as well as FBO services. As of the date of this report, the city employs as many as three to four part-time and/or seasonal personnel who split their time between airfield maintenance and FBO duties.

The current management structure can be summarized as follows:

Figure 7.1
WVL Management Structure



Current Airport staffing is summarized as follows:

Table 7.1
Current Airport Staffing

Title	Job Status	Hrs / Wk	Description of Work / Misc. Comments
Assistant Airport Manager	Full Time	Salary	Ensures Airport is maintained to FAA and other safety standards. Also, operates & manages FBO – servicing pilots, passengers and aircraft.
Airport Maintenance Technician	Part Time, Seasonal Full Time – Winter Part Time – Summer	 40+ 10 as available	Maintains Airport-owned facilities Winter – snow removal, airfield lighting, trees Summer – brush control, minor structure maintenance, etc.; Divides time 50/50 between WVL & DPW (annual goal is 50/50 split)
FBO Support Staff – 1	Part Time, Seasonal Winter Summer	15-20 20 15	All aspects of service to Pilots / Crew, passengers and aircraft
FBO Support Staff – 2	Part Time, Seasonal Winter Summer	30-35 35 30	All aspects of service to Pilots / Crew, passengers and aircraft
FBO Support Staff – 3 (pending new hire for 2008)	Part Time, Seasonal Winter Summer	20 0 20	All aspects of service to Pilots / Crew, passengers and aircraft

At present approximately six people are responsible for running the Airport, only one of which is employed (near) full time[2] as the *Assistant Airport Manager*. Two part time employees, including the *Airport Manager*, serve elsewhere in city government under Community Development and the Public Works Department. Three other individuals serve in a part time capacity providing either maintenance and/or FBO services. The city operates a net budget deficit in its current capacity of managing the Airport and running the FBO; however year end statistics provided by the City for FY06-07 showed a profit of $35,004 for FBO Operations[3].

As currently organized, the City Engineer serves in a part-time capacity as *Airport Manager*; Airport manager responsibilities are presently included in the job description for the City Engineer[4]. In practice the *Airport Manager* reports directly to the City Manager. This direct line to decision-making authority should be advantageous for the Airport. However the part-time status of this position is not ideal for

[2] Interview with Assistant Airport Manager dated 02/18/2008; official work work schedule may be less than 40 hours, but the Assistant Airport Manager is on-call 24/7 and typically responds to evening and weekend service requests
[3] WVL Ph1 AMPU Working Paper No. 1, dated 12/21/2007, page 22 of 28; Table - WVL Year End 06-07 Financial Summary
[4] Teleconference with City Manager and Airport Manager on 05/07/2008

running a successful Airport. On one hand it could be argued the Airport benefits from lower labor costs, and the appearance might suggest the Airport is "doing more with less". But the daily demands of Airport operations, maintenance and oversight should be supported with full-time Airport management. If the city intends to capitalize on the facility's business aircraft market potential, such demands will only add to the *Airport Manager's* workload.

The position description provided for the *Assistant Airport Manager* indicates daily, full-time duties, with a requirement for on-call status outside of the normal weekly work hours (M-F, 8 a.m. to 5 p.m.). The list of duties included for the *Assistant Airport Manager* is generally consistent with job responsibilities for an *Airport Manager* of a typical general aviation (GA) facility; however it also includes services that a Fixed Base Operator (FBO) would provide[5].

The job description outlines some of the necessary duties normally expected of this position; however it also includes a few vague references and lacks specific detail for certain other essential job functions. For example, the statement "*Monitor Airport conditions*" is ambiguous and should be supported with specific guidance. Such language could be replaced with a requirement for daily airfield inspections and a list of major items to observe including, but not limited to, aircraft traffic patterns, pavement conditions and foreign object debris (FOD), winter snow and ice conditions, airfield markings, airspace, vegetation, airfield electrical equipment (e.g. lights, signs, beacons), NAVAIDS, wildlife, maintenance equipment, etc. Essentially, conditions required for a safe and efficient operating environment should be monitored daily. Most Airports similar to WVL would impose this responsibility on the *Airport Manager*. In the absence of such a requirement, the city is encouraged to update the *Assistant Managers* job description.

Another example of ambiguous language included in the job description is to "*Read and understand all FAA Advisory Circulars*". The job description further states that the employee is required to "*Inform Supervisor of all new regulations or policies that the FAA enacts through the AC process*." Such well-intended duties cannot be taken literally. But without further clarification, this requirement could have unintended consequences. The current language sets the employee up for failure; a good job description should convey reasonably fair expectations for both employee and employer.

In practice the current *Assistant Airport Manager* divides his duties among three main categories of work: FBO services, airfield maintenance activities and typical office-related Airport management duties. At present, the vast majority of time is spent dealing with FBO services. Combined, airfield operations & maintenance and office work represent less than 1/3rd of the typical weekly duties of the current *Assistant Airport Manager*. Consider this general breakdown of duties for the typical work week[6]:

Table 7.2
Staffing Responsibility Breakdown

Category of Work	Currently	Ideally
FBO Services	70%	20%
Airfield Maintenance	5%	5%
Airport Mgr Duties	25%	75%

At present, the *Assistant Airport Manager* spends much less time dealing with various office responsibilities required of the position (airfield Tenant issues, leases, FAA & MeDOT issues, Advisory

[5] Reference Position Description for Assistant Airport Manager dated 10/19/2007
[6] Phone interview with the Assistant Airport Manager on 02/18/2008.

Circulars, maintaining financial records, budgets, accounting, etc.), which tend to take a backseat to ever increasing, time-sensitive FBO duties. Anecdotal evidence from previous interviews suggests the Airport is achieving higher marks for its FBO services, but it may be at the cost of running an efficient Airport.

A copy of the annual performance evaluation form was obtained for the *Assistant Airport Manager*. This form, titled Supervisory Employee Evaluation Form 2, appeared to be a generic form used for all city positions. Variations of this standard-issue template are commonly adopted at all levels of public-sector government service. If implemented properly, it can be an effective means of measuring an employee's job performance. However the form provided did not appear to include specific performance criteria, but only generic expectations that could reasonably apply to any position within city government. Therein lays the possibility that such an important evaluation tool might fail to meet expectations for both the reviewing manager and the employee. Particular emphasis should be given to identifying and detailing job duties that are specific to the actual position being evaluated. Consider Factor #1, Job Knowledge:

FACTORS AND RATING

---

1. **Job Knowledge:** Demonstrates knowledge within field. Carries out daily responsibilities. Follows City policies.

☐ Exceptional Performance ☐ Outstanding Performance ☐ Expected Performance ☐ Acceptable Performance ☐ Unsatisfactory Performance

Comments:

The text highlighted in yellow was included on the form provided to the consultant. It is unclear whether or not this language is a generic city standard or the actual evaluation criteria for the *Assistant Airport Manager*. Either way, the criteria is so general that it is nearly impossible to properly evaluate and rate the employee's performance. The phrase "*Demonstrates knowledge within field*" is vague and should be expanded to more accurately identify the Supervisor's expectations. Success indicators should be clearly included for the benefit of both parties. For instance, this particular performance objective could be expanded as follows (refer to the text highlighted in green):

FACTORS AND RATING

---

1. **Job Knowledge:** Demonstrates knowledge within field. Carries out daily responsibilities. Follows City policies.

Success Indicators: The Assistant Airport Manager shall complete one aviation training course during this evaluation period. Acceptable course work includes the Basic Airport Safety and Operations Specialist training offered by the American Association of Airport Executives / Northeast Chapter (AAAE/NEC), the Winter Deicing Training Course offered by the National Air Transport Association (NATA), or other pre-approved aviation management training courses.

The employee shall demonstrate such knowledge and ability by applying industry standard practices endorsed by the training sponsors listed above while carrying out his/her daily operations duties.

☐ Exceptional Performance ☐ Outstanding Performance ☐ Expected Performance ☐ Acceptable Performance ☐ Unsatisfactory Performance

Comments:

Performance ratings could also be expanded by clearly identifying success benchmarks. For instance, a rating of "*Expected Performance*" might involve simply attending and participating in the recommended

training course. A rating of "*Outstanding Performance*" might involve the employee receiving special recognition by the training sponsor (e.g. Certificate, Test Score). Creating specific, detailed evaluation criteria and listing actual success benchmarks undoubtedly involves more work for the Supervisor, but the "payback" is well worth the effort. Such clarity will assure reasonable accountability on both sides of the evaluation; it will contribute to the employee's personal development and increase job productivity.

Airport Advisory Board

The City's Airport Ordinance also includes a provision for an Airport Advisory Board. Below is the full text of this city ordinance.

> **ARTICLE I. ADMINISTRATION**
>
> **Sec. 1-2. Airport Advisory Board.**
>
> There is hereby established an Airport Advisory Board composed of nine (9) individuals, a majority of whom shall be City residents. The remaining members need not be residents of the City, but should have an interest in or experience with aviation related activities. At least two (2) members of the Board shall be Waterville City Councilors. Board members shall serve without compensation.
>
> Appointments to the Airport Advisory Board shall be made by the Mayor with the approval of a majority of the City Council. In case of a vacancy, the Mayor, with the approval of the Council, shall appoint a successor to fill the unexpired term. The initial terms of the members of said Airport Advisory Board shall be staggered as follows: three (3) members for one (1) year, three (3) for two (2) years, and three (3) for three (3) years. At the expiration of the initial term of each member of the Airport Advisory Board, all subsequent terms shall be for three (3) years. The Airport Advisory Board shall be charged with the duty of advising the City Manager, Airport Manager, Mayor and Council on matters pertaining to the municipal Airport. The Board should focus on developing plans/recommendations to improve the long term viability of the Airport.

An Airport Advisory Board was previously established in years past. Board members had no legal oversight or management authority of Airport personnel; rather, the Board advised city officials on various Airport matters. As conceived, the Board was empowered with a worthy cause: "focus on developing plans / recommendations to improve the long term viability of the Airport." In practice, it would appear the city and the Board failed to meet each other's expectations. Various interviews during the course of this master plan update suggest differing opinions regarding the value and benefit of the Advisory Board. Regardless of one's perspective, the Board disbanded several years ago and is no longer functioning.

Airport Authority

The Maine Legislature recently passed a bill to modify Title 6 of the Maine state statutes for the creation of a new Airport Authority[7]. A detailed assessment of Airport authorities for facilities similar to the Waterville Airport is provided later in this Chapter. These sections include a discussion of best practices and a summary of the pros and cons for establishing a new Airport authority as it may relate to the City of Waterville. Included in the new legislation is a provision for the establishment of a Board of Directors, which shall appoint an Airport Manager as the chief executive officer of the facility. The Airport manager in turn may be empowered by the Board to appoint other Airport employees.

This new option of governance is an intriguing departure from the status quo; it offers many advantages over the city's current organizational structure. A formal Board of Directors with oversight and decision making authority represents a paradigm structural shift, particularly for the City of Waterville given its recent history of employing a part-time *Airport Manager* and choosing to forgo with an Advisory Board. However this more formal political structure focusing exclusively on aviation issues is a much better business model than what currently exists. If organized and operated properly, city government can benefit from the knowledge base and experience of individual Board members. Although it may sound counter-intuitive, the Board should not be comprised entirely of pilots, but rather a reasonable cross section of the community. In addition to aviation expertise and city government representation, an effective Board should include members of the business community. In no particular order, other beneficial representation may include expertise in civil engineering or planning, the legal profession, law enforcement, the insurance industry, accounting, higher education, and a representative of at-large community concerns, particularly from a neighboring town to promote regionalization efforts. Joint ownership or management of the facility induces additional Board considerations[8].

Regardless of its role (advisory vs. authority), an effective Board should consist of a reasonable number of participants; too many members can be unwieldy and unproductive. Consensus building fosters accountability and improves productivity; disagreement and debate is a healthy by-product of decision-by-committee, as long as it remains focused through strong leadership from the Board Chairman.

Fixed Base Operations (FBO)

The FBO situation at WVL has been problematic for the City in recent years. Telford Aviation (Telford) was the last successful Fixed Based Operator serving the Waterville Airport. Telford served customers at WVL for twenty years from 1980 to 2000. Input from the interviews conducted under Task 3 suggests that Telford was well regarded and ran a successful business until its departure from the Airport in 2000. In fact, most people generally agree that the City and Telford both benefited from this relationship. Succeeding Telford was Kennebec Air from 2000 to 2002 and then Airborne Aviation from 2002 to 2004. It has been said that neither of these two FBOs made a serious investment in WVL. Other attempts were made to secure an FBO since 2004, but to no avail.

Since 2004, the City of Waterville has been providing FBO services for its customers. Some people might suggest the City is a reluctant participant in the FBO business, many people have said the City should not be running the FBO. In fact there were previous accounts of inadequate FBO services described during the interview process in Task 3. Under the circumstances Airport personnel are performing admirably; results from the user surveys suggest services have improved in recent years. However the City is not well qualified or equipped to run a first class FBO. It has been reported to the

[7] Reference Maine Public Law, Chapter 563, "*An Act To Facilitate the Creation of an Airport Authorities*", Section 1.6 MRSA c.10 – "*Airport Authorities*"

[8] Task 10.3 summarizes the legal requirements and ramifications of joint ownership / management

consultant that WVL lost several jet customers over the past few years because of inadequate FBO services, specifically mentioning services related to fueling and deicing.

The Airport / FBO relationship could be described as symbiotic. A good FBO can have a significant positive impact on the success of an Airport, and vice versa. Conversely, poor FBO services can adversely affect an Airport's image and marginalize the facility's use. Although evidence would suggest the city has improved on its services, it may nevertheless be struggling to recapture lost aircraft and past activity from clients that may have experienced poor customer service in years past.

The Waterville Airport is ideally positioned to capture additional business[9], but due to the current lack of aviation services and facilities, many business opportunities are probably being lost to nearby Airports. Such lost opportunity is exemplified with business customers using the Belgrade Lakes Golf Course. During the interview process it was revealed that when given the choice, people regularly choose the Augusta Airport over the Waterville Airport because of better service. Augusta Airport also benefits from greater use by customers destined for the City of Waterville simply because some people choose not to use WVL. In such instances, rental car, catering, fuel, landing and parking fees, hangar, maintenance, restaurant and hotel revenues are being lost to businesses in Augusta.

The following quote was obtained from the organization GA Serving America:

> "*The high value of General Aviation (GA) is well known to the people who have to select locations for America's new factories and offices. Many manufacturing firms intentionally locate themselves within 10 miles of a public-use Airport so that they can exploit the speed and access provided by GA. Community Airports allow local businesses to reach new markets, work with suppliers from neighboring states, or ship time-critical parts and materials to their customers. Local area businesses gain enduring competitive advantages when they use the nearby Airport; at the same time, the surrounding community gains jobs."*

If FBO services are improved and facilities are brought up to the standards required by most corporate aircraft operators, re-claiming this lost business should not be difficult[10].

Conclusions & Recommendations

With the current organizational structure, the Airport is overseen by a part-time *Airport Manager* and much of the remaining Airport staff is also considered part-time or seasonal. Differing opinions suggest the Airport Advisory Board never achieved its objective or the city never capitalized on its advice; either way, the Board's mission was never realized or fully completed. Without sufficient oversight and focus, the Airport could become a "rudderless ship". These factors may contribute to an unfocused mission, insufficient oversight and ineffective Airport management.
The WVL Airport is a major regional transportation asset; Airport management should continue to coordinate with city officials, the state and other regional partners including area business leaders to assure the Airport maintains appropriate emphasis in the city's comprehensive plan. With such recognition and commitment, the Airport could help stimulate and foster a more robust regional economy. Relegating the *Airport Manager* position to part-time status is contrary to these goals and objectives. The

[9] Professional opinion based on Airport location, proximity to ground access, airfield facilities and NAVAIDS, instrument approach procedures, and results of Phase I interviews. The Phase II business plan will expand on such market potential.
[10] Professional opinion based on Phase I analysis of previous based aircraft numbers and aircraft operations data; also assumes the City will commit the necessary resources to implement a reasonable business plan to capture WVL's market potential.

current Airport management structure does not foster a successful or productive business environment; part-time Airport management may be hindering the Airport's potential.

The Airport should be run like a business with a focused mission, strong leadership and community support. To assure success, the Airport should cater to the corporate customer and fully exploit this market potential. The Airport should also continue to support the needs of its based aircraft tenants and try to recapture former based customers. Besides a goal of financial self-sufficiency, under the right circumstances the Airport can, and should, be a catalyst for regional economic growth. It will take a serious and focused commitment by city government and the cooperation of local business leaders to achieve success. The Airport should have a full time manager with a background in aviation management and operations, and preferably some business development expertise. A business-minded oversight board can provide similar expertise, foster community support, and facilitate regionalization efforts.

Recent improvements have been made to improve FBO services, however the city is not well equipped, and the Airport is not properly funded, to provide industry-standard FBO services. Attempting to run the FBO and manage the Airport may be too much to handle; the current situation is not ideal. Attracting a first rate FBO should be a priority for the City of Waterville; however the Airport is strongly encouraged to review and update (or develop new) Airport Minimum Standards which establish operating criteria and guidelines for the FBO and other Airport tenants. A good FBO will free Airport staff to concentrate on running a safe and efficient facility, and allow them to explore and capitalize on additional land development opportunities. Identifying and developing adequate hangar facilities for corporate aircraft should be an integral part of the Airport's business strategy. The lack of hangar facilities and services is a leading factor in aircraft operators choosing to use neighboring Airports over Waterville, particularly during winter months. Airport management must develop clear and concise guidelines and identify specific, well-thought out sites for potential hangar development; this particular issue will be fully explored in Phase II. Care must be taken to include these sites on the ALP (Airport Layout Plan) with careful consideration of future ramp and taxiway requirements. One of the Phase II project deliverables will include a new ultimate ALP sheet that will depict all future Airport improvements based on this master plan project.

Summary of Recommendations

- Develop a mission statement for the Airport
- Adopt the new Maine Airport Authority management structure pursuant to Public Law, Chapter 563, "*An Act To Facilitate the Creation of Airport Authorities*", Section 1.6 MRSA c.10 – "*Airport Authorities*"
    - Reorganize / implement Airport management & staffing pursuant to new mission
    - Airport Manager should be reclassified to a full-time position
    - Provide adequate funding to meet new staffing requirements
    - Develop a new job description for the Airport Manager
    - Refine the job description for the Assistant Airport Manager
    - The City should develop and/or refine the annual performance evaluation criteria with success indicators and benchmarks for all Airport Authority employees including the Airport Manager, the Assistant Airport Manager and other Airport staff
    - Qualifications and experience for the Airport Manager and Assistant Airport Manager should be consistent with, and meet or exceed, local and state requirements
    - Airport Manager & Assistant Airport Manager should implement the Maine DOT Airport Manager Training Program including applicable testing requirements

  - A new personnel training program should be developed for all Airport Department employees including the Airport Manager, Assistant Airport Manager, and particularly, personnel involved in Operations & Maintenance of the Airport facility
- Secure a Fixed Base Operator, with particular emphasis on serving the business customer
  - Review and update the Airport Minimum Standards
  - Secure new FBO consistent with new mission statement
- Relinquish FBO duties and focus on managing and maintaining the facility

7.2 Research of Other Airport Authorities

Comparable Airports

In an effort to better understand industry practices relating to Airport management, an analysis was performed comparing several key aspects of WVL with similar or comparable Airports. The analysis is comprised of the following sections:

1. Describe the approach employed to determine the list of comparable Airports;
2. Provide an overview of the selected Airports in the context of a management framework;
3. Develop a summary of the "lessons learned" in creating an Airport authority;
4. Summarize the pro's and con's of creating an Airport authority; and
5. Identify the best practices available to create an Airport authority.

Data Collection, Screening and Airport Selection

The screening process to determine comparable Airports began with collecting basic Airport information on other general aviation Airports similar to WVL. Initially only other Airports within the state of Maine were looked at, with Auburn Lewiston Municipal Airport included in the analysis at the request of WVL project staff. However, it was determined that no other Maine Airports would meet the objectives necessary for a thorough analysis in determining the best option for the Airport and the City.

It was then determined that a search outside of the State would most likely produce the best comparable Airports to WVL. As a result of there being more than 5,000 general aviation Airports across the country, a random sampling of general aviation Airports in several states was undertaken. Those Airports that are not owned by a municipality were first eliminated. Finally, only those municipal Airports that currently are operated by an Airport authority were considered. The remaining Airports were then screened based on the following criteria:

- Number of based aircraft
- Number of operations (annually)
- Ratio of local – to – itinerant air traffic
- Available facilities and services
- Land uses surrounding the Airport (where available)

The data set remaining for further analysis consisted of four Airports that meet the selection criteria, in addition to Auburn Lewiston. These Airports included:

- Waterville Robert LaFleur Municipal Airport (ME);
- Auburn Lewiston Municipal Airport (ME);
- Zephyrhills Municipal Airport (FL);
- Smyrna Municipal Airport (TN);
- Mandan Municipal Airport (ND); and
- Pocono Mountains Municipal Airport (PA)

The following table provides a summary description of each Airport based upon the screening criteria.

Table 7.3
Comparable Airports Summary

Airport	Based Aircraft	Annual Operations	Operations Mix	Available Facilities & Services	Land Uses Surrounding the Airport
Waterville Robert LaFleur Municipal (WVL)	29	13,505	55% Local 40% Itinerant	100LL/Jet A, Tie-downs, Hangars	Industrial Park Residential
Auburn-Lewiston Municipal (LEW)	91	70,445	35% Local 29% Itinerant	100LL/Jet A, Tie-downs, Hangars Major Mx	Industrial Agricultural Residential
Zephyrhills Municipal (ZPH)	90	37,595	61% Local 37% Itinerant	100LL/Jet A, Tie-downs, Hangars Minor Mx	Industrial Park
Smyrna Municipal (MQY)	263	71,540	37% Local 54% Itinerant	100LL/Jet A, Tie-downs, Hangars Major Mx Oxygen	Business Park
Mandan Municipal (Y19)	32	8,030	54% Local 37% Itinerant	100LL/Jet A, Tie-downs, Hangars Major Mx	Open Space
Pocono Mountains Municipal (MPO)	23	17,155	76% Local 22% Itinerant	100LL/Jet A, Tie-downs, Hangars Major Mx	Open Space

Source: AirNav & Airport Interviews

The scope of the project called for up to three Airports to be included in the analysis. A deciding factor in the final screening was the climate at each Airport, which can affect the operational characteristics of an Airport and determines similar demands on Airport staff as a result of weather and other seasonal characteristics. As the State of Maine has recently adopted a revised Title 6 to include language addressing the creation of new Airport authorities, the final criterion used was to choose Airports located in states that have legislation in place that also addresses this issue. Therefore, the Airports included in this analysis consist of:

- Auburn Lewiston Municipal Airport (ME)
- Mandan Municipal Airport (ND)
- Pocono Mountains Municipal Airport (PA)

These Airports are further described herein.

Comparable Airports Overview

When making comparisons between Airports, it is most useful to balance quantitative metrics, those things capable of being expressed numerically, and qualitative metrics, those things described in terms of quality or character. In an Airport environment there are both numerous quantitative and qualitative metrics that can be considered. For this analysis, a framework was developed for use when contacting representatives of the comparable Airports that included questions related to both qualitative and quantitative metrics in a management context.

Telephone interviews were conducted for each comparable Airport between December 2007 and January 2008. The information garnered from the interviews is presented below within the context of the management framework and each management context is preceded by a brief description of each Airport.

7.3 Comparable Airports Management Context

The management context is comprised of those aspects of the Airport which directly relate to Airport authority issues such as enacting legislation, authority establishment requirements, membership composition and criteria, decision making authority, and Airport funding/budgetary obligations.

Auburn Lewiston Municipal Airport (Maine)

Auburn Lewiston Municipal Airport (LEW) serves the corporate, charter, and recreational aviation activities of the Cities of Auburn and Lewiston, Maine. The Airport is jointly owned by both cities and operated by the Auburn-Lewiston Airport Authority. The Authority was established by an inter-local agreement between the two cities in accordance with the Maine Aeronautics Act, Inter-local Cooperation Statute.

Source: AirNav

Established in the late 1970's as a part of an inter-local agreement between the Cities of Auburn and Lewiston in accordance with the State of Maine Inter-local Cooperation Statute which can be found in the appendix to jointly own and operate LEW, the Airport authority at LEW is governed by this agreement with respect to the establishment, membership, and responsibilities of the Authority.

The Authority is comprised of seven members. The membership, appointment process, and terms are identified by the inter-local agreement as follows:

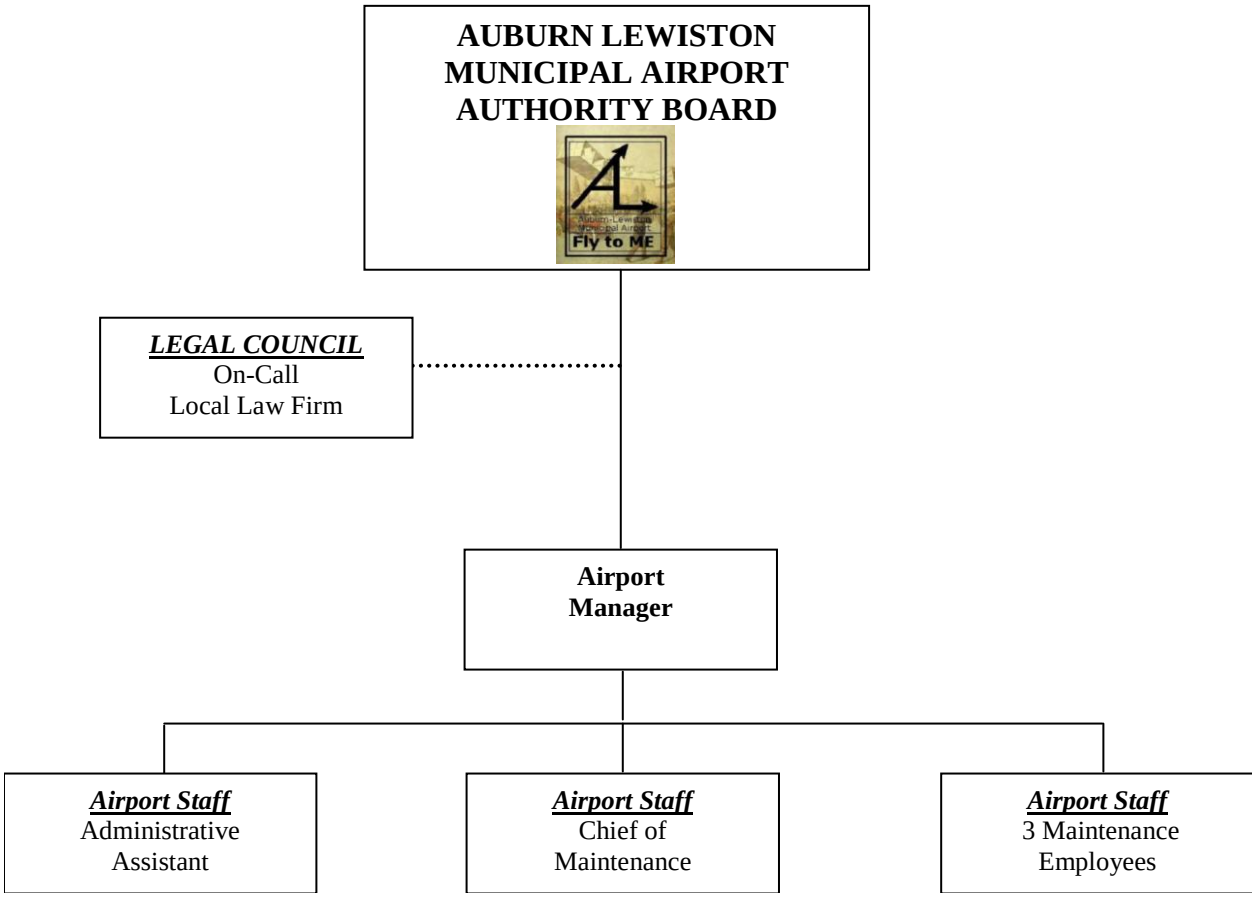
- Lewiston Finance Director – By virtue of the Office
- Auburn City Manager – By virtue of the Office
- Lewiston Councilor – While a Councilor of the City of Lewiston, nominated by the Mayor
- Auburn Councilor – While a Councilor of the City of Auburn, nominated by the Mayor
- One Auburn Resident – Three year term, appointed by the Auburn City Council
- One Lewiston Resident – Three year term, appointed by the Lewiston City Council
- An alternating resident from the City of Auburn and City of Lewiston – Three year term, nominated by the Chamber of Commerce and elected by the other six members of the authority.

Authority board members are not allowed to receive compensation for their service as a member, however, reasonable reimbursements are allowed for actual expenses incurred in the performance of their duties. These reimbursements must be approved by the Authority Board.

The Authority is responsible for the operation, maintenance, and all improvements to LEW, as well as the encouragement of businesses to develop at the Airport and in the Airpark surrounding the Airport. The Airport Manager reports directly to the Board and all staff members of the Airport are direct employees of the Authority. The Airport Manager handles all human resource issues, and legal council is retained on an on-call basis with a local law firm.

The Airport is generally self-sufficient, deriving its funding through leases, including tie-down, hangar, and building space. In the event that these fees do not cover the cost of operating the Airport, the estimated net deficit is met jointly by the Cities through their own budgets in a 50-50 manner. A financial statement detailing the preceding fiscal year's activity is submitted in May to the City Councils of both Cities. A copy of the operating budget for Fiscal Year 2008 is included in the appendix.

The following is an organizational chart developed for this effort as the organization was described in the phone interview.



Mandan Municipal Airport (North Dakota)

Mandan Municipal Airport (Y19) serves the recreational general aviation needs of the City of Mandan, North Dakota. The Airport is owned solely by the City of Mandan and operated by the Mandan Airport Authority. The Authority was created and is operated under the Airport Authority Act of North Dakota, which governs the establishment, membership, and responsibilities of Airport authorities within North Dakota.

Source: AirNav

The Airport Authority at Y19 was established in the 1960's under the Airport Authority Act of North Dakota, which is a part of the North Dakota Century Code. A copy of the Airport Authority Act can be found in the appendix. This Act governs the establishment, membership, and responsibilities of all Airport authorities within North Dakota. In fact, this system is so successful that of the 90 publicly-owned Airports in North Dakota, 89 of them have established Airport authorities under this Act.

Under the terms of this Act, all Airport authorities are quasi-independent agencies comprised of a five member board, which are appointed by nominations from City Council and include the Airport Manager and a member of the City Commission. Members of the Authority Board serve for a five year term, with no term limits. Authority members are not required to have an aviation background, only an interest in the operation of the Airport. They serve as volunteers and are not compensated for their service.

The Airport Authority is responsible for all decisions regarding the Airport, including the operation, maintenance, and any necessary capital improvements. Human resource issues are handled by the City, and legal council is on an on-call basis from a local law firm. The Airport manager is the sole employee of the Airport, and responsible for all operational needs of the Airport, including customer service, fueling, maintenance, and snow removal.

The Authority must submit a budget to the city annually. All funding for the Airport currently comes from an enterprise fund maintained by the City, however, they authority is currently undertaking the task of making the Airport self-sufficient through leases of tie-down, hangar, and facility space, as well as through landing fees. The only fiscal responsibility of the City is for reimbursement of the Airport Manager's salary. A copy of the Fiscal Year 2008 operating budget is included in the appendix.

No organization chart exists for Y19, since it is a flat organization consisting of only one level.

Pocono Mountains Municipal Airport (Pennsylvania)

Serving the needs of regional corporate and private aircraft, Pocono Mountains Municipal Airport is located in Mount Pocono, Pennsylvania. Originally owned and operated by several townships through an inter-local agreement, the Airport recently reverted back to the State at the expiration of the agreement, and those townships declined to renew the agreement. At that time Monroe County took over ownership of the Airport, and as a part of that transfer created the current Pocono Mountains Airport.

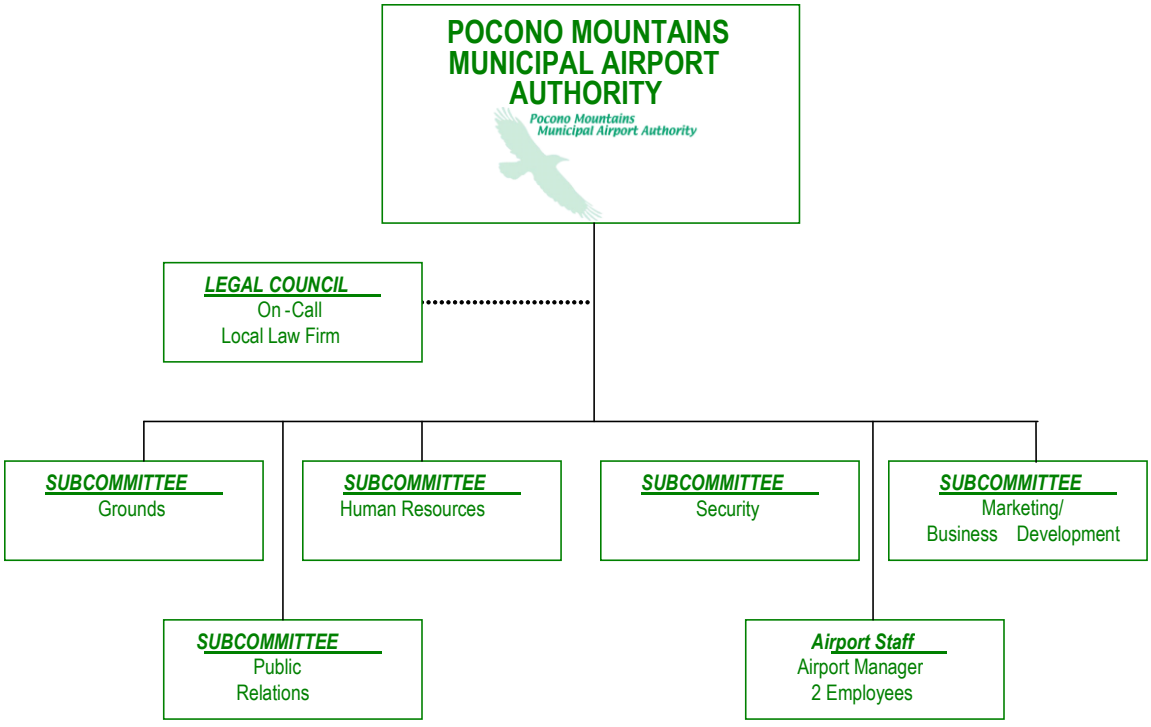
Source: AirNav

Established in 2000 as a part of the transfer of MPO from the State to Monroe County, the Airport authority was created in accordance with the Pennsylvania Municipalities Authority Act of 1945. The full act can be found in the appendix.

The Authority is comprised of a nine member board and three full-time employees who maintain and operate the Airport on a day-to-day basis. Board members are appointed by the Monroe County Commissioners to five-year terms and are not limited in the number of appointments that they are allowed to serve. There are no minimum qualifications required of board members to serve, only an interest in the successful operation of MPO. They serve as volunteers and are not compensated for their service. All human resource issues are addressed by a subcommittee of the Commissioners.

Legal services are provided on an on-call basis from a local legal firm. The Airport staff handles all of the operating needs of the Airport, including fueling, maintenance, customer service, and snow removal. There currently are no contracted services utilized at MPO.

An official organization chart does not exist for the Airport Authority, however based upon discussions with the Airport manager; the following org chart has been developed:



Funding for MPO comes from the County as a part of its standard budget. Revenues that are generated from leases at the Airport go towards the operating needs of the Airport. The operating budget for the upcoming fiscal year is currently in development, and will be provided once it is complete.

7.4 Comparable Airports: Lessons Learned and Best Practices

The scope of the project called for a review of the lessons learned during the establishment of the Airport authorities at the comparable Airports, as well as a review of the best practices that are implemented for each Airport.

During follow up interviews conducted with each Airport, it was reported by all Airport managers that the authorities were established an average of 30 years ago, prior to the tenure of any current member of Airport or authority staff that serves the Airport and therefore no one was able to speak on the topic of any lessons learned.

In addition, each Airport manager reported that the Airports currently do not use an established set of best management practices. In light of this information, additional research was completed to identify published best practices that can be referenced by WVL during the development of its best practices. Two samples were identified and are summarized herein.

"Arizona Best Practices Guide" (2007): Available online at www.azAirports.org

Developed in cooperation by the Arizona Airports Association (AzAA), the FAA's Western Pacific Region, and the Arizona Department of Transportation – Aeronautics Division, the purpose of this Guide is to clarify roles, responsibilities, and expectations of all affected parties when conducting Airport related business, as well as to ensure that issues are addressed and dealt with in a uniform manner. It identifies the roles and responsibilities of each agency; the processes involved with general service agreements, Airport capital improvement plans, environmental overviews, FAA & ADO funding resources, and bids; contractor allowances (defined as the sum of money available to help pay the expense of any unforeseen circumstance to help contractors cover additional eligible costs incurred during construction that otherwise would require processing amendments); and the sponsor contact list.

"Aviation Best Practices Report of New York State" (2000): Available online at www.nysdot.gov

The New York State Department of Transportation (NYSDOT) in cooperation with the state's Airports developed this report as a compilation of practices and ideas submitted by Airports and consultants in response to a survey conducted by NYSDOT. Its intent is to serve as a medium for the exchange of experiences and to promote discussion on continuous improvement efforts employed in the aviation industry. As a fluid document, the State openly invites Airports to send in additional suggestions and recommendations for periodic updates of the report. The report identifies best practices for:

- Management Practices (e.g. Airport management, FBO management, land Use/zoning, and noise abatement)
- Operations Practices (e.g. Snow removal, pavement management/maintenance, environmental management, deicing, obstruction removal/management)
- Aviation Awareness Practices (e.g. Aviation safety and education)
- Marketing/Public Relations Practices \
- Economic Development Practices (e.g. Improving air service and business development)

While both documents can provide WVL with invaluable insight into best management practices, certain topics apply more directly to the immediate goal of improving the management of WVL. For example, the identification of agency roles and responsibilities and recommended communication processes found in the "Arizona Best Practices Guide" could streamline the establishment of any new management structure. With respect to the "Aviation Best Practices of New York State", the intent, description, and

effectiveness of each program identified can provide WVL with a snapshot of "lessons learned" at other Airports through their own efforts at improving their best practices.

It should be noted that regardless of what best practices WVL may undertake, these practices can only provide guidance for the safe and efficient operation of the Airport, and cannot supersede any Federal, State, or local laws, rules, or regulations.

Legal Requirements & Ramifications of Joint Ownership / Management

Ownership and management of an Airport can come in many forms. Often what works at one Airport will not always work at another. In some instances, the ownership and management of an Airport is effectively run by a single municipality, and others find that sole ownership and management of an Airport does not serve the best interests of the Airport or community at large.

Several types of Airport ownership exist. They include:

- **Sole Ownership/Management**: A single government entity (State, county, or municipality) who exclusively owns the Airport and is responsible for all operational, financial, and maintenance needs of the Airport, including but not limited to the day-to-day operation of the Airport, facilities maintenance, and fueling.

This is the current structure that WVL operates under.

- **Joint Ownership/Management**: Traditionally consists of two or more governmental agencies whereby both entities share the ownership and responsibility for the operation and upkeep of the Airport. In most states, joint ownership of an Airport requires codification into State law. The most common joint ownership relationships are:

  - Municipal/Municipal;
  - Municipal/County; and
  - County/County.

An example of this type of agreement is Auburn Lewiston Municipal Airport.

- **Sole Ownership/Agency Management**: An arrangement whereby a government entity retains ownership of an Airport, but creates a quasi-independent agency that is responsible for the operation and upkeep of the Airport. Usually this form of ownership is seen in multiple Airport systems that are owned by a State.

The Rhode Island Airport Corporation (RIAC) is an example of this type of arrangement.

- **Sole Ownership/Private Management**: A single government entity maintains ownership of the Airport, but contracts with a private enterprise (in some cases Fixed Base Operators) to maintain and operate the Airport. Traditionally, the government entity also maintains its financial responsibility. This is most common at commercial and larger general aviation Airports.

An example is Westchester County Airport (NY), who currently contracts with AvPorts to maintain and operate the Airport.

- **Private Ownership/Private Management**: A private entity owns the Airport and is responsible for all operational, financial, and maintenance needs of the Airport. In some instances, a government entity will transfer ownership of an Airport to a private enterprise through a long-term lease, but will maintain ownership of the land the Airport is situated upon.

An example of this type of operation is Morristown Municipal Airport in New Jersey which is under a 99-year lease with D.M. Airport Developers, Inc.

Each of these ownership options has its own pro's and con's, and are identified in the following sections.

Sole Ownership/Management

The pro's of the City of Waterville acting as the sole owner of the Airport include:

- Maintains its status as an eligible sponsor for both FAA AIP and MEDOT grants.
- Maintains sole decision making power in the development and operation of the Airport. While these decisions would need to meet the Grant Assurances of the FAA and MEDOT, the City would maintain great latitude as sole owner.
- Maintains the ability to influence and directly benefit from the economic value generated by the Airport.

The con's of sole ownership include:

- As sole owner the City is solely responsible for the short and long term expenses of Airport ownership. One key assurance that the City makes to the FAA in order to accept AIP funds is that the Airport will be operated and maintained in a safe and efficient manner.
- Airports, like any other asset, rarely satisfy all citizens or users. As sole owner, the City is faced with listening to and doing their best to resolve all complaints about the Airport. In some areas the Grant Assurances preclude the City from making decisions popular with the majority of citizens.
- The City is solely responsible for the financial burdens of the Airport, while the Airport provides an economic asset for the Central Maine Region.

Joint Ownership/Management

The pro's of joint ownership include:

- Maintains its status as an eligible sponsor for both FAA AIP and MEDOT grants.
- If development, operation, or maintenance costs are high, the City has a co-owner to share the financial burden.
- Joint ownership has the potential to obtain nearly identical economic impact as sole ownership, and may see additional economic opportunities with the additional resources of the co-owner.

The con's of joint ownership include:

- Just as the City can stop many things objectionable to the City, the City's partner(s) can hinder the decision making on City proposals that they do not support.
- In most cases, no one sponsor has complete decision making ability so the City may see protracted decision making ability.

- As a joint owner the City will receive citizen and user complaints similar to the level that they would receive as sole owner. One advantage may be the increased pool of resources between all ownership partners to study issues and recommend solutions.

Sole Ownership/Agency Management

The pro's of sole ownership/agency management include:

- Maintains its status as an eligible sponsor for both FAA AIP and MEDOT grants.
- With the agency responsible for the issuance of contracts, the City has less financial responsibility and may be able to improve the efficiency of the Airport. However, poor agency decisions can result in poor press for the City.
- With the agency having certain powers, fewer decisions reach the City, thereby reducing the day-to-day work required of the City.

The con's of sole ownership/agency management include:

- Based upon the terms of the codified law that sets up the agency, the City may not retain its decision making ability, and therefore would be unable to stop any proposed plans that the City deems objectionable or actions that the City deems as poor judgment from happening.
- It will be known that the City maintains its ownership of the Airport and citizens and users who are not satisfied by the agency will likely complain to the City. Some of these complaints can be handled through an established protocol between the City and the agency outlining lines of communication and action by the agency to resolve the issue.

Sole Ownership/Private Management

The pro's of sole ownership/private management include:

- Maintain its status as an eligible sponsor for both FAA AIP and MEDOT grants.
- Maintains sole decision making power in the development and operation of the Airport. While these decisions would need to meet the Grant Assurances made to the FAA and MEDOT, the City would maintain great latitude as sole owner.
- A reduction or altogether elimination in the day-to-day work required of the City.

The con's of sole ownership/private management include:

- The City remains financially responsible for the Airport.
- Many private enterprises who manage Airports for municipalities often require multi-year contracts for their services. Should the City find that the enterprise is not fulfilling its end of the agreement, is providing a poor service to the citizens and users, or by poor decisions generate poor press for the City, it may prove difficult and/or costly to end the relationship with the enterprise.
- It will be known that the City maintains its ownership of the Airport and citizens and users who are not satisfied by the private enterprise will likely complain to the City. Some of these complaints can be handled through an established protocol between the City and the enterprise outlining lines of communication and action by the enterprise.

Private Ownership/Private Management

The pro's of private ownership/private management include:

- The City is no longer financially responsible for the Airport.
- A private enterprise is not required to adhere to a fiscal cycle in order to start maintenance and development projects, and therefore streamline these efforts.
- The City will no longer be required to resolve complaints from citizens or users unhappy with the Airport. It is possible that the City may still receive the occasional complaint; however these concerns can be forwarded to the private enterprise to deal with directly.

The con's of private ownership/private management include:

- Eligibility to receive funds under the AIP is contingent upon the owner being a qualified public agency or a private entity if the Airport is a commercial service Airport or a general aviation Airport that relieves general aviation traffic from a hub Airport of the national aviation system. Since Waterville does not meet either of these criteria, it would not maintain its ability to receive AIP funds.
- The City would no longer retain its decision making ability regarding development and maintenance at the Airport. Therefore, the City cannot preclude most things that they see as disagreeable or poor judgment from happening.

Comparison of Potential Joint Venture Partners

This section provides a comparison of potential joint venture partners for WVL. Joint venture partner options include a joint ownership/management structure with another public entity such as municipalities, counties, or the State; a sole ownership/agency management structure with the creation of a quasi-independent agency; or a sole ownership/private management structure, such as a municipality/FBO arrangement.

In the case of WVL, potential joint venture partners would include:

- The Cities of Oakland, Winslow, Fairfield, and/or Sydney;
- Kennebec County;
- An Airport Authority (with sole City or multiple City representation); or
- A private management company, such as AvPorts or Fixed Base Operator, such as Million Air.

Generally a joint venture between public agencies is established in order to defray the costs of operating the Airport; improve the ability to maintain and operate the Airport at an equitable or higher level of safety and customer service; and increase the economic benefit experienced by each public agency within the Region.

State and Local Statute Requirements

As previously stated in Section 10.1, the State of Maine recently revised Title 6 of the Maine state statutes regarding the creation of Airport authorities (Public Law 563, MRSA c.10). Therefore, the recommendations contained herein will be applied according to the requirements set forth in the regulations.

As a part of a set of revisions introduced in December 2007 to Maine's Aeronautics Act (Title 6: Aeronautics), legislation was created regarding Airport authorities (MRSA c.10: Airport Authorities). In summary, this legislation outlines:

- The nature and general powers of an Airport authority;
- Requirements for the creation of an Airport authority by a single municipality or county; two or more municipalities or counties; and grandfathers in existing authorities;
- Exemption from state, county, and municipal taxation for authorities for property and revenues;
- Necessary approvals required by the State prior to the establishment of an Airport authority;
- Requirements for a certificate of organization to remain on file with the Maine Secretary of State;
- Operations and powers of Airport authorities;
- Bonding rights and requirements; and
- Necessary steps for the dissolution of an Airport authority.

As a general rule, a joint venture is required to be codified into law to ensure that all parties abide by a set of standards that are fair to all involved in the venture. Based upon industry standards, the Joint Operating Agreement (JOA) should identify, at a minimum, the following:

- Date and plan of organization;
- All parties entering into the JOA;
- Ownership share of all parties as a percentage based on relative aggregate levels of Airport capital contributions;
- The governing entity of the JOA, including by-laws and duties;
- Each entity's duties and responsibilities with regard to the operation, management, and development of the Airport;
- Funding sources and budget requirements;
- Purchasing authority for real property, avigation easements, runway protection zones, etc;
- An office location for the managing entity of the JOA;
- Insurance requirements for each entity; and
- Conditions and processes for dispute arbitration and termination of the JOA.

7.5 Requirements for Financing Airport Operations

In order to finance the operation and management of the Airport, a budget must be put into place. Funding this budget can come from several sources including Airport leases, the sale of Airport assets including non-aviation use Airport property, and from the budgets of each entity involved in the JOA, which is generally the primary source of funding. The amount of funding from each entity's budget may subject to negotiation and generally the percentages should be reviewed every five years to determine if they are still applicable based on the financial health of each entity.

Additional funding can be attained through the Airport's Capital Improvement Program (CIP) funds, which are in part funded by the FAA for safety improvements at Airports. This funding usually defrays the costs of maintaining an Airport to approximately 95% of a projects cost apportioned to the FAA and the remaining 5% spread among state and local funds. This can significantly improve an Airport's ability to maintain an Airport by alleviating its financial burden for planning and construction projects, thus allowing more funds to be available for other items, such as general maintenance and administration expenses. Items that are generally eligible under CIP funds include, but are not limited to:

- Runway, taxiway, and apron pavement rehabilitation, which usually includes improvement to airfield lighting associated with said pavement;

- Obstruction remediation in the form of lighting, removal, reduction, or avigation easements;
- Purchase of airfield equipment, particularly snow removal equipment;
- Navigational Aid (NAVAID) improvements; and
- Runway Safety Area improvements.

Capital Funding Ramifications

The type of ownership/management structure of an Airport also determines its eligibility for funding through the FAA's Airport Improvement Program (AIP), which is governed by FAA Order 5100.38c. This Order states that funding eligibility is contingent upon the type of sponsor and the type of activity for which funds are sought.

Eligible sponsor types include:

- **Planning agencies**: Any agency designated by the FAA Administrator that is authorized by laws of the State or political subdivisions concerned to engage in area-wide planning for the areas in which the grant assistance is to be used. Examples include Regional Planning Commissions, Metropolitan Planning Commissions; the District of Columbia, Virgin Islands, and Commonwealth of Puerto Rico.

- **Public agencies owning Airports**: A state or political subdivision; a tax-supported organization; or an Indian tribe.

- **Certain public agencies not owning Airports**: See the previous definition of a public agency.

- **Certain private Airport owners/operators**: An individual, partnership, corporation, etc., that owns a public-use Airport that is used or intended to be used as a reliever Airport or an Airport that has at least 2,500 passenger boardings each year and receives scheduled passenger aircraft service.

Since Waterville does not constitute a reliever Airport and does not receive scheduled passenger aircraft service, it would not continue its eligibility for AIP funding if it were to be privatized. Otherwise capital funding for the Airport under any other ownership/operating arrangement would not impact its ability to receive AIP funding.

Recommendations

Waterville has set goals of improving services and ultimately increasing both the number of business opportunities and users at the Airport. In order to successfully achieve these goals, the management of the Airport must be addressed. The current structure lacks the hierarchy necessary to make timely and effective policy-level decisions for the Airport and puts the entire financial burden of operation of the Airport on the City of Waterville while the surrounding communities benefit economically.

Based upon the comparable Airports analysis, the review of potential ownership/management options, the legal ramifications of each ownership/management option, and the recently adopted revisions to Maine's Title 6, it is recommended that the City should further examine the creation of an Airport Authority in accordance with Title 6 that incorporates participation from the surrounding communities and potentially Kennebec County. This participation would include representation on the Authority Board of Directors as well as a predetermined percentage of financial responsibility when Airport revenues are not sufficient

to cover operating costs. These participation components among others will be determined when the by-laws of the Authority are established.

It is recommended that this Authority be created prior to implementation of the project recommendations of this master plan to assure that the newly established Authority is behind the future goals and plans of the Airport. The implementation section of the master plan will address the business planning initiatives that a new Authority should address once established.

Waterville Robert LaFleur Municipal Airport
AIRPORT MASTER PLAN UPDATE

CHAPTER 8
IMPLEMENTATION AND FINANCIAL PLAN

8.0 Implementation and Financial Plan

8.1 Implementation

Through the evaluation of facility requirements and the analysis of future development alternatives, the improvements needed at the airport over the next 20 years have been determined. When considered in their entirety, these improvements are known as the Preferred Alternative. The objective of this Chapter is to develop an implementation schedule (Capital Improvement Plan) and Financial Plan. These plans are created by prioritizing the improvement projects, including any enabling projects, and identifying the implications these projects will have on the financial resources of the City of Waterville. The Airport's Financial Plan is comprised of estimated costs of proposed projects and the anticipated funding sources associated with each project. The goal of the Capital Improvement Plan is to ensure that projects are prioritized such that the following objectives are met:

- Forecasted capacity and demand are accommodated for;
- Existing infrastructure and previous capital investments are preserved and properly maintained;
- Airport safety improvements are provided and projects are designed to meet FAA design standards, and;
- Projects are in accordance with environmental policies and demonstrate environmental stewardship.

In addition, this chapter identifies the financial posture of the Airport by examining current and historical revenues and expenditures and also contains a high level comparison of the rates and charges of WVL to other nearby airports of similar size and function. By understanding the current financial state of the Airport and its means of generating revenue, this chapter also provides strategic recommendations in an effort to enhance the Airport's financial performance.

8.2 Capital Improvement Plan

The Capital Improvement Plan (CIP) addresses the phased scheduling of projects identified in this Master Plan and their financial implications on the resources of the Airport and the City of Waterville. Since WVL is publically owned and considered to be important to public transportation as part of the National Plan of Integrated Airport Systems (NPIAS), it is eligible to receive federal grants for planning and development.

The CIP for WVL, presented herein, includes the preferred projects identified in this Airport Master Plan, as well as any associated enabling projects or initiatives. Within the CIP, estimated costs of each project and potential sources of funding from the Federal Aviation Administration (Federal), the Maine Department of Transportation (State), the City of Waterville (Local), and others, are identified. Although the CIP includes all potential projects, there is no guarantee if, or when, projects will be undertaken, however any proposed project seeking federal funding much be reflected on an FAA Approved Airport Layout Plan (ALP). Notably, all development projects eligible for federal funding have been identified on the Ultimate ALP sheet found in Chapter 6.

Since the FAA makes funding decisions based on project eligibility, justification, priority, and the availability of funds, it is intended that the CIP be realistic, such that the projects included are essential to airport operation, safety, and maintenance. Typically, proposed airport projects for safety or maintenance receive first priority and are most likely to receive federal funds. All others are demand based and subject to funding limitations. However, the FAA recommends that an Airport's CIP also focus on funding sources for all types of airport development, rather than only relying on the Airport Improvement

Program (AIP). Therefore, projects ineligible for AIP funding are still identified on the airport's CIP but assume non-federal funds in order for implementation. Funding sources, including the FAA Airport Improvement Program, are described further within this chapter.

The National Environmental Policy Act (NEPA) of 1969 set a standard for federal agencies to follow in order to make sound decisions that are based on an understanding of, and consideration for, the environmental consequences of their actions. As mentioned, final implementation of the projects identified on the Airport's CIP are subject to appropriate environmental evaluation and final approval by FAA, Maine DEP, and other regulations to demonstrate environmental stewardship.

In addition to having the proposed project reflected on an approved ALP and the proper environmental process completed, projects are also subject to airspace review and approval by the FAA before they can be fully implemented.

8.3 Capital Improvement Program

The Capital Improvement Program provides a schedule of development for the proposed projects identified in this Master Plan. The schedule is based on a twenty year planning period and separated into three phases:

- Phase 1 (0 to 5 years)
- Phase 2 (6 to 10 years)
- Phase 3 (11 to 20 years).

In order to receive federal funding, the Airport must submit its Capital Improvement Plan to the FAA New England Region Airports Division Office who ultimately determines which projects are likely candidates for federal funding. Once a project is determined as a qualified candidate, it is added to the FAA's Airport Capital Improvement Program (ACIP).

The Phase 1 projects identified in the Master Plan constitute what is commonly referred to as the ACIP by FAA and assists the FAA with identifying and prioritizing airport development needs within the first five years of the planning period. The Phase 2 projects are those more appropriately identified for inclusion in the FAA National Plan of Integrated Airport System (NPIAS). The 10-year outlook in the NPIAS report to Congress develops national airport needs on a broader scale. Finally, the last phase of development is a general range of projects for the 10 to 20-year period and is obviously much more speculative. Both the Phase 2 and Phase 3 projects provide the Airport and FAA with an outlook of future needs, but as they move into the near term horizon they need to be re-assessed as demand changes or funding sources are better defined.

Order-of-magnitude engineering costs were developed for each of the Master Plan projects. The FAA will fund eligible projects as defined under the Airport Improvement Program, subject to available funding under AIP. Such projects are related to: airfield pavement, lighting, vegetation clearing, utilities, airport roadways, and some types of airport vehicles. Unless the Airport has met all FAA design criteria and safety standards, projects that are revenue producing are ineligible for FAA funding. These projects generally include conventional and t-hangar development, and other facilities, run for profit. Nevertheless, these projects are usually completed with either the Sponsor's funding or from funds from a private source such as a Fixed Base Operator (FBO), Aviation Services Operator, or local pilot's association.

It should be noted that the Airport's Capital Improvement Program is based on the assumption that the Airport's activity will grow consistent with the forecasts derived in this Master Plan, and that the facilities

will be developed when required to meet demand. If actual activity does not meet or exceed the forecasted demand, implementation of the project schedule should be modified as necessary.

The cost estimates associated with the Master Plan projects reflect allowances for Sponsor administration, engineering/design, construction contingencies, and construction administration. Depending on the implementation schedule, project costs will need to be escalated to account for future inflation in Phase 2 and Phase 3. Recent history has shown that on average the Consumer Price Index (CPI) inflation increases by approximately 3 to 4 percent annually.

Table 8.1 through **Table 8.3** provides the 20-year ACIP for the Waterville Airport, organized into the following three phases:

- Phase 1 (0 to 5 years)
- Phase 2 (6 to 10 years)
- Phase 3 (11 to 20 years).

Phase 1 Development (0 to 5 years)

Phase 1 development consists of the following capital projects:

1-A: Avigation Easement Acquisition (14 Parcels); Environmental Review; Phase I Tree Clearing (Approx. 25+ Acres)
1-B: Runway 14-32 Reconstruction
1-C: Design Only - Reconstruct Runway 5-23; Permitting for Phase II Tree Clearing
1-D: Phase I - Reconstruct Runway 5-23; Phase II Tree Clearing
1-E: Phase II - Reconstruct Runway 5-23
1-F: Taxiway 'A' Pavement Repairs
1-G: Construct SRE Building & Purchase Snow Blower

Table 8.1
Phase 1 (0 to 5 years) Project Cost

Project	Cost	FAA	MaineDOT	Airport	Other
1-A: Avigation Easement Acquisition (14 Parcels); Environmental Review; Phase I Tree Clearing (Approx. 25+ Acres)	$565,000	$508,500	$28,250	$28,250	None
1-B: Runway 14-32 Reconstruction	$811,000	$729,900	$40,550	$40,550	None
1-C: Design Only - Reconstruct Runway 5-23; Permitting for Phase II Tree Clearing	$475,000	$427,500	$23,750	$23,750	None
1-D: Phase I - Reconstruct Runway 5-23; Phase II Tree Clearing	$4,451,000	$4,005,900	$222,550	$222,550	None
1-E: Phase II - Reconstruct Runway 5-23	$4,313,000	$3,881,700	$215,650	$215,650	None
1-F: Taxiway 'A' Pavement Repairs	$235,000	$211,500	$11,750	$11,750	None
1-G: Construct SRE Building & Purchase Snow Blower	$1,700,000	$1,530,000	$85,000	$85,000	None
Total – Phase 1:	**$12,550,000**	**$11,295,000**	**$627,500**	**$627,500**	**$0**

Phase 2 Development (6 to 10 years)

Phase 2 development consists of the following capital projects:

2-A: Construct New T-Hangar Development (North TW D)
2-B: Terminal Apron Expansion - Phase II
2-C: Airport Master Plan Update (incl. Utility MP)

Table 8.2
Phase 2 (6 to 10 years) Project Costs

Project	Cost	FAA	MaineDOT	Airport	Other
2-A: Construct New T-Hangar Development (North TW D)	$3,398,000	$0	$0	See Other	$3,398,000
2-B: Terminal Apron Expansion - Phase II	$1,059,500	$953,000	$52,975	$52,975	None
2-C: Airport Master Plan Update (incl. Utility MP)	$170,000	$153,000	$8,500	$8,500	None
Total – Phase 2:	**$4,627,500**	**$1,106,550**	**$61,475**	**$61,475**	**$3,398,000**

Phase 3 Development (11 to 20 years)

Phase 3 development consists of the following capital projects:

3-A: Construct New FBO Expansion
3-B: Construct Airfield Fencing Improvements
3-C: Construct Taxiway "E"
3-D: Develop Area G / North Quadrant
3-E: Purchase Land / Easements for MALSR Upgrade
3-F: Upgrade the Approach Lighting System to a MALSR
3-G: Reconstruct Taxiway A
3-H: Purchase Avigation Easements - Long Term
3-I: Land/Easement Acquisition South of Taxiway "D" – 6.4 Acres
3-J: Reconstruct Taxiway D

Table 8.3
Phase 3 (11 to 20 years) Project Costs

Project	Cost	FAA	MaineDOT	Airport	Other
3-A: Construct New FBO Expansion	$3,805,000	$3,424,500	$190,250	$190,250	None
3-B: Construct Airfield Fencing Improvements	$1,765,000	$1,588,500	$88,250	$88,250	None
3-C: Construct Taxiway "E"	$808,500	$727,650	$40,425	$40,425	None
3-D: Develop Area G / North Quadrant	$14,582,000	$0	$0	See Other	$14,582,000
3-E: Land Acquisition/Easements for MALSR Upgrade	$395,000	$355,500	$19,750	$19,750	None
3-F: Upgrade the Approach Lighting System to a MALSR	$945,000	$850,500	$47,250	$47,250	None
3-G: Reconstruct Taxiway A	$4,500,000	$4,050,000	$225,000	$225,000	None
3-H: Purchase Avigation Easements - Long Term	$299,200	$269,280	$14,960	$14,960	None
3-I: Land/Easement Acquisition South of Taxiway "D" (6.4 Acres)	$64,000	$57,600	$3,200	$3,200	None
3-J: Reconstruct Taxiway D	$2,850,000	$2,565,000	$142,500	$142,500	None
Total – Phase 3:	**$30,013,700**	**$13,888,530**	**$771,585**	**$771,585**	**$14,582,000**

8.4 Project Funding Sources

There are various sources of capital funding available to airports. Specifically, Waterville Airport has the following available:

- FAA Airport Improvement Program
  - Non-Primary Entitlement Funds
  - Apportionment Funds
  - Discretionary Funds
- Maine DOT State Funding
- Local Funding
- Private Investment

FAA Airport Improvement Program

The Airport and Airway Trust Fund, which was established by the Airport and Airway Revenue Act of 1970, provides the revenue used to fund the Airport Improvement Program. The legislation that currently authorizes the FAA to issue Airport Improvement Program (AIP) grants for airport eligible projects expired September 30, 2007 and the FAA is currently operating under temporary reauthorization legislation. Since it is too speculative to determine when a longer, more stable funding measure will be agreed upon, for the purpose of this Chapter it is assumed that the existing AIP requirements and funding sources will continue.

AIP monies are distributed to airports in three primary ways: entitlement, state apportionment, and discretionary grants. The City of Waterville is eligible to receive funding in all of these forms. It is anticipated that this will remain so, throughout the planning period.

AIP Non-Primary Entitlement Funds

The AIP provides entitlement grants for eligible commercial and general aviation airports. WVL is eligible for what is referred to as Non-Primary Entitlement funds, which are currently set at a maximum of $150,000 per airport. The FAA evaluates airport grant requests using a published priority ranking system that is weighted toward safety, airfield pavement and airfield capacity projects, although other non-airfield projects such as terminal buildings and main access/entrance roads are also eligible. Within the entitlement amount granted, up to 95% of eligible project costs are funded, with the remaining 5% provided from other non-federal sources, which typically come from state and local budgets. Entitlement monies are guaranteed on an annual basis.

Apportionment Funds

Apportionment funds include a defined amount of funding provided to each State based on the area and population. It is to be used for general aviation airports in the state based on need and priority.

AIP Discretionary Funds

Any additional funds make up the discretionary apportionments of the AIP. A portion of the discretionary funds are set aside to achieve special funding minimums established for airport noise projects, military airports, and general aviation reliever airports, while the remaining discretionary funds are distributed based on a national priority system. The priorities follow criteria established by the FAA and are based on Project Purpose, Type, Project Component, and Airport Type. This type of funding is essential to most public airport development programs and since discretionary funds are not assured, airports must compete against others for discretionary funds. In addition to the financing methods described herein, the Financial Plan for WVL recommends strategies to enhance the airport's competitiveness for discretionary funds.

Maine DOT

As identified in the Inventory chapter of this plan, according to an Airport Economic Impact Study for the State of Maine completed in 2006, Maine DOT invests approximately $500,000 to 750,000 annually in public use airports across the State. However, more recent data available through the Maine DOT website indicates that the total "Air Capital" funds for FY2010 and FY2011 combined totaled $600,000, while Personal Services and "All Other" Air funds totaled $3.4M.

http://www.maine.gov/mdot/aboutmainedot/pdf/FY10-11%20AllUsesmoredetail.pdf

8.5 Comparative Airport Rates & Charges

In order to help offset and recover the costs of providing the airport for use by the flying public, airports impose fees, known as "Rates and Charges" for various uses of the airport. These fees which usually apply differently to based and transient airport users and can often be a differentiator when transient aircraft owners choose a destination airport or when area pilots are deciding on an airport to base their aircraft. Charges such as landing and temporary parking fees are associated with transient aircraft, while monthly hangar storage and tie-down rates apply to based aircraft. Transient users wishing to park or store their aircraft in a conventional hangar can usually do so at a daily rate, charged by the FBO, and dependent upon availability.

Typical rates and charges at any particular airport include:

- Fuel price (AvGas and/or Jet A)
- Aircraft tie-down rates (Paved and/or Grass tie-downs)
- Aircraft hangar rates (T-hangar and/or conventional hangar)
- Landing fees
- Temporary aircraft parking fees (Ramp fees)
- Ground lease rates (Land/Building and/or Aircraft apron rates)

In most cases, rates and charges for transient aircraft services are set by the FBO, while rates and charges for based aircraft are controlled by airport management. Since the Airport currently operates both the FBO and the airport itself, it controls all the rates and charges at the Airport. Tables 8.4 and 8.5 show the recent rates and charges at WVL compared to a cross-section of other market area airports.

Table 8.4
Comparative Airport Fuel Prices

Airport	Miles from WVL (est)	Avgas	Jet A
Waterville LaFleur Airport	-	5.70	5.35
Central Maine Airport of Norridgewock	16	5.65	n/o
Augusta State Airport	16	5.99	5.72
Pittsfield Municipal Airport	22	5.95	5.00
Belfast Municipal Airport	34	5.98	n/o
Dexter Regional Airport	39	n/o	n/o
Knox County Regional Airport	43	6.30	5.90
Auburn/Lewiston Municipal Airport	45	5.79	5.49
Bangor International Airport	46	5.81	4.97

Source: Airnav (September 2011), n/o (not offered)

Table 8.4 shows that WVL offers Jet A fuel cheaper than most of the other market area airports. Fuel sales can be profitable, but generally, the margins FBO's have been making have been decreasing in recent history since the difference between the wholesale and retail cost of fuel has remained quite static, while operating costs (rent, labor, insurance, etc.) have escalated. The historical financial data illustrated in the following section shows that the sale of aviation fuel at WVL is currently the largest revenue generator for the Airport. However, since the Airport currently operates the FBO, the sale of aviation fuel comes at an increased expense compared to if the Airport were to only operate a fuel storage facility. The expenses related to the operation of the FBO, compared to the revenues generated through aviation fuels can be found within the expense and revenue tables in this chapter.

Table 8.5
Comparative Airport Rates and Charges

Airport	Tie-Down	Hangar Storage	Ground Lease	Ramp Fee	Landing Fee
Waterville Lafluer Airport	$30/Mth	Based on A/C dimensions $130 Summer Minimum $150 Winter Minimum	$0.10/SF		Waived with Fuel Purchase
Central Maine Airport of Norridgewock					
Augusta State	$47/Mth	$237/Mth older Hgr $355/Mth Newer Hgr		$50-100	Based on Weight
Pittsfield Municipal	$35/Mth	SE $150/Mth ME- $175/Mth	$0.07/SF		
Belfast Municipal	$60/Mth	N/A			
Dexter Regional	$47/Mth				
Knox County Regional	$47/Mth				
Auburn/Lewiston Municipal	$45 Mth w/electric or $30 w/o electric	Varies by lease			
Bangor International	$33/Mth	$250.00			

Source: The Louis Berger Group (September 2011) N/A – Not Available

As shown in Table 8.5, Compared to other market area airports, Waterville Airport is quite competitive with regard to rates and charges. However, as opposed to using a formula that calculates hangar storage fees based on aircraft dimensions, the Airport may want to consider a simpler structure based on 3 categories: single and multi-engine piston driven aircraft and jet aircraft based on type.

Further, the Airport should consider raising its rates and charges. A 20% increase across the board would still place the Airport in the low end of the comparable airports in the table above. And, assuming these charges make up approximately 25% of total FBO revenue (25% of $230,000) the increase could generate up to $11,500 in additional revenue annually. (25% of $230,000=$57,500; a 20% increase on $57,500=$11,500).

8.6 Airport Historical Financial Performance and Recommendations

Historical financial data represents the financial history and performance of the Airport and in most cases, gives some indication of expense and revenue trends at the Airport. Tables 8.7 through 8.9 show the historical expenses and revenues provided by the City of Waterville for the years 2006 through 2010. Tables 8.10 and 8.11 summarize the financial performance of the Airport over that time. As shown, the Airport's expenses have exceeded its revenues for each year reported.

Typical of many publically owned and operated General Aviation airports, non-operating revenues, generated through real estate taxes in the City's general fund are used to supplement total Airport revenues. However, since it is the objective of the Airport to become financially self sufficient, for the purpose of this financial assessment, supplemental revenues provided through the General fund have been omitted.

In most cases, a historical analysis of airport financial data gives some indication of trends which can be used to make financial projections. As documented in various forms throughout this master plan, the characteristics of the operation of the Airport since 2007 include variables associated with FBO operations, and Airport Management that have been inconsistent. Therefore, since in recent history, variables used to comprise the financial data at the Airport have changed, projections of financial data using established trends cannot be made.

Although historical financial trends cannot be used to determine reliable financial forecasts for the Airport, this assessment still looks to identify opportunities within the Airport's operating expenses and revenue generating capabilities where the Airport can mitigate operating costs while optimizing revenues. As a result of this assessment, this chapter provides recommendations that have both quantitative and qualitative considerations.

1) Labor

   Labor expenses for the operation of both the Airport and the FBO include staff salaries, hourly wages, overtime, and employee benefits, such as healthcare. Although trends concerning labor costs could not be established, the changes in management structure at the Airport, as well as the use of part-time rather than full time laborers have caused labor costs to fluctuate since 2006 when labor costs totaled approximately $61,000. In 2007, these costs increased roughly $26,000 to around $88,000, and remained relatively stable until 2009 when they dropped to about $70,000. In 2010, total labor costs were about $85,000, over $38,000 of which was attributed to operating the FBO.

2) Utilities

   Costs associated with the Airport include items such as electricity and heating fuel for both the maintenance of the Airport and the FBO separately. Historically, the costs for utilities have fluctuated. In 2006, these combined costs totaled approximately $26,000 and in 2010 they were about $18,500. Given the Airport's characteristics and geographic location, it is normal for these costs to vary based on the weather for any particular year, however, the average annual costs of utilities at the Airport over the five year period (2006-2010) is $22,700. Utility costs (including heating fuel) directly related to the operation of the FBO averaged approximately $12,000 annually over the same period.

3) Facility Maintenance

Unlike other airports of similar size and function, WVL lacks a full-time maintenance staff with specific capabilities required to maintain all areas of the airfield. Therefore, costs associated with maintaining airport electrical infrastructure, such as the runway lighting, or maintaining airfield pavements, such as crack repair, are accrued through the hire of outside contractors. The cost and need of facility maintenance can vary greatly. These costs were as low as $12,339.46 in 2007 and as high as $21,034 in 2009. Since 2006, Facility Maintenance costs averaged approximately $16,000 annually.

4) Equipment Maintenance

Considering the geographic location of the Airport and the associated weather the airport experiences, airport related equipment, such as tractors, plows, trucks, etc., used to maintain the Airport are subjected to elements that affect the service life of the equipment. Furthermore, the need to repair and/or replace necessary equipment can be unexpected, and result in unanticipated costs for a given year.

Aside, from using the estimated service life of a particular piece of equipment, trends associated with equipment maintenance and repair costs are difficult to determine. This is evident between 2006, when equipment maintenance costs at the Airport were estimated at roughly $7,000, and 2007, when these costs topped $31,000. The average annual costs for equipment maintenance between 2006 and 2010 were approximately $14,000. Generally, as equipment ages, associated maintenance costs increase. Accurately tracking these costs can inform decision makers and assist in determining when to replace equipment.

5) Motor Fuels

Fuel associated with the operation of airport related equipment can be costly and hard to anticipate since the oil costs, and the level of use for airport equipment is based upon a number of unknown variables. For airports located in the Northeast, and New England the intensity and frequency of winter storms can drastically affect the costs associated with snow removal operations in a given year. Motor fuels at Waterville in 2006 were approximately $4,800 and increased to almost $11,000 the following year. In 2010, the costs for motor fuel at the Airport totaled approximately $8,500. For the entire five year period, motor costs averaged approximately $7,000 annually and as stated, experienced a fluctuation of roughly $6,000 between 2006 and 2007.

6) Aviation Fuel

The topic of aviation fuel and the Waterville Airport is unique for a number of reasons; mainly because the airport operates the FBO and has been since 2004. As identified within the financial tables, fuel sales can be one of the most significant revenue generating streams at airports of similar size and function. Typical of General Aviation airports with few tenants, revenues generated through aviation fuel sales can often determine whether an airport is considered "self sufficient", or not. The profitability of fuel sales are mostly dependant on the volume and the capacity of an airport to attract based and transient turbine aircraft that require large quantities of Jet A fuel.

The manner in which General Aviation airports generate aviation fuel revenue is determined by the manner in which the fuel is sold. Airports with one or more FBOs typically purchase wholesale aviation fuel and operate a fuel storage facility. Typically, at airport's that own their own fuel farm, FBO's who sell aviation fuel to customers at retail price, purchase their fuel from the airport and are charged a flowage fee, which is a fee levied by the airport per gallon of fuel sold. Since the City of Waterville currently operates the FBO, revenues generated through the sale of aviation fuel are maximized since the fuel is purchased at wholesale and sold at retail. However, since WVL lacks the level of corporate aircraft

services commonly offered by FBO's at similar airports (Catering, lavatory disposal, limo, etc.), the Airport currently accepts a lower profit margin on aviation fuel compared to other nearby airports in order to stay competitive and generate business from customers who might land at WVL to save on fuel costs, (See Table 8.4). Furthermore, the annual fuel volume at a particular airport can also be related to how flexible the airport can be with their fuel pricing structure. Airports that generate healthy revenues from multiple sources are able to be more flexible with their fuel pricing structure than airports like Waterville where revenue streams are few, and fuel sales serve as a primary revenue generator. Generally, airports with annual fuel volumes in excess of one million gallons, sell Jet A over AvGas at a ratio of about 5:1.

Table 8.6 shows the historical annual fuel volume at the Airport from 2006-2010 as reported by the City of Waterville. The average ratio of Jet A over AvGas at WVL through the entire period is roughly 3.25 to 1.

Table 8.6
Historical Annual Airport Fuel Volume

	2006	2007	2008	2009	2010	5 yr Annual Average
Jet A	43,890	60,230	53,157	42,913	32,010	**46,440**
AvGas	13,787	10,780	13,460	12,823	20,571	**14,284**
Ratio (Est)	3 to 1	5.6 to 1	4 to 1	3.3 to 1	1.6 to 1	**3.25 to 1**

Source: Data from the City of Waterville and Consultant Calculations

Since 2008, the economic downturn has affected the level of operations and the annual volume of fuel sales at General Aviation airports across the country. As a result, the profits generated from fuel sales at these airports have also been affected. Notably, the nearly 50% decrease in annual fuel volume at WVL since 2007 has resulted in an almost 40% decrease in FBO revenue as shown in Table 8.9. Since the revenues generated at Waterville have historically been largely dependent on fuel sales, the revenues at WVL have diminished at a much larger percentage than airports of similar size and function with a more diverse set of revenue streams. Airports with major tenants such as full service FBO's or aircraft maintenance shops have the ability to cover airport operating costs through guaranteed building and/or ground lease revenue and can often offset the losses resulting from reductions in airport fuel sales. Until Waterville obtains the services of such tenants, the City will continue to rely on aviation fuel sales as one of its only means of revenue.

The Airport has indicated that the profit on a gallon of Jet A is approximately $1.00. If the Airport were to regain fuel sales volume back to 2007 levels they could expect an additional $30,000 in annual revenue to the Airport.

Table 8.7
Historical FBO Expenses

FBO	2006	2007	2008	2009	2010	5 Yr. Ann. Average.
LABOR						
Full-time Wages	$22,401.58	$ 34,338.39	$32,380.91	$ -	$ -	
Overtime	1,039.84	634.14	857.45	807.00	1,282.70	
Part-time and Temp	7,488.07	18,415.47	19,417.98	27,232.00	34,640.09	
Fica	1,932.99	3,180.03	3,226.37	1,738.00	2,227.32	
Medicare	452.35	769.16	754.32	407.00	520.97	
Deferred Comp	-	-	-	-	-	
Group Health Ins	22.40	-	-	23.00	-	
Dental Ins	231.11	808.86	745.42	-	-	
Disability and Life Ins	133.80	547.05	618.05	-	-	
Labor Sub-total	**$ 33,702.14**	**$ 58,693.10**	**$ 58,000.50**	**$ 30,207.00**	**$ 38,671.08**	**$ 43,854.76**
NON-LABOR						
Telephone	$5,672.47	$4,000.02	$3,694.93	$3,574.00	$3,924.80	
Advertising	-	-	-	-	75.00	
Utilities	12,754.19	6,047.35	6,235.54	927.00	1,246.05	
Heating Fuel	-	7,297.52	11,465.84	6,170.00	7,380.31	
Travel	131.33	24.00	53.73	-	36.50	
Misc. Supplies	4,835.83	8,235.35	3,193.10	1,953.00	1,869.16	
Aviation Fuel	133,242.83	316,729.84	190,061.71	169,607.00	204,222.66	
Catering	3,920.42	5,556.68	4,379.70	1,205.00	21.53	
Motor Fuels	4,808.93	10,979.91	5,206.11	-	-	
Facility Maintenance	842.97	2,420.77	2,347.70	2,312.00	10,170.91	
Prop. Gen. Liab Ins.	-	14,450.00	14,290.00	-	-	
Hangar Keeps Ins	-	-	-	3,335.00	3,168.00	
Non-labor Sub-total	**$166,208.97**	**$375,741.44**	**$240,928.36**	**$189,083.00**	**$232,114.92**	**$240,815.34**
TOTAL FBO EXPENSES	**$199,911.11**	**$434,434.54**	**$298,928.86**	**$219,290.00**	**$270,786.00**	**$284,670.10**

Source: Data from the City of Waterville & Consultant Calculations

Table 8.8
Historical Maintenance Expenses

MAINTENANCE (MX)	2006	2007	2008	2009	2010	5 Yr. Ann. Average.
LABOR						
Full-time Wages	$3,076.00	$12,731.92	$12,106.11	$15,657.00	$16,589.19	
Overtime	400.00	3,523.38	103.90	1,439.00	2,553.81	
Part-time and Temp	18,613.64	7,353.32	8,967.97	13,905.00	18,360.00	
Fica	1,415.12	1,389.93	1,140.32	1,723.00	2,210.80	
Medicare	330.66	299.66	266.66	403.00	517.11	
Deferred Comp	-	293.44	-	-	-	
Group Health Ins	-	3,978.13	6,320.78	6,767.00	6,188.63	
Disability and Life Ins	23.45	(88.53)	21.26	22.00	22.54	
Dues and Memberships	125.00	115.00	125.00	50.00	-	
Labor Sub-total	**$23,983.87**	**$29,596.25**	**$29,052.00**	**$39,966.00**	**$46,442.08**	**$33,808.04**
NON-LABOR						
Prop. and Gen. Lia. Ins.	$26,275.00	$2,121.00	$3,032.00	$2,715.00	$2,849.00	
Telephone	1,178.16	1,686.77	691.20	75.00	-	
Advertising	126.00	-	-	-	-	
Utilities	11,673.29	5,343.17	5,716.29	5,149.00	4,707.70	
Heating Fuel	1,265.17	3,983.07	2,813.88	3,026.00	465.78	
Electricity	-	-	-	-	1,132.98	
Airfield Electricity	-	-	-	4,990.00	3,599.57	
Equipment Maintenance	6,934.12	31,454.11	12,790.28	8,556.00	7,219.36	
Facility Maintenance	18,242.54	12,339.46	12,824.97	21,034.00	15,623.48	
Misc. Supplies	5,212.79	3,368.22	2,730.25	842.00	1,515.45	
Office Supplies	372.02	-	-	-		
Motor Fuels	-	-	-	5,891.00	8,495.28	
Wearing Apparel	-	273.12	-	50.00	180.00	
Property Purchase	2,185.49	-	-	-	-	
Non-labor Sub-total	**$73,464.58**	**$60,568.92**	**$ 40,598.87**	**$52,328.00**	**$45,788.60**	**$54,549.79**
TOTAL MX EXPENSES	**$97,448.45**	**$90,165.17**	**$69,650.87**	**$92,294.00**	**$92,230.68**	**$88,357.83**

Source: Data from the City of Waterville & Consultant Calculations

Table 8.9
Historical Airport Revenues

	2006	2007	2008	2009	2010	5 Yr. Ann. Average
FBO						
Hangar Rental	$7,230.00					
Credit Card Sales		$337,423.33	$261,656.29	$195,078.00	$184,604.99	
Invoiced Sales		40,410.34	70,344.86	44,785.00	35,446.13	
Cash Sales		3,788.99	3,154.73	6,606.00	12,499.02	
Aviation Fuel	220,552.84					
Hangar Leases						
Misc. Revenue	214.65	278.15	454.22		168.95	
Tie Down Fees	1,605.00					
TOTAL FBO REVENUE	**$229,602.49**	**$381,900.81**	**$335,610.10**	**$246,469.00**	**$232,719.09**	**$ 285,260.30**
MAINTENANCE (MX)						
Misc. Revenue	$ 14.00	$279.89	$ -	$ -	$ -	
Excise - Airplanes	1,301.17	1,451.57	1,261.44	2,721.00	1,125.04	
Snow Removal	-	-	-	-	-	
Tie Down Fees	-	-	-	-	-	
Hangar Land Leases	2,789.52	1,881.92	977.77	-	-	
Rental Income	6,122.70	5,630.84	6,925.00	5,775.00	2,625.00	
TOTAL MX REVENUE	**$10,227.39**	**$9,244.22**	**$9,164.21**	**$8,496.00**	**$3,750.04**	**$8,176.37**
TOTAL ANNUAL REVENUE	**$239,829.88**	**$391,145.03**	**$344,774.31**	**$254,965.00**	**$236,469.13**	**$293,436.67**

Source: Data from the City of Waterville & Consultant Calculations

Table 8.10
Historical FBO and Maintenance Financial Summary

	2006	2007	2008	2009	2010	5 Yr. Ann. Average
TOTAL FBO REVENUE	$229,602.49	$381,900.81	$335,610.00	$246,469.00	$232,719.09	**$285,260.30**
TOTAL FBO EXPENSES	199,911.11	434,434.54	298,928.86	219,290.00	270,786.00	**284,670.10**
ANNUAL FBO SURPLUS/DEFICIT	**29,691.38**	**(52,533.73)**	**36,681.14**	**27,179.00**	**(38,066.91)**	**590.20**
TOTAL MX REVENUE	10,227.39	9,244.22	9,164.24	$8,496.00	3,750.04	**8,176.37**
TOTAL MX EXPENSES	97,448.45	90,165.17	69,650.87	$92,294.00	92,230.68	**88,357.83**
ANNUAL MX SURPLUS/DEFICIT	**($87,221.06)**	**($80,920.95)**	**($60,486.63)**	**($83,798.00)**	**($88,480.64)**	**$ 80,181.46**

Source: Data from the City of Waterville & Consultant Calculations

Table 8.11
Historical Overall Financial Summary

	2006	2007	2008	2009	2010	5 Yr. Ann. Average
TOTAL FBO REVENUE	$229,602.49	$381,900.81	$335,610.00	$246,469.00	$232,719.09	**$ 285,260.30**
TOTAL MX REVENUE	10,227.39	9,244.22	9,164.24	8,496.00	3,750.04	**8,176.37**
TOTAL REVENUES	**$239, 829.88**	**$391,145.03**	**$344,774.24**	**$254,965.00**	**$236,469.13**	**293,436.67**
TOTAL FBO EXPENSES	199,911.11	434,434.54	298,928.86	$219,290.00	270,786.00	**284,670.10**
TOTAL MX EXPENSES	97,448.45	90,165.17	69,650.87	92,294.00	92,230.68	**88,357.83**
TOTALEXPENSES	**$297,359.56**	**$524,599.71**	**$368,579.73**	**$311,584.00**	**$363,016.68**	**$373,027.93**
SURPLUS/DEFICIT	**($57,529.68)**	**($133,454.68)**	**($23,805.42)**	**($56,619.00)**	**($126,547.55)**	**($79,591.26)**

Source: Data from the City of Waterville & Consultant Calculations

8.7 Summary of Airport Financial Assessment

The five year financial history of the Airport reveals that FBO expenses averaged $284,670 while FBO revenues averaged $285,260. This results in an annual average FBO profit of $590 between 2006 and 2010. For the same five years, maintenance expenses averaged approximately $88,000 per year while maintenance revenues averaged approximately $8,000 per year. This indicates that maintenance activities have been operating at an average loss of nearly $80,000 annually. Unfortunately FBO revenue has steadily decreased each year since 2007. Another disturbing trend in the overall profit and loss shows an increasing (doubling) deficit over the last three years since 2008. The Strategic Recommendations section of this chapter looks to provide options for the Airport to secure long term positive revenues while reducing current airport expenses.

8.8 Strategic Recommendations

There are various items that can improve an Airport's ability to generate increased revenue such as new development, new tenants, additional airport services and amenities, and/or a modification to existing rates and charges. However, just as revenues can change over any given time, expenses can change as well. Unexpected expenses associated with airfield maintenance, as well as airport owned buildings and equipment, as well as the departure or failure of an existing on-airport business can significantly affect annual budgets.

It is important to note that an Airport Master Plan, including the study of its financials, is based upon recent history, and current conditions. Therefore, the FAA suggests completing an update to the Master Plan every 5 to 10 years, or if the characteristics of the facility changes. Regularly updating the Airport's Master Plan will enable the City to develop a successful roadmap into the future while tracking the Airport's performance of the past.

The following strategic recommendations for WVL are based upon the historical financial data provided by the City and are both quantitative and qualitative in nature. They include:

1) **Maintenance and Rehabilitation of Airport Infrastructure.** Without improvements to the runway infrastructure, activity levels will not increase. Further, the Airport runs the risk of losing based aircraft as well as the potential additional liability of high speed aircraft operating on poorly rated airfield pavements. Maintenance and reconstruction of the runway infrastructure is a key component to being able to attract an FBO as well as attract additional based aircraft tenants/hangar development opportunities.

   When based aircraft tenants choose to keep their aircraft at an airport, they do this based on the infrastructure (i.e. runways, services, navaids, etc.) available at the facility and in turn pay the Airport a fee to do so through leases and fuel sales. The expectation is that the Airport utilizes those fees to maintain and improve the facility accordingly.

   The following is one scenario of just one component of Airport revenues paying back a capital improvement. While not all encompassing of the capital program or airport revenues, the Reconstruction of Runway 14-32 is a good example of return on investment. At a total reconstruction cost of $811,000 the City's share at 5% is $40,550. Assuming $5,000 of the existing rental/land lease income annually, the City's share is returned in just 8 years.

   Infrastructure improvements are the most prudent investment the City can undertake to make the Airport more attractive. And considering that every $0.05 the City spends in capital improvements attracts $0.95 from the federal (FAA) and state (Maine DOT) makes this a wise investment.

2) **Airport FBO and Additional Airport Services.** Securing a reputable FBO has the potential to significantly stabilize quantitative and qualitative aspects of the Airport. The Airport and the City should solicit the services of a Fixed Base Operator (FBO) for WVL through an Request for Proposal (RFP) process. This will help the following:

   Revenues and Expenses: From 2006 to 2010 positive cash flow to the City resulting from the operation of the FBO has varied. Operating the FBO resulted in its highest surplus of $36,681.14 in 2008 and largest deficit of $52,533.73 in 2007. Over the course of these five years, the FBO has averaged an annual profit of less than $600.00. However, losses have increased since 2008 with a significant deficit recorded in 2010.

   The average annual FBO expenses of approximately $285,000 will be substantially borne by the new FBO. Revenues from the lease of facilities, fuel flowage and/or percent of gross receipts will provide a steadier stream of revenue for the City. Recognizing that the Airport may need to offer incentives to attract an appropriate FBO that will provide competitive services, the ultimate amount of revenue derived from a lease with the FBO will be a function of procurement and contract negotiations between the FBO and the City.

   Transferring FBO services to a pri**v**ate entity will be a key component to providing the City a positive cash flow on a regular basis. Considerations should be made to the following:

   - Fuel Flowage: Based on 2010 fuel volume and a fuel flowage fee of $0.05 per gallon the City could expect nearly $2,600 in annual revenue. However, the adoption of a brand name FBO required to provide a minimum level of services could result in much higher fuel volumes and revenues associated with fuel flowage fees.

   - FBO Rent Incentives: Since FBO's generally pay rent equal to less than 5% of gross annual sales, it is recommended that the Airport provide incentives to attract a well known FBO and examine FBO revenues after the first year of business to determine reasonable land and building rates. Typical of airports of similar size and function, the Airport should consider a scaled structure based on annual gross sales which would result in an increase of revenue to the City as FBO revenues grow.

   - Land and Building Lease: While subject to negotiation and appraisal, the rental of the existing terminal, hangar and apron areas would net positive cash flow to the City on a regular basis. Should the City decide to rent the building and apron area on a square footage basis, an apron rent of $.25/S.F. would yield approximately $6,000 annually, and building rent of $5.00/S.F. would yield nearly $65,000 annually. However, as the previous bullet suggests, the City may choose to incentivize potential FBO operators by offering a segmented fee structure based on a percentage of annual gross FBO sales.

   Additional Airport Services: As part of the FBO selection process, the qualitative services of WVL can be improved by requiring the FBO to offer the full suite of FBO services to alleviate jet diversions to nearby airports that offer these services (based on anecdotal information gained throughout the Master Plan process). This will help to further attract and provide the potential for increased activity at WVL ultimately helping the FBO to succeed as well as WVL in general.

Therefore, in order to optimize the benefits of the Airport to the customers and the general public, it is recommended that the Airport establish minimum standards for any future FBO doing business at WVL, prior to advertisement and selection of a new FBO.

Based upon the characteristics of the Airport and the market area, mandatory products and services the City should consider requiring, include:

- Airframe and power plant (A&P) repair facilities.
- Flight training and aircraft rental.
- Air Charter Part 135 services.
- Delivering and dispensing of Jet fuel, Avgas, and aircraft lubricants into all general aviation aircraft normally frequenting the Airport.
- Provide, operate and maintain a UNICOM or ARINC Radio Service.
- Maintain an aircraft log.
- Collect landing fees.
- Additional activities and/or services as the City may approve or require, e.g., aircraft deicing, aircraft lavatory servicing, ground power service, etc.
- Disabled aircraft removal.

It is recommended that the City allow the FBO to meet minimum standards for the provision of aircraft maintenance and flight training services through certified and authorized sublessee(s) who will perform their services from the FBO's leased premises.

Brand Recognized FBO: Soliciting for a FBO that is brand recognized is not a requirement, but should be considered by the City in making a selection. A recognized brand brings customer loyalty as well as a network of accounts and marketing throughout the FBO's brand network. This can often lead to WVL being a destination because of the brand in addition to local destinations, etc. In addition, a brand recognized FBO is one with multiple locations and generally brings financial stability with their business model and economies of scale for marketing their services and locations.

3) **Airport Rates and Charges.** Providing competitive rates and charges is key to maximizing revenue, and helps maintain existing based aircraft owners while attracting new business in the form of transient users. Should the City continue to operate the FBO; it is recommended that rates and charges at surrounding airports be tracked by WVL on a monthly or at least quarterly basis (it is recommended that fuel rates be analyzed weekly).

FBO Control: Should the City adopt an outside FBO, in order to ease the burden on airport management, it is recommended that the FBO be required to analyze the day-to-day rates and charges to ensure competitiveness with other market airports. This requirement can be incorporated into the FBO lease structure with the City and generally includes rates for, fuel, tie-downs, landing fees, apron parking, and transient hangar storage.

As recommended earlier, an immediate increase in rates and charges by 20% could increase Airport revenues up to $11,500 annually.

4) **Lease for Cargo Operation.** A lease agreement between the Airport and Wiggins Airways does not currently exist. The Airport should execute a lease agreement with Wiggins Airways at market rates for the existing cargo operation at the Airport. Among other benefits, having a lease agreement in place protects both parties:

1. The agreement provides a guarantee of revenue for the Airport over a defined time period; and

2. Provides the cargo operator a guarantee that space will be available for their operation.

5) **Business Development and Land Leases.** With an FBO providing the day-to-day aircraft services, it is recommended that airport management focus their efforts on the development and redevelopment of Airport land parcels. Either through an RFP process or unsolicited proposals, it is recommended that the Airport work with local and state economic development officials to review and consider airport related development proposals. Also, since development and redevelopment activity on the Airport is a basis for increasing revenue, when land or building leases are ultimately developed or renewed, it is recommended that an appraisal by a qualified airport appraiser be performed to determine fair market rates.

As an example, if the Airport were to ground lease additional parcels for box hangar development, they could see an increase in annual revenue. The ground lease of one box hangar identified on the ALP would net approximately $2,118 per year which suggests at full build out of 8, would net approximately $17,000 in annual revenue. This is based on 1,765 Sq. Ft of land per unit and a monthly ground lease rate of $.10 per Sq. Ft.

Two additional examples can be seen from the t-hangar and corporate development areas.

1. The ALP identifies an area to develop t-hangar complexes. Assuming private development of the t-hangars, each unit would generate a land lease of the approximate 9,450 square feet of land. At the $0.10 per square foot rate, the Airport could generate up to $11,340 in annual revenue per unit ($34,020 if all three areas are developed).

2. The ALP identifies an area for corporate development. This area is approximately 59,395 square feet. For this analysis and to be conservative with the estimate, it is assumed half of this space may initially be leaseable at 30,000 square feet. At the $0.10 rate, this parcel could generate up to $36,000 annually for the Airport.

6) **Control Maintenance and Operational Expenses.** Controlling maintenance and operational expenses is a day-to-day business practice of any successful operation. Since staffing, utilities, and maintenance expenses can vary in the northeast due to weather extremes, it is recommended that the Airport monitor expenses and develop reserves for any unforeseen expenses or significant escalations in airport utility and maintenance costs.

7) **Equipment Costs.** It is likely that unanticipated costs related to equipment maintenance could adversely affect the airport financials for any given year. Since equipment maintenance costs are largely related to the age and quantity of existing airport related equipment, it is recommended that an

accurate inventory of airport maintenance equipment, its condition, and a history of repairs be kept and maintained.

8) **Record Keeping**. Like a business, Airport financial data should be managed in an organized and professional manner. Furthermore, access to consistent and accurate data can help the Airport identify and track historical trends that can determine the areas in which the Airport is either succeeding or needs improvement upon. The City should also consider auditing the Airport on a regular basis to assure compliance with applicable accounting standards and bookkeeping practices.

   Due to incomplete data, an in-depth analysis of the Airport's financials was not possible. The following represents a sample income statement for a similar size airport. WVL should consider the utilization of more detailed record keeping in line with the sample provided on the next page.

Sample Airport Financial Statement

ABC Airport Financials	Fiscal Year 2006	Fiscal Year 2005	Fiscal Year 2004	Fiscal Year 2003
REVENUES				
Jet Fuel/Prist Sales	508,511.12	233,542.57	189,090.94	213,769.05
Avgas Fuel Sales	207,081.67	190,936.88	198,196.01	194,181.68
De-icing	2,726.00	0.00	0.00	0.00
Oil Sales	619.50	751.00	772.44	635.06
Landing Fees	7,940.00	4,360.00	5,670.00	3,952.75
Line Service Labor Sales	2,600.00	1,995.00	3,060.00	2,013.39
Aircraft Tiedown/Parking	89,091.25	73,605.37	80,884.25	84,416.89
Concession	0.00	0.00	0.00	0.00
Terminal Utility Reimbursement	3,666.81	4,388.03	4,572.05	7,424.56
Rent-Building/Land	145,014.89	76,108.25	67,988.41	89,746.28
Miscellaneous Sales	0.00	0.00	0.00	0.00
Miscellaneous	6,413.04	2,858.32	3,493.34	1,045.49
Finance/Service Charges	0.00	0.00	<9,716.88>	0.00
Total Revenues	**973,664.28**	**588,545.42**	**544,010.56**	**597,185.15**
COST OF SALES				
Avgas	157,968.31	123,947.98	134,870.00	122,310.96
Jet/Prist	337,378.89	135,617.27	93,149.11	101,969.21
Inventory Increase/Decrease	1,707.61	1,005.99	1,423.48	1,340.37
De-icing	5,696.45	0.00	0.00	0.00
Misc. Cost of Sales	3,411.90	1,359.48	2,722.44	905.54
Oil Cost of Sales	268.01	502.02	544.65	366.73
PRIST COST OF SALES	0.00	0.00	0.00	350.00
Finance/Service Charges	20,217.62	11,385.12	0.00	7,637.29
Total Cost of Sales	**526,648.79**	**273,817.86**	**232,709.68**	**234,880.10**
GROSS PROFIT	**447,015.49**	**314,727.56**	**311,300.88**	**362,305.05**
SALARIES & WAGES				
Wages & Compensation	174,331.86	0.00	0.00	0.00
Wages/Line	13,197.20	161,731.34	160,467.08	132,296.65
Overtime	15,451.79	11,261.18	11,530.66	18,153.26
Payroll FICA Taxes	15,182.12	12,813.90	12,484.47	11,230.56
Payroll Unemployment Taxes	4,531.51	2,143.51	3,649.77	3,706.96
Total Salaries & Wages	**222,694.48**	**187,949.93**	**188,131.98**	**165,387.43**
EXPENSES				
Advertising	0.00	998.07	1,776.08	1,873.77
Auto Expense/Mileage	179.90	486.65	475.79	345.73
Bank Service Charges	0.00	-5.00	0.00	0.00
Dues & Subscriptions	864.88	877.96	1,385.48	502.28
Equipment Rental	15,343.60	0.00	17,696.36	1,530.00
Fuel/Vehicle	5,847.84	6,202.41	3,430.68	2,215.43
Insurance/General	10,391.40	12,200.40	12,842.61	10,223.02
Maint. Service Contracted	826.05	1,655.90	3,966.40	1,450.00
Office Equipment	1,831.32	1,029.99	259.96	0.00
Office Expense	1,592.46	1,001.03	1,688.48	1,096.40
Outside Services	7,587.36	8,487.16	9,142.45	7,504.54
Postage Expense	0.00	79.78	52.44	48.00
Fuel Farm Interest Expense	0.00	69.74	1,292.79	2,892.78
Fuel Farm Maintenance	8,424.97	12,000.36	2,781.32	5,091.73
Refueling Vehicle Maint. Repair	0.00	0.00	446.65	-105.00
Repairs/Building	11,181.42	5,343.11	26,284.59	20,934.43
Repairs/Equipment Line Svc.	0.00	0.00	0.00	0.00
Repairs/Equipment Non-vehicle	2,161.85	2,258.32	3,849.04	157.67
Repairs/Equipment(Snow Removal)	0.00	0.00	6.32	0.00
Repairs/Other	580.00	202.40	0.00	0.00
Repairs/Runway	1,608.83	3,602.53	59.76	765.00
Repairs/Runway(NAVAIDS)	2,909.14	6,330.59	4,220.20	4,524.80
Repairs/Runway(Painting)	1,111.50	542.46	176.03	0.00
Repairs/Vehicle	3,507.12	7,099.87	7,280.68	3,339.26
Repairs/Vehicle(Snow Removal)	15,672.23	10,272.25	910.94	9,702.08
Supplies/Airfield-Landscape	7,027.01	1,438.27	1,910.32	6,251.55
Supplies/FBO Operating	15,500.53	12,952.53	10,960.07	6,680.87
Supplies/Household	0.00	0.00	0.00	0.00
Supplies/Misc. Operating	0.00	0.00	0.00	0.00
Supplies/Safety	2,227.13	4,071.19	3,929.11	2,985.19
Supplies/Snow Removal	2,176.68	660.93	1,084.98	5,921.01
Supplies/Snow Equp. Non-vehicle	0.00	0.00	0.00	0.00
Supplies/Building-Machinery	0.00	301.64	15.68	0.00
Taxes & Licenses	187.05	96.54	0.00	0.00
Telephone	8,563.02	10,157.56	9,902.80	3,348.44
Tools & Equipment	1,046.85	718.28	1,562.20	4,456.67
Training	0.00	1,999.00	577.50	0.00
Trash Removal	3,321.05	3,352.68	3,141.33	2,526.56
Travel	0.00	0.00	904.10	69.35
Travel/Meals	0.00	0.00	119.93	8.35
Truck Rental	21,300.00	21,300	20,014.38	15,400.00
Uniforms/Clothing	6,212.24	5,434.01	5,844.72	3,228.63
Utilities Central Electricity	44,878.46	27,147.63	18,161.27	19,797.79
Utilities Fuel #1 Diesel	13,937.13	10,029.53	7,487.27	6,922.87
Utilities Fuel #2 Heating	849.32	3,833.82	3,154.68	9,297.45
Utilities/Water	1,650.24	1,082.81	922.46	1,072.94
Total Expenses	**220,498.58**	**185,312.40**	**189,717.85**	**162,059.59**
Total Payroll & Expenses	**443,193.06**	**373,262.33**	**377,849.83**	**327,447.02**
TOTAL NET INCOME OPERATING	**3,822.43**	**(58,534.77)**	**(66,548.95)**	**34,858.03**
CAPITAL EXPENSES				
Capital Expense-Other	0.00	0.00	0.00	0.00
Fuel Farm Lease Payment	0.00	5,870.26	22,467.21	20,867.22
Total Capital Expenses	**0.00**	**5,870.26**	**22,467.21**	**20,867.22**
OTHER INCOME & EXPENSES	**0**	0	0	0
Total Other Income & Expenses	**0.00**	**0.00**	**0.00**	**0.00**
NET INCOME	**3,822.43**	**(64,405.03)**	**(89,016.16)**	**13,990.81**

Summary and Conclusion

The total Capital Improvement Program for Waterville Robert Lafleur Municipal Airport, as discussed in this Master Plan, is approximately $47.2 million. Even with this size program, the planning process requires the City of Waterville to consistently monitor the progress of the airport in terms of total aircraft operations, total based aircraft, and overall aviation activity. Analysis of aircraft demand is critical to the exact timing and need for new airport facilities. The information obtained from continually monitoring the airport activity and demand will provide the data necessary to determine if the development schedule should be accelerated or decelerated.

In addition to continually monitoring the CIP, it is recommended that in order to better compete for AIP funds, now and into the future, the airport adopt a proactive approach to airport development and funding strategies and consider the following:

- Focus on safety first.
- Strive to meet applicable FAA design standards.
- Preserve existing eligible infrastructure (Starting from RWY centerline and working outward).
- Understand that the FAA may withhold discretionary funding if entitlement funding is used on low priority projects.
- Consider combining entitlement funds and discretionary funds on high priority projects.
- Target high priority projects based on FAA criteria.
- Identify projects well in advance of the funding request.
- Complete the required planning and administrative tasks (Master Plan, ALP, Environmental Process, etc.).
- Maintain a commitment to good project execution (Starting and completing work promptly).
- Breaking up large projects into components where able – Allows projects to begin with limited funding.
- Review and Consider the items within the FAA ACIP Project Evaluation Checklist located in FAA Order 5100.39A.
- Communicate with the FAA and MeDOT regularly.

Waterville Robert LaFleur Municipal Airport

AIRPORT MASTER PLAN UPDATE

APPENDICES

APPENDIX A – GLOSSARY

ADVISORY CIRCULAR (AC) - Federal Aviation Administration Advisory Circular. This is a FAA document, which provides guidance on aviation issues.

AIRCRAFT APPROACH CATEGORY - An aircraft approach category is a FAA grouping of aircraft based on approach speed. The aircraft approach categories are:

(1) Category A: Speed less than 91 knots;
(2) Category B: Speed 91 knots or more but less than 121 knots;
(3) Category C: Speed 121 knots or more but less than 141 knots;
(4) Category D: Speed 141 knots or more but less than 166 knots.

AIR NAVIGATION AID FACILITY (NAVAID) - Any facility used or available for use as an aid to air navigation, including landing areas; lights; any apparatus or equipment for disseminating weather information, for signaling, for radio direction-finding, or for radio or other electronic communication; and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or during the landing or takeoff of aircraft.

AIRPLANE DESIGN GROUP (PHYSICAL CHARACTERISTICS) - The FAA airplane Design Group subdivides airplanes by wingspan. The airplane Design Groups are:

(1) Group I: Wingspan up to but not including 49 feet (15 m);
(2) Group II: Wingspan 49 feet (15 m) up to but not including 79 feet (24 m);
(3) Group III: Wingspan 79 feet (24 m) up to but not including 118 feet (36 m);
(4) Group IV: Wingspan 118 feet (36 m) up to but not including 171 feet (52 m);
(5) Group V: Wingspan 171 feet (52 m) up to but not including 197 feet (60 m)
(6) Group VI: Wingspan 197 feet (60 m) up to but not including 262 feet (80 m).

AIRPORT HAZARD - An airport hazard is any structure or natural object located on or in the vicinity of a public airport, or any use of land near such airport, that obstructs the airspace required for the flight of aircraft in landing or taking off at the airport or is otherwise hazardous to aircraft landing, taking of, or taxiing at the airport.

AIRPORT IMPROVEMENT PROGRAM (AIP) – FAA program that is the primary source of funding for airport projects as grants. This funding is provided at specific levels, with the funding priority based on the airport's Capital Improvement Program (CIP)

AIRPORT TRAFFIC CONTROL TOWER (ATCT) - A facility providing airport traffic control service to an airport and its associated airspace area.

APPROACH LIGHT SYSTEM (ALS) - An airport lighting system designed to assist pilots in finding the runway during instrument approaches for landing. The lights extend from the runway end outwards along the extended centerline for a certain distance, depending on the type of runway.

ATC - AIR TRAFFIC CONTROL SERVICE - A service provided for the purpose of promoting the safe, orderly, and expeditious flow of air traffic, including airport, approach, and enroute air traffic control services. ATC is provided by the Federal Aviation Administration, a branch of the federal government under the Department of Transportation.

APPROACH END OF RUNWAY - The approach end of runway is the near end of the runway as viewed from the cockpit of a landing airplane.

APPROACH SURFACE - An imaginary surface extending out from the end of the Primary Surface at a slope and width defined in FAR Part 77, above which the airspace must be

free of obstacles as aircraft approach or depart the runway.

BASED AIRCRAFT - An aircraft permanently stationed at an airport by agreement between the airport owner (management or FBO) and the aircraft owner.

CAPITAL IMPROVEMENT PROGRAM (CIP) – The Capital Improvement Program provides a schedule of development for the proposed projects identified in an Airport Master Plan.

CATEGORY I, II, AND III LANDINGS -

- Category I: 200 foot ceiling and 2400 foot RVR;
- Category II: 100 foot ceiling and 1200 foot RVR;
- Category IIIA: zero ceiling and 700 root RVR;
- Category IIIB: zero ceiling and 150 foot RVR;
- Category IIIC: zero ceiling and zero RVR.

To make landing under these conditions, aircraft must be equipped with special avionics, pilot must be qualified to land under specified conditions for that category, and aircraft must have proper ground equipment for conditions.

CEILING - The height above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken" "overcast", or "obscured" and not classified as "thin" or "partial". The ceiling is reported in feet above the surface in a given location.

CLEAR ZONE - Defined by FAR Part 77 as an area off each runway end to be void of trees and other obstacles. The FAA has replaced this area with the Runway Protection Zone (RPZ).

CLEARWAY - A clearway is an area beyond the stop end of runway, not less than 500 feet (150 m) wide, centered on the extended centerline of the runway, and controlled by the airport authorities. -The clearway is expressed in terms or a geometric plane extending from the end of the runway, with an upward slope not exceeding 1.25 percent, above which no object nor terrain may protrude. Threshold lights, however, may protrude above the clearway plane if their height above the end of the runway is 26 inches (66 cm) or less and if they are located to each side of the runway. A clearway increases the allowable operating takeoff weights of turbine-powered airplanes. For most airplanes, the maximum usable length of the clearway is less than 1,000 feet (300 m).

DECISION HEIGHT (DH) - The height above the highest runway elevation in the touchdown zone at which a missed approach shall be initiated if the required visual reference has not been established. This term is used only in procedures where an electronic glide slope provides the reference for descent, as in ILS.

DECLARED DISTANCE - Declared distances are the runway distances that limit turbine-powered airplane operations and thus the airport operational capacity. The distances are the accelerated stop -distance available (ASDA), the Landing Distance Available (LDA), the Takeoff Distance Available (TODA), and the Takeoff Run Available (TORA).

(1) ASDA is equal to TORA plus the length of the stopway (SWY), if provided.
(2) LDA is equal to the length of runway available and suitable for the landing ground run of airplanes.
(3) TODA is equal to TORA plus the length of the clearway (CWY) if provided.
(4) TORA is equal to the length of runway available and suitable for the takeoff ground run of airplanes.

DESIGN AIRCRAFT - The Design Aircraft is an aircraft whose dimensions and/or other requirements make it the most demanding aircraft for an airport's facilities (i.e. runways and taxiways). The Design Aircraft is used as the basis for airport planning and design; because if the airport's facilities are designed to accommodate the Design Aircraft, they can accommodate less demanding aircraft as well. An aircraft can be utilized as the Design Aircraft for an airport if it will (has) conduct (ed) 500 or more annual operations (250 landings) at that airport.

DISPLACED THRESHOLD - A displaced threshold is a threshold located at a point on the runway other than at the runway end. Except for the approach standards defined in FAR Part 77, approach surfaces are associated with the threshold location.

DISTANCE MEASURING EQUIPMENT (DME) - Equipment (airborne and ground) used to measure, in nautical miles, the distance of an aircraft from a NAVAID.

DME FIX - A geographical position determined by reference to a NAVAID, which provides distance and azimuth information. The DME fix is defined by a specified distance in nautical miles and a radial in degrees magnetic from that aid.

FEDERAL AVIATION REGULATION (FAR) - Regulations developed by the FAA in order to maintain safety, define standards, and institute uniform practices throughout the industry.

FINAL APPROACH FIX (FAF) - The fix from or over which final approach (IFR) to an airport is executed.

FINAL APPROACH - A flight path of a landing aircraft in the direction of landing along the extended runway centerline from the base leg to the runway. For instrument approaches, the final approach begins at the final approach fix (FAF).

FIX - A geographical position determined by visual reference to the surface by reference to one or more radio NAVAIDs, by celestial plotting, or by another navigational device.

FIXED BASE OPERATION OR FIXED BASE OPERATOR (FBO) - A sales and/or service facility located at an airport, or the person who operates such a facility.

GENERAL AVIATION (GA) - All civil aircraft and aviation activity except that of the certified air carriers and military operations. GA includes corporate flying and private flying (recreation or personal).

GLIDESLOPE - Vertical guidance provided by a ground based radio transmitter to an aircraft landing by use of an Instrument Landing System. This guidance informs the pilot if the aircraft is either too high or too low as it flies its approach to the runway for landing.

GLOBAL POSITIONING SYSTEM (GPS) - GPS is a navigational system based on the use of multiple satellites strategically placed in the earth's orbit. GPS is used by aircraft equipped with the proper GPS receiving equipment for enroute navigation, as well as instrument approaches to airports for landing. GPS allows aircraft to fly more freely and set waypoints (destinations) without the need or reliance on ground based radio navigation facilities such as VORs.

HAZARD TO AIR NAVIGATION - Any object which has a substantial adverse effect upon the safe and efficient use of navigable air-space by aircraft or on the operation of air navigation facilities is a hazard to air navigation. The FAA will conduct an aeronautical study of any object to determine whether or not the object is a hazard to air navigation. As part of the airport layout plan approval process, the FAA con-ducts aeronautical studies of all obstructions to air navigation identified on the Airport Layout Plan. Hazards or potential hazards to air navigation are eliminated by either altering the existing or proposed object or adjusting the aviation operation to accommodate the object, in that order of priority.

HEIGHT ABOVE AIRPORT (HAA) - Indicates the height of the MDA above the published airport elevation. This is published in conjunction with circling minimums.

HOLDING - A predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

HOLDING FIX - A specified geographical point or NAVAID used as a reference point in establishing and maintaining the position of an aircraft while holding.

IFR CONDITIONS - Weather conditions below the minimum prescribed for flight under VFR.

INITIAL APPROACH - The segment of a standard instrument approach procedure between the initial approach fix and the intermediate fix, or the point where the aircraft is established on the intermediate segment of the final approach course.

INITIAL APPROACH ALTITUDE - The altitude prescribed for the initial approach segment of an instrument approach.

INSTRUMENT FLIGHT RULES (IFR) - Aircraft operation rules as pre-scribed by Federal Aviation Regulations for flying by instruments.

INSTRUMENT LANDING SYSTEM (ILS) - A system of electronic devices whereby the pilot guides his aircraft to a runway solely by reference to instruments in the cockpit. In some instances the signals received from the ground can be fed into the automatic pilot for automatically controlled approaches. The ILS consists of a Localizer, Glideslope and Marker Beacons (and Approach Light System).

ITINERANT OPERATIONS - All aircraft operations other than local operations.

LOCAL OPERATION - Operations performed by an aircraft that:
(a) operates within the local traffic pattern or within sight of the airport;
(b) are known to be departing for or arriving from an Airport within a 20 mile radius of the Airport in question;
(c) execute practice maneuvers such as touch and goes or simulated instrument approaches at the airport.

The majority of local operations are conducted by based aircraft.

LOCALIZER TYPE DIRECTIONAL AID (LDA) - A facility of comparable utility and accuracy to a localizer but which is not part of a complete ILS and will not be aligned with the runway.

LOCALIZER - A ground based radio transmitter which provides pilots with course guidance as they approach a runway for landing utilizing a Instrument Landing System. The course guidance is known as "azimuth".

MEDIUM INTENSITY APPROACH LIGHT SYSTEM (MALS) - An airport approach light system of medium intensity.

MARKER BEACON - An instrument, which provides aural and/or visual identification of a specific position along a Instrument Landing System approach to a runway.

MEDIUM INTENSITY RUNWAY LIGHTS (MIRL) - An airport runway lighting system of medium intensity.

MOVEMENT AREA - The runways, taxiways, and other areas of an airport which are used for taxiing, takeoff, and landing of aircraft, excluding loading ramps and parking areas.

NAUTICAL MILE (NM) - The unit measure of distance in both nautical and aeronautical context. A nautical mile equals 1.15 statute miles (6,080 feet). The measure of speed in regards to nautical miles is known as KNOTS (nautical miles per hour).

NON DIRECTIONAL BEACON (NDB) - A radio beacon transmitting non directional signals whereby an aircraft equipped with direction finding equipment can determine headings to or from the radio beacon and "home" in on a track to or from it.

NATIONAL AIRSPACE SYSTEM (NAS) - The common system of air navigation and air traffic control encompassing communications facilities, air navigation facilities, airways, controlled airspace special use airspace, and flight procedures authorized by FAR's for domestic and international aviation.

NON-PRECISION APPROACH - A standard instrument approach procedure in which no electronic glide slope is provided. A localizer, NDB, or VOR is often used.

NON PRECISION INSTRUMENT RUNWAY - A non precision instrument runway is one with an instrument approach procedure utilizing air navigation facilities, with only horizontal guidance, or area-type navigation equipment for which a straight in non precision instrument approach procedure has been approved or planned, and no precision approach facility of procedure is planned or indicated on an FAA or DOD approved Airport Layout Plan, or on other FAA of DOD planning documents.

NOTICE TO AIRMEN (NOTAM)- A notice identified either as a NOTAM or an Airmen Advisory containing information concerning the establishment, condition, or change in any component of, or hazard in, the National Airspace System, the timely knowledge of which is essential to personnel concerned with flight operations.

(1) NOTAM : A Notice to Airmen in message form requiring expeditious and wide dissemination by telecommunications means.

(2) AIRMEN ADVISORY : A Notice to Airmen normally only given local dissemination, during pre-flight or in--flight briefing, or otherwise during contact with pilots.

OBSTACLE FREE ZONE (OFZ) - An OFZ is an area:

(1) Comprised of the runway OFZ, the approach OFZ, and the inner-transitional surface OFZ.

(A) Runway OFZ: The runway OFZ is the volume of space above a surface longitudinally centered on the runway. The elevation of any point on the surface is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet (60 m) beyond each end of the runway and its width is:

1) 120 feet (36 m) for visual runways serving or expected to serve only small airplanes with approach speeds less than 50 knots.

2) 250 feet (75 m) for non precision instrument and visual runways serving or expected to serve small airplanes with approach speeds of 50 knots or more and no large airplanes.

3) 300 feet (90 m) for precision instrument runways serving or expected to serve only small airplanes.

4) 180 feet (54 m), plus the wingspan of the most demanding airplane, plus 20 feet (6 m) per 1,000 feet (300 m) or airport elevation; or, 400 feet (120 m), whichever is greater, for runways serving or expected to serve large airplanes.

(B) Approach OFZ: The approach OFZ is the volume of space above a surface which has the same width as the runway OFZ and rises at a slope of 50 (horizontal) to 1 (vertical) away from the runway into the approach area. It begins 200 feet (60 m) from the runway threshold at the same elevation as the runway threshold and it extends 200 feet (60 m) beyond the last light unit in the approach lighting system. The approach OFZ applies only to runways with an approach lighting system.

(C) Inner-Transitional Surface OFZ: The inner-transitional surface OFZ is the volume or space above the surfaces which slope 3 (horizontal) to 1 (vertical) laterally from the edges of the runway.

1) OFZ and approach OFZ end at the height of 150 feet (45 m) above the established airport elevation. The inner-transitional surface OFZ applies only to precision instrument runways.

2) Free of all fixed objects. FAA approved frangible equipment, which provides an. essential aviation service may be located in the OFZ, provided the amount of penetration is kept to a practical minimum.

3) Clear of vehicles as well as parked, holding, or taxiing aircraft in the proximity of an airplane conducting an approach, missed approach, landing, takeoff' or departure.

OBSTRUCTION TO AIR NAVIGATION - An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of a greater height than any of the heights or surfaces defined in FAR PART 77.23.

OPERATION - Generally thought of as either a take-off or a landing of an aircraft. FAA ATCT operations include all radio contacts with an aircraft, regardless of whether or not they are taking off or landing. Operations used for planning purposes include only takeoffs, landings and touch and goes.

PRECISION APPROACH PATH INDICATOR (PAPI) - An airport approach light aid to pilots. See GVGI.

PRECISION INSTRUMENT RUNWAY - A precision instrument runway is one with an instrument approach procedure utilizing an Instrument Landing System (ILS), microwave landing system (MLS), or precision approach radar (PAR). A planned precision instrument runway is one for which a precision approach system or procedure is indicated on an FAA or DOD approved airport layout plan, or on other FAA or DOD planning documents.

PRIMARY SURFACE - An imaginary horizontal surface extending out an equal distance on each side of the runway centerline a width as defined in FAR Part 77.

R/W - Runway.

RUNWAY ALIGNMENT INDICATOR LIGHTS (RAIL) - (usually part of a MALS system).

RADAR (RADIO DETECTION AND RANGING) - A device which, by measuring the time interval between transmission and reception of radio pulses, provides information on range, azimuth and/or elevation of objects in the path of the transmitted pulses.

RADAR SERVICE - A term which encompasses aircraft separation, navigation guidance, and/or flight track monitoring services based on the use of radar which can be provided by a controller to a pilot of a radar-identified aircraft.

RADAR SURVEILLANCE - The radar observation of a given geographic area for the purpose of performing some radar function.

RADIAL - A magnetic bearing extending from a VOR, a VORTAC, or a TACAN navigational facility.

RUNWAY END IDENTIFIER LIGHTS (REIL) - Flashing strobe lights (usually white) which indicate the end or a runway. They are located at each end of the runway.

RELIEVER AIRPORT - An airport designated as having the primary function of relieving congestion at a commercial airport and providing more general aviation access to the overall community. Reliever Airports are allowed to receive AIP (federal) funds for improvement.

RUNWAY - A runway is a defined rectangular area on an airport prepared for the landing or takeoff of airplanes.

RUNWAY PROTECTION ZONE (RPZ) - A trapezoidal area centered about the extended runway centerline beginning 200 feet beyond the end of the area usable for takeoff or landing. The dimensions are a function of the approach visibility minimum and the type of aircraft. Refer to AC 150/5300-13 for specific dimensions and land use guidelines.

RUNWAY SAFETY AREA - A runway safety area is a rectangular area, centered on the runway centerline, which includes the runway (and stopway, if present) and the runway shoulders. The portion abut-ting the edge of the runway shoulders, runway ends, and stopways is cleared, drained, graded and usually turfed. Under normal conditions, the runway safety area is capable of supporting snow removal, firefighting, and rescue equipment and accommodating the occasional passage of aircraft without causing major damage to the aircraft.

RUNWAY VISUAL RANGE (RVR) - An instrumentally derived value, based on standard calibrations, that represents the horizontal distance a pilot will see down the runway from the approach end.

SAFETY AREA - An actual graded area surrounding the runway that can be safely

negotiated in case of an emergency by an aircraft that will be using that runway.

SEPARATION - Spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off.

SEPARATION MINIMA - The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.

SMALL AIRCRAFT - A small aircraft is an aircraft of 12,500 pounds (5,700 kg) or less maximum certificated takeoff weight.

STATUTE MILE - A regular "highway" mile measuring 5,280 feet.

STOP END OF RUNWAY - The stop end of runway is the far runway end as viewed from the cockpit of a landing airplane.

STOPWAY - A stopway is an area beyond the stop end of the takeoff runway which is no less wide than the runway and is centered on the extended centerline a' the runway. It is able to support an airplane during an aborted takeoff without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

STRAIGHT-IN APPROACH - Entry into the traffic pattern by interception of the extended runway centerline (final approach) without executing any other portion of the traffic pattern.

T/W - Taxiway.

TAXI - To operate an airplane under its own power on the ground, except the movement incident to actual takeoff and landing.

TAXILANE - A taxilane is the portion of the aircraft parking area used for access between taxiways, aircraft parking positions, hangars, storage facilities, etc. A taxilane is outside the movement area, and is normally not controlled by the Air Traffic Control Tower.

TAXIWAY - A taxiway is a defined path, from one part of an airport to another, selected or prepared for the taxiing of aircraft.

TAXIWAY SAFETY AREA - A taxiway safety area is an area centered on the taxiway centerline, which includes the taxiway and taxiway shoulders. The portion abutting the edge of the taxiway shoulders is cleared, drained, graded, and usually turfed.

Under normal conditions, the taxiway safety area is capable of sup-porting snow removal, fire fighting, and rescue equipment and accommodating the occasional passage of aircraft without causing major damage to the aircraft.

THRESHOLD - The threshold is the beginning of that portion of the runway available and suitable for the landing of airplanes.

THRESHOLD CROSSING HEIGHT (TCH) - The height of the straight line extension of the visual or electronic glide slope above the runway threshold.

TOUCH AND GO - A training operation in which a landing approach is made, the aircraft touches-down on the runway, but does not fully reduce speed to turn off the runway. Instead, after the landing, full engine power is applied while still rolling and a takeoff is made, thereby practicing both maneuvers as part of one motion. It counts as two separate aircraft operations.

TRACK - The flight path of an aircraft over the surface of the earth.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The usual traffic pattern consists of five segments, or “legs”. These components are the upwind leg, crosswind leg, downwind leg, base leg, and the final approach. Traffic patterns are followed by aircraft in order to exit the airport area after takeoff in an orderly fashion, and to enter an Airport area and ultimately land, also in an orderly fashion.

TRANSITION ZONE - An imaginary surface extending upward at a 7 -to 1 slope (i.e. up one

foot for every seven feet moved horizon-tally) from the Primary Surface and Approach Surface defined in Federal Aviation Regulations (FAR) Part 77.

TURBINE - A mechanical device or engine that spins in reaction to fluid flow through or over it. This device is used in turbofan, turbojet, and turboprop-powered aircraft.

TURBOFAN - A turbojet engine whose thrust has been increased by the addition of a low-pressure compressor fan.

TURBOJET - An engine that derives power from a fanned wheel spinning in reaction to burning gases escaping from a combustion chamber. The turbine in turn drives a compressor and other accessories.

TURBOPROP - A turbine engine in which the rotating turbine turns a propeller.

UTILITY AIRPORT - A utility airport is an airport designed, constructed, and maintained to serve airplanes in Aircraft Approach Category A and B. For discussion on airport type, see paragraph 5.

VFR CONDITIONS - Basic weather conditions prescribed for flight under Visual Flight Rules; usually implies a ceiling of at least 1000 feet and a forward visibility of three miles or more.

VERY HIGH FREQUENCY OMNI DIRECTIONAL RANGE (VOR) - A ground radio station that provides a pilot of a properly equipped air-craft with his radial location in reference to that station. A VORTAC is an electronic air navigation facility combining a VOR and a TACAN.

VISIBILITY, PREVAILING - The horizontal distance at which targets of known distance are visible over at least half of the horizon. It is normally determined by an observer on or close to the ground viewing buildings or other similar objects during the day and ordinary city lights at night.

VISUAL APPROACH SLOPE INDICATOR (VASI) - The VASI is a device used by pilots to determine their position in regard to the recommended approach path for a particular airport. See also GVGI.

VISUAL FLIGHT RULES (VFR) - "See and be seen" flight rules. Each pilot is responsible for the safe spacing and proper operation of his aircraft. Under VFR, a pilot is not required to file a flight plan or be in constant radar and communication contact with air traffic control. Visual flight rules are determined by weather and require a ceiling of at least 1,000 feet and visibility of at least 3 miles.

VFR TRAFFIC - Aircraft traffic operated solely in accordance with Visual Flight Rules.

VISUAL APPROACH - A VFR approach granted to an IFR flight by air traffic control under special circumstances. Visual approaches are normally conducted by aircraft operating under visual flight rules.

VISUAL RUNWAY - A visual runway is a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA or Department of Defense (DOD) approved layout plan, or, on other FAA or DOD planning documents.

VORTAC - A combination of the civil VOR/DME and the military TACAN which can provide both distance and direction of an aircraft from the station.

WAKE TURBULENCE - The air turbulence caused by a moving aircraft, originating at the tips of the wings. The turbulence is caused by vortices generated by an aircraft's wingtips as it travels through the air. This turbulence is greatest when the aircraft is taking off and landing.

WIND COVERAGE - Wind coverage is the percent of time for which aeronautical operations are considered safe due to acceptable crosswind components.

Waterville Robert LaFleur Municipal Airport

Phase I Airport Master Plan Update

AIP Project Number 3-23-0047-15

Project Kickoff Meeting

Tuesday, September 18, 2007

Meeting Agenda

1. Introductions

2. Project Goals & Objectives
- a. City / Airport
- b. MeDOT / OPT
- c. FAA

3. Outline Scope of Work
- a. Phase I
- b. Phase II

4. Project Management Team (PMT)
- a. Past planning efforts
- b. Historical performance

5. Project Advisory Committee (PAC)
- a. Committee make-up
- b. Public Meetings

6. Schedule

7. Miscellaneous

8. Adjourn

Robert A LaFleur - Phase I Airport Master Plan Update

AIP Project # 3-23-0047-15

Project Kickoff Meeting, Tuesday 18 September 2007

Name	Representing	Phone / Fax	email
Gary Brown	WVL		
Jen O'Bryan	MaineDOT	624-3240	jennifer.obryan@maine.gov
Bob Mallard	ASG	781-491-0083	rmallard@airportsolutionsgroup.com
Marc Champigny	The Louis Berger Group	518-432-9545	mchampigny@louisberger.com
Ralph Nicosia Rusin	FAA	781 238-7612	ralph.nicosiarusin@faa.gov
Mike Roy	WTVL		
Rosemary Winslow	WTVL	872-5713	rosemary.winslow@mail.house.gov

PROJECT ADVISORY COMMITTEE (PAC)
MEETING NO. 1

March 10, 2008
5:00 PM TO 7:00 PM
At
Waterville City Council Chambers
1 Common Street
Waterville, Maine 04901

AGENDA

- **Introductions**
- **Review PMT / PAC Roles & Responsibilities**
- **Discuss Results of Working Paper No. 1 – Inventory**
- **Review DRAFT Working Paper No. 2 – Forecasts**
- **Review DRAFT Working Paper No. 4 – Assessment of Airport Management Structure**
- **Review Project Schedule**
- **Next Steps**
    - Complete Task 5 – Facility Requirements
    - Set Date for PAC Meeting #2
    - Phase II AMPU
    - Other Thoughts?

Waterville Master Plan
PAC Meeting No. 1

Name	Association	Telephone
Clyde Edgerton	Meadow Brook Consulting	O-293-6740 C 592-3700
Ron Marreche	Maine General	O-872-1000
Michael Lamontagne	Waterville	207-660-5145
Dennis Mclellan	Oakland Council	207-465-3492
Bob Early		495-2844
Elery Keene	Chamber of Commerce	872-5231
Greg Thibeault	Waterville Airport	314-7730
John Butera	Central ME Growth Council	680-7300
Rosemary Winslow	City Councilor, WTVL	873-5713
Doug Carnick	Public Policy, Mid-Main Chamber	872-8221
Greg Brown	WTVL	680-4232
Tom Munson	Fairfield	453-8000
Jim Schmidt	Reno	397-5940 (romeme@roadrunner.com)
John Marden	Pilot, Belgrade ME	465-2851
Mike Roy	WTVL	
Ralph Nigosian-Rusin	FAA Airports	781 238-7612
Jeri OBryon	MaineDOT	624-3240
Marc Champlony	Louis Berger	518-432-9545
Nick Stefanik	Louis Berger	518-432-9545
Bob Mallard	ASG	781-491-0083
Byron Race	ASG	" " "

PROJECT ADVISORY COMMITTEE (PAC)
MEETING NO. 2

May 19, 2008
6:30 PM TO 8:00 PM
At
Waterville City Council Chambers
1 Common Street
Waterville, Maine 04901

AGENDA

- **Introductions**
- **Review Working Paper No. 3 – Facility Requirements / Demand Capacity**
- **Review Working Paper No. 4 – Assessment of Airport Management Structure**
- **Review Project Status / Schedule**
- **Next Steps**
    - Phase II AMPU
    - Other Thoughts?

PROJECT MANAGEMENT TEAM (PMT)
MEETING

December 01, 2008
4:00 PM TO 6:00 PM
At
Waterville City Council Chambers
1 Common Street
Waterville, Maine 04901

AGENDA

- **Please complete the "Sign-In Sheet"**
- **Introduction of Meeting Participants**
- **Summarize Phase I Results – See Mtg. Handout**
    - Survey results: Hangar space, FBO services, Airport Mgt., etc.
    - Forecast: Moderate growth in AC operations; recapture based AC
    - Airport Reference Code (ARC): RW5-23 C-II [no change]
    - Physical plant: repair / improvements needed
    - Capacity: AC storage (hangar & apron) – northwest area
    - Airport Mgt. Structure: Airport Authority? FBO?
- **Review Phase II Study Components – See Mtg. Handout**
- **2008 (Pre) Year-End Review**
    - Operating Budget / AP-FBO Financials
    - Aircraft Operations
    - FBO Services
    - Airport Management
    - Other Issues?
- **Factors Influencing Alternatives Analysis – See Mtg. Handout**
- **Next Steps**

WATERVILLE ROBERT LAFLEUR MUNICIPAL AIRPORT
AIP Project No. 3-23-0047-16
Phase II AMPU

PROJECT MANAGEMENT TEAM (PMT) / KICK-OFF MEETING
Monday, December 01, 2008 – 4:00 p.m. (EST)

SIGN IN SHEET
(Please print clearly)

Name	Company / Organization	Phone Number	Email Address
Bob Mallard RTM	**Airport Solutions Group (ASG)**	**(781) 491-0083**	rmallard@airportsolutionsgroup.com
Stacie Haskell	Maine DOT	(207) 624-3243	stacie.haskell@maine.gov
Greg Brown	WVL	207 680-4232	
Mike Ray	"	680-4203	
Marc Champigny	The Louis Berger Group	518-432-9545	mchampigny@louisberger.com
John Butera	Central Maine Growth Council	680-7300	jbutera@centralmaine.org
Nick Stefaniak	The Louis Berger Group	518-432-9545	NSTEFANIAK@LOUISBERGER.COM
Rosemary Winslow	WTVL City Councilor US Congressman Michaud	(207) 873-5713	rosemary.winslow@mail.house.gov
Greg Thibeault	KWVL	(207) - 873-8013 (207) 314-7730	gthibeault@watervillemaine.gov

JOINT MEETING OF THE

PROJECT MANAGEMENT TEAM (PMT)

PROJECT ADVISORY COMMITTEE (PAC)

March 30, 2009
5:00 PM TO 7:00 PM

At

Waterville City Hall
City Council Chambers
1 Common Street
Waterville, Maine 04901

AGENDA

- **Please complete the "Sign-In Sheet"**
- **Introduction of Meeting Participants**
- **Factors Influencing Alternatives Analysis**
- **Review Working Paper #5**
- **Discuss Alternatives Analysis**
- **Review Project Schedule**
- **Discuss Next Steps**

WATERVILLE ROBERT LAFLEUR MUNICIPAL AIRPORT
AIP Project No. 3-23-0047-16
Phase II AMPU

PROJECT MANAGEMENT TEAM (PMT) MEETING
PROJECT ADVISORY COMMITTEE (PAC) MEETING
Monday, March 30, 2009 – 5:00 p.m. to 7:00 p.m. (EST)

SIGN IN SHEET
(Please print clearly)

Name	Company / Organization	Phone Number	Email Address
Bob Mallard	**Airport Solutions Group (ASG)**	**(781) 491-0083**	rmallard@airportsolutionsgroup.com
Stacie Haskell	Maine DOT	(207) 624-3243	stacie.haskell@maine.gov
Tom Munson	Mainely Real Estate	453-8000	Tom@MAINELY-REALESTATE.com
Greg Thibeault	WVL Airport	314-7730	gthibeault@waterville-me.gov
Ralph Nicosia-Rusin	FAA Airports	781 238 7612	ralph.nicosia-rusin@faa.gov
John Butera	CMGC	680-7300	jbutera@centralmaine.org
Duane Scott	Maine DOT	624-3309 (207)	duane.scott@maine.gov
Gerald Saint Amand	Town of Winslow	873-6753	JSAINT@adelphia.net
Dana Wrigley	Town of Oakland	465 3830	dwwrig@myfairpoint.net
Marc Champigny	The Louis Berger Group	518-432-8545	mchampigny@louisberger.com
CARL BASGALL	Waterville City Council	872-0749	cbasgall@waterville-me.gov
Mark Rolfe	Airlink	458-1072	markcr@gwi.net

Continued

WATERVILLE ROBERT LAFLEUR MUNICIPAL AIRPORT
AIP Project No. 3-23-0047-16
Phase II AMPU

PROJECT MANAGEMENT TEAM (PMT) MEETING
PROJECT ADVISORY COMMITTEE (PAC) MEETING
Monday, March 30, 2009 – 5:00 p.m. to 7:00 p.m. (EST)

SIGN IN SHEET
(Please print clearly)

Name	Company / Organization	Phone Number	Email Address
Michael Lamontagne	Waterville	861-5882-H 660-5145-C	MLAMONT@MYFAIRPOINT.NET
Kim Lindlof	mid-ME Chamber of Commerce	873-3315	Kimberly@midmainechamber.com
Nicholas Stefaniak	Lois Berger	518 432-9545	NSTEFANIAK@loisberger.com
Clyde E. Djaz	Meadow Brook Consulting	207-592-3700	Clyde_djazr@meadowbrookconsulting.org

JOINT MEETING OF THE

PROJECT MANAGEMENT TEAM (PMT)
&
PROJECT ADVISORY COMMITTEE (PAC)

March 15, 2010
5:00 PM TO 7:00 PM

At

Waterville City Hall
City Council Chambers
1 Common Street
Waterville, Maine 04901

AGENDA

- **Please complete the "Sign-In Sheet"**
- **Introduction of Meeting Participants**
- **Summarize Previous Alternatives Analysis**
- **Review & Discuss Preferred Alternatives**
- **Discuss Environmental Issues**
- **Review Project Schedule**
- **Discuss Next Steps**

WATERVILLE ROBERT LAFLEUR MUNICIPAL AIRPORT
AIP Project No. 3-23-0047-16
Phase II AMPU

PROJECT MANAGEMENT TEAM (PMT) MEETING
PROJECT ADVISORY COMMITTEE (PAC) MEETING
Monday, March 15, 2010 – 5:00 p.m. to 7:00 p.m. (EST)

SIGN IN SHEET
(Please print clearly)

Name	Company / Organization	Phone Number	Email Address
Bob Mallard	**Airport Solutions Group (ASG)**	**(781) 491-0083**	rmallard@airportsolutionsgroup.com
Mike Bramhall	**Airport Solutions Group (ASG)**	**(781) 491-0083**	mbramhall@airportsolutionsgroup.com
NICK STEFANIAK	THE LOUIS BERGER GROUP	518 432 9545	NSTEFANIAK@LOUISBERGER.COM
Stacie Haskell	MaineDOT	(207)624-3243	stacie.haskell@maine.gov
Penny Vaillancourt	Maine DOT	(207)624-3240	penny.vaillancourt@maine.gov
BRAD FISHER	MID MAINE CHAMBER	(207) 872-5569	bfisher@merrillbank.com
TOM NUNSON	FAIRFIELD REP	453-8002	TOM@MAINELY-REALESTATE.COM

JOINT MEETING OF THE

PROJECT MANAGEMENT TEAM (PMT)
&
PROJECT ADVISORY COMMITTEE (PAC)

November 7, 2011
5:00 PM TO 7:00 PM

At

Waterville City Hall
City Council Chambers
1 Common Street
Waterville, Maine 04901

AGENDA

- **Please complete the "Sign-In Sheet"**
- **Introduction of Meeting Participants**
- **Summarize Previous Work**
- **Review & Discuss Task 8 – Airport Layout Plan (ALP)**
- **Review & Discuss Task 9.1 – Capital Improvement Plan (CIP)**
- **Review & Discuss Task 9.2 – Financial Plan**
- **Review Project Schedule**
- **Discuss Next Steps**

WATERVILLE ROBERT LAFLEUR MUNICIPAL AIRPORT
AIP Project No. 3-23-0047-16
Phase II AMPU

PROJECT MANAGEMENT TEAM (PMT) MEETING
PROJECT ADVISORY COMMITTEE (PAC) MEETING
Monday, November 7, 2011 – 5:00 p.m. to 7:00 p.m. (EST)

SIGN IN SHEET
(Please print clearly)

Name	Company / Organization	Phone Number	Email Address
Bob Mallard	**Airport Solutions Group (ASG)**	**(781) 491-0083**	rmallard@airportsolutionsgroup.com
Dana Wrigley	Town of Oakland	207 465 3830	dwwrig@myfairpoint.net
Zlatko Necevski	—	207 314-6369	znecevski@hotmail.com
RAY STEINMEYER	R+R AEROWORKS	207 547-3856	pipercolt@fairpoint.net
Tami Slowey	———	207 485-6823	tamislowey@me.com
Michael Hammer	Winslow	207-872-2776	mhammer@winslow-me.gov
Tom Mann	FAIRFIELD	453-8000	TOMCMAINELY-REALESTATE.COM
Randy Marshall	City of Waterville	314-7730	rmarshall@waterville-me.gov
Darryl Sterling	Central Maine Growth Council	680-7300	dsterling@centralmaine.org
Nick Stefaniak	LBG	518 432 9545	NSTEFANIAK@LANGBERGER.COM
ELLIOT THAYER	TEC CONSULTING	207 441 7762	ethayer@thayereng.com
Mike Roy	City of WTVL		

Continued

WATERVILLE ROBERT LAFLEUR MUNICIPAL AIRPORT
AIP Project No. 3-23-0047-16
Phase II AMPU

PROJECT MANAGEMENT TEAM (PMT) MEETING
PROJECT ADVISORY COMMITTEE (PAC) MEETING
Monday, November 7, 2011 – 5:00 p.m. to 7:00 p.m. (EST)

SIGN IN SHEET
(Please print clearly)

Name	Company / Organization	Phone Number	Email Address
Rosemary Winslow	City Councilor	873-5713	rosemary.winslow@mail.house.gov
George Myers Jr.	"	877-4447	george@georgemyersjr.com
Mark Turner	City of Waterville	680-4744	mturner@waterville-me.gov
KLAUS THALINGER	AIRLINK LLC	207-859-0109	KLAUS@AIRLINKONNECTION.COM
ELENA MARKOVA			
Kim Lundlof	Mid-ME Chamber	873-3315	kimberly@midmainechamber.com
Brad Fisher	" director	872-5569	brad.fisher@peoples.com
RON MARRACHE	FAA MEDICAL	207-619-4322	dr.ron@elmcitymed.com

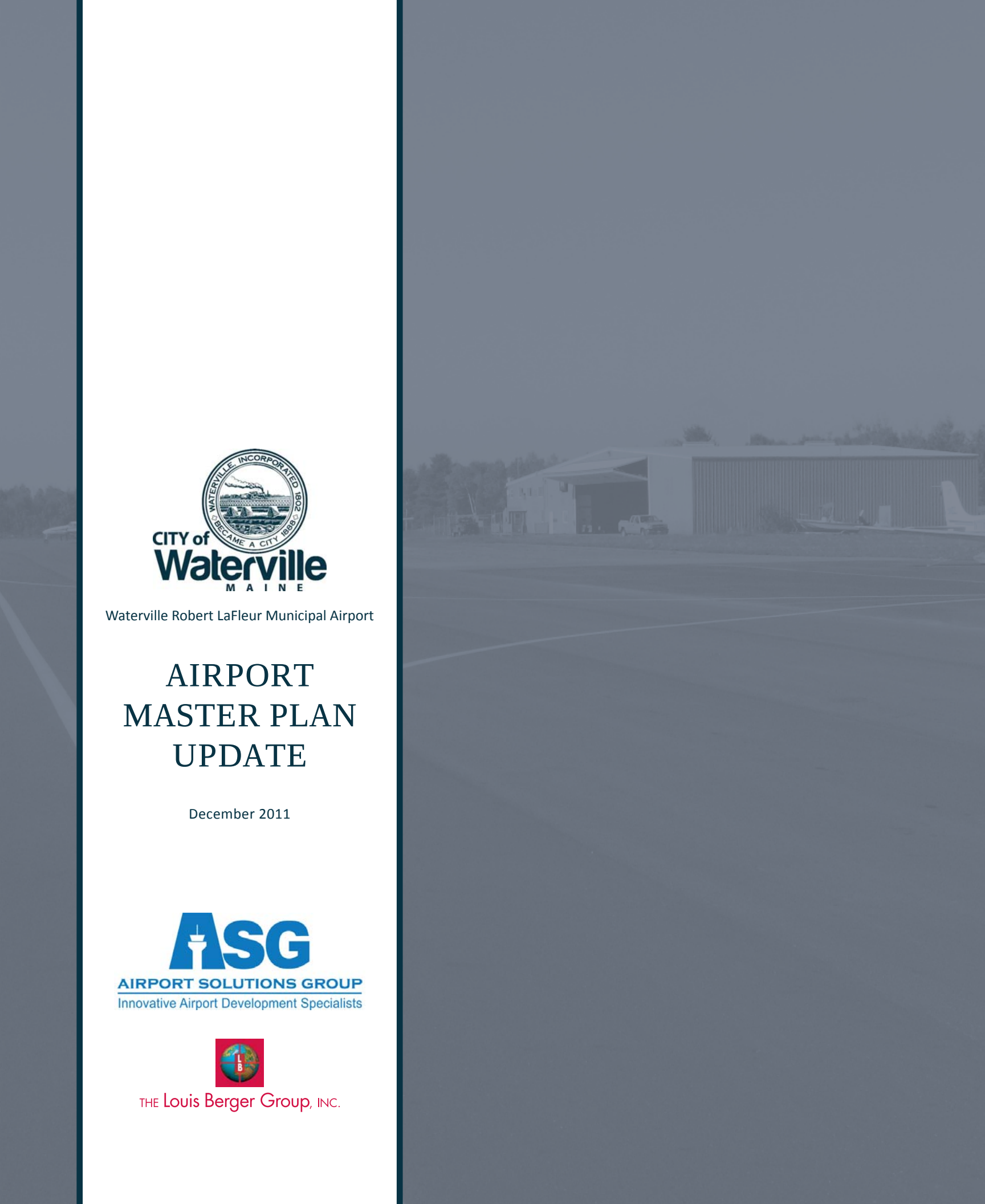
Continued

WATERVILLE ROBERT LAFLEUR MUNICIPAL AIRPORT
AIP Project No. 3-23-0047-16
Phase II AMPU

PROJECT MANAGEMENT TEAM (PMT) MEETING
PROJECT ADVISORY COMMITTEE (PAC) MEETING
Monday, November 7, 2011 – 5:00 p.m. to 7:00 p.m. (EST)

SIGN IN SHEET
(Please print clearly)

Name	Company / Organization	Phone Number	Email Address
Michael Lamontagne	Waterville	660-5145	Michael.Lamontagne@Roadrunner.com



CITY of Waterville
MAINE

Waterville Robert LaFleur Municipal Airport

AIRPORT MASTER PLAN UPDATE

December 2011

ASG
AIRPORT SOLUTIONS GROUP
Innovative Airport Development Specialists

THE Louis Berger Group, INC.