Saratoga County Airport

AIRPORT MASTER PLAN UPDATE
FINAL REPORT

Prepared for:

SARATOGA COUNTY DEPARTMENT OF PUBLIC WORKS

Submitted By:

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Chapter 1
Introduction

1.0. INTRODUCTION

This chapter provides a brief summary of the purpose of the Master Plan for Saratoga County Airport and a brief historical overview of the Airport. Also discussed in this chapter are the Goals and Objectives developed by the Saratoga County Department of Public Works (SCDPW) for the Master Plan. The chapter is organized as follows:

- Purpose of the Master Plan
- History of the Airport
- Goals and Objectives of the Master Plan
- Organization of the Master Plan Study

1.1. PURPOSE OF THE MASTER PLAN

The SCDPW is the Airport Sponsor for Saratoga County Airport and develops and maintains a vital transportation facility that provides the highest level of safety for based and transient aircraft operations. The Airport also serves to support and enhance the existing and future economic development initiatives within Saratoga County.

The Airport has two paved runways with a supporting taxiway system, aircraft parking aprons and hangar and T-hangar facilities to store aircraft. The Fixed Based Operator (FBO) provides aviation services to the general aviation community and also provides limited day-to-day management oversight of the Airport. Two glider clubs are based at the Airport. Based on the most recent Federal Aviation Administration (FAA) Airport Master Record Form (5010), the Airport has 38,550 annual operations and 60 based aircraft.

The primary goal for this project is to develop both air and landside infrastructure and facilities to meet the growing needs of the Airport and the Region. This goal includes identification and implementation of realistic sustainable targets and practices. The work includes improvements to existing air and landside facilities and recommendations for new and innovative ideas to enhance cost effective operations, profitability, and customer services of the Airport.

1.2. HISTORY OF THE AIRPORT

Initial development of Saratoga County Airport was in 1942 during World War II and was built as a Civil Aeronautics Administration project. The project is identified as 904-30-38 and was designated as necessary for national defense. The Airport consists of two 4,000-foot runways with parallel and connecting taxiways and a small apron. It was paved by the Airways Engineering Section of the Civil Aeronautics Administration during the summer of 1943. The pavement was placed on a natural subgrade (soil class A-3) consisting of a 6-inch base course of sand and plant mix asphalt emulsion, a tack coat and a 1 ½ - inch bituminous surface course. It was designed to accommodate a gross loading of 30,000 pounds. An A.N.C. lighting system with contact lights on two runways was installed as part of the project. The Airport was completed in October of 1943, and the total cost of development at that time was $617,600. Acting pursuant to the terms of the Third Supplemental National Defense Appropriation Act of 1942, title to the Airport was turned over to the Town of Milton in May of 1942 and was officially opened November of 1943. As part of the agreement, the Town of Milton agreed that, continuously during the term of this agreement, the Airport would be operated as such, and for no other purpose, and that unless utilized exclusively for military purposes, it would at all times be operated for the use and benefit of the public, and reasonable terms and without unjust discrimination, and without grant or exercise of any exclusive right for use of the Airport within the meaning of Section 303 of the Civil Aeronautics Act of 1938.

The Airport served only small to medium sized aircraft, and the cost of operation became an economic burden for the Town. Subsequently, the Town offered to sell the Airport to Saratoga County for $20,000 so it could be promoted and developed to the best interest and advantage of the entire County. The County rejected the offer, and the Town of Milton entered into a 10-year lease with the Mustang Flying Service, Inc. By January of 1968, the Town Board had received considerable criticism because the Mustang firm had made no improvements and the lease was terminated. A number of other firms indicated an interest in operating the Airport, but the previous experience prejudiced any substantial action in the direction.

In September 1967, the New York State Department of Commerce, Bureau of Aviation, prepared a report on improvements of the Airport at the request of the Town Board. The major recommendation of the Bureau of Aviation, as stated in the report, was that responsibility for the Airport be assumed by Saratoga County and that Federal and State assistance be sought by the County to accomplish needed renovations and improvements. Influenced by these recommendations and the criticism received concerning improvements, the Town Board then voted to offer the Airport to the County for $50,000.

The County rejected this offer; but after investigations and extensive negotiations, the Board of Supervisory of Saratoga County passed Resolution 120, dated August 12, 1968, which offered the Town of Milton the sum of $25,000 for purchase of the Airport. Said sum was to be paid upon acceptance of the offer and delivery of an acceptable title. Consent of Federal and State agencies was obtained, and the Chairman and Clerk of the Board of Supervisors were directed, as soon as practicable, to make application for Federal and/or State assistance for repairs, improvements, equipment, preliminary studies and/or surveys which were appropriate or necessary to improve upon the safety of the Airport.

Upon acceptance of the offer by the Town of Milton, the County in April of 1969, under Resolution 55, authorized the purchase. Needed improvements were of immediate concern. Resolution 88, dated July 14, 1969, authorized the execution and delivery of a contract between the people of the State of New York and the County of Saratoga for the undertaking and completion of an Airport project consisting of land acquisition, obstruction removal, rehabilitation and lighting of Runway 14-32, taxiway and apron improvements, and construction of an access road.

In July of 1969, Resolution 105 was adopted and authorized leasing of the Airport to an interim base operator. As a result, Richmor Aviation, Inc., was awarded an interim contract to operate the Airport, and they remained the fixed base operator until 2003. In general, the terms of their lease called for charter and fueling services, flight instruction, light maintenance of aircraft and minor repairs, aircraft sales and services, and promotion and organization of flying clubs.

Since the purchase of the Airport, various resolutions were adopted by the County legislature concerning State and Federal aid. Resolution 124, dated August 10, 1970, authorized application for Federal and State funds for development of the Airport.

With the use of varying amounts of State and Federal aid, miscellaneous improvements have been made to the Airport. The Airport property has been cleared of brush, junk, and debris, which had accumulated over the years; and maintenance, repairs and improvements to existing buildings have been accomplished through the efforts of the County and the fixed base operator. The beacon and runway lighting, installed in 1941-1942, were repaired and have been in continuous operation since the County purchased the Airport. In 1970, $47,932.30 was disbursed for maintenance and repairs to the runways and taxiways prior to paving, and the 3,000-foot taxiway and 4,000 by 150 foot runway received a paving overlay at a cost of $112,178.88.

On June 14, 1971, Resolution 144 was adopted by the County legislature. This resolution authorized an application to the State and Federal governments for funds to do a master plan study and report on the Saratoga County Airport. Projects that were included for study included a boundary survey, which had not been completed when the Airport was built, and a master plan update.

Since 1971, there have been a number of projects to enhance the Airport, expand facilities to meet aviation demand and to maintain the Airport in an operationally safe manner. The list below provides a chronological listing of projects that were completed since that time:

1970	R/W 14-32 2" Asphalt Concrete Overlay
1988	Master Plan Update & Environmental Assessment (EA)
1989	New Snow Blower
1989	Installed AWOS
1990	R/W 5-23 Obstruction Clearing

1991	Off Airport Property Acquisition
1991	R/W 5-23 700’ Extension
1999	Airport Master Plan Update & EA
2001	R/W 5-23 Reconstruction & Lighting
2002	On Airport Obstruction Clearing
2002	Off Airport Property Acquisition
2003	R/W 14-32 Reconstruction & Lighting
2004-2012	Tree Clearing and Easement Acquisition Project (Multi-phase)
2000	Runway 5-23 Reconstruction
2003	Runway 14-32 Reconstruction
2003	Construction of Saratoga Soaring Hangar
2003	Water Line Extension – Richmor Hangar
2010	Replacement of Barn Hangar with new Box Hangar
2010	Replacement of AWOS Unit
2010	Taxiway A, B, C, D, E, F and Apron Mill and Overlay
2011	Fire Station Expansion – Geyser Road
2012	Construction of Adirondack Soaring Hangar
2012	Runway 5-23 Taxiway and Visual Aids Lighting Design and Construction
2013	Based Aircraft Apron Rehabilitation Design

1.3. GOALS AND OBJECTIVES FOR THE MASTER PLAN

At the beginning of the study, a set of Goals and Objectives were developed collaboratively with the Saratoga County Department of Public Works. The purpose of these Goals and Objectives was to provide a set of guiding principles upon which the Master Plan will be developed. The following elements were developed:

1. Work cooperatively with the Federal and State agencies to balance Airport development potential and operational considerations with environmental constraints.

    a. Identify the needs of the Airport and clearly understand the environmental constraints that affect Airport development and operations.
    b. Develop effective strategies to maintain the Airport to FAA operational and safety standards.
    c. Identify strategies to meet existing and future needs of the Airport.

2. Develop strategy to work effectively with the community while also meeting the operational needs of the Airport.

    a. Review existing land use and zoning regulations. Work with the affected municipalities to revise and update land use and zoning regulations as necessary to protect the Airport, the Community and maintain compliance with FAA design criteria and grant assurances.

   b. Develop a community outreach program to inform the Community of ongoing Airport initiatives during and after the MPU is complete.

3. Enhance the financial performance of the Airport and enhance the Airport's role in regional economic development.

   a. Enhance facilities to better accommodate business use of the Airport.
   b. Evaluate and identify initiatives to enhance the revenue generation potential of the Airport.
   c. Identify economic development potential of the Airport with Local, County and Regional planning agencies.

1.4. ORGANIZATION OF THE MASTER PLAN STUDY

This Master Plan is organized in accordance with Advisory Circular 150/5070-4B, *Airport Master Plans*. The analysis presented in this Master Plan Update chronicles existing facilities, land use, socioeconomic statistics and baseline environmental conditions. Aviation forecasts will be developed to identify future aviation demand and to compare existing facilities to future demand. Facility needs will be identified from this process and future development scenarios assessed using evaluation criteria tailored to this evaluation. A recommended plan will then be selected and become the basis for the Airport Layout Plan. Cost estimates will be prepared and phased over the twenty year planning period and will define how the projects will be funded by the FAA, the State of New York, the County and private investment.

The following chapters present the technical analysis described above:

- Inventory
- Aviation Demand Forecasts
- Environmental Overview
- Demand/Capacity Analysis and Facility Requirements
- Alternatives Analysis
- Airport Layout Plan and Capital Improvement Plan

Chapter 2
Inventory

2.0. INTRODUCTION

Chapter 2 presents the base information about the Airport, describing the Airport owner, the role of the Airport, and information on aviation activity, airside and landside facilities, and land use and zoning. This chapter is organized in the following sections:

- Airport Background
- Airport Activity
- Airside Facilities
- Landside Facilities
- Landuse and Socioeconomic Data
- Airspace

2.1. AIRPORT BACKGROUND

2.1.1. Airport Sponsor

The Saratoga County Department of Public Works (SCDPW) is the recognized Sponsor of Saratoga County Airport (5B2) by the Federal Aviation Administration (FAA). The primary function of the SCDPW is to maintain the County owned roads, bridges, grounds and building facilities within the County. The SCDPW has been operating the Airport since the Airport was turned over to the County in the late 1960's.

2.1.2. Role, Classification

The FAA classifies airports that are within the National Plan of Integrated Airports System (NPIAS). The NPIAS is the FAA's report to Congress defining the system of airports in the United States and quantifying the system's capital needs. The NPIAS classifies airports as one of the following airport types; Commercial Service, General Aviation or Reliever. Commercial Service airports have air passenger service provided by legacy carriers, regional airlines or scheduled charter services. Airports without Commercial Service are classified as General Aviation airports. Reliever airports are a subset of General Aviation airports and "relieve" congested commercial service airports by providing an alternate landing airport for corporate and general aviation activity.

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New to the NPIAS in 2013 is a further classification of General Aviation airports based upon types of use and the number of based aircraft. The four categories are described in the following bullets:

- National – airports that provide communities access to national and international destinations and have 200 based aircraft, including 30 jets.
- Regional – these airports provide access to regional and national markets and have 90 based aircraft, including three jets.
- Local – access by these airports is to the local and regional markets and has 33 based propeller driven aircraft and no jets.
- Basic – support general aviation activity critical to the local community and have 10 based propeller driven aircraft and no jets.

The 2013-2017 NPIAS classifies Saratoga County Airport as a public airport falling within the Regional category. The service level for the Airport is General Aviation and the designation will remain over the next 5 years through 2017. The NPIAS identifies a 2013-2017 development cost of $4.4 million over this time period.

2.1.3. Airport Location

Saratoga County Airport is within the County of Saratoga, which is comprised of 27 individual Cities, Towns and Villages. The Airport lies within the Town of Milton, which is located in the eastern portion of the State along Interstate 87 (the Northway). Neighboring municipalities include the City of Saratoga Springs and the Village of Ballston Spa. The Town of Milton is about 3 miles southwest of Saratoga Springs and 2 miles north of Ballston Spa, which is a Village located partly within the Town of Milton and the Town of Ballston. The Airport's coordinates are N43° 03' 02.59" and W73° 51' 41.85". **Figure 2-1** shows the location of the Airport within the surrounding community.

2.1.4. Airport Access

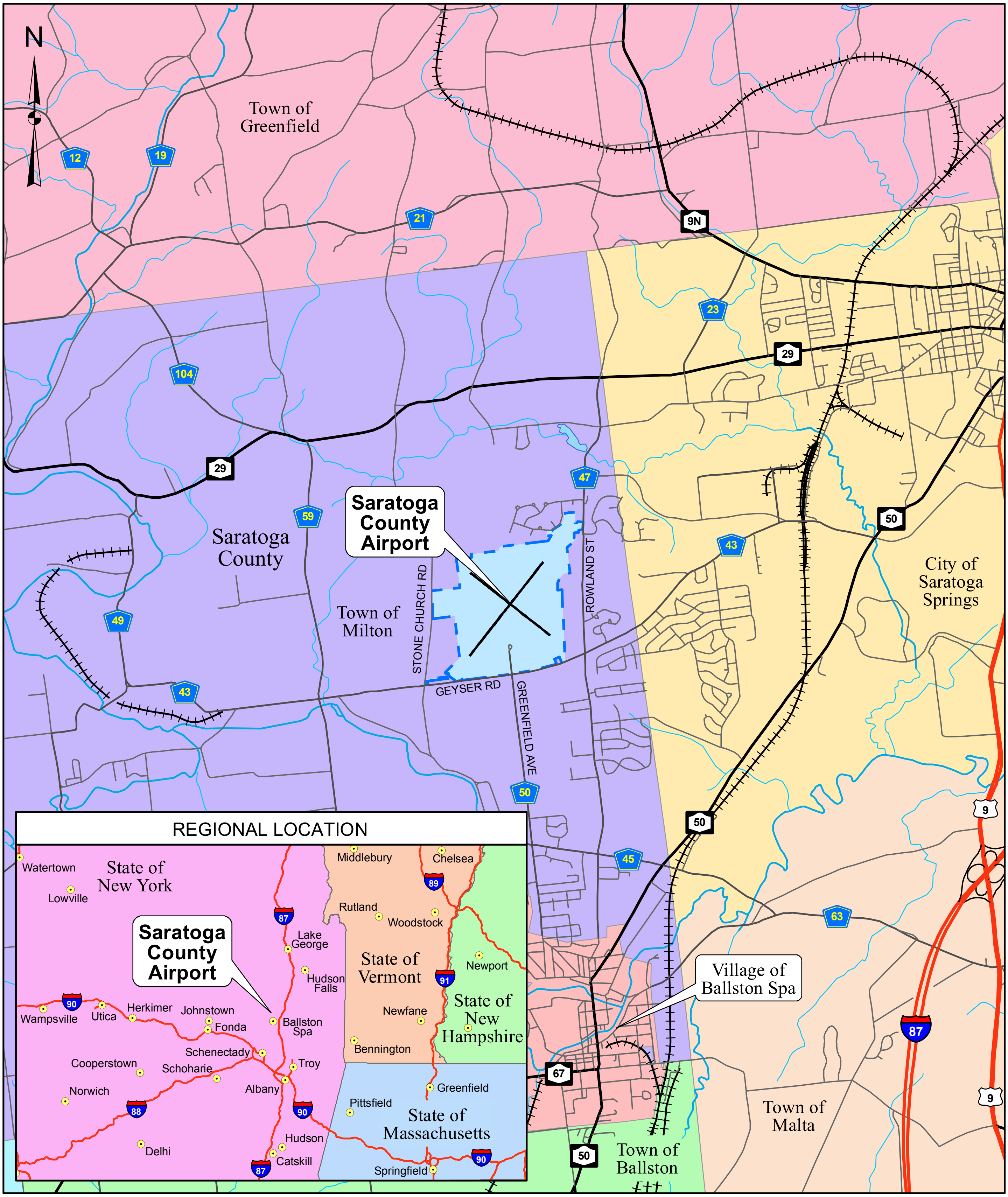
The Airport can be accessed from several directions. The Airport is about five road miles southwest of the City of Saratoga Springs and about five road miles west of Interstate 87. The Airport can be accessed from the City of Saratoga Springs via State Route 50 to County Route 43 (Geyser Road) or from Exit 13 to State Route 9 to Old Post Road to County Route 45 and then onto County Route 50, which ends at the Airport.

2.1.5. Airport Service Area/ Nearby Airports (Facility Comparison)

General Aviation airport service areas are typically a thirty-minute drive time to the airport. For purposes of this effort, a 30 nautical mile (nm) radius was used for the airport. Using this radius, there are 4 other public use airports within a 30 nm radius of Saratoga County Airport. These include Warren County Airport (17.3 nm) to the north, Albany International Airport (20.1 nm) and Schenectady County Airport (15.2 nm) to the south and Fulton County Airport (24.4 nm) to the west. **Table 2-1** provides a brief summary of comparable airports and **Figure 2-2** depicts the surrounding airports.

AIRPORT LOCATION

FIGURE 2-1



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SARATOGA COUNTY AIRPORT

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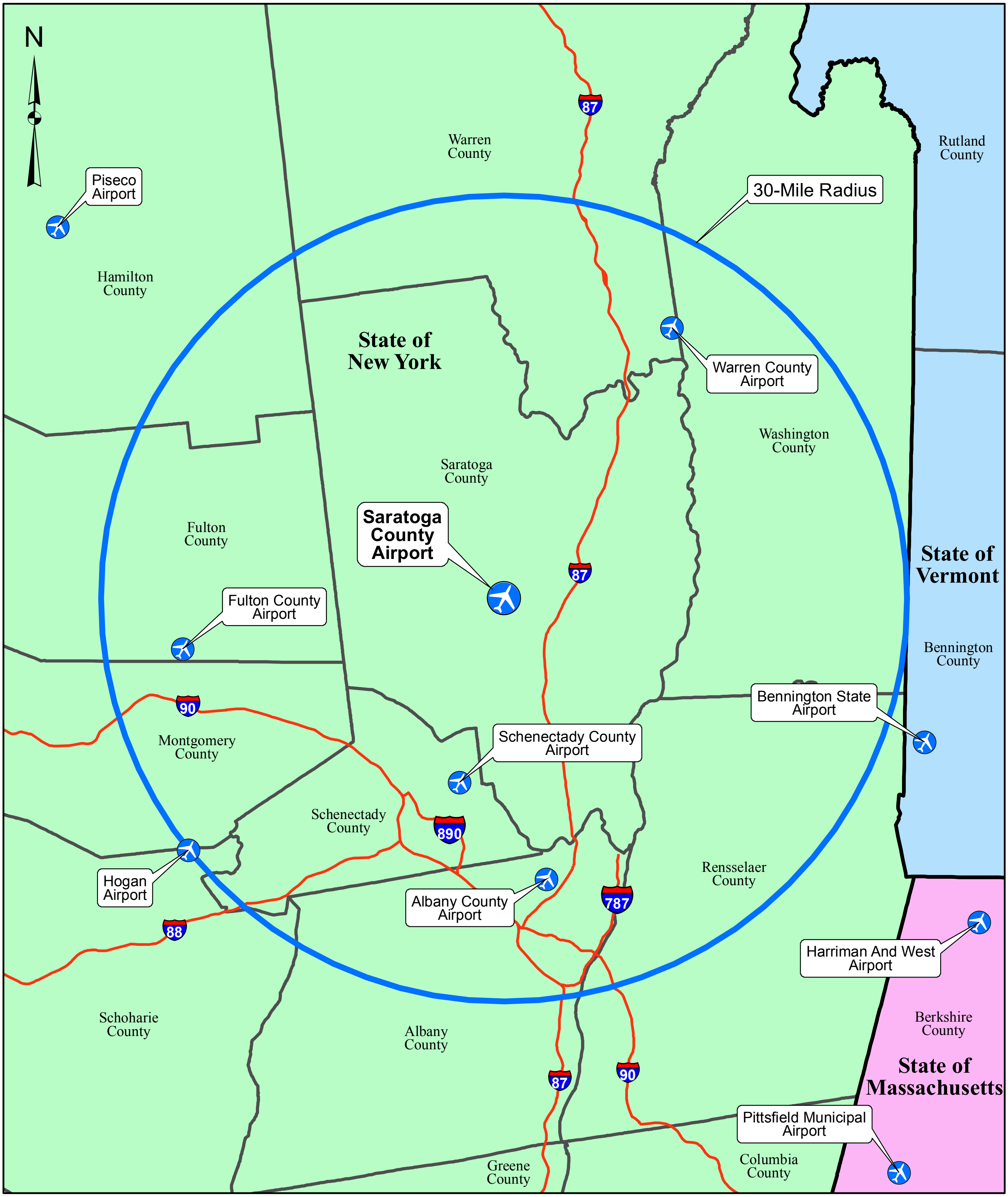
VICINITY MAP

FIGURE 2-2



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SARATOGA COUNTY AIRPORT

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Table 2-1 – Adjacent Airports

Airport	Runways	Approaches	Fuel	FBO Facilities
Saratoga County (NY) (5B2)	5-23 4,699' x 100' 14-32 4,000' x 100'	RNAV (GPS) RW 05, 23 VOR DME-A	100LL Jet-A	
Albany County (NY) (ALB)	01/19 5,000' x 150' 10/28 7,200' x 150'	ILS OR LOC RW 01, 19 ILS (CAT II) RW 01 RNAV (RNP) RW 01, 19 RNAV (GPS) RW 01, 19, 10, 28 VOR RW 28	100LL Jet-A	Yes
Schenectady County (NY) (SCH)	04/22 7,000' x 150' 10/28 4,850' x 150' 15/33 2,864' x 50'	ILS OR LOC RW 04 RNAV (GPS) RW 04, 10, 22, 28 NDB RW 22	100LL Jet-A	Yes
Warren County (NY) (GFL)	01/19 5,000' x 150' 12/30 3,999' x 100'	ILS OR LOC RW 01 RNAV (GPS) RW 01, 12, 19, 30	100LL Jet-A	Yes
Fulton County (NY) (NY0)	10/28 4,000 x 75'	RNAV (GPS) RW 10, 28 NDB RW 10, 28	100LL Jet-A	Yes

Source: McFarland Johnson, Airnav

2.1.6. Airport Tenants

There are currently three tenants at Saratoga County Airport. A summary of the tenants is provided below.

North American Flight Services (NAFS) – NAFS is the current Fixed Based Operator (FBO) at the Airport and serves as the day-to-day airport manager for the County. NAFS provides fuel (100 Low Lead and Jet-A), hangar storage for based and transient aircraft, transient aircraft parking and aircraft airframe, power plant and avionics maintenance services. NAFS owns the main hangar located in the southwest corner of the Airport and leases from the County two conventional hangars and two multi-aircraft T-hangars. They also lease and manage the based aircraft tiedowns along Taxiway C. Hours of operation during the summer is 6:30 AM to 9:00 PM and 7:00 AM to 6:00 PM during fall to spring.

Saratoga Soaring Association (SSA) – SSA was established in 1983 and currently operates from a hangar located on the southeasterly side of the Airport along Taxiway C. The SSA has five gliders, a Pawnee tow plane and a two-seat glider (Grob 103) and provides flight instruction, and soaring services (e.g. tow plane, etc.). Association members also have private sailplanes they store and operate from their hangar facility. Sailplane operations occur between March and November.

Adirondack Soaring Association (ASA) – ASA recently built a new hangar facility south of SSA's hangar facility in the southwest corner of the Airport along Taxiway C. ASA has 60 members and provides a range of services similar to SSA. The association has six sailplanes and three tow planes which include the following:

- Blanik L-13 (2)
- Blanik L-23 (2)
- Grob 103 III
- Scempp-Hirth Duo Discus
- Citabria (tow plane)
- Pawnee (2) (tow plane)

2.2. AIRPORT ACTIVITY

2.2.1. Based Aircraft / Users

Based aircraft are aircraft that base at an airport over an extended period of time. Based aircraft at Saratoga County Airport are located in several conventional box hangars, T-hangars and the based aircraft apron along Taxiway C.

Historical data on based aircraft is available from the FAA's 5010 form, the FAA's Terminal Area Forecasts as well as the 2003 Master Plan and the New York State Airport System Plan (NYSASP) dated 2008. **Table 2-2** presents the TAF's historical counts from 1990 through 2011.

The FAA's Based Aircraft Registry identified 47 based aircraft for late 2011, which is more accurate than the 2011 data shown in **Table 2-2**. Discussions with NAFS identified 50 based aircraft at the Airport in 2012.

Not counted in the total based aircraft count, however, are helicopters and gliders. The current FAA 5010 Form indicates there are one helicopter and 16 gliders. Information from NAFS confirmed the single helicopter and information from the glider associations' websites confirmed there were 10 gliders. The glider count anomaly may be related to additional gliders based at the Airport during the soaring season.

Table 2-2 – Historical TAF Data

Year	Based Aircraft
1990	78
1991	78
1992	78
1993	78
1994	68
1995	68
1996	68
1997	69
1998	69
1999	69
2000	69
2001	69
2002	69
2003	69
2004	69
2005	69
2006	69
2007	69
2008	70
2009	70
2010	38
2011	44
2012	45

Source: 1990-2011 FAA TAF, 2012 FAA 5010

2.2.2. Existing / Recent Operational Activity

Operations at General Aviation airports are comprised of two types - local operations and itinerant operations. Local operations are generated primarily by based aircraft at the airport. Local operations are also often defined as flights that fly within 20 miles of the airport. Itinerant operations are all other operations at the airport and are comprised of aircraft that fly to the airport from another airport.

Operations at Saratoga County Airport are not counted on a daily basis, as there is no air traffic control tower and no mechanism to count aircraft during the day or evening hours. Typically, aircraft operations are estimated by the airport manager and reported to the FAA annually. The historical data provided in the FAA TAF shows operations at 38,550 from 1990 through 2011 and the 2012 FAA 5010 shows the same activity level.

Reviewing the historical data from the previous Master Plan and updating information up to the 2008 NYSASP, the following operational estimates were noted:

- 1989 Master Plan - 50,700 operations

- 1995 NYSASP – 39,357 operations
- 2003 Master Plan - 38,550 operations
- 2008 NYSASP - 38,550 operations

The information, excluding the 1989 Master Plan, shows approximately 38,550 annual operations. Discussions with NAFS have indicated that Airport activity over the past several years has been steady and may have increased slightly with the improving economy.

Another way in which to gauge activity is to review trends in aviation fuel sales at the Airport. NAFS provided historical data for fuel sales and that information is presented in **Table 2-3**.

Table 2-3 – Historical Fuel Sales (Gallons Sold)

Year	Total Fuel Sales
2007	174,204
2008	238,602
2009	229,045
2010	227,864
2011	244,895
2012	292,350

Source: North American Flight Services

2.3. AIRSIDE FACILITIES

Airside facilities are the areas associated with the takeoff and landing of aircraft. The airside facilities discussed include:

- Runways
- Taxiways
- Aprons
- Instrument Approaches
- Visual Aids

Figure 2-3 presents an aerial graphic of the entire Airport, **Figure 2-4** presents the airside facilities described in the following sections.

2.3.1. Runways

Runway 5-23

Runway 5-23 is the primary runway at the Airport. The runway is 4,699 feet long and 100 feet wide with 12.5 feet wide paved shoulders. The runway surface is asphalt and is grooved to provide additional drainage of water from the runway. The grooved runway provides additional stopping performance for the corporate jet aircraft that use the Airport year round.

EXISTING AIRPORT FACILITIES

FIGURE 2-3

SARATOGA COUNTY AIRPORT

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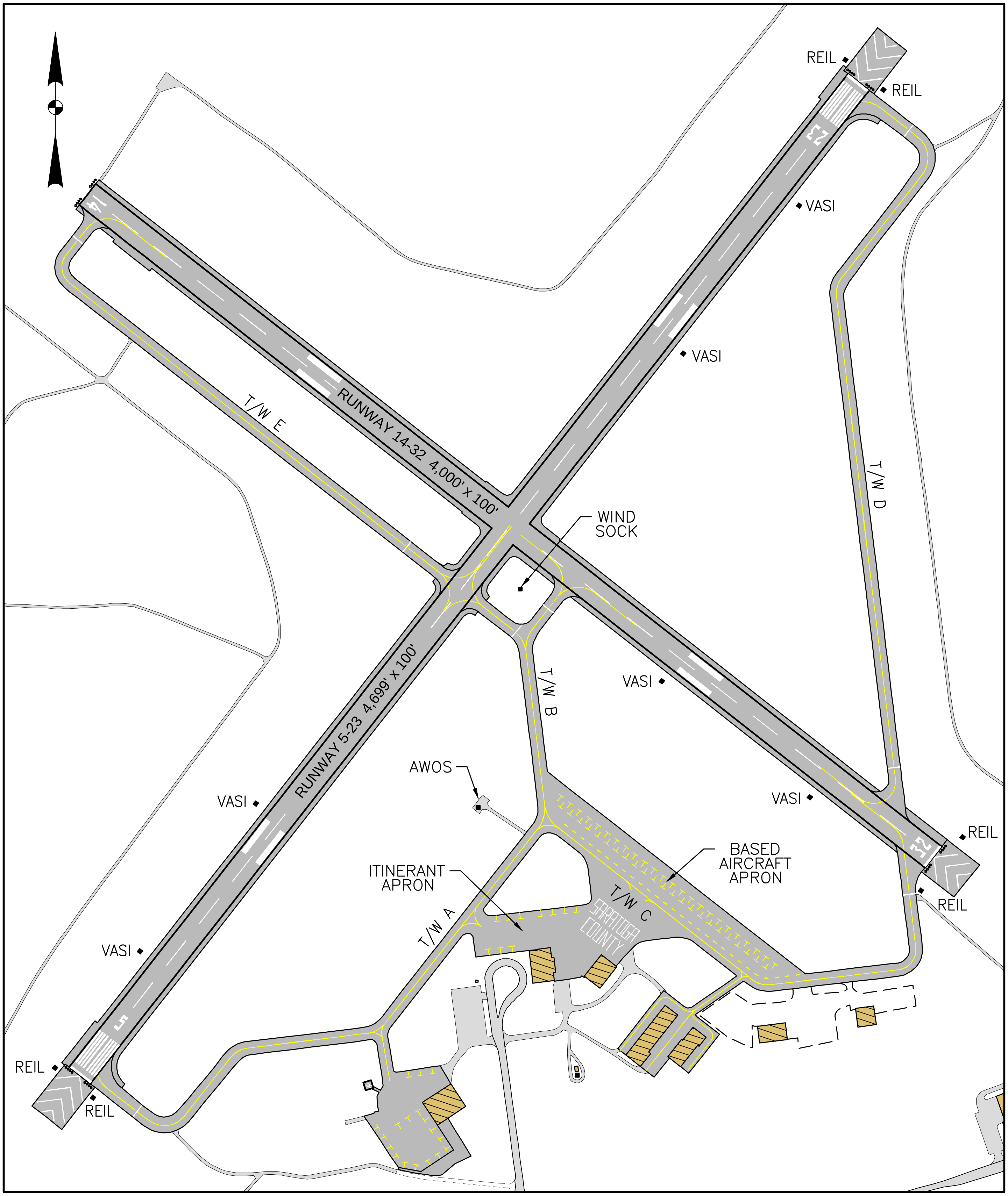
AIRSIDE FACILITIES

FIGURE 2-4



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The runway was reconstructed in 2000 and is in good condition.

The runway is marked with non-precision markings at both runway ends, all of which are in poor condition. The runway is lighted with Medium Intensity Runway Lights (MIRLS). The runway also has a four box Visual Approach Slope Indicator (VASI) for each runway end, however only the Runway 23 VASI is operational. Both VASI units are to be replaced with new Precision Approach Path Indicators (PAPI) starting in 2014 as part of a visual aids upgrade project for the Airport. Both runway ends also have Runway End Identifier Lights (REILS), which are flashing strobes demarcating the end of the runway. **Table 2-4** summarizes Runway 5-23.

Table 2-4 – Runway 5-23

	Runway 5-23	
Runway Dimensions	4,699' x 100'	
Surface	Asphalt (Grooved)	
Runway Edge Lights	MIRL	
Pavement Condition	Good	
Pavement Design Strength	30,000 lbs. (single-wheel)	
	Runway 05	**Runway 23**
Runway Heading	053^{O} Magnetic	233^{O} Magnetic
Approach End Latitude	43^{O} 02' 43.54"N	43^{O} 03' 19.86"N
Approach End Longitude	73^{O} 52' 02.51"W	73^{O} 51' 23.10"W
Approach End Elevation	433.8'	426.8'
Runway Gradient	-0.1%	0.1%
Visual Slope Indicator	4-Box VASI[1] (left)	4-Box VASI[1] (left)
Visual Glide Path Angle	3.0^{O}	3.0^{O}
Threshold Crossing Height	46'	45'
Runway End Identification Lights	Yes	Yes
Touchdown Point Elevation	433'	432'
Approach	Non-Precision	Non-Precision
Markings	Non-Precision	Non-Precision
Traffic Pattern	Left	Left
Obstructions	Trees	Trees

1/ VASI to be replaced with PAPI starting in 2014
Source: FAA 5010, McFarland Johnson

Runway 14-32

Runway 14-32 is the crosswind runway and is 4,000 feet long and 100 feet wide with 12.5 feet wide paved shoulders. The runway surface is asphalt pavement and is in good condition as it was reconstructed in 2003. The runway is marked with non-precision markings, which are in poor condition.

The runway is lighted with Medium Intensity Runway Lights (MIRLS). Runway End 32 has a four box VASI, which will also be replaced by a PAPI in the 2015 timeframe and REILS. Runway 14 does not have any visual aids as it is the least used runway end. **Table 2-5** presents information on Runway 14-32.

Table 2-5 – Runway 14-32

	Runway 5-23	
Runway Dimensions	4,000' x 100'	
Surface	Asphalt (Grooved)	
Runway Edge Lights	MIRL	
Pavement Condition	Good	
Pavement Design Strength	30,000 lbs. (single-wheel)	
	Runway 05	**Runway 23**
Runway Heading	143^{O} Magnetic	323^{O} Magnetic
Approach End Latitude	43^{O} 03' 15.94"N	43^{O} 02' 51.33"N
Approach End Longitude	73^{O} 52' 01.79"W	73^{O} 51' 19.65"W
Approach End Elevation	437.6'	425.6'
Runway Gradient	-0.2%	0.2%
Visual Slope Indicator	N/A	4-Box VASI[1] (left)
Visual Glide Path Angle	N/A	3.0^{O}
Threshold Crossing Height	N/A	45'
Runway End Identification Lights	No	Yes
Touchdown Point Elevation	433'	432'
Approach	Non-Precision	Non-Precision
Markings	Non-Precision	Non-Precision
Traffic Pattern	Left	Left
Obstructions	Trees	Trees

1/ VASI to be replaced with PAPI starting in 2015
Source: FAA 5010, McFarland Johnson

2.3.2. Taxiways

The taxiway system at Saratoga County Airport provides access to each runway end. The taxiway system is comprised of five taxiways designated A, B, C, D, and E (**Figure 2-4**). The taxiways converge at the existing main terminal area located southwest of the runway intersection. The taxiways at Saratoga County Airport were recently rehabilitated in 2010, replacing the old wearing surface with new asphalt. The taxiway system is lighted with Medium Intensity Taxiway Lighting (MITL); the old lighting systems were replaced in 2013 for all taxiways with new taxiway lights. The components of the taxiway system are presented in **Table 2-6**.

Table 2-6 – Taxiway Information

Taxiway	A	B	C	D	E
Dimensions	2650'x50'	1900'x50'	1150'x50'	2300'x50'	2000'x50'
Surface	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt
Taxiway Edge Lights	MITL	MITL	MITL	MITL	MITL
Guidance Signs	Yes	Yes	Yes	Yes	Yes
Markings	Basic	Basic	Basic	Basic	Basic
Runway Access	RW 5	Midfield	RW 32	RW 23	RW 14
Pavement Condition	Good	Good	Good	Good	Good

Source: McFarland Johnson

2.3.3. Aprons

There are four aircraft aprons at Saratoga County Airport: the itinerant apron, the based aircraft tiedown apron, the turf glider apron and the NAFS apron.

The based aircraft tiedown apron is used exclusively for based aircraft parking and is located on the northerly side of Taxiway C. The current apron has 47 tiedowns, many of which are used more during the Spring to Fall time period. The apron pavement is in poor condition, however, the apron will be reconstructed in Federal Fiscal Year 2015. As airport design standards have changed since the apron was originally built, the apron will be reconfigured and have 43 tiedowns available for based aircraft.

The itinerant apron is the largest apron and provides transient tiedowns for short-term aircraft parking. There are ten tiedowns available for transient parking and access to Taxiways A and C. This apron is used to park transient aircraft traveling from another airport. Pilots and passengers are transported to and from the apron by an NAFS vehicle. The apron was recently reconstructed and is in good condition.

The final apron is located within the two Glider Club lease areas. Both aprons are turf/gravel and meet both Clubs parking and storage needs.

The apron areas are summarized in **Table 2-7** and shown in **Figure 2-5**.

APRON AREAS

FIGURE 2-5

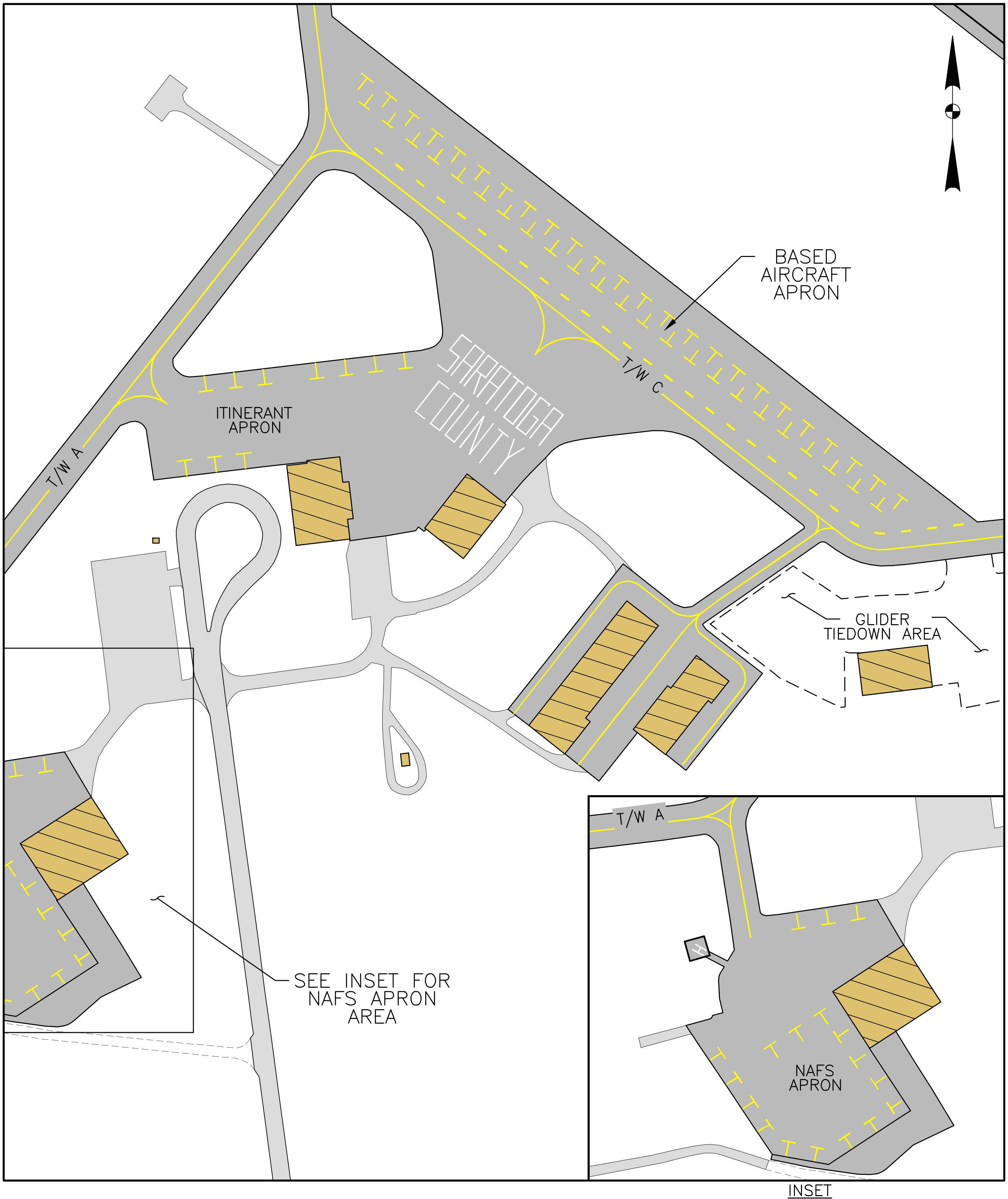

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Table 2-7 – Aircraft Parking Aprons

	Itinerant Apron	Tiedown Apron	Glider Apron	North American Apron
Size	15,700 SY[1/]	13,450 SY	3,333 SY	4,000 SY
Surface	Asphalt/Turf	Asphalt	Turf	Asphalt
Capacity	10/6	47	6-8	18
Condition	Good	Poor [2/]	N/A	Good

1/ SY = Square Yards
2/ The tiedown apron will be reconstructed in FY 2015 and will be reduced to 43 tiedowns
Source: McFarland Johnson

2.3.4. Instrument Approach Procedures

Instrument Approach procedures provide the ability to land aircraft at Saratoga County Airport during poor weather conditions. Instrument Flight Rules (IFR) weather conditions are defined as less than 3 miles visibility and less than 1,000 foot cloud height. Instrument procedures use either ground based navigational aids (NAVAIDS) located on or adjacent to the airport and Global Positioning Satellite (GPS) technology to provide guidance to the runway.

Saratoga County Airport has two GPS approaches to Runways 05 and 23. Runway 14-32 is considered a visual runway and has no instrument approaches. The available approaches to Saratoga County Airport are presented in Table 2-8 and shown in Figures 2-6 to 2-8.

Table 2-8 – Instrument Approaches

Procedure	Visibility and Cloud Height Minimums [1/]
RNAV (GPS) RW 05	860' MSL / 1 Mile
RNAV (GPS) RW 23	745' MSL / 1 Mile
VOR DME-A	1,260' MSL / 1 Mile

1/ Lowest minimums provided for approach shown
Source: FAA Instrument Approach Charts

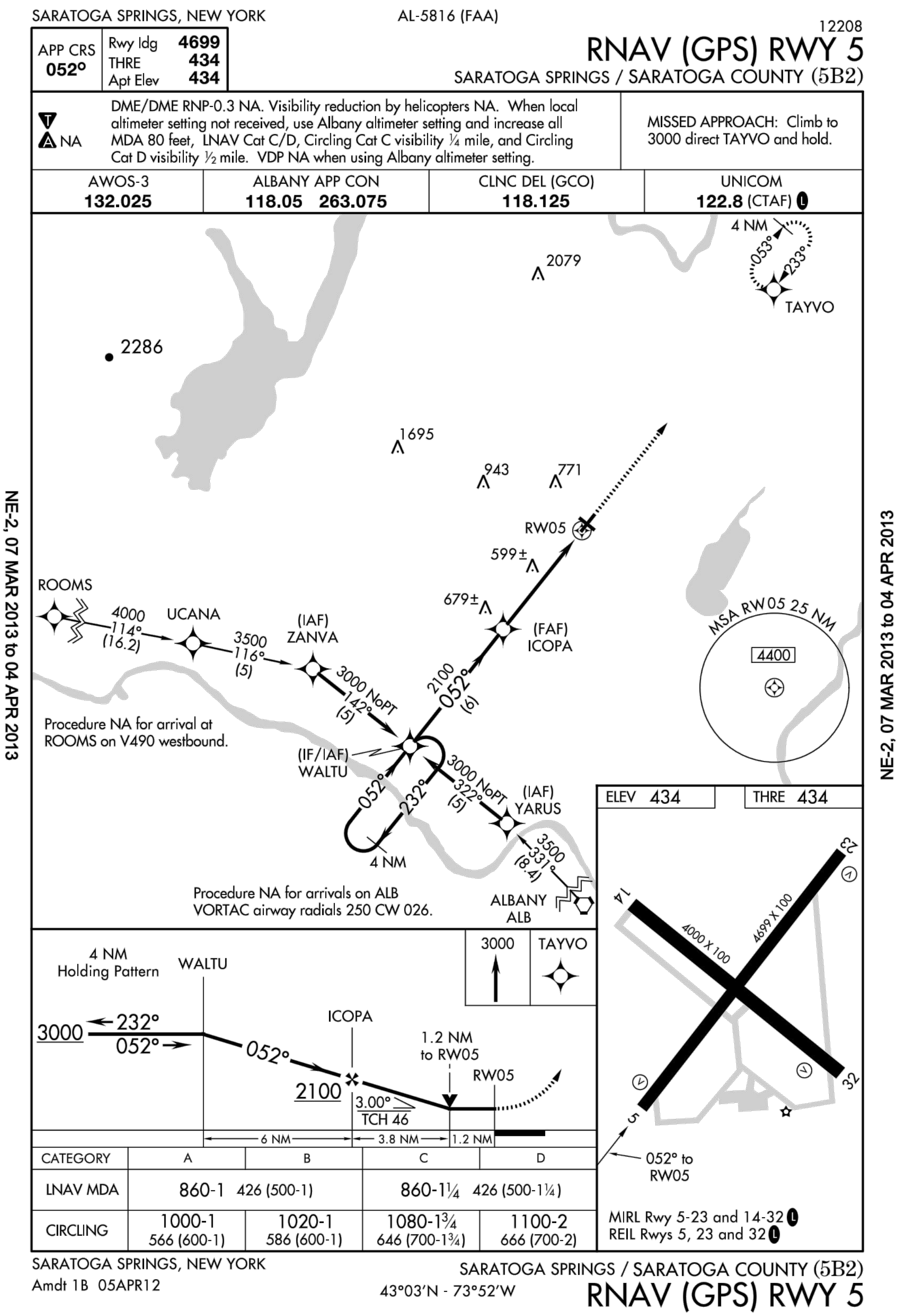
2.3.5. Airport Communication and Visual Aids

The Airport is equipped with the following communications and visual aids:

- **Common Traffic Advisory Frequency (CTAF):** Although Saratoga County Airport does not have a control tower, the Airport is equipped with a Common Traffic Advisory Frequency (CTAF) or UNICOM that uses a frequency of 122.8 megahertz to allow communication between pilots flying in the vicinity of the Airport. The CTAF is monitored by North American Flight Services when open. When the Airport is not attended, the open frequency allows pilots to state their positions both on the ground and in the air.

RUNWAY 5 APPROACH

FIGURE 2-6



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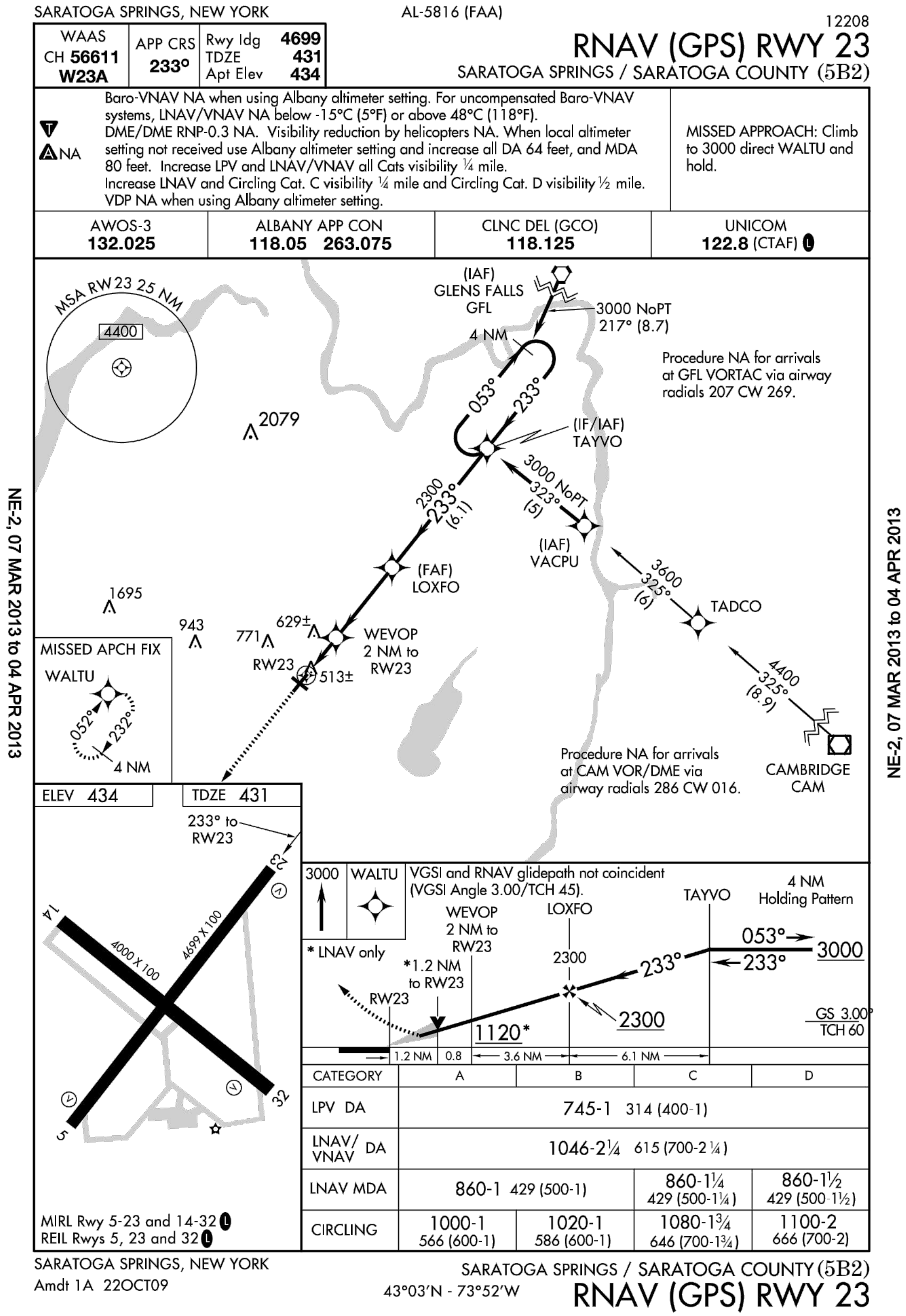
RUNWAY 23 APPROACH

FIGURE 2-7



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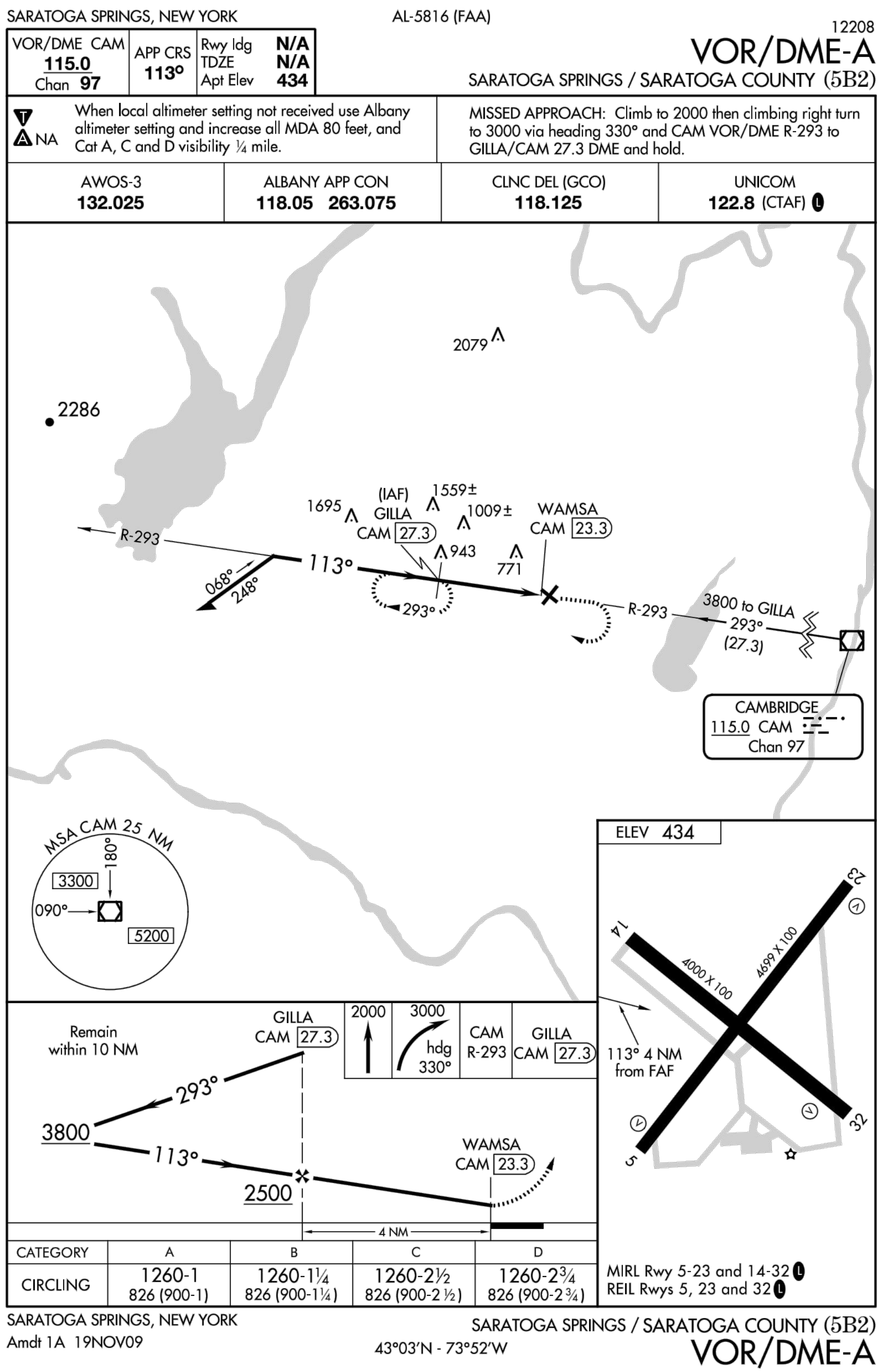
CIRCLING APPROACH

FIGURE 2-8



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Runway End Identifier Lights (REIL): A pair of flashing strobe lights is located at each end of Runway 5-23 and Runway 32 to assist pilots in locating the runway ends during periods of reduced visibility or at night.

Wind Sock: A lighted wind sock is located near the intersection of Runway 5-23 and 14-32 next to Taxiway B. The wind sock helps pilots determine the direction and relative velocity of prevailing winds, as aircraft typically operate into the wind with as little crosswind as possible.

Airport Beacon: A rotating beacon with alternating clear-green lenses is located to the south of the T-hangar buildings in an open field. Airport beacons assist pilots in the identification of airport locations at night, where the alternating white and green light denotes a lighted civilian use airport. A tree clearing project scheduled for winter 2015 will remove trees that obstruct the beacon when flying from the southeast. .

Automated Weather Observation System (AWOS-III): The AWOS provides on-demand weather observation information to pilots operating at the airport. The AWOS broadcasts on 132.025 megahertz. The information provided by the AWOS includes temperature, dew point, visibility and several other pieces of weather information. Information broadcast by the AWOS assists pilots when using the instrument approaches or considering the initiation of an instrument approach to the Airport.

2.4. LANDSIDE FACILITIES

Landside facilities support the many activities and services involved in storing and maintaining aircraft, and in meeting the needs of the aircraft and passengers before and after use of airfield facilities. Typical landside facilities include aircraft hangars and aprons, terminal buildings, aviation fuel facilities, parking lots, and access roads. Well-maintained and affordable landside facilities are important to an airport's efficient operation and financial success. Landside facilities and services discussed below for the Saratoga County Airport include the following:

- Conventional Hangars
- T-Hangar
- Aircraft Parking Aprons
- Fueling Facility
- Ground Access and Parking
- Airport Utilities

The landside facilities at the Saratoga County Airport are located south and east of the runway intersection. These facilities are shown in **Figure 2-9** and discussed in detail below.

2.4.1. Conventional Hangars

There are three conventional hangars on the Airport. The NAFS hangar is 10,000 sf and is used primarily to store NAFS aircraft and at times, larger transient aircraft that overnight at the Airport. There is approximately 1,000 sf of space used for waiting area for passengers, pilot planning area, administrative offices, a conference room and storage space. The NAFS building is located on the southwesterly side of the Airport adjacent to Runway End 5. This building is in very good condition.

The second conventional hangar is the old Richmor Hangar, which is leased by NAFS and serves exclusively as an aircraft maintenance hangar. This hangar, which is about 35 years old, is approximately 7,680 sf in size. There is an administrative/office area about 1,520 sf and is now used as storage space for tools, parts and equipment. The Automated Weather Observation System (AWOS-III) computer equipment is also located in this area. The building, in general, is in fair to poor condition with a number of leaks in the roof.

The third conventional hangar is located across from the Richmor Hangar. This hangar is new and was built in 2010 to replace an old barn hangar. The hangar is about 9,000 sf and is leased to NAFS who uses the hangar for aircraft storage, both short term and long term.

2.4.2. T-Hangars

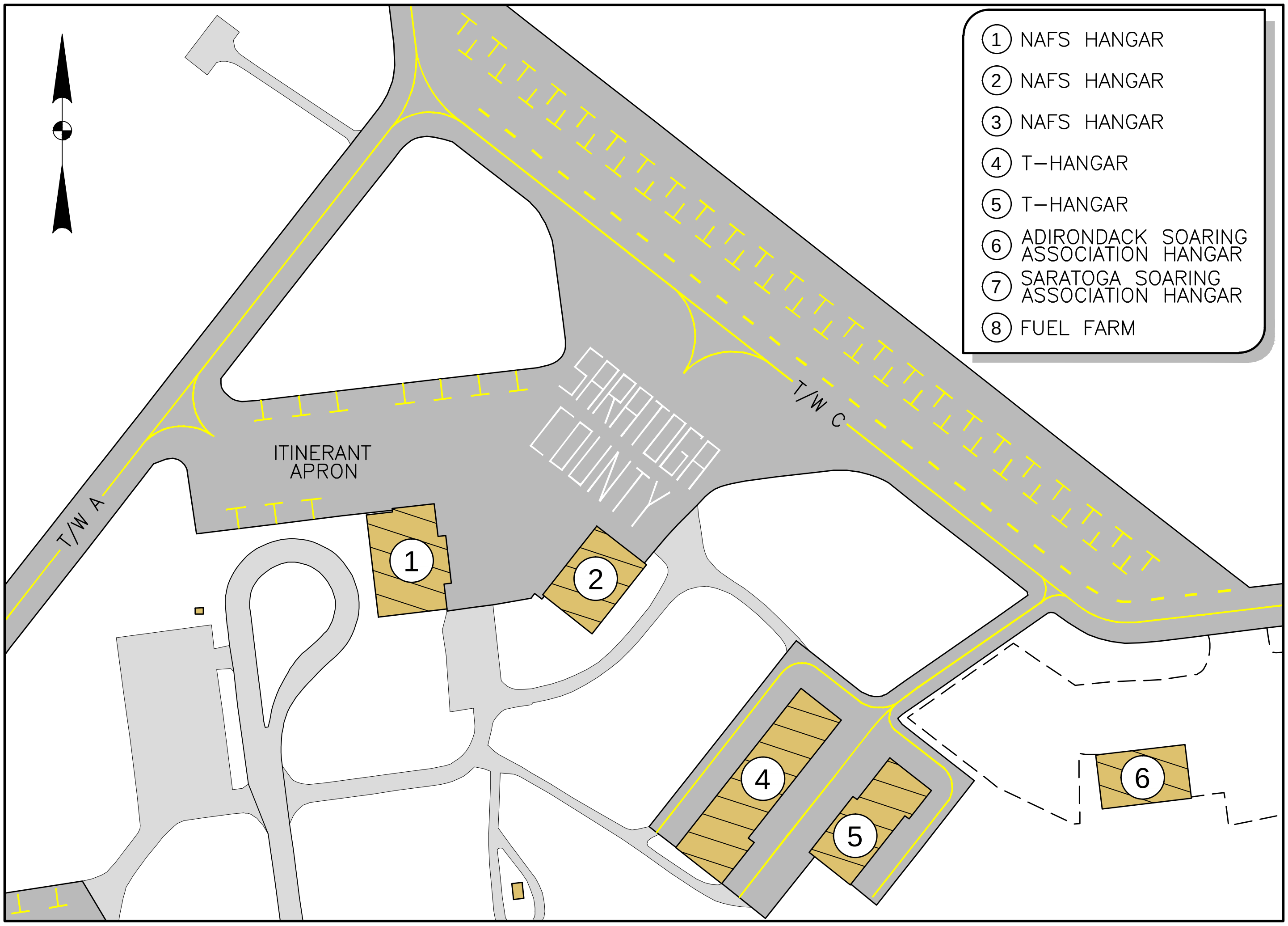
There are two T-hangar facilities at the Airport that are leased to NAFS. A T-hangar is a multi-aircraft storage hangar in which individual aircraft hangars are nested together. T-Hangars accommodate small single engine and twin engine aircraft. These T-hangars are located southeast of the new conventional hangar.

The larger T-hangar unit is approximately 13,800 sf and has seven units. There are five nested hangars housing one aircraft each and two large end units capable of accommodating several single engine aircraft. This hangar is approximately 22 years old and in good condition.

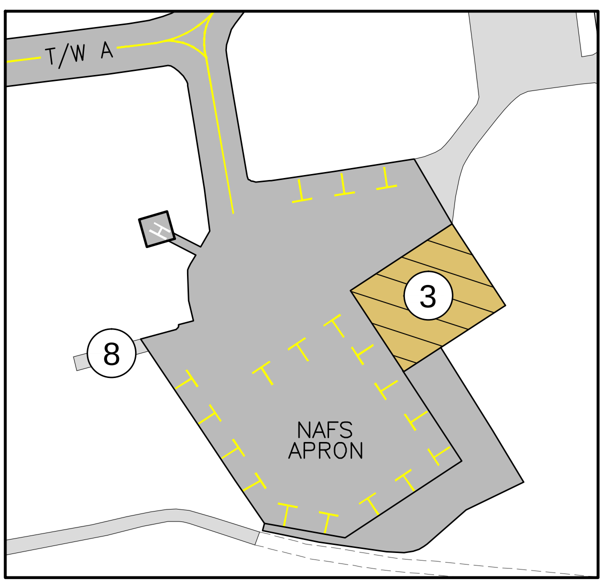
The second T-hangar is approximately 9,000 sf and has 6 nested hangar units. All units in this T-hangar are single aircraft units. This hangar is also 22 years old and in good condition.

LANDSIDE FACILITIES

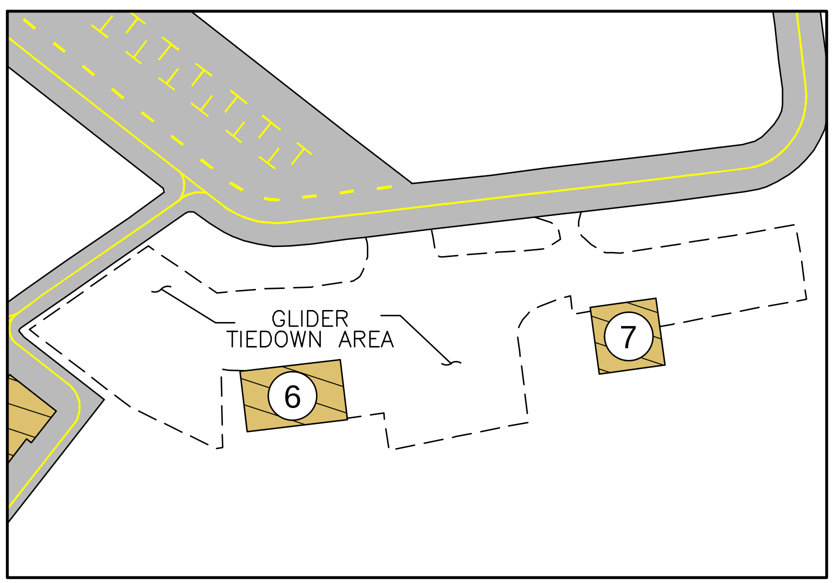
FIGURE 2-9



CENTRAL TERMINAL AREA



SOUTHWEST TERMINAL AREA



SOUTHEAST TERMINAL AREA

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2.4.3. Glider Hangars

Two glider hangars are located to the north of the T-hangars. The hangars were built by Saratoga Soaring Association in 2003 and Adirondack Soaring Association in 2012. The soaring associations lease the land from the County. These hangars have direct access to Taxiway C, allowing gliders to be towed to and from the hangar areas to the operating runway.

2.4.4. Fueling Facility

There are two above ground fuel tanks located adjacent to the NAFS aircraft parking apron. There are two 10,000 gallon tanks, one for 100LL fuel and one for Jet-A fuel. The tanks have secondary containment for spill protection and dispensers to load fuel trucks.

NAFS has two fuel trucks as well. One truck is used for 100LL and is 1,000 gallons and the second truck has a 3,000 gallon capacity and is used for Jet-A.

2.4.5. Ground Access and Parking

The Airport is accessed via Geyser Road (County Route 43). Access into the Airport is provided by Greenfield Avenue. There is a large parking area between the NAFS building and the former Richmor Hangar that has 60 automobile spaces. There are an additional 10 parking spaces adjacent to the former Richmor Hangar that provides parking for maintenance staff. Greenfield Avenue ends in a “jughandle”, returning cars back to Geyser Avenue.

2.4.6. Airport Utilities

Several utilities serve the Airport. Each of the utilities and the facilities they serve are summarized below:

- **Electricity –** Niagara Mohawk provides electricity. All of the buildings have electrical service including the two glider hangars. Additionally, Niagara Mohawk also serves all airfield lighting including the Airport beacon. The Airport electrical vault houses the lighting equipment interface for the Airport lighting system and is located adjacent to the Airport beacon.

- **Natural Gas –** Niagara Mohawk also provides the natural gas to the Airport. Buildings served by gas include the NAFS hangar, the former Richmor Hangar and the T-hangars.

- **Water** – Water is provided by Heritage Springs Water Company. Buildings served include NAFS, the former Richmor Hangar and the fire hydrants on the Airport. A water line connects to the new box hangar; however, it cannot be used until the facility is connected to a septic system. In addition, two bays of the larger of the two T-hangars are served by water; no units have water.

- **Sewer** – There is no sanitary sewer system at this time. The NAFS facility and Richmor Hangar have septic systems. The new box hangar has no septic system. The larger T-hangar has an oil water/separator & leach field that were plugged and abandoned several years ago.

2.4.7. Airport Equipment

The SCDPW provides the equipment as needed during the seasons. The Airport does have two dedicated snow blower units, a 1972 Sicard and a 2005 Larue that are housed at the SCDPW's County Farm Road Facility and brought to the Airport as needed.

2.4.8. Fire Fighting Services

The Town of Milton Fire Department has a facility on Geyser Road east of the Airport entrance. The facility was recently expanded and provides fire service to the Airport through a mutual agreement with the County.

2.5. LAND USE & SOCIOECONOMIC DATA

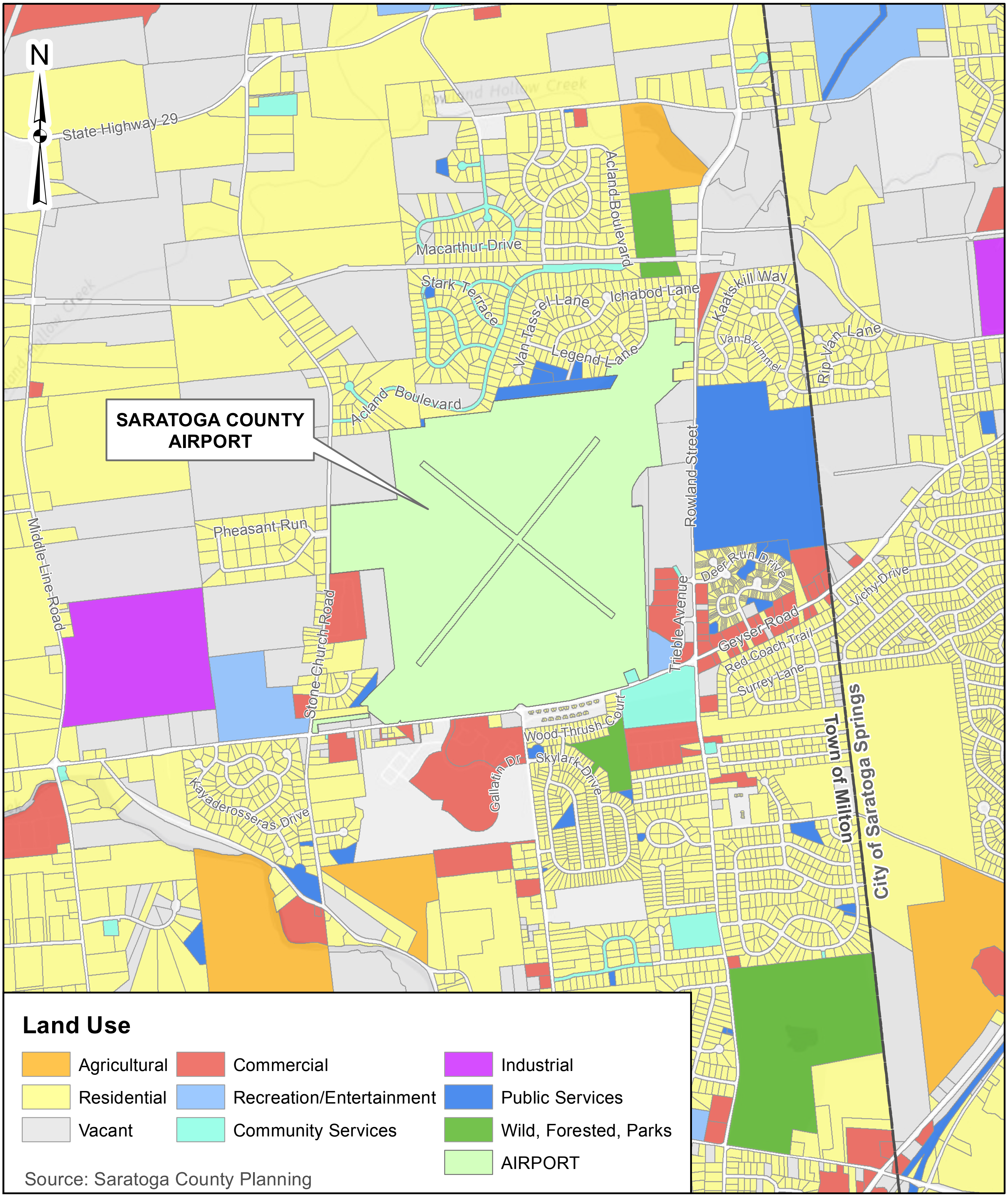
This section describes land use and the socioeconomic characteristics of the Town of Milton and the County. The data presents the land use around the Airport and presents information on various Local and Regional economic factors and population statistics.

2.5.1. Existing Land Use

Based on 2013 data obtained from Saratoga County and the Town of Milton, the adjacent land uses that surround the Airport are shown in **Figure 2-10**. The Airport is located within the Town of Milton. There are various residential land uses near the Airport, particularly north of the Airport where several neighborhoods with single family residential land uses exist along Acland Boulevard, Van Tassel Lane, Ichabod Lane, and Legend Lane. In addition, northeast of the Airport, across Rowland Street from the Airport, are also several residential neighborhoods along Van Brummel Lane and Katskill Way. The area directly east of the Airport, along Rowland Street, mainly consists of vacant commercial lands. Southwest of the Airport, also along Rowland Street, are several commercial structures, including several banks and a supermarket. A miniature golf course, closed in the summer of 2014 and a newly constructed (2014) medical building are located immediately southwest of the airport, directly off the Runway 32 end. Further east of the Airport, particularly along Deer Run Drive, an additional number of residential land uses occur.

TOWN OF MILTON LAND USE MAP

FIGURE 2-10



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SARATOGA COUNTY AIRPORT

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South of the Airport, along Geyser Road, the Milton Fire District operates a station off the Runway 32 end, and the Town of Milton operates a park and the Town municipal building. Also along Geyser Road are several residential land uses, including several condominium and apartment complexes near the entrance to the Airport. Further west along Geyser Road are several additional residential parcels intermixed with a few commercial entities. Further south and southwest from Geyser Road, land use is mainly residential. West of the Airport, land uses along Stone Church Road are nearly entirely residential in nature, including a mobile home community.

Downtown Saratoga Springs, the closest city to the Airport, is approximately three miles to the northeast. Vehicle travel from the Airport to Saratoga Springs could occur over two routes, including Geyser Road, with mixed-use development, to the commercial State Route 50, or the mainly undeveloped Rowland Street to State Route 29, where development is minimal until reaching Saratoga Springs. Both Geyser Road and Rowland Street are designated as County Roads and utilized as primary roads within the area.

2.5.2. Zoning

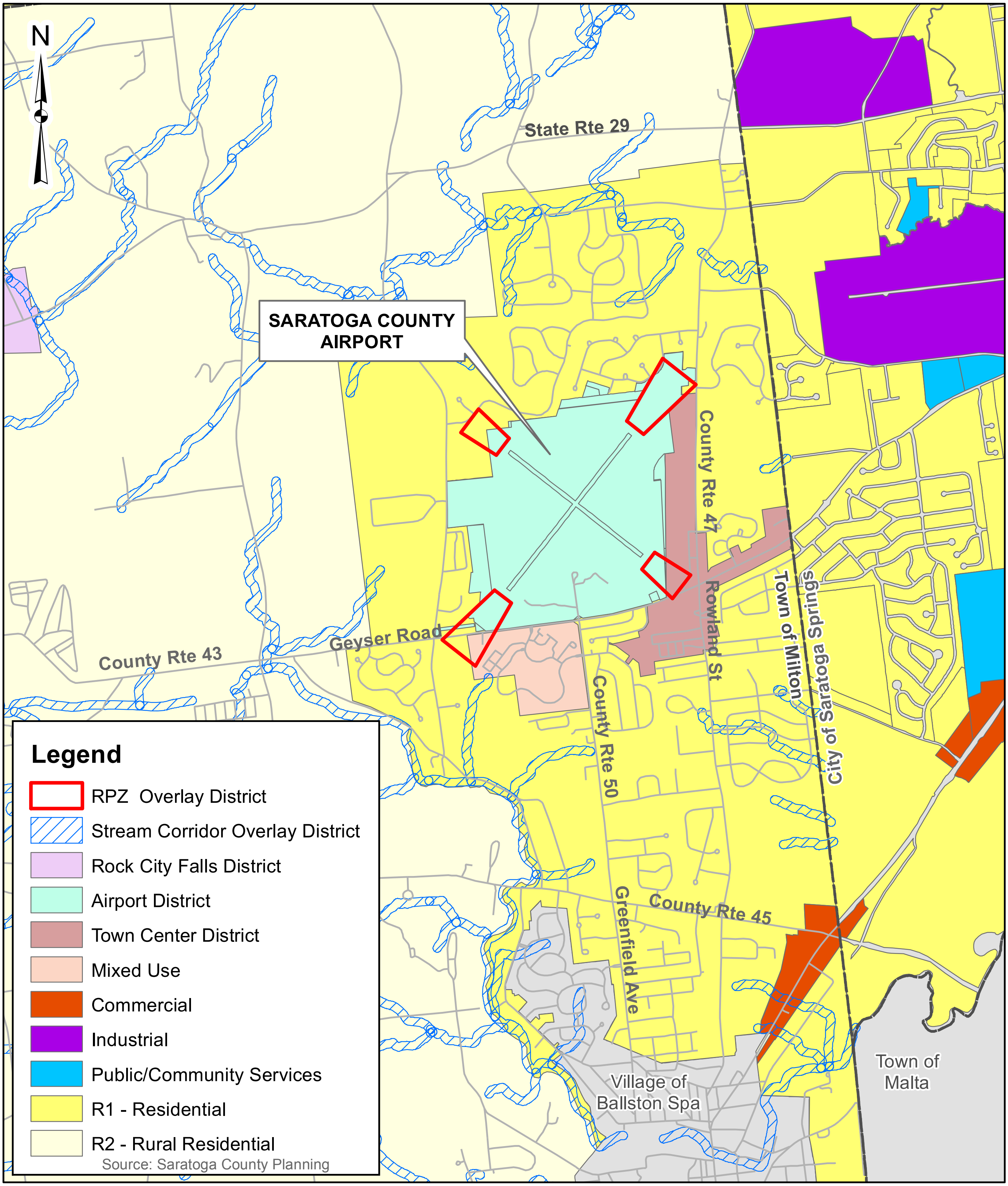
Zoning in the vicinity of the Saratoga County Airport is enacted and enforced by the Town of Milton. According to the Town Code, and the Zoning Map provided by Saratoga County, dated January 6, 2010, the entire existing Airport property is zoned as “A – Airport District”, as displayed in **Figure 2-11**. Land uses permitted within the Airport District are limited, with “accessory building” and “forest and forest farming operations” as the only land uses permitted by right. Land uses permitted with a special use permit include airports and private airstrips, light manufacturing, telecommunication towers, restaurants, public buildings, and private schools. No residential land uses, or land uses that are not typically considered compatible with airport operations, are permitted within the Airport District.

Much of the area in the vicinity of the Airport are zoned “R1 – Residential District”. Additionally, several properties southwest of the Airport, along Geyser Road and in the vicinity of the Runway 5 end, are zoned “MU – Mixed Use District”. To the east and southeast of the Airport, along Geyser Road and Rowland Street in the vicinity of the Runway 32 end, land is zoned as “H2 – West Milton Hamlet District” Within these districts, many additional land uses are permitted, including 1-family residential (permitted by right in all districts), multi-family dwellings (permitted by right in the MU district), public recreation areas (permitted by right in all districts), hospitals (permitted with a special use permit in the MU district), and day-care centers (permitted with a special use permit in the MU and H2 districts). These land uses are examples of those that are considered less compatible with the operations of an airport.

Beyond the traditional zoning districts, the Town of Milton has also established a Runway Protection Zone Overlay District (RPZ). According to the Section 180-28.1 of the Town Code, “The purpose of this district is to acknowledge the unique aspects of the Saratoga

ZONING

FIGURE 2-11



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SARATOGA COUNTY AIRPORT

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County Airport and to encourage compatible land uses adjacent to the Airport for the purposes of promoting the public health, safety, and general welfare of the residents and aviation users.[1]" The RPZ district indicates that all new construction within the district shall be subject to site plan review, and that no new use, building, or structure will be permitted within the district, other than accessory structures, with the exception of golf courses which may be permitted after the completion of a wildlife hazard assessment. Additionally, the RPZ district restricts residential structures, structures that promote large concentrations or bulk storage of flammable substances or materials, or the public assembly of people, including schools, hospitals, shopping centers, and restaurants. In addition, if subdivision of land within the RPZ district was to occur, a fair disclosure agreement and covenant must be recorded with the subdivision, and the potential buyers notified, that the property is in an area where aviation activity occurs and impacts associated with, but not limited to, noise, vibration, and hours of operation, may occur.

Enforcement of the Overlay district is outlined in Section 180-53 Section C of the Town of Milton Zoning Regulations. The process is described in the Zoning regulations as follows: "All development proposals shall be required to provide a completed FAA Form 7460-1, Notice of Proposed Construction or Alteration, to determine potential impacts to airport airspace. If the Building Department determines the proposal may impact airport airspace, the Building Department shall advise the county personnel responsible for the overall management and operation of the airport to determine what, if any, FAA notification and review must be obtained prior to approval for construction."

2.5.3. Socioeconomic Base

According to the 2010 Census, the population of Saratoga County was 219,607. The U.S. Census Bureau estimates that the population Saratoga County increased to 222,133 by 2012, a growth of approximately 1.15 percent over the two year span, or an annual growth of approximately 0.58 percent. This indicates a decrease in the rate of growth in Saratoga County, where annual growth between 2000 and 2010 was approximately 0.95 percent. On a more local level, in 2010, the population of the Town of Milton was 18,575, a growth of 8.61 percent from the 2000 population. This represents an average annual growth of approximately 0.86 percent.

According to the 2007-2011 American Community Survey 5-Year Estimates, the median household income in Saratoga County was estimated at $67,186, an increase of 35.84 percent from the median household income identified in the 2000 Census. Median household income in the Town of Milton, based on the 2007-2011 American Community Survey 5-Year Estimates, is estimated at $66,806, an increase of 48.44 percent from the 2000 Census. The median household incomes identified in the 2007-2011 American Community Survey 5-Year Estimates are all significantly greater than the national average of $52,762.

[1] Town of Milton Code Chapter 180, Section 28.1.

Saratoga County, as part of the Capital District Region, has more recently been considered part of New York's "Tech Valley". According to Empire State Development, the Region has strategically invested in various emerging technologies, including bio life sciences, nanotechnology, chemical manufacturing, and clean energy production. Combined with the many colleges and universities in the region, including SUNY Albany's burgeoning College of Nanoscale Science and Engineering, the area is well suited for growth in these various industries. Several of the major employers in Saratoga County are included in **Table 2-9**. Employers are listed in order of the number of employees reported. The largest employer in Saratoga County is GLOBALFOUNDRIES in Malta.

Table 2-9 – Top Employers

Employer Name	Municipality	Number of Employees
GLOBALFOUNDRIES	Malta	1,800
Stewart's Ice Cream	Saratoga Springs	1,550
Shenendehowa Central School District	Clifton Park	1,350
State Farm Insurance	Malta	1,171
Saratoga County Government	Ballston Spa	1,075
Momentive Performance Materials	Waterford	1,000
Target	Wilton	1,000
Saratoga Springs City School District	Saratoga Springs	988
United States Navy	Milton	900
Quad Graphics	Saratoga Springs	825
Saratoga Hospital	Saratoga Springs	823
Skidmore College	Saratoga Springs	713
Price Chopper	Various Locations	648
Saratoga Bridges	Ballston Spa	580
Sysco Foodservice	Halfmoon	500

Source: The Chamber of Southern Saratoga County (http://www.southernsaratoga.org/economic_development/Largest_Employers.aspx)

2.6. AIRSPACE

The following section describes how aircraft are controlled and the airspace structure on and surrounding the Airport.

2.6.1. Airspace Structure

Airspace in the United States is classified into the following categories: controlled, uncontrolled, special use and other. A brief description of these categories and how they apply to airspace in the vicinity of Saratoga County Airport is provided in the following paragraphs. A description of airspace is provided in **Table 2-10** and **Figure 2-12** provides a graphic of the Local and Regional airspace structure.

AIRSPACE STRUCTURE

FIGURE 2-12

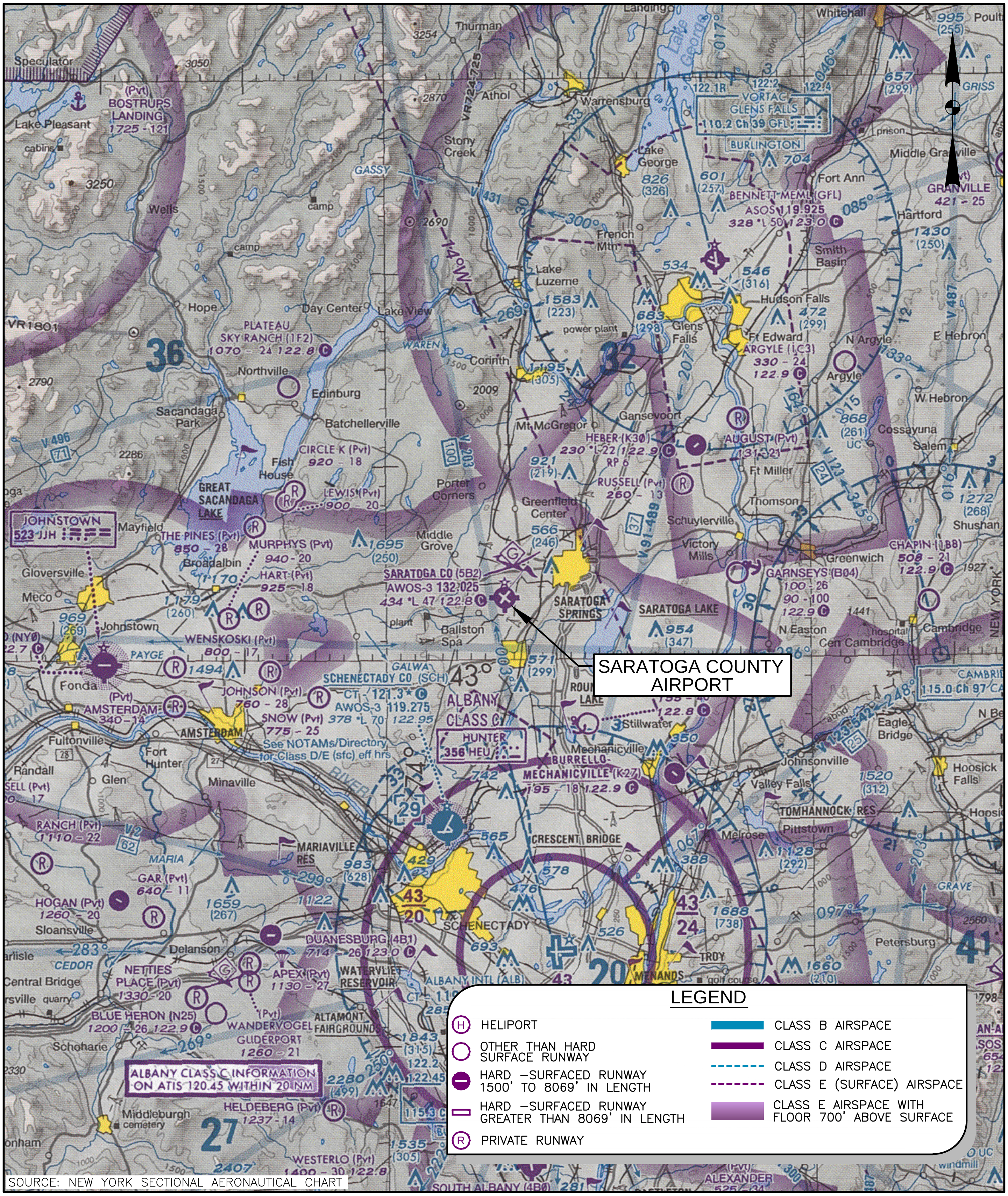

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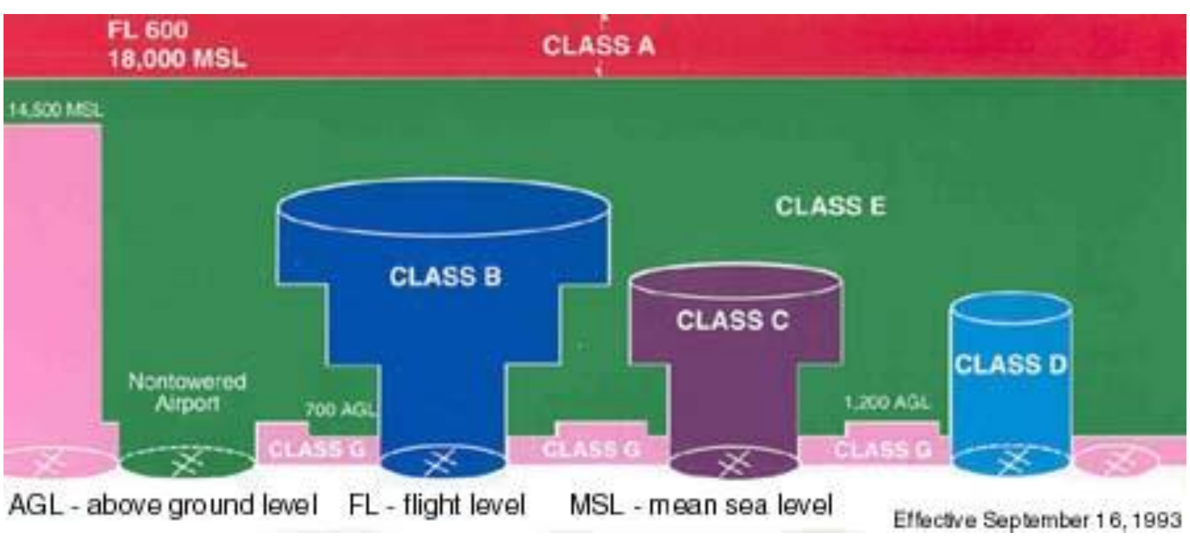
Table 2-10 – Airspace Structure

Controlled Airspace
Class A: Airspace above 18,000 feet Mean Sea Level (MSL). Class A airspace contains all the high altitude airways and jet routes. IFR flights are provided sequencing and separation from other IFR flights.
Class B: Airspace within a 20 Nautical Mile (NM) radius around the nation's busiest commercial airports. Class B airspace may extend up to 10,000 feet MSL. Aircraft entering Class B airspace must contact air traffic control (ATC) for clearance and maintain radio contact with ATC while within the airspace. Aircraft separation services are provided to all aircraft within the airspace by ATC.
Class C: Terminal airspace within a 10 NM radius around busy commercial airports. Class C airspace extends from the surface up to 4,000 feet above airport elevation. A Mode C Transponder is required as well as two-way radio contact with ATC. ATC provides sequencing and separation services for IFR and VFR flights.
Class D: Terminal airspace within a 5-statute-mile radius surrounding moderate activity commercial and military airports. Class D airspace extends up to 2,500 feet above airport elevation. ATC provides separation services for IFR flights.
Class E: General and enroute airspace which starts at the surface or a designated altitude at non-towered airports, or lies between Class B, C, D or G airspace and the 18,000 foot MSL floor for Class A airspace. ATC provides separation services for IFR flights.
Uncontrolled Airspace
Class G: Occupies all airspace that is not controlled. Extends from the ground up to 700 feet or 1,200 feet above ground near airports, and up to 14,500 feet AGL in remote areas removed from airports. Class G airspace includes all low level airspace surrounding the Saratoga County Airport below 1,200 feet AGL above ground level. ATC may provide basic information services to aircraft that are in radio contact with ATC.

Source: McFarland Johnson, Inc ; Aeronautical Information Manual at
http://www.faa.gov/air_traffic/publications/ATPubs/AIM/aim.pdf



Controlled Airspace - Controlled airspace is classified as Class A, B, C, D, and E. Each of these classes has different dimensions, purposes and requirements. Class A airspace covers the entire United States and encompasses all airspace from 18,000 feet to 60,000 feet above NFIA. Aircraft flying in Class A airspace must operate under instrument flight rules.

ATC clearance is required prior to operating an aircraft within either Class B or Class C airspace. All aircraft that have received such clearance are provided with separation services by ATC. Class B and Class C airspace define areas inside which all aircraft are subject to certain operating, pilot, and equipment rules. Class B airspace is usually reserved for areas surrounding the nation's busiest airports.

The nearest Class C Airspace is located at Albany International Airport. Class C airspace resembles a cylinder with a radius of five nautical miles, extending from the ground to an altitude of 2,200 feet above ground level (AGL). This cylinder is topped by another, larger, cylinder with a radius of ten nautical miles which extends to an altitude of 4,700 feet AGL.

The nearest Class D is associated with Schenectady County Airport. Class D airspace extends five nautical miles in all directions from the center of Schenectady County Airport and extends upward to an altitude of 3,100 feet. Aircraft operating in Class D airspace must maintain radio contact with the appropriate control facility while operating in the airspace. Pilots must also abide by certain operating, pilot, and equipment rules while operating within Class D airspace.

Class E airspace includes all the airspace that is not classified as A, B, C, or D. Class E airspace has no special restrictions with respect to pilot or aircraft equipment rules. However, it is controlled airspace, meaning that aircraft can be provided with ATC services. Saratoga County Airport lies within Class E airspace. The controlling facility is Albany Approach/Departure.

Uncontrolled Airspace - Class G airspace is uncontrolled airspace. It consists of all airspace that is not classified as A, B, C, D, or E.

Special Use Airspace - Special use airspace consists of Prohibited and Restricted Areas, Warning Areas, Military Operation Areas, Alert Areas, and Controlled Firing Areas. There are no prohibited areas in the vicinity of Saratoga County Airport.

There are no Warning Areas, Alert Areas, or Controlled Firing Areas; however, there is a complex of Military Operation Areas (MOA) that are located northwest of Saratoga County Airport. They include the Tupper, Adirondack, Carthage, Cranberry and Lowville MOAs. Tupper MOA is closest and is approximately 40 nautical miles to the northwest.

Chapter 3
Forecast of Aviation Activity

3.0. INTRODUCTION

Forecasts of aviation activity at Saratoga County Airport are a key element in the Airport's future planning as they are used as the basis for the demand/capacity and facility requirements analyses that Identify Airport development needs. The two major elements of this Chapter are the forecasts of aviation activity and the selection of a design aircraft for the Airport. Aviation activity refers to the annual level of aircraft operations, which includes takeoffs and landings. The design aircraft is the most demanding aircraft, or family of aircraft, in terms of approach speed and wingspan that is anticipated to use the Airport on a regular basis, which the FAA defines as at least 500 annual operations. Together, approach speed and wingspan provide a basis for determining the type and size of aviation facility development, and serve as a platform upon which this Master Plan is based.

The base year of the aviation demand forecasts for Saratoga County Airport is 2012, which represents the last full year of data available from the Airport. The aviation demand forecasts were developed for a twenty-year planning horizon and segregated into the short term (0-5 years), mid-term (6 to 10 years), and long term (11 to 20 years). The forecasts allow the Airport Sponsor to set a time line for development based on expected changes in aviation and airport demand. If future demand does not match the projection time frame, development implementation may be modified to fit the changing demand pattern.

The forecasts presented in this Chapter are unconstrained, that is, they assume that adequate airside and landside facilities will be in place to accommodate the forecast activity levels. Projected activity levels may not be achieved if adequate facilities are not in place.

Major sections of this Chapter include:

- Unique Aviation Activity
- Historical Data
- Forecasting Methodologies
- Assumptions Considered for the Forecasting Effort
- Forecasting Methodologies Considered but not Used
- Based Aircraft Forecasts
- Aircraft Operations Forecasts

3.1. UNIQUE AVIATION ACTIVITY

Saratoga County Airport has two unique aviation activities that define the aircraft operations at the Airport. The first is the Airport's extensive glider operations generated by the soaring associations located on the airfield. The second unique aspect of activity is the seasonal influx of aircraft associated with the Saratoga Race Course in Saratoga Springs. The following sections summarize these activities and how they were considered in the forecasting effort.

3.1.1. Glider Operations

Glider activity has been increasing at the Airport since the last Master Plan was completed in 2003. Saratoga Soaring Association was the first soaring association to construct a hangar to accommodate their operations. They built their hangar in September of 2003. Adirondack Soaring Association started operating at the Airport within the past few years and constructed a new hangar on the Airport in June of 2012. Both glider associations operate from April until November and occasionally during the winter if conditions permit.

The glider activity is recreational in nature and peaks during weekend days. However, there is a limited amount of training that takes place during the weekdays. The level of activity varies from weekend to weekend depending upon weather conditions and the scheduling of any glider-related functions.

The glider associations provided current information on their activity. Saratoga Soaring has one tow plane and five gliders while Adirondack has three tow planes and 48 gliders. All but 17 gliders are stored in the hangars or on the lease property of each glider association. The glider associations also indicated that there were about 2,500 flights in 2013. A flight consists of four operations, a takeoff of the tow plane and glider and the landing of each aircraft. Based on this assumption, there were about 10,000 operations in 2013.

Glider operations were not included in the forecast given that historical information on glider activity at Saratoga County Airport is not available. Anecdotal information from the glider associations indicated that there has been about a 5% annual growth in activity, however, without the ability to confirm that growth level, developing a forecast is not practical.

Nevertheless, the unique operational requirements of the glider operations at the Airport, coupled with the mixing of powered aircraft and gliders, have generated unique issues at Saratoga County Airport. On the ground, there have been times when powered aircraft are blocked by gliders being towed or waiting to be towed into the air. As the gliders cannot be moved onto the turf areas of the Airport, which is habitat for the presently endangered Karner Blue Butterfly, powered aircraft had their access to the departure runway delayed.

Operationally, gliders primarily use Runway 32 while powered aircraft operate on Runway 23. In these instances, both powered aircraft and gliders operate independently and operational conflicts are minimal. However, when both powered aircraft and gliders operate on Runway 5-23, there have been conflicts as it takes time to get a glider airborne or off the runway after landing. In these cases, powered aircraft may have to abort the landing and re-enter the pattern to land once the gliders have vacated the runway. In other cases, aircraft are delayed when taxiing to Runway 23 on Taxiway D due to gliders being towed to Runway 32 or 23. The glider associations have been effective in minimizing this situation; however, it does occur on occasion. The results of this activity are the reduction in runway capacity and increase time and fuel expenditures.

Given the unique issues discussed above, glider operations will be further assessed in Chapter 5, *Demand Capacity and Facility Requirements* to determine the overall capacity to accommodate both glider and powered aircraft operations and address the unique operational requirements of glider operations further in Chapter 5, *Demand Capacity and Facility Requirements*,

3.1.2. Saratoga Race Course Aviation Traffic

The Saratoga Race Course in Saratoga Springs celebrated its 150th anniversary in 2013. The Course attracts people from around the New York Region and elsewhere every year. The track's race season is from Mid July until Labor Day.

During that six-week period, there is a major influx of corporate jet and turboprop activity. July and August accounted for 53% of the annual corporate turboprop and jet activity at the Airport in 2012. Prior years have similar activity levels.

The primary consideration for the forecasting effort is the peak demand generated by this activity and the impacts on aircraft parking. During "Race Season", all of the aprons are used to park transient turboprop and jet aircraft in addition to the based aircraft that are tied down. Many times, the aircraft are parked closer than normal to fit the large numbers of aircraft. To alleviate some of the issue, taxiways have been used to temporarily park aircraft. Activity associated with the race season will be forecasted to identify future peaking characteristics and any additional facilities that may be necessary.

3.2. HISTORICAL DATA

The Airport and aviation activity have changed since the last Master Plan was completed in 2003. This section summarizes how activity has changed and what has influenced those changes. This information provides both quantitative and qualitative information upon which the forecasts of aviation activity will be developed.

The data was compiled from several sources. Socioeconomic data was obtained from the local economic development agency, while baseline and historic activity data was collected from previous planning efforts, including the 1990 and 2003 Master Plans, the 1998 NYSDOT State Aviation System Plan, and FAA Form 5010. Other data sources including flight tracking services were also obtained and used in this forecasting effort.

3.2.1. Regional and Socioeconomic Trends

Socioeconomic data, in addition to aviation industry trends, provides general indicators of demographic and economic change that have been found to coincide with potential demand for general aviation services. In this regard, trends in population, median income, and employment/unemployment levels have the potential to affect aviation demand at Saratoga County Airport. Saratoga County is one of four Counties that make up the Capital District of New York. However, for purposes of this effort, all data for Saratoga County was obtained and presented as the County drives much of the activity of the Airport in terms of based aircraft and operations.

As shown in **Table 3-1**, three measures of socioeconomic activity in Saratoga County between 1990-2012 (where available) indicate positive growth.

Table 3-1 – Saratoga County Socioeconomic Activity Characteristics

Year	Population	Employment	Median Income
1990	181,276	39,677	$36,635
2000	200,635	53,651	$49,460
2010	219,607	61,076	$65,100
2011	221,081	-	$67,186
2012	222,133	-	-
Growth Rate	0.9% (1990-2012)	2.2% (1990-2010)	2.9% (1990-2011)

Source: Saratoga County Industrial Development Agency

Information from Saratoga County Economic Development Corporation (SCEDC) identified research and development as one of the major factors changing the economic structure of the region. One example is a new large semi-conductor company, GLOBALFOUNDARIES, which established a plant in Malta, south of Saratoga County Airport. The facility is operational and employs over 1,800 people. Discussions with company staff indicated they use Albany County Airport for commercial service needs and Albany and Schenectady County Airports for corporate services.

Other research and development initiatives ongoing in the region include General Electric's Global Research Center and Knolls Atomic Power Laboratory in the Town of Milton (advanced nuclear propulsion technology and technical support for naval reactors). It is expected that combined research and development will become a larger component of the economic growth of the region that will attract new businesses to the region and may have future implications of additional based aircraft or use of Saratoga County Airport.

This information will be used in quantitative analyses in subsequent sections to identify potential statistical relationships regarding activity at Saratoga County Airport. If such positive correlations exist, some measure of these socioeconomic growth rates will be utilized to direct forecasts for future demand levels at Saratoga County Airport.

3.2.2 Based Aircraft

A based aircraft is defined as an active aircraft that is stored at an airport on a permanent basis, either in a hangar or tied down on an apron. At Saratoga County Airport, the based aircraft fleet mix consists of a wide spectrum of aircraft types. **Table 3-2** presents historical based aircraft data for Saratoga County Airport, supplemented by data from the Airport Form 5010, which provides data for 1999 and 2012.

Table 3-2 – Historic Based Aircraft Fleet Mix

Year	SE*	% Total	ME*	% Total	Turbo-Prop	% Total	Jet	% Total	Rotor	% Total	Total
1986	63	97%	1	2%	1	2%	0	-	0	0	65
1999	58	95%	2	3%	1	2%	0	-	0	-	61
2012	39	78%	5	10%	3	6%	2	4%	1	2%	50

*Source(s):1986 Data: Saratoga County Airport Master Plan, 1990; 1998; 1999 Data: Airport Master Record/FAA Form 5010, 1999; 2012 Data: Airport Master Record/FAA Form 5010, 2012, North American Flight Services. *SE=Single Engine Aircraft, ME=Multi-Engine Aircraft.*

As shown in **Table 3-2**, the number of based aircraft at Saratoga County Airport has decreased over the last 27 years. During this period, the average decrease in based aircraft is -1.0 percent annually.

Changes in total based aircraft activity at Saratoga County Airport between 1999-2012 mirror the periods analyzed for the 2003 AMPU, however with one exception: fleet mix composition. In this regard, the overall decrease from 1986 to 2012 is primarily driven by a nearly 38 percent decrease in based single engine piston aircraft. During this period, based multi-engine and jet aircraft increased from 5 percent to 22 percent of total based aircraft at the Airport. This occurrence continues in spite of four single engine aircraft that relocated to Saratoga County Airport by new employees of GLOBALFOUNDARIES during this period. The change in composition of the based aircraft fleet is consistent with national trends where the number of recreational use aircraft (predominantly single engine) is declining while turboprop and jet aircraft favored by business users are increasing.

3.2.3 Aircraft Operations

An aircraft operation is defined as a takeoff or a landing, where each is counted as a separate operation. Operations are further divided into local operations and itinerant operations. A local operation is one where the aircraft departs and returns to the same airport, and flies within 20 miles of the Airport as defined in the FAA Air Traffic Activity Systems (ATADS) glossary. These operations are usually associated with pilot training or recreational flying. An itinerant operation is one where an aircraft is either going to or arriving from another airport.

Activity data for Saratoga County Airport was obtained from the FAA 5010 form and other historical documents including the 1986 and 2003 master plans and the 1995 New York State Airport System Plan. As the airport does not have a control tower, aircraft operations are estimated based on input from the Fixed Base Operator (FBO) and New York State Department of Transportation (NYSDOT). The activity data available for Saratoga County Airport is presented in **Table 3-3**.

Table 3-3 – Historic Aircraft Operations

Year	Total GA Operations	Itinerant Operations	Local Operations
1986	50,700	N/A	N/A
1995	39,357	N/A	N/A
1999	38,500	17,300	21,200
2012	38,550	16,550	22,000

Source(s):1986 Data: Saratoga County Airport Master Plan, 1990; 1995 Data: New York State Aviation System Plan, 1998;1999 Data: Airport Master Record/FAA Form 5010, 1999; 2012 Data: Airport Master Record/FAA Form 5010, 2012

As seen in the table, overall activity is down from 1986; however, the Airport's activity has not changed since 1999. Discussions with the Airport Manager indicated that over the past several years, activity has been relatively stable but has mirrored the national economic trends, decreasing when the economy falters and increasing when the economy is doing well. The Airport Manager's observations, especially for the past several years, are supported by aircraft fuel sales data available from the Airport's aviation fuel supplier.

Fuel sales data for the Airport is presented in **Table 3-4**.

Table 3-4 – Fuels Sales (Gallons)

	2009		2010		2011		2012	
Month	**Avgas**	**Jet A**	**Avgas**	**Jet A**	**Avgas**	**Jet A**	**Avgas**	**Jet A**
January	0	0	0	1,785	3,064	8,155	0	429
February	0	0	0	8,152	0	105	0	8,118
March	8,265	8,101	8,424	180	0	8,128	0	1,000
April	0	8,498	0	8,507	0	8,048	4,050	8,561
May	8,435	8,524	7,928	16,095	8,011	7,996	8,040	8,002
June	0	8,451	0	19,792	4,405	15,907	0	7,585
July	4,972	16,875	7,875	20,580	0	23,872	8,423	32,018
August	8,234	72,823	3,730	64,649	7,952	65,985	8,463	56,633
September	8,269	26,384	4,464	15,910	7,939	24,374	0	8,915
October	0	8,507	8,334	16,382	0	8,503	0	16,666
November	8,565	7,527	0	7,748	0	8,535	8,490	2,293
December	0	8,065	7,624	949	8,006	8,587	0	8,568
Total	46,740	173,755	48,379	180,729	39,377	188,195	37,466	158,788

Source: Avfuels

As shown in **Table 3-4**, aviation gas (Avgas) used by the piston aircraft grew slightly from 2009 to 2010, and then decreased. Several aircraft relocated to other airports in 2010 and the drop in the number of based aircraft is, in part, reflected in the Avgas fuel sale trends.

Jet A fuel sales increased between 2009 and 2011 and then dropped in 2012. The reason for the 2012 drop is not apparent based on discussion with the Airport Manager; however, general economic conditions are likely to have played a role.

3.2.4 Local and Itinerant Aircraft Split

Aircraft operations are split between the based aircraft and itinerant aircraft using an airport. In the case of Saratoga County Airport, the split between local and itinerant aircraft has not changed significantly according to discussions with the Airport Manager. Though based aircraft generate the greater activity for the airport, the Airport's itinerant activity is strong as well. This is due in part to corporate activity that occurs throughout the year for business purposes and the unique activity associated with "Race Season" in Saratoga that was discussed in Section 3.1.2. Many of these aircraft are corporate jets and turboprop aircraft. Due to the Race Season, the Airport has a higher concentration of itinerant aircraft than a typical General Aviation Airport. **Table 3-5** presents the historical local and itinerant split.

Table 3-5 – Historic Split of Aircraft Operations

Year	Total GA Operations	Itinerant Operations	Local Operations
1986	50,700	N/A	N/A
1995	39,357	N/A	N/A
1999	38,500	44.9%	55.1%
2012	38,550	42.9%	57.1%

Source(s):1986 Data: Saratoga County Airport Master Plan, 1990; 1995 Data: New York State Aviation System Plan, 1998; 1999 Data: Airport Master Record/FAA Form 5010, 1999; 2012 Data: Airport Master Record/FAA Form 5010, 2012

3.3 FORECASTING METHODOLOGIES

Forecasting aviation activity requires the use of various statistical methodologies to generate a projection of activity. For Saratoga County Airport, a series of quantitative methodologies were considered to develop scenarios of future based aircraft and aircraft operations levels. Each scenario was developed utilizing growth rates and factors that could affect future aviation activity at Saratoga County Airport. As will be shown, particular forecasts were also adjusted where appropriate to reflect local knowledge and/or input from the Airport Sponsor and/or the FBO.

The methodologies use forecast data from the FAA, local activity for the airport and local demographic data for the region. The FAA forecasting data used for this analysis included:

- FAA Aviation Forecast Growth Rates
- FAA Terminal Area Forecast (TAF)
- Regional Socioeconomic Growth Rates

The statistical models used to develop forecasts of aviation activity included the following methodologies:

- Time-Series/Trend Line Analysis
- Regression Analysis
- Applied FAA Aerospace Forecast Growth Rates
- Market Share Analysis

These methodologies are further detailed in the next sections.

3.4 ASSUMPTIONS CONSIDERED FOR THE FORECASTING EFFORT

Several assumptions were made regarding the forecasting effort for Saratoga County Airport. The assumptions were as follows:

- The base year for the forecasts was 2012, which is the last full year of data available from the FBO. The FAA data obtained for this effort also had a base year of 2012.

- Information provided by the Airport Manager indicated that there is little movement of based aircraft or aircraft operations among the regional airports including Warren County, Schenectady County and Fulton County airports. In the past, based aircraft have relocated to other regional airports or have been attracted to Saratoga County Airport for various reasons including favorable hangar fees, management issues, or other similar issues. There also has been fuel price competition that has influenced airport activity. However, the Airport Manager indicated that in the past several years, there has been no appreciable loss of based aircraft or reduction in aircraft operations.

- Seventy five percent of the based aircraft are residents of Saratoga County; the remaining 25% are made up of residents from other counties. Further analysis showed that residents outside of Saratoga County were from Towns that were on the boarder of Saratoga County and the adjacent counties. This substantiates information provided by the Airport Manager and indicates that based aircraft are largely influenced by Saratoga County and not the surrounding counties or airports located within these adjacent counties.

- The Airport gained four based aircraft when GLOBALFOUNDARIES located a manufacturing plant in the County. It is reasonable to assume that as high tech companies relocate to the region, as intended by the region's marketing efforts, that Saratoga County Airport will gain based aircraft in the future.

- North American Flight Services is planning to expand its services. Their maintenance services are well known in the region and attract aircraft from the greater New York and New England areas. As there are no organized flight training services offered at the Airport today, the FBO is planning to offer flight training in the 2014/2015 timeframe. This training will add to both based aircraft and aircraft operations in the future.

These assumptions will be used to develop the forecasts of based aircraft and aircraft operations for Saratoga County Airport.

3.5 FORECASTING METHODOLOGIES CONSIDERED BUT NOT USED

The lack of historical data available for based aircraft and operations limited the effectiveness of developing a valid projection for the trend line and regression methodologies. These methodologies work best when there is reliable and abundant data to generate useful projections. The following sections summarize the findings.

3.5.1 Time Series/Trend Line Analysis

Time-series forecasting is a simple methodology that is effective when historical data has followed a relatively consistent pattern over a number of years. It assumes that past trends will continue into the future.

The available data for based aircraft and operations was limited. The only sources of data were information from the 1986 Master Plan, 2003 Master Plan and the current FAA 5010. Based aircraft have fluctuated between 1986 and 2012 and as such, does not generate a trend line with a high level of confidence.

A similar problem occurs with aircraft operations. Operations decreased between 1986 and 2003 and then remained flat. As such, the trend line analysis does not produce a useable trend line to project aircraft operations.

In order to achieve a high level of statistical confidence, trend line analysis is dependent on a consistent rate of change over a period of time. Given the fluctuations in based aircraft since 1986 and the overall decline in reported operations, fitting a forecast for either measure of Airport activity along long term trend line projections does not achieve a high level of confidence. Therefore, forecasts for based aircraft and operations utilizing time-series/trend line analysis were dismissed from further consideration.

3.5.2 Regression Analysis

Another forecast analysis methodology is a regression model, which attempts to find a mathematical relationship between historical factors at the Airport, such as operations or based aircraft (the “dependent” variable) and “independent” socio-economic and/or demographic variables. For Saratoga County Airport, this methodology considers the potential effect of outside factors as a coincident relationship (rather than a causal relationship) for changes in based aircraft and operations.

The availability of abundant data for population, employment and per capital income was limited to major years (i.e. 2000; 2010); intermediate year data was not available. Regression analysis requires extensive data in order to produce an effective analysis. For this reason, regression analysis was not considered a viable methodology to develop projections of based aircraft or aircraft operations for Saratoga County Airport.

3.6 FORECASTING METHODOLOGIES USED TO FORECAST AVIATION ACTIVTY

The Trend Line and Regression methodologies did not generate useful forecast of aviation activity. As a result, the Applied FAA Aerospace Forecast Growth Rates and Market Share Methodologies were used to forecast aviation activity at Saratoga County Airport. Each of the methodologies is discussed below followed by their respective forecasts of Based Aircraft and Operations.

3.6.1 Applied FAA Aerospace Forecast Growth Rates

The FAA prepares national forecasts of general aviation activity annually, with the most recent being *FAA Aerospace Forecast Fiscal Years 2013-2033*. The FAA's aviation forecasts are categorized by types of general aviation aircraft and year, and cover a broad range of measures of aviation activity and industry health.

The Aerospace Forecast is based on econometric models that are consistent with emerging trends and structural changes taking place within the aviation industry. Therefore, in spite of uncertainty as to the timing and relative strength of a recovery in aviation demand, the FAA Aerospace Forecast predicts continued growth in the U.S. economy throughout the forecast period.

For purposes of this forecasting effort, growth rates were extrapolated from the Aerospace Forecasts and applied to based aircraft and aircraft operations numbers to generate a forecast of activity. The analysis for based aircraft and aircraft operations is presented in the next section.

3.6.2 Market Share Analysis

Market share projections are based on the assumption that the amount of activity at an individual airport or region will change proportionally to that of a larger Region in which it is a part. This approach is a "top-down" methodology since forecasts of aggregated or high level measures are used as the basis for deriving their smaller component parts. Market share forecasts are developed by calculating the proportion of some aviation activity measure over time (the "market share"), and projecting either a static or dynamic share into the future. This method is an appropriate forecast model given that the FAA has forecasted, using reliable data, the activity at the National, Regional and New York State levels. Also, this model is applicable when the historic share of the airport to the larger aggregate exists and is relatively constant through the years, particularly the last 10 to 20 years.

For Saratoga County Airport, the market share analysis and projections utilized the *FAA's Terminal Area Forecast Summary, Fiscal Years 2012-2040 (TAF)*. While the TAF provides airport forecasts primarily focused on commercial activity at core airports, also included are summaries for total operations and based aircraft by Region. Therefore, this FAA forecast is well suited for providing aggregate data from which market share estimates can be derived for Saratoga County Airport for the planning period.

The analysis using the market share approach for Based Aircraft and Aircraft Operations is presented in the next section.

3.7 BASED AIRCRAFT FORECAST

In order to project the number of based aircraft at Saratoga County Airport, the Applied FAA Aerospace Forecast Growth Rates and Market Share methodologies were applied to develop based aircraft projections. The following sections detail the analysis completed for each methodology.

3.7.1 FAA Aerospace Forecast Growth Rates

The FAA Aerospace Forecasts provided a discussion on future activity based upon five categories of aircraft: Single Engine, Multi-Engine, Turboprop, Jet and Helicopters. All are applicable to Saratoga County Airport.

The annual growth rates for each of these aircraft categories were defined in the document and are presented as follows:

- Single Engine: -0.2%
- Multi-Engine: -0.6%
- Helicopter: 3.0%
- Turboprop: 2.8%
- Jet: 3.5%

These growth rates were applied annually to the 2012 based aircraft categories presented in **Table 3-2** and forecasted for the twenty-year planning period. They were then added together to generate the total number of based aircraft. The results are presented in **Table 3-6**.

Table 3-6 – Forecast of Based Aircraft, FAA National Growth Analysis

Year	Single Engine	Multi-Engine	Turbo-Prop	Jet	Rotor	Total
2012	39	5	3	2	1	50
2017	39	5	3	2	1	50
2022	38	5	5	3	1	51
2027	38	5	5	3	2	53
2032	37	4	6	4	2	54

Source: FAA Aerospace Forecast 2012-2032, McFarland Johnson

The application of the FAA's *Forecast* growth rates to existing based aircraft at Saratoga County Airport yields an increase of only four aircraft over the twenty-year planning period. This is primarily due to the loss of single and multi-engine aircraft over the twenty-year period and the small increases associated with turboprops, jets and helicopters.

3.7.2 Market Share Analysis Forecast

The TAF provides projections of based aircraft in Table 3-1 of the TAF document. The projections of based aircraft are presented at the National, FAA Eastern Region, and New York State levels.

Table 3-7 below presents the historical based aircraft for Saratoga County Airport and the TAF based aircraft at the National, FAA Eastern Region and New York State levels. The market share of Saratoga County Airport's based aircraft to based aircraft in the National, FAA Eastern Region and New York categories were calculated and are shown in parentheses.

Table 3-7 – Market Share Percentages for Based Aircraft

Year	Saratoga County BA	National	Eastern Region	New York
1990	63	162,173 (0.039%)	16,519 (0.38 %)	5,040 (1.25%)
2000	58	179,740 (0.032%)	17,869 (0.33%)	4,960 (1.17%)
2012	**48**	**163,351 (0.031%)**	**15,378 (0.33%)**	**4,266 (1.17%)**

*Source(s): FAA TAF Summary, FY 2012-2040 *TAF Base Year 2012*

Saratoga County Airport's share of National, Regional, and Statewide based aircraft appears consistent, albeit declining at a low rate over the 20-year historical period.

To derive a projection of based aircraft for Saratoga County Airport, the respective 2012 market shares calculated for the National, FAA Eastern Region and New York State were applied to the TAF's based aircraft projections for each category. The 2012 market share percentage for each category was held constant through the planning period. The resulting forecast of based aircraft is presented in **Table 3-8**.

Table 3-8 – Forecasts of Based Aircraft, TAF Market Share National, Region, & New York State

Year	National	Saratoga County	Eastern Region	Saratoga County	New York	Saratoga County
2012	163,351	50	15,378	50	4,266	50
2017	170,292	54	15,935	52	4,406	52
2022	177,734	54	16,572	54	4,569	54
2027	185,515	57	17,176	56	4,719	55
2032	193,531	59	17,791	58	4,872	57

Source: FAA TAF Summary, FY 2012-2040

The application of the FAA's TAF to a market share forecast scenario at Saratoga County Airport yields a comparatively modest growth for each category through the planning period.

3.7.3 Preferred Based Aircraft Forecast

The resulting projections for the two forecast methodologies were reviewed to identify a preferred based aircraft forecast. The following paragraphs detail the assessment and **Table 3-9** provides a summary comparison of the forecasts:

Table 3-9 – Summary of Based Aircraft Forecasts

Year	FAA Growth Rate Forecast	Market Share Forecast		
		National	Eastern Region	New York State
2012	50	50	50	50
2017	50	52	52	52
2022	51	54	54	54
2027	53	57	56	55
2032	54	59	58	57

Source: FAA TAF Summary, FY 2012-2040

The Applied FAA Aerospace Forecast analysis showed a small growth of only two aircraft over the twenty-year planning period. This was due to the loss in single and multi-engine aircraft being countered with the growth in turboprops, jets and helicopters. However, this is not a realistic forecast as the FBO is planning to expand its services, including a new flight school, which will add new based aircraft. Additionally, the FBO is also planning to add aircraft to their fleet, which will further increase based aircraft in the future.

The Market Share Forecast, on the other hand, assumed overall growth based on the regional market. Fluctuations in total based aircraft at the Airport over the historical period point toward local or regional competition that has either attracted single engine aircraft to base at Saratoga County in some years or drawn them away in other years. Such local market forces are not reasonably reflected in the forecast for the Applied FAA Aerospace Forecast methodology. Interestingly, the forecast results for the FAA Eastern Region and New York State are the same, while the National market share forecast is only slightly higher in the later portion of the planning period.

Based on the observations discussed above, the Regional Market Share Analysis methodology for New York State was selected as the preferred forecast of based aircraft for Saratoga County Airport. This forecast better projects the market forces noted above while also forecasting a modest growth in based aircraft at Saratoga County Airport.

3.7.4 Based Aircraft Fleet Mix Forecast

Using the preferred forecast of total based aircraft presented in **Table 3-9** above, the next step was to examine the types of aircraft forecasted to be based at the airport. For purposes of this analysis, the 2012 percent of total based aircraft was calculated for each aircraft category: single engine 78%, multi-engine 10%, turboprop 6%, jet 4% and helicopter 2%. These percentages were reviewed to determine if these percentages should be adjusted.

The FAA Aerospace forecasts suggest that single and multi-engine aircraft will decrease over the next ten years, and then start a slow growth while turboprop, jet and helicopters will increase, thus jets having the greatest level of growth at 3.5% annually. However, there are several factors, which suggest that the Airport could see a different growth pattern:

- The FBO is planning to become a Cessna authorized flight school. Thus, new single engine aircraft will be used for flights training. This suggests that single engine aircraft will not decrease over time as per the FAA aerospace forecasts, but will slowly increase over time as the flight school builds business.

- Multi-engine aircraft are expected to decrease, as most of these aircraft are privately owned. The flight school is expected to have one multi-engine aircraft, but this will not have a significant effect on the reduction of the privately owned aircraft. The Aerospace forecast, however, does suggest that multi-engine aircraft will see a slight growth beyond the 2022 timeframe.

- Turboprop aircraft are expected to remain steady as the FBO does not have plans to increase the number of turboprop aircraft used today.

- The FBO is replacing one of its two jets in 2016. However, the FBO is also planning on building a new hangar and as part of that development, expected to house a jet aircraft once the facility is built. As such, a new jet is expected to be based at the Airport by 2017. The mid and long term could see additional jets.

- Helicopter activity is not expected to significantly change as the current helicopter, which is based at Saratoga, is used primarily for training. Future growth, however, is not known at this time.

Based on the bulleted information above, slight adjustments were made to the percentages for multi-engine aircraft and jet aircraft. The share of multi-engine aircraft was reduced from 10% to 8% and jet was increased from 4% to 6%. The resulting fleet mix forecast is presented in **Table 3-10**.

Table 3-10 – Based Aircraft Fleet Mix Forecast

Year	SE	ME	Turbo	Jet	Helicopter	Total
2012	39	5	3	2	1	50
2017	41	4	3	3	1	52
2022	43	4	3	3	1	54
2027	44	5	3	3	1	56
2032	45	5	3	3	1	57

Source: McFarland Johnson

3.8 AIRCRAFT OPERATIONS FORECAST

The next forecasting step was to project the number of operations at Saratoga County Airport. As with the Based Aircraft Forecast, the forecast of aircraft operations for Saratoga County Airport focused on the Applied FAA Forecast Analysis Growth Rates and the Market Share Forecast analysis. The forecast analysis for each is presented in the following sections.

3.8.1 Applied FAA Aerospace Forecast Analysis

The FAA Aerospace Forecasts provide the starting point for a forecast of future demand at Saratoga County Airport. In this forecast, the FAA predicts that the general aviation hours flown will increase at 1.5% annually through the twenty-year planning period. The FAA projected that much of the growth in hours flown would be associated with turbine and helicopter activity.

Table 3-11 presents the forecast of operations by applying the 1.5% growth rate annually over the twenty-year planning period.

Table 3-11 – Forecast of General Aviation Operations, Applied FAA Aerospace Forecast

Year	Total
2012	38,550
2017	41,524
2022	44,728
2027	48,180
2032	51,898

Source: McFarland Johnson

3.8.2 Market Share Analysis Forecast

Similar to the market share analysis performed for based aircraft, a forecast of operations for Saratoga County Airport using this methodology is based on the assumption that the amount of activity at the Airport will change proportionally to that of New York State, the Eastern Region, or the Nation as a whole. Additionally, the market share analysis and projections of operations relies on the *FAA's Terminal Area Forecast Summary, Fiscal Years 2012-2040*.

For the 1990-2012 period, Saratoga County Airport accounted for the following market share percentages shown in **Table 3-12**.

Table 3-12 – Market Share Percentages for General Aviation Operations

Year	Saratoga County	National	Eastern Region	New York
1990	49,440	105,376,406 (0.047%)	13,877,281 (0.36%)	4,094,181 (1.21%)
2000	38,025	121,891,415 (0.031%)	14,488,267 (0.26%)	4,295,078 (0.89%)
2010	34,800	101,345,016 (0.034%)	11,531,856 (0.30%)	3,610,053 (0.96%)
2012	**38,500**	**99,304,384 (0.039%)**	**11,169,965 (0.35%)**	**3,624,725 (1.06%)**

Source: FAA TAF Summary, FY 2012-2040

Given the historical fluctuations, the 2012 share of Saratoga County Airport's operations for the National, Eastern Region and New York State operations were used to derive the forecast for operations. The market share was held constant and applied to the TAF's forecast of National, Eastern Region and New York Operations. The application of these market shares through the 2012-2032 forecast period yields the total general aviation operations at Saratoga County Airport shown in **Table 3-13**.

Table 3-13 – Forecast of General Aviation Operations, Market Share

Year	National	Saratoga County	Eastern Region	Saratoga County	New York	Saratoga County
2012	99,304,384	38,550	11,169,965	38,550	3,624,725	38,550
2017	101,541,051	39,418	11,395,395	39,328	3,617,226	38,470
2022	105,256,000	40,860	11,888,230	41,029	3,733,905	39,711
2027	109,044,766	42,331	12,392,400	42,769	3,851,754	40,965
2032	113,170,636	43,933	12,931,879	44,631	3,997,550	42,302

Source: FAA TAF Summary, FY 2012-2040, McFarland Johnson

3.8.3 Operations per Based Aircraft (OPBA)

As a check on the reasonableness of the Applied FAA Aerospace and Market Share Forecast analyses, the ratio of Operations per Based Aircraft (OPBA) was calculated for the historical period. The relationship of operations to based aircraft is shown in **Table 3-14**.

Table 3-14 – Operations per Based Aircraft (OPBA) (Historical)

Year	Total Operations	Based Aircraft	OPBA
1986	50,700	65	780
1995	39,357	46	856
1999	38,500	61	631
2005	36,600	60	610
2010	34,800	58	600
2012	38,550	50	771
AVERAGE	-	-	711

Source: McFarland Johnson

As shown in the table above, the historical OPBA average at Saratoga County Airport has fluctuated, ranging from 780 in 1986 to 711 in 2012 and dipping to 600 in 2010. The average during this period was 711.

A review of FAA Order 5090-3C - *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)* presents some guidelines for typical OPBA values for different types of airports. They include 250 OPBA for rural airports, 350 for busier general aviation airports and 450 for busier reliever airports, The Order goes on to note that in certain circumstances where there is a high level of itinerant operations, the OPBA value can be 750. For Saratoga, this is the case with the extensive itinerant activity during the horse racing season. As shown above in **Table 3-14**, the OPBA values have ranged in the 600 to 700 ranges.

The OPBA for the Applied FAA Aerospace and Market Share Forecast analyses were calculated for the forecast years and are shown in **Table 3-15**.

Table 3-15 – Operations per Based Aircraft (OPBA), Forecast Comparison

	Market Share Forecast			Applied FAA
		Eastern	New York	Aerospace
Year	National	Region	State	Forecast
2012	711	711	711	711
2017	758	756	740	799
2022	757	760	735	828
2027	770	778	745	876
2032	771	783	742	910
AVERAGE	765	770	747	837

Source: McFarland Johnson

As shown in the table above, the average OPBA for the Market Share forecasts remain around the 750 OPBA number while the Applied FAA Aerospace Forecast methodology is in the low 800 range.

Preferred Forecast of Aircraft Operations

Table 3-16 summarizes the two sets of operations forecasts developed for this analysis.

Table 3-16 – Summary of General Aviation Operations Forecast

	Market Share Forecast			Applied FAA
		Eastern	New York	Aerospace
Year	National	Region	State	Forecast
2012	38,550	38,550	38,550	38,550
2017	39,418	39,328	38,470	41,524
2022	40,860	41,029	39,711	44,728
2027	42,331	42,769	40,965	48,180
2032	43,933	44,631	42,302	51,898

Source: McFarland Johnson

Given the findings of the OPBA analysis, the Market Share forecasts represent forecasts that are in line with FAA OPBA guidance whereas the Applied Aerospace Forecasts exceed the OPBA guidelines. Supporting this is that there are no known major airside or landside projects proposed at the surrounding regional airports that would influence a major change in activity at Saratoga County Airport.

The recommended operations forecast selected for Saratoga County Airport is the New York Market Share Forecast. This forecast represents the more likely operational level as Saratoga County Airport. The share of operations in the region has remained steady as need in the fuel sales data presented earlier in this chapter and information provided by the Airport Manager, who indicated that competition among the regional airports has not influenced significant changes in operations.

3.8.4 TAF Comparison

FAA Order 5090.3C - *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)* provides a guideline to approve forecasts of aviation activity. The requirement states that the five-year projection be within 10% of the TAF forecast and 15% for the ten-year projection.

The TAF forecast for Saratoga County Airport is flat at 38,550 operations over the twenty-year period. As compared to FAA TAF, the operations forecast presented in **Table 3-16** represents a slight decline of -0.2% over TAF levels in the five-year period and 3.0% higher in the ten-year period. Both of which are within the FAA's accepted range of 10% above the TAF for the five-year future and 15% for the ten-year future.

Table 3-17 - Comparison to TAF Operations Forecast

Year	TAF	Preferred	% Difference
2012	38,550	-	-
2017	38,550	38,470	- 0.2%
2022	38,550	39,711	+ 3.0%
2027	38,550	40,965	+6.3%
2032	38,550	42,302	+9.7%

Source: McFarland Johnson

3.8.5 Local and Itinerant Operations Forecast

Tables 3-3 and 3-5, presented earlier, provide the best data available regarding historic trends between local and itinerant operations at Saratoga County Airport. As a percentage of total operations, itinerant flights have ranged from 43 percent and 45 percent of total operations, with a slight decrease (-0.3 percent annually). Local operations have ranged from 55 percent to 57 percent, with a corresponding increase (0.3 percent annually) over the same period.

For purposes of this forecast, the 2012 FAA 5010 local and itinerant share of 57% and 43%, respectively, was used and held constant through the planning period. It should be noted that the itinerant operations, taken from the FAA 5010 Form, include military and air taxi operations. The resulting projection for Saratoga County Airport is shown in **Table 3-18**.

Table 3-18 – Forecast of Local & Itinerant Operations

Year	Total Operations	Local Operations	Itinerant Operations
2012	38,550	21,974	16,576
2017	38,470	21,928	16,542
2022	39,711	22,635	17,076
2027	40,965	23,350	17,615
2032	42,302	24,112	18,910

Source: FAA 5010; 2012, McFarland Johnson

3.8.6 Operational Fleet Mix

Operational fleet mix breaks down the annual activity forecasts by the percentage of total operations of both based and itinerant aircraft that were generated by the various aircraft types, which is an important demand indicator. The 2012 fleet mix percentages were derived using information provided by the Airport Manager and information from Flightwise, which tracks aircraft operations. It should be noted that the Airport Manager defined the information for single and multi-engine data while the data from Flightwise identified the number of turboprop and jet aircraft. The operational breakdown is shown in **Table 3-19**.

Table 3-19 – Operational Fleet Mix Percentages

Aircraft Category	Example Aircraft	Fleet Mix Percentage
Single Engine (Piston)	Cessna 172 or Similar	93.5%
Multi-Engine (Piston)	Cessna 310, Piper Navajo	1.6%
Turboprop	Beech King Air, Pilatus PC12	1.7%
Jet	Cessna Citation, Dassault Falcon, Bombardier Learjet	2.4%
Helicopter	Robinson R-22, Sikorsky S-76	0.8%

Source: North American Flight Services (FBO), Flightwise, McFarland Johnson Analysis

The fleet mix percentages in **Table 3-18** were used to calculate the 2012 operations for each aircraft category, which were then projected into the future using the based aircraft forecasts and annual usage projections. In this way, an estimate of operational fleet mix was forecasted. The forecast of operational fleet mix for Saratoga County Airport is shown in **Table 3-20**.

Table 3-20 – 2012-2032 Operational Fleet Mix

Year	Single Engine	Multi-Engine	Turboprop	Jet	Rotor	Total
2012	36,045	617	646	930	312	38,550
2017	35,970	616	645	928	311	38,470
2022	37,131	636	665	958	321	39,711
2027	38,303	656	686	988	332	40,965
2032	39,553	677	709	1021	342	42,302

Source: McFarland Johnson

3.8.7 Peak Operations

Since many of the Airport's facility needs are related to the levels of activity during peak periods, forecasts were developed for peak month, design day and design hour. Ideally, comprehensive historical data should be analyzed to determine the peaking characteristics. The most commonly used approach in developing these activity descriptors is based on the peak month, design day, peak hour methodology.

- Peak Month Operations: This level of activity is defined as the calendar month when peak aircraft operations occur.

For Saratoga County Airport, a non-towered facility, historical data regarding peak month operations was extrapolated from fuel sales data provided by the FBO for the 2009-2012 period. Based on this fuel sales data, the peak month at the Airport has been August, which is reasonable considering this coincides with the peak of Race Season. Peak activity estimates are shown in **Table 3-21**.

Table 3-21 – Peak Month & Percentage of Annual Activity, 2009-2012

Year	Total Operations	Peak Month	Peak Month Activity	Peak Month Percentage
2009	35,160	August	12,939	36.8%
2010	34,800	August	10,370	29.8%
2011	36,050	August	11,716	32.5%
2012	37,300	August	12,384	33.2%
AVERAGE	-	-	-	33.1%

Source: McFarland Johnson; Total Operations Extrapolated from Historical Operations Data

- Design Day Operations: This level of operations is defined as being ten percent busier than the average day within the peak month. This indicator is developed by dividing peak month operations by either 30 or 31 and then multiplying by 1.1. A 31-day peak month was assumed for design day operations at Saratoga County Airport, as per **Table 3-21**, the peak month was August.

- Peak Hour Operations: This level of operations is defined as the peak hour within the design day. Typically, these operations will range between 8 and 15 percent of the design day operations for airports with the activity profile similar to Saratoga County Airport. Because of the importance of having adequate facilities to serve peak hour demand, while not overbuilding, the midpoint of 11.5 percent was used to estimate peak hour operations.

Table 3-22 presents the forecasts of peak month, design day and peak hour operations based upon the above methodology. These forecasts can then be applied to determine the level of facility development necessary to maintain a reasonable level of service at Saratoga County Airport.

Table 3-22 – Forecast of Peak Activity

Year	Total Operations	Peak Month	Peak Day	Peak Hour
2012	38,550	12,747	452	52
2017	38,470	12,733	451	52
2022	39,711	13,144	466	54
2027	40,965	13,559	481	55
2032	42,302	14,002	496	57

Source: McFarland Johnson

3.8.8 Instrument Operations and Approaches

An instrument operation occurs when an aircraft departs from, or arrives at, an airport in accordance with an Instrument Flight Rules (IFR) flight plan, or the flight obtains IFR separation from terminal or air route traffic control centers. Instrument operations require a special instrument pilot rating, and most of the activity is associated with business flights or aircraft that fly at altitudes where IFR flight plans are required. Student training is also a source of instrument approaches during instrument flight training. Instrument approach counts can be underestimated as many instrument flight plans are terminated before the aircraft reaches the airport. This is often done when weather conditions allow the pilots to visually see the airport before they have to initiate the instrument approach. These cancellations do not show up in the annual count, which accounts for the large difference in instrument approach and operation counts at an airport.

Table 3-23 provides extrapolated historical data on the number of annual instrument approaches and itinerant operations at Saratoga County Airport. The relationship between instrument approaches and itinerant activity are typically most relevant when forecasting instrument operations at general aviation airports since the bulk of instrument flying is conducted during itinerant flights.

Table 3-23 – Historic Instrument Approaches & Operations

Year	Itinerant Operations	Instrument Approaches	Instrument Approaches % of Itinerant Operations
2008	16,025	1,296	8.1%
2009	15,862	1,416	8.9%
2010	15,700	1,481	9.4%
2011	16,002	1,162	7.3%
2012	16,550	1,064	6.5%

Source: FAA Air Traffic Activity Systems (ATADS); McFarland Johnson

As shown in the table above, instrument approach data for Saratoga County Airport indicates a steady decline during the 2008-2012 period, representing a decrease of approximately 5 percent annually.

While historic instrument approaches at Saratoga County Airport show a downward trend, fuel sales data provided by the FBO indicates that jet aircraft activity remains steady. Instrument approaches are conducted primarily by itinerant flights, and for the purposes of forecasting, the 2012 percentage of instrument operations per itinerant operation (6.5 percent) was used and held constant through the 2012-2032 forecast period. **Table 3-24** presents the resulting forecast.

Table 3-24 – Forecast of Instrument Approaches

Year	Itinerant Operations	Instrument Approaches
2012	16,550	1,064
2017	16,542	1,075
2022	17,076	1,109
2027	17,615	1,144
2032	18,910	1,229

Source: McFarland Johnson

3.9 SUMMARY OF FORECASTS

The recommended forecast for Based Aircraft and Operations was the New York State Market Share forecast. **Table 3-25** summarizes the key forecasts developed for the recommended Based Aircraft and Operations forecasts for Saratoga County Airport.

Table 3-25 – Summary of Forecasts

Forecast	2012	2017	2022	2027	2032
Based Aircraft	50	52	54	55	57
Based Aircraft Fleet Mix					
Single Engine	39	41	43	44	45
Multi-Engine	5	4	4	5	5
Turboprop	3	3	3	3	3
Jet	2	3	3	3	3
Helicopter	1	1	1	1	1
Aircraft Operations	38,550	38,470	39,711	40,965	42,302
Aircraft Operations Fleet Mix					
Single Engine	36,045	35,970	37,131	38,303	39,553
Multi-Engine	617	616	636	656	677
Turboprop	646	645	665	686	709
Jet	930	928	958	988	1021
Helicopter	312	311	321	332	342
Aircraft Operations Split					
Local	21,974	21,928	22,635	23,350	24,112
Itinerant	16,576	16,542	17,076	17,615	18,910

Source: McFarland Johnson

Chapter 4
Environmental Overview

4.0. INTRODUCTION

The operation, maintenance, and development at an airport has the potential to affect its neighbors and the natural environment and therefore is a major concern in the airport planning and development process. A balance must be achieved between the orderly maintenance and improvement of an airport and the significance of the effects these activities can have upon the environment and community. This section presents the general environmental conditions that exist on and adjacent to Saratoga County Airport. This data serves as a basis to evaluate future environmental considerations for existing and new facilities identified as part of the Facility Requirements Analysis and Alternatives Analysis.

4.1. ENVIRONMENTAL OVERVIEW ANALYSIS

The National Environmental Policy Act (NEPA) of 1969 requires all Federal agencies to consider the potential impacts their projects and policies may have on the environment. The Federal Aviation Administration (FAA) Order 1050.1E, *Environmental Impacts: Policies and Procedures for Implementing NEPA,* in conjunction with FAA Order 5050.4B *The National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* establishes the policies and procedures for compliance with NEPA regulations for all Federally funded airport development projects. These orders identify specific environmental categories that must be considered in relation to a proposed action, in order to determine whether a significant impact would result from the proposed action. If so, appropriate measures to take to avoid or minimize an impact's effect would be determined. These categories must be addressed prior to implementation of a Federally funded airport project. The following is a list of environmental concerns identified in the handbook that are commonly associated with development projects:

- Air Quality
- Biotic Resources
- Coastal Resources
- Compatible Land Use
- Construction Impacts
- Environmental Justice
- Farmlands
- Federal and State Listed Species
- Floodplains
- Hazardous Materials
- Historic and Archeological
- Light Emissions and Visual Effects
- Natural Resources and Energy
- Noise
- Section 4(f) Resources
- Socioeconomic Impacts
- Solid Waste
- Water Quality
- Wetlands
- Wild and Scenic Rivers
- Cumulative Impacts

The objective of this Environmental Overview (EO) chapter is to identify environmental resources or other constraints to airport development at the Saratoga County Airport. Early identification of these resources and constraints is important to the formulation of reasonable alternatives to an activity or project that would eliminate or avoid a project's impact on a particular resource. The potential for future projects to affect certain identified environmental impact categories was based on information obtained from State and Federal resources and information that was gathered during on-site investigations conducted as part of the MPU process for the Saratoga County Airport. For the purposes of this EO, only Airport property has been evaluated.

4.2. AIR QUALITY

Increases in vehicle exhaust emissions, caused by development-related increases in aircraft activity and automobile traffic may affect air quality. However, the air quality impact attributable to potential airport development is expected to be negligible at the Saratoga County Airport.

Under Section 176(c) of the Clean Air Amendments of 1977, the FAA is responsible for ensuring that Federal airport actions conform to the State Implementation Plan (SIP), which protects against area-wide air pollution impacts. In areas that do not have indirect source review requirements for airports, such as Upstate New York, air quality analysis is not required for airport location determinations, runway development, and airside and/or landside improvements that increase capacity if a commercial service airport has less than 1.3 million passengers, and 180,000 annual general aviation operations. Based on the forecasts prepared for the MPU, activity levels are not expected to exceed those thresholds. A detailed air quality assessment would not be required for proposed improvements.

Saratoga County Airport is currently located in a marginal nonattainment area for 8-hour ozone under the 1997 attainment standards. Ozone is one of the six priority pollutants classified under the National Ambient Air Quality Standards (NAAQS). Since Saratoga County Airport is located in a nonattainment area, development projects are subject to the EPA's general conformity regulations. Under general conformity regulations, an air quality analysis can be necessary depending on the nature of the proposed improvement and activity levels at the airport. Forecast activity levels are not expected to exceed the 180,000 annual general aviation operations that would require a detailed air quality study within the 20 year planning horizon for this Master Plan.

4.3. BIOTIC RESOURCES

Biotic resources refer to the various types of flora (plants) and fauna (fish, birds, reptiles, amphibians, mammals, etc.) in a particular area. It also includes the habitat supporting the various flora and fauna including rivers, lakes, wetlands, forests, and other ecological communities. Airport projects can affect these ecological communities and thereby affect vegetation and wildlife populations.

The majority of the habitat at the Saratoga County Airport consists of maintained grassland and wet meadow, interspersed with paved airfield surfaces. All habitats identified at the Saratoga County Airport are common and secure within New York State. However, there are habitats located at the Airport that are designated as "critical habitats" for State and/or Federally-listed endangered species, or species of special concern. Further detail of State and Federally-listed threatened or endangered species is discussed in Section 4.9. Furthermore, specific details of the Karner Blue Butterfly Management Plan can be found in Section 4.9. Further information regarding State and Federally regulated waterways and wetlands is presented in Sections 4.19 and 4.20.

4.4. COASTAL BARRIERS AND COASTAL ZONE MANAGEMENT

The Airport is not located in a Coastal Zone Management Area. Coastal Zone Management regulations will not apply to any proposed improvements at the Saratoga County Airport.

4.5. COMPATIBLE LAND USE

When considering improvement projects that meet airport development goals, it is important early in the planning process to identify potential impacts to existing land uses on airport property and in the surrounding area, and to determine how potential airport projects will affect future land use and development patterns. If necessary, this will enable the plan to incorporate measures into the future design and layout of airport developments that will avoid or minimize land use conflicts as well as improve existing conflicts.

Land use around the Airport varies, but is primarily surrounded by clusters of residential areas and some public use areas as shown on **Figure 2-10**, *Town of Milton Land Use Map*. Land use at the Saratoga County Airport is regulated by the Town of Milton Planning Board. The Airport is zoned as an "Airport District", and the land surrounding the Airport is mostly zoned as "R1 Residential", except for a small section south of the Airport zoned as "Mixed Use". The "R1 Residential Zone" is primarily residential property, with a small amount of commercial, public use, and vacant property. The "Mixed Use" land currently contains a mix of vacant land, commercial, and residential properties. Immediately surrounding the Airport are some forested areas on the east and west sides of the property, along Stone Church Road and Route 47. Land use along Route 43, or Geyser Road, shows a mix of residential, recreational, and commercial land uses. In addition to the primary airport surroundings, most of outlying areas are residential.

Land uses that are considered more susceptible to airport development include, but are not limited to, residential areas, schools, religious institutions, hospitals, and public places including recreational areas and parks. Potential impacts to these land uses result from exposure to disruption and safety hazards. Certain land use impacts result from exposure to elevated noise levels generated by aircraft and automobile traffic, as well as community disruption and safety hazards. Additionally, some land uses can negatively impact the operation of the Airport and are also considered incompatible with airport activity. These land uses could include, but are not limited to, recreational areas containing wildlife habitat that attract birds and other animals and commercial and industrial facilities that generate high-voltage electricity, utilize bright lights, or create a significant amount of smoke or steam.

FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, identifies several land uses that are compatible with an airport's RPZ. In general, the RPZ should be clear of places of public assembly, including residences, schools, religious institutions, hospitals, and industrial buildings, recreational areas, transportation facilities (including roads), fuel and hazardous materials storage facilities, wastewater treatment facilities, and above-ground utility infrastructure. Acceptable land uses within the RPZ include agriculture meeting the minimum specified buffers, irrigation channels that do not attract birds, airport service roads, underground facilities, and unstaffed navigational aids and facilities. Further revised guidance on acceptable land use within the RPZ is anticipated in late 2014. In general, it is expected that the FAA will place more limitations on land use in the RPZ. Various land uses including public roads, residences, and commercial properties are present within the RPZ's at Saratoga County Airport.

4.6. CONSTRUCTION IMPACTS

Construction activities may produce temporary environmental impacts such as noise, dust, soil erosion, and negative effects on water quality. Noise impacts will be mitigated to the extent possible through the use of Best Management Practices (BMPs), such as requiring the use of properly mufflerized equipment or the implementation of work hour limitations if necessary. Dust, soil erosion, and water quality impacts are mitigated by implementation of an Erosion of Sediment Control Plan (ESCP) containing BMPs inclusive of site specific temporary and permanent measures to limit erosion and off-site migration of materials. BMPs that may be incorporated include, but are not limited to, grass-lined swales, dikes, berms, temporary sediment basins, fiber mats, and re-vegetation during construction as appropriate. When implemented properly, BMPs are generally sufficient to mitigate potential construction impacts.

4.7. ENVIRONMENTAL JUSTICE

An environmental justice analysis considers the potential of Federal actions, including those involving Federally obligated airports, to cause a disproportionate and adverse effect upon low-income or minority populations. Physically, Saratoga County Airport is located within the Town of Milton, with the City of Saratoga Springs approximately one half mile to the east and the Village of Ballston Spa approximately two miles south of the Airport. However, any improvements made to the Saratoga County Airport will not have any impacts outside of the Town of Milton. For this EO, only the Town of Milton will be considered for the discussion of potential impacts that improvements to the Airport could have on the community.

As shown on **Table 4-1**, the 2010 U.S. Census recorded the Town of Milton as having a total population of 3,395, with 6.7% below the poverty threshold. The percentage of residents who classify themselves as white is 97.7%, which is 21.8% above the national average, as well as 3.5% above the percentage for Saratoga County. However, when considering median household income, the median in Milton is $66,806, which is above the national average and slightly below the median for Saratoga County, which is $67,186.

The New York State Department of Environmental Conservation (NYSDEC) Environmental Justice Preliminary Mapping showing the locations of such minority population was referenced on August 5, 2013 (**Appendix 4-A**). The mapping did not identify any areas of concern in Milton for populations that are potentially sensitive to environmental justice areas. However, the mapping did identify a potentially sensitive area in the City of Saratoga Springs. This neighborhood, however, is not adjacent or within the nearby vicinity of the Saratoga County Airport.

Due to the location of the Airport, and the layout of the current facilities at Saratoga County Airport in relation to the potential environmental justice areas identified from the NYSDEC mapping, disproportionately high and adverse human health or environmental effects are not anticipated to occur among minority or low-income populations as a result of potential airport development.

Table 4-1 - Demographic Profile Surrounding the Saratoga County Airport (2010)

Census Category	National Average	Saratoga County	Town of Milton
Total Population	N/A	222,133	3,395
White Population	77.9%	94.4%	97.7%
Minority Population	22.1%	5.6%	2.3%
Population Under Age 5	6.4%	12,140	6.1%
Population Age 65 & Older	13.7%	13.7%	14.5%
Individuals Below Poverty Level	14.3%	6.5%	6.7%
Median Household Income	$52,762	$67,186	$66,806
Non-English Speaking Households	20.3%	3.1%	3.1%

Source: U.S. Census American Factfinder, 2010 Census

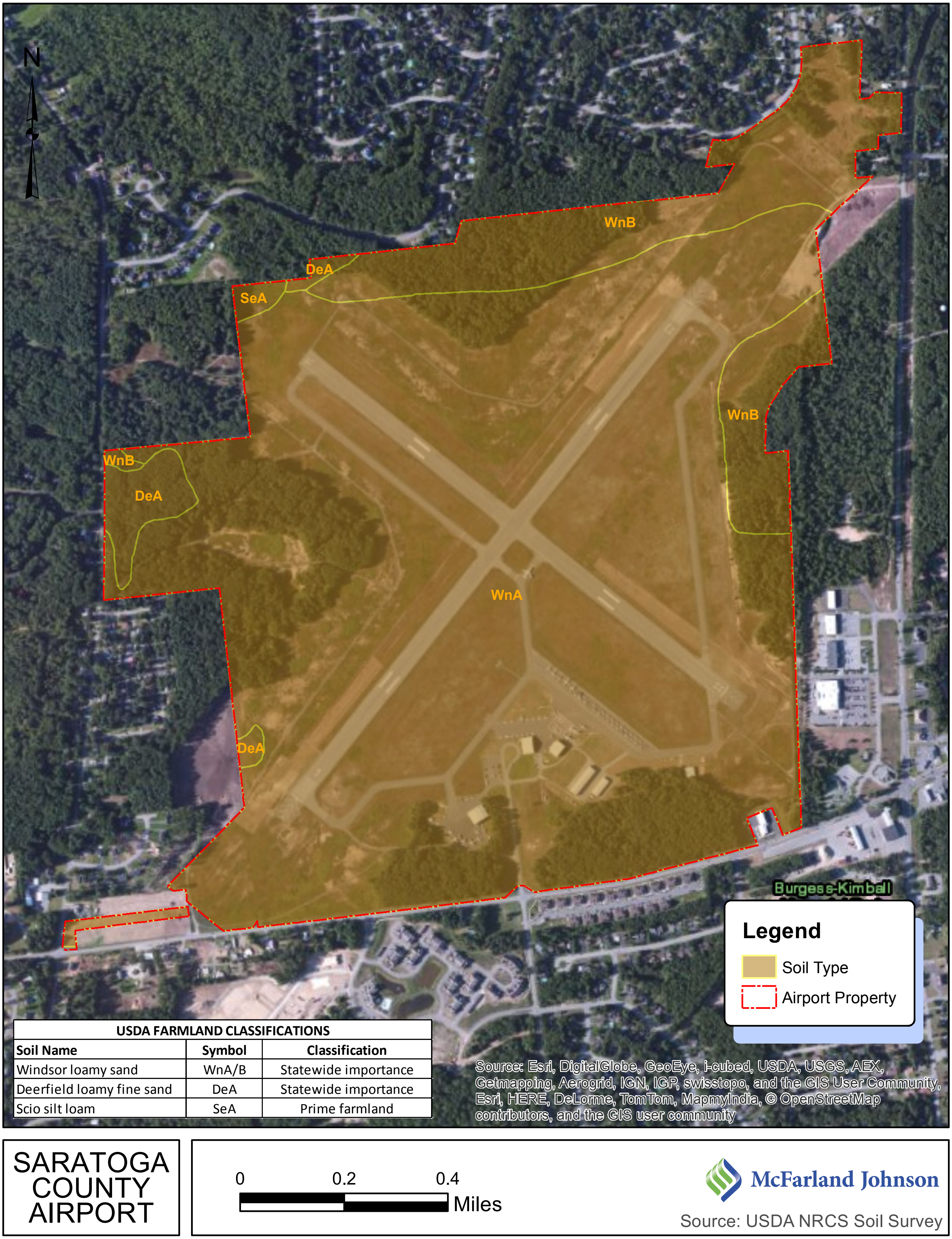
4.8. FARMLANDS

The Farmland Protection Policy Act (FPPA), 7 CFR Part 658, requires the consideration of project alternatives that will minimize impacts to such soils. According to the U.S. Natural Resource Conservation Service (NRCS) *Web Soil Survey* (see USDA Soil Report in **Appendix 4-B**, accessed on August 8, 2013), approximately 0.3% of the property encompassing the Saratoga County Airport is classified as prime farmland soils, and 99.6% is classified as farmland soils of statewide importance, as shown in **Figure 4-1**, Soil Survey Map. FPPA does not apply to land already committed to “urban development or water storage” (i.e. airport developed areas), regardless of the NRCS designation. Currently, the Airport property is not utilized for any active agricultural production, but is dedicated to Airport utilization. Therefore, Airport property is not subject to FPPA regulations. In addition, the NRCS notes in the “Farmland Protection Policy Act Manual” that lands identified by the United States Census Bureau as an urbanized area are not subject to the provision of FPPA. According to the 2010 Census, the area surrounding the Saratoga County Airport, including the Airport property, is within a designated urbanized area. Should future developments occur in that area, they would not be subject to the FPPA requirements.

Article 25-AA of the New York State Agriculture and Markets Law, Section 305(4), protects farmlands by requiring a Notice Of Intent and public review procedure for acquisition of more than one acre from any actively operated farm in an Agricultural District or a cumulative total of more than ten acres in any Agricultural District. According to the New York State Department of Agriculture and Markets, none of the Saratoga County Airport property is located within an Agricultural District. If future development is proposed as part of this MPU to include acquisition of land within an agricultural district, a Notice Of Intent will be required for project funding through the FAA. **Figure 4-2** depicts Saratoga County Agricultural Districts in relation to the Saratoga County Airport.

SOIL COMPOSITION

FIGURE 4-1



USDA FARMLAND CLASSIFICATIONS

Soil Name	Symbol	Classification
Windsor loamy sand	WnA/B	Statewide importance
Deerfield loamy fine sand	DeA	Statewide importance
Scio silt loam	SeA	Prime farmland

SARATOGA COUNTY AIRPORT

McFarland Johnson

Source: USDA NRCS Soil Survey

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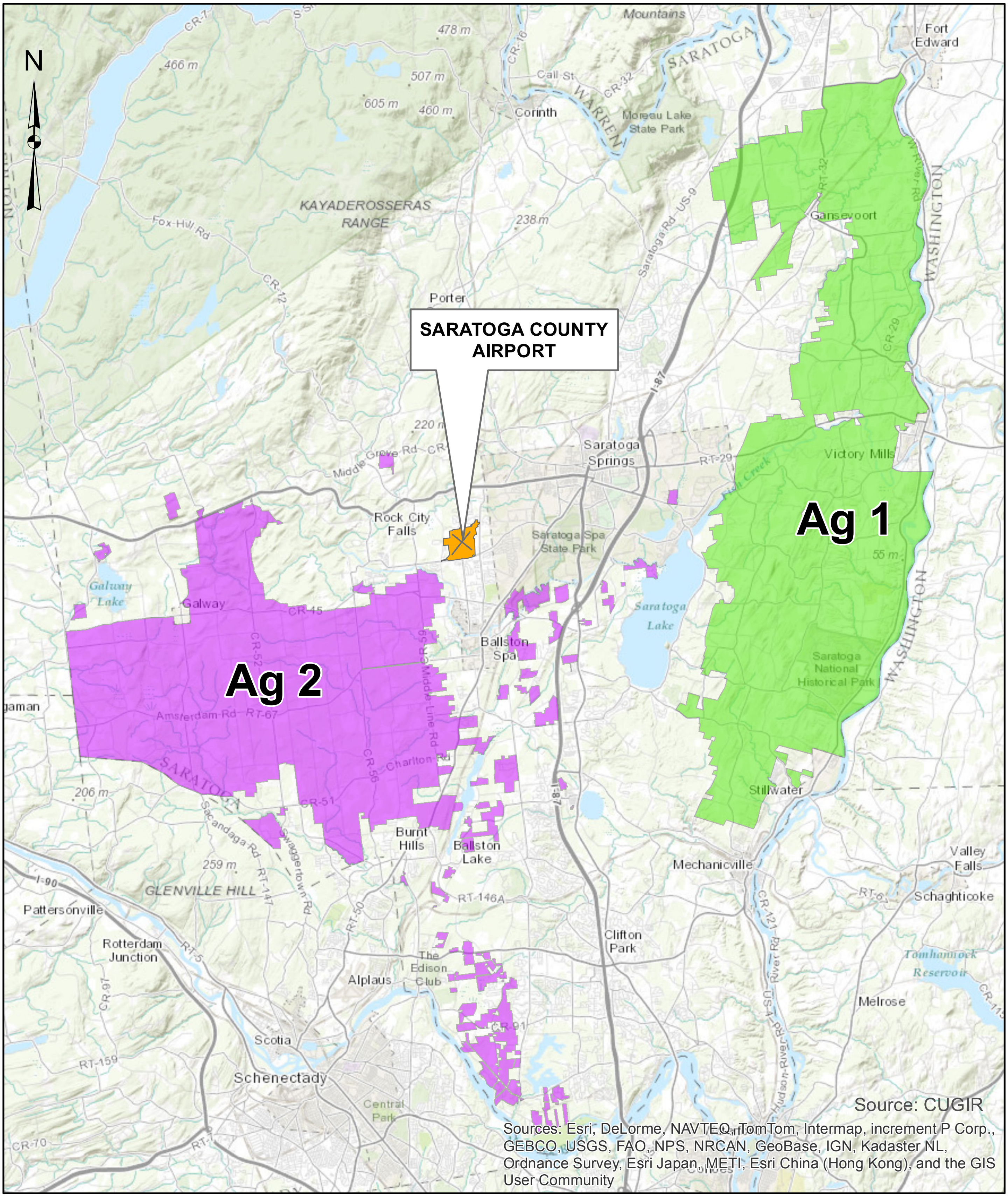
AGRICULTURAL DISTRICTS

FIGURE 4-2



SARATOGA COUNTY AIRPORT

0 5 10 Miles

McFarland Johnson

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4.9. FEDERAL & STATE LISTED THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) directs all Federal agencies to work to conserve endangered and threatened species and to use their authorities to further the purposes of the ESA. Section 7 of the ESA, titled "Interagency Cooperation," is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species. Endangered species are those, which are in danger of extinction throughout their range or a significant portion of its range. Threatened species are those, which are likely to become endangered within the foreseeable future throughout all or a significant portion of their range. Candidate species are species for which the U.S. Fish & Wildlife Service (USFWS) has sufficient information on the biological vulnerability and threats to support issuance of a proposal list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Candidate species do not receive substantive or procedural protection under the ESA. However, USFWS does encourage Federal agencies and other appropriate parties to consider these species in the planning process.

New York State regulation 6 NYCRR Part 182 prohibits the take or engagement in any activity that is likely to result in a take of any State-listed threatened or endangered species. Species listed as endangered in New York are native species in imminent danger of extirpation or extinction in the State, or are species listed as endangered by the United States Department of the Interior. Species listed as threatened in New York are native species that are likely to become an endangered species within the foreseeable future in New York. Species listed as species of special concern are native species that are at risk of becoming threatened in New York. Fauna classified as species of special concern do not qualify as either endangered or threatened, but have been determined by the NYSDEC to require some measure of protection to ensure that the species does not become threatened in the future. Species of special concern are considered "protected wildlife" under Article 11 of the Environmental Conservation Law (ECL).

Consultations with the USFWS and the NYSDEC were initiated to determine the existence of any recorded observations of Federal or State listed threatened or endangered flora or fauna in the vicinity of Saratoga County Airport.

A review of the USFWS Information, Planning and Consultation (IPaC) system was conducted on July 30, 2013. The USFWS database indicated that the Federally-listed endangered Karner blue butterfly (*Lycaeides melissa samuelis)* is known to exist at the Airport. The Official Species List from the USFWS is included in **Appendix 4-A**.

A response from the NYSDEC, dated August 13, 2013, identified several State protected species and a species of special concern that are known to occur at the Airport (**Appendix 4-A**). The table below identifies the species noted by the NYSDEC.

Table 4-2 - NYSDEC Threatened & Endangered Species in the Vicinity of 5B2

Common Name	Scientific Name	State Status	Habitat on Airport
Frosted elfin butterfly	*Callophrys irus*	Threatened	Yes
Karner blue butterfly	Lycaeides melissa samuelis	Endangered	Yes
Mottled duskywing	*Erynnis martialis*	Special Concern	Yes

Source: NYSDEC Correspondence dated August 19, 2013

All of the aforementioned rare species primarily rely upon the maintained grasslands at the Airport. These grasslands also support an abundance of wild blue lupine (*Lupinus perrens*), an herbaceous perennial plant that serves as the sole larval stage food source of the State and Federally-listed Karner blue butterfly. Frosted elfin butterfly larvae are also known to feed heavily upon wild blue lupine, and therefore occupy similar habitats as the Karner blue butterfly. The mottled duskywing's preferred food plant is New Jersey tea (*Ceanothus americanus*), a small deciduous shrub that is present throughout the airfield.

Another species of butterfly not reported by the NYSDEC, but that has the potential to be present at the Airport, is the Persius duskywing butterfly (*Erynnis persius*). The Persius duskywing is State listed endangered species that feeds heavily upon wild blue lupine, and is closely related to the mottled duskywing. The identification of the two species of duskywing butterflies requires microscopic dissection of the male genitalia to confirm species identity, and to date, such studies have not been undertaken at the Airport.

In addition, during site visits conducted by McFarland Johnson two bird species that are State listed species of special concern were observed. The species included the horned lark (*Eremophila alpestris*) and vesper sparrow (*Pooecetes gramineus*). These species rely upon the Airport's grasslands for nesting and foraging habitat.

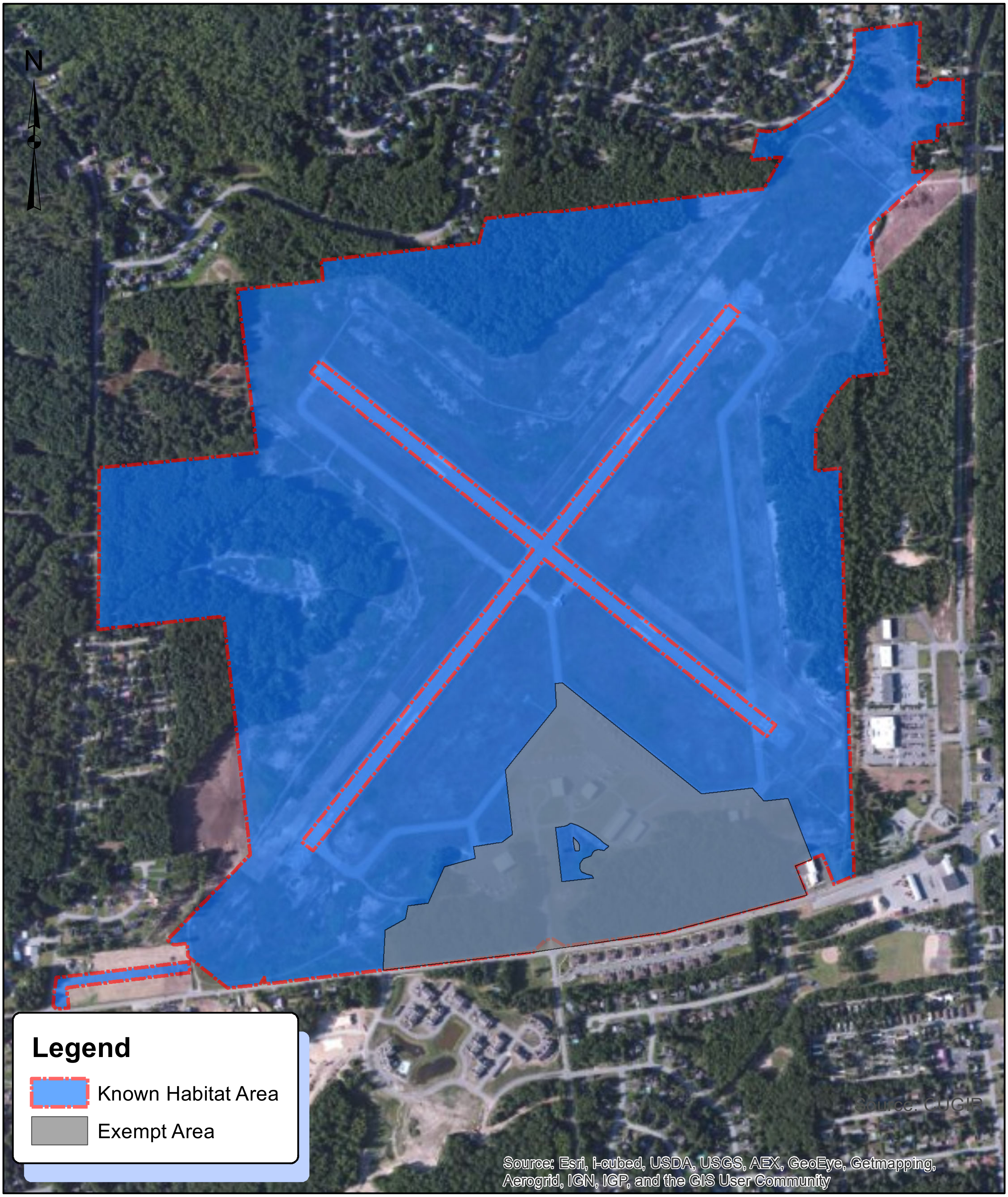
The distribution and density of wild blue lupine has been dramatically increased at the Airport by seeding efforts by the NYSDEC for habitat improvements, and by the Airport as part of mitigation efforts required by the NYSDEC and USFWS for previous impacts to the grassland habitat at the Airport. In addition, the Airport has been operating under the conditions of a non-executed Draft Management Agreement (DMA) with the NYSDEC, which restricts mowing and other operational activities at the Airport. A copy of this agreement has been included in **Appendix 4-C**.

The focus of the DMA is on the Karner blue and frosted elfin butterflies. Karner blue and frosted elfin butterflies are considered "umbrella species", in that providing for their habitat protection; protection is provided for several other rare species and their habitat. The DMA separates the Airport property into two areas, "Known Habitat Area" and "Exempt Area" (**Figure 4-3**). The Known Habitat Area is subject to the management restrictions outlined in the DMA, while the Exempt Area is not. The most significant land use restrictions imposed within the Known Habitat Area include no motor vehicle traffic off paved or gravel surfaces and a seasonal mowing restriction from January 1 to October 15. Any Airport development project located within the Known Habitat Area will require consultation with the NYSDEC and USFWS. Projects that are found to have an effect on any State listed species will require an Incidental Take Permit in accordance with 6 NYCRR Part 182.

The USFWS considers all open grasslands, non-manicured lawn areas, non-forested areas, and non-paved areas at the Airport as potential habitat for the Federally-listed Karner blue butterfly. Any project that has the potential to affect Karner blue butterfly habitat will require modification of the latest Biological Opinion (BO) issued by the USFWS, dated July 22, 2011. A copy of the USFWS BO has been included in **Appendix 4-D**.

HABITAT MANAGEMENT AREA

FIGURE 4-3



SARATOGA COUNTY AIRPORT

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McFarland Johnson

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Some of the Karner blue butterfly habitat management and enhancement activities may be inadvertently creating or enhancing a wildlife attractant. Wild turkeys, deer, coyote, and other small mammals as well as numerous avian species have been observed on the airfield. Accordingly, Saratoga County obtained FAA funding to conduct a Wildlife Hazard Assessment (WHA) and is currently preparing a Wildlife Hazard Management Plan (WHMP) for the Airport. The WHA will evaluate the wildlife species present at the Airport, features on and near the Airport that attract wildlife, and provide descriptions of potential wildlife hazards to air carrier operations, as well as recommend actions for reducing the identified wildlife hazards. Based on the information collected in the WHA, a WHMP would be developed for the Airport to reduce potential wildlife hazards. Elements of the WHMP include wildlife control techniques, wildlife population management, habitat modification and land use changes. Any wildlife hazard management activity that has the potential to affect a State or Federally listed species will also require consultation with the NYSDEC and USFWS.

The FAA Office of Safety and Standards, Certalert No. 06-07- *Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State-Listed Threatened and Endangered Species and Species of Special Concern on Airports,* states that: “Airport operators should exercise great caution in adopting new management techniques; new techniques may increase wildlife hazards and be inconsistent with safe airport operations”. Certalert No. 06-07 further states that: “Adopting such techniques could place them in violation of their obligations and subject to an FAA enforcement action and possible civil penalties under 49 USC §44706, as implemented by 14 CFR §139.337.

Given the potential for conflicts between Airport operations, development, and wildlife hazard management activities, and State and Federally listed threatened and endangered species, Saratoga County is currently in discussions with the NYSDEC and USFWS regarding the development of a Habitat Conservation Plan (HCP) for the Airport. The HCP would be developed to consider all anticipated future actions at the Airport, including wildlife hazard management activities, that have the potential to affect State or Federally-listed threatened and endangered species that are known to occur at the Airport. In addition, any Airport project that has the potential to affect wildlife populations or habitat at or in the immediate vicinity of the Airport, including those recommended or requested by the NYSDEC or USFWS should be thoroughly reviewed by a FAA Qualified Airport Wildlife Biologist or a USDA Wildlife Services’ Airport Biologist prior to prior to taking any action.

4.10. FLOODPLAINS

Floodplains are lands associated with bodies of water (lakes, rivers, and wetlands) that are likely to become inundated during a flooding event. The area or magnitude of a floodplain will vary according to the magnitude of the storm events as determined by the storm interval occurrences. For example, a five-year storm has a magnitude that can be expected once every five years. Typically, the Federal Emergency Management Agency (FEMA) utilizes a 100-year storm interval for flood preparation. Flooding related to a 100-year storm statistically has a one percent chance of occurring during any given year. The 100-year floodplain has been selected as having special significance for floodplain management because it is the maximum level of flooding that can reasonably be expected and planned for during a project’s expected life span.

A Flood Insurance Study (FIS) for all jurisdictions within Saratoga County, including the Town of Milton, was published by FEMA on August 16, 1995. According to the Flood Insurance Rate Map (FIRM) panel depicting the Saratoga County Airport (FIRM 36091C0436); also published

August 16, 1995, all of the Airport property is classified as Zone X. The *Definitions of FEMA Flood Zone Designations* website (http://cugirdata.mannlib.cornell.edu/, accessed August 6, 2013) states that Zone X is an "Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level." The Airport is not located in a FEMA floodplain area.

4.11. HAZARDOUS MATERIALS

A hazardous or contaminated environmental condition is the presence or likely presence of any hazardous substances or petroleum products (including products currently in compliance with applicable regulations) on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property.

The preliminary hazardous waste and contaminated materials screening conducted for the Airport included a review of available historical topographical maps, aerial photographs, and Environmental Protection Agency (EPA) and NYSDEC environmental databases files. In addition, a visual inspection was conducted during a site walkover that was conducted on April 25, 2013.

Review of the available historical USGS topographical maps (1902, 1947, and 1967) and aerial photographs of the site (1960, 1978, 2004, 2013) indicated that the area surrounding the Airport has historically largely consisted of flat, residential lands with small clusters of residential dwellings and some commercial properties. The available USGS topographical maps and aerial photographs did not indicate the presence of any specific structures, buildings, or activities that had the potential to create environmental concerns within the vicinity of the project area.

Review of the NYSDEC Spills Incidents (1978-Current) and Environmental Site Remediation Databases indicated two incidents of spills in the immediate vicinity of the. According to the NYSDEC Spills Incidents Database, Spill #0701537, a waste oil/used oil spill affected soil at the Saratoga County Airport on May 7, 2007, and the case was closed on July 2, 2007. Another spill, Spill #0711811, a jet fuel spill occurred on February 8, 2008, affected the soil at the Saratoga County Airport. However, this spill case was closed on December 28, 2010.

The Airport does store and dispense fuel from aboveground storage tanks located at the facility, however the NYSDEC Bulk Storage Database does not provide information on the storage capacity and fuel types at the Airport in accordance with New York Public Officers Law §87.2(f) and §89.5(a)(1)(1-a), "Critical Infrastructure". Further information regarding the Airport's fuel storage capacity and fuel types can be found in Section 2.4.4; however it was noted during the site walkover that there was no visual indications of any current or recent releases of petroleum products stored at the Airport.

The EPA Enviromapper Database System did not indicate any sites located within the immediate vicinity of the Airport that had the potential to have previously released or have the threat of a release of any hazardous substances or petroleum products into structures within the project area or into the ground, ground water, or surface water within the project area.

The site inspection conducted on April 25, 2013 did not reveal any visual conditions that would be cause for environmental concern.

No suspected hazardous wastes or contaminated materials were identified within or adjacent to the project area during the course of the preliminary hazardous waste and contaminated materials screening of the project area. Although the potential risk for involvement with documented or undocumented inactive hazardous waste or contaminated materials is considered to be unlikely, a more thorough hazardous waste and contaminated materials review is recommended prior to commencing with any projects at the Saratoga County Airport.

4.12. HISTORICAL AND ARCHEOLOGICAL

According to 36 CFR Part 800, a historic property is “any prehistoric or historic district, site, building, structure, or object included in, or eligible for, inclusion in the National Register of Historic Places (NHRP).” The National Historic Preservation Act (NHPA) Section 106 requires that Federal agencies such as the FAA consider the effects of their actions on historic properties via consultation with the State Historic Preservation Office (SHPO). The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) on-line mapping application, accessed on July 31, 2013, shows no archeologically sensitive areas on or adjacent to Airport property. The potential of an archeological site on or adjacent to Airport property may have no effect on development alternatives. As required by NEPA, specific project documentation will be provided to SHPO for evaluation prior to any ground disturbance.

Correspondence dated August 21, 2013 from the OPRHP states that this project will have no effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places (**Appendix 4-A**). When a specific airport development is proposed, the required documentation, including detailed descriptions and pictures of structures to be affected, will be sent to the OPRHP for a determination of that project’s potential effect on historic or cultural resources as part of future studies to comply with NEPA.

4.13. LIGHT EMISSIONS AND VISUAL EFFECTS

Airport improvements may include the installation of additional lighting or change the location of lighting on airport property to accommodate the construction of the infrastructure improvement. These installations can alter the existing lighting conditions both on-airport and in the vicinity of the Airport. Light emissions are typically one of the greatest concerns for residents in neighborhoods, as well as users of other incompatible land uses. The potential for light emissions and visual effects will be evaluated in a subsequent NEPA document after specific Airport development proposals have been identified.

4.14. NATURAL RESOURCES AND ENERGY

Use of energy supplies and natural resources is closely linked to construction of airport improvements and operations. In general, natural resources and energy supply are readily available in Saratoga County.

4.15. NOISE

Aircraft noise emissions, inherent to the operation of an airport, can adversely impact land use compatibility between an airport and its surrounding properties, particularly in the presence of noise-sensitive receptors. Religious institutions, hospitals, schools, amphitheaters, and residential districts are receptors that are sensitive to elevated noise levels. Recreational areas and some commercial uses are moderately sensitive to elevated noise levels. Therefore, it is important to predict any change in noise levels associated with airport development, to determine the significance, if any, of the impact to noise sensitive land-uses. Subsequent abatement measures can be incorporated into airport development plans to avoid and/or minimize the impacts.

In order to evaluate the noise impacts of aviation activity on surrounding areas, the FAA has developed the Integrated Noise Model (INM). This computer model calculates cumulative aircraft noise at ground level expressed in decibels (dB), using a Day-Night Average Level (DNL). The DNL is the average daily noise level, with an additional 10 dB weight for nighttime aircraft operations. Decibels are measured in A-weighted units, which approximate the range of human hearing. The FAA considers the 65 dB DNL level to be the threshold of impact for noise-sensitive areas. In order to help put the 65 dB DNL into perspective, the typical ambient noise level in suburban residential areas is 55 dB DNL. **Table 4-3** shows the typical noise levels associated with specific areas commonly encountered every day. **Table 4-4** shows the Day-Night average noise levels (DNL, dB) that are used by the FAA to evaluate land use compatibility with respect to airports.

Table 4-3 - Typical Outdoor Day-Night Noise Levels

DNL Day-Night Noise Level (dB)	Locations
50 dB	Small town residential area or quiet suburban area
55 dB	Suburban residential area
60 dB	Urban residential
65 dB	Noisy urban residential area
70 dB	Very noisy urban residential area
80 dB	City Noise (Downtown of a Major Metropolitan Area)
88 dB	3rd Floor Apartment in a Major City Next to a Freeway

Source: "Noise Fundamentals Training Document, Highway Noise Fundamentals", U.S. Dept. of Transp, Federal Highway Admin.

Table 4-4 - Land Use Compatibility

Land Use	Yearly Day-Night Average Noise Level (DNL, dB) Compatible Below 65	Compatible Between 65 and 70	Compatible Between 70 and 75
Residential	YES	NO	NO
Mobile Home Parks	YES	NO	NO
Transient Lodgings	YES	NO	NO
Schools	YES	NO	NO
Hospitals/Nursing Homes	YES	YES	YES
Churches/Auditoriums	YES	YES	YES
Governmental Services	YES	YES	YES
Transportation/Parking	YES	YES	YES
Offices/Business/Professional	YES	YES	YES
Wholesale and Retails	YES	YES	YES
Utilities	YES	YES	YES
Communications	YES	YES	YES
Manufacturing	YES	YES	YES
Photographic/Optical	YES	YES	YES
Agriculture and Forestry	YES	YES	YES
Livestock Farming	YES	YES	YES
Mining/Fishing	YES	YES	YES
Outdoor Sports Arenas	YES	YES	YES
Outdoor Music Shells	YES	NO	NO
Nature Exhibits/Zoos	YES	YES	NO
Amusement/Parks/Camps	YES	YES	YES
Golf Courses/Stables	YES	YES	YES*

Source: 14 CFR 150, Airport Noise Compatibility Planning

A review of aerial photography, along with land use and zoning maps of the area, indicates that much of the land surrounding the Saratoga County Airport could be considered noise sensitive. There are residential land uses located on all sides of the Airport with an increased density of residential land use on the north side of the Airport. Almost all of the land surrounding the Airport is zoned Residential, with a small section on the south zoned as Mixed Use. Further evaluation of potential noise impacts requiring NEPA compliance will reveal if noise impacts are anticipated relative to future developments, and will consider mitigation measures if necessary.

4.16. SECTION 4(F) RESOURCES

Section 4(f) of the Department of Transportation Act of 1966 states that Federal approval will not be given to projects requiring the use of any land from a public park, recreation area, wildlife/waterfowl refuge, or historic site unless there is no feasible or prudent alternative to the use of such land, and the project includes all possible planning to minimize harm resulting from use.

There are no parks, recreation, or conservation lands on Airport property. However in the immediate vicinity of the Airport there are protected lands, as shown on **Figure 4-4**. South of the Airport on the south side of Route 43 (Geyser Road), is the Burgess Kimball Memorial Park, owned by the Town of Milton. North of the Airport there is forested land owned by Saratoga County; according to the New York Protected Areas Database (NYPAD) this is protected conservation land. East of the Airport, across County Route 47 (Rowland Street), is the Ballston Spa Reservoir, which is a water resource owned by the Village of Ballston Spa. There are a few small water resource lands around the immediate Airport vicinity, which are deemed protected lands for flood control purposes. Finally, along the north end of the Airport property is the Rowland Hollow Waterworks Company, which is also a protected water resource according to NYPAD.

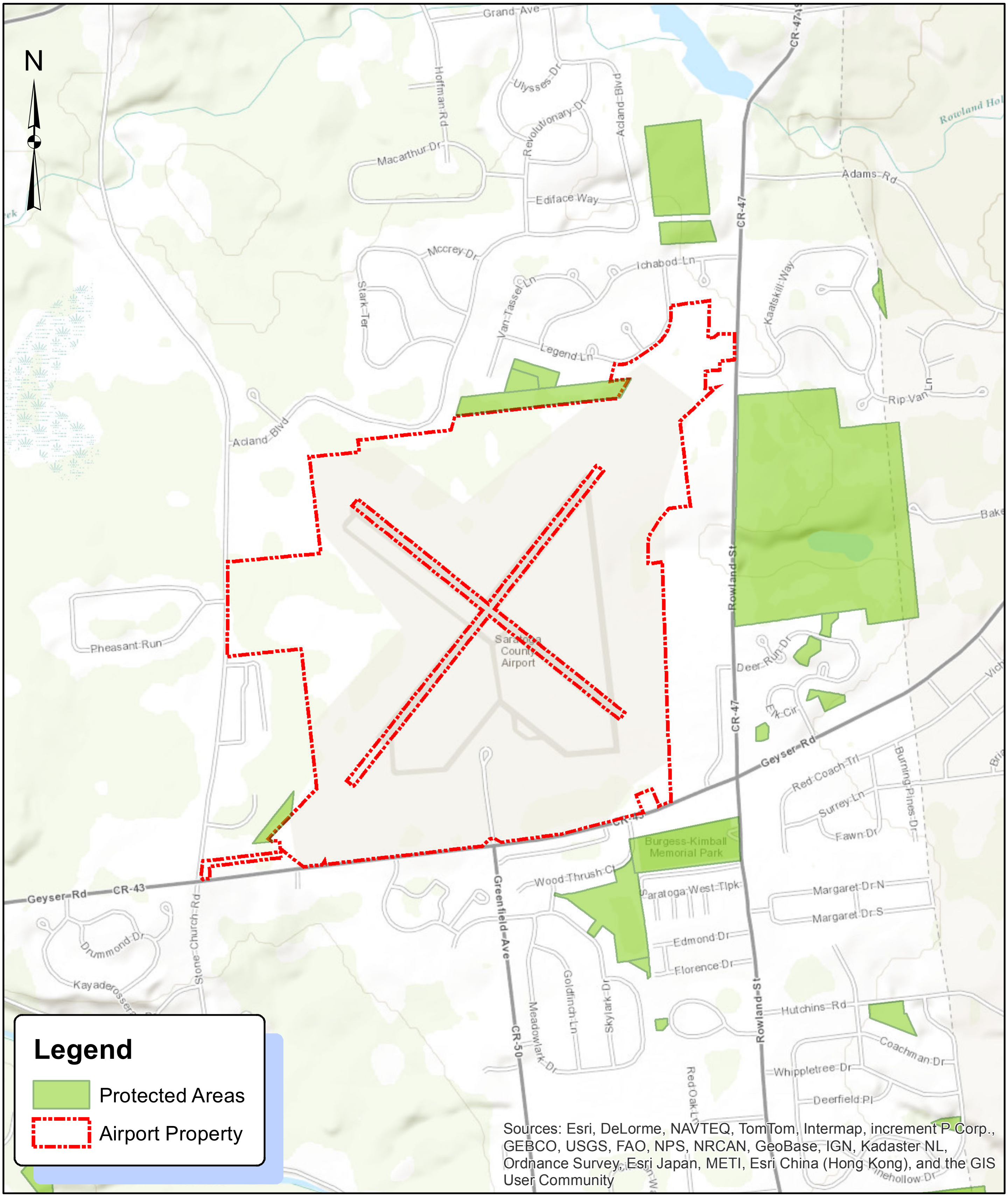
4.17. INDUCED SOCIOECONOMIC IMPACTS

Under the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Part 1502.1), Federal agencies are required to consider the effects to the area population's health, safety risks to children, and socioeconomic impacts. Under 40 CFR 1508.14 the CEQ requires that the human environment be considered for Federal projects to address the relationship of people with their natural and physical environments. Therefore, social impacts are required to be considered as an effect of any proposed airport project. Principal impacts to be considered include the displacement of families or businesses, effects to neighborhood characteristics, dividing or disruption of established communities, changing ground transportation patterns, disruption of orderly planned community developments, or creating measurable changes in employment. If land acquisition were necessary for proposed airport development alternative, it would be accomplished in accordance with 49 CFR Part 24, *Uniform Relocation Assistance and Real Property Acquisition Policies Act* (Uniform Act) and FAA Advisory Circular 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects.* The Uniform Act standardizes real property acquisition policies and requires the uniform and equitable treatment of persons relocated due to a Federally assisted project. Proposed projects need to be evaluated for the potential effects to the community economy, social structure and necessary community health and safety service.

Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, Federal agencies are directed to make identification and assessment of environmental health and safety risks that may disproportionately affect children a high priority. Federal agencies are encouraged to ensure that their policies, programs, and activities address any disproportionate risks children may incur from environmental health and safety risks. These risks are generally attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use, or which they may be exposed. Proposed projects will be assessed for their potential to impair the ability of neighborhood children to access clean breathable air, healthy food, potable water, and appropriate recreation sites.

NEW YORK PROTECTED AREAS

FIGURE 4-4



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SARATOGA COUNTY AIRPORT

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McFarland Johnson

Source: New York Protected Areas Database, 2013.

4.18. SOLID WASTE

Solid waste facilities inherently attract wildlife, particularly birds, and therefore can increase the aircraft-bird strike hazard. There are no solid waste facilities on or adjacent to Airport property. Consultation with the local solid waste management facilities for projects that may substantially increase solid waste generation will be required to ensure that adequate facilities and procedures are in place to accommodate the solid waste.

4.19. WATER QUALITY

This section discusses water quality, including surface waters and stormwater.

4.19.1. Surface Waters (Excluding Wetlands)

The United States Army Corps of Engineers (USACE) regulates water bodies under Section 10 of the Rivers and Harbors Appropriation Act (RHA) that are considered to be a Traditionally Navigable Water of the United State (TNW) as defined specifically there within. The USACE also regulates water bodies through Section 404 of the Clean Water Act (CWA) that have a significant nexus to a TNW as defined in Section 10 of RHA or a TNW as defined in Section 404 of the CWA. A significant nexus is generally defined as having more than an insubstantial or speculative effect on the chemical, physical, or biological integrity of a downstream TNW.

The NYSDEC regulates activities in water bodies that are considered “protected streams” or “Navigable Waters of the State” under the Article 15 of the ECL.

There are currently no NYSDEC protected streams or USACE regulated streams on, or immediately adjacent to Airport property. If any disturbances are determined, the use of BMPs during construction will minimize indirect impacts to any regulated surface waters.

4.19.2. Stormwater

The Saratoga County Airport is situated in the Town of Milton, which is partially included in the Saratoga Springs Urban Area. This urban area is considered an Automatically Designated Urbanized Area under the Municipal Separate Storm Sewer Systems (MS4s) as part of the National Pollutant Discharge Elimination System (NPDES) Stormwater Phase II permit program. Urbanized municipalities, publically funded institutions and other public entities must follow MS4 regulations for discharges from their facilities that discharge into surface waters. Therefore, the Airport is required to manage its stormwater runoff from its developed areas within the Town of Milton. NYSDEC has been delegated to enforce the Federal MS4 Phase II regulations in New York State under its State Pollution Discharge Elimination System (SPDES) General Permit Program.

NYSDEC regulations do not allow an increase in the visible turbidity of water when compared to preconstruction conditions. If one or more acres of land are disturbed during construction, a SPDES permit for Construction Activities, issued by NYSDEC is required. During the construction period, erosion and sediment control measures would be implemented, as prescribed in a Stormwater Pollution Prevention Plan (SWPPP), to avoid or minimize impacts to water quality.

If the proposed improvements disturb one or more acres of land, a SPDES Construction permit would be required. Issuance of a SPDES Construction permit would require review and approval by the Town of Milton, a MS4, if the project is within the Town. The SPDES permit requires implementation of a SWPPP, developed specifically for the project site, to minimize and mitigate any impacts due to erosion and sedimentation during construction. As part of the SWPPP, all SPDES permit sites must develop an Erosion and Sediment Control Plan (ESCP) to control stormwater discharge during construction.

The ESCP consists of temporary and permanent BMPs intended to reduce erosion, control siltation and sedimentation, and ensure that sediment-laden water does not leave the site. As each proposed project is progressed to the final design phase, an ESCP will be developed for implementation during construction to address water quality concerns and avoid significant impacts on water quality. The plans will incorporate acceptable BMPs, which will serve to protect the water quality in and around the Saratoga County Airport.

If the ground disturbance is greater than one acre, or within the regulated MS4, a full SWPPP including a Water Quality and Quality Control Plan must be implemented for the project. The Water Quality and Quality Control portion of the SWPPP consists of permanent BMPs intended to enhance water quality and provide water quantity control through peak flow attenuation. To meet the goal of no net increase in peak stormwater runoff from pre-project condition, BMPs must compensate for the increase in runoff resulting from additional impervious surfaces.

The full SWPPP would be implemented during construction and then properly maintained thereafter. This would ensure that water quality standards are met. The increase in runoff resulting from the expansion or creation of impervious surfaces during development would be mitigated by the SWPPP. Any proposed BMPs would be designed to accommodate an increase in stormwater volume. BMPs designed to accommodate an increase in runoff, generally meet water quality objectives by default. The SWPPP will comply with FAA Order 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports.*

4.19.3. Groundwater

According to the U.S. Geological Survey (USGS), the Airport is not situated in a sole-source aquifer as defined by the EPA pursuant to Section 1424(e) of the Safe Drinking Water Act. The Airport is located just south of the New York and New English carbonate rock aquifer, and is partially covered by an Aquifer of Alluvial and Glacial Origin, according to the USGS.

4.20. WETLANDS

USACE regulates activities in wetlands that have a significant nexus to TNWs under Section 404 of the Clean Water Act (CWA). The USACE requires that an area have hydrophytic vegetation primacy, hydric soils, and wetland hydrology present in order to be considered a wetland. The National Wetland Inventory (NWI) mapping indicates potential wetland areas that were identified by the USFWS using aerial photography. These maps do not have any regulatory consequence, but rather indicate areas that may meet Federal wetland criteria.

Review of the NWI mapping of the Airport indicates there is a potential palustrine scrub-shrub wetland northeast of the Runway 5 end. (**Figure 4-5**).

The NYSDEC also regulates certain wetlands within New York State under the Article 24 of the ECL, often referred to as the "Freshwater Wetlands Act". The NYSDEC regulates those wetlands within the state that are larger than 12.4 acres (5 hectares) in size, and certain smaller wetlands of unusual local importance. The NYSDEC also regulates an adjacent area of 100 feet to provide protection for the wetland. Review of the NYSDEC Freshwater Wetlands Map of the Airport area indicated that NYSDEC Freshwater Wetland S-18 is mapped near the northwest corner of the Airport (**Figure 4-6**).

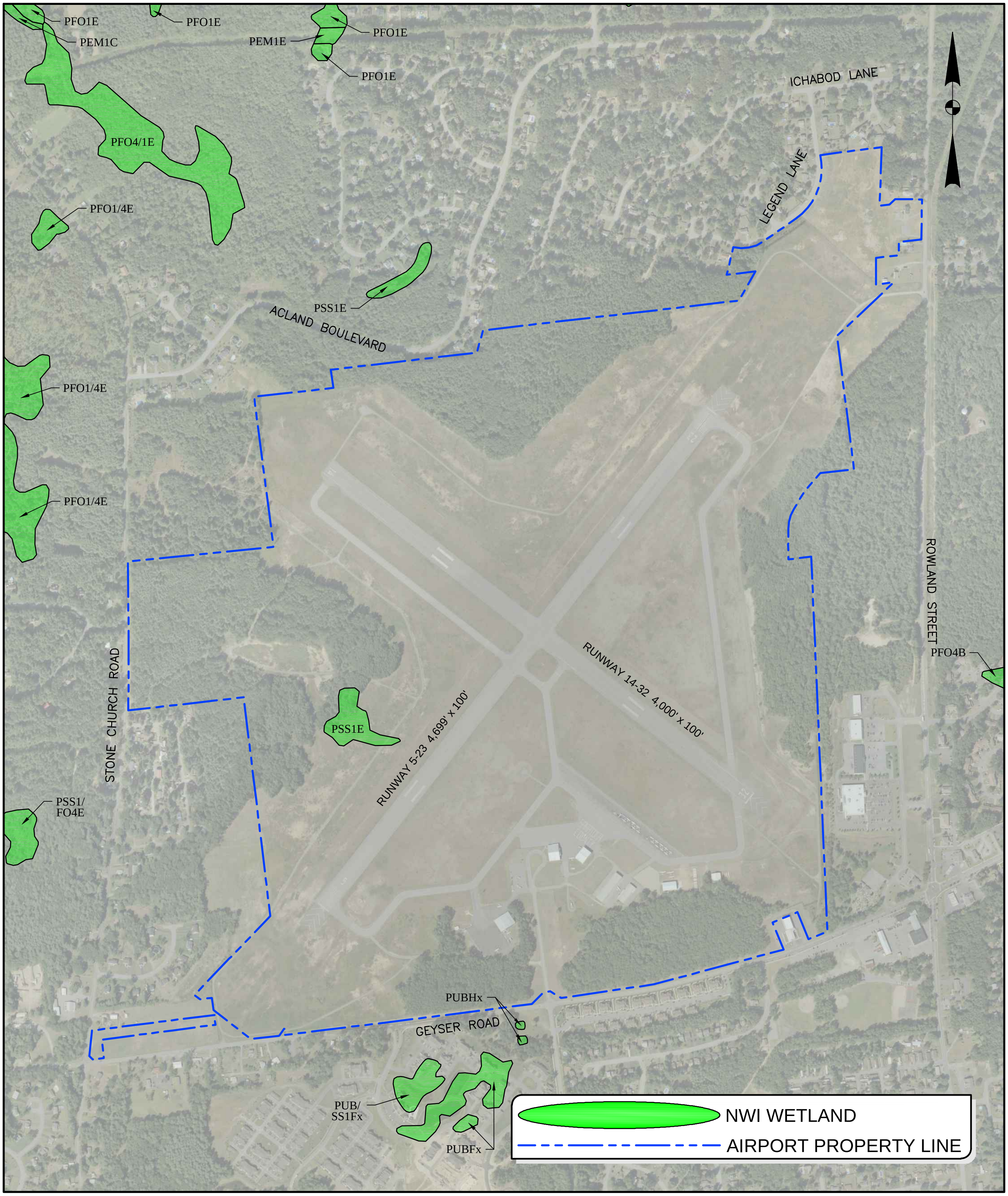
McFarland Johnson performed a wetlands and waterways delineation in April 2013. The wetland delineation was conducted through field investigations of vegetation, soils and hydrology in accordance with the 1987 *USACE Wetlands Delineation Manual* (1987 USACE Manual) and 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (2012 Regional Supplement). In the vicinity of those areas where NYSDEC Freshwater Wetlands were mapped, the 1995 *New York State Freshwater Wetlands Delineation Manual* (1995 NYSDEC Manual) was also consulted. See **Appendix 4-E** for a copy of the complete Wetlands and Waterways Delineation Report. A total of six wetlands, hereafter referred to alphabetically as Wetland A through Wetland F, were identified at the Airport. The locations of these wetlands are shown on **Figure 4-7**.

Based on field reconnaissance, it is McFarland Johnson's opinion that all six wetlands identified at the Airport, Wetlands A through F, are closed depressional wetlands with no significant nexuses to a TNW, and therefore it is assumed that none of the identified wetlands are subject to USACE jurisdiction under Section 404 of the Clean Water Act. The Section 404 jurisdictional statuses of these wetlands will need to be confirmed by the USACE.

As previously stated, review of the NYSDEC Freshwater Wetlands Map indicated that NYSDEC Freshwater Wetland S-18, is mapped near the northwest corner of Saratoga County Airport. Based on field reconnaissance of the general vicinity and offset survey data collected from Airport property, it is believed that NYSDEC Freshwater Wetland S-18 occurs off Airport property, with the 100 feet protected adjacent area extending onto Airport property. Although Wetlands D, E, and F were delineated on Airport property, and within the area mapped as NYSDEC Freshwater Wetland S-18, these wetlands are small isolated wetlands. Wetlands D and F are located within 50 linear feet from what is believed to be the true boundary of NYSDEC Freshwater Wetland S-18, while Wetland E is not. It is believed that Wetlands D, E, and F do not, collectively or individually, function as a unit with, nor do they significantly contribute to the ability of NYSDEC Freshwater Wetland S-18 in providing the wetland benefits listed in paragraphs (a), (b), (c), (e), (f), and (i) of Section 0105-7 of Article 24 of the ECL. Based on this assessment, it is believed that none of the six delineated wetlands on Airport property are subject to NYSDEC jurisdiction under Article 24 of the ECL. The Article 24 jurisdictional statuses of these wetlands will need to be confirmed by the NYSDEC. Regardless of their State and Federal jurisdictional statuses, all six wetlands delineated by McFarland Johnson are subject to EO 11990.

NWI WETLANDS

FIGURE 4-5



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NYSDEC WETLANDS

FIGURE 4-6

SARATOGA COUNTY AIRPORT

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DELINEATED WETLANDS

FIGURE 4-7

SARATOGA COUNTY AIRPORT

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McFarland Johnson

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Depending on the State and Federal jurisdictional statuses of the identified wetlands, projects that have no practicable alternatives to avoid direct impacts to wetlands may require Section 404 permits from USACE and/or Article 24 permits from the NYSDEC. Impacts to NYSDEC regulated wetlands 100 feet adjacent areas would also require an Article 24 permit from the NYSDEC. The USACE issues activity specific Nationwide Permits (NWP), for wetland disturbances meeting specific conditions. If a proposed project does not meet the conditions of any of the Nationwide Permits, a USACE Individual Permit is required before any work that causes disturbance in or near protected wetlands can commence.

Compensatory wetland mitigation may be required as a permit condition by USACE and/or NYSDEC depending on the specific details of the proposed project(s). Wetland mitigation can come in the form of restoration, establishment, enhancement, and/or preservation of wetlands. Typical mitigation ratios that are recommended by the USACE are shown in **Table 4-5**.

Table 4-5 - Typical USACE Recommended Wetland Mitigation Ratios

Wetland Type	Restoration (Re-establishment)	Creation (Establishment)	Enhancement (Rehabilitation)	Preservation (Protection/Management)
Open Water (PUB)	1:1	1:1	Project Specific	Project Specific
Emergent (PEM)	2:1	2:1 to 3:1	3:1 to 10:1	15:1
Scrub-Shrub (PSS)	2:1	2:1 to 3:1	3:1 to 10:1	15:1
Forested (PFO)	2:1 to 3:1	3:1 to 4:1	5:1 to 10:1	15:1

Source: Excerpted from USACE's "New England District Compensation Mitigation Guidance"' dated July 20, 2010

Based on regulations promulgated by the Department of Defense and Environmental Protection Agency in *Mitigation for Losses of Aquatic Resources; Final Rule* (Fed. Reg. Vol. 73, No. 70, April 10, 2008) the hierarchy of preferred wetland mitigation options for impacts to Federally regulated wetlands is shown below.

Use of credits from a wetlands mitigation bank
⬇
Use of credits from an in-lieu-fee program
⬇
Permittee-responsible mitigation using a watershed approach
⬇
On-site permittee-responsible mitigation
⬇
Off-site permittee-responsible mitigation

It should be noted that five Federal agencies, including the FAA and USACE, signed a Memorandum of Agreement (MOA) in July 2003 to facilitate interagency cooperation on aircraft-wildlife strikes related issues, including wetland management at airports. As part of the MOU, the signatory agencies are required to diligently consider the siting criteria recommendations as stated in FAA Advisory Circular (AC) 150/5200-33- *Hazardous Wildlife Attractants On or Near Airports*.

FAA AC 150/5200-33B recommends separation distances between an airport's air operations area (AOA) and potential wildlife hazards, including proposed wetland mitigation sites. These siting distances are:

- 5,000 feet of a runway that serves piston-powered aircraft
- 10,000 feet of a runway that serves turbine-powered aircraft
- 5 statute miles if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace

The above siting criteria will be taken into consideration when considering potential wetland mitigation options and site selection.

In addition to USACE Section 404 and NYSDEC Article 24 regulations, Section 401 of the CWA provides states with the authority to ensure that Federal agencies do not issue permits or licenses that violate their water quality standards. The NYSDEC implements Section 401 compliance through a certification process called Water Quality Certification (WQC). The NYSDEC has issued blanketed WQC for many of the NWPs, providing certain special conditions are met. Individual WQCs are required from the NYSDEC for USACE Individual Permits and for those NWPs where the NYSDEC as not issued blanketed WQCs, and on projects qualifying for a NWP, but where the blanket WQC special conditions cannot be met.

Furthermore, when impacts to wetlands cannot be avoided, an EO 11990 “Wetland Finding” must be prepared to document compliance with the order and that the wetland impacts are justified.

Future proposed projects will take measures in design and construction to avoid, minimize or mitigate any possible adverse impacts to wetland resources to the maximum degree possible. The use of BMPs during construction projects will minimize indirect impacts to wetland resources at the Airport.

4.21. WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act (Public Law 90-542) describes river areas eligible to be included in a system afforded protection under the Act as free flowing and possessing “…outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or similar values.” There are no State or Federal Wild and Scenic Rivers on or adjacent to the Airport.

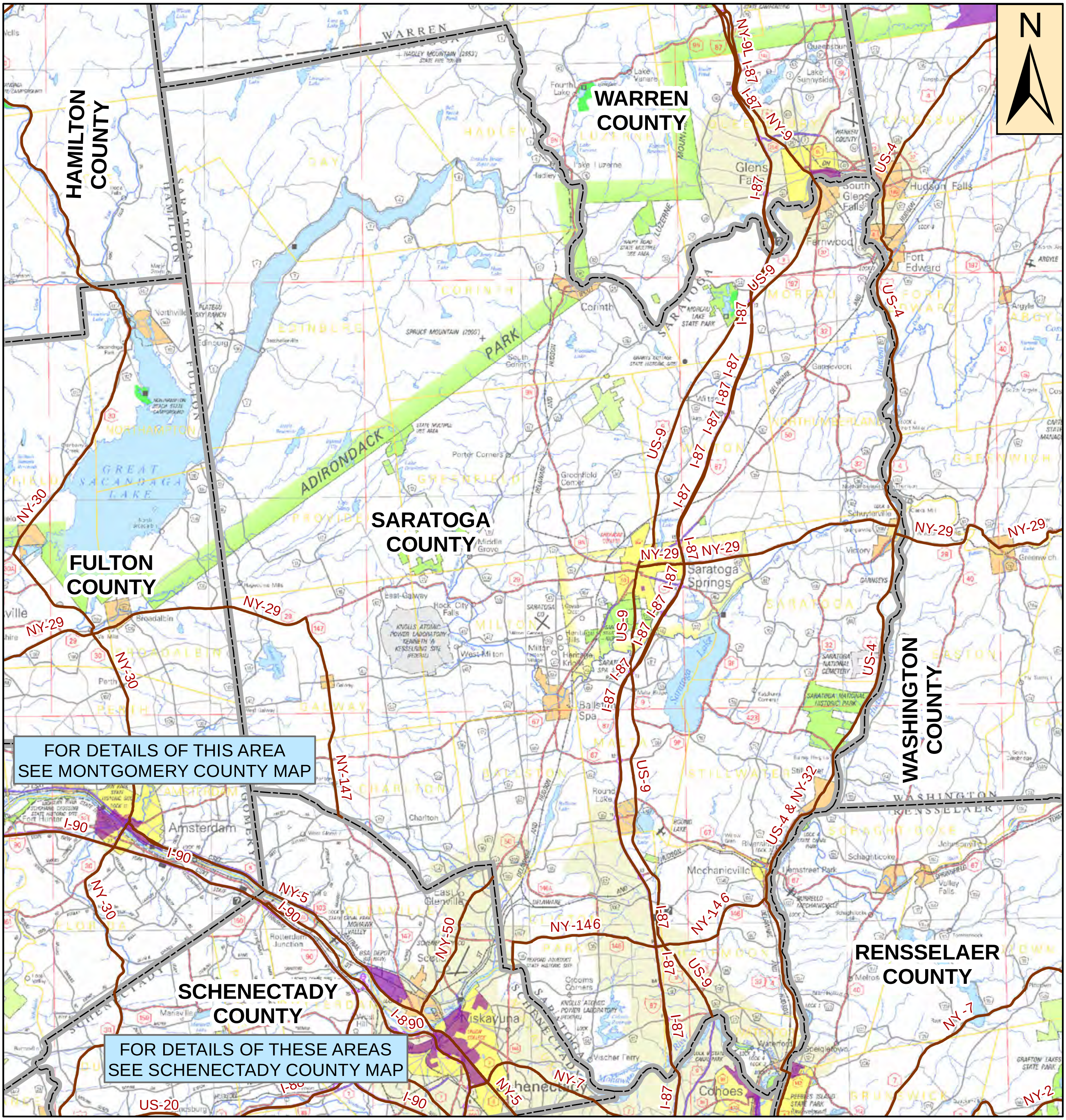
4.22. CUMULATIVE IMPACTS

The Federal Council of Environmental quality regulations contained in 40 CFR 1508.7 defines cumulative impact as the impact on the environment which results from incremental impact of the action(s) when added to other past, present, and reasonably foreseeable future projects located in the project vicinity. In the past five years, there have been several Airport improvement projects, as detailed in Section 1.2, *History of the Airport.* None of these projects have resulted in significant impacts to the environment.

For future improvements at the Saratoga County Airport, the FAA must evaluate any Airport development action funded under the Airport Improvement Program (AIP) or subject to approval under NEPA. Thus, any project requiring NEPA compliance would require a cumulative impact analysis discussion, to assess a proposed project’s direct and indirect impacts on a particular resource.

Appendix 4-A – Correspondence

Potential Environmental Justice Areas in Saratoga County, New York
Click on the Potential EJ Area outlined in blue for a detailed map



							Miles
0	2	4	6	8	10		

SCALE: 1:325,000

Legend

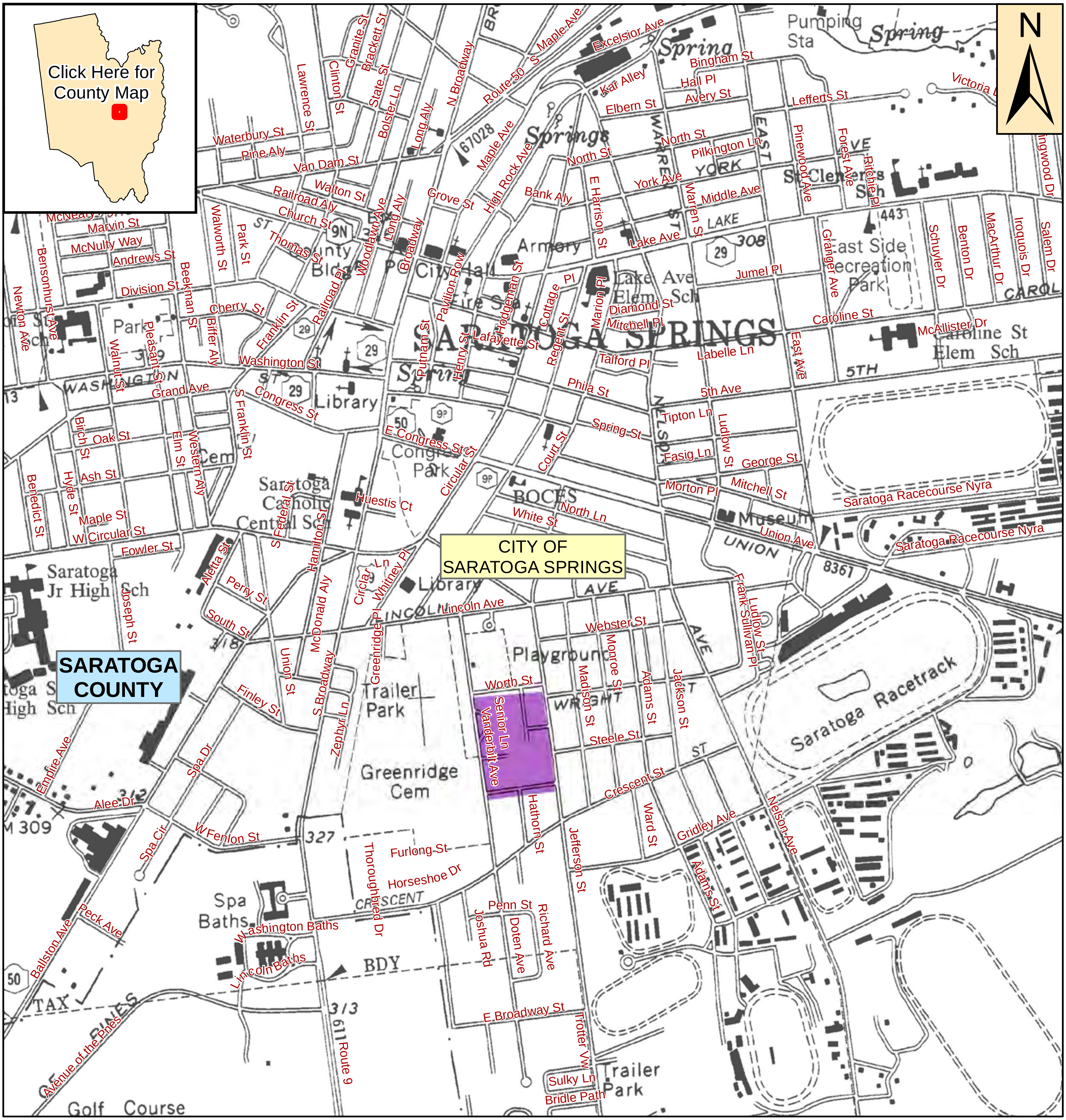
Potential EJ Area

County Boundary

Data Source for Potential Environmental Justice Areas:
U.S. Census Bureau, 2000 U.S. Census

For questions about this map contact:
New York State Department of Environmental Conservation
Office of Environmental Justice
625 Broadway, 14th Floor
Albany, New York 12233-1500
(518) 402-8556
ej@gw.dec.state.ny.us

Potential Environmental Justice Areas in the City of Saratoga Springs, Saratoga County, New York



Miles
0 0.1 0.2 0.3 0.4 0.5

SCALE: 1:15,000

This computer representation has been compiled from supplied data or information that has not been verified by EPA or NYSDEC. The data is offered here as a general representation only and is not to be used for commercial purposes without verification by an independent professional qualified to verify such data or information.

Neither EPA nor NYSDEC guarantee the accuracy, completeness, or timeliness of the information shown and shall not be liable for any loss or injury resulting from reliance.

Data Source for Potential Environmental Justice Areas:
U.S. Census Bureau, 2000 U.S. Census

Legend

- Potential EJ Area
- County Boundary
- Waterbodies

For questions about this map contact:
New York State Department of Environmental Conservation
Office of Environmental Justice
625 Broadway, 14th Floor
Albany, New York 12233-1500
(518) 402-8556
ej@gw.dec.state.ny.us

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

Joe Martens
Commissioner

August 13, 2013

Rachel Passer
McFarland Johnson
PO Box 1980
Binghamton, NY 13902

RECEIVED
AUG 19 2013
McFARLAND-JOHNSON, INC.

Re: Saratoga County Airport Master Plan Update
Town/City: Milton. County: Saratoga.

Dear Rachel Passer :

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Sincerely,

Nancy A. Davis

Nancy Davis-Ricci
Environmental Review Specialist
New York Natural Heritage Program

801

The following state-listed animals have been documented at your project site, or in its vicinity.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed or are candidates for federal listing. The list may also include significant natural communities that can serve as habitat for Endangered or Threatened animals, and/or other rare animals and rare plants found at these habitats.

For information about potential impacts of your project on these populations, how to avoid, minimize, or mitigate any impacts, and any permit considerations, contact the Wildlife Manager or the Fisheries Manager at the NYSDEC Regional Office for the region where the project is located. A listing of Regional Offices is at http://www.dec.ny.gov/about/558.html.

The following species have been documented at the project site. Potential onsite and offsite impacts from the project may need to be addressed.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Butterflies				
Frosted Elfin	*Callophrys irus*	Threatened		6355
Karner Blue	*Plebejus melissa samuelis*	Endangered	Endangered	5701

This report only includes records from the NY Natural Heritage databases. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the listed animals in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NYSDEC at http://www.dec.ny.gov/animals/7494.html.

Information about many of the rare plants and animals, and natural community types, in New York are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NatureServe Explorer at http://www.natureserve.org/explorer.

The following rare plants, rare animals, and significant natural communities have been documented at your project site, or in its vicinity.

We recommend that potential onsite and offsite impacts of the proposed project on these species or communities be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process, such as reviews conducted under SEQR. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may still contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following animals, while not listed by New York State as Endangered or Threatened, are of conservation concern to the state, and are considered rare by the New York Natural Heritage Program.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Butterflies			
Mottled Duskywing	*Erynnis martialis*	Special Concern	Critically Imperiled in NYS and Globally Uncommon

Saratoga County Airport, 1999-07-28: The butterflies were observed in the fields of the airport containing New Jersey tea. 11148

The following plants are listed as Endangered or Threatened by New York State, and/or are considered rare by the New York Natural Heritage Program, and so are a vulnerable natural resource of conservation concern.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Vascular Plants			
Mock-pennyroyal	*Hedeoma hispida*	Threatened	Imperiled in NYS

Saratoga County Airport, 1992-07-25: Mowed airport apron. 769

This report only includes records from the NY Natural Heritage databases. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

Information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org. For descriptions of all community types, go to http://www.dec.ny.gov/animals/29384.html and click on Draft Ecological Communities of New York State.

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

New York State Office of Parks, Recreation and Historic Preservation

Division for Historic Preservation
P.O. Box 189, Waterford, New York 12188-0189
518-237-8643

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

August 21, 2013

RECEIVED
AUG 26 2013
McFARLAND-JOHNSON, INC.

Rachel Passer
McFarland Johnson
PO Box 1980
Binghamton, New York 13902

Re: FAA, DOT
Saratoga Airport Master Plan Update
405 Greenfield Ave
MILTON, Saratoga County
13PR03771

Dear Ms. Passer:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, it is the SHPO's opinion that your project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Deputy Commissioner for Historic Preservation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
NEW YORK ECOLOGICAL SERVICES FIELD OFFICE
3817 LUKER ROAD
CORTLAND, NY 13045
PHONE: (607)753-9334 FAX: (607)753-9699
URL: www.fws.gov/northeast/nyfo/es/section7.htm

Consultation Tracking Number: 05E1NY00-2013-SLI-0720 July 30, 2013
Project Name: Saratoga County Airport

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project.

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Saratoga County Airport

Official Species List

Provided by:

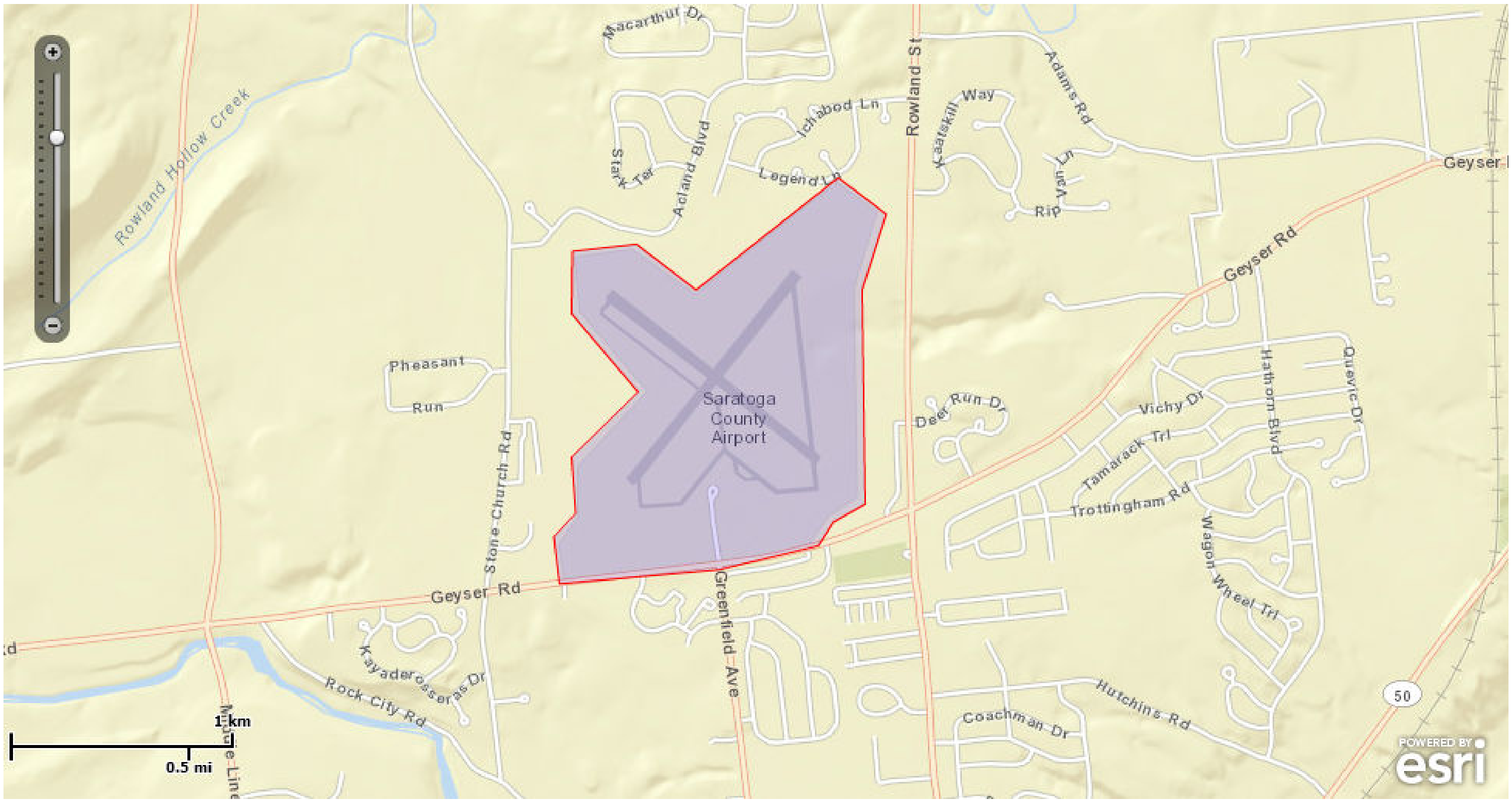
NEW YORK ECOLOGICAL SERVICES FIELD OFFICE
3817 LUKER ROAD
CORTLAND, NY 13045
(607) 753-9334
http://www.fws.gov/northeast/nyfo/es/section7.htm

Consultation Tracking Number: 05E1NY00-2013-SLI-0720
Project Type: Transportation
Project Description: Master Plan Update

United States Department of Interior
Fish and Wildlife Service

Project name: Saratoga County Airport

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-73.8692187 43.0560707, -73.8656589 43.0563545, -73.8623544 43.054506, -73.8544579 43.0590481, -73.8517972 43.0575743, -73.8531254 43.0545028, -73.8529559 43.0458144, -73.8547154 43.045093, -73.8555737 43.0441207, -73.8611098 43.0431485, -73.8699482 43.0425855, -73.8702551 43.0444971, -73.8690535 43.045438, -73.869268 43.0477275, -73.8655773 43.0503618, -73.869268 43.0535291, -73.8692187 43.0560707)))

Project Counties: Saratoga, NY

United States Department of Interior
Fish and Wildlife Service

Project name: Saratoga County Airport

Endangered Species Act Species List

Species lists are not entirely based upon the current range of a species but may also take into consideration actions that affect a species that exists in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Please contact the designated FWS office if you have questions.

Karner Blue butterfly *(Lycaeides melissa samuelis)*

Population: Entire

Listing Status: Endangered

Appendix 4-B – Soil Report

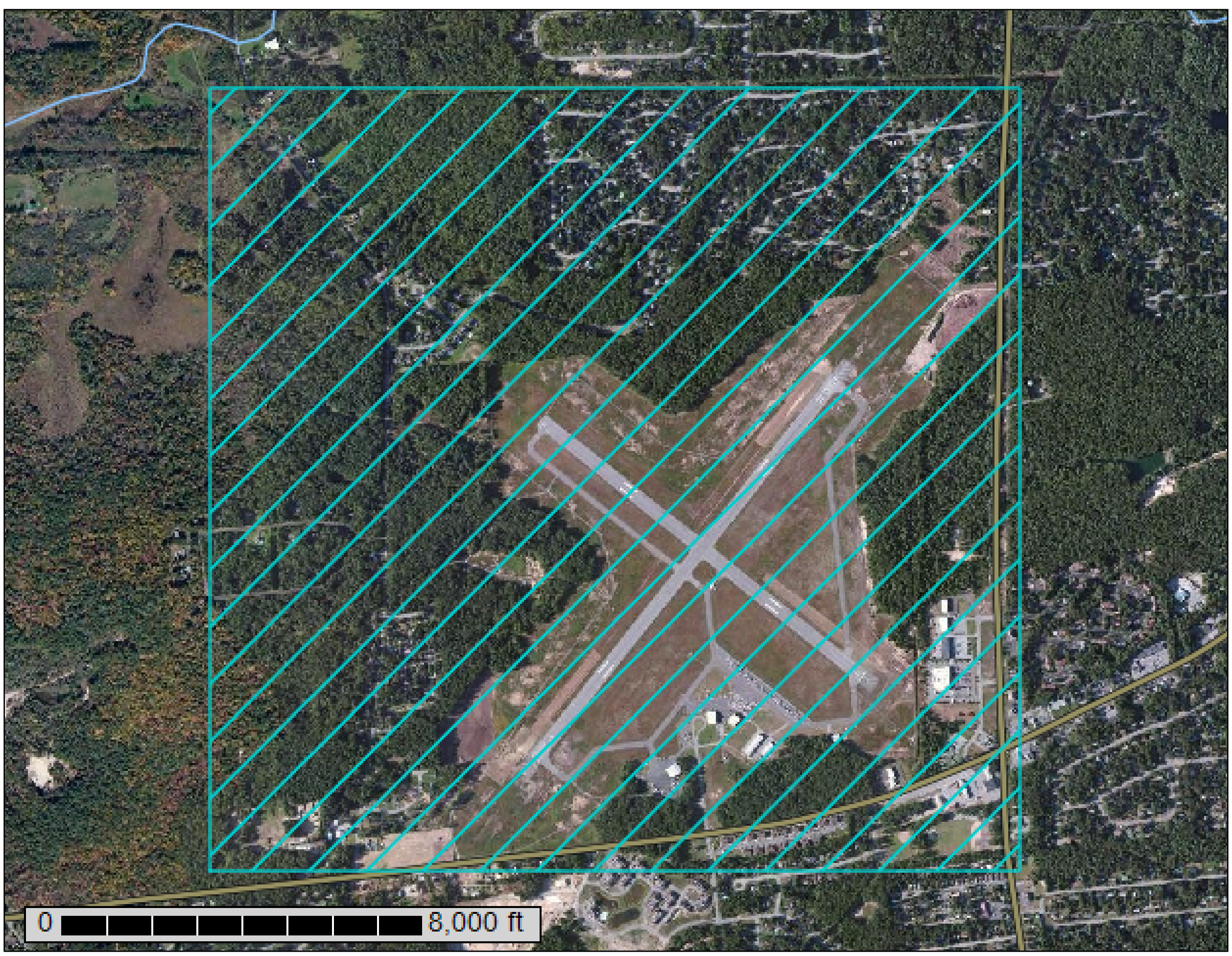
United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Saratoga County, New York



August 8, 2013

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map


73° 53' 26'' W
73° 50' 17'' W
43° 3' 55'' N
43° 2' 25'' N
590500
590900
591300
591700
592100
592500
592900
593300
593700
594100
594500
4768500
4768100
4767700
4767300
4766900
4766500
4766100
WnB
SeA
WnC
Ra
WnD
DeA
DeB
WnA
Wa
Stark Ter
Rowland St
Geyser Rd
Margaret Dr
59
43
N
Map Scale: 1:19,500 if printed on A landscape (11" x 8.5") sheet.
Meters
0
250
500
1000
1500
Feet
0
500
1000
2000
3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Saratoga County, New York
Survey Area Data: Version 12, Sep 21, 2012

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2010—Sep 19, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Saratoga County, New York (NY091)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
DeA	Deerfield loamy fine sand, nearly level	60.2	4.4%
DeB	Deerfield loamy fine sand, undulating	7.8	0.6%
Ra	Raynham silt loam	4.4	0.3%
SeA	Scio silt loam, 0 to 3 percent slopes	55.3	4.0%
Wa	Wareham loamy sand	0.9	0.1%
WnA	Windsor loamy sand, nearly level	710.9	52.0%
WnB	Windsor loamy sand, undulating	406.8	29.8%
WnC	Windsor loamy sand, rolling	106.9	7.8%
WnD	Windsor loamy sand, hilly	13.7	1.0%
Totals for Area of Interest		**1,367.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Saratoga County, New York

DeA—Deerfield loamy fine sand, nearly level

Map Unit Setting

Elevation: 0 to 1,000 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 125 to 160 days

Map Unit Composition

Deerfield and similar soils: 75 percent
Minor components: 25 percent

Description of Deerfield

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Sandy glaciofluvial or deltaic deposits derived mainly from granite, gneiss, or sandstone

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.8 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance
Land capability (nonirrigated): 3w
Hydrologic Soil Group: A

Typical profile

0 to 10 inches: Loamy fine sand
10 to 26 inches: Loamy fine sand
26 to 72 inches: Fine sand

Minor Components

Oakville

Percent of map unit: 10 percent

Claverack

Percent of map unit: 7 percent

Wareham

Percent of map unit: 4 percent

Wareham

Percent of map unit: 4 percent

DeB—Deerfield loamy fine sand, undulating

Map Unit Setting

Elevation: 590 to 1,000 feet
Mean annual precipitation: 35 to 50 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days

Map Unit Composition

Deerfield and similar soils: 75 percent
Minor components: 25 percent

Description of Deerfield

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, rise
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Sandy glaciofluvial or deltaic deposits derived mainly from granite, gneiss, or sandstone

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.8 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance
Land capability (nonirrigated): 2w
Hydrologic Soil Group: A

Typical profile

0 to 10 inches: Loamy fine sand
10 to 14 inches: Loamy fine sand
14 to 26 inches: Loamy fine sand
26 to 44 inches: Fine sand
44 to 72 inches: Fine sand

Minor Components

Oakville

Percent of map unit: 10 percent

Claverack

Percent of map unit: 7 percent

Wareham

Percent of map unit: 4 percent
Landform: Depressions

Wareham

Percent of map unit: 4 percent

Ra—Raynham silt loam

Map Unit Setting

Elevation: 50 to 500 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 125 to 160 days

Map Unit Composition

Raynham and similar soils: 60 percent
Minor components: 40 percent

Description of Raynham

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Glaciolacustrine, eolian, or old alluvial deposits, comprised mainly of silt and very fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water capacity: High (about 11.8 inches)

Interpretive groups

Farmland classification: Prime farmland if drained
Land capability (nonirrigated): 3w
Hydrologic Soil Group: C/D

Typical profile

0 to 12 inches: Silt loam
12 to 34 inches: Very fine sandy loam
34 to 72 inches: Very fine sandy loam

Minor Components

Scio

Percent of map unit: 10 percent

Raynham

Percent of map unit: 10 percent

Rhinebeck

Percent of map unit: 10 percent

Unadilla

Percent of map unit: 5 percent

Madalin

Percent of map unit: 5 percent
Landform: Depressions

SeA—Scio silt loam, 0 to 3 percent slopes

Map Unit Setting

Elevation: 100 to 1,000 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 125 to 160 days

Map Unit Composition

Scio and similar soils: 70 percent
Minor components: 30 percent

Description of Scio

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Glaciolacustrine deposits, eolian deposits, or old alluvium, comprised mainly of silt and very fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water capacity: Moderate (about 8.4 inches)

Interpretive groups

Farmland classification: All areas are prime farmland
Land capability (nonirrigated): 2w
Hydrologic Soil Group: B/D

Typical profile

0 to 4 inches: Silt loam
4 to 23 inches: Silt loam
23 to 72 inches: Silt loam

Minor Components

Raynham

Percent of map unit: 10 percent

Unadilla

Percent of map unit: 10 percent

Deerfield

Percent of map unit: 5 percent

Hudson

Percent of map unit: 5 percent

Wa—Wareham loamy sand

Map Unit Setting

Elevation: 100 to 1,000 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 125 to 160 days

Map Unit Composition

Wareham, poorly drained, and similar soils: 70 percent
Minor components: 30 percent

Description of Wareham, Poorly Drained

Setting

Landform: Depressions

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial or deltaic deposits

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.1 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance
Land capability (nonirrigated): 4w
Hydrologic Soil Group: A/D

Typical profile

0 to 2 inches: Slightly decomposed plant material
2 to 8 inches: Loamy sand
8 to 19 inches: Loamy sand
19 to 72 inches: Sand

Minor Components

Wareham, somewhat poorly drained

Percent of map unit: 10 percent

Deerfield

Percent of map unit: 5 percent

Raynham

Percent of map unit: 5 percent

Cheektowaga

Percent of map unit: 5 percent
Landform: Depressions

Scarboro

Percent of map unit: 5 percent
Landform: Depressions

WnA—Windsor loamy sand, nearly level

Map Unit Setting

Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 125 to 160 days

Map Unit Composition

Windsor and similar soils: 80 percent
Minor components: 20 percent

Description of Windsor

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy glaciofluvial or deltaic deposits

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance
Land capability (nonirrigated): 3s
Hydrologic Soil Group: A

Typical profile

0 to 2 inches: Moderately decomposed plant material
2 to 11 inches: Loamy sand
11 to 25 inches: Loamy sand
25 to 72 inches: Loamy sand

Minor Components

Deerfield

Percent of map unit: 10 percent

Hinckley

Percent of map unit: 5 percent

Oakville

Percent of map unit: 5 percent

WnB—Windsor loamy sand, undulating

Map Unit Setting

Mean annual precipitation: 36 to 48 inches

Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 125 to 160 days

Map Unit Composition

Windsor and similar soils: 80 percent
Minor components: 20 percent

Description of Windsor

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy glaciofluvial or deltaic deposits

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance
Land capability (nonirrigated): 3s
Hydrologic Soil Group: A

Typical profile

0 to 2 inches: Moderately decomposed plant material
2 to 11 inches: Loamy sand
11 to 25 inches: Loamy sand
25 to 72 inches: Loamy sand

Minor Components

Deerfield

Percent of map unit: 10 percent

Oakville

Percent of map unit: 5 percent

Hinckley

Percent of map unit: 5 percent

WnC—Windsor loamy sand, rolling

Map Unit Setting

Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 125 to 160 days

Map Unit Composition

Windsor and similar soils: 75 percent
Minor components: 25 percent

Description of Windsor

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy glaciofluvial or deltaic deposits

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 4e
Hydrologic Soil Group: A

Typical profile

0 to 2 inches: Moderately decomposed plant material
2 to 11 inches: Loamy sand
11 to 25 inches: Loamy sand
25 to 72 inches: Loamy sand

Minor Components

Hinckley

Percent of map unit: 10 percent

Deerfield

Percent of map unit: 10 percent

Oakville

Percent of map unit: 5 percent

WnD—Windsor loamy sand, hilly

Map Unit Setting

Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 125 to 160 days

Map Unit Composition

Windsor and similar soils: 75 percent
Minor components: 25 percent

Description of Windsor

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy glaciofluvial or deltaic deposits

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 6e
Hydrologic Soil Group: A

Typical profile

0 to 2 inches: Moderately decomposed plant material
2 to 11 inches: Loamy sand
11 to 25 inches: Loamy sand
25 to 72 inches: Loamy sand

Minor Components

Oakville

Percent of map unit: 10 percent

Hinckley

Percent of map unit: 10 percent

Deerfield

Percent of map unit: 5 percent

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Appendix 4-C – NYSDEC Draft Management Agreement

Rev: 10/15/01

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MANAGEMENT AGREEMENT

Between
Department of Environmental Conservation
Division of Fish, Wildlife, and Marine Resources
and
Saratoga County
in Relation to Endangered Species Management at
Saratoga County Airport

Witnesseth

This agreement, made _____________ Day of __________, 2001 by the New York State Department of Environmental Conservation Division of Fish, Wildlife and Marine Resources, acting by and through its Commissioner, hereafter referred to as DEC, and Saratoga County, **40 McMaster Street**, Ballston Spa, New York 12020, hereinafter referred to as the County.

Whereas, DEC recognizes that the Karner Blue butterfly (*Lycaeides melissa samuelis*) is considered an endangered species by the State of New York and the US Department of the Interior, with the largest known population located on the Saratoga County Airport property in the Town of Milton, and

Whereas, the DEC recognizes that the airport property also supports the Frosted Elfin butterfly (*Callophrys irus*), a state threatened species, and the mottled duskywing *(Erynnis martialis)*, a state species of special concern, together with many other specialized grassland invertebrates and nesting birds and

Whereas DEC, under its legal mandate and responsibilities under Sections 11-0303 and 11-0535 of the New York State Fish and Wildlife Law and the Endangered Species Cooperative Agreement with the United States Fish and Wildlife Service, hereafter referred to as the Service, is responsible for the welfare and protection of resident threatened and endangered species and

Whereas, activities adversely affecting an endangered or threatened species or its occupied habitat may be construed as taking under Section 11-0535 of the New York State Fish and Wildlife Law

Whereas, the County has previously been a party to a non-binding management agreement to protect the Karner Blue and perpetuate and manage its habitat on the airport property and

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Whereas, since the 1991 effective date of the original management agreement, the Frosted Elfin has been listed as a state threatened species which is also protected under 11-0-535 and

Whereas since the 1991 effective date of the original management agreement the Karner Blue has been listed as a federal endangered species under Section 4 of the Endangered Species Act and is under the jurisdiction of the Service, and since aspects of the activities covered under the original agreement may be construed as take under Sections 3 and 9 of the Endangered Species Act and

Whereas the County has completed a new draft Master Plan for the Airport property which must be approved by the Federal Aviation Administration, hereafter referred to as FAA, and that such approval may be subject to a Section 7 consultation with the Service regarding impacts to the Karner Blue butterfly and

Whereas this new management agreement shall be considered a part of the Master Plan.

Now, therefore, the DEC and the County do hereby respectfully agree to the following including new or altered conditions to the original 1991 agreement designed to reduce habitat "take" as much as possible

1. The County will not begin its annual mowing of the airport property until after October 15 of each year and will complete such mowing before December 31 to allow the Karner Blue and Frosted Elfin to fully carry out their life functions and to allow for completion of the life cycles of essential habitat plants including but not limited to wild blue lupine (*Lupinus perennis*). Mowing blades will be set to between **six (6) and eight (8) inches**. Areas which must be mowed earlier to allow for safe use of the runways and taxiways by aircraft, as specifically identified in Exhibit 1 are exempt from this clause. These areas are described as follows and designated on the attached map, which will be considered part of this agreement.

    A. Generally, the area between Geyser Road (County Rd. 43) and the terminal areas and the aircraft tie-down areas along taxiways A and C . The width of the area is irregular and roughly extends on the west side along the airport fence at the parking lot to the extent of the 2001 development of the North American facility and along the tree line back to Geyser Road. On the east side, it extends as far as the proposed glider hangar location at the turn of taxiway C toward Runway 32 (See the attached map).

    B. The itinerant apron between taxiways A and C and the grassy area between the aircraft tie downs along taxiway C and the hangar area (both of which are proposed to be paved under the 2001 Master Plan).

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C. A swath along taxiways and the taxiway into the North American facility to clear vegetation around lights and directional signs. Mowers will be reminded each year to mow only the minimum area needed to clear the lights and signs. Previously, a large mower was used to cut a swath along the edge of the pavement and around the lights, then another swath behind the lights, and a smaller riding mower cut away the remainder of the grass from the lights themselves. Under this new agreement, a large mower will only cut a swath between the lights and the pavement and a small mower will follow up cutting one circular pass around the lights. There will be no swath cut behind the lights and the area between the lights will also remain unmowed (See detail A on the attached map).

Since the lights of the runways are on pavement, there will be no mowing along the runways themselves.

D. The area surrounding the airport beacon. There is considerable Lupine habitat readily used by Karner Blues and Frosted Elfins on and above the slope near the beacon and between the beacon and the hangars. While part of the exempt area, this Lupine should not be disturbed until the October 15 annual mowing date unless there is a compelling safety or operational reason. If the habitat will be affected by excavation for cable placement or repair, every effort should be made to minimize the extent of the damage to the habitat and it should be reseeded with habitat mix as specified by DEC. The County, with DEC's assistance in designating the edge, will mark the limits of this area to aid its mowers in avoiding it.

E. The access road built and used **during runway 05-23 reconstruction in 2001** from the airport entry road to the southeast corner of taxiway A. As the County has expressed the desire to keep this road for future access, the County will maintain the road at its present width with gravel to keep lupine from growing into the road.

F. The two (2) permanent access roads which are west and north of the runway intersection. These roads will be constructed during the course of on-site obstruction removal project. The county will maintain these roads with gravel to keep Lupine from growing into the roads.

G. Service access roads and aprons to the automated weather observation station, electrical vault and beacon. The location of these roads and aprons will be coordinated with DEC and will be constructed during the course of on-site obstruction removal project. The county will maintain these roads and aprons with gravel to keep Lupine from growing in these areas.

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2. The County will avoid use of machinery on all habitat areas at any time of the year with the exception of those areas and times specifically identified in this agreement. The County will annually instruct its employees of the mowing schedule and the restrictions of driving or parking any vehicles outside of designated areas and will emphasize the importance of adhering to the terms of this agreement. Early mowing may kill Karner Blues or Frosted Elfins and impair long-term integrity of the habitat.

3. DEC and The County will annually **inform** airport tenants about restrictions on operation of aircraft or vehicles off-pavement in undesignated areas and will be encouraged to inform pilots they are in radio contact with of these restrictions. The County will erect signs at the entrance road advising visitors and pilots that vehicles may be parked only in designated areas and may not be parked off-pavement. **The County will request that a pilot notification be placed in the FAA Airport Facility Directory regarding restrictions and unauthorized off pavement operations at the Saratoga County Airport.**

4. Snow may be blown off runways and taxiways into the habitat areas via snowblowers to clear pavement and the lights. Snow plowed from the aircraft parking areas in front of the Richmor Offices may be pushed off the pavement into the area immediately adjacent to the west side of the aircraft parking but must not be pushed any further than the corner of the fence line (see attached map). **A reasonable effort will be made to raise the blade of the plow so as to minimize scraping up the ground and vegetation in this area.** This condition must be part of the annual instruction county workers receive.

5. The County agrees to consult with DEC concerning and prior to any alterations of or use of Karner blue and Frosted Elfin habitats except in emergencies or as specifically identified in this agreement. The County will notify DEC Endangered Species Unit immediately after any accident or emergency on the airfield. Emergencies would include but not be limited to spills; fires, emergency repairs to lights, aircraft crashes or aircraft emergency landings off pavement.

6. The DEC will conduct periodic surveys of the Karner blue and Frosted Elfin populations and make the results of such surveys available to the County. The County agrees to grant reasonable access to department officials or their designees for purposes of research and management of Karner Blue and Frosted Elfin butterflies and their habitat.

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7. **The extent of the present "Known Habitat Area" is depicted on the attached map. It includes the area outside the Exempt Area and is primarily considered to be bound by the existing airport fence. The exception being that portion of the existing airport fence that is northeast, north and southwest of Runway 14 at which location the habitat extends beyond the fence line for a distance of ten (10) feet. After the completion of the on-site obstruction clearing and grubbing project proposed by the County, portions of the existing perimeter airport fence will be relocated outward. The relocated fence, for its entire perimeter around the airport property, will delineate the extent of the "Known Habitat Area", with no buffers beyond the fence line at any location. The newly cleared areas will be managed on the same mowing schedule as the present Habitat Area. The County agrees to plant these areas with Karner Blue butterfly habitat plants. However, DEC and the County agree to discuss where there may be areas that could be allowed to remain non-lupine habitat. Beyond what the County will plant in the newly cleared areas, the County agrees to allow DEC to improve and expand habitat on the airport property to the extent that it will not impinge on the exempt areas or the other areas agreed to remain non-lupine habitat.**

8. The DEC will prepare a recovery plan for the Karner Blue which will include consultation with the County in developing specific recommendations and tasks which involve the airport property or other County property.

9. Together the County and DEC will develop the format and language for an interpretive sign for the airport that will educate the public on the Karner Blue and the other values of the sand prairie habitat at the airport.

10. **The County and DEC will develop agreements with all aircraft users who request operations off-pavement that will detail approved locations for their activities and the procedure to report and document any emergency landings off pavement in the habitat areas. These agreements shall be designed to minimize and control occasional and temporary take from off pavement activities. Activities which would permanently remove habitat or which would involve substantial and/or frequent take or disturbance will not be authorized in any such agreement.**

11. In eventualities where DEC and US Fish and Wildlife approve that projects, repairs or other activities may occur within the habitat areas, the County will keep such projects to a minimum extent and reseed with DEC approved mixes of native habitat seeds or seedlings. Projects, repairs or activities occurring within the exempt areas will be re-seeded using species approved by DEC that will not encroach or invade native habitat.

12. While the Department generally approves of the Airport Master Plan, it reserves the right to review and comment on the preliminary design strategies of any new construction,

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techniques and timing of projects or expansions that may be proposed under that Master Plan. This will ensure that working habits and procedures will not have a detrimental effect on the protected butterflies or their habitat.

13. This agreement shall be effective beginning midnight December 31, 2001 until modification or termination by either party as described below.

14. **While it is understood that Saratoga County is the owner and manager of the Saratoga County Airport and that Saratoga County will make every effort to administer and enforce this plan in accordance with its terms, Saratoga County will not be held responsible for violations, or any resulting monetary fines, of its terms by persons or parties not in the employ or under the direction of Saratoga County.**

15. This agreement is to be considered legally binding in that it constitutes a feature of major significance to the protection and management of the Karner Blue butterfly in the Master Plan as reviewed by the US Fish and Wildlife Service in its Biological Opinion to FAA for its approval of the Master Plan. At any point during its effective period, it may be amended upon approval of both parties and the concurrence of the Service.

In witness whereof we have hereunto set our hand and seals the day and year first written above.

State of New York Department of Environmental Conservation	Saratoga County
________________________ Gerald A. Barnhart	________________________ Joseph C. Ritchey, P.E.
Director, Division of Fish, Wildlife, and Marine Resources	Saratoga County Commissioner of Public Works
________________________ Date	Date

Appendix 4-D – USFWS Biological Opinion

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

July 22, 2011

Ms. Sukhbir K. Gill
Environmental Protection Specialist
U.S. Department of Transportation
Federal Aviation Administration
New York Airports District Office
600 Old Country Road, Suite 446
Garden City, NY 11530

Dear Ms. Gill:

We received your March 10, 2011, letter regarding the Saratoga County Department of Public Works' (County) proposed activities at the Saratoga County Airport (Airport) in the Town of Milton, Saratoga County, New York, and their effects on the Karner blue butterfly (*Lycaeides melissa samuelis*). In accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*), the Federal Aviation Administration (FAA) has requested reinitiation of consultation for activities at the Airport to address the proposed rehabilitation of the taxiway lighting system and the installation of Precision Approach Path Indicator lights for Runways 5, 23, and 32 end, and reconstruction of the based aircraft apron.

This serves as an update to the U.S. Fish and Wildlife Service's (Service) September 24, 2009, Biological Opinion (BO) (enclosed). While all work is within areas where the Service has previously authorized incidental take of Karner blue butterflies due to other County activities, the proposed action was not previously considered. We must review the proposed action in light of the current status of the species and provide an updated assessment. Please note that while previous BOs did not include an end date, we consider any incidental take authorized to date from actions previously considered as valid through December 2012, as we understand the next Master Plan Revision Process will occur in 2012.

This BO is based on information provided in telephone conversations, letters, and electronic mail exchanges among the Service, FAA, and others. A complete administrative record of this consultation is on file at the Service's Cortland, New York, Field Office.

We are amending the 2009 BO by including additions to or replacing current language by section.

I. CONSULTATION HISTORY SINCE SEPTEMBER 2009 BO

Add the following items to the existing consultation history.

September 24, 2009	Letter from the Service to FAA amending BO to include paving of the current 0.08-acre gravel access road to the AWOS facility.
December 29, 2009	Letter from the Service to FAA providing technical assistance regarding obstruction removal at the ends of Runways 5, 14, and 23 and avigation easement acquisition for future tree clearing at the end of Runway 32.
January 24, 2011	Electronic mail exchange among McFarland-Johnson, New York State Department of Environmental Conservation (NYSDEC), and the Service regarding lighting replacement.
February 3, 2011	Conference call among McFarland-Johnson, County, FAA, and the Service to discuss proposed projects.
March 10, 2011	Letter from FAA to the Service requesting reinitiation of formal consultation.
July 2011	E-mail exchanges between the Service and FAA regarding project description clarification.

II. BIOLOGICAL OPINION

Description of the Proposed Action

Add the following to the original description.

The proposed new Federal action is the funding and/or approval of the following activities at the Airport: rehabilitation of the taxiway lighting system and the installation of Precision Approach Path Indicator (PAPI) lights for Runways 5, 23, and 32 end, and reconstruction of the based aircraft apron (Figure 1). The taxiway lighting system and the runway PAPIs play an integral part in airport operations and provide a safe environment for aircraft to operate in.

This project will rehabilitate the airport's failing taxiway lighting system. The lighting rehabilitation will require trenching procedures to remove the old direct buried cable and replace it with new conduit and wiring. New taxiway light units will be installed on new bases in situ to replace the current light units. New wiring to the electrical vault will be connected to the indoor electrical vault.

The taxiway edge lighting work includes installation of the following elements:

- Individual edge lights, which are placed 10 feet from the taxiway pavement edge, and are located a maximum of 200 feet apart, along the length of the existing taxiways.
- Electrical conduit and cable that connect each light (conduit is parallel to the pavement edge).
- Bare copper wire (counterpoise, or ground wire) that is installed 5 feet from the edge of the taxiway pavement.

The total length of lighting system is approximately 21,500 linear feet (10,750 linear feet of taxiway pavement, with the lights installed on each side of taxiway). The area of disturbance is conservatively estimated as an area 15 feet wide (conduit installed 10 feet from pavement edge, and the track of the construction equipment is assumed to extend an additional five feet beyond the conduit trench) by 21,500 linear feet in length, for a total area of 322,500 square feet. Trenching will be completed using the narrowest trench width possible (generally 12 inches) (typically per a Ditch Witch). All work will be initiated and completed during frozen ground conditions. All disturbances will be within areas currently mowed.

The outdated Visual Approach Slope Indicator (VASI) currently in place at the airport for Runways 5, 23, and 32 ends will be replaced with modernized PAPIs. Installation of the proposed PAPIs will impact turf areas adjacent to the south edge of pavement of runway 23 approach end, the north edge of pavement of runway 5 approach end, and the south edge of pavement of runway 32 approach end.

The PAPI's consist of navigational equipment installed on a concrete foundation, 2 feet wide by 4 feet in length. Each PAPI installation consists of two units, installed 30 feet and 50 feet, respectively, from the runway edge. The area of this installation that will be disturbed is conservatively estimated as 60 feet by 20 feet, or 1,200 square feet. Three PAPI's will be installed, resulting in a total disturbance of 3,600 square feet.

In addition to the PAPI equipment itself, electrical conduit (approximately 4,600 linear feet) will be installed to provide power to the units. The PAPIs will require approximately 4,600 feet of additional trenching for the new electrical wiring. The PAPIs will require two trench lines, one five feet from pavement for the bare copper ground wiring and the other at ten feet from the edge of the pavement for the conduit line. Trenching will be completed in the same manner as the lighting rehabilitation and will be also limited to a 12-inch maximum width. Assuming the conduit is placed 10 feet from the pavement edge, with a 15 foot width of disturbance, the installation of the PAPI conduit will disturb an additional 4,600 ft X 15 ft = 69,000 square feet. All work will be initiated and completed during frozen ground conditions. All disturbances will be within areas currently mowed.

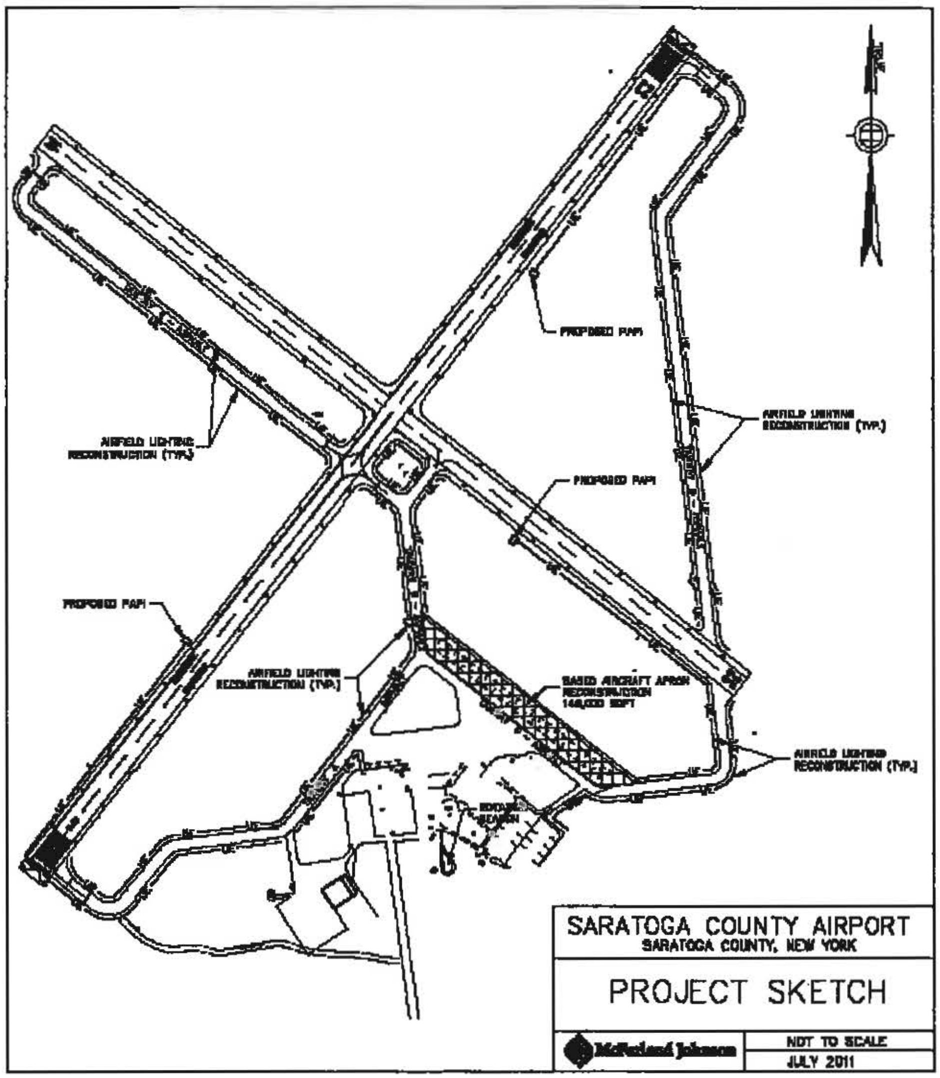
Total disturbance is calculated as 322,500 sf + 3,600 sf + 69,000 sf = 395,100 sf = 9.07 acres. It should be noted that other than the actual PAPI equipment foundations, and the individual edge lights themselves, all disturbance is temporary. These areas will be regraded to match existing ground elevations, and re-seeded with butterfly-friendly seed.

The based aircraft tie-down ramp asphalt pavement is critically deteriorated with full depth cracks throughout the surface area. Reconstruction will require a full depth reconstruction of the ramp within the current ramp footprint occupying approximately 16,500 square yards.

The existing apron pavement will be removed and reconstructed, with no additional permanent impervious surface being installed. During construction, an area 15 feet from the existing pavement edge, and 1,150 feet in length will likely be disturbed due to construction equipment activity. This area is calculated to be 17,250 square feet, or 0.4 acre. Similar to the electrical work, all disturbance is temporary. These areas will be regraded to match existing ground elevations, and re-seeded with butterfly-friendly seed. The project will also paint new lines to remark the tie down area.

Add a new Figure 1 and renumber all of the following figures accordingly.

Figure 1. Proposed project sketch.



The proposed action includes the following conservation measures to minimize impacts to Karner blue butterflies (item in italics is a requested change):

Work will be conducted in the winter during frozen ground conditions;

Construction vehicles will be limited to the project work limits (as defined in project plans);

Protective orange fencing will be installed and maintained during construction activities to limit activity within the project work limits;

A 4-foot by 8-foot post-mounted sign will be placed at the entrances to the active haul roads with instructions to remind drivers to remain on existing gravel roads and pavements;

A consultant will monitor the construction full-time to ensure compliance with the conservation measures;

Equipment will be staged on a closed section of existing taxiway or apron pavement;

All temporary disturbances will be restored with the addition of loam and Karner blue butterfly-friendly grass seed. *Please note that sandy soils (not loam) shall be used (see **terms and conditions**);*

Equipment will be staged on the existing road surface and will remain on the road whenever possible; however, limited passing of equipment off and within close proximity to the edge of the road will be required;

The County will coordinate activities with the NYSDEC; and

All activities will be under the management of County personnel.

A summary of projects for which the Service and FAA anticipated incidental take from the 2002 BO and subsequent amendments is provided in Table 1. Replace Table 1 (page 7 of the 2009 BO) with the following.

Table 1. Projects for which incidental take has previously been provided.

Project	Acreage Affected	Type of Incidental Take
Reconfigure Itinerant Tiedown Apron (includes relocation of two fuel tanks)	2.84	Permanent occupied habitat loss (kill and harm)
Glider Hangar	0.50	Permanent occupied habitat loss
Construct Snow Removal Equipment Storage Building	0.08	Permanent occupied habitat loss
T-Hangar Development	0.40	Permanent occupied habitat loss
AWOS Gravel Access Road	0.08	Permanent occupied habitat loss
Paving of AWOS Access Road	NA	Already counted as permanent occupied habitat loss
FBO Building and Apron	0.37	Permanent occupied habitat loss
Access road paving	5.7	Permanent occupied habitat loss
Areas Mowed for Safety (i.e. around taxiway lights) - (Management Agreement)	3.00	Recurring disturbance (kill and harm)
Turf in Exempt Areas – (1) Mowing (Management Agreement)	11.00	Recurring disturbance
Snow Blowing and Plowing (Management Agreement)	0.12	Recurring disturbance
Glider Operations Areas (Glider Operations Agreement)	5.00	Recurring disturbance
	29.09	**Subtotal** (Permanent loss and recurring disturbance)
Rehabilitation of Runway 14/32	2.54	Temporary disturbance/habitat loss (kill and short-term harm)
Reconstruct Taxiway D-North	0.08	Temporary disturbance/habitat loss
Reconstruct Taxiway E	0.27	Temporary disturbance/habitat loss
Reconstruct Taxiway C	0.63	Temporary disturbance/habitat loss
Reconstruct Taxiway A	1.38	Temporary disturbance/habitat loss

Regrading Along the Entrance Taxiway to the North American Aviation Area	0.02	Temporary disturbance/habitat loss
Replacement of the Airport Beacon	0.04	Temporary disturbance/habitat loss
Itinerant apron replacement	0.06	Temporary disturbance/habitat loss within exempt mowing area (not duplicating acreage in final total)
Staging area	0.49	Temporary disturbance/habitat loss within exempt mowing area (not duplicating acreage in final total)
Access road maintenance	3.27	Temporary disturbance/habitat loss along edges
	9.03	**Subtotal** (Temporary disturbance/habitat loss)
Mowing in non-exempt areas	**~261**	Temporary disturbance to KBBs (kill/injure)
	298.32	**TOTAL** (All projects and activities)

Rangewide Status of the Species

Species not considered further in this opinion

No updates.

Listing Status

No updates.

Species Description

No updates.

Life History

No updates.

Status and Distribution

No updates.

Species Recovery

No updates.

Recovery Units

No changes to first two introductory paragraphs. Add new subheadings and revise remainder of page 15 of the 2009 BO as described below.

Status of the Karner Blue Butterfly within GLA

The Karner blue butterfly is known from approximately 28 locations in New York (all within the GLA Recovery Unit) at this time. There may be multiple management sites within a given sub-population and habitat restoration activities since 2002 have connected many previously separate areas. At least half of the New York management sites are 10 acres or less in size and another 25 percent are less than 20 acres (K. O'Brien, NYSDEC, 10/25/2002 pers. communication). These small sites are threatened by unfavorable mowing practices, woody encroachment from adjacent woodlands, development, and incompatible management practices.

The following paraphrased information was provided for the 2008 Service Recovery Data Call (K. O'Brien, NYSDEC, 08/28/2008 pers. communication). In 2008 we saw a continuation of the general downturn except in a few locations where Karner blue butterflies are expanding into recently created habitat adjacent to an existing subpopulation. Numbers at most known sites are lower than past years and even more sites may be extirpated. In the Albany Pine Bush, the highest number seen at any site was a spring brood count of 19 which then had a peak second flight count of 8. In the Saratoga Sandplains, the new habitat sites had peak counts markedly higher than in 2007 (103 was the highest count at one site, with several in the 90s), but almost all had summer brood counts much lower than the spring. The Airport had second brood counts over 100 for the first time since 2005; however, most of the other sites in Saratoga West had extremely low counts. There are no currently viable sites within the Queensbury population. Loss of lupine due to succession and/or damage from human activity, as well as weather, may account for the low counts at many sites.

The 2009 Service Recovery Data Call indicated an increase (compared to very low counts in 2006-2008) in the Saratoga County Airport population, with general declines at other New York (GLA) sites (Service 2009). In general, Karner blue butterfly numbers were better in 2010 than in 2009, possibly due to the better (although still extreme) weather (NYSDEC 2011).

Factors Affecting the Species' Environment within GLA

Habitat loss, fragmentation, and degradation are considered the primary threats to the survival of the species (Service 2003). Development throughout the Saratoga, Queensbury, and Albany regions has contributed to the species' decline and remains the primary threat to Karner blue butterflies in New York State. Fire suppression, resulting in vegetational succession, and habitat fragmentation have also impacted Karner blues in New York. These activities have reduced the native vegetation of the Albany Pine Bush in New York State from 25,000 acres to about 2,500 acres. However, the NYSDEC and partners like The Nature Conservancy (TNC) are actively working to restore habitat throughout the Albany Pine Bush and Saratoga Sandplains.

Ongoing Karner blue butterfly management and monitoring (e.g., monitoring and marking butterflies; mowing and prescribed burning of vegetation; collection of lupine seed; captive-rearing and translocations of butterflies) may exert near-term adverse effects on small proportions of local populations of Karner blue butterflies; however, these activities are also essential to maintain long-term habitat conditions that cannot persist without regular active management.

Similar restoration and management activities, along with the potential for a return to baseline habitat conditions associated with a recently issued Safe Harbor Agreement to TNC, were addressed in an intra-Service biological opinion dated April 12, 2010.

A biological opinion issued to the U.S. Army Corps of Engineers on May 20, 2010, documented effects and anticipated incidental take associated with butterfly management and monitoring of a restoration site as part of mitigation for impacts associated with expansion of the Albany County Landfill. No other biological opinions have been issued for Karner blue butterflies in New York State.

Environmental Baseline

Status of the Karner blue butterfly at Saratoga County Airport

Replace the entire section with the following language.

As noted above, there are approximately 28 Karner blue butterfly sub-populations in New York. Nine sub-populations are located in the Saratoga West viable population area (Airport, Geyser Road Dune Cut, Geyser Road Railroad, Geyser Road/Rowland Street, Rowland Street PROW, Rowland Street West, Hutchins Road, Route 145 Sandpit, Saratoga Spa State Park). The Airport is currently the largest Karner blue butterfly single site by acreage in the entire state. However, there are larger sub-populations in terms of numbers in Saratoga Sandplains. The closest two sub-populations to the Airport are powerlines approximately 500 meters away with the remaining much farther away.

The NYSDEC conducts transect surveys at the Airport each year. The counts from these transects do not represent the true population size, rather, they are an index to compare relative counts from year to year. The actual population size is likely much greater than the transect counts, and distance sampling is now used at the Airport to estimate population size. That said, we do know that the Airport has provided some of the largest numbers of Karner blue butterflies in the state. Peak second brood counts were 426 in 1997, 277 in 1998, 457 in 1999, 208 in 2000, 907 in 2001, 129 in 2002, 226 in 2003, 938 in 2004, 358 in 2005, 29 in 2006, 42 in 2007, and 177 in 2008. Distance sampling conducted in 2007, 2009, and 2010 resulted in summer brood estimates of 900-1,300, 550-800, and 1,450-2,250 butterflies respectively (NYSDEC 2011). The variability in the numbers is most likely due to weather events at the airport. For example, in the Spring of 2002, late frosts damaged much of the lupine by killing leaves and flowers and during the activity period of the second brood, severe thunderstorms and wind events went through the area.

One of the most significant factors potentially limiting the Karner blue butterfly population at the Airport is the homogeneity of the site; the habitat is very open with little to no diversity in structure or topography. This homogeneity decreases the Karner blue's ability to survive weather events such as frosts or high winds. In addition, the nectar is poorly distributed throughout the site. Finally, some management practices of the County impact the Karner blue butterfly, as well as accidental incidents involving the County or users of the airport property. However, it is difficult to fully assess the long-term viability of the site, as the butterfly's future presence on nearby tracts is unknown; dispersal rates from or to the site are also unknown. Nearby Karner blue butterfly patches have an uncertain future given their lack of management. In addition, we have limited opportunities to create new patches near the Airport at this time.

Action Area

No updates.

Effects of the Action

No changes to the introductory sentence.

Direct Effects

Replace the entire section with the following language.

Many of the proposed activities at the Airport will result in direct adverse effects on Karner blue butterflies and their habitat as a result of the initial disturbance and removal of occupied and potential habitat for some of the projects, and the temporary disturbance of occupied and potential habitat for other projects and activities. Since some life stage of the Karner blue butterfly (eggs, larvae, pupae, or adults) are present year-round in occupied habitat, those projects and activities affecting occupied habitat, either permanently or temporarily will result in the taking (kill or injure) of Karner blue butterfly eggs, larvae, pupae, or adults, depending on the time of year of the disturbance to the habitat.

The host plant for the Karner blue butterfly, wild blue lupine, and the nectar species used by the adults are not evenly distributed over the airport property. Most of the open areas of the airport are mowed according to the existing Management Agreement with the NYSDEC using certain methods and timing to minimize potential impacts on the butterflies or their other life stages. Some areas of the airport have been designated as "exempt areas" under the Management Agreement and more frequent mowing and certain other necessary activities are allowed to take place within the exempt areas. These areas total approximately 14 acres. Lupine and Karner blue butterflies or their other life stages may occur in grassy open areas within these exempt areas as well as the other open areas of the airport property; however, lupine and Karner blue butterfly occurrences in these exempt areas would be more scattered and sparse due to the habitat conditions, development, and activities there. The proposed activities addressed in this BO update will all occur within 4.94 acres of previously described "exempt areas". An additional 4.53 acres of temporary disturbance is proposed within "non-exempt" currently mowed areas.

There has been no comprehensive mapping of lupine or nectar species at the Airport, although lupine concentrations have been identified. For the purposes of this consultation and evaluation of project impacts, it was agreed to assume that lupine, nectar, and Karner blue butterflies or their other life stages may be present in any open grassy areas of the property, and that the effects of the various projects and activities would be evaluated based on the acreages of open grassy areas affected. Access roads previously had lupine and nectar growing through the gravel in many locations. However, access roads have since been paved. Other non-forested, non-paved, non-manicured lawn areas are also considered as habitat. The Service recognizes that the actual amount of potential habitat or habitat that is occupied by Karner blue butterflies or their other life stages, and therefore affected, is less than the acreages described in the project documents and this BO.

Projects and activities that will result in the loss of Karner blue butterflies in any of their life stages that are present have been identified in the project documents and information provided for this consultation. Italicized projects have been completed or are ongoing since the 2002 BO. These projects and the acreages affected by them are:

- Reconfigure Itinerant Tiedown Apron (includes relocation of two fuel tanks) (2.84 acres) *- Not completed but the avgas tank has been removed from the site*
- *Glider Hangar (0.5 acre) - completed*
- Construct Snow Removal Equipment Storage Building (0.08 acre) - *no longer proposed*
- T-Hangar Development (0.4 acre)
- *Gravel AWOS Access Road (0.08 acre) - completed*
- *Paving of AWOS Access Road (same acreage) - completed*
- FBO Building and Apron (0.37 acre)
- *Annual Areas Mowed for Safety (i.e. around taxiway lights) (3.0 acres) - ongoing*
- *Annual Areas Mowed Around the AWOS (up to 0.72 acre) - ongoing*
- *Turf in Exempt Areas – Annual Mowing (11 acres) - ongoing*
- *Annual Glider Operations Areas (up to 5.0 acres) - ongoing*
- *Rehabilitation of Runway 14/32 (2.54 acres) - completed*
- *Reconstruct Taxiway C (0.63 acre) - completed*
- *Reconstruct Taxiway A (1.38 acres) - completed*
- *Reconstruct Taxiway D-North (0.08 acre) - completed*

- *Reconstruct Taxiway E (0.27 acre) - completed*

- *Reconstruct Itinerant Apron (0.06 acre) - completed*

- *Temporary staging area for Taxiway B, D, E, F and Itinerant Apron reconstruction (0.49 acre) - completed*

- *Regrading Along the Entrance Taxiway to the North American Aviation Area (0.02 acre) - completed*

- *Replacement of the Airport Beacon (0.04 acre) - completed*

- *Annual Snow Blowing and Plowing (0.12 acre) - ongoing*

- *Annual Mowing in Non-Exempt Areas - Between October 15 and December 31 (191 acres) - ongoing*

- *Annual Mowing in Newly Cleared and Replanted Areas (70 acres) - ongoing*

- *Access Road Paving (limited off-road work and some small patches of lupine in current gravel roads) (5.7 acres) - completed*

- *New Hangar and apron adjacent to North American Flight Services (formerly Richmor) - completed*

<u>Indirect Effects</u>

Replace the entire section with the following language.

Many of the above-listed activities also have the potential to result in indirect effects to Karner blue butterflies. The following actions will result in permanent loss of occupied habitat (lupine and/or nectar).

- Reconfigure Itinerant Tiedown Apron (includes relocation of two fuel tanks) (2.84 acres) - *Not completed but the avgas tank has been removed from the site*

- *Glider Hangar (0.5 acre) - completed*

- Construct Snow Removal Equipment Storage Building (0.08 acre) - *no longer proposed*

- T-Hangar Development (0.4 acre)

- *AWOS Access Road (0.08 acre) - completed*

- *Paving of AWOS Access Road (same acreage) - completed*

- FBO Building and Apron (0.37 acre)

- *Access Road Paving (limited off-road work and some small patches of lupine and nectar in current gravel roads) (5.7 acres) - completed*

The following activities will result in long-term impacts (although no removal or destruction) to occupied habitat. The continual nature of the disturbance throughout the growing season renders them virtually permanently unavailable to Karner blue butterflies. Temporary adverse effects associated with the recurring activities taking place under the Management Agreement and Glider Operations Agreement were originally anticipated to be short-term but recurring periodically as described in the agreements. A more accurate description is that effects are long-term in the set-up areas adjacent to the runways given the repeated disturbance except for the set-up area next to runway 14 which is seldom used by gliders. Effects of glider landing areas off runways are less frequent and can be considered short-term in nature.

- *Annual Areas Mowed for Safety (i.e. around taxiway lights) (3.0 acres) - ongoing*

- *Annual Areas Mowed Around the AWOS (up to 0.72 acre) - ongoing*

- *Turf in Exempt Areas – Annual Mowing (11 acres) - ongoing*

- *Annual Glider Operations Areas (up to 5.0 acres) - ongoing*

- *Access Road Maintenance (up to 3.27 acres) - ongoing*

In addition, other projects and activities will result in the loss of lupine with replanting of grasses/nectar. These projects and activities and the acreages affected are:

- *Rehabilitation of Runway 14/32 (2.54 acres) - completed*

- *Reconstruct Taxiway C (0.63 acre) - completed*

- *Reconstruct Taxiway A (1.38 acres) - completed*

- *Reconstruct Taxiway D-North (0.08 acre) - completed*

- *Reconstruct Taxiway E (0.27 acre) - completed*

- *Regrading Along the Entrance Taxiway to the North American Aviation Area (0.02 acre) - completed*

- *Replacement of the Airport Beacon (0.04 acre) - completed*

However, the small acreage and scattered nature of the areas of impact when compared to the overall availability of habitat for the Karner blue butterfly within their daily home range (<200 m on average) should result in minimal and short-term indirect effects to individual butterflies.

Beneficial Effects

Add the following introductory paragraph to page 21 of the 2009 BO.

The proposed action implements recovery actions in the Karner blue butterfly recovery plan (Service 2003). The primary actions addressed are Action 1.23 (continue/start management activities for New York), 1.4111 (protect existing Karner blue populations using Section 7 Federal responsibilities), and 4.2 (inform local governments of Karner blue recovery units).

Cumulative Effects

No updates.

Conclusion

Replace the entire section with the following language.

The proposed taxiway lighting rehabilitation, installation of PAPI lights, and reconstruction of the based aircraft apron are anticipated to result in the death of any Karner blue butterflies (egg stage) that are present in the 9.47 acres of construction work area that were not already killed during routine mowing of the area. As stated above, all work will be conducted within areas that are routinely mowed and for which the Service has previously authorized incidental take of Karner blue butterflies.

In addition, the trenching activities are anticipated to result in the injury or death of any wild blue lupine, grass, or nectar plants with roots in the trench zone. This will result in a temporary decrease in habitat for Karner blue butterflies until new plants are established. No additional acres of Karner blue butterfly habitat will be impacted from the proposed action than previously considered. However, we did not previously expect death of plants due to routine mowing. Instead, we expected that plants would be maintained in a state that was generally unsuitable for use by Karner blue butterflies. Therefore, we expect few Karner blue butterflies to be exposed to the activities. However, any butterflies that are exposed to heavy equipment are anticipated to be crushed and die.

The FAA/County have proposed restoring the work area with loam and Karner blue butterfly grass seed. Please see **terms and conditions** for a revision to the restoration terms.

Given that no new habitat areas are proposed for disturbance, we do not anticipate any new impact to the overall population at the Airport. In turn, we do not expect the project to result in reductions in the overall fitness of the population. Therefore, it is the Service's Biological Opinion that the FAA's approval of the proposed taxiway lighting rehabilitation, installation of PAPI lights, and reconstruction of the based aircraft apron, is not likely to jeopardize the continued existence of the Karner blue butterfly. No critical habitat has been designated for this species, therefore, none will be affected.

The Service has based this determination on the relative quality and size of the actual areas that will be adversely affected by the proposed action, the measures to avoid and minimize adverse impacts on the Karner blue butterfly that have been included in the proposed action and related projects and activities, the draft Management Agreement and draft Glider Operations Agreement that are designed to minimize adverse effects on the Karner blue butterfly, and the creation of approximately 70 acres of habitat at the site, as part of the proposed action that is expected to benefit the Karner blue butterfly.

III. INCIDENTAL TAKE STATEMENT

No changes to the introductory paragraphs.

Amount and Extent of Take

To the end of this section, add the following.

The proposed taxiway lighting reconstruction and PAPI will result in the death of any Karner blue butterflies (egg stage) that are present in the 9.47 acres of construction work area that were not already killed during routine mowing of the area. In addition, the trenching activities are anticipated to result in the injury or death of any wild blue lupine, grass, or nectar plants with roots in the trench zone.

Table 2 on page 24 of the 2009 BO describes the Project areas where the proposed lighting actions will occur. 4.94 acres will occur in "Areas Mowed for Safety (i.e. around taxiway lights) - (Management Agreement) - 3.00 acres of recurring disturbance (kill and harm)" or "Turf in Exempt Areas (1) Mowing – (Management Agreement) - 11.0 acres of recurring disturbance" and 4.53 acres will occur in "Mowing in non-exempt areas – 261 acres of temporary disturbance to KBBs."

Effect of the Take

In the accompanying BO, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures to Minimize Take

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take:

Add the following measure to the 2009 BO.

1. Avoid disturbance of Karner blue butterfly habitat adjacent to or outside the areas described for project construction in the FAA's March 20, 2011, letter.

Terms and Conditions

In order to be exempt from prohibitions of Section 9 of the Act, the FAA must ensure that the following terms and conditions, which implement the reasonable and prudent measures described above, and outline required reporting and monitoring requirements, are included in the project plans. These terms and conditions are non-discretionary.

Add the following terms and conditions to the 2009 BO.

1. The County (or NYSDEC) shall inspect project areas at the start of and during construction to ensure construction disturbance is limited to the appropriate areas as described in the FAA's March 10, 2011, letter.

2. The County shall backfill trenched areas with the trenched soil material or other clean, sandy soils immediately after taxiway and PAPI equipment installation. The County shall plant all disturbed soils with butterfly-friendly grass by May 15, 2012. Plant species shall be coordinated with NYSDEC and the Service by October 31, 2011.

No changes to conclusion paragraph.

Conservation Recommendations

No updates.

Reinitiation of Formal Consultation

This concludes formal consultation on the action(s) outlined in the March 10, 2011, request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The Service appreciates the opportunity to work with the FAA, the County, and the NYSDEC in fulfilling our mutual responsibilities under the Endangered Species Act. Please contact Robyn Niver of this office at (607) 753-9334 if you have any questions or require additional information.

Sincerely,

David A. Stilwell

David A. Stilwell
Field Supervisor

REFERENCES

Add the following references.

New York State Department of Environmental Conservation. 2011. PROGRESS REPORT: KARNER BLUE BUTTERFLY SURVEYS OVERVIEW. April 1, 2010 - March 31, 2011.

U.S. Fish and Wildlife Service. 2009. Recovery Data Call unpublished report.

Enclosure

cc: Saratoga County Department of Public Works, Ballston Spa, NY (T. Speziale)
NYSDEC, Albany, NY (Wildlife Diversity Unit, K. O'Brien)
NYSDEC, Warrensburg, NY (Env. Permits)
NYFO, Project & BR Files
Niver File
ES:NYFO:RNiver:ran:mvd

Appendix 4-E – Wetland and Waterways Delineation

WETLAND DELINEATION REPORT

MASTER PLAN UPDATE
SARATOGA COUNTY AIRPORT
BALLSTON SPA, SARATOGA COUNTY, NEW YORK

August 2013

<u>Prepared For:</u>

Saratoga County
Department of Public Works
3654 Galway Road
Ballston Spa, NY 12020-2517

<u>Prepared By:</u>

McFarland-Johnson, Inc.
49 Court Street
Metrocenter
PO Box 1980
Binghamton, NY 13902-1980

Table of Contents

Section **Page**

APPENDICES

1 PROJECT BACKGROUND

1.1 INTRODUCTION

McFarland Johnson, Inc. (MJ) was contracted by Saratoga County to conduct a wetland delineation as part of the Master Plan Update (MPU) for Saratoga County Airport (Airport). The Airport is a county-owned general aviation airport located in the Town of Milton, Saratoga County, New York (Figure 1).

1.2 PROJECT DESCRIPTION

The Airport MPU is a comprehensive study that describes the short-, medium-, and long-term development plans to meet the future aviation demands of the airport. In developing the Airport MPU, consideration was given to the potential environmental impacts of potential future development at the airport. This report was prepared to assist in creating development alternatives that had the least environmental impacts to wetlands.

2 METHODS

2.1 AGENCY RESOURCE INFORMATION

Prior to the field survey of Airport, aerial photographs and various mapping resources were reviewed. The mapping resources included:

a) United States Geological Survey (USGS) Topographic Map (Saratoga Springs USGS 7.5 Minute Quadrangle), Appendix A- Figure 1.

b) New York State Department of Environmental Conservation (NYSDEC) Freshwater Wetlands Map, Appendix A - Figure 2.

c) United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map, Appendix A- Figure 3.

d) Federal Emergency Management Agency (FEMA) Floodplain Map (FEMA Map Service Center, Appendix A- Figure 4.

e) Natural Resource Conservation Service (NRCS) Soils Map, Appendix A- Figure 5.

2.2 FIELD DATA COLLECTION

Wetland delineations were completed by MJ during site visits on April 25 and 26, 2013. The Project Study Area (PSA) covered by this wetland delineation report is the Airport property boundaries. The wetland delineation was conducted through field investigations of vegetation, soils and hydrology in accordance with the 1987 *USACE Wetlands Delineation Manual* (1987 USACE Manual) and 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (2012 Regional Supplement). In the vicinity of those areas where NYSDEC Freshwater Wetlands were mapped, the 1995 *New York State Freshwater Wetlands Delineation Manual* (1995 NYSDEC Manual) was also consulted.

Surveyor’s flags were placed along the wetland boundaries based on observations of vegetation, hydric soil indicators, and hydrology conditions. The wetland and waterway boundaries were surveyed using a hand held Trimble GPS Pathfinder ProXH receiver with H-Star technology with decimeter (10 cm/ 4 inch) post processing accuracy. USACE Wetland Determination Forms and wetland photographs were also compiled. Further descriptions on the field criteria and methods used to identify wetlands within the project study area are described in the subsequent subsections.

2.2.1 WETLANDS

The 1987 USACE and 1995 NYSDEC Wetland Delineation Manuals are generally similar in methodologies for delineating wetland boundaries, however the 1995 NYSDEC Manual is more conservative. The 1995 NYSDEC Manual states that if an area meets a set of specific hydrophytic vegetation criteria, then the area can be considered a wetland without detailed investigation of hydrology and soils.

Hydrophytes are plants that are especially adapted to survive in wet soil conditions in predominantly anaerobic conditions. The 2012 *National List of Plant Species That Occur in Wetlands* assigns individual species to specific indicator statuses based on their probability to occur in wetlands or uplands. Further information on the specific indicator statuses is provided below.

Indicator Code	Indicator Status	Comment
OBL	Obligate Wetland	Almost always is a hydrophyte, rarely in uplands
FACW	Facultative Wetland	Usually is a hydrophyte but occasionally found in uplands
FAC	Facultative	Commonly occurs as either a hydrophyte or non-hydrophyte
FACU	Facultative Upland	Occasionally is a hydrophyte but usually occurs in uplands
UPL	Obligate Upland	Rarely is a hydrophyte, almost always in uplands

A species is considered hydrophytic if it listed as FAC, FACW or OBL.

2.2.1.1 1995 NYSDEC Manual

The 1995 NYSDEC Manual considers an area to be a wetland without detailed investigation of hydrology and soils if the following hydophytic vegetation criteria are met:

(1) FACW or wetter species comprise more than 50 percent of the dominant species of the plant community and no FACU or UPL species are dominant, or;

(2) OBL perennial species collectively represent at least 10 percent aerial cover in the plant community and are evenly distributed throughout the community and not restricted to depressional microsites, or;

(3) One or more dominant plant species in the community has one or more of the following morphological adaptations: hypertrophied lenticels, buttressed stems or trunks, multiple trunks, adventitious roots, shallow root systems, or other locally applicable adaptation, or;

(4) The presence of unbroken expanses of peat mosses (*Sphagnum* spp.) and other regionally applicable species of bryophytes over persistently saturated soil.

If none of the aforementioned vegetation criteria are met, but more than 50 percent of the dominant species of all strata are FAC or some combination of FAC and wetter species; then an investigation and verification of hydrology and/or hydric soils is required to define the wetland boundary. At this point, the methodologies of the two manuals for identifying wetland boundaries are generally consistent.

2.2.1.2 1987 USACE Manual and 2012 Regional Supplement

The 2012 Regional Supplement uses several tests, as needed, to analyze the primacy of hydrophytes in data collection plots based on plant species absolute percent covers, dominance, and morphological adaptations. Further information on these tests is provided below.

- Rapid Test – Hydrophytic dominance is confirmed when all dominant species across all stratums are OBL or FACW. Dominant plant species are determined by ranking species within a stratum based on their absolute percent cover as individuals, and then selecting those species in decreasing order who as individuals, or cumulatively, immediately exceed 50% of the total absolute cover by all species in that stratum. Those species whose absolute percent cover individually exceed 20% of the total absolute cover by all species in that stratum are also considered dominants.

- Dominance Test – Hydrophytic primacy is confirmed when greater than 50% of the dominant plants across all strata are OBL, FACW or FAC. Dominant plant species are determined by ranking species within a stratum based on their absolute percent cover as individuals, and then selecting those species in decreasing order who as individuals or cumulatively immediately exceed 50% of the total absolute cover by all species in that stratum. Those species whose absolute percent cover individually exceed 20% of the total absolute cover by all species in that stratum are also considered dominants.

- Prevalence Test – Hydrophytic primacy is confirmed when the plot-based prevalence index is greater than 3.0. The prevalence index is calculated based on a weighted-average wetland indicator status of all species identified within a plot location. Dominant plant species are determined by a weighted average. Plants are given a numeric value based on the indicator status and abundance in the collection plot area. To meet the dominance category, the weighted average must be equal to or below 3.0.

- Morphological Adaptations – Hydrophytic primacy is confirmed if upon indicator status reassignment and primacy is satisfied through reevaluation via the Dominance Test or Prevalence Test. If more than 50% of a FACU species located in an area exhibit morphological adaptations such as shallow root systems, adventitious roots, hypertrophied lenticels, multi-stemmed trunks due to prolonged soil inundation or saturation, then this species is reassigned as a FAC species, and the Dominance Test and Prevalence Test are recalculated.

The 1987 USACE Manual and 2012 Regional Supplement require permanent inundation, sufficient periodic inundation, or soil saturation within 12 inches of the soil surface during the growing season to meet the criteria of wetland hydrology. Since wetland evaluations are comparatively brief, hydrology evaluations utilize primary and/ or secondary indicators that are readily visible during a site assessment. The 2012 Regional Supplement has established that a minimum of one primary indicator or two secondary indicators are required to meet the hydrology criterion. The listing primary and secondary indicators established in the 2012 Regional Supplement follows.

Primary field indicators for hydrology include:

- Surface Water
- High Water Table
- Saturations
- Water Marks
- Sediment Deposits
- Drift Deposits
- Algal Mat of Crust
- Iron Deposits
- Inundation Visible on Aerial Imagery
- Sparsely Vegetated Concave Surfaces
- Water Stained Leaves
- Aquatic Fauna
- Marl Deposits
- Hydrogen Sulfide Odor
- Oxidized Rhizospheres of Live Roots
- Reduced Iron Spots
- Recent Iron Reduction in Tilled Soils
- Thin Muck Surface
- Other (Explain)

Secondary hydrological indicators include:

- Surface Soil Cracks
- Drainage Patterns
- Moss Trim Lines
- Dry-Season Water Table
- Crayfish Burrows
- Saturation Visible on Aerial Imagery
- Stunted or Stressed Plants
- Geomorphic Position
- Shallow Aquitard
- Microtopographic Relief
- FAC-Neutral Test

The 1987 USACE Manual and 2012 Regional Supplement indicate that hydric soils are those that exhibit certain characteristic morphologies as the result from repeated periods of saturation or inundation for extended periods of time. These morphological characteristics persist during saturated and unsaturated conditions and can serve in identifying hydric soils in the field. Evidence of hydric soils was determined in the field through soil test pits dug to a depth of 16 inches below grade or to a depth as subsurface conditions allowed. The soil stratums were then described in form of texture, saturation, matrix color, and redox features. The soil descriptions were then compared to the most current version of the USDA NRCS publication *Field Indicators of Hydric Soils in the United States* for determination of the presence of a hydric soil.

3 RESULTS

3.1 AGENCY RESOURCES INFORMATION

Review of the USGS mapping did not indicate the potential presence of any wetlands or waterways at Airport (Appendix A- Figure 1).

Review of the NYSDEC Freshwater Wetlands Map indicated that NYSDEC Freshwater Wetland S-18, a Class IV Wetland, is mapped near the northwest corner of the airport (Appendix A- Figure 2).

The NWI mapping indicates potential wetland areas that were identified by the US Fish and Wildlife Service (USFWS) using aerial photography. These maps do not have any regulatory consequence, but rather indicate areas that may meet federal wetland criteria. The NWI mapping did not indicate the potential presence of any wetlands or waterways in the PSA (Appendix A- Figure 3).

Based on soils information provided by the NRCS, the PSA had two small areas mapped with soil that is considered to be partially hydric (Appendix A- Figure 4). The mapped partially hydric soil was Deerfield loamy fine sand (DeA).

3.2 WETLANDS

A total of six wetlands, hereafter referred to alphabetically as Wetland A through Wetland F, were delineated at SCA.

Based on the U.S. Fish and Wildlife Service (USFWS) 1979 publication *Classification of Wetlands and Deepwater Habitats of the United States*, all six wetlands are considered to be palustrine emergent wetlands (PEM). The Wetlands and Waterways Delineation Plan is included in Appendix B. Wetland datasheets are included in Appendix C and wetland photographs are provided in Appendix D.

Feature I.D.	Feature Type	Acreage	NYSDEC Jurisdiction	USACE Jurisdiction
Wetland A	PEM	0.07	No	No
Wetland B	PEM	0.81	No	No
Wetland C	PEM	0.18	No	No
Wetland D	PEM	0.04	No	No
Wetland E	PEM	0.05	No	No
Wetland F	PEM	0.04	No	No

3.2.1 NYSDEC JURISDICTION

As previously stated, review of the NYSDEC Freshwater Wetlands Map indicated that NYSDEC Freshwater Wetland S-18, a Class IV Wetland, is mapped near the northwest corner of Saratoga County Airport. Based on field reconnaissance of the general vicinity and offset survey data collected from airport property, it is believed that NYSDEC

Freshwater Wetland S-18 occurs off airport property. Although Wetlands D, E, and F were delineated on airport property, and within the area mapped as NYSDEC Freshwater Wetland S-18, these wetlands are small isolated wetlands. Wetlands D and F are located within 50 linear feet from what is believed to be the true boundary of NYSDEC Freshwater Wetland S-18, while Wetland E is not. It is believed that Wetlands D, E, and F do not, collectively or individually, function as a unit with, nor do they significantly contribute to the ability of NYSDEC Freshwater Wetland S-18 in providing the wetland benefits listed in paragraphs (a), (b), (c), (e), (f), and (i) of Section 0105-7 of Article 24 of the ECL. Based on this assessment, it is believed that none of the six delineated wetlands on airport property are subject to NYSDEC jurisdiction under Article 24 of the ECL.

3.2.2 USACE JURISDICTION

Wetland A

Wetland A is dominated by woolgrass (*Scirpus cyperinus*). Hydrological conditions B10- Drainage Patterns and D2- Geomorphic Position were observed in Wetland A. The soils map shows the area of Wetland A mapped as WhA- Windsor loamy sand (nearly level), a non-hydric soil. Observed soils within Wetland A consisted of 10YR 3/2 loamy fine sand to a depth of 5.5 inches overlain a 2.5Y 5/3 loamy fine sand with 2% 7.5YR 4/6 redox concentrations to a depth of 9 inches. The soil layer from 9 to 11 inches consisted of 2.5Y 5/3 loamy fine sand with 20% 10YR 3/1 organic streaking, and from 11 to 16 inches consisted of 10YR 4/3 loamy fine sand. Based on this information, the soils within Wetland A meet the 2012 Regional Supplement hydric soils indicator S6- Stripped Matrix.

No wetland or other aquatic-dependent fauna where observed in Wetland A during the site visits conducted by MJ.

Wetland A is a closed depressional wetland with no significant nexus with a traditionally navigable waterway (TNW), and therefore it is assumed that Wetland A is not subject to USACE jurisdiction under Section 404 of the Clean Water Act.

Wetland B

Wetland B is dominated by woolgrass. Hydrological conditions B7- Inundation Visible on Aerial Imagery, B10- Drainage Patterns, and D2- Geomorphic Position were observed within Wetland B. Wetland B is mapped as Deerfield loamy fine sand- nearly level (DeA), a partially hydric soil. Observed soils within the wetland consisted of 10YR 3/4 loamy fine sand to a depth of 1 inch overlain a 10YR 2/1 loamy fine sand with 7% 10YR 3/3 redox concentrations to a depth of 16 inches. Based on this information, the soils within Wetland B meet the 2012 Regional Supplement hydric soils indicator S5- Sandy Redox.

No wetland or other aquatic-dependent fauna where observed in Wetland B during the site visits conducted by MJ.

Wetland B is a closed depressional wetland with no significant nexus with a TNW, and therefore it is believed that Wetland B is not subject to USACE jurisdiction under Section 404 of the Clean Water Act.

Wetland C

Wetland C is dominated by path rush (*Juncus tenuis*). Hydrological conditions A2- High Water Table, A3- Saturation, B1- Watermarks, B7- Inundation Visible on Aerial Imagery, B10- Drainage Patterns, and D2- Geomorphic Position were observed in Wetland C. Wetland C is mapped as WhA- Windsor loamy sand (nearly level), a non-hydric soil. Observed soils within the wetland consisted of 10YR 3/2 loamy fine sand to a depth of 1 inch overlain a 2.5YR 4/2 loamy fine sand with 2% 5YR 4/6 redox concentrations to a depth of 16 inches. Based on this information, the soils within Wetland C meet the 2012 Regional Supplement hydric soils indicator S5- Sandy Redox.

Red-spotted newt (*Notophthalmus v. viridescens*) adults and eggs were where observed in Wetland C during the site visits conducted by MJ.

Wetland C is an excavated closed depressional wetland with no significant nexus with a TNW, and therefore it is assumed that Wetland C is not subject to USACE jurisdiction under Section 404 of the Clean Water Act.

Wetland D

Wetland D is dominated by sedges (*Carex* sp.), soft rush (*Juncus effusus*), and woolgrass. Hydrological conditions C9- Saturation Visible on Aerial Imagery, B10- Drainage Patterns, and D2- Geomorphic Position were observed in Wetland D. Wetland D is mapped as Scio silt loam (0-3% slopes), a non-hydric soil. Observed soils within the wetland consisted of 10YR 2/1 loamy fine sand with 2% 5YR 3/4 redox concentrations to a depth of 11 inches. The soil layer from 11 to 16 inches consisted of 10YR 5/2 loamy fine sand with 3% 7.5YR 3/4 redox concentrations. Based on this information, the soils within Wetland D meet the 2012 Regional Supplement hydric soils indicators S5- Sandy Redox and S7- Dark Surface.

No wetland or other aquatic-dependent fauna where observed in Wetland D during the site visits conducted by MJ.

Wetland D is a closed depressional wetland, with no discernible hydrological connection to a TNW. Based on this information, it is believed that Wetland D is not subject to USACE jurisdiction under Section 404 of the Clean Water Act.

Wetland E

Wetland E is dominated by woolgrass and sedges. Hydrological conditions B10- Drainage Patterns, C9- Saturation Visible on Aerial Imagery, and D2- Geomorphic Position were observed in Wetland E. Wetland E is mapped as Scio silt loam (0-3% slopes), a non-hydric soil. Observed soils within the wetland consisted of 10YR 2/1 loamy fine sand with 10% 5YR 3/4 to a depth of 11 inches overlain a 10YR 4/3 loamy fine sand with 3% 10YR 4/3 redox concentrations to a depth of 16 inches. Based on this information, the soils within Wetland E meet the 2012 Regional Supplement hydric soils indicators S5- Sandy Redox and S7- Dark Surface.

No wetland or other aquatic-dependent fauna where observed in Wetland E during the site visits conducted by McFarland Johnson.

Wetland E is a closed depressional wetland, with no discernible hydrological connection to a TNW. Based on this information, it is inferred that Wetland E is not subject to USACE jurisdiction under Section 404 of the Clean Water Act.

Wetland F

Wetland F is dominated by sedges and redtop (*Agrostis gigantea*). Hydrological conditions B10- Drainage Patterns, C9- Saturation Visible on Aerial Imagery, and D2- Geomorphic Position were observed in Wetland F. Wetland F is mapped as Scio silt loam (0-3% slopes), a non-hydric soil. Observed soils within the wetland consisted of 10YR 2/1 loamy fine sand with 5% 5YR 3/4 redox concentrations to a depth of 8.5 inches overlain a 2.5YR 4/3 loamy fine sand with 2% 10YR 4/6 redox concentrations to a depth of 16 inches. Based on this information, the soils within Wetland F meet the 2012 Regional Supplement hydric soils indicators S5- Sandy Redox and S7- Dark Surface.

No wetland or other aquatic-dependent fauna where observed in Wetland F during the site visits conducted by McFarland Johnson.

Wetland F is a closed depressional wetland, with no discernible hydrological connection to a TNW. Based on this information, it is assumed that Wetland F is not subject to USACE jurisdiction under Section 404 of the Clean Water Act.

4 SUMMARY

Based on the wetland delineations performed by McFarland-Johnson, a total of six wetlands, Wetlands A through F, were identified and delineated within the 527.06 acre PSA. All delineated six wetlands are considered to be PEM wetlands.

Based on a review of the New York State Freshwater Wetland mapping and site reconnaissance, it is believed that none of the delineated wetlands are regulated by the NYSDEC under Article 24 of the ECL.

It is McFarland Johnson's opinion that Wetlands A through F are closed depressional wetlands, with no discernible hydrological connections to TNWs and are not regulated by the USACE under Section 404 of the CWA.

Confirmation of the Article 24 and Section 404 jurisdictional statuses of these wetlands will need to be confirmed by the USACE and NYSDEC.

Appendix A

Figures

Source:
TOPO!® Version 2.6.9
USGS 1:24,000
Topographical Maps

USGS Topographical Map
Saratoga County Airport
Ballston Spa, Saratoga County, New York

Figure 1

McFarland Johnson

Source:

NYSGIS Clearinghouse,
On-line: http://gis.ny.gov/

NYSDEC Freshwater Wetlands Map
Saratoga County Airport
Ballston Spa, Saratoga County, New York

Figure 2

Source:

USFWS National Wetlands Inventory Wetlands Mapper

NWI Wetlands Map
Saratoga County Airport
Ballston Spa, Saratoga County, New York

Figure 3

Source: FEMA Map Service Center, On-line: https://msc.fema.gov	**FEMA Floodplain Map** **Saratoga County Airport** **Ballston Spa, Saratoga County, New York**	**Figure 4**

McFarland Johnson

Map Unit Symbol	Map Unit Name	Hydric Rating
DeA	Deerfield loamy fine sand, nearly level	Partially Hydric
SeA	Scio silt loam, 0 to 3 percent slopes	Not Hydric
WnA	Windsor loamy sand, nearly level	Not Hydric
WnB	Windsor loamy sand, undulating	Not Hydric

Source:

NRCS Web Soil Survey, On-line:
http://websoilsurvey.nrcs.usda.gov/

NRCS Soils Map
Saratoga County Airport
Ballston Spa, Saratoga County, New York

Figure 5

Appendix B

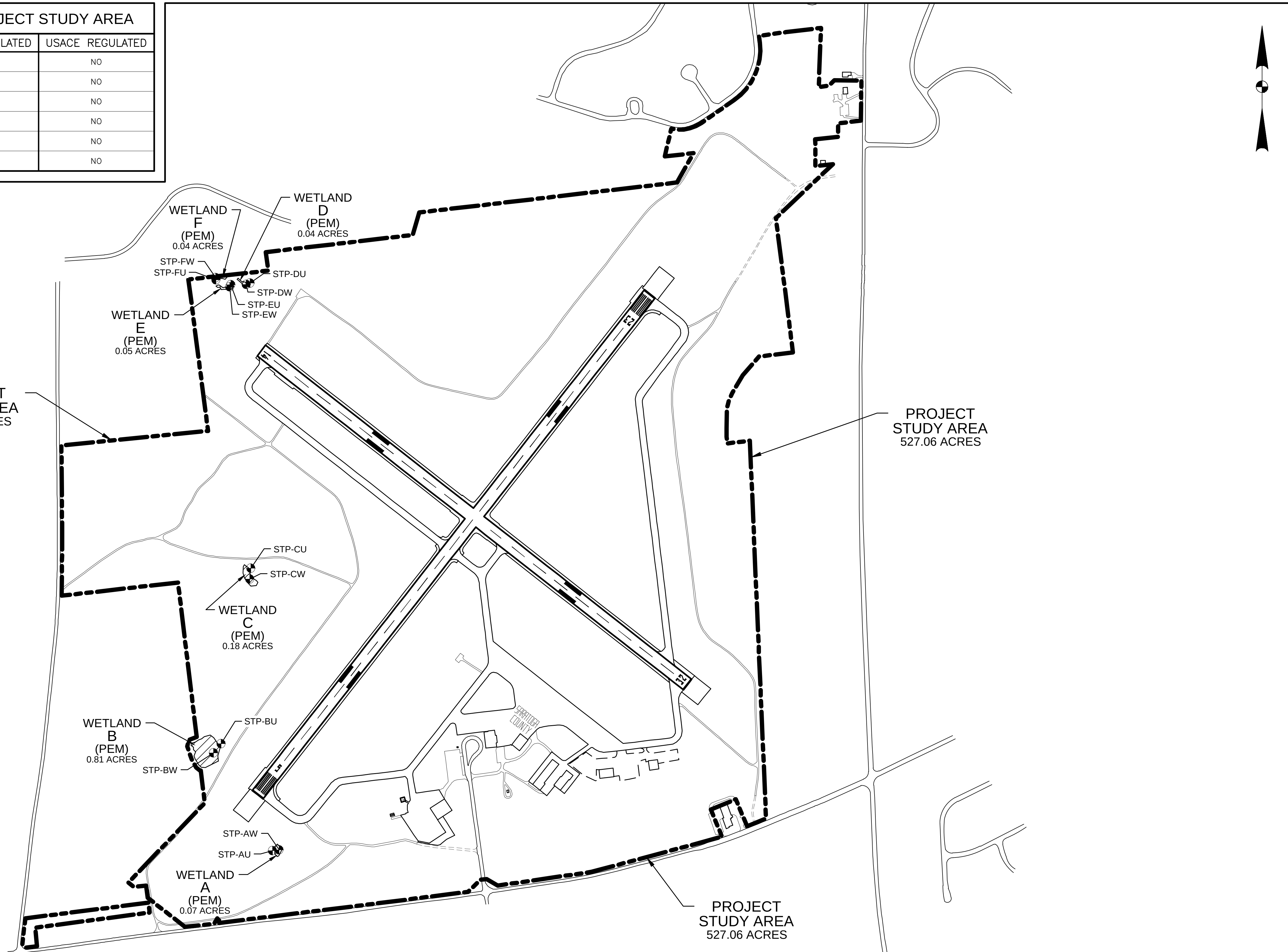
Wetland Delineation Plans

WETLANDS AND WATERWAYS DELINEATION - OVERALL PLAN

PLAN WDP-1

WETLANDS AND WATERWAYS WITHIN 527.06 ACRE PROJECT STUDY AREA				
FEATURE ID	FEATURE TYPE	AREA	NYDEC REGULATED	USACE REGULATED
WETLAND A	PEM	0.07 AC	NO	NO
WETLAND B	PEM	0.81 AC	NO	NO
WETLAND C	PEM	0.18 AC	NO	NO
WETLAND D	PEM	0.04 AC	NO	NO
WETLAND E	PEM	0.05 AC	NO	NO
WETLAND F	PEM	0.04 AC	NO	NO

NYSDEC REGULATED WETLAND ADJACENT AREA WITHIN 527.06 ACRE PROJECT STUDY AREA	
FEATURE ID	AREA
NYSDEC ADJACENT AREA	0.78 AC



WETLAND DATA POINT

PEM WETLAND

SARATOGA COUNTY AIRPORT

SCALE

0 800 1600

FEET

McFarland Johnson

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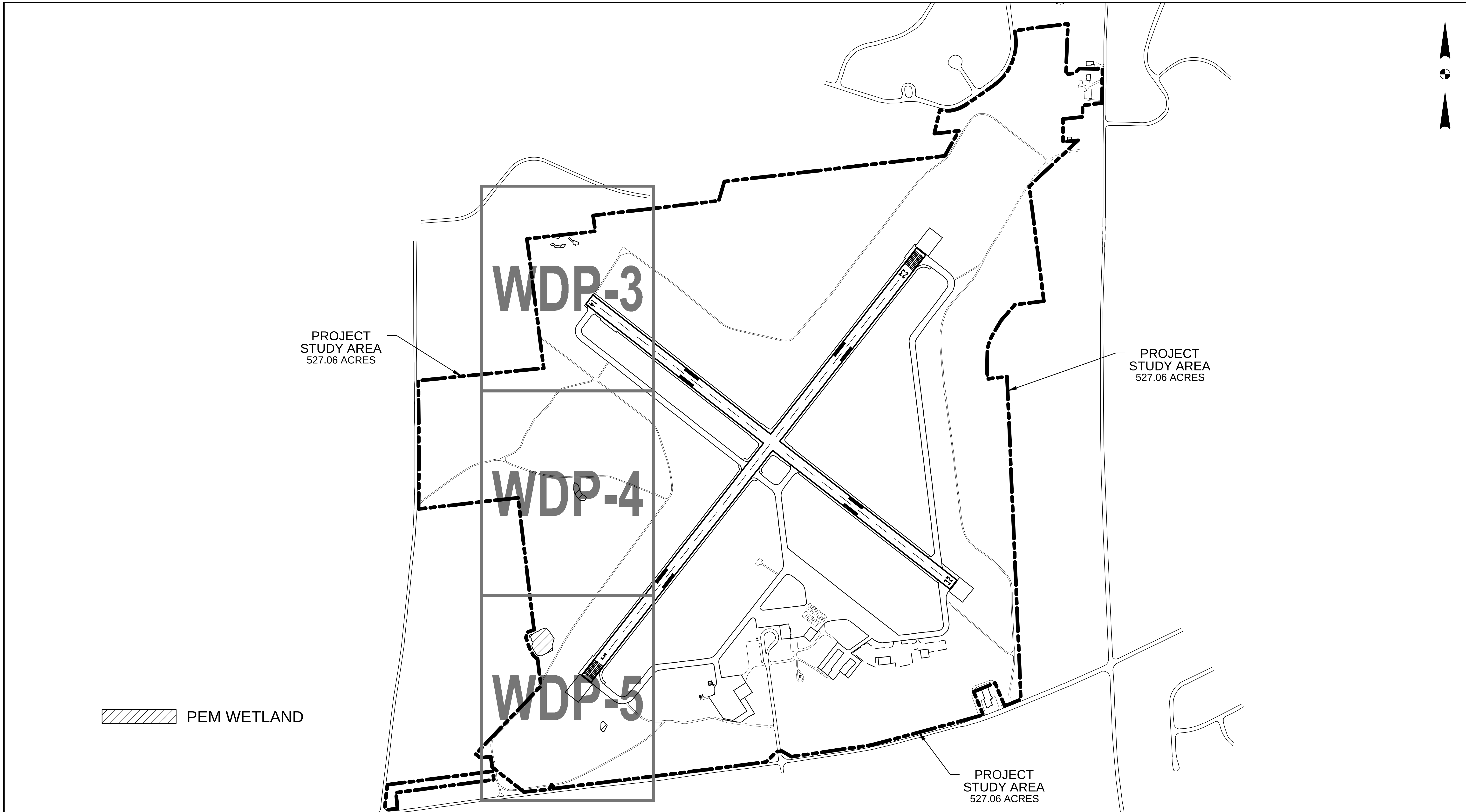
WETLANDS AND WATERWAYS DELINEATION - SUBSET LAYOUT PLAN

PLAN WDP-2



SARATOGA COUNTY AIRPORT

McFarland Johnson

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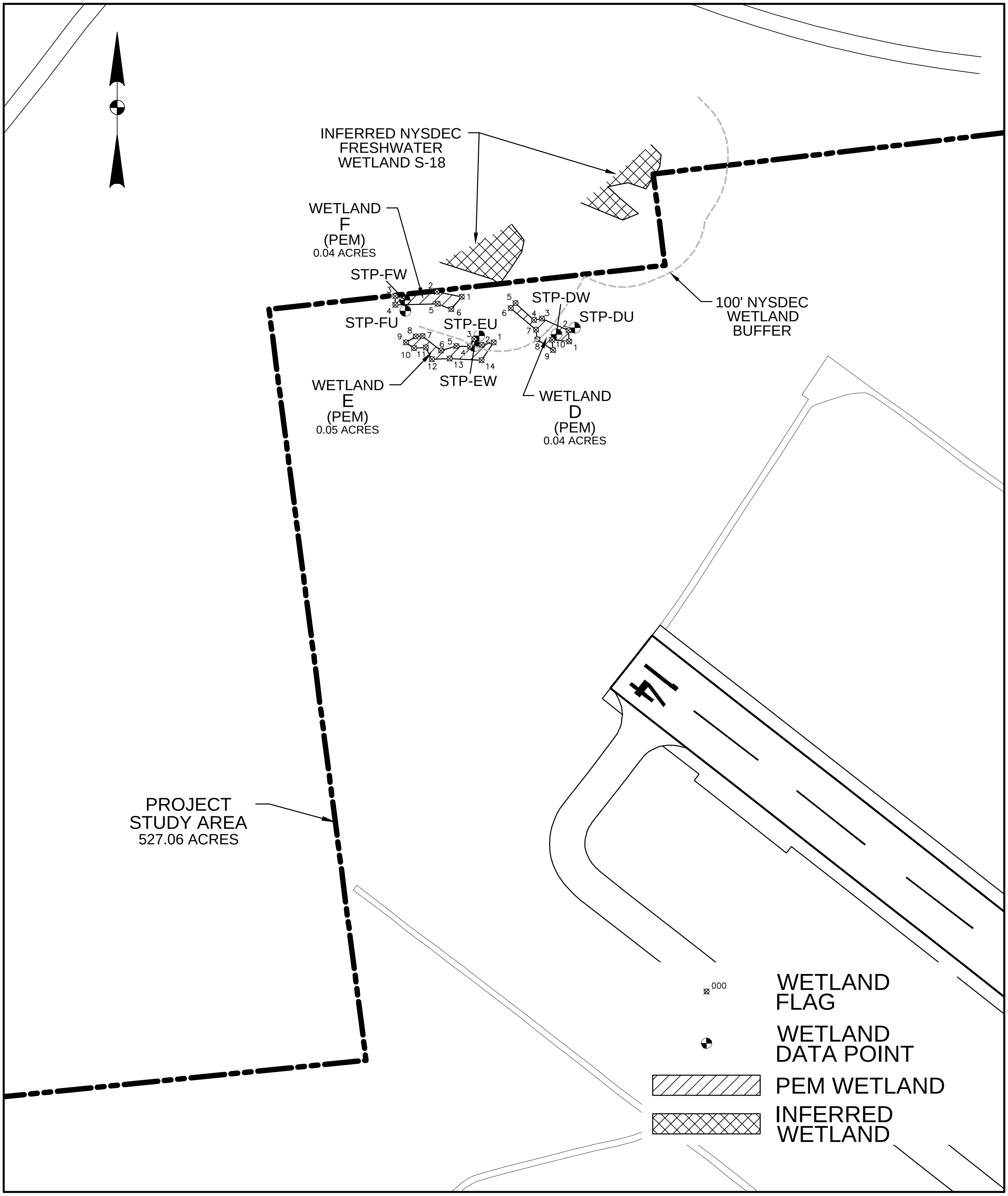
WETLANDS AND WATERWAYS DELINEATION - SUBSET PLAN

PLAN WDP-3



SARATOGA COUNTY AIRPORT

SCALE

0 200 400

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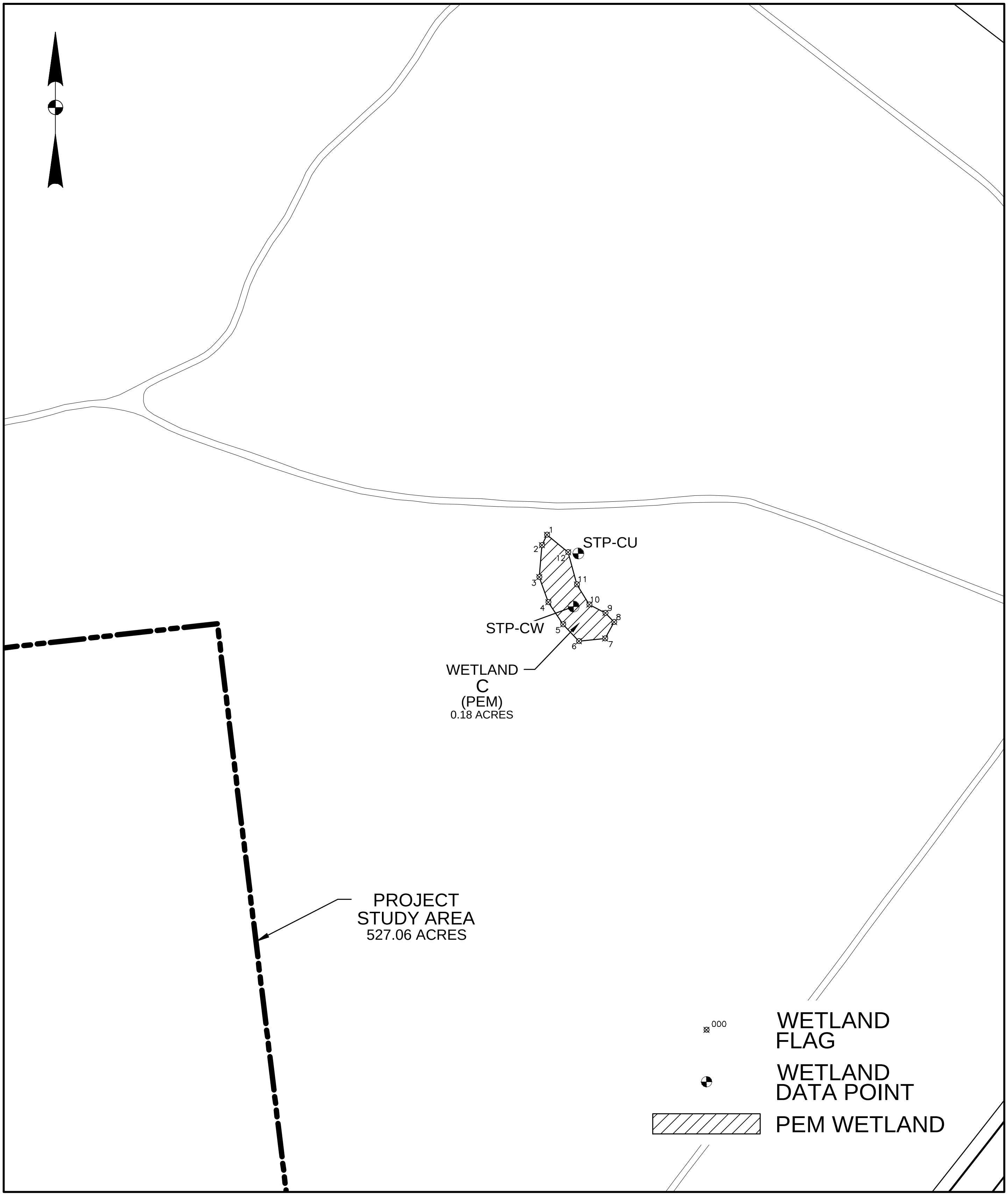
WETLANDS AND WATERWAYS DELINEATION - SUBSET PLAN

PLAN WDP-4



SARATOGA COUNTY AIRPORT

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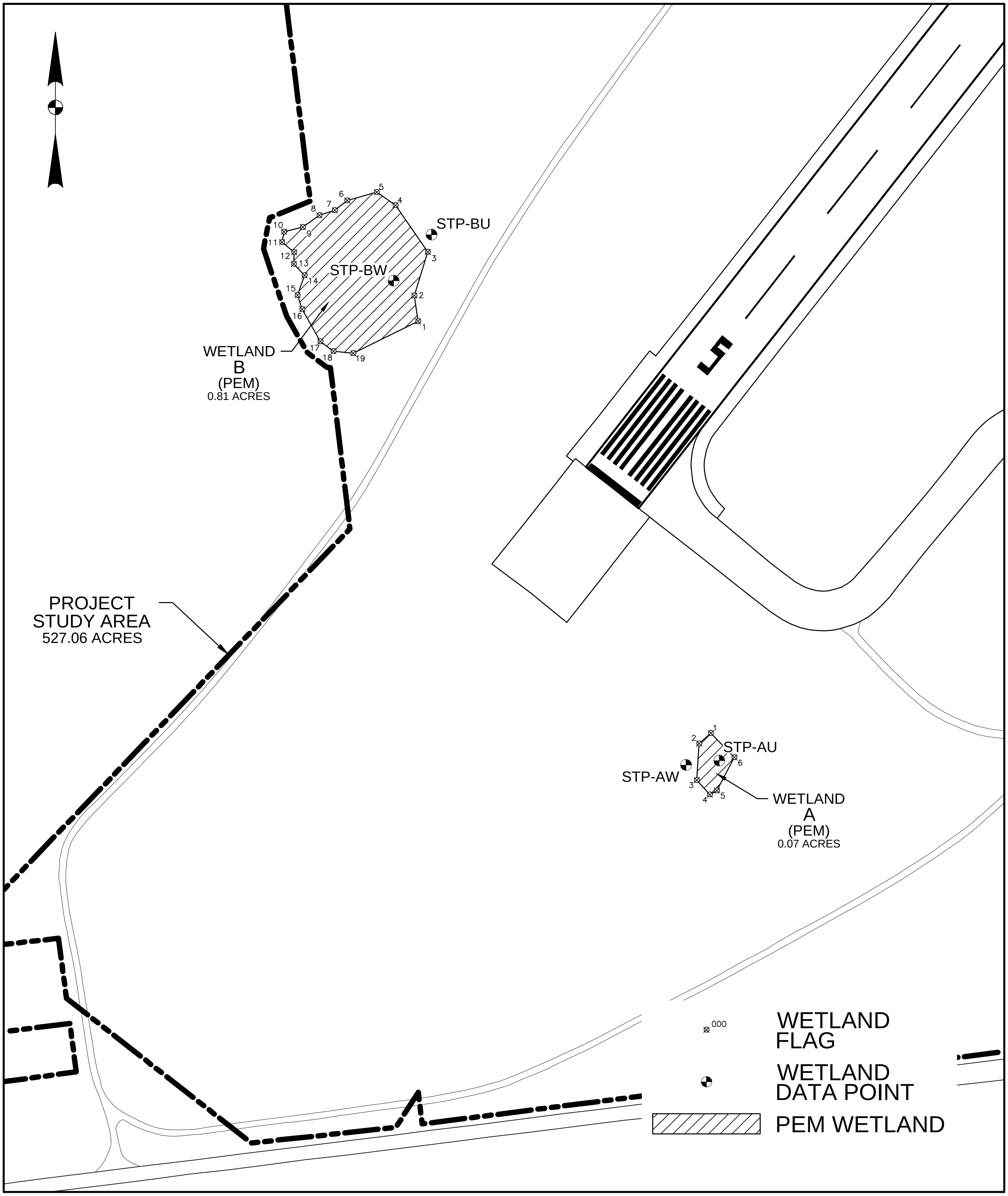
WETLANDS AND WATERWAYS DELINEATION - SUBSET PLAN

PLAN WDP-5



SARATOGA COUNTY AIRPORT

SCALE

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FEET

McFarland Johnson

Appendix C

Wetland Datasheets

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/25/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: A-U

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 2

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: WhA- Windsor loamy sand (nearly level) NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are “Normal Circumstances” present? Yes X No ___

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: A-U

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *Schizachyrium scoparium*	50	Yes	FACU
2. *Comptonia peregrina*	10	No	UPL
3. *Danthonia spicata*	10	No	UPL
4. *Lupinus perennis*	2	No	UPL
5. *Centaurea maculosa*	2	No	UPL
6. *Solidago sp.*	2	No	UPL
7.			
	76 =Total Cover		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	=Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	50	x 4 =	200
UPL species	26	x 5 =	130
Column Totals:	76 (A)		330 (B)

Prevalence Index = B/A = 4.34

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: A-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					Sandy	
6-16	2.5Y 4/3	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/25/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: A-W

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: WhA- Windsor loamy sand (nearly level) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	If yes, optional Wetland Site ID: Wetland A

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	
___ High Water Table (A2)	___ Aquatic Fauna (B13)	
___ Saturation (A3)	___ Marl Deposits (B15)	
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	
___ Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: A-W

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Scirpus cyperinus*	50	Yes	OBL
2. *Danthonia spicata*	10	No	UPL
3. *Carex sp.*	10	No	FAC
4. *Salix sp.*	2	No	FAC
5.			
6.			
7.			
	72	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	50	x 1 =	50
FACW species	0	x 2 =	0
FAC species	12	x 3 =	36
FACU species	0	x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	72 (A)		136 (B)

Prevalence Index = B/A = 1.89

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: A-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5.5	10YR 3/2	100					Sandy	
5.5-9	2.5Y 5/3	98	7.5YR 4/6	2			Sandy	Prominent redox concentrations
9-11	2.5Y 5/3	80	10YR 3/1	20			Sandy	Distinct redox concentrations
11-16	10YR 4/3	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
X Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: __________

Depth (inches): __________

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/25/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: B-U

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 1

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: WhA- Windsor loamy sand (nearly level) NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: B-U

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Danthonia spicata*	100	Yes	UPL
2. *Comptonia peregrina*	10	No	UPL
3.			
4.			
5.			
6.			
7.			
	110	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	110	x 5 =	550
Column Totals:	110	(A)	550 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: B-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/4	100					Sandy	
11-16	10YR 2/1	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ________

Depth (inches): ________

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport | City/County: Balston Spa, Saratoga | Sampling Date: 4/25/2013

Applicant/Owner: Saratoga County | State: NY | Sampling Point: B-W

Investigator(s): Thomas Wirickx | Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain | Local relief (concave, convex, none): Covex | Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144A | Lat: ____ | Long: ____ | Datum: ____

Soil Map Unit Name: DeA- Deerfield loamy fine sand (nearly level) | NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?**	**Yes** X **No** ___
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___	If yes, optional Wetland Site ID:	Wetland B

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	
___ High Water Table (A2)	___ Aquatic Fauna (B13)	
___ Saturation (A3)	___ Marl Deposits (B15)	
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	
X Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	
Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: B-W

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Scirpus cyperinus*	90	Yes	OBL
2. *Carex sp.*	10	No	FAC
3.			
4.			
5.			
6.			
7.			
	100	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		120 (B)

Prevalence Index = B/A = 1.20

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: B-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/4	100					Sandy	
1-16	10YR 2/1	93	10YR 3/3	7			Sandy	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/25/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: C-U

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 1

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: WhA- Windsor loamy sand (nearly level) NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: C-U

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Danthonia spicata*	2	Yes	UPL
2. *Comptonia peregrina*	2	Yes	UPL
3. *Centaurea maculosa*	2	Yes	UPL
4. *Schizachyrium scoparium*	2	Yes	UPL
5. *Salix sp*	2	Yes	FAC
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	8	x 5 =	40
Column Totals:	10 (A)		46 (B)

Prevalence Index = B/A = 4.60

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: C-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 5/6	100					Sandy	
11-16	10YR 4/3	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/25/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: C-W

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: WhA- Windsor loamy sand (nearly level) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area**
Hydric Soil Present?	Yes X No ___	**within a Wetland? Yes** X **No** ___
Wetland Hydrology Present?	Yes X No ___	If yes, optional Wetland Site ID: Wetland C

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	
X High Water Table (A2)	___ Aquatic Fauna (B13)	
X Saturation (A3)	___ Marl Deposits (B15)	
X Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	
X Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	
___ Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 5"
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 4"

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: C-W

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Juncus tenius*	80	Yes	FAC
2. *Scirpus cyperinus*	5	No	OBL
3. *Juncus effusus*	2	No	OBL
4.			
5.			
6.			
7.			
	87	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	7	x 1 =	7
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	87 (A)		247 (B)

Prevalence Index = B/A = 2.84

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation
X Dominance Test is >50%
X Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: C-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/2	100					Sandy	
1-16	2.5Y 4/2	98	5YR 4/6	2			Sandy	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
_X_ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** _X_ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/25/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: D-U

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 1

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: SeA- Scio silt loam, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)	____ Water-Stained Leaves (B9)	
____ High Water Table (A2)	____ Aquatic Fauna (B13)	
____ Saturation (A3)	____ Marl Deposits (B15)	
____ Water Marks (B1)	____ Hydrogen Sulfide Odor (C1)	
____ Sediment Deposits (B2)	____ Oxidized Rhizospheres on Living Roots (C3)	
____ Drift Deposits (B3)	____ Presence of Reduced Iron (C4)	
____ Algal Mat or Crust (B4)	____ Recent Iron Reduction in Tilled Soils (C6)	
____ Iron Deposits (B5)	____ Thin Muck Surface (C7)	
____ Inundation Visible on Aerial Imagery (B7)	____ Other (Explain in Remarks)	
____ Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

____ Surface Soil Cracks (B6)
____ Drainage Patterns (B10)
____ Moss Trim Lines (B16)
____ Dry-Season Water Table (C2)
____ Crayfish Burrows (C8)
____ Saturation Visible on Aerial Imagery (C9)
____ Stunted or Stressed Plants (D1)
____ Geomorphic Position (D2)
____ Shallow Aquitard (D3)
____ Microtopographic Relief (D4)
____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: D-U

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Danthonia spicata*	2	Yes	UPL
2. *Comptonia peregrina*	2	Yes	UPL
3. *Centaurea maculosa*	2	Yes	UPL
4. *Schizachyrium scoparium*	2	Yes	UPL
5. *Salix sp*	2	Yes	FAC
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	8	x 5 =	40
Column Totals:	10 (A)		46 (B)

Prevalence Index = B/A = 4.60

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: D-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 5/6	100					Sandy	
11-16	10YR 4/3	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/26/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: D-W

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: SeA- Scio silt loam, 0 to 3 percent slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___	**Is the Sampled Area**	
Hydric Soil Present? Yes X No ___	**within a Wetland?**	**Yes** X **No** ___
Wetland Hydrology Present? Yes X No ___	If yes, optional Wetland Site ID:	Wetland D

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	
___ High Water Table (A2)	___ Aquatic Fauna (B13)	
___ Saturation (A3)	___ Marl Deposits (B15)	
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	
___ Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: D-W

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Carex sp.*	50	Yes	FAC
2. *Scirpus cyperinus*	30	Yes	OBL
3. *Juncus effusus*	30	Yes	OBL
4.			
5.			
6.			
7.			
	110	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		210 (B)

Prevalence Index = B/A = 1.91

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: D-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 2/1	98	5YR 3/4	2			Sandy	Prominent redox concentrations
11-16	10YR 5/2	97	7.5YR 3/4	3			Sandy	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport   City/County: Balston Spa, Saratoga   Sampling Date: 4/26/2013

Applicant/Owner: Saratoga County   State: NY   Sampling Point: E-U

Investigator(s): Thomas Wirickx   Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain   Local relief (concave, convex, none): Covex   Slope (%): 1

Subregion (LRR or MLRA): LRR R, MLRA 144A   Lat: ____   Long: ____   Datum: ____

Soil Map Unit Name: SeA- Scio silt loam, 0 to 3 percent slopes   NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ____
Water Table Present?	Yes ___	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: E-U

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Schizachyrium scoparium*	30	Yes	UPL
2. *Lycopodium clavatum*	30	Yes	FAC
3. *Gaultheria procumbens*	30	Yes	FACU
4. *Comptonia peregrina*	10	No	FACU
5. *Kalmia angustifolia*	5	No	FAC
6.			
7.			
	105	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	40	x 4 =	160
UPL species	30	x 5 =	150
Column Totals:	105 (A)		415 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: E-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Sandy	
2-16	10YR 4/4	98	10YR 4/6	2			Sandy	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/26/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: E-W

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: SeA- Scio silt loam, 0 to 3 percent slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

If yes, optional Wetland Site ID: Wetland E

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)
___ High Water Table (A2)	___ Aquatic Fauna (B13)
___ Saturation (A3)	___ Marl Deposits (B15)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: E-W

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Scirpus cyperinus*	50	Yes	OBL
2. *Carex sp.*	40	Yes	FAC
3. *Juncus effusus*	20	No	OBL
4.			
5.			
6.			
7.			
	110	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		190 (B)

Prevalence Index = B/A = 1.73

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: E-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 2/1	90	5YR 3/4	10			Sandy	Prominent redox concentrations
11-16	10YR 4/3	97	10YR 4/6	3			Sandy	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
X Sandy Redox (S5)
___ Stripped Matrix (S6)
X Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/26/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: F-U

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 1

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ___ Long: ___ Datum: ___

Soil Map Unit Name: SeA- Scio silt loam, 0 to 3 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

If yes, optional Wetland Site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: F-U

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size:)			
1. *Lycopodium clavatum*	40	Yes	FAC
2. *Gaultheria procumbens*	20	Yes	FACU
3. *Poa pratensis*	20	Yes	FACU
4. *Vaccinium angustifolium*	20	Yes	FACU
5. *Potentilla canadensis*	20	Yes	FACU
6. *Comptonia peregrina*	10	No	FACU
7. *Solidago rugosa*	2	No	FAC
8.			
9.			
10.			
11.			
12.			
	132	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	42	x 3 =	126
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	132 (A)		486 (B)

Prevalence Index = B/A = 3.68

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: F-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/3	100					Sandy	
8-16	10YR 4/6	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Saratoga County Airport City/County: Balston Spa, Saratoga Sampling Date: 4/26/2013

Applicant/Owner: Saratoga County State: NY Sampling Point: F-W

Investigator(s): Thomas Wirickx Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Covex Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: SeA- Scio silt loam, 0 to 3 percent slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID: Wetland F

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)	____ Water-Stained Leaves (B9)	
____ High Water Table (A2)	____ Aquatic Fauna (B13)	
____ Saturation (A3)	____ Marl Deposits (B15)	
____ Water Marks (B1)	____ Hydrogen Sulfide Odor (C1)	
____ Sediment Deposits (B2)	____ Oxidized Rhizospheres on Living Roots (C3)	
____ Drift Deposits (B3)	____ Presence of Reduced Iron (C4)	
____ Algal Mat or Crust (B4)	____ Recent Iron Reduction in Tilled Soils (C6)	
____ Iron Deposits (B5)	____ Thin Muck Surface (C7)	
____ Inundation Visible on Aerial Imagery (B7)	____ Other (Explain in Remarks)	
____ Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: F-W

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	

Sapling/Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Carex sp.*	50	Yes	UNK
2. *Agrostis gigantea*	20	Yes	FAC
3. *Scirpus cyperinus*	10	No	OBL
4. *Juncus effusus*	2	No	OBL
5.			
6.			
7.			
	82	=Total Cover	

Herb Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	12	x 1 =	12
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	32 (A)		72 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: F-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8.5	10YR 2/1	95	5YR 3/4	5			Sandy	Prominent redox concentrations
8.5-16	2.5YR 4/3	98	10YR 4/6	2			Sandy	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Appendix D

Wetland Photographs

Representative Photograph of Wetland A

Representative Photograph of Wetland B

Representative Photograph of Wetland C

Representative Photograph of Wetland D

Representative Photograph of Wetland E

Representative Photograph of Wetland F

SARATOGA COUNTY
1791

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Chapter 5
Demand Capacity and Facility Requirements

5.0 INTRODUCTION

This chapter describes the airside and landside facility requirements necessary to accommodate existing and forecasted demand in accordance with Federal Aviation Administration (FAA) and New York State Department of Transportation (NYSDOT) design criteria and safety standards. The facility requirements are based upon the aviation demand forecasts presented in Chapter 3, *Forecasts of Aviation Activity* and the guidelines provided in FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, and 14 CFR Part 77, *Objects Affecting Navigable Airspace*. The major components of this chapter are listed below:

- Airfield Capacity Analysis
- Design Aircraft and Runway Design Code
- Airport Design Standards
- Airside Facilities
- Landside Facilities
- Other Facility Requirements
- Facility Requirements Summary

5.1. AIRFIELD CAPACITY

Airfield capacity refers to the ability of an airport to safely accommodate a given level of aviation activity. The FAA has prepared a number of publications and computer programs to assist in the calculation of capacity. This report will use the methodologies described in AC 150/5060-5, *Airport Capacity and Delay*.

Capacity is described using three terms: Annual Service Volume (ASV), Visual Flight Rules (VFR) Hourly Capacity, and Instrument Flight Rules (IFR) Hourly Capacity. The ASV is a reasonable estimate of the annual capacity, or the maximum annual level of aircraft operations that can be accommodated at an airfield. Airports can, and often do, exceed their stated annual service volume. Delays begin to increase rapidly once the annual service volume has been exceeded.

The VFR and IFR Hourly Capacities are the maximum number of aircraft operations that can take place on the runway system in one hour under VFR or IFR conditions respectively. When hourly demand approaches or exceeds the hourly capacity, delays may force traffic into the succeeding hours or cause aircraft to divert to other airports.

5.1.1. Airfield Capacity Analysis

It is important to understand the various factors that affect the ability of an air transport system to process demand. Once these factors are identified and their effect on the processing of demand is understood, efficiencies can be evaluated. The airfield capacity analysis considers several factors that affect the ability of the airport to process aviation demand. These factors include:

- Meteorological Conditions
- Runway Configuration
- Runway Utilization
- Aircraft Fleet Mix
- Percent Arriving Aircraft
- Percent Touch-and-Go Operations
- Exit Taxiway Locations

Meteorological Conditions

Meteorological conditions specific to the location of an airport not only influence the airfield layout, but also affect the use of the runway system. As weather conditions shift, low ceilings and visibility can reduce airfield capacity. Runway usage will alter as the wind speed and direction change, also impacting the capacity of the airfield.

Capacity is affected adversely as weather deteriorates. To better understand the impact of deteriorating weather on capacity, a brief synopsis of aviation flying conditions is provided. For the purposes of capacity evaluation, these flying conditions are described as VFR conditions, IFR conditions and Poor Visibility & Ceiling (PVC) conditions. The National Climactic Data Center defines VFR conditions "occur whenever the cloud ceiling is at least 1,000 feet above ground level and the visibility is at least three statute miles." IFR conditions "occur when the reported cloud ceiling is at least 500 feet but less than 1,000 feet and/or visibility is at least one statute mile but less than three statute miles." PVC conditions "exist when the cloud ceiling is less than 500 feet and/or the visibility is less than one statute mile." Decreases in cloud ceiling and visibility require an increase in aircraft spacing, as mandated by the FAA. This increase in aircraft spacing causes a decline in the frequency at which aircraft can land and depart the airfield over a specified period.

Climate data specific to the Airport is not available, although there is an Automated Weather Observation System (AWOS) at Saratoga County Airport, the data is not recorded. FAA criteria allow wind data for other airports to be used during a wind analysis. As a result, the nearest airport collecting weather data was identified as the Floyd Bennett Memorial Airport (GFL) in Queensbury, NY. The National Oceanic and Atmospheric Administration (NOAA) data for GFL was obtained and analyzed to reflect the ceiling and visibility characteristics at Saratoga County Airport. The analysis of this data indicated that VFR conditions occur approximately 89.3% of the time, IFR conditions 8.9%, and PVC conditions about 1.8% of the time.

Runway Configuration

The configuration of the runway system refers to the number, location, and orientation of the active runway(s), the type and direction of operations, and the flight rules in effect at a particular time. The two-runway configuration at Saratoga County Airport provides a high level of wind coverage.

The methodology in AC 150/5060-5 requires the selection of a runway use configuration in **Figure 2-1** that provides an estimate of VFR and IFR hourly capacity for the given runway arrangement. For Saratoga County Airport, the configuration representing two intersecting runways (Configuration 9) was used.

Runway Utilization

The active runway is determined by current wind and weather conditions. Aircraft must takeoff and land into the wind, thus the predominant wind direction is taken into account and the traffic pattern is established around that active runway. Based on information provided in the 2003 Airport Master Plan and discussions with the FBO, Runway 23 is the primary runway based on annual usage. **Table 5-1** presents the breakdown by runway.

Table 5-1 – Runway Use

Runway	Annual Runway Use
5	15%
23	60%
14	5%
32	20%

Source:2003 Airport Master Plan

Aircraft Fleet Mix

The capacity of a runway is dependent upon the type and size of aircraft that use it. Aircraft are placed into one of four classes when conducting capacity analysis. These classes are based upon the amount of wake vortex created when the aircraft passes through the air. The more severe the wake vortex, the greater the separation that must be maintained between aircraft approaching or leaving the airport.

The majority of the aircraft operations at Saratoga County Airport is a mix of small single and twin engine aircraft weighing less than or equal to 12,500 pounds, which places them in Class A (single) or Class B (multi-engine). There are also Class C aircraft that weigh over 12,500 pounds but less than 255,000 pounds. These aircraft include corporate jets operating at the Airport. The mix of aircraft is presented in **Table 5-2**:

Table 5-2 – Aircraft Fleet Mix

Aircraft Class	Operations	Fleet Mix (%)
A	36,371	96.2
B	2,179	3.2
C	930	0.6

Source: McFarland Johnson

Percent Arriving Aircraft

The capacity of the runway is also influenced by the percentage of aircraft arriving at the airport during the peak hour. Arriving aircraft are typically given priority over departing aircraft. However, arriving aircraft require more time to complete their operation (approach and land) than do departing aircraft (takeoff), and can reduce capacity. Therefore, the higher the percentage of aircraft arrivals during peak periods of operations, the lower the annual service volume. As is typical with General Aviation (GA) airports, operational activity is well balanced between arrivals and departures. Thus, it is assumed in the capacity calculations that arrivals equal departures during the peak period.

Percent Touch-and-Go Operations

A touch-and-go operation refers to an aircraft maneuver in which the aircraft performs a normal landing touchdown followed by an immediate takeoff, without stopping or taxiing clear of the runway. A touch-and–go is counted as two operations, one take off and one landing. These operations are normally associated with flight training, and are included in the local operations figures reported by the airport. The FBO estimates that 20% of all operations are touch-and-gos at Saratoga County Airport.

Exit Taxiway Locations

A final factor in analyzing the capacity of a runway system is the ability of an aircraft to exit the runway as quickly and as safely as possible. The location, design, and number of exit taxiways affect the occupancy time of an aircraft on the runway system. The longer an aircraft remains on the runway, the lower the capacity of that runway.

The current taxiway configuration for each runway represents a partial-parallel taxiway system rather than a true full-parallel taxiway for each runway. However, the configuration does operate as though it were a full-parallel taxiway system to each runway as there is access to each runway end with no need to back-taxi on either runway. A back-taxi is an aircraft ground procedure where any portion of a runway is instead used as a taxiway, implying that an aircraft must taxi in the opposite direction from which it will take off or has landed. Therefore, for purposes of this analysis, it was assumed that each runway has a parallel taxiway. There are two exit taxiways associated with each runway.

5.1.2. VFR/IFR Hourly Capacities and Annual Service Volume

Because the characteristics of airports vary so widely, guidance in AC 150/5060-5, *Airport Capacity and Delay* is provided for different types of airports, from large commercial service hubs to small, single runway facilities. For Saratoga County Airport, runway capacity was calculated for VFR and IFR weather. Special characteristics of the Airport that were considered are:

- For the purpose of this analysis, the capacity was calculated assuming Class C aircraft represents 0.6% of operations.
- Both runways have a parallel taxiway.
- The Airport has radar coverage through Albany Approach, but does not have an Instrument Landing System (ILS).
- Arrivals equal departures.
- There are no airspace limitations affecting runway use.
- Percentage of touch-and-go operations is approximately 20%.

The methodology presented in AC 150/5060-5 was used to calculate the hourly capacity and annual service volume (ASV).

Hourly Capacity

Hourly capacity values for VFR and IFR conditions were determined using the formula presented in AC 150/5060-5. The formula for hourly capacity is presented below:

Hourly capacity of the runway component = C * T * E

Where: **C =** Base Capacity
T = Touch-and-Go Factor
E = Exit Factor

The base capacity value (C), the touch-and-go factor (T), and the exit factor (E) are derived from the hourly airfield capacity graphs contained in AC 150/5060-5. The hourly capacity is determined for each aircraft arrival and departure configuration for Saratoga County Airport. The hourly capacities for the following arrival departure scenarios were calculated:

- Arrival and Departure Runway 5 or 23 / Departure Runway 14 or 32 VFR conditions
- Arrival and Departure Runway 05 or 23 IFR conditions
- Arrival and Departure Runway 05 or 23 VFR conditions
- Arrival and Departure Runway 14 or32 VFR conditions
- Airport Closed

Figures representing these operating conditions were referenced in AC 150/5060-5 to obtain the three components making up the hourly capacity formula. The results are shown in **Table 5-3**.

Table 5-3 – Hourly Capacity

	C	T	E	Hourly Capacity
Arr/Dep RW 5-23 – Dep 14 or 32 VFR (Fig 3-27*)	109	1.06	.93	107
Arr/Dep RW 5-23 or 23/5 IFR (Fig 3-43*)	62	1	.99	61
Arr/Dep RW 5-23 or 23/5 VFR (Fig 3-28*)	104	1.17	.94	114
Arr/Dep RW 14-32 or 32/14 VFR (Fig 3-3*)	120	1.2	.94	135
Airport Closed	0	0	0	0

**Figures presented in AC 150/5060-5, Chapter 3*
Note: Arr = Arrival, Dep = Departure
Source: AC 150/5060-5, McFarland Johnson

The hourly capacity calculations above were then used to derive the weighted hourly capacity (Cw) which is used in the Annual Service Volume calculation discussed in the next section. The weighted hourly capacity averages the various operating conditions using the following formula:

$$\frac{(P_1{*}C_1{*}W_1) + (P_2{*}C_2{*}W_2) + \ldots + (P_n{*}C_n{*}W_n)}{(P_1{*}W_1) + (P_2{*}W_2) + \ldots + (P_n{*}W_n)}$$

Where: **P =** Percent of Time Each Runway Configuration Is Used Annually
C = Hourly Capacity
W = Weighting Factor

The percent of time (P) was based on the previous Master Plan Assumptions detailing the percent of time that each runway configuration was used, the hourly capacity (C) was taken from Table 5-2 presented earlier and the (W) was determined from Table 3-1 in the AC. The resulting weighted hourly capacity (Cw) was approximately 103 operations.

Annual Service Volume

The ASV was calculated using the VFR and IFR hourly capacities calculated above using the methodology provided in AC 150/5060-5 *Airport Capacity and Delay.* Hourly capacity was converted to a weighted hourly capacity (Cw) through use of a formula that considers the relative occurrence of those two conditions. This number is then multiplied by two factors that account for airport peaking characteristics. The H and D ratios are used to adjust for hourly peak periods during the day, and daily peak periods during the year, respectively. The formula to calculate the ASV is shown below:

ASV = C_W* H * D, where:

ASV = Annual Service Volume
C_W = Weighted Hourly Capacity
H = Ratio of Average Daily Demand to Average Peak Hour Demand, and
D = Ratio of Annual Demand to Average Daily Demand

Using the formula above, the Weighted Hourly Capacity and the demand ratios provided in Table 3-2 of the AC were used to develop the ASV for Saratoga County Airport. The ASV for the airport is as follows:

ASV = 103 (Cw) x 6(H) x 374(D) = 231,100 operations

In developing the capacity assessment for Saratoga County Airport, two scenarios were considered. Aviation activity associated with Track Season in late July, August and early September (approximately 8 weeks per discussions with the FBO) is significantly higher than during the remaining portion of the year. Track Season fuel sales represent 33% of annual fuel sales for the Airport. This level of activity represents the Peak Period operations at the Airport. Based on this, a second scenario identified the next busiest month for fuel sales at the Airport and is assumed to represent the true Peak Period operations without the Track Season influence. The fuel sales data indicated May as the next busiest month, accounting for 8% of annual fuel sales. This percentage is comparable to other similarly sized New York GA airports.

Tables 5-4 and 5-5 present a summary of the airfield capacity calculations for Saratoga County Airport for Non-Track Season and Track Season capacity levels.

Table 5-4 - Demand and Capacity Summary – Non-Track Season

	Demand		Capacity 1/			Utilization	
Year	Annual	Peak Hour	ASV	Hourly VFR	Hourly IFR	Percent Peak Hour (VFR/IFR)	Percent ASV\
2012	38,550	17	231,100	107	61	16% / 28%	17%
2017	38,470	18	231,100	107	61	17% / 30%	17%
2022	39,711	18	231,100	107	61	17% / 30%	18%
2032	42,302	19	231,100	107	61	18% / 31%	19%

1/ VFR hourly capacity based on combined Runway 5-23 and 14-32 operational condition and IFR is based on Runway 5-23 operational condition
Source: AC 150/5060-5, McFarland Johnson

Table 5-5 - Demand and Capacity Summary – Track Season

	Demand		Capacity 1/			Utilization	
Year	Annual	Peak Hour	ASV	Hourly VFR	Hourly IFR	Percent Peak Hour (VFR/IFR)	Percent ASV
2012	38,550	52	231,100	107	61	49% / 85%	17%
2017	38,470	52	231,100	107	61	49% / 85%	17%
2022	39,711	54	231,100	107	61	50% / 89%	17%
2032	42,302	57	231,100	107	61	53% / 93%	18%

1/ VFR hourly capacity based on combined Runway 5-23 and 14-32 operational condition and IFR is based on Runway 5-23 operational condition
Source: AC 150/5060-5, McFarland Johnson

Tables 5-4 and 5-5 above show the dramatic effect on the Airport's capacity during Track Season. As noted earlier, the figures shown in **Table 5-4** are representative of GA airports with similar annual activity as Saratoga County Airport. Saratoga County Airport operates at approximately 16% of annual capacity today. During the peak hour, the Airport operates at approximately 17% of capacity under VFR conditions while IFR represents 28% of capacity. The modest forecasted aviation activity growth increases the ASV percentage to 18% while VFR and IFR percentages increase to 18% and 31%, respectively.

When Track Season aviation activity is analyzed, the Airport operates much closer to its maximum hourly capacity under Peak Period conditions. While the ASV percentages remain the same over the planning period, the Peak Period percentages increase significantly. The VFR percentages increase to 49% of Peak Period operations while IFR increases to 85% of Peak Period operations. Applying the forecasted growth in activity, VFR operations represent 53% of Peak Period Operations while IFR reaches 93% of capacity of the Airport.

As seen in these statistics, Track Season aviation activity pushes the hourly capacity under VFR and IFR conditions to levels that would suggest capacity changes might be necessary to accommodate Peak Period operations during this timeframe, especially under IFR conditions.

The Airport does not have an Air Traffic Control Tower (ATCT), therefore, pilots operating at the Airport must communicate over the common traffic advisory frequency and state their position on the ground and in the runway traffic pattern. During normal peak operations, this is not a factor as there is adequate capacity to accommodate demand under both VFR and IFR conditions. However, during peak period VFR operations, hourly demand is close to half the total hourly demand. Discussions with the FBO indicate that the Airport becomes very busy and radio traffic is constant.

During IFR conditions, the potential hourly capacity is nearly met based on the calculations presented in **Table 5-5**. However, without an ATCT, IFR hourly capacity is significantly reduced. The lack of a tower requires that Albany Approach can only allow one aircraft to use an instrument approach until that aircraft has landed or declared a missed approach. All other aircraft must await clearance to fly the IFR approach, thus creating significant delays based on calculated IFR hourly capacity.

As discussed, Track Season activity significantly affects the hourly VFR and IFR capacity of the Airport. As such, discussions with FAA should be initiated to determine if temporary short term ATCT services could be provided during the 6 week Track Season period to provide aircraft tracking and separation for aircraft operating at Saratoga County Airport. This service would ensure that the Airport operates efficiently and enhance operational safety.
.
Recommendation: Discuss the potential to provide temporary air traffic control services at Saratoga County Airport during Track Season.

Glider Operations

Two glider clubs operate at Saratoga County Airport through three seasons of the year, typically March through November. A discussion with the glider clubs offered insight to their operations and is discussed in the following paragraphs.

Glider activity at GA airports typically occurs on separate turf runways off to the side of the paved runways or runway system, thus separating powered and non-powered aircraft. However, a key difference in glider operations at Saratoga County Airport is that gliders must stage, launch, land, and recover on the paved runway surfaces. This is required as the turf areas of Saratoga County Airport are protected habitat of the Karner blue butterfly and cannot be used, with the exception of about 2,000 feet of turf area immediately off the side of the runway ends that can be used for emergency glider landings.

During low wind conditions, the gliders typically operate off Runway 14-32 while powered aircraft use Runway 5-23. Discussions with the Airport users indicated that there are no runway capacity issues as powered aircraft operate independently of the gliders. However, based on discussions with the glider clubs, both gliders and powered aircraft must share Runway 5-23 or 14-32 about 10% of the year. Peak glider operations generally coincide annually with Track Season, further exacerbating runway capacity issues under certain conditions. During busy weekend days, when glider operations peak during a typical week, the hourly capacity of the runway may be reduce. The time it takes to launch or recover a glider (about 8-10 minutes) requires a longer runway occupancy time, thus reducing overall capacity. To assess this scenario, the capacity calculations were revisited assuming one runway is available and used by both powered and non-powered aircraft.

Referring to AC 150/5360-5, the hourly capacity calculation for one runway is 98 VFR operations per hour based on **Figure 2-1**, Diagram 1. This equates to 1.6 aircraft per minute. Assuming that it takes 10 minutes to launch or recover one glider, 16 powered aircraft operations could occur during the time it takes to launch or recover one glider. This illustrates that under certain conditions, airfield capacity can easily be exceeded during the peak summer months, creating arrival and departure delays.

The analysis above highlights the unique nature of mixing powered and non-powered aircraft when they cannot be separated. As this situation occurs about 10% of the year, it is recommended to evaluate the potential options to segregate powered and non-powered aircraft operations. These options could include a separate turf runway adjacent to either Runway 5-23 or 14/32 or operational staging areas to the sides of the runways to launch or recover gliders. These options will be further assessed in Chapter 6, *Alternatives.*

5.2. DESIGN AIRCRAFT AND RUNWAY DESIGN CODE

Airport design is based upon the identification of a critical aircraft for that airport. The dimensions and performance characteristics of the critical aircraft form the basis on which design guidelines for the airport are identified, which in turn determine appropriate runway and taxiway width and separation standards, as well as dimensions of various airport safety areas. The critical aircraft for an airport is defined as the most demanding aircraft (based on its approach speed and wingspan or tail height) that conducts, or is anticipated to conduct, a minimum of 250 or more takeoffs/landings (500 operations) per year. When the crosswind runway has significantly different operating or usage characteristics than the primary runway, the design aircraft for the two runways may vary.

Prior to the update of AC 150/5300-13A, *Airport Design,* airports were given an Airport Reference Code that defined the class of aircraft according to which the airport would be designed. In the AC update, the definition of the Airport Reference Code (ARC) was expanded to now signify the highest Runway Design Code (RDC), minus the visibility component of the RDC. The update also defines the RDC for single or multiple runway airports. For multiple runway airports, each runway may have its own RDC. The following analysis will define the critical aircraft and RDC for each runway at Saratoga County Airport.

5.2.1. RDC Components and Design Aircraft

The parameters used to define the design aircraft are similar to those used to classify the RDC. For the purposes of this report, the RDC components are discussed. The Taxiway Design Group (TDG) component of the Design Aircraft will be addressed in Chapter 4, *Facility Requirements Analysis*.

Table 5-6 presents the RDC criteria used in airport planning.

Table 5-6 – Airport Reference Code (ARC)

Category	Aircraft Approach Category Approach Speed	
A	Less than 91 knots	
B	91 knots or more but less than 121 knots	
C	121 knots or more but less than 141 knots	
D	141 knots or more but less than 166 knots	
E	166 knots or more	
Group	**Airplane Design Group** **Wingspan**	**Tail Height**
I	Up to but not including 49 feet	Up to but not including 20 feet
II	49 feet up to but not including 79 feet	20 feet up to but not including 30 feet
III	79 feet up to but not including 118 feet	30 feet up to but not including 45 feet
IV	118 feet up to but not including 171 feet	45 feet up to but not including 60 feet
V	171 feet up to but not including 214 feet	60 feet up to but not including 66 feet
VI	214 feet up to but not including 262 feet	66 feet up to but not including 80 feet
RVR (FT)	**Visibility Minimums (VIS)** **Flight Visibility Category (statute mile)**	
VIS	Visual Approaches	
4000	Lower than 1 mile but not lower than ¾ mile (APV ≥ 3/4 but < 1 mile)	
2400	Lower than 3/4 mile but not lower than 1/2 mile (CAT-I PA)	
1600	Lower than 1/2 mile but not lower than 1/4 mile (CAT-II PA)	
1200	Lower than 1/4 mile (CAT-III PA)	

Source: FAA Advisory Circular (AC) 150/5300-13 A

The RDC is comprised of three components. The first component, depicted by a letter, is the Aircraft Approach Category (AAC) and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the Airplane Design Group (ADG) and relates to either the aircraft wingspan or tail height (physical characteristics); whichever is most restrictive. The third component relates to the visibility minimums expressed by Runway Visual Range (RVR) values.

The 2003 Master Plan Update identified a "then" future design aircraft as the Gulfstream G-IV, which has an AAC and ADG of C-II. To determine if there have been changes in the types of corporate aircraft operating at Saratoga County Airport today, an analysis of corporate aircraft activity was undertaken to reaffirm the C-II designation.

For this analysis, the critical aircraft was determined using data obtained from a flight tracking service (Flightwise) as the Airport does not have a tower. The data obtained from the flight tracking service included aircraft operating on an IFR flight plan. No VFR traffic was identified. Data was obtained from 2008 to 2012 and broken down by month to include aircraft type, departure airport and flight time. The focus for this effort was the identification of aircraft type.

Data was collected for aircraft flying into Saratoga County Airport. As such, the data only represented one aircraft operation - landing. Because arriving aircraft eventually depart the Airport, each arrival is assumed to have a corresponding departure (one landing and takeoff) that comprises two operations. **Table 5-7** summarizes the turboprop and jet operational activity between 2008 and 2012.

Table 5-7 – Jet and Turboprop Activity

Year	Jet	Turboprop	Total
2008	962	582	1,544
2009	966	702	1,668
2010	1,056	654	1,710
2011	1,012	570	1,582
2012	930	646	1,576

Source: Flightwise, McFarland Johnson Analysis

Corporate jets using the Airport range from small Cessna Citation series aircraft to large Gulfstream G-V aircraft. **Table 5-8** below lists the aircraft and their corresponding ARC that have used the Airport during the 2008 to 2012 period.

Table 5-8 – Corporate Jet Aircraft Using Saratoga County Airport

Aircraft	ARC	Aircraft	ARC	Aircraft	ARC
IAI Astra 1125	C-II	Canadair Challenger 300	C-II	Gulfstream II	D-II
Beechjet 400A	B-I	Canadair Challenger 600	C-II	Gulfstream III	C-II
Cessna Citation CJ2	B-II	Canadair CRJ 200	C-II	Gulfstream IV	C-II
Cessna Citation CJ3	B-II	Embraer ERJ 135	C-II	Gulfstream V	C-III
Cessna Citation CJ4	B-II	Embraer Legacy 500	C-II	Learjet 25	C-I
Cessna Citation I	B-I	Eclipse 500	B-I	Learjet 31	C-I
Cessna Citation I/SP	B-I	Dassault Falcon 2000	B-II	Learjet 35	D-I
Cessna Citation Mustang	B-I	Dassault Falcon 900	B-II	Learjet 40	C-I
Cessna Citation CJ1	B-II	Dassault Falcon 10	B-II	Learjet 45	C-I
Cessna Citation II	B-II	Dassault Falcon 20	B-II	Learjet 55	C-I
Cessna Citation V/Ultra	B-II	Dassault Falcon 50	B-II	Learjet 60	C-I
Cessna Citation Excel	B-II	Dassault Falcon 7X	B-II	Beechcraft Premier 1	B-II
Cessna Citation IV/VI/VII	C-II	Bombardier Global Express	C-II	Beechcraft Hawker 800	C-I
Cessna Citation Sovereign	C-II	Rockwell Saberliner 61	C-I		
Cessna Citation X	C-II	Gulfstream 200	B-II		

Source: Flightwise, McFarland Johnson Analysis, FAA AC/150/5300-13A, Burns and McDonnell Aircraft Characteristics 7th/10th Edition

Table 5-8 indicates there is a range of corporate jet aircraft that use the Airport with the AAC and ADG between B-II to C-III. C/D-II/III aircraft represented 260 Jet operations in 2012, or 28% of total jet activity. As such, the majority of aircraft are in the B-II aircraft category. **Table 5-9** provides a breakdown of 2012 operations by aircraft manufacturer.

Table 5-9 – Jet Aircraft By Manufacturer

Manufacturer	2012 Operations	% of Ops.
Category B Aircraft		
Cessna Citation Series (B-I/II)	382	41%
Beech Series (Beechjet/Hawker) (B-II)	166	18%
Dassault Falcon Series (B-II)	92	10%
Other B Category Aircraft	30	3%
Total Category B Aircraft	670	72%
Category C Aircraft		
Canadair Challenger Series (C-II)	50	5%
Embraer Series (C-II)	30	3%
Cessna Citation Series (C-II/III)	52	6%
Gulfstream G Series (C-II/III)	26	3%
Learjet Series (C/D-I)	88	9%
Other C Category Aircraft	14	2%
Total Category B Aircraft	260	28%
Total Category B and C aircraft	930	100%

Source: Flightwise, McFarland Johnson Analysis

Discussions with the FBO indicated they are planning to purchase a Cessna Citation Sovereign as a replacement for two smaller corporate jet aircraft by late spring 2016. The FBO also indicated that the aircraft would, at a minimum, conduct 500 annual operations (250 takeoffs and 250 landings) from Saratoga County Airport. This is based on how the existing corporate jet aircraft to be replaced are operated.

The Sovereign's AAC and ADG, as presented in AC 150/5300-13A Appendix 1, were not fully defined. The data has no letter defining the AAC but does define the ADG as Group II. To define the AAC, information was obtained from Cessna Aircraft to determine the aircraft approach category using the landing stall speed (Vso) multiplied by a factor of 1.3 as outlined in AC 150/5300-13A, Section 102-Definitions, item c. Using the stall speed chart provided in the Cessna document, the stall speeds were multiplied by 1.3 to define the approach speed of the aircraft. **Table 5-10** shows the results of the calculations.

Table 5-10 – Cessna Citation Sovereign Stall Speed Calculations

Landing Weight	Flap Setting (degrees) 35	15	7	0
30,300 lbs.	121 kt.	131 kt.	138 kt.	144 kt.
30,000 lbs.	121 kt.	131 kt.	137 kt.	143 kt.
29,000 lbs.	118 kt.	129 kt.	135 kt.	140 kt.
28,000 lbs.	117 kt.	126 kt.	133 kt.	139 kt.
27,000 lbs.	114 kt.	125 kt.	130 kt.	137 kt.
25,000 lbs.	111 kt.	120 kt.	126 kt.	131 kt.
23,000 lbs.	107 kt.	116 kt.	121 kt.	126 kt.
21,000 lbs.	101 kt.	101 kt.	116 kt.	121 kt.

**Note: The blue numbers represents approach speeds within the AAC B category*
Source: 2007 Cessna Citation Sovereign Flight Planning Guide, McFarland Johnson Calculations

As shown in **Table 5-10**, the aircraft operates as an AAC Category B or C aircraft depending upon the flap setting configuration. Therefore, the aircraft straddles the two categories. At the maximum landing weight of 27,100 lbs or below, the aircraft will operate at Saratoga County Airport as either an AAC Category B aircraft or Category C aircraft based upon landing configurations. For purposes of this analysis, stall speeds at or below the maximum aircraft landing weight were assessed and it was determined that there is a 50/50 split between AAC Category B and C. As such, it was assumed that half of the Cessna Citation Sovereign operations, or 250 annual operations, would represent AAC Category C operations.

The final step was to combine the 260 annual operations conducted by C/D-II/III during Track Season with the projected activity of the FBO's Cessna Citation Sovereign at 250 annual operations. When combined, C/D category aircraft will conduct 510 annual operations during calendar year 2014, meeting the FAA's definition of the critical design aircraft. When this level of activity is forecasted over the planning period using the recommended forecast's growth rates, this number climbs to 580 annual operations in 2023.

It must also be considered that over time, the number of AAC Category C aircraft using the Airport may climb as aircraft owners upgrade to the larger and faster aircraft over time or use the larger and faster aircraft within their aircraft fractional share programs. Another consideration is that in the future the FBO may upgrade to a larger and faster aircraft such as a G-V, as they had considered when upgrading their aircraft recently. Together, the presence of AAC Category C aircraft will remain throughout the planning period, subsequently maintaining the AAC/ADG category of C/D-II, which will provide the highest level of efficiency and safety for Saratoga County Airport.

5.2.2. RDC Runway 5-23 and 14-32

Based on the information discussed in the previous section, the appropriate AAC and ADG for Saratoga County Airport is C/D-II. As it relates to the two runways, Runway 5-23 is the main runway and the longer of the two runways at 4,700 feet. Almost all of the corporate jets use this runway. This runway currently has two LPV approaches to each runway end; both approaches have 1-mile visibility minimums. Based on this, the RDC for Runway 5-23 will be C/D-II - 4000 is appropriate for this runway.

Runway 14-32, which is the crosswind runway, is shorter at 4,000 feet. The previous Airport Master Plan defined the design aircraft as the Beech King Air 200, which has an AAC and ADG of B-II. A King Air is based at the Airport currently. Runway 14-32 is a visual runway currently. It is recommended to maintain an RDC of B-II - VIS for Runway 14-32.

5.3. AIRSIDE FACILITIES

Airside facilities are the facilities associated with the takeoff and landing of aircraft, i.e., the airfield and its components. Airside facility requirements are identified for current and ultimate airport needs. This section examines the needs of the following airside facilities:

- Runway Orientation
- Runway Length
- Runway Width
- Runway Strength and Condition
- Runway Safety Areas
- Runway Object Free Areas
- Runway Protection Zones
- Runway Visibility Zone
- Runway Obstacle Free Zone
- Runway Pavement Markings
- Taxiways
- Airfield Lighting and Visual Aids
- Airport Weather Observation System
- Instrument Approaches
- FAR Part 77 Surfaces
- Runway End Siting Surfaces
- Wildlife Hazard Assessment
- Airfield Facility Requirements Summary

5.3.1. Runway Orientation

A major factor in evaluating a runway's orientation is the direction and velocity of the prevailing winds as discussed previously. Ideally, aircraft takeoffs and landings are conducted directly into the wind to maximize lift and allow for shorter takeoff runs and slower landing approach speeds. A runway alignment that is not oriented directly into the wind creates what is known as a crosswind component, which requires additional techniques to guide the airplane down the intended glide path. Therefore, every effort is made to align runways with the prevailing wind direction.

The commonly used measure of the degree to which a runway is aligned with the prevailing wind conditions is the wind coverage percentage. Wind coverage percentage is that percent of time crosswind components are below an acceptable velocity. Essentially, this figure estimates the average percentage of time that aircraft within a particular design group would be able to use the runway if runway length, width or surface type were not a consideration. Current FAA standards recommend airfields provide 95 percent All-Weather wind coverage for aircraft that regularly use an airport.

Wind data for Saratoga County Airport was not available. However, the FAA allows the use of wind data from nearby airports that have similar topographical features. In the case of Saratoga County Airport, wind data was obtained for Floyd Bennett Memorial Airport in Queensbury, NY. The wind data covered a ten-year period between 2000 through 2009. Recorded weather data includes measurements of ceiling, visibility, wind velocity, and direction.

The wind data was compiled into All Weather, VFR and IFR wind roses that are presented in **Figures 5-1, 5-2** and **5-3**. The wind roses show the percentage of time winds originated from different directions at various velocities. The data is further segregated to provide wind conditions for the overall runway system and each runway end.

Given the range of aircraft that operate at Saratoga County Airport, three crosswind components were assessed. The 10.5-knot crosswind component was used for aircraft in RDC A/B-I, the 13-knot crosswind component was used for RDC B-II, and the 16-knot value was used for RDC C-III aircraft. Tables 5-11 and 5-12 present the wind analysis for both the individual runways and comprehensive runway system, as well as the wind coverage for each runway end.

Table 5-11 - Runway Wind Coverage Analysis

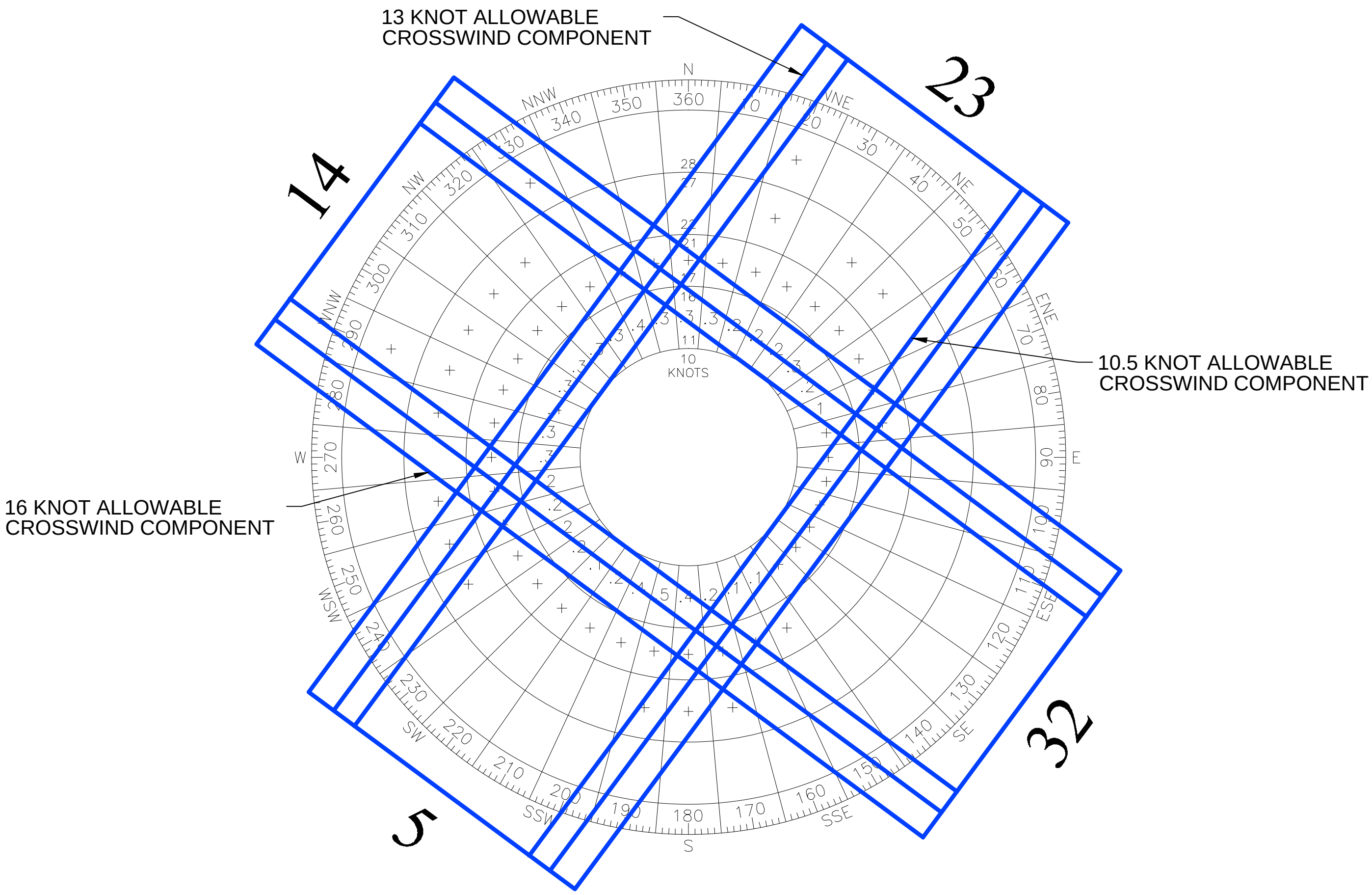
Wind Coverage Category	Runway 5-23	Runway 14-32	Runway 5-23 and 14-32 Combined
All Weather Wind Coverage [1/]			
10.5 Knot Crosswind	97.03%	95.92%	99.70%
13.0 Knot Crosswind	98.56%	98.00%	99.95%
16.0 Knot Crosswind	99.72%	99.71%	99.99%
VFR Wind Coverage [2/]			
10.5 Knot Crosswind	96.76%	95.65%	99.34%
13.0 Knot Crosswind	98.42%	97.87%	99.95%
16.0 Knot Crosswind	99.69%	99.68%	99.99%
IFR Wind Coverage [3/]			
10.5 Knot Crosswind	99.30%	97.92%	99.83%
13.0 Knot Crosswind	99.71%	98.97%	99.98%
16.0 Knot Crosswind	99.92%	99.88%	100.00%

1/ All Weather Conditions: All Ceiling and Visibility Conditions
2/ VFR Weather Conditions: Ceiling greater than or equal to 1,000' and greater than or equal to 3 miles visibility
3/ IFR Weather Conditions: Ceiling less than 1,000' and below 3 miles visibility but greater than or equal to ceiling greater than 200' and 1/2 mile visibility
Source: National Climactic Data Center – 72518 Floyd Bennett Memorial Airport, NY 2000-2009, McFarland Johnson

ALL WEATHER WIND ROSE

FIGURE 5-1

ALL WEATHER
ALL CEILING AND VISIBILITIES



WIND ROSE

ALL WEATHER WIND COVERAGE	10.5 KNOT CROSSWIND	13.0 KNOT CROSSWIND	16.0 KNOT CROSSWIND
RUNWAY 5	58.91%	59.61%	60.16%
RUNWAY 23	70.54%	71.37%	72.00%
RUNWAY 14	65.83%	66.87%	67.81%
RUNWAY 32	62.78%	53.83%	64.61%
RUNWAY 5/23	97.03%	98.56%	99.72%
RUNWAY 14/32	95.92%	98.00%	99.71%
RUNWAY 5/23 AND 14/32 COMBINED	99.70%	99.95%	99.99%

SOURCE:
NATIONAL CLIMACTIC DATA CENTER
72518 FLOYD BENNETT MEMORIAL AIRPORT, NY
PERIOD OF RECORD 2000–2009
NUMBER OF OBSERVATIONS: 79894
CALMS: 33%

SARATOGA COUNTY AIRPORT

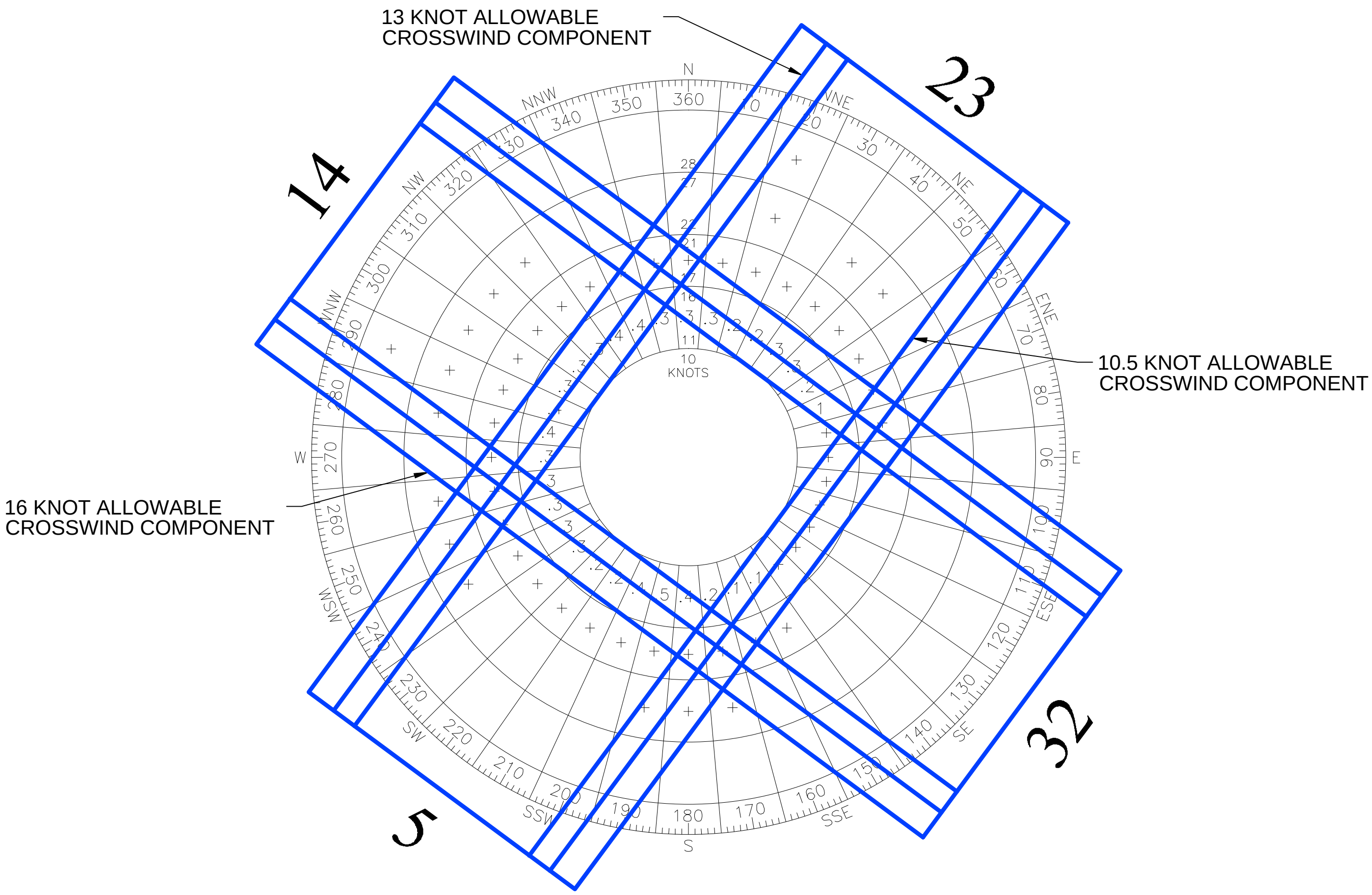
McFarland Johnson

VFR WIND ROSE

FIGURE 5-2

VFR

CEILING ≥ 1000' AND VISIBILITY ≥ 3 MILES



WIND ROSE

VFR WIND COVERAGE			
	10.5 KNOT CROSSWIND	13.0 KNOT CROSSWIND	16.0 KNOT CROSSWIND
RUNWAY 5	56.99%	57.75%	58.35%
RUNWAY 23	69.85%	70.76%	71.45%
RUNWAY 14	63.84%	64.96%	65.97%
RUNWAY 32	62.20%	53.30%	64.12%
RUNWAY 5/23	96.76%	98.42%	99.69%
RUNWAY 14/32	95.65%	97.87%	99.68%
RUNWAY 5/23 AND 14/32 COMBINED	99.34%	99.95%	99.99%

SOURCE:
NATIONAL CLIMACTIC DATA CENTER
72518 FLOYD BENNETT MEMORIAL AIRPORT, NY
PERIOD OF RECORD 2000–2009
NUMBER OF OBSERVATIONS: 79863
CALMS: 27%

SARATOGA COUNTY AIRPORT

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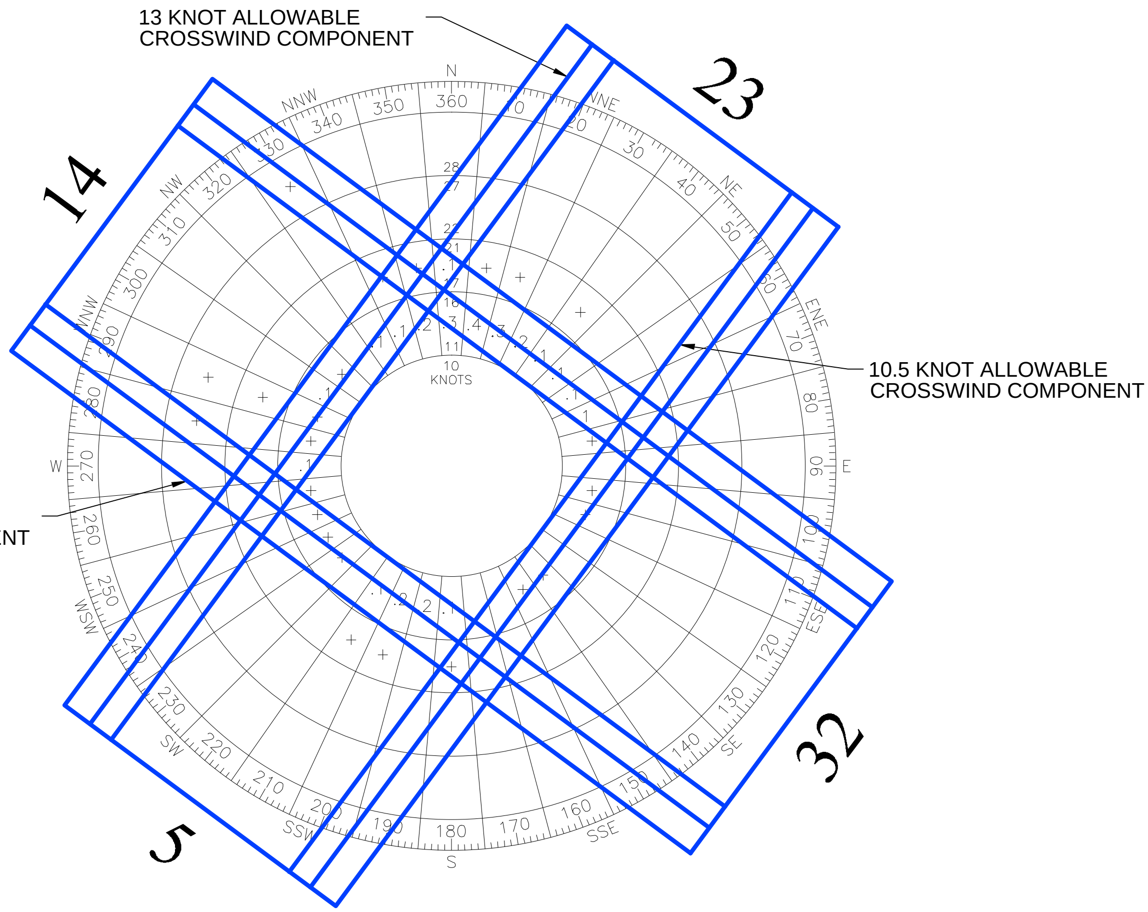
IFR WIND ROSE

FIGURE 5-3

IFR

CEILING < 1000' AND / OR VISIBILITY < 3 MILES BUT CEILING ≥ 200' AND VISIBILITY ≥ ½ MILES



WIND ROSE

IFR WIND COVERAGE			
	10.5 KNOT CROSSWIND	13.0 KNOT CROSSWIND	16.0 KNOT CROSSWIND
RUNWAY 5	72.54%	72.80%	72.93%
RUNWAY 23	74.63%	74.76%	74.88%
RUNWAY 14	81.51%	81.95%	82.38%
RUNWAY 32	64.38%	65.00%	65.48%
RUNWAY 5/23	99.30%	99.71%	99.92%
RUNWAY 14/32	97.92%	98.97%	99.88%
RUNWAY 5/23 AND 14/32 COMBINED	99.83%	99.98%	100.00%

SOURCE:
NATIONAL CLIMACTIC DATA CENTER
72518 FLOYD BENNETT MEMORIAL AIRPORT, NY
PERIOD OF RECORD 2000–2009
NUMBER OF OBSERVATIONS: 79863
CALMS: 4%

SARATOGA COUNTY AIRPORT

McFarland Johnson

Table 5-12 - Runway End Wind Coverage Analysis

Wind Coverage Category	Runway 5	Runway 23	Runway 14	Runway 32
All Weather Wind Coverage				
10.5 Knot Crosswind	58.91%	70.54%	65.83%	62.78%
13.0 Knot Crosswind	59.61%	71.37%	66.87%	53.83%
16.0 Knot Crosswind	60.16%	72.00%	67.81%	64.61%
VFR Wind Coverage				
10.5 Knot Crosswind	56.99%	69.85%	63.84%	62.20%
13.0 Knot Crosswind	57.75%	70.76%	64.96%	53.30%
16.0 Knot Crosswind	58.35%	71.45%	65.97%	64.12%
IFR Wind Coverage				
10.5 Knot Crosswind	72.54%	74.63%	81.51%	64.38%
13.0 Knot Crosswind	72.80%	74.76%	81.95%	65.00%
16.0 Knot Crosswind	72.93%	74.88%	82.38%	65.48%

Source: National Climactic Data Center – 72518 Floyd Bennett Memorial Airport, NY 2000-2009, McFarland Johnson

Based on the information above, Runway 5-23 and 14-32 separately meet the FAA's recommended 95% wind coverage for all weather crosswind categories. As such, small aircraft, which are affected most by crosswind conditions, are able to operate on either runway under a given crosswind component.

As seen in the data, Runway 5-23 provides the greater wind coverage of the two runways. As such, this runway represents the main runway used annually, which was confirmed through discussions with the FBO. When both runways are combined, the wind coverage meets over 99% of the annual winds for all wind coverage categories.

A comparison of the runway end analysis in **Table 5-12** indicates that Runway 23 provides the highest wind coverage under All Weather conditions and VFR conditions. Under IFR conditions, Runway 14 provides the highest IFR coverage as compared to each runway end. This is consistent with information provided in the previous Airport Master Plan.

Recommendation: Based on the analysis, no changes to the current runway configuration are required.

5.3.2. Runway Length

Runway length requirements are based upon the most demanding aircraft, or the most demanding aircraft group, anticipated to utilize the airport on a regular basis. For airports such as Saratoga County Airport that will serve a variety of aircraft from small propeller aircraft up to large corporate jets on a regular basis, runway length is determined by utilizing a series of published curves presented in AC 150/5325-4B, *Runway Length Requirements for Airport Design.* Information provided by an aircraft fractional share company whose aircraft frequent the airport was also used to supplement and support the AC data.

Runway length requirements are a function of aircraft performance and includes such factors as runway grades, temperature, and runway surface conditions (wet, icy, snow covered). The previous Airport Master Plan assessed the runway length for both runways. The findings suggested a potential 300 foot extension of Runway 5-23, providing an overall length of 5,000 feet. Runway 14-32 was maintained at its current 4,000 feet. The runway lengths were reassessed based on the changes in the aircraft fleet and advances in aircraft performance that have occurred since the last Airport Master Plan.

Runway 5-23

Runway 5-23 accommodates a wide range of aircraft and is the primary runway used by corporate turboprop and jet aircraft. The runway is currently 4,700 foot long and is grooved to provide drainage and improve wet runway operations. The runway length analysis for this runway evaluated the information presented in AC 150/5325-4B and information provided by a fractional share aircraft company. The findings are summarized below.

Based on the aircraft using this runway, aircraft performance graphs for aircraft with a maximum certificated weight of more than 12,500 lbs. up to and including 60,000 lbs. were used. **Table 3-1** and **Table 3-2** in the AC, which provide a listing of aircraft that make up 75% of the fleet and 100% of the fleet respectively, were compared to corporate jet aircraft that use the Airport. The comparison concluded that the Airport accommodates 100% of the fleet and both tables were used for this assessment. **Table 5-13** presents the findings, which were based on a Mean Daily Maximum Temperature of the Hottest Month of 85 degrees Fahrenheit and an Airport elevation of 434 feet Mean Sea Level.

Table 5-13 – FAA Runway Length Analysis

Percent of Fleet	Runway Length
75% of Fleet, 60% Useful Load	4,800’
75% of Fleet, 90% Useful Load	6,400’
100% of Fleet, 60% Useful Load	5,500’
100% of Fleet, 90% Useful Load	8,300’

Source: AC 150/5325-4B, McFarland Johnson

As the Airport accommodates 100% of the fleet, the useful load was assessed. Based on discussions with the FBO, the distances flown by these aircraft are between 500 and 1,000 nautical miles and are not heavily loaded with passengers and fuel. Given this factor, aircraft within 100% of the fleet operate at 60% useful load, equating to a runway length requirement of 5,500 feet.

The information above was supplemented by data from a fractional share aircraft company whose aircraft operate at Saratoga County Airport. Their aircraft are used to fly clients to and from Saratoga County Airport throughout the year. The fractional share aircraft company provided data including takeoff performance and landing lengths under dry and wet runway conditions. The information is detailed below.

Data was provided on the destinations that are flown to and from Saratoga County Airport to understand the typical stage lengths of the flights. As seen in **Table 5-14**, the typical stage lengths are between 500 and 1,000 nautical miles, which correspond to the information provided by the FBO.

Table 5-14 – Typical Stage Lengths from Saratoga County Airport

Aircraft	Airport / State	Distance (nm)
BE-400A	KOMA - Eppley Airfield, NE	986
CE-560E	KMSP - Minneapolis St. Paul Airport, MN	844
CE-560EP	KPLN - Pellston Regional Airport, MI	569
CE-560XL	KTPA - Tampa Airport, FL	997
CE-560XLS	KTPA - Tampa Airport, FL	997
CE-680	KHOU -Houston Hobby Airport, TX	1306
CE-750	KCVG - Cincinnati/Northern Kentucky Airport, KY	546
DA-2000	KPBI - West Palm Beach Airport, FL	1182
DA-2000EX	KBCT - Boca Raton Airport, FL	1045
G-200	KPBI - West Palm Beach Airport, FL	1182
GIV-SP	KBLM - Monmouth Executive Airport, NJ	198
HS-125-800XP	KTEB - Teterboro Airport, NJ	152
HS-125-800XPC	KSDF - Louisville International Airport, KY	616
HS-125-900XP	KSDF - Louisville International Airport, KY	616

Source: Fractional Share Aircraft Company

The fractional share company also provided a listing of weight restrictions imposed by the existing runway length of 4,700 feet. Taking a weight penalty requires that fuel, passenger load or both, be reduced to ensure the aircraft is able to take off on the available runway length. For purposes of this analysis, the weight penalties are based on maximum takeoff weight and an 82-degree day. **Table 5-15** presents this information.

Table 5-15 - Weight Penalties Based on Existing 5-23 Runway Length

Aircraft	Maximum Takeoff Weight (lbs)	Required Weight at 4699' (lbs)	Weight Reduction (lbs)	% of Takeoff Weight
BE-400A	16,300	15,990	310	2%
CE-560E	16,630	16,630	0	
CE-560EP	16,830	16,830	0	
CE-560XL	20,000	20,000	0	
CE-560XLS	20,200	20,200	0	
CE-680	30,300	30,300	0	
CE-750	35,700	32,493	3,207	9%
DA-2000	36,500	32,405	4,095	11%
DA-2000EX	42,220	36,021	6,199	15%
G-200	35,450	28,674	6,776	19%
GIV-SP	74,600	66,650	7,950	11%
HS-125-800XP	28,000	25,257	2,743	10%
HS-125-800XPC	28,000	25,390	2,610	9%
HS-125-900XP	28,000	26,242	1,758	6%

Source: Fractional Share Aircraft Company

As seen in this table, more than half of the aircraft must take a weight penalty based on maximum takeoff weight. The majority of the weight penalty is about 10%, with the exception of the Dassault Falcon 2000EX and the Gulfstream G-200 at 15% and 19%, respectively. The findings of this analysis indicate that additional runway length would reduce or in some cases, eliminate weight penalties.

The final piece of information provided by the fractional share aircraft company was runway landing lengths based on dry and wet runway pavements. At times, landing distance can be more critical under these conditions than for takeoff length requirements. The data was presented applying required FAA landing length adjustments based on the type of operation. The FAA requires that an aircraft be able to land within 80% of the runway length at the destination airport under Federal Aviation Regulation (FAR) Part 91 (private flights) and 60% of the available runway length under FAR Part 135 commercial charter operations. The calculations presented in **Table 5-16** are based on maximum takeoff weight and 83 degrees.

Table 5-16 - Landing Distance Calculations – Dry and Wet Pavement

Aircraft	Dry (80%)	Dry (60%)	(Wet 80%)	Wet (60%)
BE-400A	4,014’	**5,345’**	**5,383’**	**6,146’**
CE-560E	3,637’	4,850’	4,395’	**5,577’**
CE-560EP	3,642’	4,857’	4,395’	**5,585’**
CE-560XL	4,165’	**5,082’**	**5,282’**	**5,844’**
CE-560XLS	4,166’	**5,082’**	**5,248’**	**5,844’**
CE-680	3,449’	4,599’	3,967’	**5,289’**
CE-750	4,528’	**6,037’**	**5,207’**	**6,943’**
DA-2000	3,940’	**5,253’**	4,531’	**6,041’**
DA-2000EX	4,401’	**5,868’**	**5,061’**	**6,748’**
G-200	4,075’	**5,434’**	4,687’	**6,249’**
GIV-SP	N/A	**5,337’**	N/A	**6,137’**
HS-125-800XP	N/A	4,464’	N/A	**5,133’**
HS-125-800XPC	N/A	4,464’	N/A	**5,133’**
HS-125-900XP	N/A	4,464’	N/A	**5,133’**
Average Length	-	**5,300’**	**5,200’**	**6,300’**

Note: Bold numbers represent landing requirements above 4,700’
Source: Fractional Share Aircraft Company

As demonstrated in the **Table 5-16**, under dry runway conditions, aircraft operating under FAR Part 91 have no trouble landing within 80% of the available dry pavement. However, when the runway is wet, about half of the aircraft would require 5,000 feet or longer meeting the 80% landing distance requirements under wet runway conditions. When averaged, wet runway length requirements would be about 5,200 feet to operate safely.

Under FAR Part 135, almost all of the aircraft exceed 4,700 feet to meet the 60% rule under dry runway conditions. The average length under dry conditions is 5,300 feet. Under wet runway conditions, the runway length requirement to meet the 60% rule increases significantly. The average landing length increases to 6,300 feet under wet runway conditions.

Based on this range of landing lengths, and taking into account available land for a runway extension, an 800 foot extension providing a 5,500 foot runway is recommended to be considered. This runway length meets the requirements of 100% of the fleet at 60% useful load as shown in Table 5-12. FAR Part 91 operators would be accommodated under both dry and wet runway conditions. For FAR Part 135 operators, most of the aircraft could operate efficiently under dry conditions while about half of the aircraft would be able to operate efficiently under wet runway conditions. This runway length effectively covers the majority of aircraft operating at the Airport today.

Runway 14-32

The current length of Runway 14-32 is 4,000 feet. It is the crosswind runway and is used during certain wind conditions predominantly in the spring and fall. The types of aircraft that use this runway range from small single engine aircraft to turboprop and small jet aircraft, all of which are based at the Airport. AC 150/5325-4B and aircraft manufacturer information was used to determine the optimal runway length for Runway 14-32.

Consulting the AC, Figure 2-2 Small Airplanes Having 10 or More Passenger Seats was used to derive a recommended runway length for Runway 14-32. Using an Airport elevation of 434 feet MSL and an average mean maximum temperature of 85 degrees Fahrenheit, the graph in Figure 2-2 recommended a runway length of about 4,250 feet.

To provide a comparison of the AC findings, aircraft manufacturer data was obtained for the smaller corporate jet aircraft not presented in Table 5-16. These aircraft weigh between 10,000 lbs to 17,000 lbs, which allows these aircraft to operate on shorter runways at the smaller airports. The aircraft presented in Table 5-17 also represent the current generation of the small corporate jet aircraft, thus having exceptional operational characteristics due to the latest engine and airframe technology.

The analysis was completed for FAR Part 91 and FAR Part 135 operations, as was done for Runway 14-32. These operational requirements outline the specific regulatory requirements for wet pavement conditions and the calculations are presented in **Table 5-17** below.

Table 5-17 – Aircraft Landing Distances – Dry and Wet Pavement Runway 14-32

AIRCRAFT	Wet Landing*	Wet Pavement (60%)**	Wet Pavement (80%)***
Mustang	3,033’	4,571’	**3,428’**
CJ1+	3,481’	5,054’	**3,791’**
CJ2+	3,225’	5,802’	4,351’
CJ3	3,578’	5,374’	4,031’
Bravo	3,102’	5,963’	4,472’
CJ4	3,250’	5,196’	**3,877’**

Sources: Flight Planning Guides for various Cessna aircraft, http://www.cessna.com/citation.html
Notes: 1,000' msl and 86° temperature
60% useful load
** Wet landing length = dry landing length x 1.15*
*** FAR Part 135 Analysis Wet landing length = wet landing length divided by 0.6*
**** FAR Part 91 Analysis Wet landing length = wet landing length divided by 0.8*

As shown in **Table 5-17**, with no regulatory requirements applied, these aircraft require between 3,000 feet to 3,600 feet to land on wet runways. Applying the regulatory statutes, under FAR Part 91, three of the six aircraft in the Wet Pavement (80%) column can land within the existing runway length. FAR Part 135 operations shown in the Wet Pavement (60%) column require much longer lengths that are more than 5,000 feet due to more stringent regulatory requirements. Given the longer runway lengths and regulatory requirements, FAR Part 91 aircraft would likely use the runway during wet pavement conditions, thus the Wet Pavement (80%) results were used for comparison purposes.

Comparing the AC findings with the operational data from the aircraft manufacturers, the landing lengths under the Wet Pavement (80%) column are similar to the landing length identified by the AC at 4,250 feet. The 250 foot extension would be built on the Runway 14 end and would require land acquisition to accommodate the extended Runway Safety Area (RSA) and Object Free Area (OFA). In addition, the RPZ would be moved northeast and capture a number of residential properties and based on FAA's current Runway Protection Zone (RPZ) guidance, these residential properties would need to be acquired. Given the significant costs associated with the runway extension and associated land acquisition, the 250 foot extension cannot practicably be achieved without significant community disruption and was not considered further. Retaining the current length of Runway 14-32 is recommended.

Recommendation: An ultimate length of Runway 14-32 of 5,500 feet is recommended. The current 4,000 foot length of Runway 14-32 should be maintained.

5.3.3. Runway Width

Runway pavement must be wide enough to accommodate the dimensions of the critical aircraft it is designed to serve. Therefore, width requirements are based on a RDC for each runway. The RDC for Runway 5-23 is C-II-4000, which dictates a standard runway width of 100 feet, which is the current width for 5-23.

The RDC for Runway 14-32 is B-II-VIS, which equates to a width of 75 feet, however, the current width is 100 feet. The 100 feet runway width should be retained based on the utility and safety this runway width provides. The runway is used by a variety of aircraft, including the smaller corporate jet aircraft, many of which are operated under FAR Part 91 and are more than capable of using this runway for takeoff and landing (see Table 5-12 above). Under wet runway conditions, about half of the FAR Part 91 operated aircraft can also land on Runway 14-32 at slightly less than maximum landing weight.

The runway is also used by the glider clubs when Runway 5-23 is active. The runway provides both a staging area as well as takeoff and recovery area for the gliders. As the glider clubs cannot use the turf areas on the Airport, the width of the runway provides adequate area to prepare gliders while also allowing gliders to be launched or recovered at the same time. Reducing runway width would significantly affect the operational requirements of the gliders.

Based on the information above, the current width of Runway 14-32 should be maintained.

Recommendation: Runway 5-23 currently meets airport design requirements of 100 feet width. Runway 14-32's width should be retained at 100 feet to continue providing operational flexibility and enhanced safety of powered aircraft and gliders.

5.3.4. Runway Strength and Condition

The required runway strength is dependent upon the demands of the aircraft with the greatest wheel load (considering aircraft weight and landing gear type) operating at the Airport. It does not depend upon the runway's RDC because the aircraft with the greatest wheel load is not necessarily the most demanding aircraft in terms of wingspan and approach speed.

The current runway strength of both runways at Saratoga County Airport is reported to be 30,000 lbs. in a single wheel configuration. Both runways have been reconstructed since the last Airport Master Plan was completed in 2003. During construction of either runway, the runway strength was assessed for corporate jet aircraft, more specifically, the Gulfstream G-IV, which weighs about 74,000 lbs. Therefore, the pavement was designed to accommodate the larger and heavier corporate aircraft that operate at the airport annually. This in turn extends the life of the pavement and reduces the overall maintenance of the pavements over their twenty-year design life. As such, the runway strength for both runways is adequate to accommodate existing and future aircraft operating at Saratoga County Airport.

The current pavement condition for both runways is good. Runway 5-23 and Runway 14-32 were reconstructed in 2001 and 2003 respectively. Pavement life for a GA runway is around twenty years. Based on the dates of reconstruction, the pavements are at about half of their useful life. Continued maintenance of the pavement surfaces, including crack sealing, should continue to maximize the remaining pavement's useful life.

Recommendation: The current strength of each runway is adequate for existing and future aircraft. The pavements are in good condition and are at about half of their useful life. Continued pavement maintenance is recommended to maintain and maximize the pavement surfaces.

5.3.5. Runway Safety Areas

The Runway Safety Area (RSA) is an area surrounding a runway that is designated to improve the safety of aircraft operations. The dimensions of the RSA are based on the size and speed of aircraft operating at the Airport as represented by the runway's RDC.

The RSA is a defined surface surrounding a runway prepared for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. This area must be cleared and graded and have no potentially hazardous ruts, humps, depressions or other surface variations. The surface should not permit water accumulation and, under dry conditions, should be capable of supporting snow removal equipment, aircraft rescue, and firefighting equipment, and the occasional passage of aircraft. The RSA should be free of objects higher than three inches, except for those

objects that must be located in the area for air navigation or aircraft ground maneuvering purposes.
The required dimensions of the RSA for Runway 5-23 is based on a RDC of C-II-4000. The RSA is 500 feet wide and extends beyond each runway end 1,000 feet. The current RSA for Runway 5-23 meets dimensional requirements. The RSA does not have any surface irregularities.

Runway 14-32 has an RDC of B-II-VIS. Based on this criterion, the RSA dimension is 150 feet wide and extends 300 feet beyond each runway end. The RSA meets the FAA's dimensional and surface requirements.

Table 5-18 summarizes the RSA requirements for both Runways.

Table 5-18 – Runway Safety Area Requirements

	Runway 5-23	Runway 14-32
Width	500'	150'
Length Beyond Runway End	1,000'	300'
Length Prior to Threshold	600'	300'

Source: AC 150/5300-13A, McFarland Johnson

Recommendation: The current RSA for both runways meet current FAA standards.

5.3.6. Runway Object Free Area

The OFA is a two-dimensional surface surrounding the RSA and runway that should be clear of objects, except for objects that need to be located within the area for aeronautical purposes. The ROFA clearing standard requires the removal of objects protruding above the ground.

The current ROFA for Runway 5-23 is 800 feet wide and extends beyond each runway end 1,000 feet based on an RDC of C-II-4000. The ROFA for the runway is clear of violations. The runway 14-32 ROFA is 500 feet wide and extends beyond each runway end 300 feet. There are no violations to this ROFA. **Table 5-19** summarizes the ROFA requirements for both Runways.

Table 5-19 – Runway Object Free Area Requirements

	Runway 5-23	Runway 14-32
Width	800'	500'
Length Beyond Runway End	1,000'	300'

Source: AC 150/5300-13A, McFarland Johnson

Recommendation: The current ROFA for both runways meet current FAA standards.

5.3.7. Runway Protection Zone

The Runway Protection Zone (RPZ) is a large trapezoidal area off each runway end that underlies aircraft approach and departure paths. The RPZ is intended to enhance the protection of people and property on the ground. Certain land uses (e.g., residential, places of public assembly, and fuel storage) within these areas are prohibited by the

FAA when the airport controls the land use. Airport control of these areas is strongly recommended and is achieved through airport property acquisition, easements, or zoning to control development and land use activities.

The RPZ is located 200 feet from the end of the runway and the dimensions are based upon the RDC for each runway. The dimensions of each RPZ for Runways 5-23 and 14-32 are presented in **Table 5-20**.

Table 5-20 – Runway Protection Zone Dimensions

Runway End	Inner Width	Outer Width	Length
5	500’	1,010’	1,700’
23	500’	1,010’	1,700’
14	500’	700’	1,000’
32	500’	700’	1,000’

Source: AC 150/5300-13A, McFarland Johnson

There are no planned approaches to the runways at this time; therefore, the RPZs will not change.

The FAA recommends that the airport own or control the land within each RPZ. The current RPZ ownership is discussed below:

Runway 23 RPZ – Most of the RPZ overlies Airport property. The County has obtained easements on the northeast corner of the RPZ that overlies private property.

Runway 5 RPZ - About half of the Runway 5 RPZ lies on Airport property, the remainder of the RPZ extends beyond the Airport and overlies private property and easements have been acquired within most of this area. There are no easements on the southwest corner of the RPZ.

Runway 32 RPZ – About one third of the RPZ overlies Airport property; the remaining portion overlies public and private property. The RPZ is incorporated was part of the Old Mill Planned Development District (PDD) zoning that lies off this runway end. The Town of Milton redesigned the PDD to Town Center zoning, but retained the requirements for the RPZ to assure consistency with protection of the RPZ and associated airspace from the previous PDD requirements.

Runway 14 RPZ – Similar to the Runway 32 RPZ, about a third of the RPZ is on Airport while the remaining portion overlies private property. Easements have been acquired in the outer portion of the RPZ. A small portion along the south central portion of the RPZ does not have an easement.

The Airport controls most of the RPZs that overlie non-Airport property. It is recommended to acquire remaining easements within portions of the RPZs that do not yet have easements.

It should be noted that a medical building was partially constructed within the Runway 32 RPZ immediately off Airport property in June of 2013; the building is now complete. As the building is a prohibited use within an RPZ, the FAA is evaluating the building’s impact on the approach to Runway 32. The potential effect could require that the Runway 32 threshold be displaced to clear the building. This results in a loss of landing length and may restrict larger aircraft from using this runway.

Recommendation: The current RPZs for each runway end meet current FAA dimensional standards and are mostly controlled through easements within non-Airport owned property. The County should continue to pursue avigation easements within portions of each of the four runways to prohibit development and control land use activities.

5.3.8. Runway Visibility Zone

Advisory Circular 150/5300-13A, *Airport Design*, presents criteria regarding the minimum line of sight along and between multiple runway configurations. The following criteria defines the line of sight criteria requirements

The Runway Visibility Zone (RVZ) is applied when there are two runways. A clear line of sight between the ends of intersecting runways is recommended. Terrain needs to be graded and objects need to be sited so there will be an unobstructed line of sight from any point 5 feet above one runway centerline to any point 5 feet above an intersecting runway centerline within the RVZ. At this time, there are no violations associated with the RVZ.

Recommendation: The current RVZ meets current clearing requirements.

5.3.9. Runway Obstacle Free Zone

The OFZ is a design surface but is also an operational surface that must be kept clear during operations. The OFZ is a defined volume of airspace centered above the runway centerline, above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The OFZ extends 200 feet beyond each end of the runway. The width is 400 feet for operations by large aircraft and is applicable to Runway 5-23. The width of the OFZ for Runway 14-32 is 250 feet wide based on the types of aircraft using the runway and visual approaches to either runway end.

Recommendation: The OFZ dimensional and clearing standards are met for both runway OFZs.

5.3.10. Runway Pavement Markings

Runway 5-23 has non-precision approaches to each runway end. The runway is currently marked with non-precision markings. Runway 14-32 has no instrument approaches to either runway end, but the VOR/DME-A circling approach requires non-precision markings are in good condition. The runway markings were repainted in September 2013 and are in excellent condition. No new approaches to the runways are proposed, therefore no changes are required.

Recommendation: No runway marking changes are required for either runway.

5.3.11. Taxiways

Planning standards for taxiways include taxiway width, taxiway safety areas, taxiway object free areas, taxiway shoulders, taxiway gradient, and for parallel taxiways, the distance between the runway and taxiway centerlines. The dimensions of each standard vary based on the identified Airplane Design Group (ADG) and Taxiway Design Group (TDG) for each taxiway. The ADG is based on the wingspan and tail height of an aircraft, while the TDG is based on the distance between an aircraft's cockpit to main gear, as well as the width of the main gear. There are six ADG groups, and seven TDG groups. Details regarding the various dimensions follow in **Tables 5-21** and **5-22**.

Table 5-21 - Taxiway Requirements – Airplane Design Group

Design Standard	ADG I	ADG II	ADG III	ADG IV	ADG V	ADG VI
Taxiway Safety Area	49'	79'	118'	171'	214'	262'
Taxiway Object Free Area	89'	131'	186'	259'	320'	386'
Runway/Taxiway Separation	225' – 400'*	240' – 400'*	300'-400'*	400'	400'	500'*

** Runway/Taxiway Separation vary based on approach visibility minimums*
Source: FAA Advisory Circular 150/5300-13A

Table 5-22 - Taxiway Requirements – Taxiway Design Group

Design Standard	TDG 1	TDG 2	TDG 3	TDG 4	TDG 5	TDG 6	TDG 7
Taxiway Width	25'	35'	50'	50'	75'	75'	82'
Taxiway Shoulder Width	10'	10'	20'	20'	25'	35'	40'

Source: FAA Advisory Circular 150/5300-13A

The new requirements for taxiway design published in AC 150/5300-13A, *Airport Design* now requires the design to be based on "cockpit over centerline" taxiing as opposed to "judgmental oversteering". This change particularly impacts curves and intersections, which will require modifications to accommodate the "cockpit over centerline" taxiing. The dimensions of intersection fillets and taxiway curves are based on the associated TDG for each taxiway.

The design standards to be used for Saratoga County Airport were based on the design aircraft, which was identified as the Cessna Citation Sovereign. For purposes of this analysis, the entire taxiway system is assumed to be used by all aircraft, including the Sovereign. The aircraft's ADG is C-II and based on its cockpit to main gear distance of 25 feet, the TDG was identified as 3. Reviewing **Tables 5-21** and **5-22**, the following taxiway design standards apply to Saratoga County Airport:

Table 5-23 - Taxiway Design Standards

Design Standard	Dimension
Taxiway Safety Area	79'
Taxiway Object Free Area	131'
Runway/Taxiway Separation Runway	300'
Taxiway Width	50'
Taxiway Shoulder Width	20'

Source: FAA Advisory Circular 150/5300-13A

The existing taxiway width for all taxiways is 50 feet and meets TDG-3 standards, requiring no changes. All other elements noted in **Table 5-18** are also met on the airfield. Also, the taxiways are lighted with Medium Intensity Taxiway Lights (MITLs). The MITLs were replaced as part of a taxiway project that was completed in 2013.

The current taxiway configuration operates as a parallel taxiway system to both runways in that an aircraft can get to all runway ends without the need to back-taxi on the runways. However, Taxiways A, C and D, which primarily serve Runway 5-23 and Runway 32 can experience congestion during busy weekend days or during the 6 week Track Season.

When operations dictate the need for both powered and non-powered aircraft to operate on either Runway 5 or 23 or access Runway 32, the taxiway system can become significantly congested. This is because gliders cannot be pulled to the side on the turf areas due to the protected habitat for the Karner blue butterfly. As such, powered aircraft must wait until all glider operations have departed or hooked up to be towed back to the glider hangars. This can become a larger efficiency issue during Track Season, when activity levels increase significantly. In order to provide a more efficient movement of aircraft, a full parallel taxiway to Runway 5-23 is proposed. The taxiway would be offset 400 feet from the centerline of Runway 5-23, connecting into existing portions of Taxiway A and D near the ends of Runway 5-23.

The taxiway would provide an alternate routing that does not exist today. Possible use scenarios include the use of the parallel taxiway to access Runway 23 during glider operations. Taxiway C and D can be used by gliders to stage or recover while powered aircraft use the parallel taxiway, thereby separating powered aircraft from non-powered aircraft. In the case of Runway 5 operations, powered aircraft could use Taxiway A while gliders stage on the parallel taxiway. In these instances, gliders can be segregated and allow powered aircraft access to Runway 5 or 23 unimpeded. The parallel taxiway has the added benefit of reducing taxi distances and queuing times, resulting in reduced fuel burn, exhaust and greenhouse gas emissions, and reduced noise.

Recommendation: Provide a parallel taxiway to Runway 5-23 to relieve congestion and provide efficient movement of powered aircraft to either runway end and reduce environmental effects associated with movement of powered and non-powered aircraft.

5.3.12. Airfield Lighting and Visual Aids

This section discusses the airfield lighting and visual aids on the Airport.

Runway Lighting

Runway 5-23 and 14-32 are lighted with Medium Intensity Runway Lighting (MIRLS). The lighting system for Runway 5-23 was replaced when the runway was reconstructed in 2001. The MIRL system for Runway 14-32 was replaced when this runway was reconstructed in 2003. The existing lighting systems for both runways meet the lighting requirements for the current approaches.

Runway End Identifier Lights (REILS) are provided on Runways 5, 23 and 32 to assist pilots during night conditions. These lights are in good condition and no changes are recommended.

Recommendation: Both runways are lighted appropriately with Medium Intensity Runway Lights and have REILs.

Precision Approach Path Indicators (PAPI)

Runways 5, 23 and 32 currently have four box Visual Approach Slope Indicators (VASIs). All except the Runway 23 VASI are currently inoperative. However, they are being replaced by Precision Approach Path Indicators (PAPI) units to provide visual guidance to these runway ends. The Runway 23 PAPI's is operational while the Runway 5 PAPI is expected to be operational in 2015.

Recommendation: No changes are required pending completion of the PAPI installations.

Wind Cone

A wind cone provides visual reference of the wind direction and velocity for pilots using the Airport. A wind cone is located southeast of the runway intersection and is lighted. The wind cone was replaced in Spring 2014.

Recommendation: The current wind cone was replaced and no further action is required.

Beacon

The Airport beacon is located south of the terminal area on a tower. The beacon is in good condition. Trees to the southeast obstruct pilot's view of the beacon when approaching from the south. A State grant was obtained in September 2013 to remove the trees that affect the ability to see the beacon when approaching from the south. The trees are expected to be removed in 2015.

Recommendation: No changes are recommended. A State grant was obtained to remove trees that obstruct the view of the beacon from the air.

5.3.13. Automated Weather Observation System (AWOS-III)

The Airport has an AWOS unit that is located west of the based aircraft tie-downs and Taxiway A. The unit was replaced in 2009 with a new and updated unit. The AWOS broadcasts on 132.025 MHz and provides weather information including wind speed, wind direction, temperature and dew point, among other parameters. The AWOS broadcast can also be obtained by telephone at (518) 884–9289.

Recommendation: As the unit was replaced in 2009, no recommendation is required.

5.3.14. Instrument Approaches

There are three instrument approaches to Saratoga County Airport. There is a Localizer Performance with Vertical Guidance (LPV) approach to Runway 23, an Area Navigation (RNAV) approach to Runway 5 and a VOR/DME circling approach to the Airport.

Both the RNAV and LPV approaches provide 314 feet and 1 mile and 426 feet and 1-mile visibility minimum, respectively. The lowest possible minimums for these types of approaches are 250 feet and ¾ mile visibility with no obstructions to approach surfaces. Subsequently, the existing approach minimums provide adequate poor weather access to Saratoga County Airport. The ability to obtain better minimums to these approaches is through the removal of trees that obstruct the current approaches. An analysis of the current approaches is underway to determine if better minimums can be obtained and will be presented in a subsequent chapter.

The VOR/DME-A circling approach has high minimums at 826 feet and 1-mile visibility and provides access to the Airport during poor weather conditions. As it is a circling approach, once a pilot has visually acquired the airport on the approach, the pilot may choose to land on any runway based upon current wind conditions. This approach provides an additional poor weather approach resource to access the Airport. No changes are recommended at this time for this approach.

The feasibility of attaining a precision approach was studied in the past; however, the amount of trees within the current 5-23 approaches prohibits this from being a viable option. As such, no precision approach is recommended at this time.

Recommendation: The recommendation is to assess the current tree obstructions to Runway 5 and 23 to determine if better minimums can be obtained.

5.3.15. FAR Part 77 Surfaces

In an effort to protect the safety of aircraft operations, the FAA defines and regulates the airspace surrounding airports in FAR Part 77, *Objects Affecting Navigable Airspace*. This airspace is defined and delineated by a set of geometric surfaces referred to as “imaginary surfaces” that extend outward and upward from airport runways. An object that protrudes through an imaginary surface is an obstruction. Obstructions may be hazards, and an FAA analysis may result in a recommendation to light and/or mark the object. The height and dimensions of the imaginary surfaces are determined by the runway end and airfield elevation, aircraft size and runway approach. Existing and proposed imaginary surfaces at Saratoga County Airport are discussed below.

The surfaces that comprise the FAR Part 77 surfaces are as follows:

- **Primary Surface**: A surface longitudinally centered on the runway. When the runway has a paved surface, the Primary Surface extends 200 feet beyond each runway end. The width of the Primary Surface depends upon the type of approach provided to the runway, the aircraft using the approach and the associated visibility minimums.

For purposes of this analysis, Runway 5-23 is considered other than utility runway, which defines the primary surface as 500 feet. Runway 14-32 is defined a utility runway and has a Primary Surface width of 250 feet. In addition, the elevation of any point of the Primary Surface is the same as the nearest point on the runway centerline.

- **Horizontal Surface**: This surface is a horizontal plane 150 feet above the highest point on the runway surface. The elevation of the Horizontal Surface for Saratoga County Airport is 584 feet MSL. The edges of this surface are defined by 10,000-foot radial arcs centered from the ends of Runway 5-23 and 5,000 foot arcs on Runway 14-32.

- **Conical Surface**: This surface extends outward and upward from the perimeter of the Horizontal Surface at a slope of 20:1 for a horizontal distance of 4,000 feet.

- **Approach Surface**: The Approach Surface is an inclined plane longitudinally centered on the extended runway centerline, extending outward and upward from the Primary Surface. The dimensions and slope of these surfaces are based on the category of approach (visual, non-precision, or precision), the visibility minimums of the published approach, and the type of aircraft that will use the approach. The Approach Surfaces for all runways start 200 feet from end of usable pavement. The Approach Surface for Runway 5 and 23 are 34:1 based on the existing approaches. Runway 14-32 has 20:1 approaches, as both runway ends are visual approaches.

- **Transitional Surface**: A surface extending outward and upward at right angles from the sides of the Primary and Approach Surfaces at a slope of 7:1. The Transitional Surfaces terminate at the overlying Horizontal Surface.

When an object penetrates an imaginary surface, it is considered an obstruction to air navigation. Obstructions can include man-made objects (buildings, towers), objects of natural growth (trees), and terrain. Not all obstructions are hazards, although they are generally presumed to be hazards in the absence of further study. The determination of obstruction hazard status is made by the FAA as a result of an Aeronautical Study conducted in accordance with FAR Part 77 procedures.

No new approaches are proposed at this time; therefore, the FAR Part 77 dimensions discussed above will not change.

Recommendation: No changes are recommended.

5.3.16. Runway End Siting Surface

The runway end siting surfaces identify the minimum approach clearances to obtain a safe approach and night use of instrument approaches, and are defined in Table 3-2 of Advisory Circular 150/5300-13A, *Airport Design*. If penetrations to the surface cannot be removed, threshold displacement or obstruction lighting may be required. **Table 5-24** presents the runway end siting surface dimensions and slopes that are associated with existing approaches to Runway 5-23 and 14-32.

Table 5-24 - Existing Runway End Siting Surface Dimensions and Slopes

Runway	Table 3-2 Designation	Approach Type	Initial Width	Final Width	Length	Slope
Runway 23	5	Non-Precision	800’	3,800’	10,000’	20:1
	8	Non Precision	300’	1,520’	10,000’	30:1
Runway 05	5	Non-Precision	800’	3,800’	10,000’	20:1
	8	Non Precision	300’	1,520’	10,000’	30:1
Runways 14 and 32	2	Visual	250’	700’	5,000’	20:1

Source: *FAA Advisory Circular 150/5300-13A, Table 3-2*

As there are no changes in the types of approaches to either runway, these surface dimensions do not change.

Recommendation: No changes are recommended.

5.3.17. Wildlife Hazard Assessment

An FAA grant to conduct a Wildlife Hazard Assessment (WHA) was awarded in September 2013. The WHA will assess and evaluate the potential wildlife hazards that may exist on the Airport. The WHA will comprise of the following elements:

1. An analysis of the events or circumstances that prompted the assessment.
2. Identification of the wildlife species observed and their numbers, locations, local movements, and daily and seasonal occurrences.
3. Identification and location of features on and near the Airport that attract wildlife.
4. A description of wildlife hazards to general aviation operations.
5. Recommended actions for reducing identified wildlife hazards to air carrier operations.

Once the study is complete, the findings will be evaluated and incorporated into the Airport Master Plan recommendations.

Recommendation: Incorporate the findings of the WHA into the recommended development for the Airport.

5.3.18. Airside Facility Requirements Summary

The summary of recommendations for airside facilities is provided in **Table 5-25**.

Table 5-25 - Summary of Airside Facility Requirements

Item/Facility	Existing Facility or Capacity	Ultimate Requirement	Recommendation
Runway Length	Runway 5-23 – 4,699’ Runway 14-32 – 4,000’	Runway 5-23 – 5,500’ Runway 14-32 – 4,000’	Extend Runway 5-23 800’, Maintain Length of Runway 14-32
Runway Width	Runway 5-23 – 100’ Runway 14-32 – 100’	Runway 5-23 – 100’ Runway 14-32 – 100’	Maintain 5-23 and 14-32 Width at 100’
Runway Safety Areas	Runway 5-23 – 500’x1,000’ Runway 14-32 – 150’x300’	Runway 5-23 – 500’x1,000’ Runway 14-32 – 150’x300’	None
Runway Object Free Area	Runway 5-23 – 800’x1,000’ Runway 14-32 – 500’x300’	Runway 5-23 – 800’x1,000’ Runway 14-32 – 500’x300’	None
Runway Protection Zone	Under Airport Control through Ownership and Avigation Easements	Under Airport Control through Ownership and Avigation Easements	Target Remaining Avigation Easements
Runway Visibility Zone	Standard	Standard	None
Runway Lighting	Runway 5-23 – MIRLs Runway 14-32 - MIRLs	Runway 5-23 – MIRLs Runway 14-32 - MIRLs	None
Runway Visual Aids	Runway 5 – VASI Runway 23 – VASI Runway 32 – VASI Runway 14 - None	Runway 5 – PAPI Runway 23 – PAPI Runway 32 – PAPI Runway 14 - None	VASIs Being Replaced with PAPIs 2014/2015
Instrument Approaches	Runway 5 – RNAV (GPS) Runway 23 – RNAV (GPS) Runway 14 – Visual Runway 32 – Visual	Runway 5 – RNAV (GPS) Runway 23 – RNAV (GPS) Runway 14 – Visual Runway 32 – Visual	Assess Obstructions to Current Approaches to Improve Minima
Taxiways	Runway 5-23 – Partial Parallel Runway 14-32 – Partial Parallel	Runway 5-23 – Full Parallel Runway 14-32 – Partial Parallel	Runway 5-23 – Full Parallel
Taxiway Width	50’	50’	None
Taxiway Lighting	All Taxiways – MITL	All Taxiways – MITL	MITL’s Replaced 2013
Glider Operations	Operate on Runway 5-23 and 14-32	Separate Powered Aircraft and Gliders	Considerations Include Separate Glider Runway, Staging Areas at Ends of Runways. Assess in Chapter 6 *Alternatives*

Source: McFarland Johnson

5.4. LANDSIDE FACILITIES

In order to accommodate existing and future demand, improvements to landside facilities should keep pace with improvements to airside facilities and with growth in aviation activity at the Airport. Various methodologies have been applied to the forecasts presented in Chapter 3, *Forecasts of Aviation Activity* to determine the magnitude of the landside facility requirements. Industry standards and design criteria contained in AC 150/5300-13A, *Airport Design*, are the basis for these methodologies. Landside facilities include the following:

- Hangars
- Aprons
- Aviation Fuel Facilities
- Airfield Security
- Airfield Maintenance and Equipment
- Terminal
- Airport Rescue and Fire Fighting
- Ground Access and Parking
- Utilities
- Summary of Landside Facility Requirements

5.4.1. Hangars

Hangar requirements are typically a function of the number and type of based aircraft, owner preferences, hangar rental costs, and climate conditions in the region. Owners of large and expensive aircraft tend to prefer hangar storage to outdoor storage and the preference for enclosed storage increases when the weather conditions are severe. Since GA airports often find that T-hangars are a flexible and cost effective way to meet the aircraft storage needs of their customers, this report divides the calculated hangar demand between conventional hangar and T-hangar facilities.

Existing hangar facilities include three conventional hangars and two T-hangars. The conventional hangars are used for short and long-term storage (19,000 sf) and aircraft maintenance (7,860 sf). The FBO indicated that all the hangars are full and additional hangar space is needed. The FBO plans to purchase a larger corporate jet aircraft that will displace other aircraft in their main hangar. Additionally, the FBO indicated that they are quickly outgrowing the current maintenance hangar and that additional area is needed.

T-hangar space is comprised of two sets of T-hangars providing 22,800 sf and 13 individual units. The FBO indicated there is a waiting list of 6 aircraft for future T-hangars space.

The FBO uses the old Richmor hangar as a maintenance hangar. Maintenance service has been growing over the past few years and the maintenance facility is now at capacity. Based on discussions with the FBO, additional space is needed to service the demand. For purposes of this analysis, the general calculation to determine maintenance space is 20% of the overall hangar demand as the maintenance service provides specialty work on Cessna jets and attracts aircraft from the New England states and New York.

Table 5-26 presents the storage preferences and space requirements for existing and future based aircraft at Saratoga County Airport and is based upon discussions with the FBO and information from the 2003 Airport Master Plan.

Table 5-26 – Hangar Requirements by Aircraft Type

Aircraft Type	Type of Storage	Space Requirement
Single Engine – 30%	T-Hangar	1,200 sf
Single Engine – 10%	Conventional Hangar	1,200 sf
Multi-engine Piston – 90%	T-Hangar	1,400 sf
Multi-engine Piston – 10%	Conventional Hangar	1,400 sf
Turboprop – 100%	Conventional Hangar	1,800 sf
Jet – 100%	Conventional Hangar	3,500 sf
Helicopter – 100%	Conventional Hangar	3,500 sf

Source: FBO, 2003 Master Plan, McFarland Johnson

Future hangar facility requirements for Saratoga County Airport were computed by applying the above assumptions to the based aircraft forecasts provided in Chapter 3, *Forecasts of Aviation Activity*. **Table 5-27** presents these hangar requirements.

Table 5-27 – Hangar Requirements

Conventional Hangar	**2017**	**2022**	**2027**	**2032**
Single-Engine	4,800 sf	4,800 sf	4,800 sf	6,000 sf
Multi-Engine	0 sf	0 sf	1,400 sf	1,400 sf
Turboprop	5,400 sf	5,400 sf	5,400 sf	5,400 sf
Turbojet	10,500 sf	10,500 sf	10,500 sf	10,500 sf
Helicopter	3,500 sf	3,500 sf	3,500 sf	3,500 sf
Subtotal	24,200 sf	24,200 sf	25,600 sf	26,800 sf
Existing Conventional Hangar Area:	19,000 sf			
Surplus (Deficiency)	(5,200 sf)	(5,200 sf)	(6,600 sf)	(7,800 sf)
T-Hangar				
Single-Engine	14,400 sf	14,400 sf	15,600 sf	16,800 sf
(units @1,200 sf. ea.)	12	13	13	14
Multi-Engine	5,600 sf	5,600 sf	7,000 sf	7,000 sf
(units @1,400 sf ea.)	4	4	5	5
Subtotal	20,000 sf	21,200 sf	22,600 sf	23,800 sf
(units)	16	17	18	19
Existing T-Hangar Units: 13				
Unit Surplus (Deficiency)	(3)	(4)	(5)	(6)
Maintenance Area				
20% of Hangar/T-hangar Demand	8,900 sf	9,100 sf	9,600 sf	10,000 sf
Existing Maintenance Area: 7,680 sf. (say 7,700 sf.)				
Surplus (Deficiency) (3,100	(3,100 sf)	(3,100 sf)	(1,900 sf)	(2,300 sf)

Source: McFarland Johnson

As shown in **Table 5-27**, conventional hangar space demand will increase to approximately 26,800 sf through the end of the planning period. Based on existing hangar space today, there is an immediate deficit of 5,200 sf, which increases to 7,800 sf of conventional hangar space over the planning period. The FBO indicated that hangar demand has grown and that demand is a combination of aircraft owners wanting covered storage, covered itinerant hangar needs as well as the FBO's growing fleet of aircraft. Based on this, the demand can be fulfilled by adding an additional large conventional hangar to meet near and long-term demand.

The calculation for T-hangar space also shows a deficit over the planning period. In addition, the FBO indicated that there is a current waiting list of 6 aircraft for T-Hangar Space. Based on the calculation, there is a deficit of 6 T-hangar units through the planning period. As there is a current waiting list of 6 aircraft requesting T-hangars space, the short and long-term demand will be satisfied through the development of a new 6 unit T-hangar.

Maintenance space is currently at capacity today. Based on the FBO's information, the need to provide additional space is needed in the short term. The calculations shown in Table 5-27 suggest the need for additional space in the short term and growing over the twenty-year planning period. The existing maintenance hangar is in poor condition and in need of replacement. The FBO is planning to completely renovate of this hangar in 2014/2015. The renovation of the hangar will provide the additional maintenance area identified in the facility needs. As such it is assumed that the future maintenance area will be satisfied with the renovation of the hangar.

Recommendation: To address short and long term demand, there is a need to add a new conventional hangar, a 6 unit T-hangar and replacement of the maintenance hangar with a hangar to meet future demand.

Glider Facilities

There are two glider hangars located to the east of Taxiway C. The hangars were built by the Saratoga Soaring Association in 2003 and the Adirondack Soaring Association in 2012. Discussions with the glider clubs indicate that both hangars are appropriately sized and they have adequate land to store glider trailers and area to assemble gliders. Both hangars also have direct access to Taxiway C. These hangars currently meet the needs of the two glider clubs; therefore, no additional facility needs are identified at this time.

Recommendation: Current facilities meet glider club needs and no changes are necessary.

5.4.2. Aprons

Three components of use were considered in the determination of apron requirements for Saratoga County Airport. They are as follows:

- Based aircraft parking
- Transient aircraft parking
- Aircraft Fueling Apron

Based Aircraft Parking

The current area designated for parking based aircraft is located along Taxiway C. There are currently 46 tiedowns on this apron, equating to 34,450 square yards (sy). The apron pavement is in poor condition and there is a planned project to reconstruct the pavement in 2015.

To calculate based aircraft needs, it was assumed that 60% of Single Engine based aircraft would require a tiedown. A tiedown represents 300 sy. Using these factors and the forecast of based aircraft, **Table 5-28** presents the based aircraft tiedown requirement.

Table 5-28 – Based Aircraft Apron Requirements

	2017	2022	2027	2032
60% of Based Aircraft	25	26	26	27
Area (300 sy/tiedown)	7,500 sy	7,800 sy	7,800 sy	8,100 sy
Existing Space - 13,450 sy				
Surplus (Deficiency)	5,950 sy	5,650 sy	5,650 sy	5,350 sy

Source: McFarland Johnson

As shown in **Table 5-28**, there is a surplus of approximately 20 tiedowns in 2017 and 18 in 2032. It should be noted that although there is a surplus of space, there are a number of tiedowns that are used during the summer when aircraft temporarily base at the Airport. During Track Season, itinerant parking space for corporate jets and private aircraft requiring short-term parking becomes very limited. The FBO has used the surplus area over the years to temporary park itinerant aircraft. Removing the surplus area would reduce the flexibility to temporarily park itinerant aircraft parking. As such, it is recommended to retain the surplus area for itinerant parking during Track Season.

Recommendation: There is a surplus of tiedown space, however, it is recommended to retain the apron for itinerant aircraft parking during Track Season.

Itinerant Aircraft Parking

Itinerant aircraft represent approximately 57% of the total operations conducted at Saratoga County Airport annually. Itinerant parking needs generally are accommodated during the year. However, unique to Saratoga County Airport, itinerant aircraft parking needs increase significantly during Track Season. The increased volume of aircraft, as well as an increase in aircraft size associated with mid-sized and large corporate aircraft dramatically reduces available parking space. Based on this, two itinerant parking assessments were done, one for normal activity and one for Track Season.

AC 150/5300-13A, *Airport Design*, suggests one methodology for determining apron space requirements for transient aircraft. The methodology is described as follows and modified to be consistent with airport characteristics and activity level:

- Calculate monthly itinerant operations (8% for average month, 33% for Track Season)
- Calculate total design day operations (assumes 31 day average month x 10% for busy day);
- Calculate itinerant operations on design day and divide by two to obtain number of itinerant aircraft on the apron;
- Normal Peak Month - Assume 25% percent of these aircraft require transient parking space;
- Track Season – Assume 50% of these aircraft require transient parking space.
- Allow an apron area of 360 SY per transient airplane or 1 tiedown under normal conditions and 400 sy for Track Season conditions.

The above methodology was applied to determine the apron space requirements for transient aircraft at Saratoga County Airport. **Table 5-29** presents the Normal Itinerant Apron needs followed by **Table 5-30**, which represents the Itinerant Apron Parking Needs during Track Season.

Table 5-29 - Normal Transient Aircraft Apron Area Requirements

Year	Design Day Operations	Itinerant Operations Per Design Day	Transient Aircraft on Apron	Required Transient Apron Space (sy)	Existing Transient Apron Space (sy)	Transient Apron (sy) Surplus or (Deficit)
2017	47	23	6	2,100	15,700	13,600
2022	48	24	6	2,200	15,700	13,500
2027	50	25	6	2,300	15,700	13,400
2032	54	27	7	2,400	15,700	13,300

Source: McFarland Johnson Analysis

Table 5-30 – Track Season Transient Aircraft Apron Area Requirements

Year	Design Day Operations	Itinerant Operations Per Design Day	Transient Aircraft on Apron	Required Transient Apron Space (sy)	Existing Transient Apron Space (sy)	Transient Apron (sy) Surplus or (Deficit)
2017	194	97	49	19,600	15,700	(3,900)
2022	200	100	50	20,000	15,700	(4,300)
2027	206	103	52	20,800	15,700	(5,100)
2032	221	111	55	22,100	15,700	(6,300)

Source: McFarland Johnson Analysis

As seen in **Table 5-29**, outside of Track Season, there is a surplus of itinerant parking needs under normal peak period conditions. However, as noted by the FBO, itinerant parking during Track Season shows a 6,300 sy deficit as presented in **Table 5-30**.

Based on this analysis, the surplus apron space shown in **Table 5-29** is critical to accommodating itinerant apron parking needs during Track Season. However, there still remains a deficit of itinerant parking space throughout the planning period. The based aircraft apron has been used as itinerant parking in the past. Factoring the surplus based aircraft apron area shown in **Table 5-28**, Track Season parking needs can be met in 2017, however, in the long-term, there is a deficit of 6,300 sy of itinerant parking with the based aircraft apron surplus included.

Therefore, it is recommended to retain the current transient parking space to meet normal and Track Season parking demand. In the long term future, up to an additional 6,300 sy of itinerant parking apron will be required to meet demand.

Recommendation: In the long term, provide up to 6,300 sy of additional itinerant parking apron to meet demand.

Aircraft Fueling Apron

The fueling apron is located adjacent to the FBO's hangar facility. There is an apron in front of the fuel tanks for aircraft of various sizes to fuel the aircraft. In addition to the fueling apron, the FBO also has a mobile truck to dispense fuel remotely. As such, there is no recommendation needed to address the fueling apron at this time.

Recommendation: No changes are recommended.

5.4.3. Aviation Fuel Facilities

The FBO has two above ground 10,000-gallon fuel tanks to store 100 low lead (100LL) fuel and Jet-A fuel. The tanks are located west of the North American Flight Services hangar. The system has a fueling apron for aircraft with two dispensers for 100LL fuel and Jet-A fuel. The tanks meet current Federal and State regulations for double walled tanks and containment. Additionally, a Spill Prevention, Control and Countermeasure plan (SPCC) has also been developed to meet Federal and State regulations. The FBO also has two mobile tankers with 3,000-gallon capacity, for each brand of fuel that allows the FBO to fuel aircraft remotely.

The FBO indicated that the 100LL tank is adequate for this fuel's demand. However, during the summer months, a 10,000 gallon tanker is brought in to supplement Jet-A capacity due to the demand for Jet-A during Track Season. This has occurred over the past four years to ensure that the FBO has an adequate supply of Jet-A fuel.

The fuel sales data presented in **Table 3-4** of Chapter 3, *Forecasts of Aviation Activity* was reviewed to determine the magnitude of the problem. The three busiest months for Jet-A sales is between July and September. **Table 5-31** presents the Jet-A sales between 2009 and 2012.

Table 5-31 – Jet A Fuels Sales (Gallons)

Month	2009 Jet A	2010 Jet A	2011 Jet A	2012 Jet A
July	16,875	20,580	23,872	32,018
August	72,823	64,649	65,985	56,633
September	26,384	15,910	24,374	8,915
3 Month Average	38,694	33,713	38,077	32,522

Source: Avfuels

Averaging the 3-month average over the four years, the average monthly demand for Jet-A fuel is 35,750 gallons, which equates to an average weekly demand of 8,940 gallons. As a typical tanker trailer load is about 8,000 gallons, a tanker load per week is required to meet demand. The industry recommendation is to have at least a two-week fuel supply available to operate efficiently and limit the potential of exhausting the fuel supply. The calculations above confirm that the single Jet-A tank is inadequate to accommodate demand. As such, it is recommended that a second 10,000-gallon Jet-A tank be installed to provide a minimum two-week supply of Jet-A fuel. The installation will meet all Federal and State regulations.

The maneuvering area for delivery tankers is limited and the trucks must pull in and back out, which is inefficient. As such, during the design of the second Jet-A fuel tank, the fuel delivery area should be examined to provide a more efficient configuration that will eliminate the need for the tankers trucks to back out of the delivery area.

Recommendation: Install a second 10,000-gallon Jet-A fuel tank and reconfigure the tanker truck delivery area.

5.4.4. Airfield Security

A security fence currently runs around the entire Airport perimeter and ending at the entrance to the Airport. There are several gates located along Rowland Street, Geyser Road, and Stone Church Road to provide access to the various areas of the Airport. Perimeter fencing is needed within a portion of the terminal area. It is recommended to add a fence from the old Richmor hangar around the T-hangars and Glider Hangars and connecting to the security fence along the eastern edge of the Airport. A gate should be incorporated to allow vehicles to access the hangars, T-hangars and Glider hangars. Consideration should be given to establishing a access control system to provide a higher level of security. This would ensure that only tenants could access the landside buildings and apron areas.

Recommendation: Complete the security fencing within the terminal area to limit access to the airside. The system should integrate a access control system to allow only tenants access to the hangar buildings and apron areas.

5.4.5. Airfield Maintenance Facility and Equipment

An airport requires sufficient equipment to maintain the airport facilities, and adequate storage and maintenance buildings to protect and service the maintenance equipment. The maintenance building should provide sufficient equipment storage space and an ancillary support area with maintenance work facilities, including at least one maintenance bay.

A maintenance and storage facility is not required at Saratoga County Airport. The Saratoga Department of Public Works (SCDPW) operates and maintains the Airport. The SCDPW complex is located about 2.5 miles from the Airport and maintenance equipment used to maintain the Airport is stored at this facility.

The SCDPW maintenance vehicles are used to mow grass during the fall and plow snow in the winter. This equipment is dispatched from the SCDPW facility as needed. In addition, two dedicated snow blowers are owned by the SCDPW and used during snow events. The blowers include a 1972 Sicard and a 2005 Larue.

All other maintenance such as light replacement and other maintenance needs are also provided by the SCDPW. The FBO will contact SCDPW and let them know of any maintenance needs as they arise.

Discussions with SCDPW staff indicated that no new maintenance or snow removal equipment is required.

Recommendation: No recommendations are required.

5.4.6. Terminal

The terminal building is the gathering place for pilots, passengers, visitors, and airport management. The building design should be functional, comfortable and provide a positive image of the airport. A GA terminal building typically provides space for management offices, a pilot lounge, flight planning, restrooms, eating facilities, a public telephone, and other space, such as training rooms, to meet the needs of pilots, passengers, and employees.

The current terminal amenities are provided at North American Flight Services. This area provides about 1,000 sf of space and includes a pilot lounge, pilot flight planning area, restrooms on the first floor and offices and training rooms on the second floor. The area is adequate to meet the needs of the airport. Similar administrative space provided in the North American Flight Services facility should be incorporated in the new hangar to provide additional terminal space.

Recommendation: Current terminal facilities are adequate. When a new hangar is built, additional terminal space should be incorporated.

5.4.7. Aircraft Rescue and Fire Fighting (ARFF)

There are no ARFF facilities or equipment located at the airport. The Town of Milton Fire Department provides emergency response services through a mutual aid agreement with the County. The Town of Milton's Fire Department is located ½ mile from the entrance of the Airport on Geyser Road.

Recommendation: No recommendations are required.

5.4.8. Ground Access and Parking

The current access road to the Airport is located along Geyser Road. The road is in good condition and provides access to all of the hangar facilities. There are no recommendations at this time to add additional access.

There are two automobile parking areas on the Airport. The primary lot is located adjacent to the North American Flight Services hangar and has 60 parking spaces. A second lot is located adjacent to the maintenance hangar and has 10 parking spaces.

Parking demand was estimated based upon peak period operations. The following approach was used to develop the parking estimates:

- Identify GA Peak Period operations for normal and Track Season conditions.
- Determine the number of peak-hour pilots and passengers by multiplying the number of peak hour operations by 2.5 pilots and passengers
- Estimate the number of parking spaces in use by assuming that parking demand will be half the number of pilots and passengers, since parking spaces will be utilized only by departing pilots and passengers

Using this approach, **Tables 5-32** and **5-33** present the GA parking demand estimates.

Table 5-32 - GA Automobile Parking Requirements – Normal Conditions

Year	GA Peak Hour Operations	Pilot & Passenger Parking Demand	Total Parking Demand	Existing Spaces	Surplus(Deficit)
2012	17	43	21	70	49
2017	18	44	22	70	48
2022	18	45	23	70	47
2032	19	48	24	70	46

Source: McFarland-Johnson

Table 5-33 - GA Automobile Parking Requirements – Track Season Conditions

Year	GA Peak Hour Operations	Pilot & Passenger Parking Demand	Total Parking Demand	Existing Spaces	Surplus(Deficit)
2012	52	130	65	70	5
2017	54	134	67	70	3
2022	55	138	69	70	1
2032	59	146	73	70	(3)

Source: McFarland-Johnson

As shown, there is adequate parking available during the year under normal conditions. During Track Season, demand for parking increases, however, there is enough parking spaces to meet demand with the exception of the small deficit in the long term. For purposes of this analysis, the small deficit does not require an adjustment.

Recommendation: The existing roadway and parking meet the needs of the Airport.

5.4.9. Utilities

Section 2.4.6 in Chapter 2 *Inventory*, described the utilities available at the Airport. Based on discussions with the County, most of the utilities are adequate and each building has one or more utilities serving the building. The only note is that a water line was connected to the new 9,000 sf hangar constructed across from the Richmor hangar. The water line cannot be completed until a gray water system can be built for the building. Consideration should be given to incorporate the gray water system.

Recommendation: The utilities services meet current and future needs of the Airport. A septic system should be incorporated to service the new hangar across from the maintenance hangar.

5.4.10. Summary of Landside Facility Requirements

Table 5-34 provides a summary of the Landside Facility Requirements.

Table 5-34 – Landside Facility Requirements Summary

Item/Facility	Existing Facility or Capacity	Ultimate Requirement	Recommendation
Conventional Hangar	19,000 sf	26,800 sf	Increase Hangar Space by 7,800 sf
T-Hangars	13 Units	19 Units	Increase T-hangars by 6 Units Based on Waiting List
Maintenance Hangar	7,700 sf	10,000 sf	2,300 sf to be incorporated in rehab of Richmor Hangar
Based Aircraft Apron	13,450 sy	8,100 sy	None
Transient Aircraft Apron			Utilize Based Aircraft Apron Surplus to Meet Short Term Demand. Provide 6,200 sy to Meet Long Term Demand
Normal	15,700 sy	2,400 sy	
Track Season	15,700 sy	22,100 sy	
Fuel Storage Capacity	10,000 gal 100 LL 10,000 gal Jet-A	10,000 gal 100 LL 20,000 gal Jet-A	Install an Additional 10,000 Gallon Jet-A Tank
Auto Parking			
Normal	70 Spaces	24 Spaces	None
Track Season	70 Spaces	73 Spaces	
Terminal Space	Adequate	Adequate	Adequate
ARFF	Adequate	Adequate	Adequate
Maintenance Facility and Equipment	Adequate	Adequate	Adequate
Utilities	Adequate	Adequate	Add gray water system to recently built hangar

Source: McFarland Johnson

Chapter 6
Alternatives

6.0. INTRODUCTION

The Alternatives chapter assesses the recommended facility improvements identified in Chapter 5, *Demand Capacity and Facility Requirements,* against a set of evaluation factors to determine if the recommended developments do indeed enhance the efficiency of the Airport, while meeting future demand and minimizing environmental and community impacts. The evaluating factors used to compare development options were selected based on specific considerations associated with Saratoga County Airport.

The identification and evaluation of the Airport development alternatives are outlined in the following sections:

- Summary of Airport Facility Requirements
- Development Constraints
- Airside Alternatives
- Landside Alternatives

6.1. SUMMARY OF AIRPORT FACILITY REQUIREMENTS

The previous chapters have identified and quantified the necessary improvements that should be addressed at Saratoga County Airport over the 20-year planning period. The following is a summary of the key Airport facility requirements as discussed in Chapter 5, *Demand Capacity and Facility Requirements:*

- Extend Runway 5-23 by 800 feet in length for a total length of 5,500 feet.
- Obtain land use control (easement or fee) where it is lacking in all Runway Protection Zones (RPZs).
- Remove obstructions to maintain current approaches and improve minimums where feasible.
- Provide full-parallel taxiway to Runway 5-23.
- Provide expanded and more flexible glider staging areas to better segregate powered and non-powered aircraft.
- Increase conventional hangar space by 8,000 square feet.
- Provide 6 additional T-hangar units.
- Expand transient aircraft parking by 6,200 sy to accommodate seasonal peak demand.
- Provide an additional 10,000 gallon Jet-A tank.

Potential alternatives that could meet the Airport's current and future needs will be presented. The no-build alternative, which consists of maintaining the existing facilities as is with no additions or expansions, will also be considered. The no build alternative assumes that maintenance and other activities (e.g. obstruction removal) will occur to maintain a safe and efficient operating environment. The build alternatives will then be evaluated based on a uniform set of criteria for the airside and landside elements.

6.2. DEVELOPMENT CONSTRAINTS

There are several constraints associated with the potential development at Saratoga County Airport. The key constraints considered during the formulation of the development alternatives are described below:

Endangered Species Habitat: As previously described in Chapter 4, *Environmental Overview*, the Airport has endangered species habitat is present in the grasslands surrounding the runways and taxiways. As such, Saratoga County Airport has essentially been divided into two areas, "Known Habitat Area" and "Exempt Area." Development in the Known Habitat Area is strictly regulated under Federal and State law, while the Exempt Area is not. Operations and management activities within the Known Habitat Area are also strictly regulated under an informal agreement between Saratoga County, the New York State Department of Environmental Conservation (NYSDEC), and the United States Fish and Wildlife Service (USFWS). Any development project located within the Known Habitat Area will require consultation with both NYSDEC and USFWS. Special permitting and mitigation would be required for the implementation of any feasible alternative, and may incur additional costs. These costs were not included in the estimates provided for each alternative.

Glider Operations: Chapter 5, *Demand Capacity and Facility Requirements*, highlighted the capacity issues regarding the glider operations. Two glider clubs operate at Saratoga County Airport through three seasons of the year, typically March through November. Glider activity at General Aviation Airports usually occur on turf areas to the side of the paved runways or runway system, thus separating powered and non-powered aircraft. However, because the turf surfaces at Saratoga are protected habitat areas of the Karner blue butterfly, gliders must stage, launch, land, and recover on the paved runway surfaces. This leads to a reduction in Airport capacity and delayed aircraft operations, particularly as peak glider operations coincide annually with Track Season. Consequently, Chapter 5, *Demand Capacity and Facility Requirements* recommended evaluating alternatives to segregate powered and non-powered aircraft operations.

Track Season: Saratoga County Airport's unique operating trends were discussed in Chapter 3, *Forecasts of Aviation Activity.* The Saratoga Race Course in Saratoga Springs attracts a large influx of people every year to view and partake in horse racing activities and gambling. Many of these visitors arrive by private aircraft. The track's season is from mid-July until Labor Day. During that six-week period, there is a major influx of corporate jet and turboprop activity, which accounted for 53% of the annual activity in 2012. Prior years have similar activity levels. Accommodating this increased demand requires consideration for aircraft parking, fueling, and the glider operations, which occur simultaneously.

Surrounding Land Use: Residential and/or commercial land uses exist on all sides of the airfield. These include single-family residential neighborhoods, condominium and apartment complexes, commercial structures such as banks and supermarkets, and a new medical building off the end of Runway 32. There are also vacant areas surrounding the Airport, for which there is presently no purposeful land use.

Stormwater Management: Substantial changes in the amount of impervious pavement area at the Airport, such as the construction of new aprons or taxiways, will affect stormwater management efforts. However, the impacts from any increases in impervious surfaces can be mitigated through proper grading and drainage systems.

6.3. AIRSIDE ALTERNATIVES

In this section, various ways to meet the airside needs of Saratoga County Airport will be developed and evaluated. As noted in Chapter 5, *Demand Capacity and Facility Requirements*, airside facility alternatives will include potential improvements to runways, taxiways, and approach surfaces. Several alternatives are presented.

Saratoga County has a long-standing obstruction removal program, which focuses on land use acquisition/easement and object height restriction for portions of the Runway Protection Zones not currently under the County's control. Continuation of this program is needed to maintain existing facilities and approach procedures. For purposes of this alternatives analysis, it was assumed that the obstruction removal and land use control program would continue unabated for all alternatives and all runways, including the No Build alternative. The alternatives analysis only considers additional obstruction removal and land use control needed beyond what is required to maintain existing conditions.

6.3.1. Airside Alternative Evaluation Criteria

A set of evaluation criteria was developed to provide consistent assessments of each alternative throughout the review process. The evaluation factors assess both the quantitative as well and qualitative factors for each criterion as follows:

- **Facility Requirements:** Does the alternative meet the existing and future needs of the Airport and is the alternative feasible for implementation?

- **Environmental Impact:** What are the potential environmental impacts associated with implementation of the alternative? Does the alternative avoid or minimize and mitigate environmental impacts?

- **FAA Standards:** Does the alternative meet the design standards of FAA Advisory Circular 150/5300-13A, *Airport Design*, and provide clear surfaces associated with Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*, (FAR Part 77 Surfaces) to the maximum extent feasible?

- **Land Use Compatibility:** Is the alternative compatible with on-Airport and off-Airport patterns of land use?

- **Development Costs:** Does the alternative have reasonable development costs in comparison to other alternatives that achieve the same goal?

- **Operational Flexibility:** To what extent does this alternative allow flexibility from an operational standpoint?

6.3.2. Runway Alternatives Considered and Dismissed

The following potential alternatives were considered and dismissed prior to the detailed development of airside alternatives. These alternatives are described below:

- **Extending Runway 5**

Extension of the Runway 5 approach end to provide all or part of the proposed 801 foot extension was considered. Existing Airport property includes sufficient room to accommodate the extension, however, the required Runway Safety Area, Runway Object Free Area, and Runway Protection Zone would extend off Airport property. Extension of Runway 5 would require realignment or severing of Geyser Road and acquisition of extensive residential areas to provide a standard Safety Area, Object Free Area, and Protection Zone. As such, the extension of Runway 5 is not a practical alternative at this time and was dismissed from further consideration.

6.3.3. Runway 5-23 Alternatives Identification

The following runway alternatives have been developed to meet the Runway 5-23 facility requirements at Saratoga County Airport:

- **Runway 5-23 Alternative 1:**
  - Runway 5-23 remains the same in length, width, location, and orientation (No-Build).
- **Runway 5-23 Alternative 2:**
  - Extend Runway 23 by 801 feet to a length of 5,500 feet and maintain its existing landing threshold.
- **Runway 5-23 Alternative 3:**
  - Extend Runway 23 by 301 feet to a length of 5,000 feet and maintain its existing landing threshold.

6.3.4. Runway 5-23 Alternative 1 (No-Build)

The No-Build alternative retains the current runway and makes no improvements. Runway 5-23 would remain at 4,699 feet in length and 100 feet in width. The existing layout of this alternative is depicted in **Figure 6-1**. Runway 5-23 Alternative 1 was evaluated as follows:

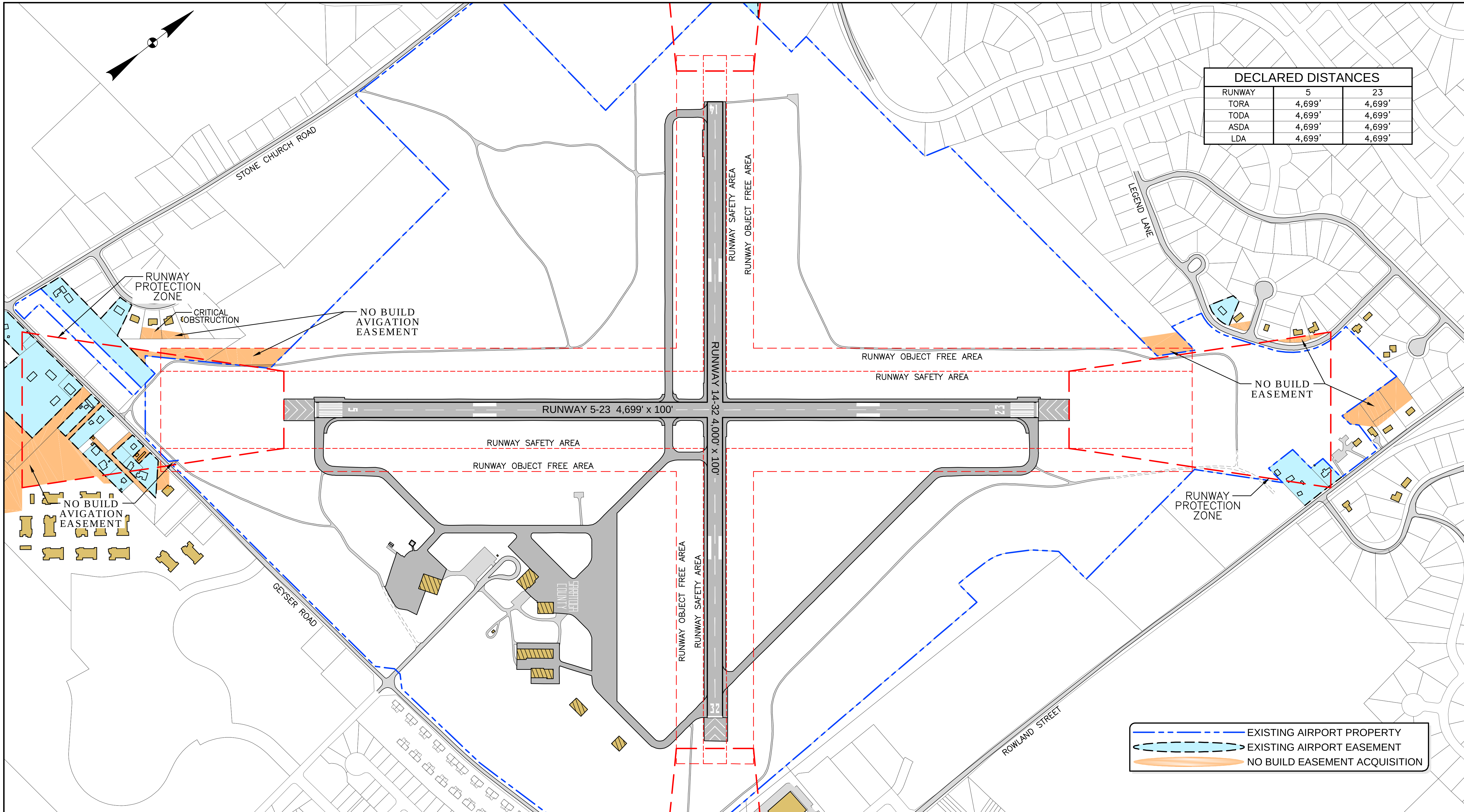
- **Facility Requirements:** The No-Build alternative for Runway 5-23 does not meet the projected needs of the Airport. Consequently, this option could result in lost revenue as aircraft would continue to experience weight restrictions and could not operate at the Airport during poor weather conditions. These aircraft could be forced to carry less passengers and/or fuel, or utilize other Airports in the region.

  However, even if the No-Build is selected, there are minimum standards, which must be addressed in order to bring the existing runway into compliance. The actions required to meet those standards are as follows:

  - **RW 5 ROFA:**
    - Easement acquisition for portions of two (2) parcels adjacent to Airport access road and portions three (3) parcels along Geyser Road.
  - **RW 5 RPZ:**
    - Easement acquisition of portions of five (5) parcels south of Geyser Road.
  - **RW 23 ROFA:**
    - Easement acquisition for a portion of one (1) parcel on the north side.

RUNWAY 5-23 - ALTERNATIVE 1 - NO BUILD

FIGURE 6-1



DECLARED DISTANCES

RUNWAY	5	23
TORA	4,699'	4,699'
TODA	4,699'	4,699'
ASDA	4,699'	4,699'
LDA	4,699'	4,699'

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- **RW 23 RPZ:**
  - Easement acquisition for portions of three (3) parcels along Legend Land.
  - Property acquisition for two (2) parcels along Rowland Street.

These action items are incorporated into each of the Runway 5-23 alternatives, indicating that any additional development requirements are incremental to those, which are currently needed.

- **Environmental Impact:** No environmental impacts are associated with this alternative.

- **FAA Standards:** The current runway dimensions, RSA, and OFA are in compliance with FAA standards and the No-Build alternative would allow the airfield to continue to meet this criteria.

- **Land Use Compatibility:** This alternative does not address existing land use incompatibility within in the RPZs to Runway 5-23. However, if the proposed easement and land acquisitions are implemented successfully, the No-Build would provide land use compatibility per RPZ standards.

- **Development Costs:** The estimated cost to bring Runway 5-23 into compliance with minimum standards is $560,000.

- **Operational Flexibility:** Runway 5-23 Alternative 1 limits the operational flexibility of the Airport by restricting the size and type of aircraft that are able to utilize the 4,699 foot runway in either dry or wet/contaminated conditions. This in turn could negatively impact the direct (fuel sales, parking fees, etc.) and indirect economic benefits (spending at local businesses) provided to the community through use of the Saratoga County Airport, especially during the summer race season when about one quarter of the Airports aircraft operations occur.

6.3.5. Runway 5-23 Alternative 2 (Extend 801 feet to a length of 5,500 feet)

Runway 5-23 Alternative 2 considers extending the Runway 23 end 801 feet to a total length of 5,500 feet. This alternative is shown in **Figure 6-2**.

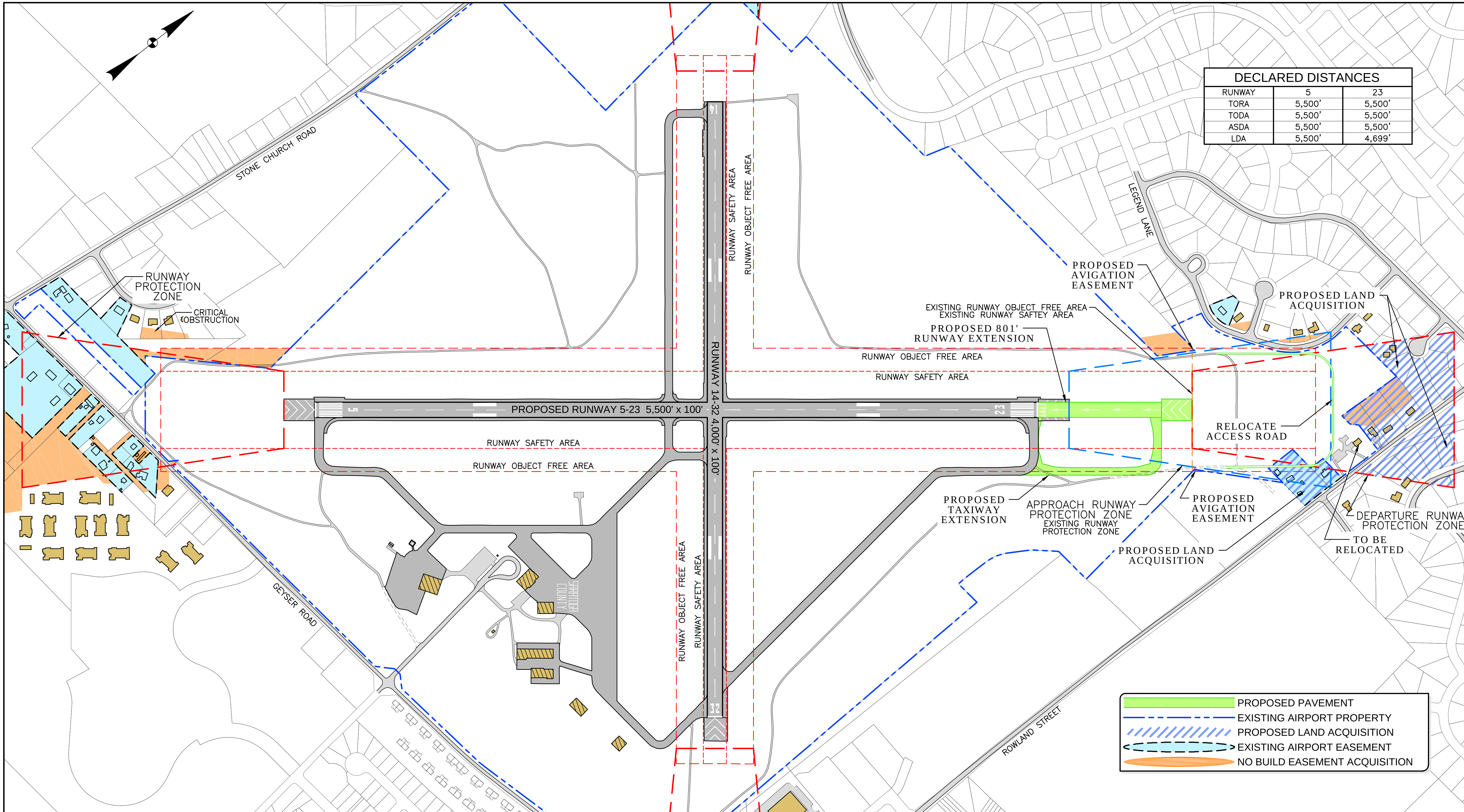
Key considerations of this alternative are listed below:

- **801 foot Extension of Runway 23:** The Runway 23 approach end would be extended by 801 feet for an ultimate primary runway length of 5,500 feet; however, the existing landing threshold would remain in place to avoid the need for additional obstruction removal. The extension would provide additional length for departures. Landings would be unchanged.

- **Install New Blast Pad:** The proposed extended runway end will require the inclusion of a new blast pad located prior to the beginning of the runway, similar to the one currently in place.

RUNWAY 5-23 - ALTERNATIVE 2

FIGURE 6-2



DECLARED DISTANCES

RUNWAY	5	23
TORA	5,500'	5,500'
TODA	5,500'	5,500'
ASDA	5,500'	5,500'
LDA	5,500'	4,699'

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- **Relocation of Connector Taxiway:** The portion of Taxiway D that connects to the end of Runway 23 will have to be adjusted in accordance with the new runway end; however, the existing connector could remain in place to serve as a staging area for gliders utilizing Runway 23.

- **Approach Surfaces/Obstruction Analysis and Removal:** The existing landing threshold will remain in its current location, there will be no additional obstructions to the approach surfaces associated with the Runway 23 landing threshold.

- **Relocate Existing Lighting and NAVAIDS:** The Runway End Identifier Lights (REILs) will be relocated to the new runway end. The Precision Approach Path Indicator (PAPI) installed on Runway 23 will remain in their current location, as they are associated with the existing landing threshold.

- **Relocate Access Road:** The proposed runway extension will cause the existing access road off the end of Runway 23 to be encompassed by the new Runway Safety Area (RSA) that extends beyond the runway threshold. Consequently, the Airport's access road will need to be moved outside the parameters of the proposed RSA to meet FAA compliance.

- **RSA, OFA, and RPZ:** The extension would require a corresponding shift of the Runway End 23 RSA, OFA, and RPZ to meet FAA design standards. The RSA would remain on existing Airport property; however, the OFA would require a small portion of a parcel located on the south side along the Airport access road to be acquired.

  With the retention of the current landing threshold, FAA design standards require an approach and departure RPZ. The approach RPZ is identical to the No-Build RPZ and has the same land use control deficiencies. However, the departure RPZ would be located 200 feet beyond the new runway end. In addition to new tree obstructions, this RPZ captures 22 new residential properties, Rowland Street, and several residential streets servicing the homes in this area. Current FAA RPZ guidance identifies new residential properties within an RPZ as a prohibited use. As such, the acquisition of the 22 properties is recommended under this alternative to protect people and property on the ground and to meet current RPZ land use guidance. Also, while Rowland Street is a central thoroughfare, its relocation should be considered with regard to RPZ compliance.

  The RSA, OFA, and RPZ requirements for Alternative 2 are summarized below. Again, these action items are in addition to those stipulated under the No-Build.

RW 23 RSA:	No easements or acquisitions
RW 23 OFA:	Portion of one (1) parcel for easement
RW 23 RPZ:	Twenty three (23) parcels for acquisition; Relocation of Legend Lane and Rowland Street; Tree clearing

The evaluation of this alternative is as follows:

- **Facility Requirements:** Runway 5-23 Alternative 2 meets the recommended length of 5,500 feet. This increased runway distance would allow the Airport to meet most of the runway length requirements identified in Chapter 5, *Demand Capacity and Facility*

Requirements. Specifically, the Takeoff Distance Available (TODA), Takeoff Run Available (TORA) and Accelerate/Stop Distance Available (ASDA) would increase in both directions, while the Landing Distance Available (LDA) would increase when landing Runway 5, but remain the same with the current threshold unchanged for Runway 23. Overall, this alternative significantly improves operational safety by allowing the mid-sized and large corporate jets to operate with minimal or no weight penalties while also providing additional landing length needed during poor weather and wet runway conditions.

- **Environmental Impact:** The proposed runway, blast pad, and taxiway extension would have 3.55 acres of direct habitat impacts. Temporary impacts associated with construction and minor grading of the RSA are not included in this estimate.

- **FAA Standards:** Runway 5-23 Alternative 2 would meet the design criteria of FAA Advisory Circular 150/5300-13A and no modification of standards would be necessary. Of importance, the proposed runway extension would shift the departure RPZ further west toward the residential areas. Acquisition of 23 residential properties, along with obstacle clearing, is required to comply with FAA RPZ requirements.

- **Land Use Compatibility:** Aircraft departing Runway 23 would begin their takeoff roll 801 feet closer to nearby residences. Noise levels are not expected to exceed 65 DNL, which would be a noise impact as defined by FAA. However, noise levels at residences near the approach end of Runway 23 would be higher than the other Runway 23 alternatives. Finally, as previously mentioned, the shifting RPZ areas would capture 23 new properties, which would be need to be acquired in fee or through easements to maintain RPZ land use requirements.

- **Development Costs:** The estimated cost for this alternative is $5,980,000.

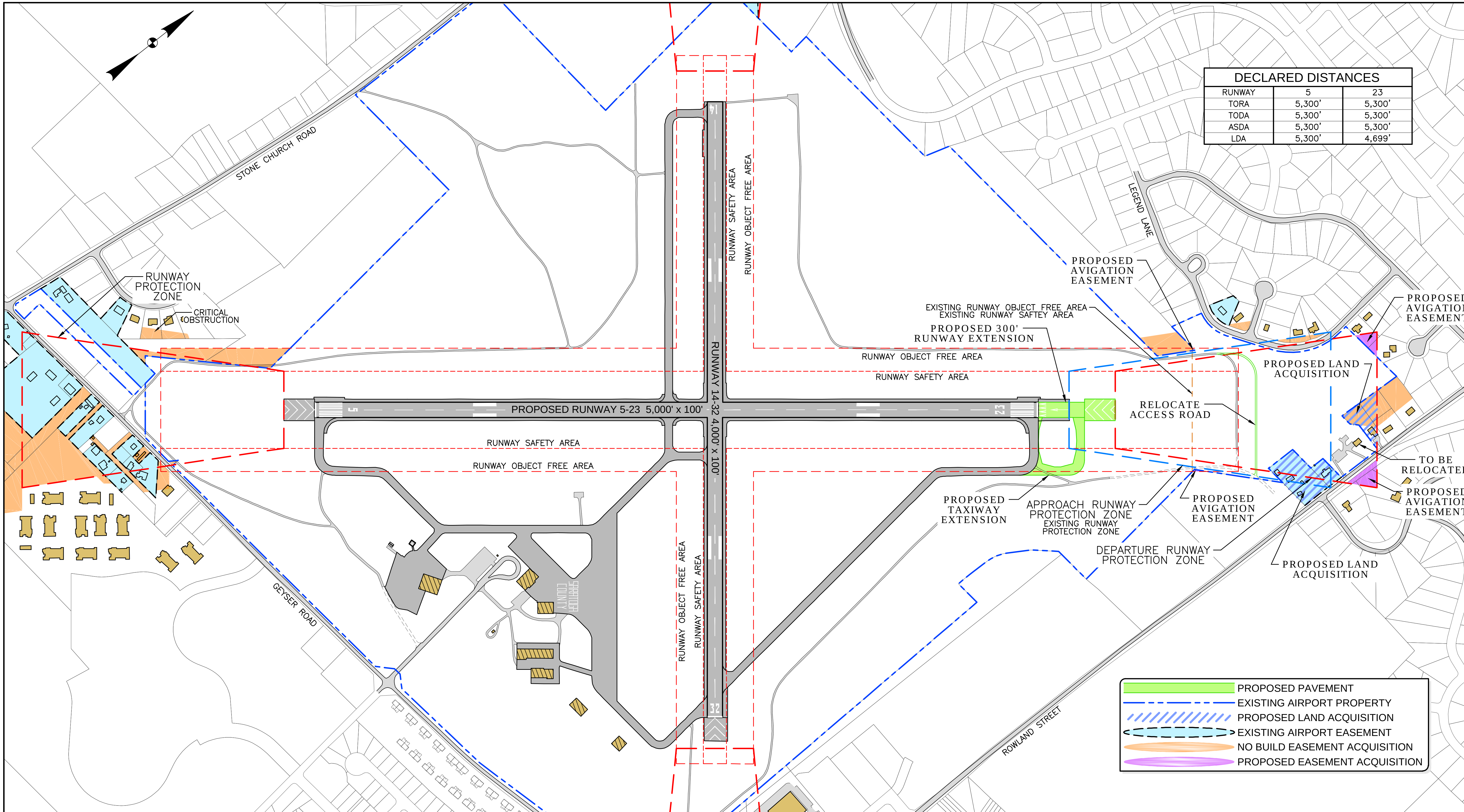
- **Operational Flexibility:** The 801 foot extension would increase operational flexibility in terms of better meeting the performance needs of corporate aircraft and enhancing safety during poor weather wet runway conditions. Also, by maintaining the connector taxiway to the existing threshold, glider operations would be separated from those of the powered aircraft, thus facilitating better operational efficiency, capacity and safety. The additional operational safety will allow aircraft to operate more efficiently and in turn lead to greater economic benefits for the community through additional fuel purchases, aircraft parking fees and passenger spending in the region.

6.3.6. Runway 5-23 Alternative 3 (Extend 301 feet to a length of 5,000 feet)

The third alternative to Runway 5-23 considers extending Runway 23 by 301 feet for a total of 5,000 feet. While this alternative does not meet facility requirements, Alternative 2 incurs extensive land acquisition and substantial tree clearing. Alternative 3 was developed in an effort to reduce the amount of land acquisition and tree clearing required for a runway extension, yet still accommodate aircraft requiring longer runway length. Based on aircraft performance charts provided in Chapter 5, *Facility Requirements,* as well as industry trends citing aircraft insurance restrictions and standard company operating procedures, it was determined that 5,000 feet of runway can sufficiently meet the majority of aircraft needs at Saratoga County Airport. This alternative is illustrated in **Figure 6-3** and includes many of the same elements to be considered in Alternative 2.

RUNWAY 5-23 - ALTERNATIVE 3

FIGURE 6-3



DECLARED DISTANCES

RUNWAY	5	23
TORA	5,300'	5,300'
TODA	5,300'	5,300'
ASDA	5,300'	5,300'
LDA	5,300'	4,699'

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Key considerations of this alternative are listed below:

- **301 foot Extension of Runway 23:** Extend Runway 23 by a length of 301 feet for an ultimate primary runway length of 5,000 feet. The existing threshold would remain in place to avoid additional tree obstruction removal.

- **Install New Blast Pad:** The proposed extended runway end will require the inclusion of a new blast pad located prior to the beginning of the runway, similar to the one currently in place.

- **Relocation of Connector Taxiway:** The portion of Taxiway D that connects to the end of Runway 23 will have to be adjusted in accordance with the new runway end; however, the existing connector could remain in place to serve as a staging area for gliders utilizing Runway 23.

- **Approach Surfaces/Obstruction Analysis and Removal:** The existing landing threshold will remain in its current location, there will be no additional obstructions to the approach surfaces associated with the Runway 23 landing threshold.

- **Relocate Existing Lights and NAVAIDS:** The Runway End Identifier Lights (REILs) will be relocated to the new runway end. The Precision Approach Path Indicator (PAPI) installed on Runway 23 will remain in their current location, as they are associated with the existing landing threshold for Runway 23, which will remain the same.

- **Relocate Access Road:** The proposed runway extension will cause the existing access road off the end of Runway 23 to be encompassed by the new RSA and OFA that extend beyond the new runway end. Consequently, the Airport's access road will need to be moved outside the parameters of the proposed RSA and OFA to meet FAA compliance.

- **RSA, OFA and RPZ:** The extension would require a corresponding shift of the Runway End 23 RSA, OFA, and RPZ to meet FAA design standards. Both the RSA and OFA would remain on Airport property, and no additional easements or acquisitions would be necessary for these.

With the retention of the current landing threshold, FAA design standards require an approach and departure RPZ. The approach RPZ is identical to the No-Build RPZ and remains on Airport property. However, the departure RPZ would be located 200 feet beyond the new runway end, and encompasses 8 new residential properties. Avigation easements will be required for 5 properties captured at the corners of the RPZ, while the remaining 3 parcels are proposed for acquisition given their alignment with the runway centerline.

The RSA, OFA, and RPZ requirements for Alternative 3 are summarized below. Again, these action items are in addition to those stipulated under the No-Build.

RW 23 RSA: No easements or acquisitions
RW 23 OFA: No easements or acquisitions
RW 23 RPZ: Portions of Seven (5) parcels for easement;
Three (3) parcels for acquisition

The evaluation of this alternative is as follows:

- **Facility Requirements:** Similar to Runway 5-23 Alternative 2, the increased runway distance provided in Runway 5-23 Alternative 3 would allow the Airport to meet some, but not all, of the runway length requirements identified in Chapter 5, *Demand Capacity and Facility Requirements*. Specifically, the TODA, TORA, and ASDA would increase to 5,000 feet, along with the LDA on approach to Runway 5. However, the LDA on approach to Runway 23 would remain 4,700 feet unchanged.

  This development option would also address the separation of powered and non-powered aircraft along the Runway 23 end, as the existing connector taxiway would remain in place to be used as a glider staging area. Overall, this alternative provides an opportunity for more aircraft to operate without weight penalties and offers operational safety improvements.

- **Environmental Impact:** The 301 foot extension of the runway and associated taxiway will directly affect 1.82 acres of habitat. Temporary impacts associated with construction and minor grading of the RSA are not included in this estimate.

- **FAA Standards:** Runway 5-23 Alternative 3 would meet the design criteria of FAA Advisory Circular 150/5300-13A and no modification of standards would be necessary. However, the proposed runway extension would slightly shift the departure RPZ further west toward the residential areas. Easement or acquisition of 8 residential properties, along with obstacle clearing, is required to comply with FAA RPZ requirements.

- **Land Use Compatibility:** Noise impacts associated with landings on Runway 23 would not change as the present location of the Runway 23 threshold is retained. However, this alternative does incur a slight increase in noise impacts related to aircraft taking off from Runway 23. The noise will not exceed 65 DNL, which the FAA uses to define noise impacts; however, takeoffs will begin approximately 301 feet closer to those homes. Still, given that the distance to the homes does not increase as appreciably as Alternative 2, the changes should not substantially affect the residential properties off the Runway 23 end, especially when compared to the 801 foot extension. Finally, as previously mentioned, the shifting RPZ areas would capture 8 new properties, which would be acquired in fee or easement to maintain RPZ land use requirements.

- **Development Costs:** The estimated cost for this alternative is $1,980,000.

- **Operational Flexibility:** This alternative would allow Saratoga County Airport to achieve a 5,000 foot runway. This runway length would increase operational flexibility in terms of better meeting the performance needs of corporate aircraft and complying with corporate aircraft insurance requirements, which often mandate a 5,000 foot runway. However, weight restrictions and limitations associated with wet runway landing requirements would remain. Those restrictions could include the exclusion of certain pilots from operating on the runway due to experience level or other insurance induced operating restrictions, to name a few. Although these conditions remain, the additional 301 feet of length would further enhance operations and safety of aircraft operating at the Airport overall. The additional operational safety will allow aircraft to operate more efficiently and in turn lead to greater economic benefits for the community through additional fuel purchases, aircraft parking fees and passenger spending in the region.

6.3.7. Runway 5-23 Alternatives Summary

The description of runway alternatives included an evaluation based on six criteria: 1) the ability of the alternative to meet the identified facility requirements, 2) potential environmental impacts, 3) the ability to meet FAA standards, 4) land use compatibility, 5) estimated development costs, and 6) development flexibility. **Table 6-1** summarizes the above analysis.

Table 6-1 - Summary of Runway 5-23 Alternatives

Alternative	RWY 5-23 Alt 1 (No Build)	RWY 5-23 Alt 2 (Extend by 801')	RWY 5-23 Alt 3 (Extend by 301')
Facility Requirements	No	Yes	Partial – Enhances runway length.
Environmental Impacts	None	3.55 Acres of Habitat	1.82 Acres of Habitat
FAA Standards	Yes – assumes ongoing land acquisition to comply with RPZ and ROFA standards	Yes	Yes
Land Use Compatibility	Compatible if RPZ action items implemented Easement acquisition for portions of 14 parcels, Acquisition in fee for 2 parcels	Increased noise levels near RW 23 Easement acquisition over all or portions of 24 parcels[1]	Slightly increased noise levels near RW 23 Acquisition of easements over portions of 7 parcels; Acquisition in fee for 3 parcels.[1]
Development Cost	$560,000	$5,980,000[2]	$1,980,000[2]
Operational Flexibility	Minimum (most weight penalties)	Maximum (least weight penalties)	Moderate (some weight penalties)

[1]Land and Easement Acquisition identified for the build alternatives is in addition to the acquisitions identified for the No Build alternative.
[2]Development Costs identified for the build alternatives are in addition to the costs identified for the No Build alternative, and do not include costs for environmental permitting or mitigation.

6.3.8. Runway 14-32 Alternative Identification

The alternatives developed specific to Runway 14-32 at Saratoga County Airport are as follows:

- **Runway 14-32 Alternative 1 (No-Build)**
  - The runway would remain in its present state, with no changes to its length, width, location, or orientation.
- **Runway 14-32 Alternative 2 (Displaced Thresholds)**
  - This alternative would displace the landing thresholds at each runway end to achieve a standard RPZ and mitigate obstructions to the approach surfaces. The Runway 14 threshold would be displaced 1,460 feet and the Runway 32 threshold would be displaced by 770 feet.

6.3.9. Runway 14-32 Alternative 1 (No-Build)

Under Runway 14-32 Alternative 1 (No-Build), no major modifications would be made to the length, width, location, or orientation of the runway. The No-Build alternative can be seen in **Figure 6-4**. Recent changes to the FAA's RPZ land use policy are considered in this alternative. If the No-Build is selected, there are still minimum standards, which must be addressed in order to bring the existing runway RPZs into compliance. The actions required to meet those standards are incorporated into both Runway 14-32 Alternatives and are as follows:

- **RW 14 RPZ:**
    - Easement acquisition for portions of two (2) parcels along Acland Boulevard and Stone Church Road.
- **RW 32 RPZ:**
    - Easement acquisition for portions of three parcels adjacent to the Airport access road.

On the Runway 32 end, a new medical building was constructed in fall of 2013, after the changes to the FAA RPZ land use policy was enacted. A portion of the building and the associated parking lot are located within the Runway 32 RPZ. Per the revised RPZ land use policy, the building is a prohibited use, and for purposes of this analysis, it was assumed that this new incompatible land use would need to be addressed in the near term, as part of the No-Build alternative. This new building cannot practicably be relocated outside of the RPZ; therefore, the FAA's declared distance methodology was used to address the incompatible land use. Implementation of declared distances would place the building outside of the RPZ, and is considered part of the No Build alternative. Further coordination with the FAA is required to determine if the parking lot is an acceptable land use in the RPZ. If the FAA determines that the parking lot is not acceptable in the RPZ, the threshold would need to be relocated by 325 feet. In addition, an easement acquisition over that portion of the property is recommended to ensure future compliance with the RPZ policies.

This alternative was assessed as follows:

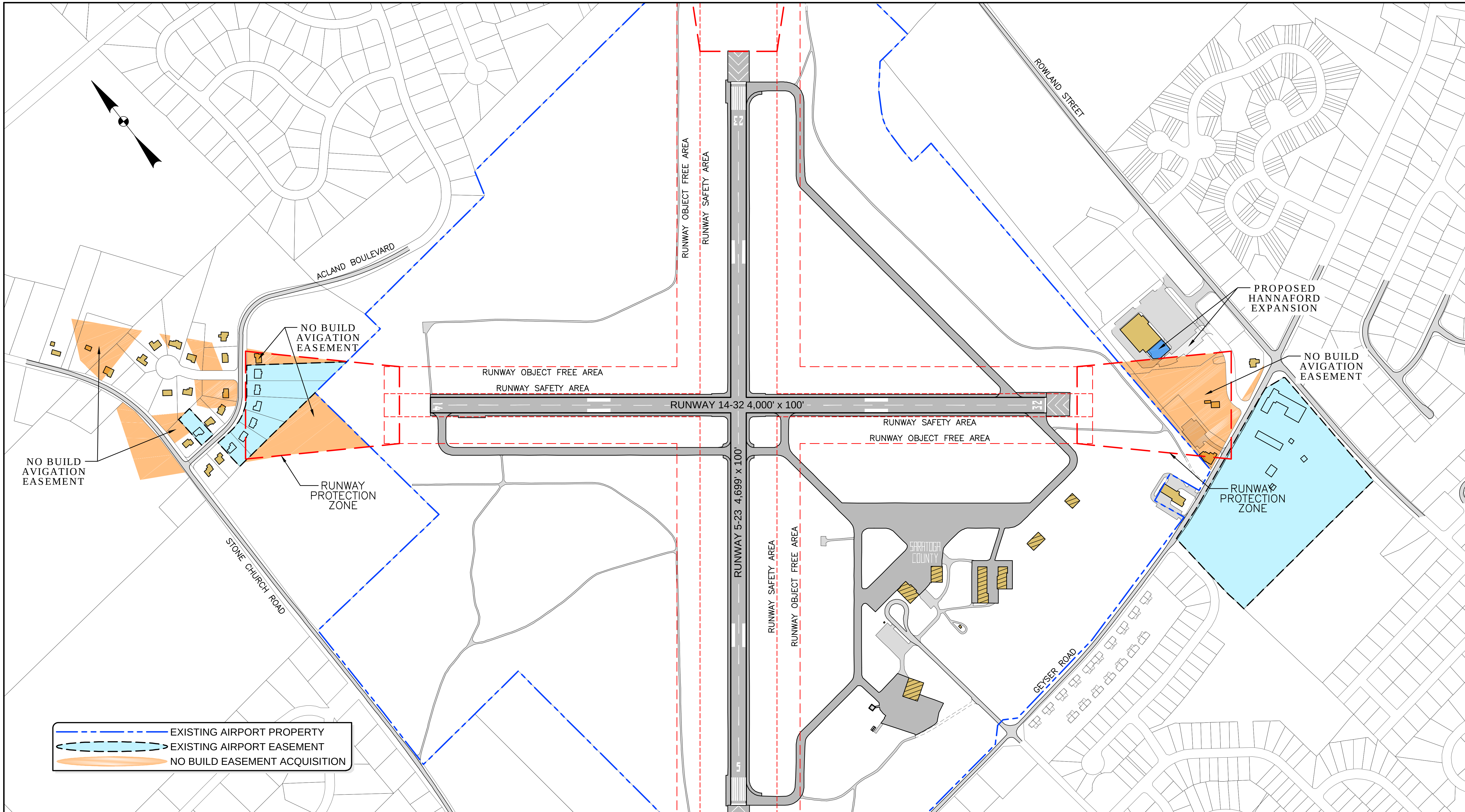
- **Facility Requirements:** The No-Build alternative for Runway 14-32 results in reduced landing length available for aircraft arriving on Runway 32 and departing Runway 14. As such, this alternative does not fully meet the identified facility requirements for Runway 14-32.

- **FAA Standards:** The alternative meets FAA standards by adjusting the Runway 32 RPZ through the declared distance methodology to meet current policy.

- **Environmental Impact:** There are no environmental impacts associated with the No-Build alternative for Runway 14-32.

RUNWAY 14-32 - ALTERNATIVE 1 - NO BUILD

FIGURE 6-4



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- **Land Use Compatibility:** The land use compatibility of the No-Build alternative is conditional upon the Airport's ability to attain the avigation easement over the medical building property off the Runway 32 end.

- **Development Costs:** The total estimated cost for the No-Build is $503,000, of which $333,000 is estimated for RPZ easements.

- **Operational Flexibility:** This alternative would impair the operational flexibility of Saratoga County Airport. The loss of 220 feet in Take Off Run Available (TORA) for Runway 14 and Landing Distance Available for Runway 32 places a greater restriction on the types of aircraft that are able to utilize Runway 14-32, particularly during strong crosswind conditions and/or with wet runway surfaces. The largest effect will be on the larger twin aircraft (piston or turboprop) and the smaller jet aircraft that use the runway currently. The effect will be especially prominent during the six-week track season during the summer due to the significant influx of aircraft operations.

6.3.10. Runway 14-32 Alternative 2

The second alternative for Runway 14-32 proposes displacing the thresholds on both Runway 14 and Runway 32. **Figure 6-5** depicts this alternative. This alternative is based upon the assumption that the off Airport tree obstructions cannot be mitigated over time and the County is unable to get the appropriate easements to remove the trees.

Using the Runway End Siting Surfaces for either runway end, clearing the tallest obstructions in the approach would require displacing the Runway 14 threshold by 1,460 feet and the Runway 32 threshold by 770 feet. This would adjust the approach RPZs relative to each modified landing threshold. The departure RPZs for both Runway 14 and Runway 32 would remain the same, as the physical runway ends would not be altered.

This alternative was evaluated as follows:

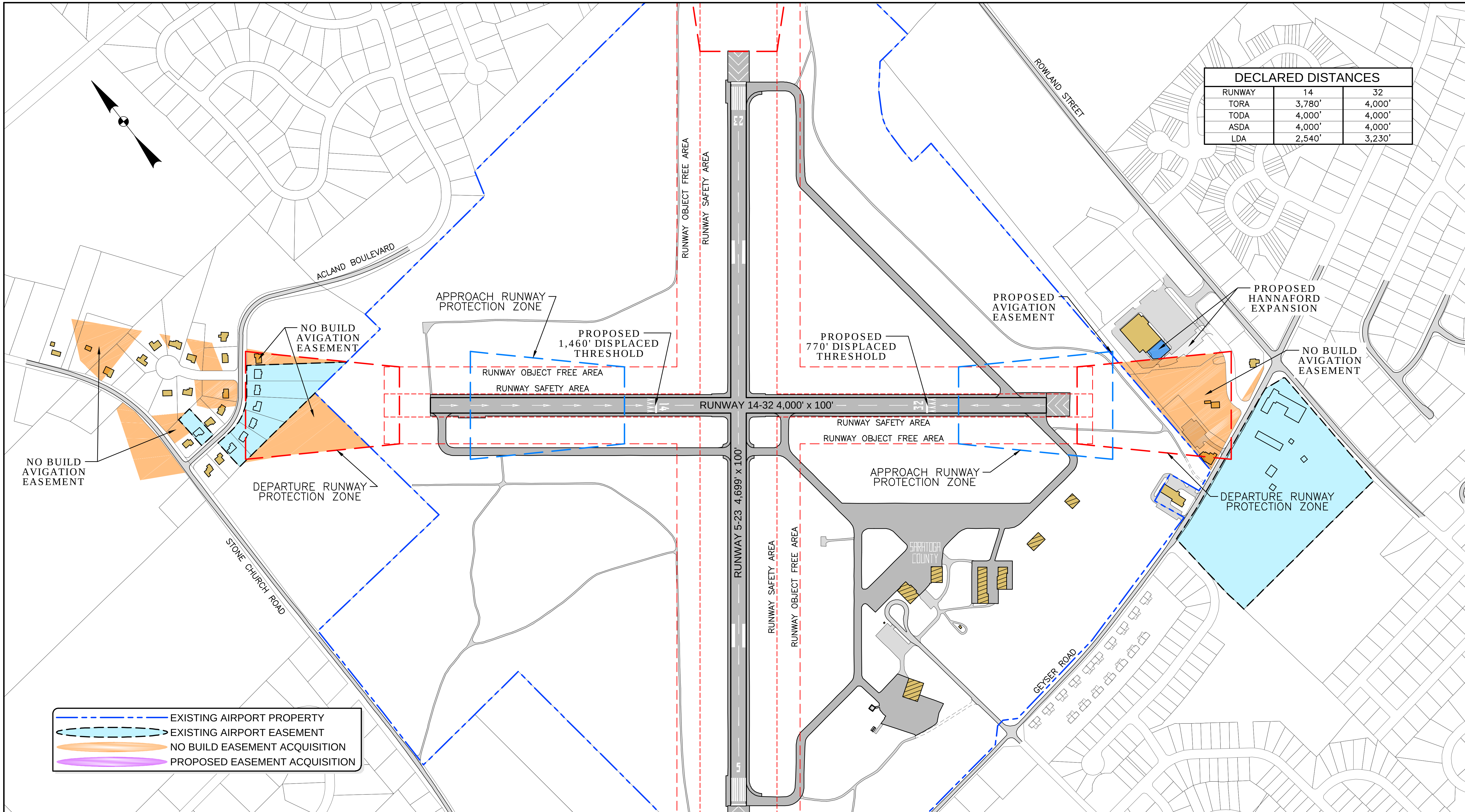
- **Facility Requirements:** The runway would not meet facility requirements. Significant displacements of either runway threshold are required to clear obstructions in the approaches to the runway. This affects the available landing distance, thereby restricting a number of high performance piston and turbine (turboprop or jet) aircraft from using the runway during dry conditions, or eliminating the use altogether when the runway is wet. This alternative would not meet facility requirements outlined in Chapter 5, *Demand Capacity and Facility Requirements.*

- **Environmental Impact:** The action evaluated in this alternative deals only with the displacement of the runway thresholds. As such, since runway markings would be the only modification under this option, no environmental impact is foreseen with Runway 14-32 Alternative 2.

- **FAA Standards:** Although all FAA airfield design standards are met under this alternative, aircraft operational requirements for landing are significantly impacted with the displaced threshold, especially for the larger twin turboprop and small jet aircraft. The FAA's Advisory Circular 150/5325-4B recommends reviewing aircraft manufacturers' data to determine takeoff and landing requirements for aircraft.

RUNWAY 14-32 - ALTERNATIVE 2

FIGURE 6-5



DECLARED DISTANCES

RUNWAY	14	32
TORA	3,780'	4,000'
TODA	4,000'	4,000'
ASDA	4,000'	4,000'
LDA	2,540'	3,230'

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The data for landing lengths for various aircraft, including wet runway conditions, indicated that the proposed runway displacements on either runway end would not meet aircraft landing length requirements identified by the manufacturer. As such, FAA standards for landing lengths cannot be met by this alternative.

- **Land Use Compatibility:** There are no on- or off-Airport land use compatibility issues associated with this alternative.
- **Development Costs:** The total estimated cost for Runway 14-32 Alternative 2 is $780,000, of which $330,000 is estimated for RPZ easements.
- **Operational Flexibility:** This development option will substantially influence aircraft operations at Saratoga County Airport, as the displaced landing thresholds would result in significantly decreased landing distance on Runway 14-32. For aircraft on approach to Runway 14, the LDA would be 2,540 feet. Aircraft approaching Runway 32 would have 3,230 feet in length available for landing. These landing distances essentially relegate the runway to serving only small single or light twin-engine airplanes, especially under strong crosswind conditions favoring this runway or wet runway surfaces. Some larger aircraft would be forced to divert to an alternate Airport under these conditions.

6.3.11. Summary of Runway 14-32 Alternatives

The description of runway alternatives included an evaluation based on six criteria: 1) the ability of the alternative to meet the identified facility requirements, 2) potential environmental impacts, 3) the ability to meet FAA standards, 4) land use compatibility, 5) estimated development costs, and 6) development flexibility. **Table 6-2** summarizes the above analysis.

Table 6-2 - Summary of Runway 14-32 Alternatives

Alternative	RWY 14-32 Alt 1 (No Build)	RWY 14-32 Alt 2 (Displace Thresholds)
Facility Requirements	No	No
Environmental Impacts	None	None
FAA Standards	Yes, use of declared distance and pending easement acquisition	No
Land Use Compatibility	Yes	Yes
Development Cost	$503,000	$780,000
Operational Flexibility	Decreases due to reduced LDA and TORA for certain operations	Substantially decreases due to reduced LDA

6.3.12. Taxiway Alternative Identification

The following taxiway alternatives have been developed to meet the taxiway facility requirements at Saratoga County Airport:

- **Taxiway Alternative 1 (No-Build)**
  - Taxiways remain the same in length, width, location, and orientation (No-Build).
- **Taxiway Alternative 2 (Partial-Parallel)**
  - Construct a partial-parallel taxiway to Runway 5-23 with a width of 50 feet and a runway-taxiway centerline separation of 400 feet.
  - Taxiway D to be abandoned in place and designated not for use. Portions of the pavement will remain available for glider staging and maneuvering.
- **Taxiway Alternative 3 (Full-Parallel)**
  - Construct a full-parallel taxiway to Runway 5-23 with a width of 50 feet and a runway-taxiway centerline separation of 400 feet.
  - Taxiway D to be abandoned in place and designated not for use. Portions of the pavement will remain available for glider staging and maneuvering.

6.3.13. Taxiway Alternative 1 (No-Build)

The existing taxiway system serves both runways and provides access to all four runway ends. However, the taxiway system serving Runway 5-23 (Taxiways A, C, and D) requires a long taxi distance to get to the terminal area and is not considered a parallel taxiway given its current configuration. Additionally, when gliders are towed to or from their hangars and the departing runway, this can create conflicts with powered aircraft that cannot directly access the runway ends due to limited maneuverability afforded by the current taxiway system. In certain cases, aircraft will back taxi to the active runway in order to avoid the taxiway congestion, thus increasing their time on the runway and reducing the overall capacity of the runway system. Under the No-Build, no changes are made to the taxiway system; the taxiways will remain the same in length, width, location, and orientation. The existing layout of this alternative is shown in **Figure 6-6**.

This alternative was evaluated as follows:

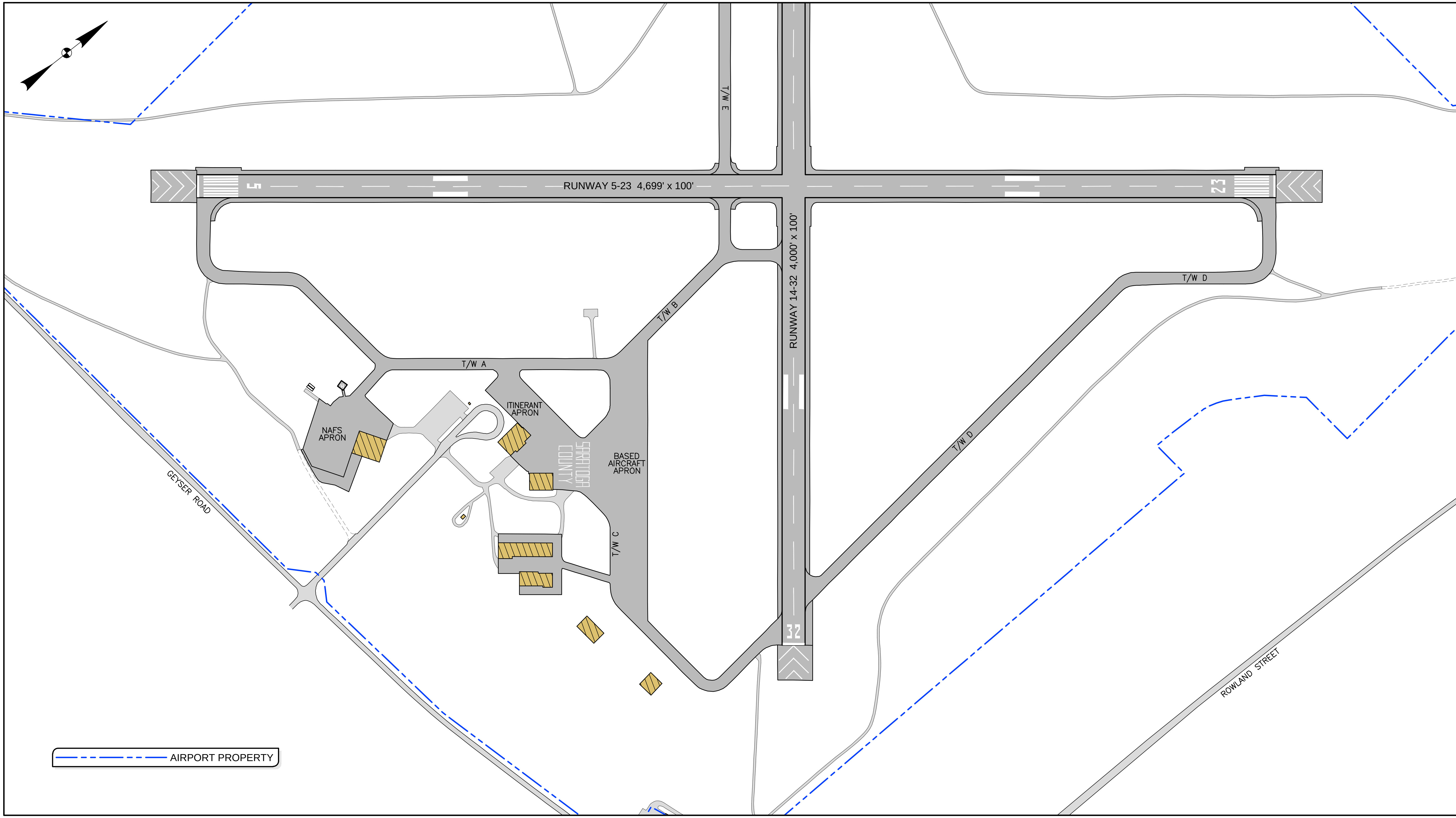
- **Facility Requirements:** Taxiway Alternative 1 does not meet the existing or future needs of the Airport, as it fails to provide separation between powered and non-powered aircraft. Additionally, the No-Build alternative would not satisfy the recommended facility requirements regarding a parallel taxiway to Runway 5-23 as described in Chapter 5, *Demand Capacity and Facility Requirements*.

- **Environmental Impact:** There are no environmental impacts associated with this alternative.

- **FAA Standards:** According to the new taxiway guidelines in Advisory Circular 150/5300-13A, it is recommended that the existing taxiway system at Saratoga County Airport include a parallel taxiway to comply with FAA standards for runways with instrument approaches. However, the present taxiway system cannot efficiently operate as a true parallel taxiway.

TAXIWAY ALTERNATIVE 1 - NO BUILD

FIGURE 6-6



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- **Land Use Compatibility:** Existing patterns of land use would remain both on and off-Airport property.

- **Development Costs:** There are no design or construction costs associated with Taxiway Alternative 1.

- **Operational Flexibility:** This choice limits the operational flexibility of the Airport due to the congestion related to both powered and non-powered aircraft operating on the same runways and taxiways.

6.3.14. Taxiway Alternative 2 (Partial-Parallel)

Taxiway Alternative 2 proposes a partial-parallel taxiway on the southeasterly side of Runway 5-23. This alternative is detailed in **Figure 6-7**. This alternative would provide a partial parallel taxiway beginning at Taxiway B, crossing Runway 32 and continuing to Taxiway D, which connects to Runway 23 end. This option offers a bypass option if gliders are on Taxiway C or D and cannot be moved. Aircraft can bypass Taxiway C and D altogether to get to Runway 23, which is the most used runway end. This option would also abandon Taxiway D in place. The ends would be turned into staging for gliders to use, avoiding the need to stage on turf areas.

Implementation of Taxiway Alternative 2 would require the following actions:

- **Construct Partial-Parallel Taxiway to Runway 5-23:** The taxiway connects with the existing portion of Taxiway D near Runway 23 and intersects with Runway 14-32 where Taxiway B is located presently. The partial-parallel taxiway would be 50 feet wide and have a runway-to-taxiway centerline separation of 400 feet. If one of the runway extension alternatives is implemented, the taxiway should be extended to the new runway end.

- **Install Medium Intensity Taxiway Edge Lighting (MITL):** MITLs will be installed on all taxiways to provide guidance to pilots taxiing at the Airport during poor weather conditions or at night.

- **Install Taxiway Signage:** Taxiway signage will be installed in conjunction with the construction and removal of related taxiways at the Airport.

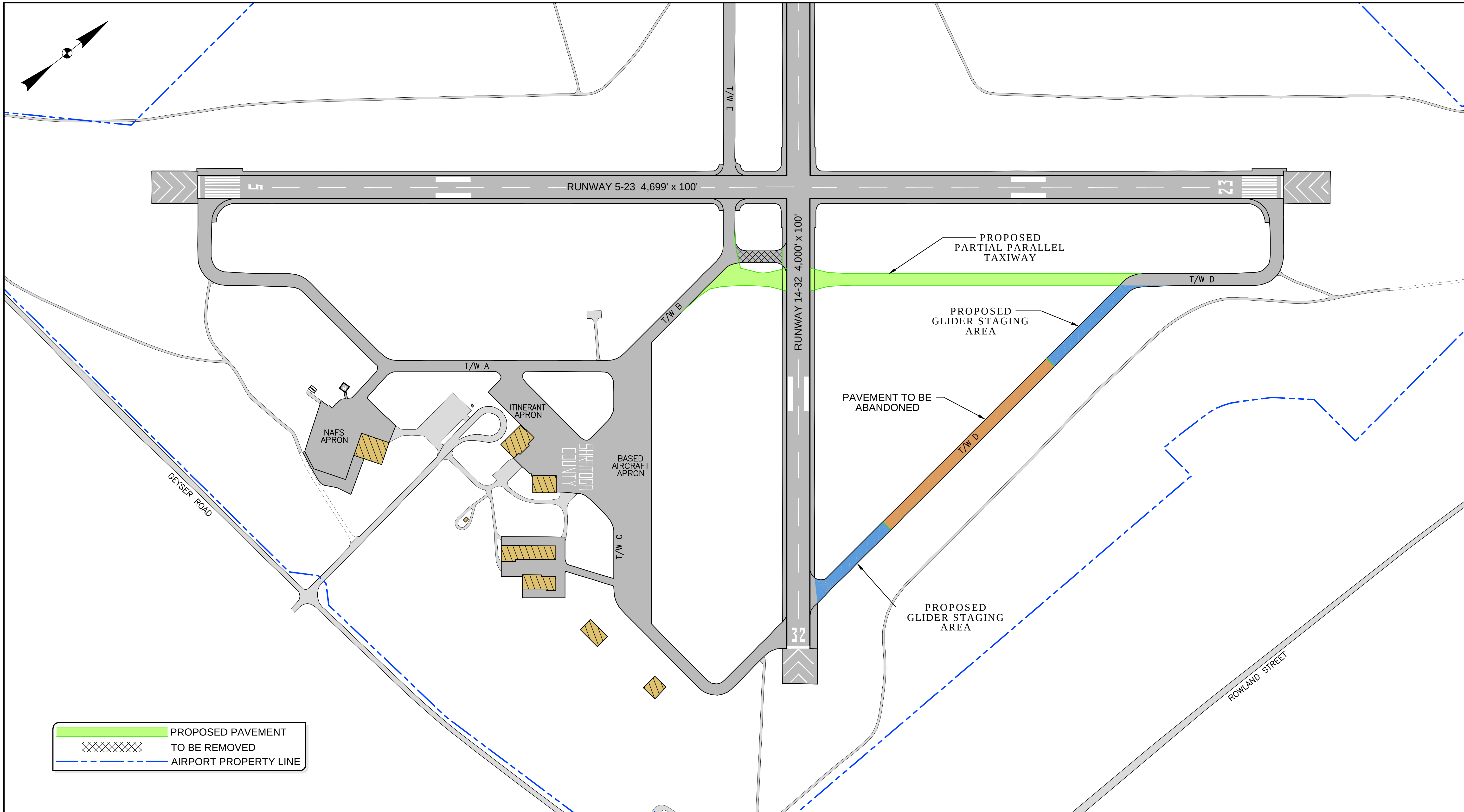
- **Abandon Taxiway D in Place:** With the construction of a partial-parallel taxiway, Taxiway D will no longer be needed, and consequently should be abandoned in place. The abandoned pavement will be used by gliders as staging or recovery area for operations on Runway 32 or 23.

This alternative was evaluated as follows:

- **Facility Requirements:** Taxiway Alternative 2 provides an efficient taxiway system that would allow independent operations by powered aircraft and gliders, thus meeting the needs identified in Chapter 5, *Demand Capacity and Facility Requirements*.

TAXIWAY ALTERNATIVE 2

FIGURE 6-7



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- **Environmental Impact:** This alternative will affect approximately 2.11 acres of Karner blue butterfly habitat. Temporary impacts associated with construction are not included in this estimate. However, , since the partial-parallel taxiway reduces the overall taxi distance and alleviates potential congestion associated with gliders on the taxiway, this alternative reduces the overall exhaust emissions generated by aircraft.

- **FAA Standards:** As proposed, Taxiway Alternative 2 adheres to FAA design standards related to a width of 50 feet and a taxiway to runway centerline separation of 400 feet, which exceeds the required separation standard. Taxiway Safety Areas (TSA), Taxiway Object Free Areas (TOFA) standards are also met under this alternative.

- **Land Use Compatibility:** The partial-parallel alternative is compatible with existing on-Airport land use. The development option employs use of the existing taxiway system south of Runway 14-32, and suggests the abandonment of those portions, which will become redundant north of Runway 14-32 (Taxiway D). Also, this option provides the ability to segment future taxiway construction into phases.

- **Development Costs:** The overall cost of this alternative is estimated at $1,320,000.

- **Operational Flexibility:** This alternative eliminates the need to back-taxi on the runways should Taxiway D be blocked for any reason, thus allowing for considerably enhanced flexibility from an operational standpoint. Taxiway Alternative 2 also provides opportunity to adapt to future changes and developments at the Airport.

6.3.15. Taxiway Alternative 3 (Full-Parallel)

This alternative includes many of the same features as Taxiway Alternative 2, except that the proposed taxiway would be a full parallel that spans the entire length of Runway 5-23. The taxiway would extend the taxiway from Alternative 2 from Taxiway B and connect with Taxiway A at the Runway End 5. This alternative is depicted in **Figure 6-8**.

The following actions are necessary for implementation of Taxiway Alternative 3:

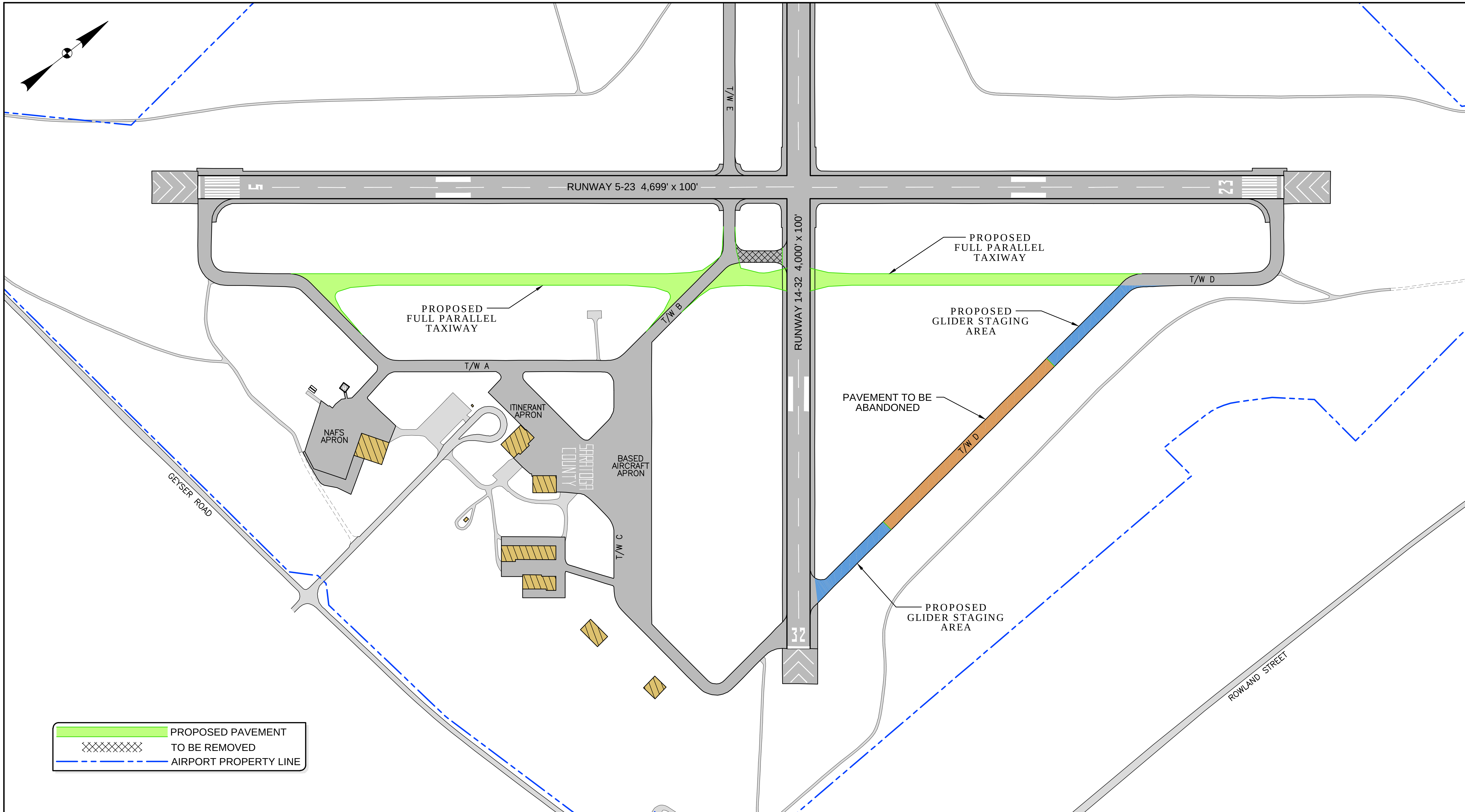
- **Construct Full-Parallel Taxiway to Runway 23:** The full-parallel taxiway will connect with the existing portion of Taxiway D along the end of Runway 23 and that of Taxiway B, which can be found near the intersection of the Airport's two runways. The full parallel would also connect to Taxiway A located adjacent to the Runway 5 end. The taxiway would be 50 feet wide and have a runway-to-taxiway centerline separation of 400 feet. If one of the runway extension alternatives is implemented, the taxiway should be extended to the new runway end.

- **Install MITL:** MITLs will be installed on the parallel taxiway to provide guidance to pilots taxiing at the Airport during poor weather conditions or at night.

- **Install Taxiway Signage:** Taxiway signage will be installed in conjunction with the construction and removal of related taxiways at the Airport.

TAXIWAY ALTERNATIVE 3

FIGURE 6-8



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- **Abandon Taxiway D in Place:** With the construction of a full-parallel taxiway, Taxiway D will no longer be needed, and consequently should be abandoned in place once the construction of the full-parallel taxiway has been completed. The abandoned pavement will be used for staging of glider operations near Runways 23 and 32.

The assessment of this alternative is as follows:

- **Facility Requirements:** Taxiway Alternative 3 addresses the congestion and separation issues by allowing powered aircraft to circumvent the existing intersection between Runway 32 and Taxiway D. The segment of the proposed taxiway between existing Taxiways A and B is redundant to the existing taxiway system in this portion of the Airport, providing little operational benefit.

- **Environmental Impact:** The planned location of the full parallel affects 4.5 acres of Known Habitat Area of the Karner blue butterfly. Temporary impacts associated with construction are not included in this estimate. Special permitting and mitigation would be necessary for this alternative to be implemented. Obtaining environmental regulatory approvals for the redundant section (see above) is expected to be difficult given the limited operational benefit. As part of the project, the stub taxiway connecting Taxiway B to Runway 32 will be removed, reducing the overall pavement requirement of this alternative. Finally, this alternative decreases the overall emissions generated by aircraft as the full-parallel taxiway reduces taxi distance and alleviates congestion associated with gliders on the taxiway.

- **FAA Standards:** As proposed, Taxiway Alternative 3 adheres to the FAA design standards related to the width of 50 feet and a taxiway to runway centerline separation of 400 feet, which exceeds the required separation standard. Taxiway Safety Areas (TSA), Taxiway Object Free Areas (TOFA) standards are also met under this alternative.

- **Land Use Compatibility:** The full-parallel taxiway alternative is compatible with existing on-Airport land uses.

- **Development Costs:** The overall cost of this alternative is estimated at $2,580,000.

- **Operational Flexibility:** By reducing the need to back-taxi should Taxiway D be blocked, this alternative allows for considerably enhanced flexibility from an operational standpoint, and provides opportunity to adapt to future changes and developments at the Airport. However, the redundant portion of the taxiway imposes additional maintenance and snow removal burden on the County for little benefit.

6.3.16. Taxiway Alternatives Summary

The descriptions of the taxiway alternatives have included an evaluation based on six criteria: 1) the ability of the alternative to meet the identified facility requirements, 2) potential environmental impacts, 3) the ability to meet FAA standards, 4) land use compatibility, 5) estimated development costs, and 6) development flexibility. **Table 6-3** summarizes the above analysis.

Table 6-3 - Summary of Taxiway Alternatives

Alternative	Taxiway Alt 1 (No Build)	Taxiway Alt 2 (Partial-Parallel)	Taxiway Alt 3 (Full-Parallel)
Facility Requirements	No	Yes	Yes
Environmental Impacts	None	2.11 acres of butterfly habitat	4.5 acres of butterfly habitat
FAA Standards	No	Yes	Yes
Land Use Compatibility	No Change	Compatible	Compatible
Development Cost	$0	$1,320,00*	$2,580,00*
Operational Flexibility	None	Improved	Improved; Increases pavement maintenance requirements for little benefit compared to Alt 2.

* *This cost does not include permitting and habitat mitigation, which are likely to be substantial.*

6.3.17. Glider Runway Alternatives

The following glider runway alternatives were developed to facilitate glider operations at Saratoga County Airport:

- **Glider Alternative 1 (No-Build)**
  - There would be no modifications made to the airfield with regard to a separate glider landing area.
- **Glider Alternative 2**
  - This alternative would provide for a gliders-only turf landing area parallel to Runway 14-32.

6.3.18. Glider Alternative 1 (No-Build)

Glider Alternative 1 suggests that no modifications be made to Saratoga County Airport with regard to separate glider staging and landing areas. This is considered the No-Build alternative and can be seen in **Figure 6-1**, with the existing Airport layout. Gliders would continue to operate on Runway 32 when Runway 5-23 is the primary runway. There will be times, however, when the winds will require the gliders and powered aircraft to operate on Runway 5-23 simultaneously, which will reduce the overall capacity of the runway.

The No-Build glider alternative was assessed as follows:

- **Facility Requirements:** Chapter 5, *Demand Capacity and Facility Requirements* discussed the operational issues related to non-powered aircraft (gliders) and powered aircraft operating simultaneously at the Airport, particularly with concern to delays and congestion around the intersection of Runway 32 and Taxiway C. Glider Alternative 1 does not provide a turf landing area for the separation of powered and non-powered aircraft. However, both Taxiway "build" alternatives provide improved glider staging areas in close proximity to Runways 23 and 32 and reduce congestion at the Runway 32/Taxiway C intersection. Implementation of either of the taxiway build alternatives would address most of the operational issues related to gliders.

- **Environmental Impact:** There are no environmental impacts associated with Glider Alternative 1.

- **FAA Standards:** Since glider operations at Saratoga County Airport are currently in compliance with FAA standards, no changes would be incurred under the No-Build glider alternative.

- **Land Use Compatibility:** There are no changes proposed to the existing Airport layout that would cause incompatible land use.

- **Development Costs:** No development costs are associated with Glider Alternative 1.

- **Operational Flexibility:** The No-Build glider alternative does not increase operational flexibility due to the lack of a separate turf landing area. Thus, the gliders must operate at all times on paved areas as they do today, except for emergency landings on the designated landing areas. As noted previously, implementation of either of the taxiway "build" alternatives, largely addresses the operational needs of the gliders.

6.3.19. Glider Alternative 2

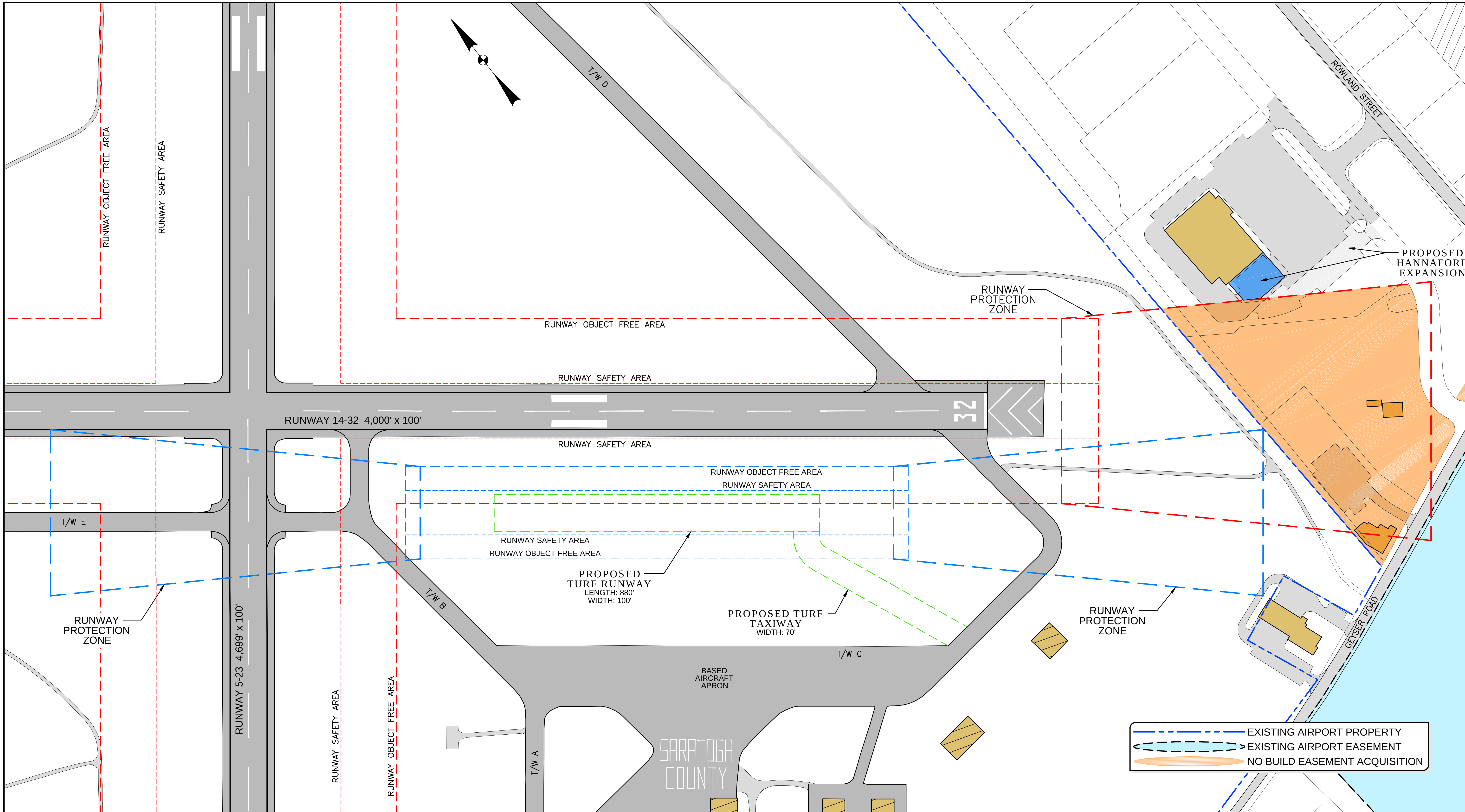
The second glider runway alternative proposes designating a portion of turf area to serve as an operating area for non-powered aircraft. The turf area could be used for takeoffs and landings, and would be located parallel to Runway 32 given the gliders' tendency to favor that runway. The turf runway would be required to comply with FAA design standards for RSAs, OFAs, and RPZs for Runway Design Group A-1. As such, the maximum length of the turf runway is approximately 1,060 feet. Additionally, a 70-foot wide turf taxiway would be implemented to provide the tow airplanes and gliders access to the turf runway via Taxiway C.

Glider Alternative 2 is illustrated in **Figure 6-9** and was evaluated as follows:

- **Facility Requirements:** Glider Alternative 2 would provide separation between the powered and non-powered aircraft by allowing the gliders to operate in the turf area independently from the powered aircraft. As noted previously, implementation of either taxiway alternative would largely address most of the glider operational issues, precluding the need for the turf runway. Nevertheless, a turf runway as described here is desirable for its convenient location to the two based glider hangars, access to and from the runway would not require gliders to be towed on the paved taxiways, thus eliminating the potential for gliders to block powered aircraft on the taxiways. However, the proposed length of the turf area is insufficient to accommodate aircraft taking off with a glider in tow; therefore, its utility is limited.

GLIDER RUNWAY ALTERNATIVE 2

FIGURE 6-9



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- **Environmental Impact:** For purposes of this analysis, it was assumed that the implementation of the turf landing area, safety area, and object free area, as well as the turf taxiway would be considered impacts to 9.4 acres of Karner blue butterfly habitat. Given the very limited utility of the turf runway as described above, the regulatory review process for this alternative is expected to be rigorous.

- **FAA Standards:** This alternative meets the standards for turf runway and incorporates the proper RSAs, OFA, and RPZ. However, the separation of the turf runway to Runway 32 is based upon abutting the OFA for each runway, and as such, further discussion with the FAA will be required. Additionally, FAA involvement would be warranted to officially recognize the new turf strip for the purpose of Airport diagrams, Airport Facility Directory (AFD) information, approach plates, and subject to grant assurances. Finally, initial analyses show that with the proposed length and siting of the turf landing area, portions of the RPZ along the Runway 32 end will be off Airport property and do not fall within any Airport easements. This would require additional land or easement acquisition.

- **Land Use Compatibility:** This alternative meets on-Airport land uses; however, as the RPZ goes off Airport, easement or land acquisition is required to provide off-Airport land use compatibility.

- **Development Costs:** The estimated cost for this alternative is $375,000, of which $25,000 is estimated for the RPZ easement. However, this does not include the costs of environmental permitting and habitat mitigation, which are likely to be substantial.

- **Operational Flexibility:** As discussed under the Facility Requirements criterion, this option would allow for reduction in capacity delays and congestion.

6.3.20. Summary of Glider Alternatives

The descriptions of the glider alternatives have included an evaluation based on six criteria: 1) the ability of the alternative to meet the identified facility requirements, 2) potential environmental impacts, 3) the ability to meet FAA standards, 4) land use compatibility, 5) estimated development costs, and 6) development flexibility. **Table 6-4** summarizes the above analysis.

After assessment of the significant impacts associated with Glider Alternative 2, particularly to the Karner blue butterfly habitat, an adjustment was considered to Glider Alternative 1 in an effort to facilitate glider operations at Saratoga County Airport while reducing the potential impact to the Karner blue butterfly habitat that may result from Glider Alternative 2. As a result, while the primary result will generally reflect Glider Alternative 1, the Airport would designate a turf run-up and staging area adjacent to Taxiway C, near its terminus at the Runway 32 end. Within this area, no improvements would be constructed; however, with the designation, gliders would be specifically directed to this area to set-up and stage prior to and after the completion of an operation. This would serve as an improvement over Glider Alternative 1, as one specific area at Saratoga County Airport would be designated for this purpose as opposed to staging and run-up occurring on active airfield pavements or within various locations of Karner blue butterfly habitat. A graphic depicting this variation to Glider Alternative 1 is illustrated in **Figure 6-9A**.

GLIDER RUNWAY ALTERNATIVE 1 - NO CONSTRUCTION

FIGURE 6-9A

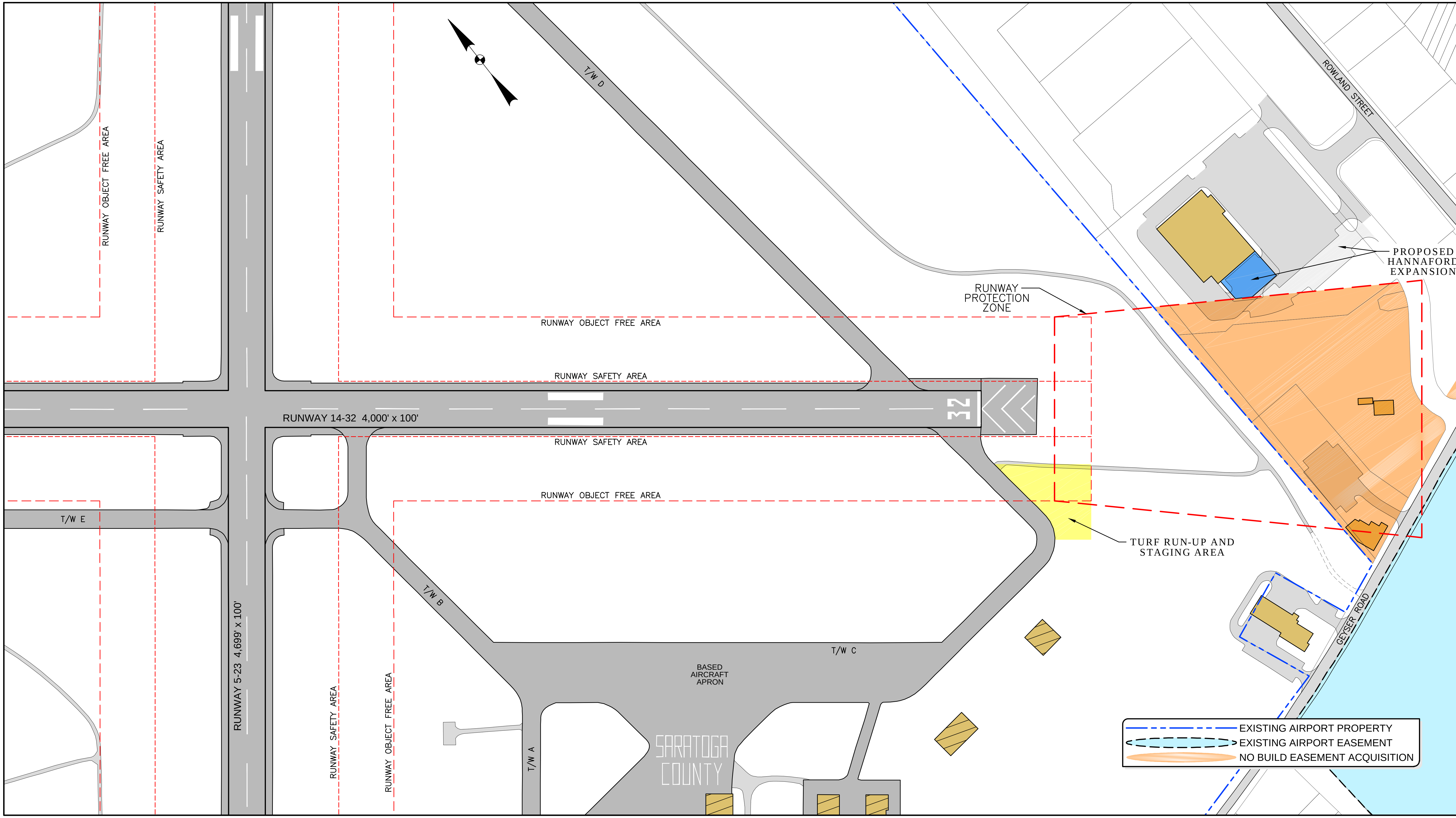

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Table 6-4 - Summary of Glider Alternatives

Alternative	Glider Alt 1 (No Build)	Glider Alt 2 (Landing Area)
Facility Requirements	No	No
Environmental Impacts	None	Significant (9.4 acres of butterfly habitat)
FAA Standards	No Change	RPZ off property
Land Use Compatibility	No Change	RPZ acquisition
Development Cost	None	$375,000 plus permits and mitigation
Operational Flexibility	No Separation	Provides Separation; Minimizes glider activities on paved airfield surfaces

6.4. LANDSIDE ALTERNATIVES

This portion of the report examines the future placement of, and relationships between, existing and future landside facilities at the Airport. The landside alternatives will be compatible with the preferred airside alternative identified in the previous section. Several of the constraints mentioned in Section 6.2 limit the area available for future landside development.

In planning for landside facilities, an important consideration is the relationship between the activity centers of an Airport. An activity center is an area in which a certain type of activity occurs, such as aircraft fueling, equipment maintenance, or glider staging. As an Airport grows and activity increases, the smooth functioning of these activity centers and the relationships between them become increasingly important. With this in mind, three landside alternatives were developed. Elements that were considered in each alternative are as follows:

- **Conventional Hangars:** Chapter 5, *Demand Capacity and Facility Requirements* recommended the replacement of the existing maintenance hangar, as well as the construction of an additional 8,000 square foot conventional hangar to meet future storage demands. The existing maintenance hangar would continue to be used for major airframe and power plant repairs on turbine and jet aircraft, including avionics installation and repairs, while the additional conventional hangar is intended for future storage of corporate or GA aircraft. Apron space equal to the area of the hangars is recommended to allow for the parking and maneuvering of aircraft.

- **T-Hangars:** T-hangars are typically a flexible and cost-effective way for an Airport operator to meet the aircraft storage needs of its customers. The previous chapter denoted a need for a 6-unit T-hanger to satisfy demand throughout the 20-year planning period.

- **Apron Development:** Given the differences in operational requirements the Airport experiences during Track Season, there are distinct times of the year when the Airport has significant surplus apron space and instances when there are discernible deficiencies. It was suggested in the *Facility Requirements* that an additional 6,200 square yards of itinerant aircraft apron be provided to meet future demand.

- **Fuel Farm:** It was recommended that the Saratoga County Airport install a second 10,000 gallon Jet-A fuel tank and reconfigure the tanker truck access to facilitate access that is more efficient by delivery trucks.

- **Area Reserved for Non-Aviation Development:** In view of Chapter 3, *Forecasts of Aviation Activity,* and Chapter 5, *Demand Capacity and Facility Requirements,* it is evident that the existing amount of land far exceeds that which will be required to fulfill the projected aviation demand at Saratoga County Airport. Since the additional land will not be needed for aviation use, it is recommended that a portion of the airfield be released for non-aviation development. The proposed land release is located on the southeastern part of the airfield along Geyser Road, from which there is no airside access. The area maximizes the road frontage for development and is approximately 6 acres in size.

6.4.1. Landside Alternative Evaluation Criteria

A set of evaluation criteria was developed to provide consistent assessments of each landside alternative throughout the review process. The criteria are defined below:

- **Land Use Compatibility:** Is the alternative compatible with on-Airport and off-Airport patterns of land use?

- **Environmental Impact:** What are the potential environmental impacts associated with implementation of the alternative? Does the alternative avoid or minimize and mitigate environmental impacts?

- **Potential for Expansion:** Does this alternative have the ability to accommodate future unanticipated expansion? This criterion recognizes the fact that location decisions made in the present will influence future Airport development for many years to come. Planning shall consider future development needs beyond the Facility Requirements of the current planning period.

- **Operational Efficiency:** Will this alternative contribute to the development of a smoothly functioning Airport with efficient movement of aircraft? This criterion will consider whether the alternative makes the best and most efficient use of Airport facilities.

- **Revenue Generation Capability:** Does the alternative afford opportunities for Airport Management to increase revenue generation thereby improving the overall competitiveness and cost-effectiveness of the Airport?

- **Development Costs:** Does the alternative have reasonable development costs in comparison to other alternatives that achieve the same goal?

The next sections present the alternatives for the landside facilities.

6.4.2. Landside Alternative 1 (No-Build)

Landside Alternative 1 represents the No-Build option. This alternative purports maintaining the existing landside facilities in their current configuration, without change to any of the hangars, aprons, facilities, etc., and without reserving space for future aviation or non-aviation development. The existing Airport facilities layout can be seen in **Figure 6-10**.

The evaluation of this alternative is as follows:

- **Land Use Compatibility:** This option allows Airport development to remain compatible with adjacent and nearby patterns of land use, as there would be no changes. However, without setting aside land for future aviation and non-aviation development, future development has the potential to become incompatible with future land uses that develop around the airfield.

- **Environmental Impact:** There are no environmental impacts associated with this alternative.

- **Potential for Expansion:** This alternative possesses maximum potential for future aviation development as no changes to the existing layout are made. The potential for non-aviation development would be hindered by the lack of a designated area under the No-Build.

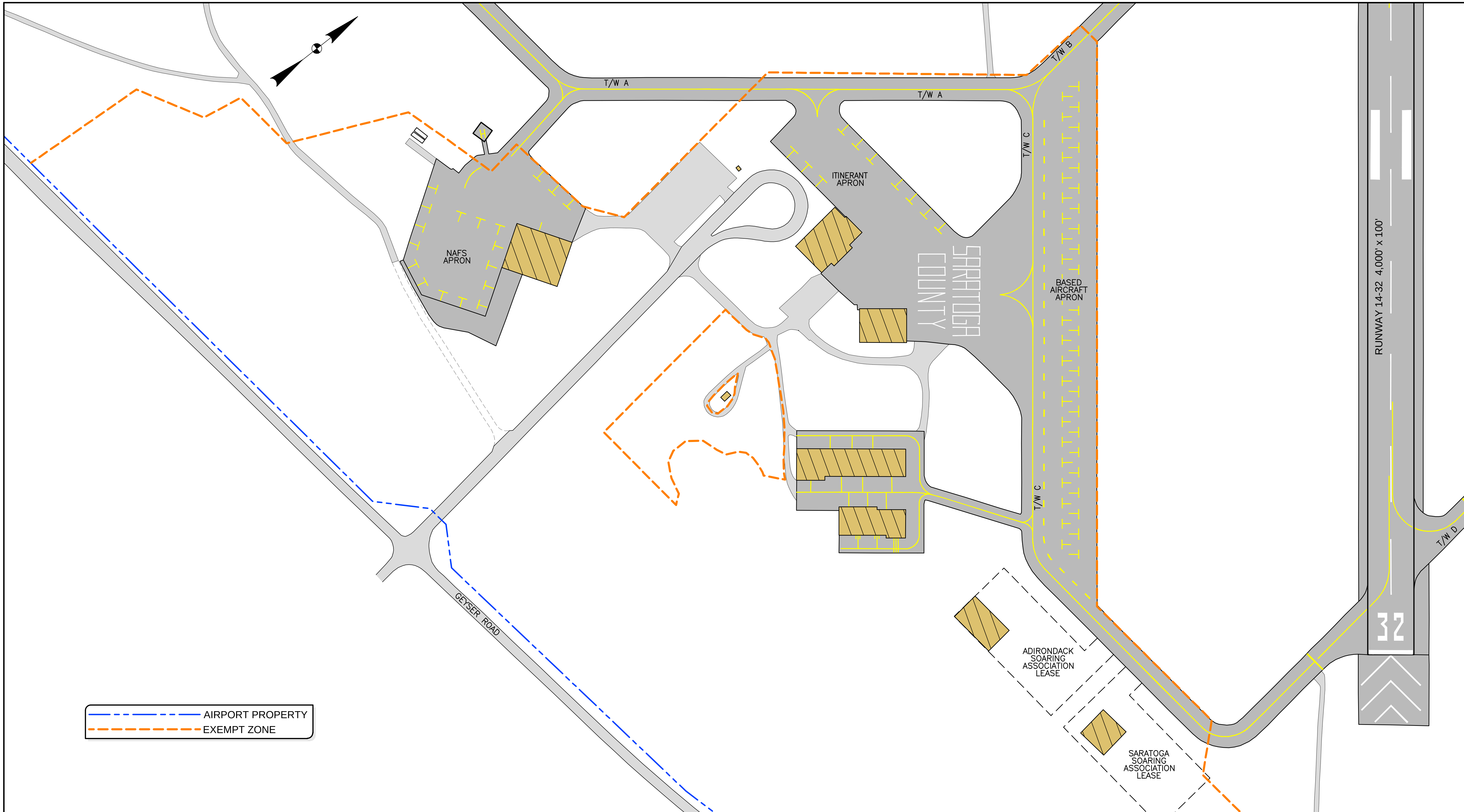
- **Operational Efficiency:** The No-Build option currently does not meet the operational efficiency levels required for the present amount of Airport operations. Additionally, as Airport operations are forecast to increase with regional economic development, the operational capabilities and capacity of this landside configuration will quickly be exceeded without additional Airport development during the planning period, leading to congestion and delays.

- **Revenue Generation Capability:** Landside Alternative 1 does not improve the overall competitiveness of the Airport, nor does it provide additional opportunities for increased revenue generation without added development. Selection of this alternative could result in negative economic and operational impacts as aircraft owners, pilots, and passengers could choose to utilize other Airports as a result of the deficient landside development.

- **Development Costs:** There would be no development costs associated with the No-Build alternative.

LANDSIDE ALTERNATIVE 1 - NO BUILD

FIGURE 6-10



SARATOGA COUNTY AIRPORT

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6.4.3. Landside Alternative 2

Landside Alternative 2 recommends placing the new 6-unit T-hanger to the south of the existing units, where the wooded area begins. The unpaved area northeast of the existing T-hangars would be constructed into an itinerant aircraft apron, providing 57,987 square feet of additional apron space. The new 8,000 square foot conventional hangar will be located adjacent to the North American Flight Services (NAFS) hangar closest to the existing fuel farm. The increase in hangar footage will require a corollary amount of additional apron area as well. This alternative recommends placing the required 10,000 gallon Jet-A fuel tank across from the existing tanks, on the opposite side of the pull-in area to the fuel farm. A turn-around will be installed, enabling the fuel trucks to drive around the other/south side of the proposed tanks. Finally, this option allocates portions of the landside area at Saratoga County Airport for future aviation and non-aviation development. These areas have the ability to be sectioned off into numerous parcels, while providing both airside access and roadway frontage. This alternative is illustrated in **Figure 6-11**.

This alternative was evaluated in the following manner:

- **Land Use Compatibility:** This alternative remains aligned with the patterns of land use both on and off the Airport. The proposed development is located within the Exempt Area of the property, and the planned elements allow access to and from both the airside movement areas and the landside road and parking network.

- **Environmental Impact:** Landside Alternative 2 has no environmental impacts. Development occurs in an exempt area as defined by State and Federal regulatory agencies and does not affect the Karner blue butterfly habitat. There will be an increase in impervious pavement area due to the construction of the buildings, apron, and fuel farm turn-around. This can be mitigated through proper grading and stormwater drainage design.

- **Potential for Expansion:** This alternative accommodates future unanticipated expansion. Because the proposed developments are located within the immediate vicinity of existing landside features, there is significant potential for expansion given the remaining areas available for use allocated for such purposes.

- **Operational Efficiency:** Landside Alternative 2 contributes to the efficient movement of aircraft; however, the planned placement of the T-hangar units is located somewhat far from the activity center – FBO, fuel, parking – of the Airport. Similarly, the site of the proposed hangar storage is located away from the main aprons.

- **Revenue Generation Capability:** This alternative offers opportunities for the Saratoga County Airport to increase revenue generation through the creation of more hangar units available for lease, additional maintenance space to perform aircraft services, greater fuel supply to be sold, and land to be developed. Overall, Landside Alternative 2 improves the competitiveness and cost-effectiveness of the Airport.

- **Development Costs:** The development cost for this alternative is estimated at $3,580,000. The costs for hangars, T-hangars, and some apron areas would be the responsibility of third party entities under this alternative.

LANDSIDE ALTERNATIVE 2

FIGURE 6-11

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6.4.4. Landside Alternative 3

As seen in **Figure 6-12**, Landside Alternative 3 places the 6-unit T-hangar north of the existing units that are just south of the eastern North American Flight Services (NAFS) hangar. The unpaved area northeast of the existing T-hangars would be constructed into an itinerant aircraft apron, providing 57,987 square feet of additional apron space. The new 8,000 square foot conventional hangar will be located adjacent to the existing NAFS maintenance hangar that is to be replaced. The increase in hangar footage will require a corollary amount of additional apron area. This alternative recommends placing the required 10,000 gallon Jet-A fuel tank next to the existing tanks along the pull-in area to the fuel farm. A turn-around will be installed for the pull-in area, allowing the fuel trucks to head away from the Known Habitat Area and alleviating the inefficiency of backing-up. Finally, this option also suggests allocating portions of the landside area at Saratoga County Airport for future aviation and non-aviation development identical to Landside Alternative 2.

This assessment of this alternative is as follows:

- **Land Use Compatibility:** This alternative remains aligned with the patterns of land use both on and off the Airport. The proposed development is located within the Exempt Area of the property, and the planned elements allow access to and from both the airside movement areas and the landside road and parking network.

- **Environmental Impact:** The proposed development is in the exempt area and would have no impacts to the Karner blue butterfly habitat. There will be an increase in impervious pavement area due to the construction of the buildings, apron, and fuel farm turn-around, which can be mitigated through proper grading and stormwater drainage design.

- **Potential for Expansion:** This alternative has the ability to accommodate future unanticipated expansion. Because the proposed developments are located within the immediate vicinity of existing landside features, there is still significant potential for expansion given the remaining areas available for use allocated for such purposes.

- **Operational Efficiency:** By maintaining a cohesive layout with the placement of the T-hangars and proposed storage hangar, Landside Alternative 3 does contribute to the efficient movement of aircraft and seems to make economical use of the existing and future Airport facilities.

- **Revenue Generation Capability:** This alternative offers opportunities for the Saratoga County Airport to increase revenue generation through the creation of more hangar units available for lease, additional maintenance space to perform aircraft services, greater fuel supply to be sold, and land available for development. Overall, Landside Alternative 3 improves the competitiveness and cost-effectiveness of the Airport.

- **Development Costs:** The development cost for this alternative is estimated at $3,760,000. The costs for hangars, T-hangars, and some apron areas would be the responsibility of third party entities under this alternative.

LANDSIDE ALTERNATIVE 3

FIGURE 6-12

SARATOGA COUNTY AIRPORT

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6.4.5. Landside Alternative Summary

The description of landside alternatives has included an evaluation based on six criteria: 1) land use compatibility, 2) potential environmental impacts, 3) potential for expansion, 4) operational efficiency, 5) revenue generation capability, and 6) development costs. **Table 6-5** summarizes the advantages and disadvantages from the above analysis.

Table 6-5 - Summary of Landside Alternatives

Alternative	Landside Alt 1 (No Build)	Landside Alt 2	Landside Alt 3
Land Use Compatibility	Compatible with Existing Use	Compatible with Existing Use	Compatible with Existing Use
Environmental Impacts	None	None	None
Potential for Expansion	Aviation Use Only	Aviation and Non-Aviation Potential	Aviation and Non-Aviation Potential
Operational Efficiency	Poor	Better	Best
Revenue Generation Capability	None	Competitive Aviation and Non-Aviation	Competitive Aviation and Non-Aviation
Development Costs	$0	$3,580,000	$3,760,000

Chapter 7
Airport Layout Plan and Airport Capital Improvement Plan

7.0 INTRODUCTION

This chapter presents the Airport Layout Plan (ALP) Drawing Set, Project Phasing Plan, and Airport Capital Improvement Plan (ACIP), which comprise the final recommendations of the Saratoga County Airport Master Plan Update. The ALP Drawing Set incorporates the Preferred Airport Development that was determined through an extensive public review process including input provided by the Technical Advisory Committee (TAC) and community input obtained through two public information meetings. This chapter represents the projects recommended to meet current safety standards and accommodating existing and future aviation demand. Final concurrence and approval of the recommended projects shown on the ALP were obtained through the Saratoga County Board of Supervisors Buildings and Grounds Subcommittee on September 8, 2014. The subcommittee subsequently forwarded a resolution adopting the Master Plan and ALP to the County Board of Supervisors for final acceptance.

The ACIP presents a recommended phasing schedule for implementing the proposed improvements over the 20-year planning period. The ACIP details the funding mechanisms and costs for implementing the program, with an emphasis on the first five-year projects. Federal, State, Sponsor and private funding are also identified for each project, The ALP and ACIP documents will become the final recommendations of the MPU.

7.1 PUBLIC PARTICIPATION PROCESS

The contents of this chapter, including the ALP Drawing Set, the Project Phasing Plan, and the Airport Capital Improvement Plan, are the culmination of a planning process that consisted of number of planned steps to solicit comment from interested parties. The planning process included a series of four meetings by the TAC at key points to allow for review and comment of the MPU as it progressed. The TAC, with 18 members, is composed of elected officials from the Towns of Milton, Greenfield, Hadley, and Stillwater, as well as representatives of the Saratoga County Department of Public Works and Planning Department, the Federal Aviation Administration (FAA), the New York State Department of Transportation (NYSDOT), the U.S. Fish and Wildlife Service (USFWS), the New York State Department of Environmental Conservation (NYSDEC), the Capital District Regional Planning Commission, and tenants and users of the Airport.

Two Public Information Meetings were also held throughout the planning process to update the public on the status of the Master Plan Update and to solicit comments on the draft documents.. The schedule of the TAC and Public Information Meetings is as follows:

• Kickoff Meeting	January 29 2013
• TAC Meeting #1	April 11, 2013
• TAC Meeting #2	October 29, 2013
• Public Information Meeting #1	January 13, 2014
• TAC Meeting #3	May 8, 2014

- Public Information Meeting #2 May 20, 2014

7.2 AIRPORT LAYOUT PLAN DRAWING SET

The ALP Drawing Set has been prepared in accordance with generally accepted planning practices and with the following FAA guidance materials:

- FAA Advisory Circular 150/5300-13A, *Airport Design*
- FAA Advisory Circular 150/5070-6B, *Airport Master Plans*
- Federal Aviation Regulations, Part 77, *Objects Affecting Navigable Airspace*
- FAA Eastern Region ALP Checklist

The ALP Drawing Set for Saratoga County Airport consists of a Cover Sheet and 10 drawing sheets as follows:

Sheet	Title
1.	Existing Airport Layout
2.	Airport Layout Plan
3.	Terminal Area Plan
4.	Airport Airspace Plan
5.	Runway 5-23 Inner Approach Drawing
6.	Runway 5-23 Departure Surface Drawing
7.	Runway 14-32 Inner Approach Drawing
8.	Inner Approach Tables
9.	Airport Land Use and RPZ Control Plan
10.	Airport Property Map – "Exhibit A"

The ALP Drawing Set is provided at the end of this Master Plan Report. Narrative descriptions of the drawings prepared for Saratoga County Airport are provided below.

7.2.1 Cover Sheet

The Cover Sheet provides a listing of the sheets comprising the ALP set. It also includes both a location map of Saratoga County Airport's Eastern New York setting and a vicinity map that shows the Airport and surrounding towns. Also presented on this sheet is information such as the FAA's Airport Improvement Program project number and the New York State Department of Transportation PIN number.

7.2.2 Existing Airport Layout

The Existing Airport Layout (Sheet 1 of 10) illustrates the existing Airport facilities at Saratoga County Airport. This drawing depicts the Airport as it exists today and provides a comparison to the ALP. The drawing is based upon photogrammetric information assembled from aerial photography meeting the current Airport Geographic Information System standards outlined in AC's 150/5300-17/18/19 and collected at the beginning of the project. The sheet depicts the entire Airport as well as neighborhoods, businesses, and local roads and highways that are adjacent to the Airport. Both airside and landside facilities are shown on the drawing. Buildings and other Airport related facilities are shown with numbers keyed to the Airport Facilities Tables that are used to identify each facility.

Airside facilities include the runways, taxiways, apron areas, and lighting and navigational aids serving each of the runways. Areas protected for safety and airspace, including the Runway Safety Areas, Runway Object Free Areas, and the Runway Protection Zones, are also shown. Landside areas include the North American Flight Service hangar and apron complex. The central terminal area encompasses a maintenance hangar, storage hangar, and several T-hangars, both glider club hangars, the based and itinerant aprons, pilot/passenger parking areas, and the main access road.

The existing Airport property boundary is shown prominently to define the Airport proper and other parcels owned by Saratoga County. The Airport property boundaries were determined using readily available data from Saratoga County; however, no “boundary survey” was completed for this project.

The Existing Airport Layout Sheet also includes the All Weather and IFR Wind Roses, Runway Data Table, Facilities Table, Airport Data Table, and a Legend. A Modification to Design Standards Table is also included, however, there are no modifications approved by the FAA.

7.2.3 Airport Layout Plan

The ALP (Sheet 2 of 10) illustrates the recommended development at Saratoga County Airport over the 20-year planning period. The ALP sheet is the most important sheet in the Master Plan Drawing Set as it serves as the official document presenting the Sponsor’s proposed development plan for the Airport and is signed by the Airport Sponsor, NYSDOT, and FAA. Projects that are eligible for federal grant funding must also be shown on the ALP to be considered for federal funding in the future. The major recommended airside and landside improvements depicted on the ALP Sheet are described in Sections 7.2.3.1 and 7.2.3.2, respectively.

7.2.3.1 Airside Improvements

The preferred airside development focuses on maintaining the runways at their current lengths and widths, enhancements to the existing close-in airspace of Runway 5-23 and 14-32, a partial parallel taxiway to enhance operational safety, and staging areas for the glider operations. The proposed development is summarized below.

Runways

The existing runways at Saratoga County will remain at their current length. Runway 5-23 is 4,700 feet long, 100 feet wide, and provides adequate length to accommodate the majority of aircraft, including corporate turboprop and jet aircraft, using the Airport today and tomorrow. The larger jet aircraft using the Airport can operate on this length of runway, albeit with weight penalties which limit their overall range, but does not affect the safety of their operations.

Runway 14-32 remains at its current length of 4,000 feet and will continue to serve the smaller single and twin-engine aircraft and provide crosswind protection during certain wind and weather conditions. The Runway 32 threshold and Runway Protection Zone (RPZ) will also be maintained in their current location based upon discussions with the FAA related to the 2013 construction of a medical building within the Runway 32 RPZ.

A turf glider runway between Runway 32 and the Based Aircraft Apron was considered to enhance glider operations. However, the project was not adopted due to the large impact to Karner blue butterfly habitat. Discussions with the glider associations identified several alternate options to enhance their operations and segregate glider aircraft from powered aircraft; those options are presented in the next sections.

Airspace Enhancements

The need for the airspace enhancements is to provide clear approaches to each runway at Saratoga County Airport. Since the completion of the 2003 Master Plan Update, Saratoga County initiated several safety related projects to remove tree penetrations to the existing approach areas to all four runway ends. Most of the work during this time focused on Runway 5 and 23. Easements were sought on adjacent properties to remove trees penetrating the inner approach areas and RPZ. Removing trees obstructing the approach areas has enhanced safety for aircraft using Saratoga County Airport.

As deficiencies remain in the existing airspace, easements are identified on the ALP in order to remove trees that continue to penetrate the approach areas and RPZs. Clearing standards for Federal Aviation Regulation (FAR) Part 77 airspace surfaces would require extensive clearing and as such, Runway End Siting Surfaces for each of the four runway ends were used to define the easements necessary to provide clear approaches to the existing runway ends. Trees currently penetrating the existing FAR Part 77 surfaces will continue to be monitored, as required by the FAA, to ensure the airspace remains clear and safe approaches maintained to the Airport's two runways.

Partial Parallel Taxiway

The need for the partial parallel taxiway is to segregate the powered aircraft and gliders operating on the Airport and enhances the operational safety and efficiency of Saratoga County Airport. The existing taxiway system on the east side of the Airport, comprised of Taxiway C and D, is circuitous and requires long taxi times when accessing the central terminal area to or from Runway 23. Additionally, with glider operations occurring on Runway 32 the majority of the soaring season, conflicts and congestion between gliders and powered aircraft have occurred on Taxiway C and D. This has reduced the efficiency of aircraft operating on the Airport. As such, a partial parallel taxiway was recommended between Taxiway B and Runway End 23 that will allow powered aircraft to access the central terminal area more efficiently while also effectively segregating glider activity from powered aircraft, allowing each to operate independently and with minimal conflict.

Glider Staging Area

The need for this project is to provide operational areas for glider staging and recovery, which limit impacts to turf areas that are habitat for the Karner blue butterfly. Gliders must remain on paved surfaces to avoid impacting Karner blue butterfly habitat in the adjacent turf areas of the Airport. As the turf runway for the gliders was not adopted due to habitat impacts, several options were discussed with the glider clubs to enhance their operations under the current limitations.

When the partial parallel taxiway is built, Taxiway D will be abandoned in place. Portions of this taxiway will be used to stage gliders accessing Runway 32 and Runway 23. This option significantly enhances the glider operation, segregates the gliders from powered aircraft, and improves the operational safety and efficiency of aircraft operating on the ground.

In addition, a smaller staging area inclusive of and adjacent to the former connection of Taxiway C to Runway 32 was also identified by the glider associations. This area is intended as an interim solution to allow glider staging to occur to the side of Taxiway C, thus reducing interaction between the gliders and powered aircraft. This area will become available once a new connection from Taxiway C to Runway 32 is constructed. This new taxiway will begin at the southeast corner of the Based Aircraft Apron, adjacent to the current taxiway access from the Adirondack Soaring Association Hangar, and will extend to provide a 90 degree intersection with Runway 32. With the construction of the new taxiway connection, the former taxiway pavements will become available as a run-up and glider staging area. Once the partial parallel taxiway to Runway 5-23 is built, new staging areas will become available when Taxiway D is abandoned in place and this staging area will no longer be required.

7.2.3.2 Landside Improvements

The landside improvements are comprised of the following projects:

- The addition of a conventional hangar and associated apron to provide additional overnight and long term storage of aircraft
- Construction of a new 6 unit T-hangar and taxilanes to meet current demand for T-hangar space at the Airport.
- In the long term, the need for additional itinerant apron will be required and is proposed north of the existing T-hangars.
- A new Jet-A fuel tank is recommended in the short term to manage fuel demands, especially during Track Season.

The need for these projects is to provide additional hangar storage and aircraft parking needs and to provide services to the aviation community using the Airport.
Saratoga County Airport has a surplus of land within the landside area. Two actions were taken to protect this land. First, a large area of the surplus land is identified for future aviation related development. This will provide flexibility for the Airport to accommodate new aviation related development such as hangars or aprons, should future aviation demand exceed the projections identified in the Chapter 3, *Forecasts*.

The second action identifies a strip of land along Geyser Road between the Airport entrance and the fire department for future non-aviation use. This land can be used as a revenue source for the Airport through the lease of land for non-aviation development such as business or offices space. This would also provide the community with additional services in this part of the Town of Milton.

7.2.4 Terminal Area Plan

The Terminal Area Plan (Sheet 3 of 10) depicts an expanded view of the terminal area development proposed for this master plan. The plan shows the recommended apron expansion to be used for aircraft tie-downs and storage, as well as the proposed conventional hangar expansion and additional T-hangar units. Apron space adjacent to these facilities is also illustrated, along with a new vehicle access road to the T-hangars. The sheet displays intended fuel farm improvements, which entail an additional Jet-A fuel tank and a vehicle turn-around to provide easier and more efficient access for fuel trucks. Lastly, the Terminal Area Plan depicts land areas on the Airport reserved for future aviation development, and those designated for future non-aviation development.

7.2.5 Airport Airspace Plan

Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace,* regulates the airspace surrounding airports through the establishment of “Imaginary Surfaces,” which include the Primary, Approach, Transitional, Horizontal, and Conical Surfaces. These surfaces were defined and discussed in Chapter 5, *Facility Requirements*.

The Airport Airspace Plan (Sheet 4 of 10), which is intended to identify obstructions to all FAR Part 77 Surfaces, depicts the Imaginary Surfaces for Saratoga County Airport. The surfaces are shown over the United States Geological Survey (USGS) map so as to orient them over the airfield and surrounding community. USGS quadrangles that make up the illustrated area are included on the plan. Additionally, an isometric view of the FAR Part 77 Surfaces is shown to provide an understanding of what is being depicted in three dimensional view.

Based on the FAR Part 77 analysis, Saratoga County Airport presently has obstructions to several of its surfaces. The tables shown on the Airport Airspace Plan list obstructions for the Conical and Horizontal Surfaces only, as the other surfaces are shown in more detail on separate sheets. The tables on the Airport Airspace Plan provide the number, description, elevation, amount of surface penetration, and proposed action for each of the obstructions identified in the analysis.

7.2.6 Inner Approach Drawings and Tables

The Inner Approach Drawings for Runway 5-23 (Sheet 5 of 10) and Runway 14-32 (Sheet 7 of 10) provide plan and profile views of the inner Part 77 Approach and Transition surfaces, as well as the Runway End Siting Surfaces (RESS) outlined in AC 150/5300-13A, *Airport Design*. The intent of these plans is to inventory any obstructions to the Part 77 Surfaces and identify the necessary action to address those obstructions, including removal or lighting of an object. Since there are two runways at Saratoga County Airport, there are two plan sheets, one for each runway.

These drawings are further supplemented by the Inner Approach Tables (Sheet 8 of 10), which provide the number, description, elevation, amount of surface penetration, and proposed action for each of the obstructions identified in the Runway 5-23 and Runway 14-32 Part 77 and RESS analyses. Obstructions are identified if they are within 10 feet of an approach surface, and are either shown as being under the surface, which is a negative difference between the object elevation and surface elevation, or a positive value, which identifies the amount of penetration above the surface.

Disposition of obstructions is based on several factors. The preference is to clear the Part 77 surfaces; however, if an obstruction cannot be removed, the FAA uses the RESS surfaces as an evaluation tool to identify the surface that must be clear to maintain or add a new approach. As described in Appendix 2 of AC 150/5300-13A, *Airport Design*, the FAA stipulates that objects penetrating most RESS surfaces should be removed. If they cannot be removed, there is the potential to displace runway thresholds, raise the minimums of an existing or new approach, increase the threshold crossing height of an existing instrument approach, or the prohibition of night activity.

Saratoga County Airport has been implementing an ongoing obstruction-removal program intended to maintain the existing approach conditions at the airfield for several years now. Many of the obstructions identified on the Inner Approach Drawings (Sheets 5 and 7), and Inner Approach Tables (Sheet 8), are part of that existing program. However, periodic updates to the surface analyses are required to identify any new or critical obstructions, and to confirm those that have been previously mitigated or removed. Using these analyses, the FAA ultimately makes the final determination on whether or not an obstacle is an obstruction and how that obstruction should be addressed (removal, lighting, easement, etc.) in order to comply with Part 77 and RESS standards.

7.2.7 Departure Surface Control Plan

The Departure Surface Control Plan (Sheet 6 of 10) depicts the 40:1 (slope) Departure Surface. This surface is used to clear departure areas for runways with Instrument Approach Procedures, thus a control plan is only required for Runway 5-23. Obstructions in these surfaces affect departure minimums (cloud height and visibility). Objects in the 40:1 Departure Surface should be removed to provide a clear surface and the lowest possible departure minimums for the Airport.

Obstructions to the departure surfaces can be addressed in two ways per FAA guidelines. If they cannot be removed, there is a potential to reduce the Takeoff Distance Available (TODA) and FAA provides a formula to determine this. Alternatively, if there is an existing instrument approach, FAA states that if the penetration is less than 35 feet, no action may be required, however, there could still be an impact to departure procedures or minimum climb gradients (existing and proposed). As such, objects exceeding 35’ are called out in these plans. The disposition of all others will have to be further assessed, which is beyond the scope of this master plan.

7.2.8 Airport Land Use and RPZ Control Plan

The Airport Land Use and RPZ Control Plan (Sheet 9 of 10) provides general guidance for future land development both on Airport property and in the vicinity thereof. Since aircraft noise is a major factor influencing land use compatibility, the FAA’s Integrated Noise Model (INM), Version 7.0b was used to predict noise levels in the year 2032 based upon forecasted aviation activity. The forecast chapter of this Master Plan Update predicted an estimated 42,302 total aircraft operations by the end of the forecast period, and the noise modeling accounts for each of these operations.

The INM estimates aircraft noise levels (in decibels – dB) at ground level. Noise levels were quantified according to the A-weighted scale (which approximates the range of human hearing) using the Day-Night Average Noise Level (DNL). A DNL of 65 dB is considered by the FAA to be the threshold of impact for noise sensitive areas. The INM output includes noise contours, which are lines of equal loudness, with higher levels centered on the runway and quieter levels expanding outward.

As shown on Sheet 9 of 10, the future noise contours for Runway 5-23 and Runway 14-32 at the 65, 70, and 75 dB levels all remain well within Airport property.

In addition to land use, this sheet contains the RPZ Control Plan for the Saratoga County Airport. The RPZ Control Plan identifies the existing avigation easements held by the Saratoga County Airport and lists them in a table with their numeric identifier, tax parcel number, acreage, and type of land use. Moreover, the RPZ Control Plan also delineates those parcels designated for potential avigation easement by the Airport, as necessary per existing Part 77 and RESS Surfaces. The proposed parcels are similarly listed in a table, and have been identified based on the location of obstructions within the Inner Approach Drawings. Easements of those properties are essential to maintaining the existing approach surfaces and ultimately complying with FAA standards.

7.2.9 Airport Property Map ("Exhibit A")

The Airport Property Map (Sheet 10 of 10) illustrates the Airport's current property boundaries as obtained from Saratoga County. The property map shows all of the existing land area that currently comprises the entire Airport, as well as property presently owned by the County. Additionally, all properties and easements surrounding the Airport that have been acquired to date are provided in their respective tables, and include a numerical identifier, tax parcel number, the grantor, acreage, date of acquisition, and the AIP grant number if the property was acquired through FAA funding. Finally, the Exhibit A also denotes the proposed avigation easements demarcated previously in the RPZ Control Plan. The suggested easements are listed in a numbered table and identified as being for the purpose of "height control." Aside from the proposed easements, there are no additional modifications to be made to the Airport Property Map at this time.

7.3 CAPITAL IMPROVEMENT PROGRAM AND PROJECT PHASING PLAN

The phasing plan presents the phased implementation of the planning projects identified on the Airport Layout Plan as well as other major projects such as environmental studies and vehicle acquisitions. Basic airfield maintenance improvements, with the exception of those necessary within the short-term and identified as part of the previous Capital Improvement Program, are not included as part of the phasing plan. The recommended phasing has been developed to coordinate with the aviation forecasts, as discussed in Chapter 3. The Phasing Plan has been divided into three phases:

- Phase I includes the short-term airport improvements (2015-2019).
- Phase II includes the mid-term airport improvements (2020-2024).
- Phase III includes the long-term airport improvements (2025-2034).

The overall phasing plan is depicted below in **Table 7-1**.

Table 7-1 - Project Phasing Plan

Phase I Projects (2015 – 2019)	
1.	Conduct Master Plan Phase I Environmental Assessment
2	Acquire Avigation Easement – Runway 23 Siting Surface 5
3.	Acquire Mowing Equipment
4.	Design/Construct Equipment Storage Building
5.	Construct Based Aircraft Tie-Down Rehabilitation
6.	Design/Construct T-Hangar Apron Rehabilitation
7.	Design/Construct Fuel Farm Improvements
8.	Aircraft Operational Enhancements/Environmental Mitigation
9.	Acquire Avigation Easements & Obstruction Removal – Phase I (Runways 23 and 32)
10.	Design/Construct Glider Staging Area
11.	Design/Construct Partial Parallel Taxiway
Phase II Projects (2020 – 2024)	
12.	Acquire Avigation Easements & Obstruction Removal – Phase II (Runways 5 and 14)
13.	Design/Construct 6-Unit T-Hangar and Apron
14.	Design/Construct Conventional Hangar and Apron
Phase III Projects (2025 – 2034)	
15.	Design/Construct Itinerant Apron Expansion

Source: McFarland Johnson

7.4 CAPITAL IMPROVEMENT PLAN

The ACIP for the twenty year planning period, 2015 through 2034, is presented below in **Table 7-2**. The ACIP incorporates estimated overall project costs and potential funding sources for all projects within Phases I, II and III. As of September 2014, projects eligible for funding through the FAA's Airport Improvement Program (AIP) can receive up to 90 percent of the total project cost from the FAA, with the remaining 10 percent split evenly between the Sponsor (Saratoga County) and the New York State Department of Transportation (NYSDOT). Funding is also currently available through NYSDOT's Aviation Capital Grant program. Projects eligible for a NYSDOT Aviation Capital Grant can receive up to 90% funding from NYSOT, with the remaining 10% to be provided by the Sponsor. Other projects that are not eligible for AIP or NYSDOT funding are indicated within the table for funding by private developers.

Project eligibility for FAA's AIP funds are generally restricted to projects that are for public use and are not revenue generating. Examples include taxiways, aprons, easement acquisition, and obstruction removal, as well as associated environmental assessments. Projects that are not eligible, or that have a very low funding priority for the FAA, include fuel facilities, parking lots, T-hangars, conventional hangars, and mowing equipment. For projects that may not be eligible for AIP funds, the NYSDOT Aviation Capital Grant program is a source of funding for many of the project types previously mentioned. These grants vary from year to year, but are generally geared to projects that are not AIP eligible.

There are also several projects that could be considered for private funding. These types of improvements are typically business decisions to expand or refurbish existing facilities and are primarily tenant related. In these instances, Saratoga County's involvement would be limited to land lease agreements and providing specific design requirements that will be incorporated into the project.

In conclusion, the 20-Year ACIP for Saratoga County Airport totals approximately $8.9 Million. When considering FAA, NYSDOT, and private investment, Saratoga County would be responsible for approximately $489,000, or 6% of the total ACIP.

Table 7-2 Capital Improvement Program

Project	Phase	Estimated Cost	FAA Share (90%)	NYSDOT Share (5% or 90%)	Sponsor Share (5% or 10%)	Private Share (100%)
Conduct Master Plan Phase I Environmental Assessment	I	$300,000	$270,000	$15,000	$15,000	$0
Acquire Avigation Easement – Runway 23 Siting Surface 5	I	$60,000	$54,000	$3,000	$3,000	$0
Acquire Mowing Equipment	I	$110,000	$0	$99,000	$11,000	$0
Design/Construct Equipment Storage Building	I	$390,000	$0	$351,000	$39,000	$0
Construct Based Aircraft Tie-Down Rehabilitation	I	$1,200,000	$1,080,000	$60,000	$60,000	$0
Design/Construct T-Hangar Apron Rehabilitation	I	$450,000	$405,000	$22,500	$22,500	$0
Design/Construct Fuel Farm Improvements	I	$660,000	$0	$594,000	$66,000	$0
Aircraft Operational Enhancements/Environmental Mitigation	I	$100,000	$90,000	$5,000	$5,000	$0
Acquire Avigation Easements & Obstruction Removal – Phase I (Runways 23 and 32)	I	$320,000	$288,000	$16,000	$16,000	$0
Design/Construct Glider Staging Area	I	$100,000	$0	$0	$0	$100,000
Design/Construct Partial Parallel Taxiway	I	$1,320,000	$1,188,000	$66,000	$66,000	$0
Acquire Avigation Easements & Obstruction Removal – Phase II (Runways 5 and 14)	II	$1,150,000	$1,035,000	$57,500	$57,500	$0
Design/Construct 6-Unit T-Hangar and Apron	II	$700,000	$0	$630,000	$70,000	$0
Design/Construct Conventional Hangar and Apron	II	$924,000	$0	$0	$0	$924,000
Design/Construct Itinerant Apron Expansion	III	$1,150,000	$1,035,000	$57,500	$57,500	$0

Source: McFarland Johnson

SARATOGA COUNTY AIRPORT

MASTER PLAN UPDATE

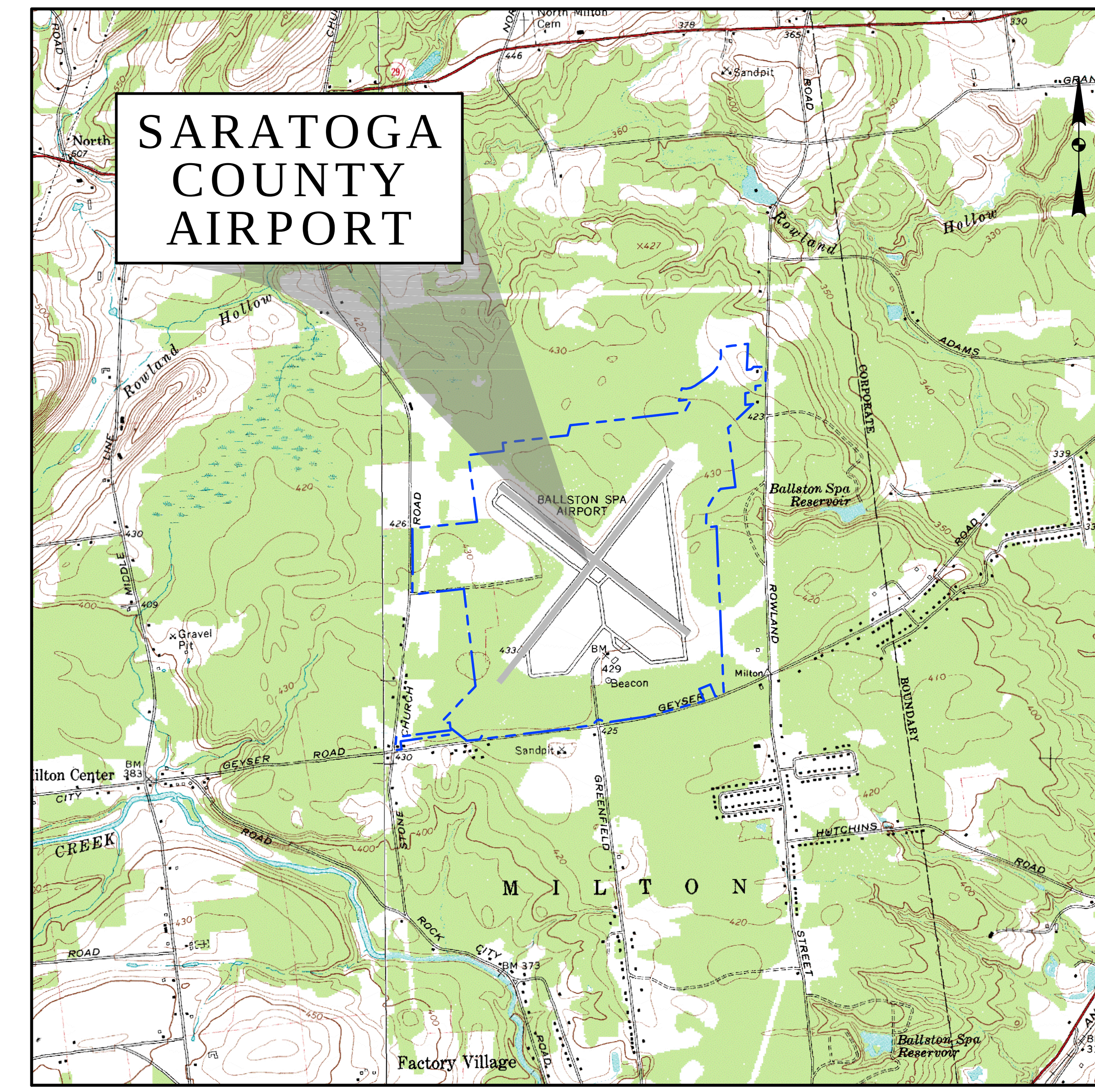
TOWN OF MILTON
SARATOGA COUNTY
NEW YORK

MAY 2015

Location Map

DRAWING INDEX

SHEET NO.	TITLE
1	EXISTING AIRPORT LAYOUT
2	AIRPORT LAYOUT PLAN
3	TERMINAL AREA PLAN
4	AIRPORT AIRSPACE PLAN
5	RUNWAY 5-23 INNER APPROACH DRAWING
6	RUNWAY 5-23 DEPARTURE SURFACE DRAWING
7	RUNWAY 14-32 INNER APPROACH DRAWING
8	INNER APPROACH TABLES
9	AIRPORT LAND USE AND RPZ CONTROL PLAN
10	AIRPORT PROPERTY MAP EXHIBIT "A"

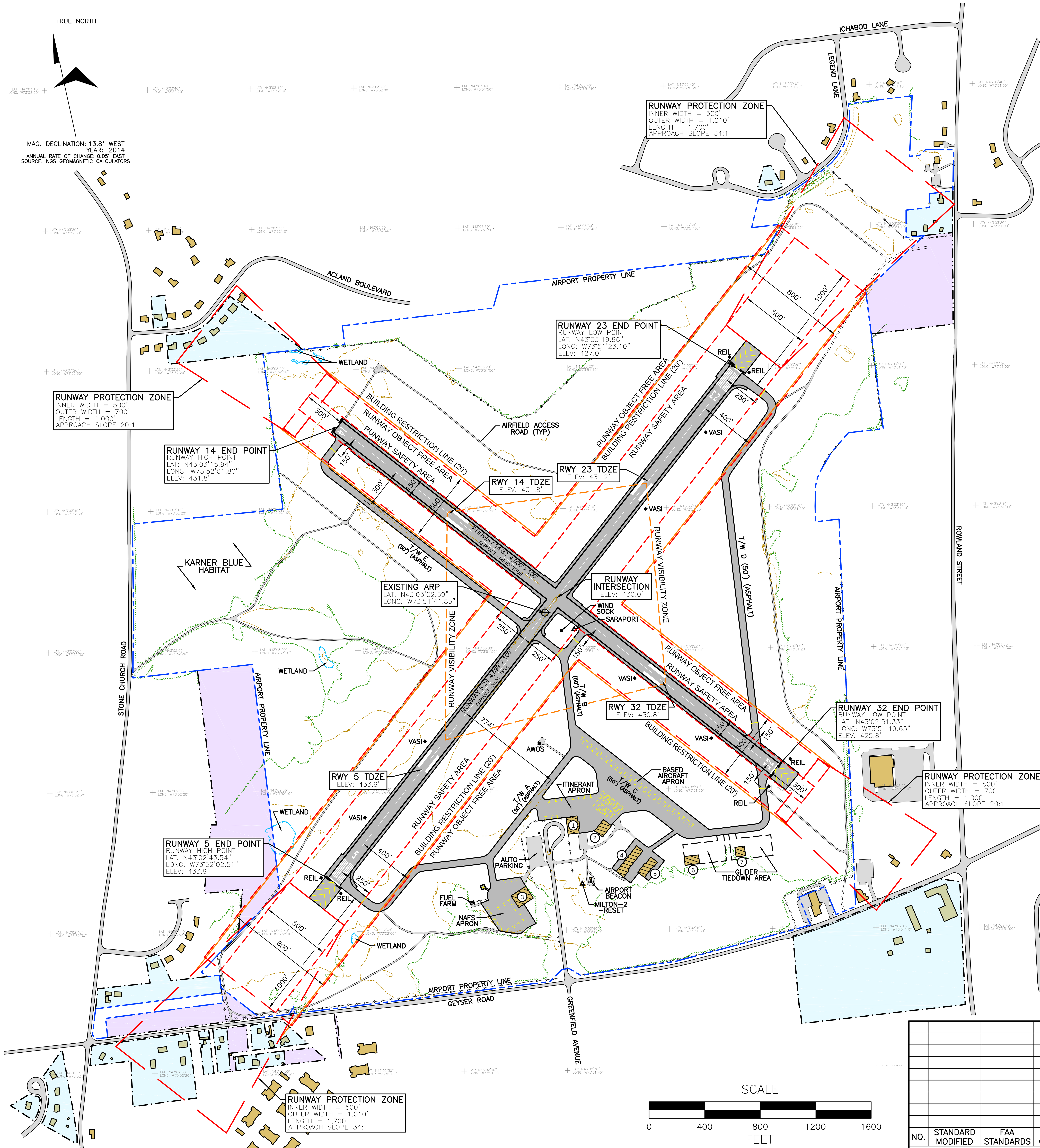


Vicinity Map

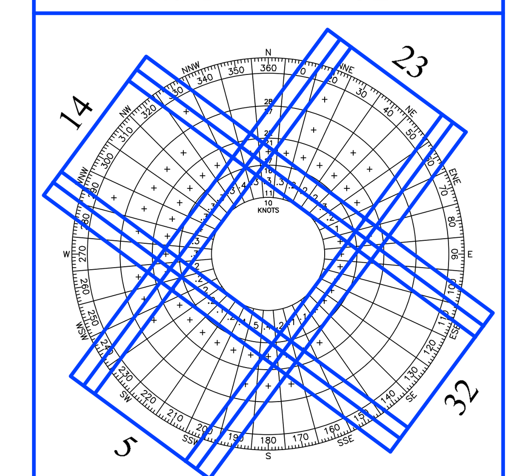
Prepared For:
SARATOGA COUNTY
DEPARTMENT OF PUBLIC WORKS

Prepared By:
McFarland Johnson
60 RAILROAD PLACE, SUITE 402
SARATOGA SPRINGS, NY 12866

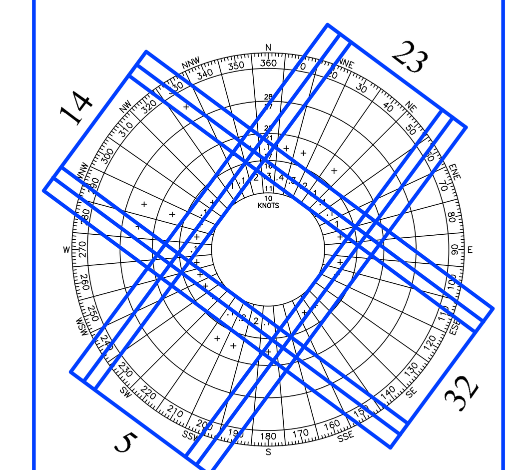
FAA AIP PROJECT NO. 3-36-0004-27-12
NYSDOT PROJECT NO. 1902.47
MCFARLAND JOHNSON PROJECT NO. 17588.04



WIND COVERAGE



ALL WEATHER WINDROSE



IFR WINDROSE

SOURCE:
NATIONAL CLIMACTIC DATA CENTER
72518 FLOYD BENNETT MEMORIAL AIRPORT, NY
PERIOD OF RECORD 2000–2009

WIND COVERAGE

KNOTS	ALL WEATHER	IFR
10.5	99.70%	99.83%
13.0	99.95%	99.98%
16.0	99.99%	100.00%

RUNWAY DATA TABLE

ITEM		RUNWAY 5–23 EXISTING	RUNWAY 14–32 EXISTING
EFFECTIVE RUNWAY GRADIENT		0.15%	0.15%
MAXIMUM GRADE CHANGE		0.42%	0.31%
WIND COVERAGE (%)	ALL WEATHER	10.5 KNOTS – 97.03%	10.5 KNOTS – 95.92%
	IFR	10.5 KNOTS – 99.30%	10.5 KNOTS – 97.92%
MAX. ELEVATION (MSL)		433.9'	431.8'
RUNWAY LENGTH		4,699'	4,000'
RUNWAY WIDTH		100'	100'
DISPLACED THRESHOLD		NONE	NONE
USABLE RUNWAY LENGTH		4,699'	4,000'
SURFACE TYPE		ASPHALT	ASPHALT
PAVEMENT STRENGTH	SINGLE WHEEL	30,000 LBS	30,000 LBS
	DUAL WHEEL	N/A	N/A
APPROACH SURFACE SLOPE		34:1 / 34:1	20:1 / 20:1
APPROACH MINIMUMS		426' 1 MILE / 314' 1 MILE	NONE / NONE
VISUAL APPROACH AIDS		REIL, VASI / REIL, VASI	NONE / REIL, VASI
INSTRUMENT APPROACH AIDS		NONE	NONE
DESIGNATED INSTRUMENT DEPARTURE RUNWAY		YES	NO
RUNWAY LIGHTING		MIRL	MIRL
RUNWAY MARKING		NON–PRECISION	VISUAL
RUNWAY DESIGN CODE (RDC)		C–II	B–II
CRITICAL AIRCRAFT		CITATION SOVEREIGN	KING AIR
TAXIWAY HOLD LINE DISTANCE		250'	150'
RUNWAY OBJECT FREE AREA (ROFA)			
	LENGTH BEYOND RUNWAY	1,000'	300'
	WIDTH	800'	500'
RUNWAY SAFETY AREA (RSA)			
	LENGTH BEYOND RUNWAY	1,000'	300'
	WIDTH	500'	150'
OBSTACLE FREE ZONE (OFZ)			
	LENGTH BEYOND RUNWAY	200'	200'
	WIDTH	400'	250'
FAR PART 77 CATEGORY		NPI / NPI	VIS / VIS
RUNWAY END COORDINATES	LATITUDE	5 – N43°02'43.54"	14 – N43°03'15.94"
	LONGITUDE	5 – W73°52'02.51"	14 – W73°52'01.80"
	LATITUDE	23 – N43°03'19.86"	32 – N43°02'51.33"
	LONGITUDE	23 – W73°51'23.10"	32 – W73°51'19.65"
RUNWAY END ELEVATIONS (MSL)		433.9' / 427.0'	431.8' / 425.8'
DISPLACED THRESHOLD ELEVATION (MSL)		N/A	N/A
TDZ ELEVATION (MSL)		433.9' / 431.2'	431.8' / 430.8'
LINE OF SIGHT VIOLATIONS		NONE	NONE

FACILITIES TABLE

EXISTING

ID	FACILITY NAME	TOP ELEV.
1	NAFS HANGAR	444'
2	NAFS HANGAR	454'
3	NAFS HANGAR	456'
4	T–HANGAR	446'
5	T–HANGAR	441'
6	ADIRONDACK SOARING ASSOCIATION HANGAR	443'
7	SARATOGA SOARING ASSOCIATION HANGAR	442'
8	FUEL FARM	438'

RUNWAY SAFETY AREA DETERMINATION

RUNWAY END ID	STANDARD RSA LENGTH BEYOND RUNWAY END	ACTUAL RSA: LENGTH BEYOND RUNWAY END	ACTUAL RSA: VIOLATIONS TO RSA ALONG SIDE OF RUNWAY	RSA DETERMINATION	DATE APPROVED
5	1,000'	1,000'	NONE	N/A	
23	1,000'	1,000'	NONE	N/A	
14	300'	300'	NONE	N/A	
32	300'	300'	NONE	N/A	

LEGEND

DESCRIPTION	EXISTING
RUNWAY CENTERLINE	
HOLD LINE	
RUNWAY SAFETY AREA (RSA)	
RUNWAY OBJECT FREE AREA (ROFA)	
RUNWAY PROTECTION ZONE (RPZ)	
RUNWAY VISIBILITY ZONE (RVZ)	
BUILDING RESTRICTION LINE (20') (BRL)	
AIRPORT REFERENCE POINT	
AIRPORT PAVEMENT	
GROUND VEHICLE PAVEMENT	
AIRPORT BUILDINGS	
MISCELLANEOUS BUILDINGS	
AIRPORT PROPERTY	
AIRPORT EASEMENT	
COUNTY OF SARATOGA PROPERTY	
NGS MONUMENT	
FENCE	
TREE LINE	
GROUND ELEVATION CONTOURS (10')	40

AIRPORT DATA TABLE

AIPORT DATA		EXISTING
AIRPORT ELEVATION/RUNWAY HIGH POINT (M.S.L.)		433.9'
AIRPORT REFERENCE POINT (NAD 83)	LATITUDE	N43°03'02.59"
	LONGITUDE	W73°51'41.85"
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		85°
AIRPORT TERMINAL AREA NAVAIDS		BEACON, AWOS
MAGNETIC VARIATION SOURCE: NGS GEOMAGNETIC CALCULATORS		13.8 WEST
DATE OF MAGNETIC VARIATION		2014
NPIAS SERVICE LEVEL		GA
STATE SERVICE LEVEL		N/A
COMBINED WIND COVERAGE (%)	ALL WEATHER	10.5 KNOTS – 99.70%
	IFR	10.5 KNOTS – 99.83%
RUNWAY DESIGN CODE (RDC)		C–II
DESIGN AIRCRAFT		CITATION SOVEREIGN
TAXIWAY LIGHTING		MITL
TAXIWAY MARKING		BASIC
TAXIWAY SURFACE TYPE		ASPHALT

NO.	STANDARD MODIFIED	FAA STANDARDS	EXISTING CONDITION	PROPOSED ACTION	DATE APPROVED

MODIFICATION TO DESIGN STANDARDS

REV	DATE	DESCRIPTION	BY	SPONSOR

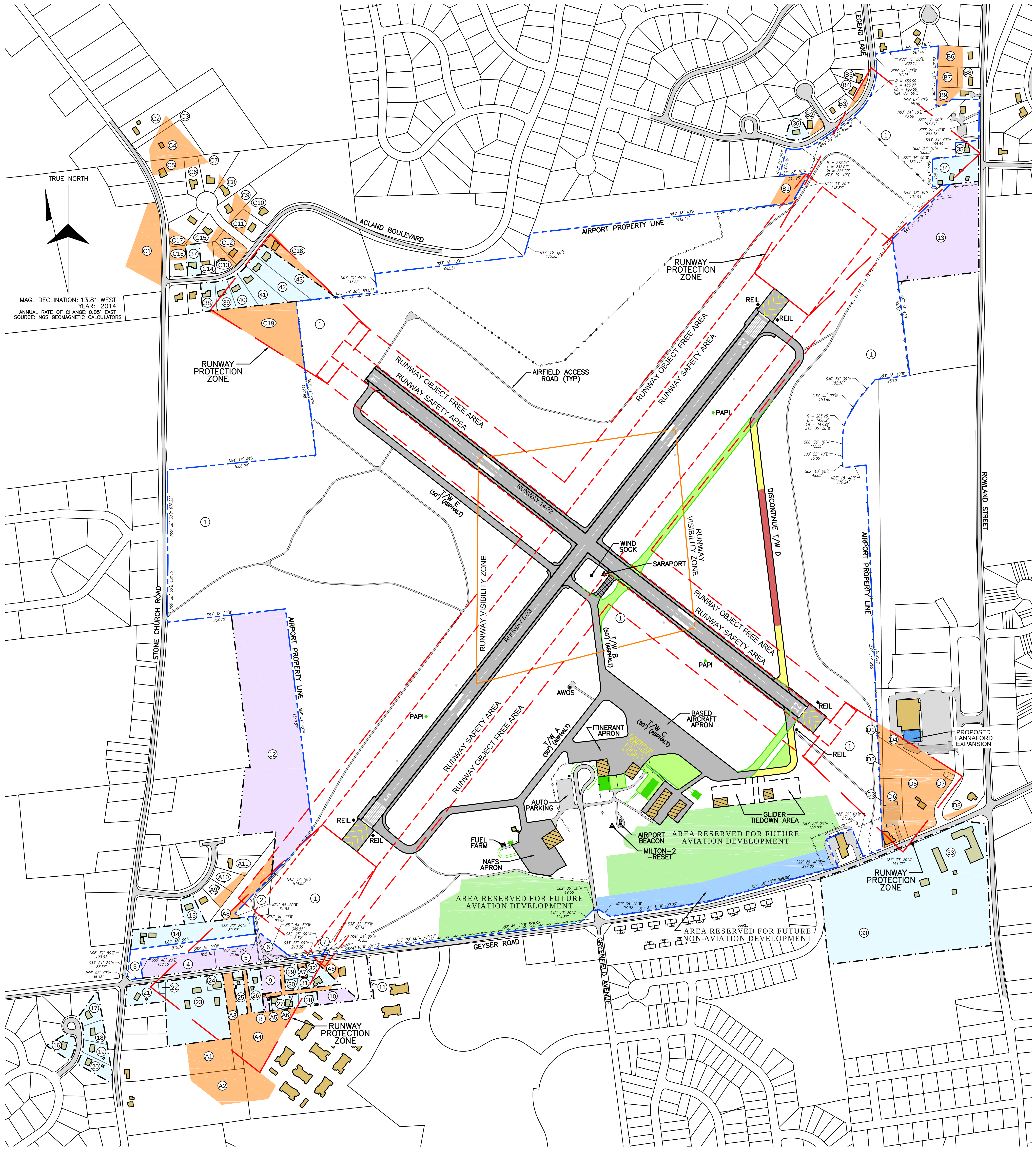
McFarland Johnson
60 RAILROAD PLACE, SUITE 402
SARATOGA SPRINGS, NY 12866 www.mjinc.com

SARATOGA COUNTY AIRPORT

SARATOGA COUNTY, NEW YORK

EXISTING AIRPORT LAYOUT

SCALE: 1" = 400'	DESIGN: DKS	SHEET: 1
DRAWN: RGT	PROJECT: 17588.04	
CHECKED: JEP	DATE: MAY 2015	



PROPOSED AIRPORT PROPERTY - EASEMENT				
REFERENCE NUMBER	TAX PARCEL NUMBER	GRANTOR	ACERAGE	PURPOSE
RUNWAY 5				
A1	189.-2-10	ANDERSON, ROBERT H	1.71	HEIGHT CONTROL
A2	189.-2-11	SHARADIN , KENNETH	1.76	HEIGHT CONTROL
A3	189.-2-9.12	TEN EYCK, TERRY	1.16	HEIGHT CONTROL
A4	190.-1-30.11	KAYDEROSS VILLAGE - LOT 2 LLC	3.78	HEIGHT CONTROL
A5	189.12-1-41.1	CURRIER, STEPHEN & KATHLEEN	0.10	HEIGHT CONTROL
A6	190.9-1-3.1	BRIGGS, RICHARD L	0.67	HEIGHT CONTROL
A7	189.12-1-9	WIEBICKE, HUGO	0.14	HEIGHT CONTROL
A8	189.12-1-3.11	TOWN OF MILTON	0.79	HEIGHT CONTROL
A9	189.12-1-52	CLAPPER, JOHN	0.21	HEIGHT CONTROL
A10	189.12-1-51	WETTIG, SEAN M & JUDITH S	0.16	HEIGHT CONTROL
A11	189.12-1-50	GOODNESS, CHRIS & MURPHY, SHEILA	0.02	HEIGHT CONTROL
RUNWAY 23				
B1	177.-1-17.2	ROWLAND HOLLOW WATERWORKS	0.76	HEIGHT CONTROL
B2	177.14-1-28	DAVIDSON, MARK C	0.12	HEIGHT CONTROL
B3	177.14-1-20	GEARING, ZACHARY D & ERIN M	0.04	HEIGHT CONTROL
B4	177.14-1-19	WAGNER, DAVID J & TERRI A	0.10	HEIGHT CONTROL
B5	177.14-1-18	ROSE, CAROL A & WILLIAM J	0.04	HEIGHT CONTROL
B6	177.14-2-32	TERRELL, CLAUDE G & DONNA R	0.62	HEIGHT CONTROL
B7	177.14-2-18	IMPERATO, MARIANNE	0.52	HEIGHT CONTROL
B8	177.14-2-19	ISHAM, ROBERT C & TAMMY	0.14	HEIGHT CONTROL
B9	177.14-2-20	D ALONZO, JOHN	0.40	HEIGHT CONTROL
RUNWAY 14				
C1	176.-2-18.11	BROWNYARD, VIRGINIA	2.26	HEIGHT CONTROL
C2	176.-2-7	SEYMOUR, MICHAEL R	0.04	HEIGHT CONTROL
C3	176.-2-17	CAREY ETAL, CLOVIS A	0.12	HEIGHT CONTROL
C4	176.-2-8	CAREY ETAL, CLOVIS A	1.39	HEIGHT CONTROL
C5	176.16-1-1	MILLARSON, AGNES	0.52	HEIGHT CONTROL
C6	176.16-1-2	MACIAG, ROBERT & PAULA	0.17	HEIGHT CONTROL
C7	176.16-1-3	HAGADORN, SCOTT A	0.11	HEIGHT CONTROL
C8	176.16-1-4	DELNICKI, CORRIE	0.04	HEIGHT CONTROL
C9	176.16-1-22	KOPPI, JEFFREY A & SUSAN W	0.30	HEIGHT CONTROL
C10	176.16-1-5	KIELB, RICHARD L & STACEY L	0.05	HEIGHT CONTROL
C11	176.16-1-21	ROONEY, JUDITH	0.34	HEIGHT CONTROL
C12	176.16-1-20	FORD, DENNIS P	0.64	HEIGHT CONTROL
C13	176.16-1-19	DOTI, CHRISTOPHER	0.27	HEIGHT CONTROL
C14	176.16-1-18	HARRISON, JULIE A	0.06	HEIGHT CONTROL
C15	176.16-1-23	MALONEY, CRAIG A	0.16	HEIGHT CONTROL
C16	176.16-1-16	SMITH, BLAIN D	0.27	HEIGHT CONTROL
C17	176.16-1-24	RUSCIO, VITTORIANO & ST-PIERRE, JOSEE	0.27	HEIGHT CONTROL
C18	176.16-1-6	ZALOGA, JAMES M & DEBRA J	0.75	HEIGHT CONTROL
C19	176.-2-10	CISAR, PAULINE	3.58	HEIGHT CONTROL
RUNWAY 32				
D1	190.-7-10.2	MARTINS FOODS OF SOUTH BURLINGTON INC	0.08	HEIGHT CONTROL
D2	190.-7-10.31	MILL CREEK GROUP LLC	0.27	HEIGHT CONTROL
D3	190.-7-10.32	MILL CREEK GROUP LLC	0.25	HEIGHT CONTROL
D4	190.-7-11	MARTINS FOODS	0.88	HEIGHT CONTROL
D5	190.-7-15.1	MILL CREEK GROUP LLC	4.01	HEIGHT CONTROL
D6	190.-7-15.2	MILL CREEK GROUP LLC	1.53	HEIGHT CONTROL
D7	190.-7-16	MILL CREEK GROUP LLC	0.07	HEIGHT CONTROL
D8	190.-7-1.12	BOGHOSIAN, THOMAS A	0.17	HEIGHT CONTROL

EXISTING AIRPORT PROPERTY - FEE SIMPLE						
REFERENCE NUMBER	TAX PARCEL NUMBER	BOOK/PAGE	GRANTOR	ACERAGE	ACQUISITION DATE	AIP NUMBER
1	177.-1-36.1	1602/69	UNKNOWN	523.64	10/28/1981	UNKNOWN
2	189.12-1-3.3	1029/227	UNKNOWN	0.80	11/02/1981	UNKNOWN
3	189.12-1-35	1298/386	UNKNOWN	1.90	10/15/1990	UNKNOWN

COUNTY OF SARATOGA PROPERTY						
REFERENCE NUMBER	TAX PARCEL NUMBER	BOOK/PAGE	GRANTOR	ACERAGE	ACQUISITION DATE	AIP NUMBER
4	189.12-1-7	1639/472	COUNTY OF SARATOGA	1.62	02/19/2003	3-36-0004-21-08
5	189.12-1-8	1667/371	COUNTY OF SARATOGA	1.05	12/19/2003	3-36-0004-21-07
6	189.-2-8.2	1029/222	COUNTY OF SARATOGA	0.76	10/28/1981	UNKNOWN
7	189.-2-8.3	1602/69	COUNTY OF SARATOGA	0.02	10/28/1981	UNKNOWN
8	189.12-1-18	1100/47	COUNTY OF SARATOGA	0.10	10/21/1985	UNKNOWN
9	189.12-1-43	1353/178	COUNTY OF SARATOGA	0.60	01/11/1993	UNKNOWN
10	190.9-1-12	1353/186	COUNTY OF SARATOGA	0.57	01/11/1993	UNKNOWN
11	190.9-1-5	1353/184	COUNTY OF SARATOGA	0.11	01/11/1993	UNKNOWN
12	189.-2-8.1	1029/222	COUNTY OF SARATOGA	17.30	10/28/1981	UNKNOWN
13	177.-1-23.11	1044/697	COUNTY OF SARATOGA	7.50	03/31/1983	UNKNOWN

EXISTING AIRPORT PROPERTY - EASEMENT						
REFERENCE NUMBER	TAX PARCEL NUMBER	BOOK/PAGE	GRANTOR	ACERAGE	ACQUISITION DATE	AIP NUMBER
14	189.12-1-4	1772/143	MULLER, COLLEEN	2.53	09/26/2006	3-36-0004-21-06
15	189.12-1-54	2010/14093	KOLODZIEJSKI, WARREN A	0.54	05/06/2010	UNKNOWN
16	189.12-2-19	1368/461	GIBNEY, KARIN M	0.52	10/04/1993	UNKNOWN
17	189.12-2-24	1368/461	DRISCOLL, JOHN R	0.55	10/04/1993	UNKNOWN
18	189.12-2-25	1368/461	SOMMA, SCOTT W & CLARAVALL, CYNTHIA O	0.50	10/04/1993	UNKNOWN
19	189.12-2-26	1368/461	DYMOND, KEITH W & SUSAN A	0.50	10/04/1993	UNKNOWN
20	189.12-2-27	1368/461	WHEELER, CARLTON J	0.62	10/04/1993	UNKNOWN
21	189.12-1-28.1	1774/374	DOTEN, EVERETT	0.88	10/19/2006	3-36-0004-21-18
22	189.12-1-28.2	1774/374	MILTON CENTER CEMETERY	0.10	10/19/2006	3-36-0004-21-18
23	189.12-1-34	1770/164	SIANO, RALPH D	4.57	09/07/2006	3-36-0004-21-20
24	189.12-1-23	1770/158	SIANO, RALPH A	0.30	09/07/2006	3-36-0004-21-13
25	189.12-1-22	1770/170	SIANO, RALPH A	0.57	09/07/2006	3-36-0004-21-12
26	189.12-1-36	1770/176	SIANO, RALPH	0.71	09/07/2006	3-36-0004-21-11
27	189.12-1-17	2007/5838	CURRIER, STEPHEN	0.50	02/08/2007	3-36-0004-21-16
28	190.9-1-13	1766/583	BALLESTERO, ANTONIO	0.32	08/21/2006	3-36-0004-21-17
29	189.12-1-10	1770/150	WILLARD, JEROME	0.24	09/07/2006	3-36-0004-21-10
30	189.12-1-15	1770/150	WILLARD, JEROME & MARIE	0.17	09/07/2006	3-36-0004-21-15
31	190.9-1-10	1765/202	ZARRO, JAMES & LORRI	0.20	08/08/2006	3-36-0004-21-14
32	190.9-1-11	1766/577	JONES, HENRY	0.60	08/21/2006	3-36-0004-21-09
33	190.-7-5	2009/26768	TOWN OF MILTON	22.06	07/28/2009	3-36-0004-22-13
34	177.-1-17.11	1064/564	DEERE, DENISE	1.53	08/04/1982	UNKNOWN
35	177.14-2-21.2	1770/144	WAGNER, JOSEPH J & PATRICIA	0.39	09/07/2006	3-36-0004-21-05
36	177.14-1-29	1774/383	MONTGOMERY, ALLEN	0.45	10/19/2006	3-36-0004-21-19
37	176.16-1-17	2007/15505	KRAWCZUK, STANLEY J & NANCY M	0.52	04/17/2007	3-36-0004-22-12
38	176.16-1-12	2008/19207	PUMA, LINDA	0.50	05/29/2008	3-36-0004-22-06
39	176.16-1-11	2007/32340	KOSHGARIAN, MICHAEL G	0.55	08/20/2007	3-36-0004-22-07
40	176.16-1-10	2008/4157	GARGIULO, RICHARD A & ANNA E	0.67	02/01/2008	3-36-0004-22-08
41	176.16-1-9	2008/4155	CHRISTENSEN, AMY S & IANNON, PHILLIP A	1.01	02/01/2008	3-36-0004-22-09
42	176.16-1-8	2008/4159	PIROLI, ANDREW P	1.17	02/01/2008	3-36-0004-22-10
43	176.16-1-7	2007/23996	CHENEY, FREDERICK D & LISA V	1.48	06/20/2007	3-36-0004-22-11

SCALE

0 400 800 1200 1600

FEET

NOTES:

1. AIRPORT PROPERTY BOUNDARY SOURCED FROM GILBERT VANGUILDER & ASSOCIATES SURVEY, DATED 10/30/2001.
2. OFF-AIRPORT PROPERTY BOUNDARIES SOURCED FROM SARATOGA COUNTY GIS.

LEGEND		
DESCRIPTION	EXISTING	PROPOSED
RUNWAY CENTERLINE		N/A
RUNWAY SAFETY AREA (RSA)		N/A
RUNWAY OBJECT FREE AREA (ROFA)		N/A
RUNWAY PROTECTION ZONE (RPZ)		N/A
RUNWAY VISIBILITY ZONE (RVZ)		N/A
AIRPORT PAVEMENT		
GROUND VEHICLE PAVEMENT		
GLIDER STAGING AREA	N/A	
AIRPORT BUILDINGS		
TO BE REMOVED	N/A	
TO BE ABANDONED	N/A	
MISCELLANEOUS BUILDINGS		N/A
AIRPORT PROPERTY		N/A
AIRPORT EASEMENT		
COUNTY OF SARATOGA PROPERTY		N/A
NGS MONUMENT		N/A
FENCE		N/A

REV	DATE	DESCRIPTION	BY	SPONSOR

McFarland Johnson
60 RAILROAD PLACE, SUITE 402
SARATOGA SPRINGS, NY 12866 www.mjinc.com

SARATOGA COUNTY AIRPORT
SARATOGA COUNTY, NEW YORK

AIRPORT PROPERTY MAP
EXHIBIT "A"

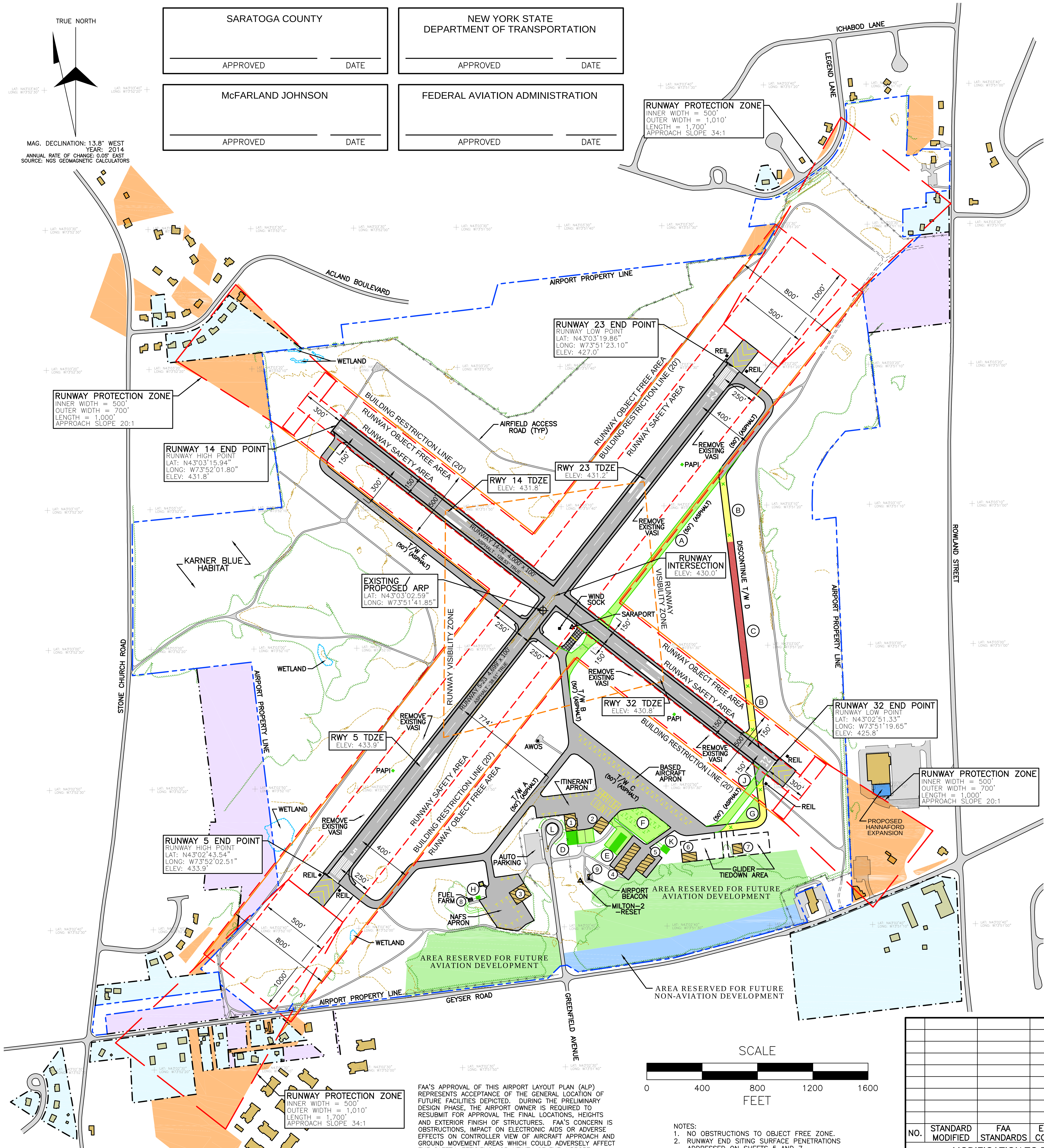
SCALE: 1" = 400'	DESIGN: DKS	SHEET: 10	
DRAWN: RGT	PROJECT: 17588.04		
CHECKED: JEP	DATE: MAY 2015		

SARATOGA COUNTY	
APPROVED	DATE

NEW YORK STATE DEPARTMENT OF TRANSPORTATION	
APPROVED	DATE

McFARLAND JOHNSON	
APPROVED	DATE

FEDERAL AVIATION ADMINISTRATION	
APPROVED	DATE



FAA'S APPROVAL OF THIS AIRPORT LAYOUT PLAN (ALP) REPRESENTS ACCEPTANCE OF THE GENERAL LOCATION OF FUTURE FACILITIES DEPICTED. DURING THE PRELIMINARY DESIGN PHASE, THE AIRPORT OWNER IS REQUIRED TO RESUBMIT FOR APPROVAL THE FINAL LOCATIONS, HEIGHTS AND EXTERIOR FINISH OF STRUCTURES. FAA'S CONCERN IS OBSTRUCTIONS, IMPACT ON ELECTRONIC AIDS OR ADVERSE EFFECTS ON CONTROLLER VIEW OF AIRCRAFT APPROACH AND GROUND MOVEMENT AREAS WHICH COULD ADVERSELY AFFECT THE SAFETY, EFFICIENCY OR UTILITY OF THE AIRPORT.

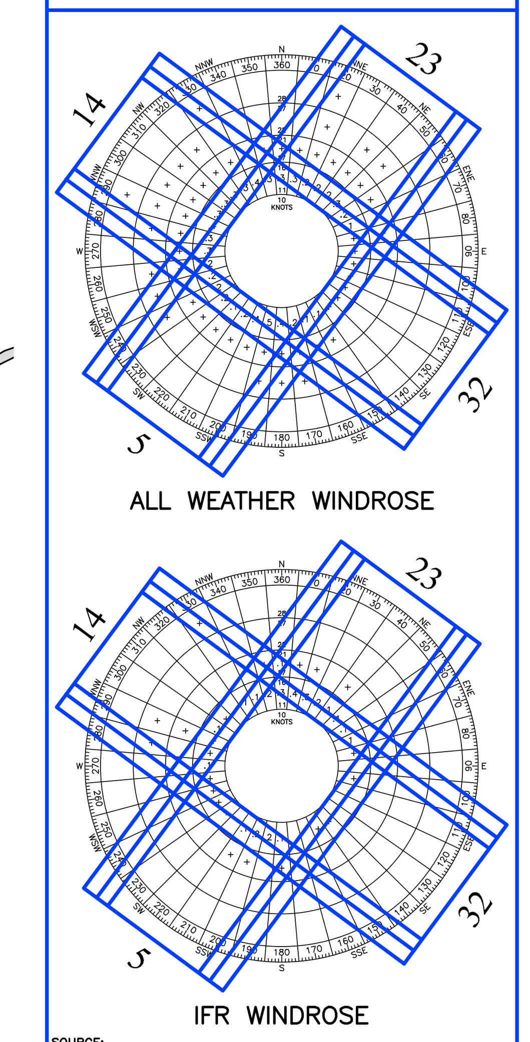
SCALE

0 400 800 1200 1600

FEET

NOTES:
1. NO OBSTRUCTIONS TO OBJECT FREE ZONE.
2. RUNWAY END SITING SURFACE PENETRATIONS ADDRESSED ON SHEETS 5 AND 7

WIND COVERAGE



SOURCE:
NATIONAL CLIMACTIC DATA CENTER
72518 FLOYD BENNETT MEMORIAL AIRPORT, NY
PERIOD OF RECORD 2000–2009

WIND COVERAGE

KNOTS	ALL WEATHER	IFR
10.5	99.70%	99.83%
13.0	99.95%	99.98%
16.0	99.99%	100.00%

FACILITIES TABLE

EXISTING

ID	FACILITY NAME	TOP ELEV.
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2	NAFS HANGAR	454'
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5	T-HANGAR	441'
6	ADIRONDACK SOARING ASSOCIATION HANGAR	443'
7	SARATOGA SOARING ASSOCIATION HANGAR	442'
8	FUEL FARM	438'
9	ELECTRICAL VAULT	436'

PROPOSED

ID	FACILITY NAME	TOP ELEV.
A	PARTIAL PARALLEL TAXIWAY (50')	N/A
B	GLIDER STAGING AREA	N/A
C	TAXIWAY D TO BE ABANDONED	N/A
D	HANGAR STORAGE EXPANSION	N/A
E	6-UNIT T-HANGAR	N/A
F	APRON DEVELOPMENT	N/A
G	RUN-UP AND GLIDER STAGING AREA	N/A
H	FUEL FARM IMPROVEMENTS	N/A
J	REALIGN TAXIWAY C	N/A
K	SRE BUILDING	N/A
L	AUTO PARKING	N/A

AIRPORT DATA TABLE

AIPORT DATA		EXISTING	PROPOSED
AIRPORT ELEVATION/RUNWAY HIGH POINT (M.S.L.)		433.9'	433.9'
AIRPORT REFERENCE POINT (NAD 83)	LATITUDE	N43°03'02.59"	N43°03'02.59"
	LONGITUDE	W73°51'41.85"	W73°51'41.85"
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		85°	85°
AIRPORT TERMINAL AREA NAVAIDS		BEACON, AWOS	BEACON, AWOS
MAGNETIC VARIATION SOURCE: NGS GEOMAGNETIC CALCULATORS		13.8 WEST	13.8 WEST
DATE OF MAGNETIC VARIATION		2014	2014
NPIAS SERVICE LEVEL		GA	GA
STATE SERVICE LEVEL		N/A	N/A
COMBINED WIND COVERAGE (%)	ALL WEATHER	10.5 KNOTS – 99.70%	10.5 KNOTS – 99.70%
	IFR	10.5 KNOTS – 99.83%	10.5 KNOTS – 99.83%
RUNWAY DESIGN CODE (RDC)		C-II	C-II
DESIGN AIRCRAFT		CITATION SOVEREIGN	CITATION SOVEREIGN
TAXIWAY LIGHTING		MITL	MITL
TAXIWAY MARKING		BASIC	BASIC
TAXIWAY SURFACE TYPE		ASPHALT	ASPHALT

RUNWAY DATA TABLE

ITEM		RUNWAY 5-23 EXISTING	RUNWAY 14-32 EXISTING	RUNWAY 5-23 PROPOSED	RUNWAY 14-32 PROPOSED
EFFECTIVE RUNWAY GRADIENT		0.15%	0.15%	0.15%	0.15%
MAXIMUM GRADE CHANGE		0.42%	0.31%	0.42%	0.31%
WIND COVERAGE (%)	ALL WEATHER	10.5 KNOTS – 97.03%	10.5 KNOTS – 95.92%	10.5 KNOTS – 97.03%	10.5 KNOTS – 95.92%
	IFR	10.5 KNOTS – 99.30%	10.5 KNOTS – 97.92%	10.5 KNOTS – 99.30%	10.5 KNOTS – 97.92%
MAX. ELEVATION (MSL)		433.9'	431.8'	433.9'	431.8'
RUNWAY LENGTH		4,699'	4,000'	4,699'	4,000'
RUNWAY WIDTH		100'	100'	100'	100'
DISPLACED THRESHOLD		NONE	NONE	NONE	NONE
USABLE RUNWAY LENGTH		4,699'	4,000'	4,699'	4,000'
SURFACE TYPE		ASPHALT	ASPHALT	ASPHALT	ASPHALT
PAVEMENT STRENGTH	SINGLE WHEEL	30,000 LBS	30,000 LBS	30,000 LBS	30,000 LBS
	DUAL WHEEL	N/A	N/A	N/A	N/A
APPROACH SURFACE SLOPE		34:1 / 34:1	20:1 / 20:1	34:1 / 34:1	20:1 / 20:1
APPROACH MINIMUMS		426' 1 MILE / 314' 1 MILE	NONE / NONE	426' 1 MILE / 314' 1 MILE	NONE / NONE
VISUAL APPROACH AIDS		REIL, VASI / REIL, VASI	NONE / REIL, VASI	REIL, PAPI / REIL, PAPI	NONE / REIL, PAPI
INSTRUMENT APPROACH AIDS		NONE	NONE	NONE	NONE
DESIGNATED INSTRUMENT DEPARTURE RUNWAY		YES	NO	YES	NO
RUNWAY LIGHTING		MIRL	MIRL	MIRL	MIRL
RUNWAY MARKING		NON-PRECISION	VISUAL	NON-PRECISION	VISUAL
RUNWAY DESIGN CODE (RDC)		C-II	B-II	C-II	B-II
CRITICAL AIRCRAFT		CITATION SOVEREIGN	KING AIR	CITATION SOVEREIGN	KING AIR
TAXIWAY HOLD LINE DISTANCE		250'	150'	250'	150'
RUNWAY OBJECT FREE AREA (ROFA)					
	LENGTH BEYOND RUNWAY	1,000'	300'	1,000'	300'
	WIDTH	800'	500'	800'	500'
RUNWAY SAFETY AREA (RSA)					
	LENGTH BEYOND RUNWAY	1,000'	300'	1,000'	300'
	WIDTH	500'	150'	500'	150'
OBSTACLE FREE ZONE (OFZ)					
	LENGTH BEYOND RUNWAY	200'	200'	200'	200'
	WIDTH	400'	250'	400'	250'
FAR PART 77 CATEGORY		NPI / NPI	VIS / VIS	NPI / NPI	VIS / VIS
RUNWAY END COORDINATES	LATITUDE	5 – N43°02'43.54"	14 – N43°03'15.94"	5 – N43°02'43.54"	14 – N43°03'15.94"
	LONGITUDE	5 – W73°52'02.51"	14 – W73°52'01.80"	5 – W73°52'02.51"	14 – W73°52'01.80"
	LATITUDE	23 – N43°03'19.86"	32 – N43°02'51.33"	23 – N43°03'19.86"	32 – N43°02'51.33"
	LONGITUDE	23 – W73°51'23.10"	32 – W73°51'19.65"	23 – W73°51'23.10"	32 – W73°51'19.65"
RUNWAY END ELEVATIONS (MSL)		433.9' / 427.0'	431.8' / 425.8'	433.9' / 427.0'	431.8' / 425.8'
DISPLACED THRESHOLD ELEVATION (MSL)		N/A	N/A	N/A	N/A
TDZ ELEVATION (MSL)		433.9' / 431.2'	431.8' / 430.8'	433.9' / 431.2'	431.8' / 430.8'
LINE OF SIGHT VIOLATIONS		NONE	NONE	NONE	NONE

RUNWAY SAFETY AREA DETERMINATION

RUNWAY END ID	STANDARD RSA LENGTH BEYOND RUNWAY END	ACTUAL RSA LENGTH BEYOND RUNWAY END	ACTUAL RSA VIOLATIONS TO RSA ALONG SIDE OF RUNWAY	RSA DETERMINATION	DATE APPROVED
5	1,000'	1,000'	NONE	N/A	
23	1,000'	1,000'	NONE	N/A	
14	300'	300'	NONE	N/A	
32	300'	300'	NONE	N/A	

LEGEND

DESCRIPTION	EXISTING	PROPOSED
RUNWAY CENTERLINE		N/A
HOLD LINE		
RUNWAY SAFETY AREA (RSA)		N/A
RUNWAY OBJECT FREE AREA (ROFA)		N/A
RUNWAY PROTECTION ZONE (RPZ)		N/A
RUNWAY VISIBILITY ZONE (RVZ)		N/A
BUILDING RESTRICTION LINE (20') (BRL)		N/A
AIRPORT REFERENCE POINT		N/A
AIRPORT PAVEMENT		
GROUND VEHICLE PAVEMENT		
GLIDER STAGING AREA	N/A	
AIRPORT BUILDINGS		
TO BE REMOVED	N/A	
TO BE ABANDONED	N/A	
MISCELLANEOUS BUILDINGS		N/A
AIRPORT PROPERTY		N/A
AIRPORT EASEMENT		
COUNTY OF SARATOGA PROPERTY		N/A
NGS MONUMENT		N/A
FENCE		N/A
TREE LINE		N/A
GROUND ELEVATION CONTOURS (10')		N/A

NO.	STANDARD MODIFIED	FAA STANDARDS	EXISTING CONDITION	PROPOSED ACTION	DATE APPROVED

MODIFICATION TO DESIGN STANDARDS

REV	DATE	DESCRIPTION	BY	SPONSOR

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SARATOGA SPRINGS, NY 12866 www.mjinc.com

SARATOGA COUNTY AIRPORT
SARATOGA COUNTY, NEW YORK

AIRPORT LAYOUT PLAN

SCALE: 1" = 400'	DESIGN: DKS	SHEET: 2	
DRAWN: RGT	PROJECT: 17588.04		
CHECKED: JEP	DATE: MAY 2015		

FACILITIES TABLE

EXISTING

ID	FACILITY NAME	TOP ELEV.
1	NAFS HANGAR	444'
2	NAFS HANGAR	454'
3	NAFS HANGAR	456'
4	T-HANGAR	446'
5	T-HANGAR	441'
6	ADIRONDACK SOARING ASSOCIATION HANGAR	443'
7	SARATOGA SOARING ASSOCIATION HANGAR	442'
8	FUEL FARM	438'
9	ELECTRICAL VAULT	436'

PROPOSED

ID	FACILITY NAME	TOP ELEV.
A	PARTIAL PARALLEL TAXIWAY (50')	N/A
B	GLIDER STAGING AREA	N/A
C	TAXIWAY D TO BE ABANDONED	N/A
D	HANGAR STORAGE EXPANSION	N/A
E	6-UNIT T-HANGAR	N/A
F	APRON DEVELOPMENT	N/A
G	RUN-UP AND GLIDER STAGING AREA	N/A
H	FUEL FARM IMPROVEMENTS	N/A
J	REALIGN TAXIWAY C	N/A
K	SRE BUILDING	N/A
L	AUTO PARKING	N/A

LEGEND

DESCRIPTION	EXISTING	PROPOSED
RUNWAY CENTERLINE		N/A
HOLD LINE		
RUNWAY SAFETY AREA (RSA)		N/A
RUNWAY OBJECT FREE AREA (ROFA)		N/A
RUNWAY PROTECTION ZONE (RPZ)		N/A
BUILDING RESTRICTION LINE (20') (BRL)		N/A
AIRPORT PAVEMENT		
GROUND VEHICLE PAVEMENT		
GLIDER STAGING AREA	N/A	
AIRPORT BUILDINGS		
TO BE REMOVED	N/A	
MISCELLANEOUS BUILDINGS		N/A
AIRPORT PROPERTY		N/A
AIRPORT EASEMENT		
COUNTY OF SARATOGA PROPERTY		N/A
NGS MONUMENT		N/A
FENCE		N/A
TREE LINE		N/A
GROUND ELEVATION CONTOURS (10')	40	N/A

REV	DATE	DESCRIPTION	BY	SPONSOR

SARATOGA COUNTY AIRPORT
SARATOGA COUNTY, NEW YORK

TERMINAL AREA PLAN

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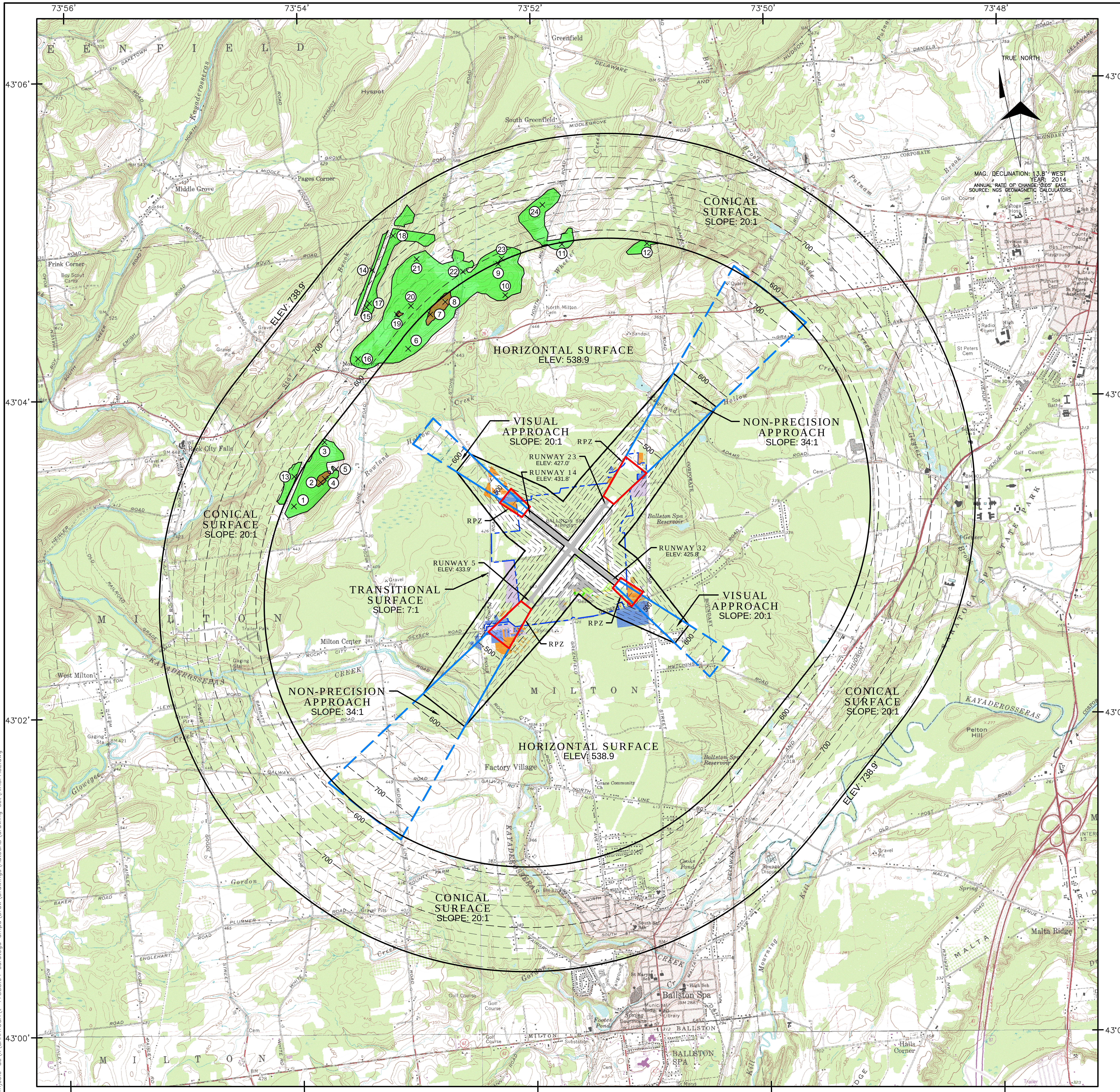
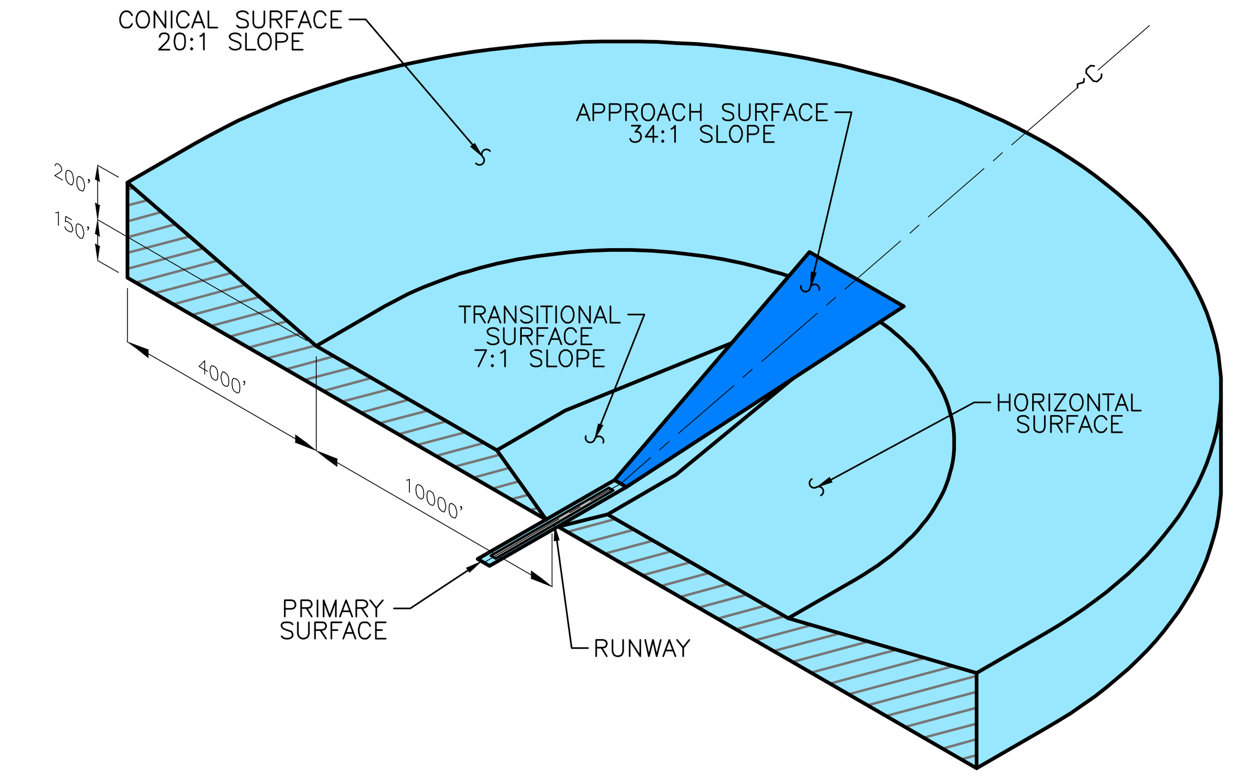
SCALE: 1" = 100'	DESIGN: DKS	SHEET: 3
DRAWN: RGT	PROJECT: 17588.04	
CHECKED: JEP	DATE: MAY 2015	



ISOMETRIC VIEW OF IMAGINARY SURFACES



EXISTING AIRPORT PROPERTY

EXISTING AIRPORT EASEMENT

COUNTY OF SARATOGA PROPERTY

PROPOSED AIRPORT EASEMENT

TREE OBSTRUCTIONS

GROUND OBSTRUCTIONS

FAR PART 77 SURFACE: CONICAL
FAR PART 77 SURFACE SLOPE: 20:1

LABEL	DESCRIPTION	TOP ELEVATION	PENETRATION	PROPOSED ACTION
13	GROUP OF TREES	623'	33'	LIGHT
14	GROUP OF TREES	659'	32'	LIGHT
15	COMMUNICATION TOWER	771'	96'	LIGHT
16	GROUP OF TREES	707'	31'	LIGHT
17	GROUP OF TREES	728'	14'	LIGHT
18	GROUP OF TREES	761'	25'	LIGHT
19	GROUND	623'	2'	LIGHT
20	GROUP OF TREES	713'	100'	LIGHT
21	GROUP OF TREES	713'	41'	LIGHT
22	GROUP OF TREES	630'	29'	LIGHT
23	GROUP OF TREES	643'	55'	LIGHT
24	GROUP OF TREES	704'	42'	LIGHT

FAR PART 77 SURFACE: HORIZONTAL
FAR PART 77 SURFACE SLOPE: FLAT

LABEL	DESCRIPTION	TOP ELEVATION	PENETRATION	PROPOSED ACTION
1	GROUP OF TREES	620'	36'	LIGHT
2	GROUP OF TREES	679'	95'	LIGHT
3	GROUP OF TREES	615'	31'	LIGHT
4	GROUND	591'	7'	LIGHT
5	BUILDING	591'	7'	LIGHT
6	GROUP OF TREES	615'	31'	LIGHT
7	GROUP OF TREES	695'	111'	LIGHT
8	GROUND	602'	18'	LIGHT
9	GROUP OF TREES	638'	54'	LIGHT
10	GROUP OF TREES	607'	23'	LIGHT
11	GROUP OF TREES	606'	23'	LIGHT
12	GROUP OF TREES	628'	44'	LIGHT

SOURCE: USGS QUADRANGLES

MIDDLE GROVE, NEW YORK	SARATOGA SPRINGS, NEW YORK
BURNT HILLS, NEW YORK	ROUND LAKE, NEW YORK

SCALE

0 2000 4000 6000 8000

FEET

NOTES:
- FOR INNER APPROACH OBSTRUCTIONS PLEASE REFER TO SHEETS 5 TO 8.
- GROUND OBSTRUCTIONS BASED ON USGS NATIONAL ELEVATION DATASET.
- TOWN OF MILTON HAS AIRPORT OVERLAY ZONING THAT ADDRESSES AIRSPACE WITHIN RPZS.

REV	DATE	DESCRIPTION	BY	SPONSOR

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SARATOGA COUNTY AIRPORT
SARATOGA COUNTY, NEW YORK

AIRPORT AIRSPACE PLAN

SCALE: 1" = 2,000'	DESIGN: DKS	SHEET: 4
DRAWN: RGT	PROJECT: 17588.04	
CHECKED: JEP	DATE: MAY 2015	

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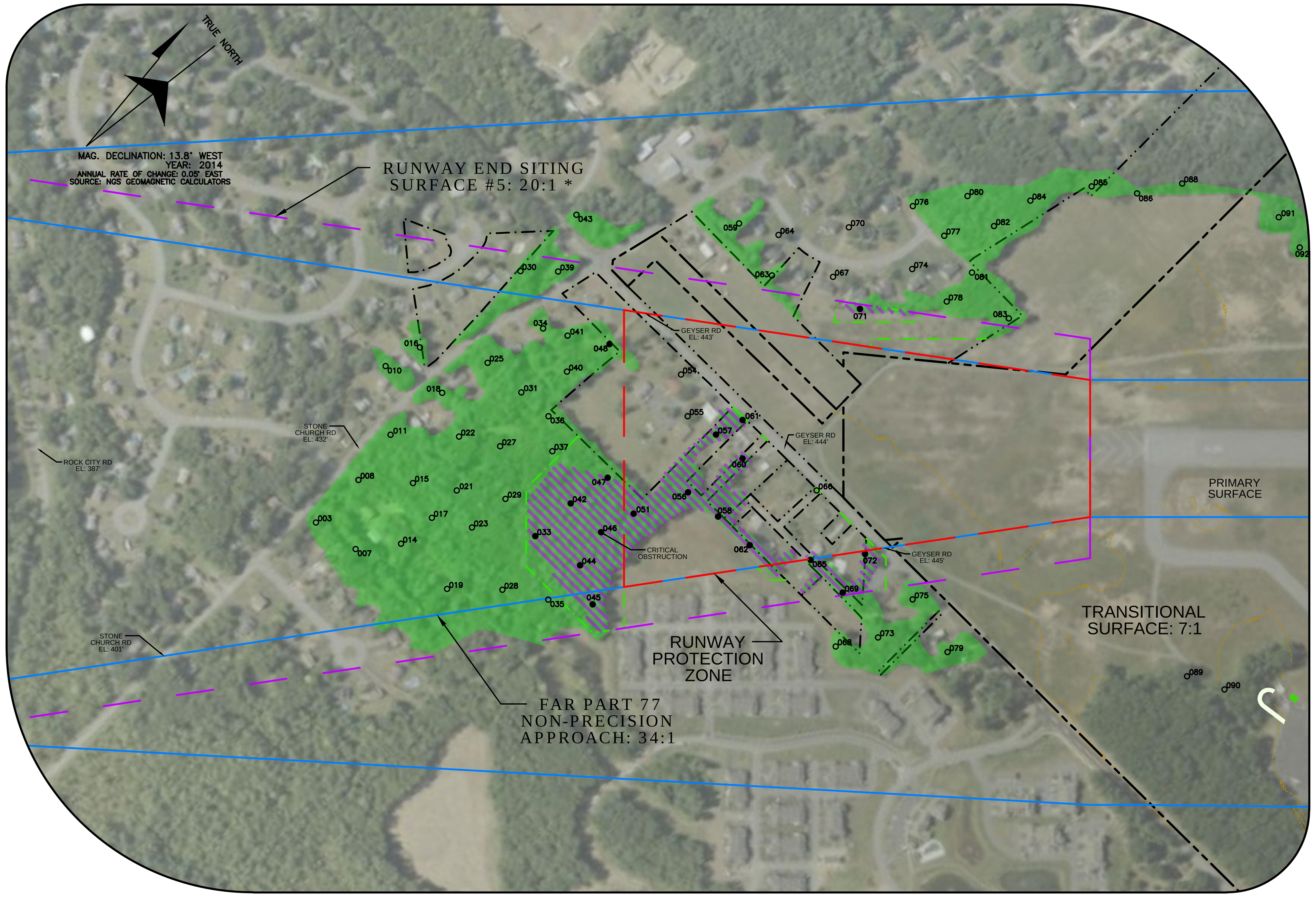
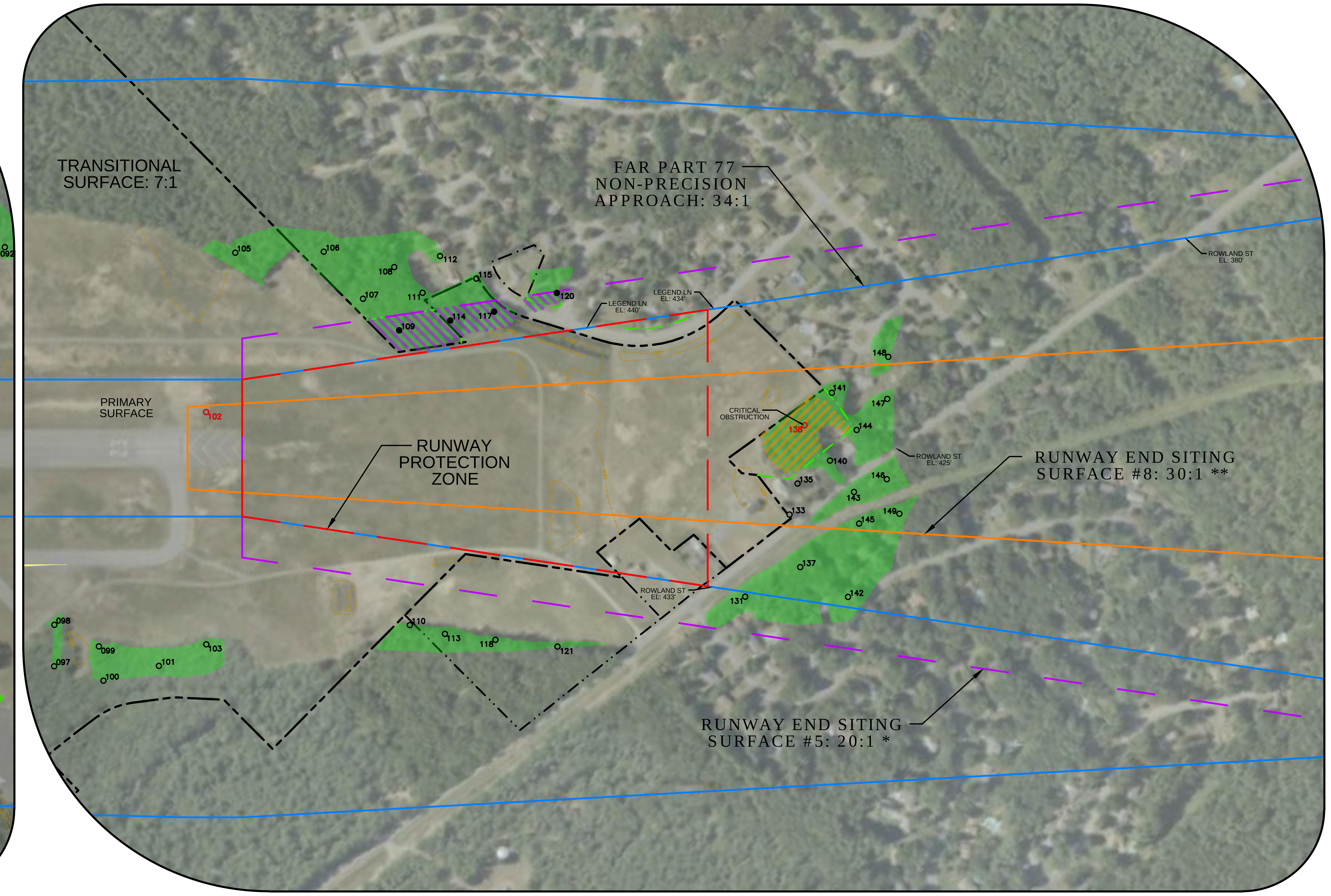
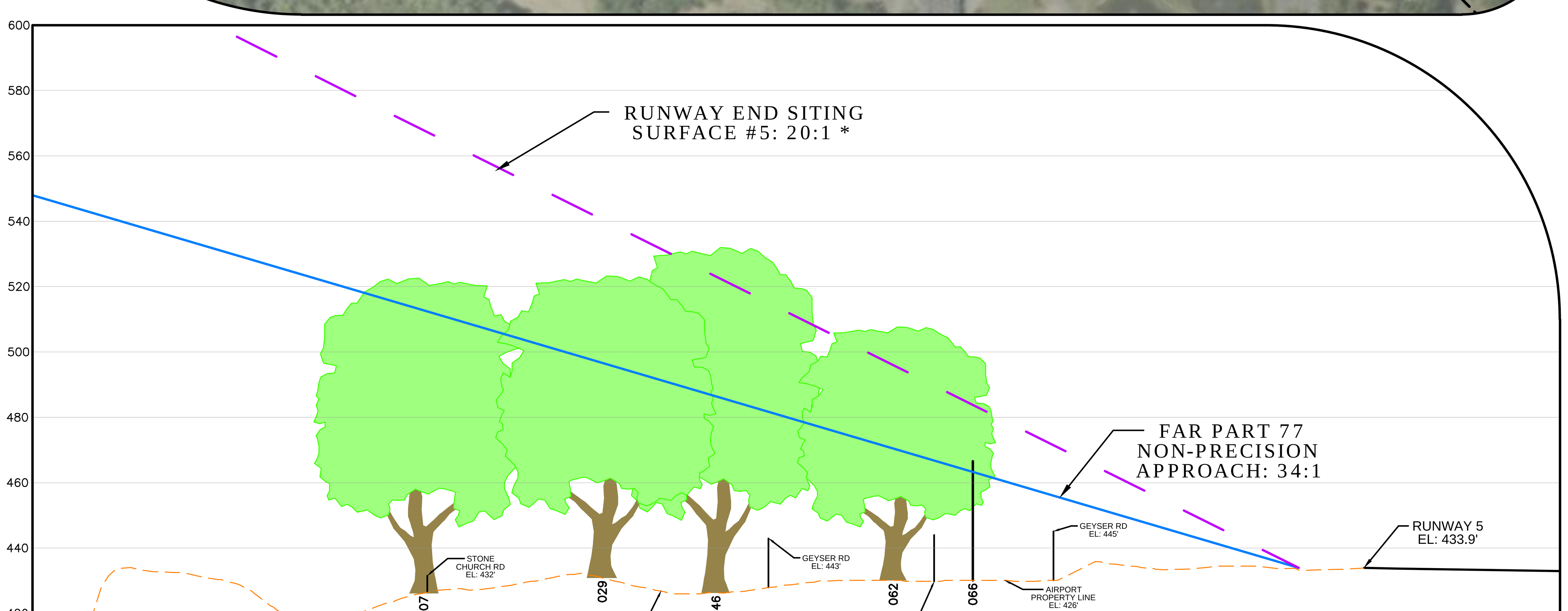
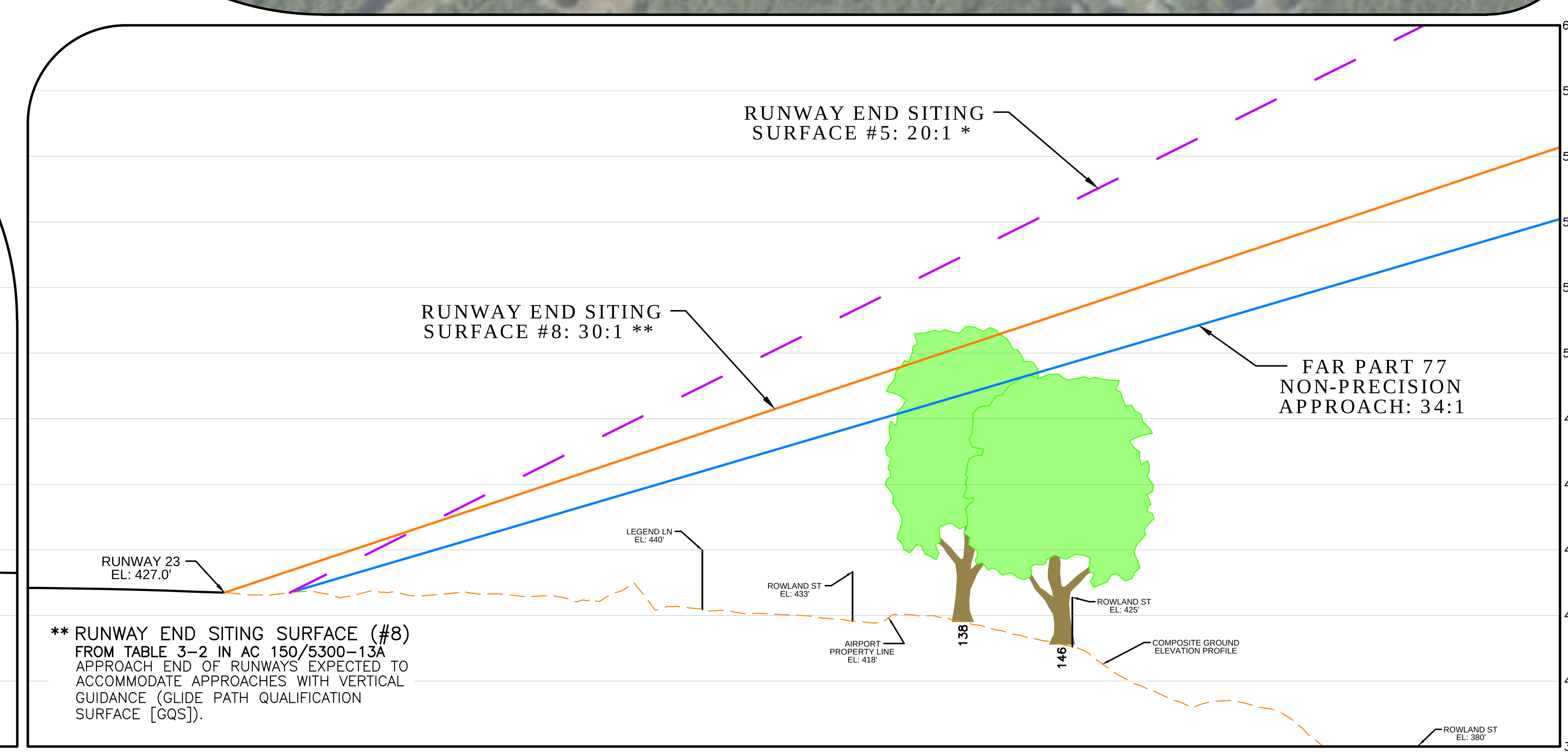


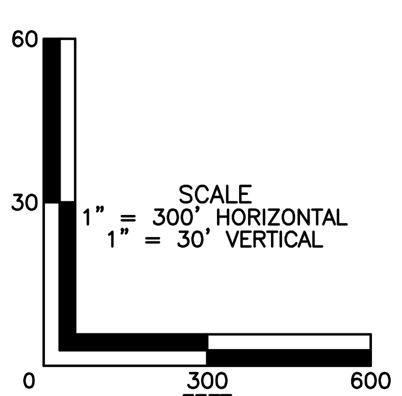




* RUNWAY END SITING SURFACE (#5)
FROM TABLE 3-2 IN AC 150/5300-13A
APPROACH END OF RUNWAYS EXPECTED TO SUPPORT INSTRUMENT NIGHT OPERATIONS SERVING GREATER THAN APPROACH CATEGORY B AIRCRAFT.



** RUNWAY END SITING SURFACE (#8)
FROM TABLE 3-2 IN AC 150/5300-13A
APPROACH END OF RUNWAYS EXPECTED TO ACCOMMODATE APPROACHES WITH VERTICAL GUIDANCE (GLIDE PATH QUALIFICATION SURFACE [GQS]).



LEGEND

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
RUNWAY PROTECTION ZONE (RPZ)		PROPOSED AIRPORT PAVEMENT		FAR PART 77 OBSTRUCTIONS	
AIRPORT PROPERTY		PROPOSED GROUND VEHICLE PAVEMENT		FAR PART 77 VEGETATION OBSTRUCTIONS	
EXISTING AIRPORT EASEMENT		PROPOSED BUILDINGS		RUNWAY END SITING SURFACE (#5) OBSTRUCTIONS	
PROPOSED AIRPORT EASEMENT		GLIDER STAGING AREA		RUNWAY END SITING SURFACE (#5) VEGETATION OBSTRUCTIONS	
COUNTY OF SARATOGA PROPERTY		GROUND ELEVATION CONTOURS (10')		RUNWAY END SITING SURFACE (#8) OBSTRUCTIONS	
				RUNWAY END SITING SURFACE (#8) VEGETATION OBSTRUCTIONS	

NOTES:

1. TREES WITHIN 10' OF SURFACE IDENTIFIED AS OBSTRUCTIONS.
2. ROAD ELEVATIONS AS INDICATED INCLUDE CONSIDERATION OF VEHICLES PER PART 77 (15' FOR ROAD).
3. COMPOSITE GROUND ELEVATION PROFILE LIMITED TO APPROACH SURFACE.

REV	DATE	DESCRIPTION	BY	SPONSOR

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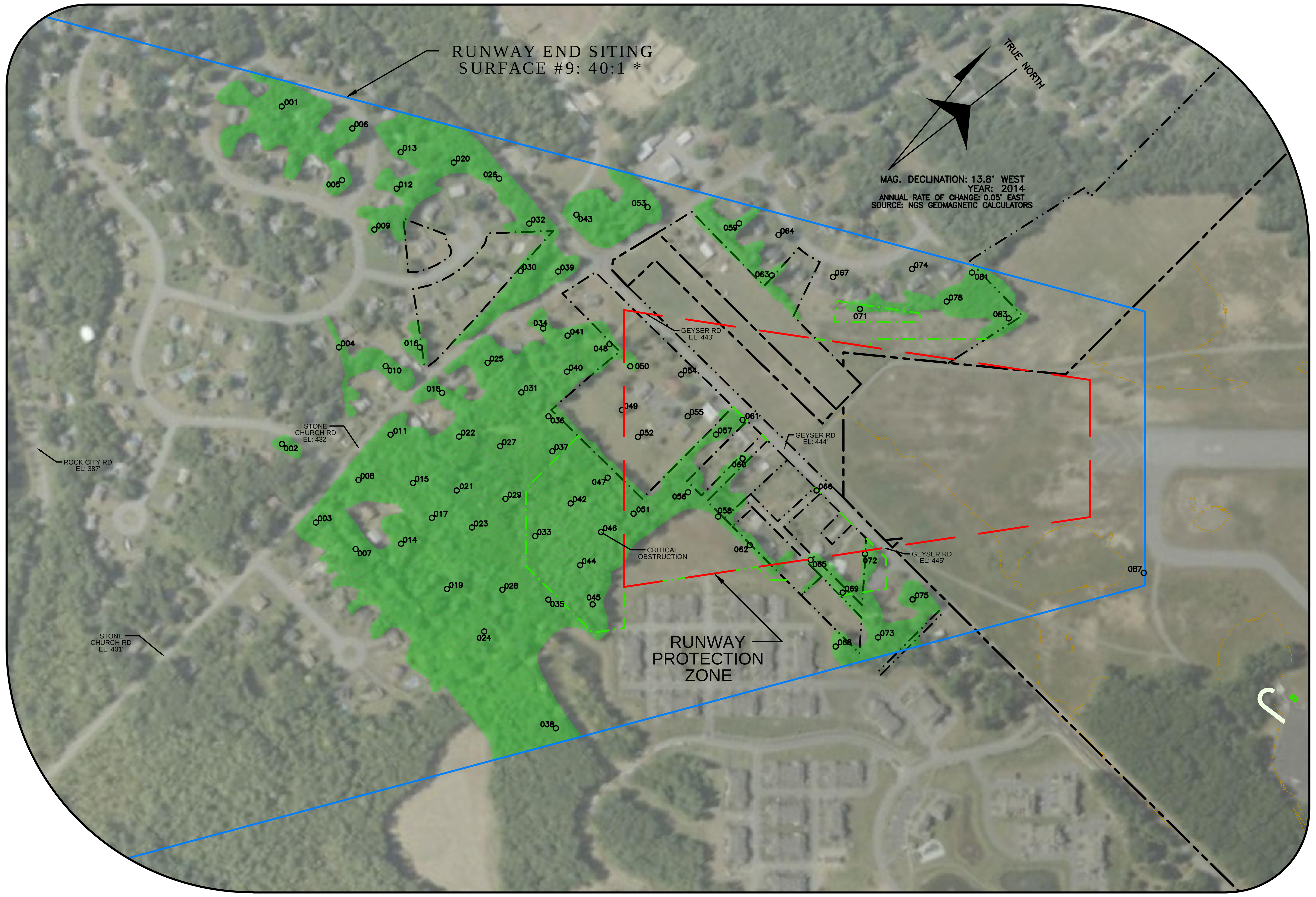
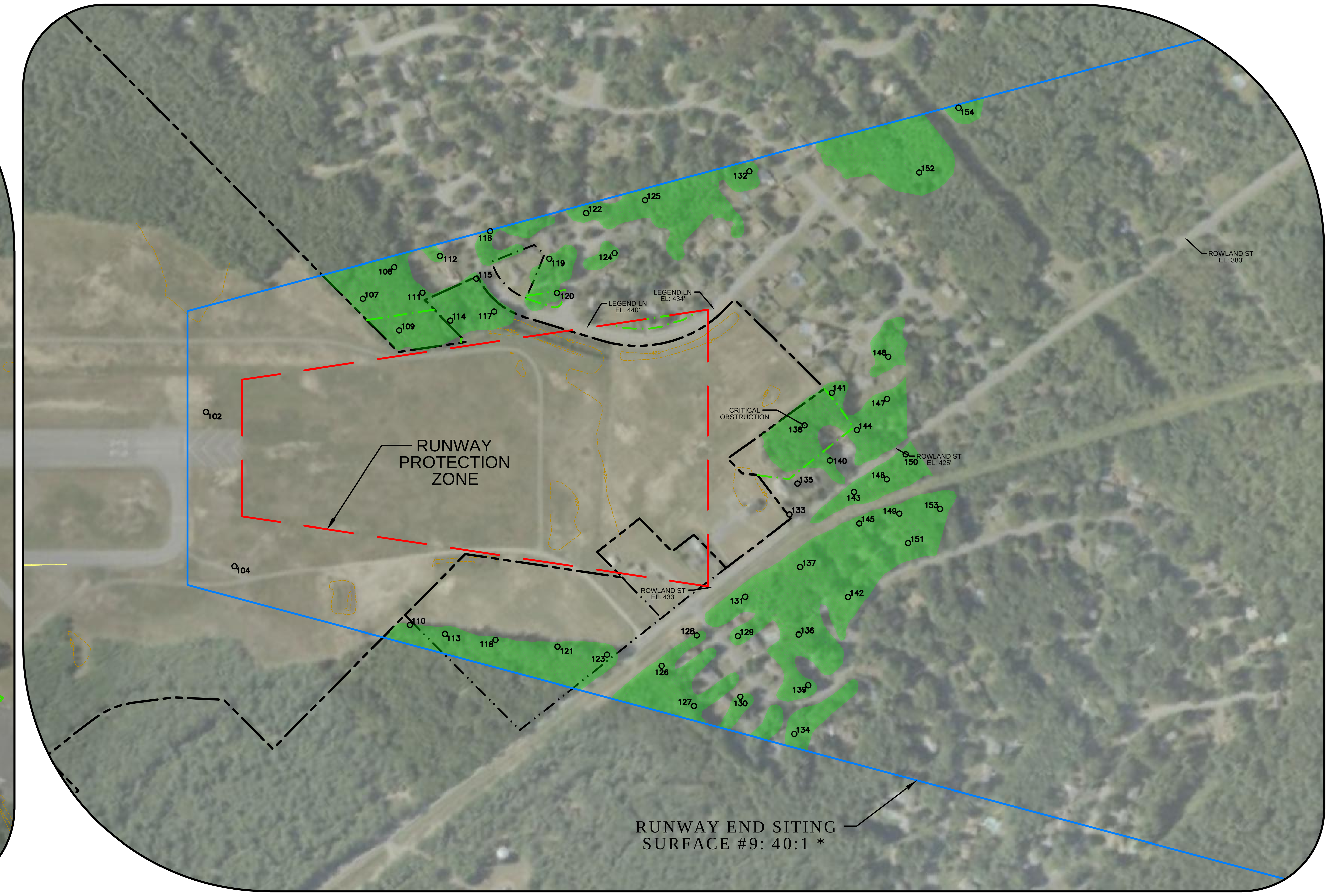
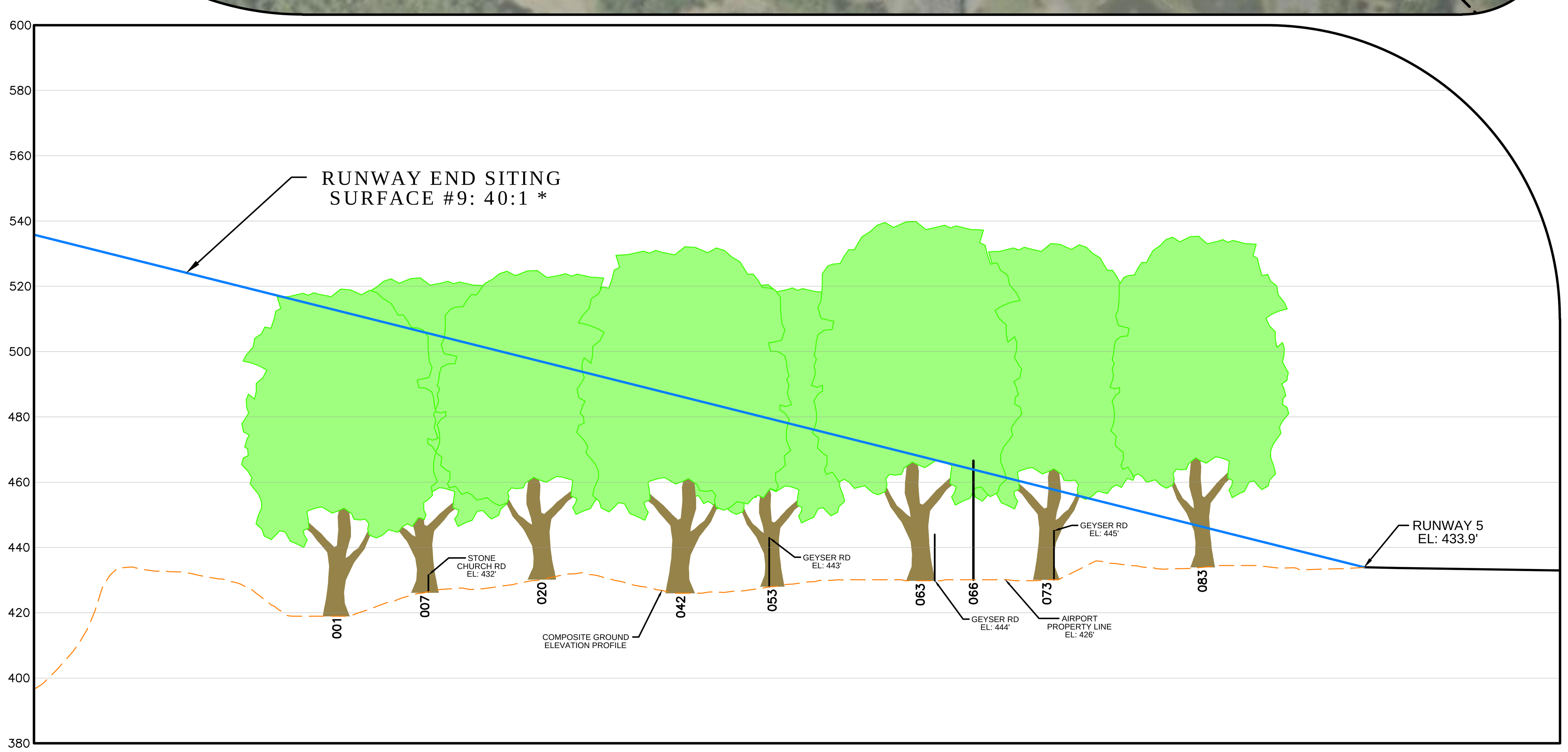
SARATOGA COUNTY AIRPORT
SARATOGA COUNTY, NEW YORK

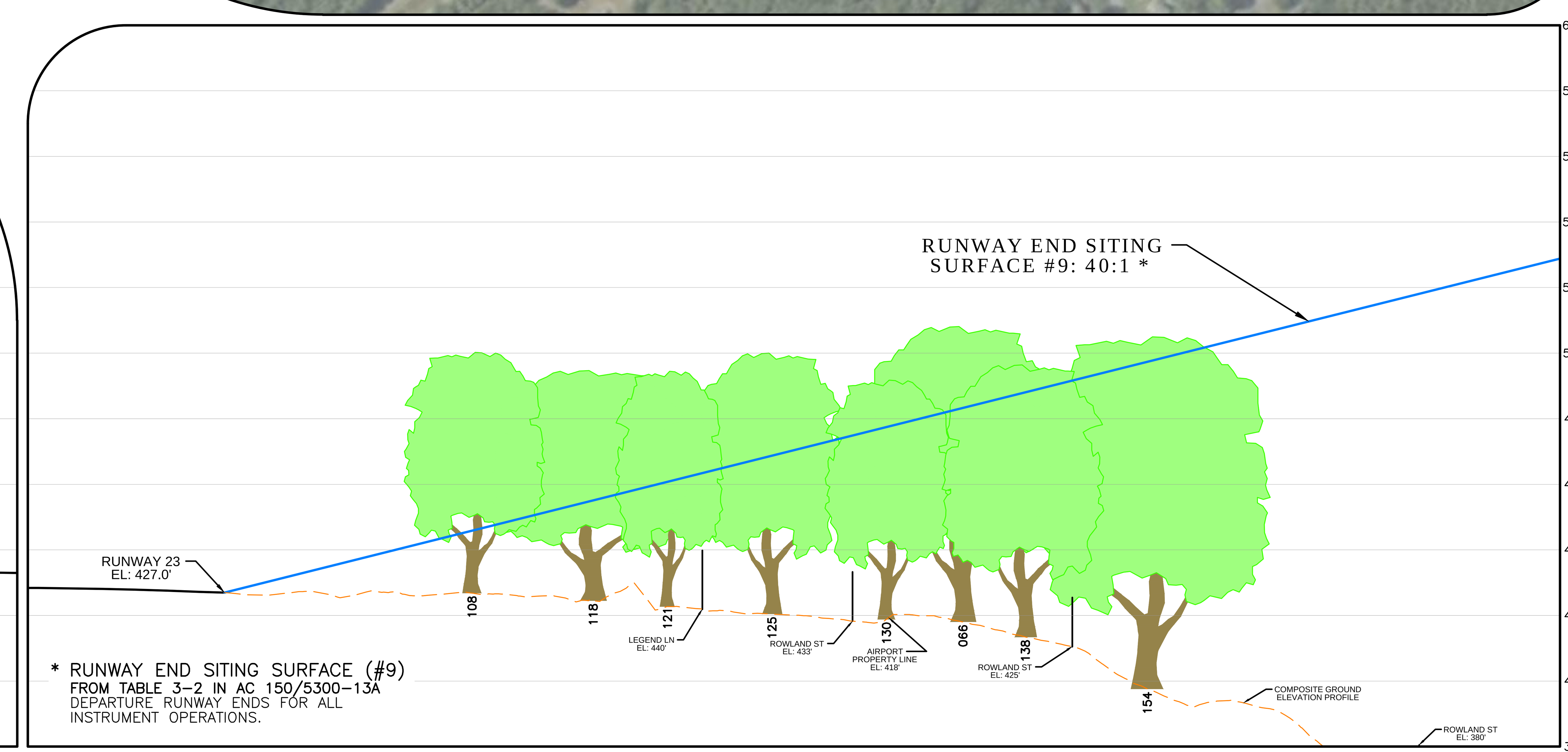
RUNWAY 5-23 INNER APPROACH DRAWING

SCALE: AS SHOWN	DESIGN: DKS	SHEET: 5
DRAWN: RGT	PROJECT: 17588.04	
CHECKED: JEP	DATE: MAY 2015	

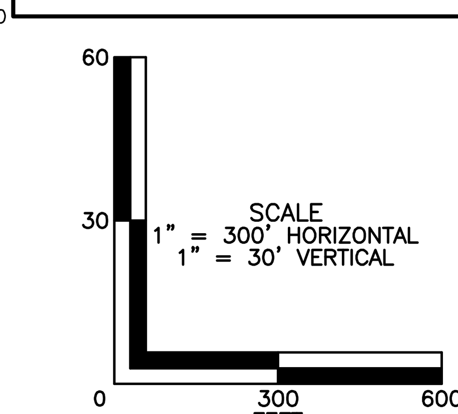








* RUNWAY END SITING SURFACE (#9)
FROM TABLE 3-2 IN AC 150/5300-13A
DEPARTURE RUNWAY ENDS FOR ALL
INSTRUMENT OPERATIONS.



LEGEND

DESCRIPTION	SYMBOL			DESCRIPTION	SYMBOL
RUNWAY PROTECTION ZONE (RPZ)		PROPOSED AIRPORT PAVEMENT		RUNWAY END SITING SURFACE (#9) OBSTRUCTIONS	XX
AIRPORT PROPERTY		PROPOSED GROUND VEHICLE PAVEMENT		RUNWAY END SITING SURFACE (#9) VEGETATION OBSTRUCTIONS	
EXISTING AIRPORT EASEMENT		PROPOSED BUILDINGS			
PROPOSED AIRPORT EASEMENT		GLIDER STAGING AREA			
COUNTY OF SARATOGA PROPERTY		GROUND ELEVATION CONTOURS (10')	40		

NOTES:

1. TREES WITHIN 10' OF SURFACE IDENTIFIED AS OBSTRUCTIONS.
2. ROAD ELEVATIONS AS INDICATED INCLUDE CONSIDERATION OF VEHICLES PER PART 77 (15' FOR ROAD).
3. COMPOSITE GROUND ELEVATION PROFILE LIMITED TO APPROACH SURFACE.

REV	DATE	DESCRIPTION	BY	SPONSOR

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SARATOGA COUNTY AIRPORT
SARATOGA COUNTY, NEW YORK

RUNWAY 5-23 DEPARTURE SURFACE DRAWING

SCALE: AS SHOWN	DESIGN: DKS	SHEET: 6
DRAWN: RGT	PROJECT: 17588.04	
CHECKED: JEP	DATE: MAY 2015	

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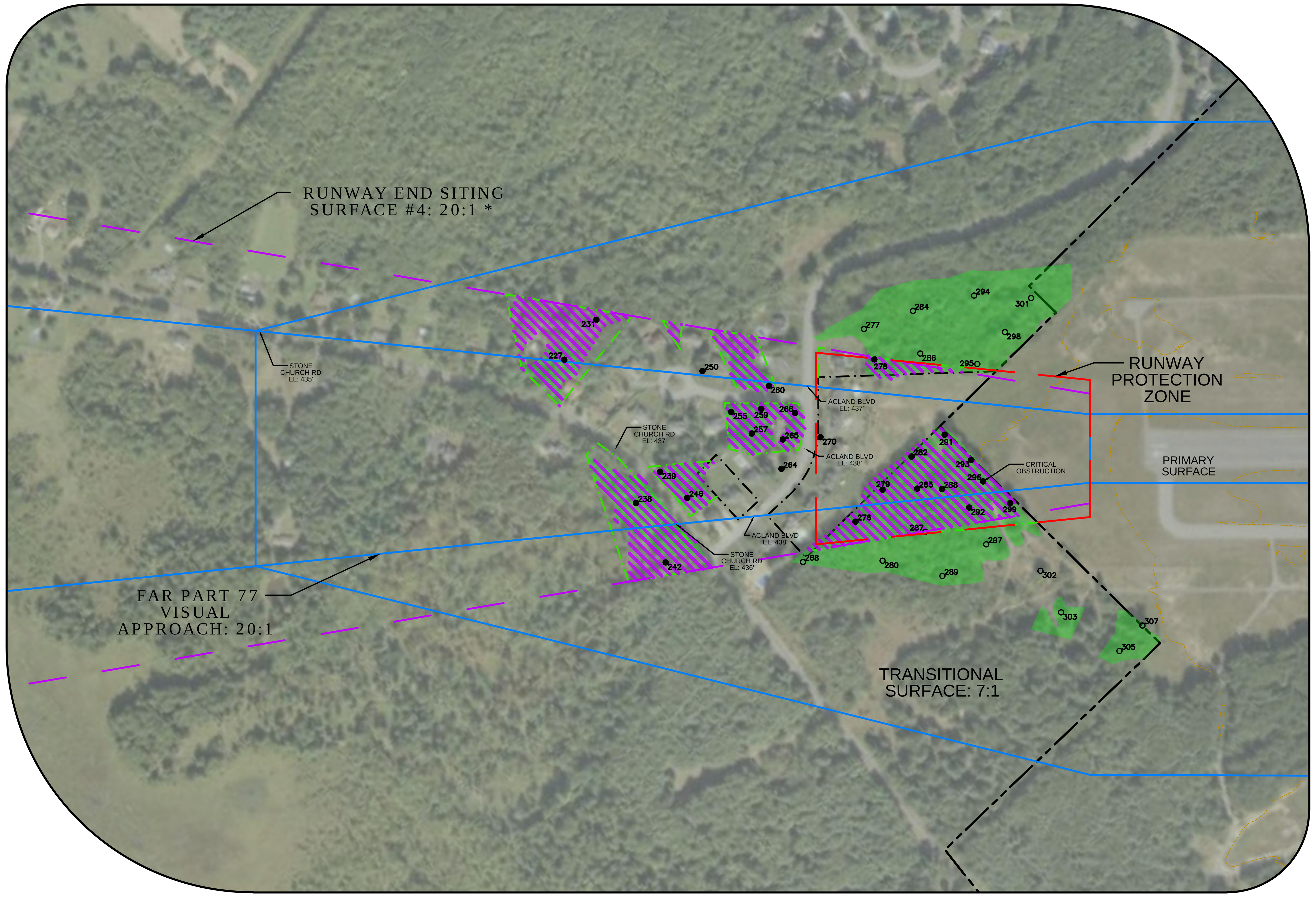
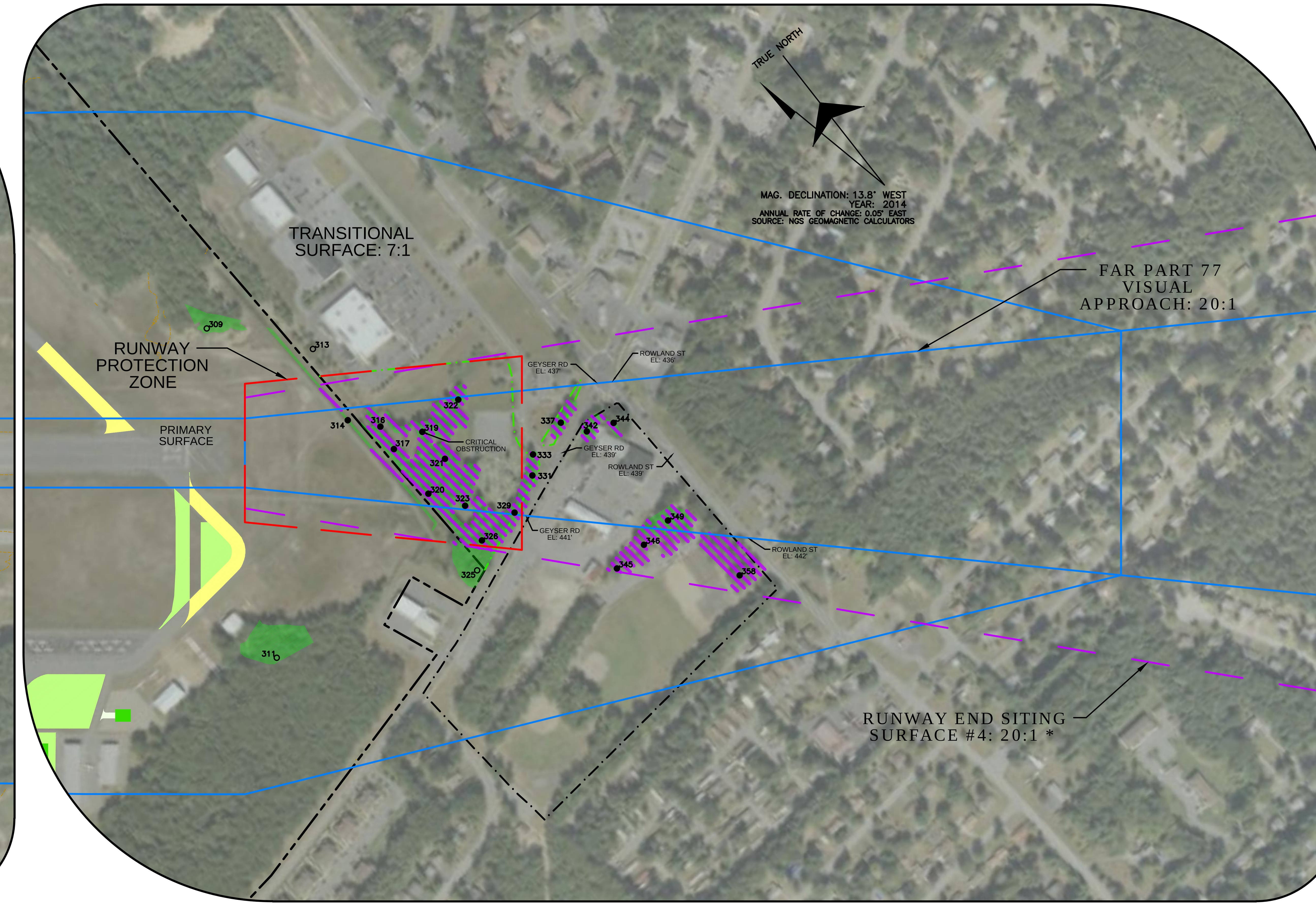
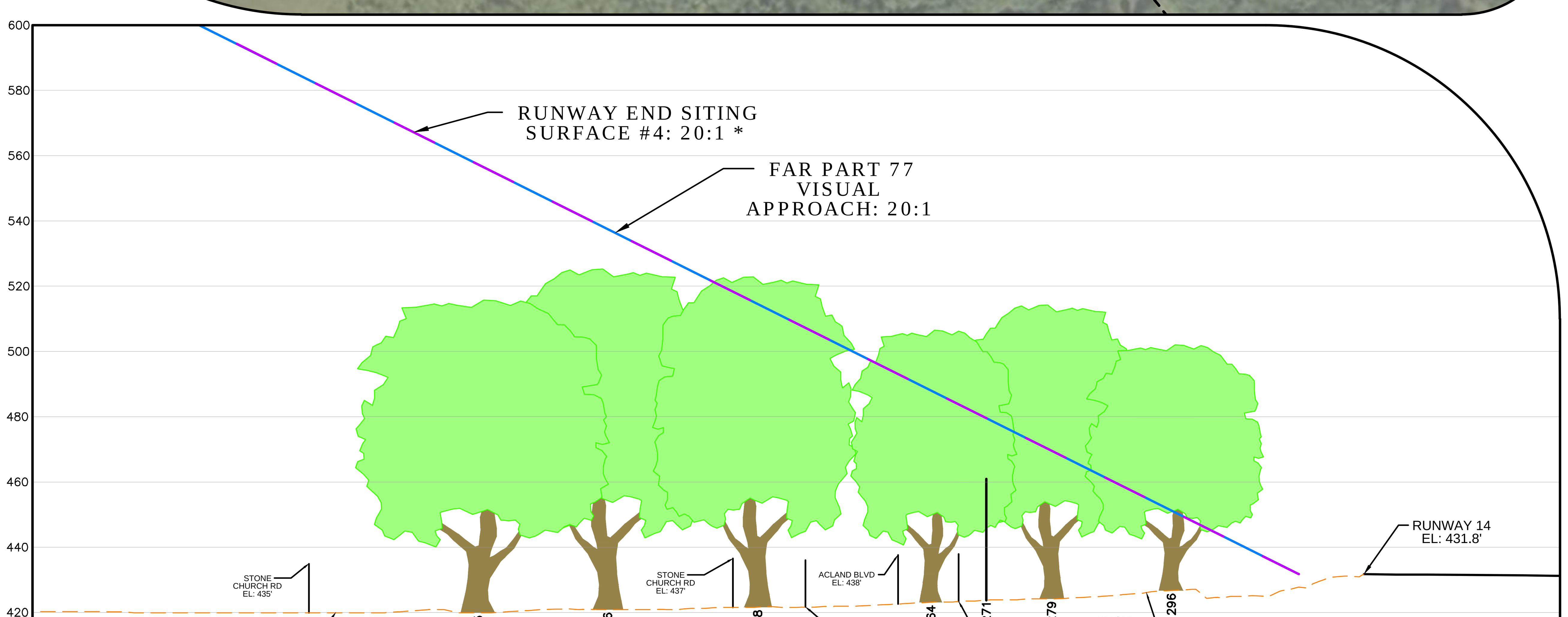
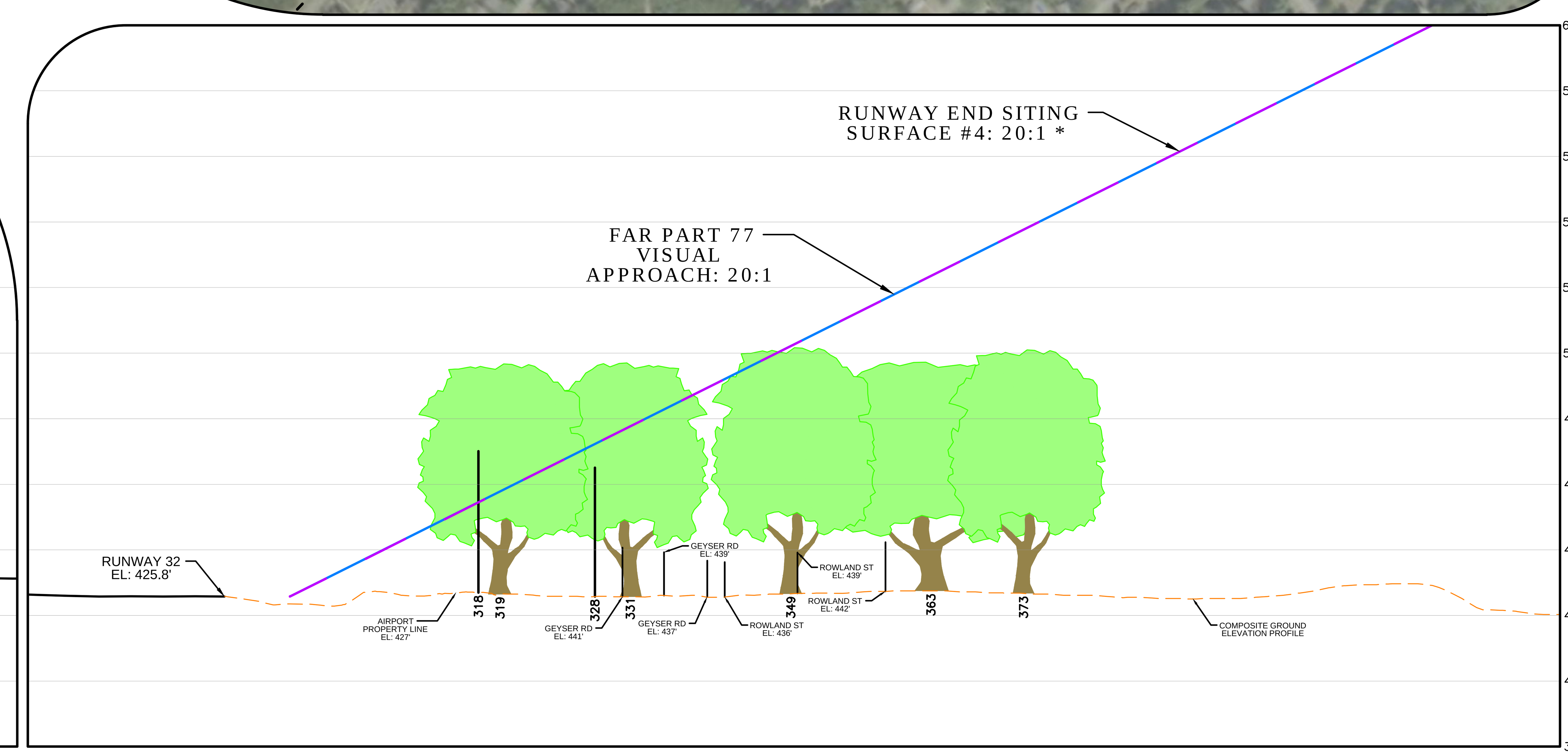
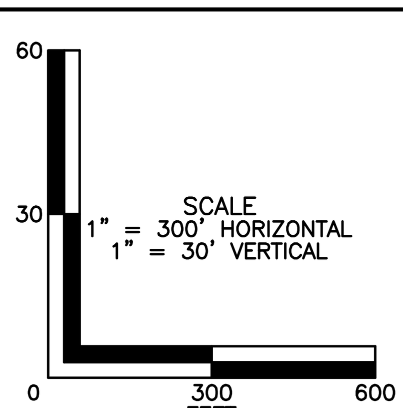






* RUNWAY END SITING SURFACE (#4) FROM TABLE 3-2 IN AC 150/5300-13A APPROACH END OF RUNWAYS EXPECTED TO SUPPORT INSTRUMENT NIGHT OPERATIONS, SERVING APPROACH CATEGORY A AND B AIRCRAFT ONLY.





LEGEND

DESCRIPTION	SYMBOL			DESCRIPTION	SYMBOL
RUNWAY PROTECTION ZONE (RPZ)		PROPOSED AIRPORT PAVEMENT		FAR PART 77 OBSTRUCTIONS	
AIRPORT PROPERTY		PROPOSED GROUND VEHICLE PAVEMENT		FAR PART 77 VEGETATION OBSTRUCTIONS	
EXISTING AIRPORT EASEMENT		PROPOSED BUILDINGS		RUNWAY END SITING SURFACE (#4) OBSTRUCTIONS	
PROPOSED AIRPORT EASEMENT		GLIDER STAGING AREA		RUNWAY END SITING SURFACE (#4) VEGETATION OBSTRUCTIONS	
COUNTY OF SARATOGA PROPERTY		GROUND ELEVATION CONTOURS (10')			

NOTES:

1. TREES WITHIN 10' OF SURFACE IDENTIFIED AS OBSTRUCTIONS.
2. ROAD ELEVATIONS AS INDICATED INCLUDE CONSIDERATION OF VEHICLES PER PART 77 (15' FOR ROAD).
3. COMPOSITE GROUND ELEVATION PROFILE LIMITED TO APPROACH SURFACE.

REV	DATE	DESCRIPTION	BY	SPONSOR

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SARATOGA COUNTY AIRPORT
SARATOGA COUNTY, NEW YORK

RUNWAY 14-32 INNER APPROACH DRAWING

SCALE:	AS SHOWN	DESIGN:	DKS	SHEET:	7
DRAWN:	RGT	PROJECT:	17588.04		
CHECKED:	JEP	DATE:	MAY 2015		

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APPROACH SURFACE: RUNWAY 5

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
003	TREES	512.2	517.0	-4.8	MONITOR
007	TREES	522.5	512.7	9.8	MONITOR
008	TREES	514.4	512.4	2.0	MONITOR
010	TREES	500.9	509.5	-8.6	MONITOR
011	TREES	506.8	508.9	-2.1	MONITOR
014	TREES	511.7	507.8	3.9	MONITOR
015	TREES	522.1	506.6	15.5	MONITOR
016	TREES	506.3	505.8	0.5	MONITOR
017	TREES	525.1	504.6	20.5	MONITOR
018	TREES	499.7	503.5	-3.8	MONITOR
019	TREES	516.9	502.9	14.0	MONITOR
021	TREES	516.1	501.9	14.2	MONITOR
022	TREES	514.7	501.6	13.1	MONITOR
023	TREES	516.5	500.2	16.3	MONITOR
025	TREES	514.7	498.6	16.1	MONITOR
027	TREES	499.9	497.3	2.6	MONITOR
028	TREES	517.8	497.0	20.8	MONITOR
029	TREES	523.3	496.7	26.6	MONITOR
031	TREES	515.6	495.0	20.6	MONITOR
033	TREES	527.2	493.4	33.8	MONITOR
034	TREES	506.0	492.6	13.4	MONITOR
036	TREES	498.4	492.0	6.4	MONITOR
037	TREES	517.6	491.6	26.0	MONITOR
040	TREES	507.5	490.1	17.4	MONITOR
041	TREES	506.1	490.0	16.1	MONITOR
042	TREES	532.1	489.7	42.4	MONITOR
044	TREES	528.5	488.6	39.9	MONITOR
046	TREES	532.0	486.4	45.6	MONITOR
047	TREES	512.0	485.6	26.4	MONITOR
048	TREES	512.7	485.5	27.2	MONITOR
051	TREES	524.5	482.9	41.6	MONITOR
054	TREES	469.4	477.8	-8.4	MONITOR
055	TREES	472.6	477.1	-4.5	MONITOR
056	TREES	510.7	477.1	33.6	MONITOR
057	TREES	503.2	474.0	29.2	MONITOR
058	TREES	500.0	473.9	26.1	MONITOR
060	TREES	499.6	471.2	28.4	MONITOR
061	TREES	497.6	471.2	26.4	MONITOR
062	TREES	507.7	470.5	37.2	MONITOR
066	POLE	466.6	463.3	3.3	LIGHT

RUNWAY END SITING SURFACE #5: RUNWAY 5

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
033	TREES	527.2	535.1	-7.9	MONITOR
042	TREES	532.1	528.7	3.4	REMOVE
044	TREES	528.5	526.9	1.6	REMOVE
045	TREES	518.3	524.7	-6.4	MONITOR
046	TREES	532.0	523.2	8.8	REMOVE
047	TREES	512.0	521.9	-9.9	MONITOR
048	TREES	512.7	521.6	-8.9	MONITOR
051	TREES	524.5	517.2	7.3	REMOVE
056	TREES	510.7	507.3	3.4	REMOVE
057	TREES	503.2	502.1	1.1	REMOVE
058	TREES	500.0	501.8	-1.8	MONITOR
060	TREES	499.6	497.3	2.3	REMOVE
061	TREES	497.6	497.3	0.3	REMOVE
062	TREES	507.7	496.0	11.7	REMOVE
065	TREES	520.3	484.9	35.4	REMOVE
069	TREES	515.3	479.0	36.3	REMOVE
071	TREES	522.9	475.9	47.0	REMOVE
072	TREES	506.8	475.0	31.8	REMOVE

APPROACH SURFACE: RUNWAY 14

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
238	TREES	522.2	514.6	7.6	MONITOR
239	TREES	501.6	510.2	-8.6	MONITOR
246	TREES	515.0	505.2	9.8	MONITOR
255	TREES	490.0	497.2	-7.2	MONITOR
257	TREES	496.0	493.4	2.6	MONITOR
259	TREES	496.7	491.7	5.0	MONITOR
260	TREES	483.5	490.3	-6.8	MONITOR
264	TREES	506.5	488.0	18.5	MONITOR
265	TREES	490.1	487.8	2.3	MONITOR
266	TREES	493.4	485.6	7.8	MONITOR
270	TREES	471.7	480.9	-9.2	MONITOR
279	TREES	514.3	469.6	44.7	MONITOR
282	TREES	502.4	464.3	38.1	MONITOR
285	TREES	499.9	463.3	36.6	MONITOR
288	TREES	495.8	458.8	37.0	MONITOR
291	TREES	503.3	458.3	45.0	MONITOR
293	TREES	490.6	453.5	37.1	MONITOR
296	TREES	502.0	451.2	50.8	MONITOR

RUNWAY END SITING SURFACE #4: RUNWAY 14

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
227	TREES	525.9	527.7	-1.8	MONITOR
231	TREES	516.6	521.8	-5.2	MONITOR
238	TREES	522.2	514.6	7.6	REMOVE
239	TREES	501.6	510.2	-8.6	MONITOR
242	TREES	514.7	509.1	5.6	REMOVE
246	TREES	515.0	505.2	9.8	REMOVE
250	TREES	500.4	502.5	-2.1	MONITOR
255	TREES	490.0	497.2	-7.2	MONITOR
257	TREES	496.0	493.4	2.6	REMOVE
259	TREES	496.7	491.7	5.0	REMOVE
260	TREES	483.5	490.3	-6.8	MONITOR
264	TREES	506.5	488.0	18.5	REMOVE
265	TREES	490.1	487.8	2.3	REMOVE
266	TREES	493.4	485.6	7.8	REMOVE
270	TREES	471.7	480.9	-9.2	MONITOR
276	TREES	500.1	474.5	25.6	REMOVE
278	TREES	514.7	471.1	43.6	REMOVE
279	TREES	514.3	469.6	44.7	REMOVE
282	TREES	502.4	464.3	38.1	REMOVE
285	TREES	499.9	463.3	36.6	REMOVE
288	TREES	495.8	458.8	37.0	REMOVE
291	TREES	503.3	458.3	45.0	REMOVE
292	TREES	479.0	453.8	25.2	REMOVE
293	TREES	490.6	453.5	37.1	REMOVE
296	TREES	502.0	451.2	50.8	REMOVE
299	TREES	500.6	446.3	54.3	REMOVE

APPROACH SURFACE: RUNWAY 23

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
133	TREES	482.0	485.8	-3.8	MONITOR
135	TREES	486.8	486.6	0.2	MONITOR
137	TREES	489.6	486.9	2.7	MONITOR
138	TREES	508.1	487.3	20.8	MONITOR
140	TREES	489.3	490.1	-0.8	MONITOR
141	TREES	489.7	490.3	-0.6	MONITOR
142	TREES	489.3	492.0	-2.7	MONITOR
143	TREES	485.5	492.7	-7.2	MONITOR
144	TREES	496.4	493.0	3.4	MONITOR
145	TREES	492.4	493.2	-0.8	MONITOR
146	TREES	493.6	496.2	-2.6	MONITOR
147	TREES	489.1	496.2	-7.1	MONITOR
148	TREES	486.8	496.4	-9.6	MONITOR
149	TREES	489.1	497.5	-8.4	MONITOR

RUNWAY END SITING SURFACE #5: RUNWAY 23

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
109	TREES	491.8	455.6	36.2	REMOVE
114	TREES	492.1	464.9	27.2	REMOVE *
117	TREES	484.1	472.9	11.2	REMOVE *
120	TREES	488.2	484.4	3.8	REMOVE

* HAS BEEN REMOVED

RUNWAY END SITING SURFACE #8: RUNWAY 23

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
102	BUSH	429.0	429.2	-0.2	MONITOR
138	TREES	508.1	502.1	6.0	REMOVE

APPROACH SURFACE: RUNWAY 32

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
314	TREES	440.9	444.3	-3.4	MONITOR
316	TREES	464.9	450.2	14.7	MONITOR
317	TREES	475.7	452.6	23.1	MONITOR
319	TREES	496.7	457.8	38.9	MONITOR
320	TREES	487.6	458.8	28.8	MONITOR
321	TREES	492.7	461.9	30.8	MONITOR
322	TREES	481.2	464.3	16.9	MONITOR
323	TREES	484.2	465.5	18.7	MONITOR
329	TREES	493.2	474.4	18.8	MONITOR
331	TREES	497.0	477.7	19.3	MONITOR
333	TREES	480.3	477.8	2.5	MONITOR
337	TREES	491.9	482.8	9.1	MONITOR
342	TREES	480.8	487.5	-6.7	MONITOR
344	TREES	483.0	492.3	-9.3	MONITOR
349	TREES	501.7	502.2	-0.5	MONITOR

RUNWAY END SITING SURFACE #4: RUNWAY 32

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
314	TREES	440.9	444.3	-3.4	MONITOR
316	TREES	464.9	450.2	14.7	REMOVE
317	TREES	475.7	452.6	23.1	REMOVE
319	TREES	496.7	457.8	38.9	REMOVE
320	TREES	487.6	458.8	28.8	REMOVE
321	TREES	492.7	461.9	30.8	REMOVE
322	TREES	481.2	464.3	16.9	REMOVE
323	TREES	484.2	465.5	18.7	REMOVE
326	TREES	491.4	468.6	22.8	REMOVE
329	TREES	493.2	474.4	18.8	REMOVE
331	TREES	497.0	477.7	19.3	REMOVE
333	TREES	480.3	477.8	2.5	REMOVE
337	TREES	491.9	482.8	9.1	REMOVE
342	TREES	480.8	487.5	-6.7	MONITOR
344	TREES	483.0	492.3	-9.3	MONITOR
345	TREES	484.7	492.9	-8.2	MONITOR
346	TREES	490.1	497.8	-7.7	MONITOR
349	TREES	501.7	502.2	-0.5	MONITOR
358	TREES	520.5	515.1	5.4	REMOVE

PRIMARY SURFACE - RUNWAY 5-23

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
094	BUSH	435.4	431.2	4.2	REMOVE
102	BUSH	429.0	426.9	2.1	REMOVE

TRANSITIONAL SURFACE - RUNWAY 5-23

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
030	TREES	521.2	507.2	14.0	MONITOR
035	TREES	515.1	492.8	22.3	MONITOR
039	TREES	509.1	505.9	3.2	MONITOR
043	TREES	527.0	534.9	-7.9	MONITOR
045	TREES	518.3	494.0	24.3	MONITOR
059	TREES	539.6	525.7	13.9	MONITOR
063	TREES	539.9	497.6	42.3	MONITOR
064	TREES	512.8	518.5	-5.7	MONITOR
065	TREES	520.3	464.5	55.8	MONITOR
067	TREES	510.1	495.1	15.0	MONITOR
068	TREES	519.3	508.8	10.5	MONITOR
069	TREES	515.3	480.6	34.7	MONITOR
070	TREES	523.1	520.6	2.5	MONITOR
071	TREES	522.9	477.7	45.2	MONITOR
072	TREES	506.8	459.8	47.0	MONITOR
073	TREES	533.0	502.8	30.2	MONITOR
074	TREES	525.8	496.9	28.9	MONITOR
075	TREES	505.9	482.1	23.8	MONITOR
076	TREES	525.0	529.6	-4.6	MONITOR
077	TREES	527.5	513.4	14.1	MONITOR
078	TREES	528.9	478.9	50.0	MONITOR
079	TREES	509.7	508.5	1.2	MONITOR
080	TREES	530.1	533.3	-3.2	MONITOR
081	TREES	532.6	493.3	39.3	MONITOR
082	TREES	527.6	516.9	10.7	MONITOR
083	TREES	535.3	468.3	67.0	MONITOR
084	TREES	527.0	529.1	-2.1	MONITOR
085	TREES	542.9	534.7	8.2	MONITOR
086	TREES	524.5	531.2	-6.7	MONITOR
088	TREES	526.8	536.1	-9.3	MONITOR
089	TREES	513.3	516.6	-3.3	MONITOR
090	TREES	513.4	523.3	-9.9	MONITOR
091	TREES	515.4	517.8	-2.4	MONITOR
092	TREES	505.9	502.0	3.9	MONITOR
093	TREES	510.5	514.2	-3.7	MONITOR
095	TREES	492.8	499.2	-6.4	MONITOR
096	BUSH	437.2	445.9	-8.7	MONITOR
097	TREES	497.5	506.4	-8.9	MONITOR
098	TREES	475.0	484.8	-9.8	MONITOR
099	TREES	487.1	495.8	-8.7	MONITOR
100	TREES	504.0	513.8	-9.8	MONITOR
101	TREES	501.8	505.4	-3.6	MONITOR
103	TREES	498.1	493.7	4.4	MONITOR
105	TREES	488.7	493.0	-4.3	MONITOR
106	TREES	493.9	496.0	-2.1	MONITOR
107	TREES	492.7	472.6	20.1	MONITOR
108	TREES	500.2	490.0	10.2	MONITOR
109	TREES	491.8	457.1	34.7	MONITOR
110	TREES	491.9	488.6	3.3	MONITOR
111	TREES	493.3	477.5	15.8	MONITOR
112	TREES	492.1	497.1	-5.0	MONITOR
113	TREES	494.3	494.1	0.2	MONITOR
114	TREES	492.1	463.7	28.4	MONITOR
115	TREES	489.4	486.4	3.0	MONITOR
117	TREES	484.1	469.7	14.4	MONITOR
118	TREES	494.7	498.8	-4.1	MONITOR
120	TREES	488.2	481.2	7.0	MONITOR
121	TREES	494.5	504.1	-9.6	MONITOR
131	TREES	485.4	483.5	1.9	MONITOR

TRANSITIONAL SURFACE - RUNWAY 14-32

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
227	TREES	525.9	528.6	-2.7	MONITOR
250	TREES	500.4	504.8	-4.4	MONITOR
268	TREES	501.4	510.4	-9.0	MONITOR
276	TREES	500.1	482.6	17.5	MONITOR
277	TREES	506.1	505.6	0.5	MONITOR
278	TREES	514.7	488.4	26.3	MONITOR
280	TREES	496.3	499.5	-3.2	MONITOR
284	TREES	524.4	508.6	15.8	MONITOR
286	TREES	528.2	485.4	42.8	MONITOR
287	TREES	493.6	478.8	14.8	MONITOR
289	TREES	496.8	499.6	-2.8	MONITOR
292	TREES	479.0	460.5	18.5	MONITOR
294	TREES	515.3	508.6	6.7	MONITOR
295	TREES	507.9	472.5	35.4	MONITOR
297	TREES	488.1	477.3	10.8	MONITOR
298	TREES	518.6	485.6	33.0	MONITOR
299	TREES	500.6	452.8	47.8	MONITOR
301	TREES	506.0	499.8	6.2	MONITOR
302	TREES	481.0	484.1	-3.1	MONITOR
303	TREES	499.7	503.2	-3.5	MONITOR
305	TREES	513.6	519.4	-5.8	MONITOR
307	TREES	511.2	506.2	5.0	MONITOR
308	BUSH	429.8	429.0	0.8	MONITOR
309	TREES	470.7	472.1	-1.4	MONITOR
311	TREES	510.3	517.7	-7.4	MONITOR
313	TREES	466.0	470.3	-4.3	MONITOR
325	TREES	497.6	498.5	-0.9	MONITOR
326	TREES	491.4	483.6	7.8	MONITOR

RUNWAY END SITING SURFACE #9: RUNWAY 5

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
001	TREES	519.1	512.6	6.5	MONITOR
002	TREES	505.1	512.6	-7.5	MONITOR
003	TREES	512.2	509.6	2.6	MONITOR
004	TREES	497.7	507.4	-9.7	MONITOR
005	TREES	511.6	507.1	4.5	MONITOR
006	TREES	512.7	506.2	6.5	MONITOR
007	TREES	522.5	505.9	16.6	MONITOR
008	TREES	514.4	505.7	8.7	MONITOR
009	TREES	515.0	504.2	10.8	MONITOR
010	TREES	500.9	503.2	-2.3	MONITOR
011	TREES	506.8	502.7	4.1	MONITOR
012	TREES	515.4	502.1	13.3	MONITOR
013	TREES	518.9	501.8	17.1	MONITOR
014	TREES	511.7	501.7	10.0	MONITOR
015	TREES	522.1	500.7	21.4	MONITOR
016	TREES	506.3	500.1	6.2	MONITOR
017	TREES	525.1	499.0	26.1	MONITOR
018	TREES	499.7	498.0	1.7	MONITOR
019	TREES	516.9	497.5	19.4	MONITOR
020	TREES	524.9	497.0	27.9	MONITOR
021	TREES	516.1	496.7	19.4	MONITOR
022	TREES	514.7	496.4	18.3	MONITOR
023	TREES	516.5	495.2	21.3	MONITOR
024	TREES	499.4	494.2	5.2	MONITOR
025	TREES	514.7	493.9	20.8	MONITOR
026	TREES	525.1	492.8	32.3	MONITOR
027	TREES	499.9	492.8	7.1	MONITOR
028	TREES	517.8	492.6	25.2	MONITOR
029	TREES	523.3	492.3	31.0	MONITOR
030	TREES	521.2	490.9	30.3	MONITOR
031	TREES	515.6	490.8	24.8	MONITOR
032	TREES	514.9	490.1	24.8	MONITOR
033	TREES	527.2	489.5	37.7	MONITOR
034	TREES	506.0	488.8	17.2	MONITOR
035	TREES	515.1	488.3	26.8	MONITOR
036	TREES	498.4	488.3	10.1	MONITOR
037	TREES	517.6	487.9	29.7	MONITOR
038	TREES	495.4	487.6	7.8	MONITOR
039	TREES	509.1	487.4	21.7	MONITOR
040	TREES	507.5	486.7	20.8	MONITOR
041	TREES	506.1	486.6	19.5	MONITOR
042	TREES	532.1	486.3	45.8	MONITOR
043	TREES	527.0	485.7	41.3	MONITOR
044	TREES	528.5	485.4	43.1	MONITOR
045	TREES	518.3	484.3	34.0	MONITOR
046	TREES	532.0	483.6	48.4	MONITOR
047	TREES	512.0	482.9	29.1	MONITOR
048	TREES	512.7	482.7	30.0	MONITOR
049	TREES	472.5	481.6	-9.1	MONITOR
050	TREES	473.0	480.9	-7.9	MONITOR
051	TREES	524.5	480.6	43.9	MONITOR
052	TREES	470.9	480.1	-9.2	MONITOR
053	TREES	520.5	479.3	41.2	MONITOR
054	TREES	469.4	476.3	-6.9	MONITOR
055	TREES	472.6	475.6	-3.0	MONITOR
056	TREES	510.7	475.6	35.1	MONITOR
057	TREES	503.2	473.0	30.2	MONITOR
058	TREES	500.0	472.9	27.1	MONITOR
059	TREES	539.6	470.9	68.7	MONITOR
060	TREES	499.6	470.6	29.0	MONITOR
061	TREES	497.6	470.6	27.0	MONITOR
062	TREES	507.7	470.0	37.7	MONITOR
063	TREES	539.9	468.0	71.9	MONITOR
064	TREES	512.8	467.4	45.4	MONITOR
065	TREES	520.3	464.4	55.9	MONITOR
066	POLE	466.6	463.9	2.7	LIGHT
067	TREES	510.1	462.4	47.7	MONITOR
068	TREES	519.3	462.1	57.2	MONITOR
069	TREES	515.3	461.5	53.8	MONITOR
071	TREES	522.9	459.9	63.0	MONITOR
072	TREES	506.8	459.5	47.3	MONITOR
073	TREES	533.0	458.2	74.8	MONITOR
074	TREES	525.8	455.2	70.6	MONITOR
075	TREES	505.9	455.1	50.8	MONITOR
078	TREES	528.9	452.0	76.9	MONITOR
081	TREES	532.6	449.7	82.9	MONITOR
083	TREES	535.3	446.3	89.0	MONITOR
087	BUSH	438.9	434.1	4.8	MONITOR

RUNWAY END SITING SURFACE #9: RUNWAY 23

OBSTRUCTION NUMBER	OBSTRUCTION TYPE	ELEV. OF OBJECT	ELEV. OF SURFACE	PENETRATION	ACTION
102	BUSH	429.0	428.6	0.4	MONITOR
104	BUSH	432.6	431.2	1.4	MONITOR
107	TREES	492.7	443.0	49.7	MONITOR
108	TREES	500.2	445.8	54.4	MONITOR
109	TREES	491.8	446.3	45.5	MONITOR
110	TREES	491.9	447.3	44.6	MONITOR
111	TREES	493.3	448.4	44.9	MONITOR
112	TREES	492.1	450.0	42.1	MONITOR
113	TREES	494.3	450.4	43.9	MONITOR
114	TREES	492.1	450.9	41.2	MONITOR
115	TREES	489.4	453.4	36.0	MONITOR
116	TREES	491.4	454.6	36.8	MONITOR
117	TREES	484.1	454.9	29.2	MONITOR
118	TREES	494.7	455.1	39.6	MONITOR
119	TREES	482.0	460.0	22.0	MONITOR
120	TREES	488.2	460.6	27.6	MONITOR
121	TREES	494.5	460.8	33.7	MONITOR
122	TREES	488.9	463.4	25.5	MONITOR
123	TREES	495.5	465.2	30.3	MONITOR
124	TREES	486.7	465.9	20.8	MONITOR
125	TREES	500.0	468.7	31.3	MONITOR
126	TREES	498.0	470.3	27.7	MONITOR
127	TREES	493.8	473.2	20.6	MONITOR
128	TREES	479.9	473.5	6.4	MONITOR
129	TREES	482.8	477.3	5.5	MONITOR
130	TREES	491.8	477.5	14.3	MONITOR
131	TREES	485.4	477.9	7.5	MONITOR
132	TREES	496.8	478.3	18.5	MONITOR
133	TREES	482.0	482.0	0.0	MONITOR
134	TREES	484.8	482.3	2.5	MONITOR
135	TREES	486.8	482.6	4.2	MONITOR
136	TREES	489.8	482.8	7.0	MONITOR
137	TREES	489.6	482.9	6.7	MONITOR
138	TREES	508.1	483.3	24.8	MONITOR
139	TREES	490.2	483.6	6.6	MONITOR
140	TREES	489.3	485.6	3.7	MONITOR
141	TREES	489.7	485.8	3.9	MONITOR
142	TREES	489.3	487.2	2.1	MONITOR
143	TREES	485.5	487.8	-2.3	MONITOR
144	TREES	496.4	488.1	8.3	MONITOR
145	TREES	492.4	488.2	4.2	MONITOR
146	TREES	493.6	490.8	2.8	MONITOR
147	TREES	489.1	490.8	-1.7	MONITOR
148	TREES	486.8	491.0	-4.2	MONITOR
149	TREES	489.1	491.9	-2.8	MONITOR
150	TREES	483.3	492.6	-9.3	MONITOR
151	TREES	486.3	492.8	-6.5	MONITOR
152	TREES	505.3	493.8	11.5	MONITOR
153	TREES	486.5	495.7	-9.2	MONITOR
154	TREES	505.0	497.4	7.6	MONITOR

NOTES:

1. HIGHLIGHTED TABLES REPRESENT TREE OBSTRUCTIONS TO BE PURSUED AND REMOVED.

REV	DATE	DESCRIPTION	BY	SPONSOR

McFarland Johnson
60 RAILROAD PLACE, SUITE 402
SARATOGA SPRINGS, NY 12866 www.mjinc.com

SARATOGA COUNTY AIRPORT
SARATOGA COUNTY, NEW YORK

INNER APPROACH TABLES

SCALE: NONE	DESIGN: DKS	SHEET: 8
DRAWN: RGT	PROJECT: 17588.04	
CHECKED: JEP	DATE: MAY 2015	

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NOTES:
1. NOISE CONTOUR DATA SOURCED FROM AUGUST 2014 ANLPV.
2. LAND USE SOURCED FROM SARATOGA COUNTY GIS.
3. ZONING SOURCED FROM SECTION 180 OF THE TOWN OF MILTON ZONING REGULATIONS.

RPZ CONTROL PLAN

REFERENCE NUMBER	TAX PARCEL NUMBER	OWNER	ACERAGE	LAND USE	PROPOSED ACTION
RUNWAY 5					
COUNTY OF SARATOGA PROPERTY					
4	189.12-1-7	COUNTY OF SARATOGA	0.95	VACANT	NONE
5	189.12-1-8	COUNTY OF SARATOGA	1.05	VACANT	NONE
6	189.-2-8.2	COUNTY OF SARATOGA	0.76	VACANT	NONE
7	189.-2-8.3	COUNTY OF SARATOGA	0.02	VACANT	NONE
8	189.12-1-18	COUNTY OF SARATOGA	0.10	VACANT	NONE
9	189.12-1-43	COUNTY OF SARATOGA	0.60	VACANT	NONE
12	189.-2-8.1	COUNTY OF SARATOGA	0.05	VACANT	NONE
EXISTING EASEMENT					
14	189.12-1-4	MULLER, COLLEEN	0.96	RESIDENTIAL	NONE
21	189.12-1-28.1	DOTEN, EVERETT	0.08	RESIDENTIAL	NONE
22	189.12-1-28.2	MILTON CENTER CEMETERY	0.10	COMMUNITY SERVICES	NONE
23	189.12-1-34	SIANO, RALPH D	3.02	COMMERCIAL	NONE
24	189.12-1-23	SIANO, RALPH A	0.30	VACANT	NONE
25	189.12-1-22	SIANO, RALPH A	0.57	RESIDENTIAL	NONE
26	189.12-1-36	SIANO, RALPH	0.71	RESIDENTIAL	NONE
27	189.12-1-17	CURRIER, STEPHEN	0.49	RESIDENTIAL	NONE
28	190.9-1-13	BALLESTERO, ANTONIO	0.04	RESIDENTIAL	NONE
29	189.12-1-10	WILLARD, JEROME	0.24	RESIDENTIAL	NONE
30	189.12-1-15	WILLARD, JEROME & MARIE	0.17	VACANT	NONE
31	190.9-1-10	ZARRO, JAMES & LORRI	0.18	RESIDENTIAL	NONE
32	190.9-1-11	JONES, HENRY	0.19	RESIDENTIAL	NONE
PROPOSED EASEMENT					
A1	189.-2-10	ANDERSON, ROBERT H	0.10	RESIDENTIAL	EASEMENT
A3	189.-2-9.12	TEN EYCK, TERRY	0.97	VACANT	EASEMENT
A4	190.-1-30.11	KAYDEROSS VILLAGE - LOT 2 LLC	2.79	COMMERCIAL	EASEMENT
A5	189.12-1-41.1	CURRIER, STEPHEN & KATHLEEN	0.10	VACANT	EASEMENT
A6	190.9-1-3.1	BRIGGS, RICHARD L	0.28	COMMERCIAL	EASEMENT
A7	189.12-1-9	WIEBICKE, HUGO	0.14	RESIDENTIAL	EASEMENT
A8	189.12-1-3.11	TOWN OF MILTON	0.32	PUBLIC SERVICES	EASEMENT
RUNWAY 23					
EXISTING EASEMENT					
34	177.-1-17.11	DEERE, DENISE	1.01	RESIDENTIAL	NONE
35	177.14-2-21.2	WAGNER, JOSEPH J & PATRICIA	0.30	RESIDENTIAL	NONE
PROPOSED EASEMENT					
B3	177.14-1-20	GEARING, ZACHARY D & ERIN M	0.04	RESIDENTIAL	EASEMENT
B4	177.14-1-19	WAGNER, DAVID J & TERRI A	0.10	RESIDENTIAL	EASEMENT
B5	177.14-1-18	ROSE, CAROL A & WILLIAM J	0.04	RESIDENTIAL	EASEMENT
RUNWAY 14					
EXISTING EASEMENT					
38	176.16-1-12	PUMA, LINDA	0.03	RESIDENTIAL	NONE
39	176.16-1-11	KOSHGARIAN, MICHAEL G	0.33	RESIDENTIAL	NONE
40	176.16-1-10	GARGIULO, RICHARD A & ANNA E	0.62	RESIDENTIAL	NONE
41	176.16-1-9	CHRISTENSEN, AMY S & IANNON, PHILLIP A	1.00	RESIDENTIAL	NONE
42	176.16-1-8	PIROLI, ANDREW P	1.17	RESIDENTIAL	NONE
43	176.16-1-7	CHENEY, FREDERICK D & LISA V	1.48	RESIDENTIAL	NONE
PROPOSED EASEMENT					
C18	176.16-1-6	ZALOGA, JAMES M & DEBRA J	0.68	RESIDENTIAL	EASEMENT
C19	176.-2-10	CISAR, PAULINE	3.51	VACANT	EASEMENT
RUNWAY 32					
EXISTING EASEMENT					
33	190.-7-5	TOWN OF MILTON	0.04	COMMUNITY SERVICES	NONE
PROPOSED EASEMENT					
D1	190.-7-10.2	MARTINS FOODS OF SOUTH BURLINGTON INC	0.08	VACANT	EASEMENT
D2	190.-7-10.31	MILL CREEK GROUP LLC	0.20	VACANT	EASEMENT
D3	190.-7-10.32	MILL CREEK GROUP LLC	0.19	VACANT	EASEMENT
D4	190.-7-11	MARTINS FOODS	0.88	COMMERCIAL	EASEMENT
D5	190.-7-15.1	MILL CREEK GROUP LLC	3.89	RECREATION / ENTERTAINMENT	EASEMENT
D6	190.-7-15.2	MILL CREEK GROUP LLC	1.47	COMMERCIAL	EASEMENT
D7	190.-7-16	MILL CREEK GROUP LLC	0.07	PUBLIC SERVICES	EASEMENT

LEGEND

DESCRIPTION	EXISTING	PROPOSED
RUNWAY PROTECTION ZONE (RPZ)		N/A
NOISE CONTOUR		N/A
AIRPORT PAVEMENT		
GROUND VEHICLE PAVEMENT	N/A	
GLIDER STAGING AREA	N/A	
AIRPORT BUILDINGS	N/A	
TO BE REMOVED	N/A	
TO BE ABANDONED	N/A	
AIRPORT PROPERTY		N/A
AIRPORT EASEMENT		
COUNTY OF SARATOGA PROPERTY		N/A
PARCEL BOUNDARY		N/A
RPZ OVERLAY ZONING DISTRICT		N/A
LAND USE – AGRICULTURAL		N/A
LAND USE – COMMERCIAL		N/A
LAND USE – COMMUNITY SERVICES		N/A
LAND USE – INDUSTRIAL		N/A
LAND USE – PUBLIC SERVICES		N/A
LAND USE – RECREATION / ENTERTAINMENT		N/A
LAND USE – RESIDENTIAL		N/A
LAND USE – WILD, FORESTED, PARKS		N/A
LAND USE – VACANT		N/A

REV	DATE	DESCRIPTION	BY	SPONSOR

McFarland Johnson
60 RAILROAD PLACE, SUITE 402
SARATOGA SPRINGS, NY 12866 www.mjinc.com

SARATOGA COUNTY AIRPORT
SARATOGA COUNTY, NEW YORK

AIRPORT LAND USE AND RPZ CONTROL PLAN

SCALE: 1" = 500'	DESIGN: DKS	SHEET:
DRAWN: RGT	PROJECT: 17588.04	9
CHECKED: JEP	DATE: MAY 2015	

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