



**FINAL ENVIRONMENTAL ASSESSMENT
AND
FINDING OF NO SIGNIFICANT IMPACT**

**RUNWAY EXTENSION AND
RELATED IMPROVEMENTS**

3-50-0011-04

**MIDDLEBURY STATE AIRPORT
MIDDLEBURY, VERMONT**

JULY 2009

PREPARED FOR:

**VERMONT AGENCY OF TRANSPORTATION
AND
FEDERAL AVIATION ADMINISTRATION**

PREPARED BY:

**URS CORPORATION
HUNT VALLEY, MD
CLIFTON PARK, NY**





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URS

This Environmental Assessment becomes a Federal document when evaluated and signed by the responsible Federal Aviation Administration official.

Handwritten signature of Richard Doucette in blue ink.

Richard Doucette, Environmental Program Manager
Federal Aviation Administration – New England Region

Handwritten date "7/23/09" in blue ink.

Date

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

FINDING OF NO SIGNIFICANT IMPACT

LOCATION: Middlebury State Airport: Middlebury, Vermont

PROPOSED FEDERAL ACTION: The proposed Federal action is to approve those projects depicted on the Airport Layout Plan that relate to the extension of Runway 1-19. The projects and environmental impacts are described in detail in the Environmental Assessment entitled *Final Environmental Assessment for the Runway Extension and Related Improvements at Middlebury State Airport* (July 2009).


FEDERAL FINDING: After careful and thorough consideration of the facts contained herein, the undersigned finds that the proposed federal action is consistent with existing national policies and objectives as set forth in Section 101 (a) of the National Environmental Policy Act (NEPA) and that it will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 101 (2)(c) of the NEPA.



Approved By: Richard Doucette

Environmental Program Manager

Federal Aviation Administration - New England Region



Date

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ACRONYMS

6B0	Middlebury State Airport
ACHP	Advisory Council on Historic Preservation
ACOE	US Army Corps of Engineers
ARC	Airport Reference Code
ASDA	Accelerated Stop Distance Available
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
CO	Carbon Monoxide
CUD	Conditional Use Permit
CWA	Clean Water Act
CZMA	Coastal Zone Management Agency
CZMP	Coastal Zone Management Program
DNL	Average Annual Day-Night Sound Level
DOT	US Department of Transportation
EA	Environmental Assessment
EA	Environmental Assessment
EPA	US Environmental Protection Agency
FAA	Federal Aviation Administration
FBO	Fixed Based Operator
FEMA	Federal Emergency Management Agency
FPPA	Farmland Protection Policy Act
FWS	US Fish and Wildlife Service
HUD	US Department of Housing and Urban Development
LDA	Landing Distance Available
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NO2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NPIAS	National Plan of Integrated Airport Systems

ACRONYMS CONTINUED

NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
O3	Ozone
OFA	Runway Object Free Area
Pb	Particulate Matter
PB10	Particulate Matter with a diameter of 10 microns or less
RCRA	Resource Conservation and Recovery Act
RPZ	Runway Protection Zone
RSA	Runway Safety Area
SARA	Superfund Amendments and Reauthorization Act of 1986
SO2	Sulfur Dioxide
TMDL	Total Maximum Daily Load
TODA	Takeoff Distance Available
TORA	Takeoff Run Available
URS	URS Corporation
USC	United States Code
USDA	US Department of Agriculture
VANR	Vermont Agency of Natural Resources
VASP	Vermont Airport System Plan
VFR	Visual Flight Rules
VSMI	Vermont Significant Wetland Inventory
VTrans	Vermont Agency of Transportation

INTRODUCTION

INTRODUCTION

This Environmental Assessment (EA) has been prepared to assist the Federal Aviation Administration (FAA) in evaluating the potential environmental consequences for a range of proposed capital improvements at the Middlebury State Airport (6B0) in Addison County, Vermont (see **Exhibits 1 and 2**). The most recent Master Plan Update (2003) identified the need and timing for future development. The aviation forecasts, demand capacity, and facility requirements completed for the Master Plan Update resulted in a comprehensive development plan for improvements to be implemented over a twenty year planning period (2004-2024). Based on this Master Plan Update, the Vermont Agency of Transportation (VTrans) has prepared a capital development program (CIP) for 6B0. As outlined in the current CIP, the proposed improvements addressed in this EA are intended to upgrade the Airport, which would allow 6B0 to operate in a safe and efficient manner, meet FAA design criteria, and achieve its airside goals. The EA will address the environmental impacts of those projects identified in this CIP, including an extension to the runway and associated taxiway, widening of the runway, removal of obstructions to Title 14 of the Code of Federal Regulations (CFR) Part 77 surfaces, and construction of standard Runway Safety Areas (RSAs) and Runway Object Free Areas (OFAs).

This EA has been prepared in accordance with the National Environmental Policy Act of 1969 [(NEPA); 42 United States Code (USC) 4321 et seq.] and the Council on Environmental Quality implementing regulations [(CEQ); 40 CFR 1500-1508]. The FAA's *Environmental Impacts: Policies and Procedures* (FAA Order 1050.1E, Change 1) was used as guidance for the format and content of this EA, as was the *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* (FAA Order 5050.4B). This EA also addresses the criteria forth in the Vermont Land Use and Development Law (ACT 250).

GENERAL PROJECT LOCATION AND HISTORY

The Middlebury State Airport is located in the Town of Middlebury in Addison County, Vermont (see **Exhibits 1 and 2**). The Airport is three miles southeast of the Town Center and approximately one mile north of the Village of East Middlebury. The Airport is situated at the base of the western slopes of the Green Mountains. Access to the Terminal Area is via Airport Road. The Airport is owned by the State of Vermont and managed by VTrans – Operations Division.

The Airport was initially developed by the Quesnel Family in the 1950's to serve their aerial pesticide application service. The facility was acquired by the Town of Middlebury and later transferred to the State of Vermont (Aeronautics Board) in 1970, with the advent of the State Airport System. The Aeronautics Board became a department within VTrans in 1974.

1950s Airfield Developed by the Quesnel Family
1966 Airfield acquired by the Town of Middlebury
1966 Runway 1-19 Paved (50 feet x 2,500 feet)

- 1970 Airport acquired by the State of Vermont and renamed Middlebury State Airport
- 1976 Construction of parallel taxiway (gravel) by the National Guard
- 1976 Land acquisition
- 1990 Construction of tie-down apron
- 1993 Installation of aviation fuel system
- 2000 Repaved Runway 1-19
- 2003 Construction of new terminal building and hangar
- 2003 Completion of Master Plan Update

The existing Airport Layout Plan (ALP) is depicted on **Exhibit 3** and those facilities that are the focus of this EA are described below.

RUNWAYS: The airfield includes a single runway, Runway 1-19, which is 50 feet wide and 2,506 feet in length. This runway was reconstructed in 2000. The Airport is a daytime VFR (visual flight rules) Airport. There are no runway lights or published instrument approaches into the Airport.

RUNWAY SAFETY AREAS: A RSA is “a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway.” The current RSA for Runway 1 is 120 feet wide and 150 feet in length and the current RSA for Runway 19 is 120 feet wide and 240 feet in length. FAA design standards require that the RSA for Runway 1-19 be 120 feet wide (60 feet on either side of the runway centerline) and 240 feet in length beyond the threshold.

RUNWAY PROTECTION ZONES: The function of a Runway Protection Zone a (RPZ) as defined in FAA Advisory Circular 150/5300-13, Change 13, *Airport Design* is to “enhance the protection of people and property on the ground.” RPZs are trapezoidal in shape and centered about the extended runway centerline. The dimensions of a RPZ are a function of the type of aircraft and approach visibility minima associated with that runway end. Runway 1-19, a Category B visual approach runway, has a RPZ with a length of 1,000 feet, inner width of 250 feet, and outer width of 450 feet.

RUNWAY OBJECT FREE AREA: The OFA is centered on the runway centerline and must be clear of above ground objects protruding above the RSA edge elevation. The existing OFA width is 250 feet wide (125 feet on either side of the runway centerline). The OFA extends 250 feet beyond the Runway 19 end and 200 feet beyond the Runway 1 end.

AIRSPACE AND CONTROLLED SURFACES: As described in 14 CFR Part 77, *Obstructions Affecting Navigable Airspace*, and FAA Advisory Circular 150/5300-13, surfaces are established in relation to an airport and each runway end in order to identify those objects that may affect airport planning and flight procedures. The size of the surfaces depends upon the type of approach planned for that runway (i.e., visual, non-precision instrument, and precision instrument). The five principal surfaces defined in 14 CFR Part 77 are as follows:

- **Primary surface:** a surface longitudinally centered on a runway that extends 200 feet beyond each end of that runway with a width of 250 feet for Runway 1-19, a visual runway with only visual approaches. Its elevation is the same as that of the runway.

- **Approach surface:** a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. The width and elevation of the inner ends conform to that of the primary surface; while the slope, length, and width of the outer end are governed by the runway service category and existing approach procedures. The approach surface for Runway 1-19 extends for a horizontal distance of 5,000 feet at a slope of 20:1.

- **Transitional surface:** a surface that extends outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7:1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

- **Horizontal surface:** a horizontal oval shaped area situated 150 feet above the established airport elevation, which is currently 490 feet above mean sea level at 6B0. Its dimensions are determined by using 5,000-foot arcs for Runway 1-19, which are centered 200 feet beyond each runway end, then connecting a line tangent to those arcs.

- **Conical surface:** a surface that extends outward and upward from the periphery of the horizontal surface at a slope of 20:1 vertical for horizontal distances of 4,000 feet. 6B0's conical surface extends up to an elevation of 350 feet above the established Airport elevation.

TAXIWAYS: The Airport has four separate taxiways: Taxiway A (parallel), B, C, and D. All taxiways consist of a bituminous surface on top of an aggregate base course. All taxiways received a micro-pavement overlay in 1998.

CURRENT AIRPORT ROLE AND CLASSIFICATION

6B0 is one of two airports open to the public in Addison County and is the only Airport with a paved runway open year round. 6B0 is included in the FAA's National Plan of Integrated Airport Systems (NPIAS). In the NPIAS, 6B0 is classified as a General Aviation Airport. The 2007 Vermont Airport System Plan (VASP) categorizes this facility as a Local Service Airport, which is defined as having community importance primarily serving recreational and personal flying activities. While Local Service Airports may serve corporate and business aviation users, they primarily provide storage and facilities for single and twin-engine piston aircraft.

Airports are classified operationally and by conformance to FAA design standards. The operational classification defines an airport by the type of activity and aircraft that use the facility, while the design

classification dictates the spatial requirements for the physical layout of the runways and taxiways and their associated safety areas. Both classifications are described below.

The classification of an airport in reference to its conformance with design standards, as stipulated by FAA Advisory Circular 150/5300-13, Change 13, is accomplished by a system called the airport reference code (ARC). The ARC is comprised of a two-part code, which represents the approach category (speed) and design Group (wing span and/or tail height) of the critical or design aircraft. The design aircraft is defined as the largest aircraft that is using or is anticipated to use the airport a minimum of 500 annual operations in the foreseeable future. The components of the ARC are depicted in **Table 1**.

TABLE 1: ARC COMPONENT DEFINITIONS

APPROACH CATEGORY	APPROACH SPEED CRITERIA	DESIGN GROUP	WINGSPAN CRITERIA
A	Speed < 91 Knots	I	Wingspan < 49 feet
B	Speed > 91 but < 121 knots	II	Wingspan > 49 but < 79 feet
C	Speed > 121 but < 141 knots	III	Wingspan > 79 but < 118 feet
D	Speed > 141 but < 166 knots	IV	Wingspan > 118 but < 171 feet
E	Speed > 166 knots	V	Wingspan > 171 but < 214 feet
		VI	Wingspan > 214 but < 262 feet

Source: FAA Advisory Circular 150/5300-13, Change 13.

Current aircraft traffic at 6B0 is generally small single engine aircraft, which lead to the Master Plan Update selection of the Cessna 172 as the pre-dominant aircraft. According to the Master Plan Update, the largest aircraft operating at the Airport are in the A-I ARC; however, the given the growth potential at the Airport, the Master Plan designated the ARC as B-I for the entire planning period. Examples of aircraft in this ARC include: Beechcraft (King Air B-100, Baron), Cessna [Businessliner (402), Golden Eagle (421)], Mitsubishi (MU-2), Piper (Navajo, Cheyenne, Aerostar), and Rockwell (Turbo Commander). All of these aircraft are currently in use and are frequent visitors to airports in the Northeast, including 6B0; albeit, under ideal weather conditions and at a reduced weight.

HISTORIC AND FORECASTED AVIATION ACTIVITY

Both FAA Form 5010-1 and the Master Plan Update cited aviation activity in calendar year 1999 at 35,000 operations with the Master Plan Update forecast for moderate growth to 37,500 operations for 2004 and 40,200 operations in 2009. From the 1970's to the 1990's, the Airport was one of the busiest general aviation airports in the Vermont State System due to its flight school and aerial pesticide application traffic and these numbers appeared reasonable. However, acoustical data collected in July 2006 by VTrans presented lower operational data. The acoustical data received for the month of July 2006 recorded 483 aircraft takeoffs, which prorated to 11,592 annual operations. **Table 2** summarizes the aviation forecasts developed in the Master Plan Update and includes the 2006 acoustical data.

TABLE 2: SUMMARY OF MASTER PLAN FORECAST DATA

	1999	2004	2006	2009	2019
Based Aircraft	44 ¹	46 ¹	48 ²	50 ¹	55 ¹
Local Operations	28,000 ¹	30,000 ¹	--	32,200 ¹	37,000 ¹
Itinerant Operations	7,000 ¹	7,500 ¹	--	8,000 ¹	9,200 ¹
Total Operations	35,000 ¹	37,500 ¹	11,592 ³	40,200 ¹	46,200 ¹
ARC	A-I ¹	B-I ¹	B-I ¹	B-I ¹	B-I ¹

Sources:¹ Master Plan Update (May 2003)

² J&M Aviation (September 2006)

³ VTrans (July 2006)

J&M Aviation, the Fixed Based Operator (FBO), verified that there were 48 aircraft, including jet and multi-engine piston aircraft such as the Fougere Magistere, Piper Aztec, Cessna Citation and Cessna 310, based at the Airport in 2006. This number of existing based aircraft compared well with the fleet mix forecasts in the Master Plan Update, which is included in **Table 3**. In addition to the aircraft currently based on the airfield, other multi-engine and jet aircraft operating at the Airport include the Piper Navajo, Piper Aztec, Piper Cheyenne, Cessna 402, and Beechcraft Baron.

TABLE 3: BASED AIRCRAFT FLEET MIX FORECAST

	1999	2004	2006	2009	2019
Total Based Aircraft	44	46	48 ¹	50	55
Single Engine Piston Aircraft	35	37	42 ¹	39	43
Multi-Engine Piston Aircraft	3	3	3 ¹	4	4
Turboprop Aircraft	--	--	--	--	--
Jet Aircraft	3	3	3 ¹	4	4
Rotor Aircraft	2	2	--	2	3
Ultra-light Aircraft	1	1	1 ¹	1	1
Glider	--	--	1 ¹	--	--

Sources: Master Plan Update (May 2003)

¹ J&M Aviation (September 2006)

The Master Plan Update forecasted the annual traffic growth at approximately 1.5 percent annually over the 20-year plan. As a comparison, air traffic operations at the neighboring Rutland State Airport have increased approximately 2 percent annually since the year 2000.

Using the 2006 acoustical data, aviation forecasts were developed using two separate methodologies. The first methodology assumes that aviation growth at the Airport will continue at 2 percent annually. The second methodology assumes that the forecasts will increase in direct proportion to the based aircraft times 259. Both methodologies present similar forecasts, which are shown in **Table 4**. Both forecast methodologies assumed that the existing runway dimensions remained constant. These forecasts were reviewed and accepted by VTrans in February 2007.

TABLE 4: PREFERRED AVIATION FORECASTS (2006-2016)

	Actual		Forecast	
	1991 ¹	2006	2011	2016
Based Aircraft	44	48 ²	52	57
Local Operations	28,000	--	--	--
Itinerant Operations	7,000	--	--	--
Operations	35,000	11,592 ³	--	--
Forecast Operations – (Method A)	--	--	12,800	14,000
Forecast Operations – (Method B)	--	--	13,468	14,763
Preferred Forecasts	--	--	13,000	14,200
Airport Reference Code	A-I	B-I	B-I	B-I

Sources: URS Corporation (2007)

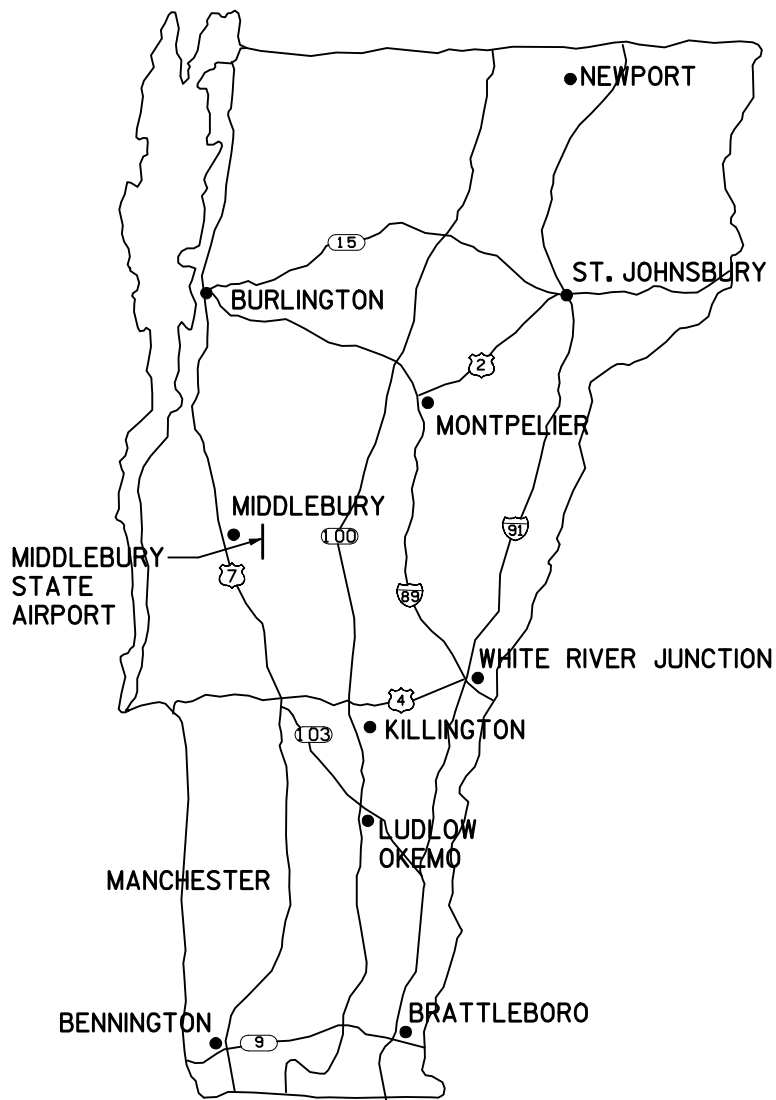
¹ Master Plan Update (May 2003)

² J&M Aviation (2007)

³ VTrans (2006)

ENVIRONMENTAL ASSESSMENT

The Master Plan Update noted several deficiencies at the Airport, including a non-standard RSA and OFA for Runway 1, penetrations to the existing Runway 1 approach surface, a non-standard runway width, and a deficient runway length to accommodate existing and projected fleet mix. However, the Master Plan recommended additional studies be completed to verify that the current aircraft fleet and operations warrant an extension. As a result of this recommendation for additional analyses, an obstruction analysis was completed, forecasts were prepared based on recent acoustical data, and a runway extension analysis was performed. The results of these studies culminated into the preparation of this document.



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7/17/2008



28 CORPORATE DRIVE, SUITE 200
CLIFTON PARK, NY 12065
(518) 688-0015

DESIGNER: G.W.D.
DRAWN: A.R.Z.
CHECKED: G.W.D.
APPROVED: -

LOCATION MAP

MIDDLEBURY STATE AIRPORT
MIDDLEBURY, VERMONT

ENVIRONMENTAL ASSESSMENT

SCALE: N.T.S.

DATE: APRIL, 2008

PROJECT No. 38397022

EXHIBIT

1



P:\38397022\Civil\Sheets\EA Report\1\Final\Draft EA (4-08)\Exhibit 2.dgn
 7/7/2008

URS
 28 CORPORATE DRIVE, SUITE 200
 CLIFTON PARK, NY 12065
 (518) 688-0015

DESIGNER: G.W.D.
 DRAWN: M.C.M.
 CHECKED: G.W.D.
 APPROVED:

VICINITY MAP

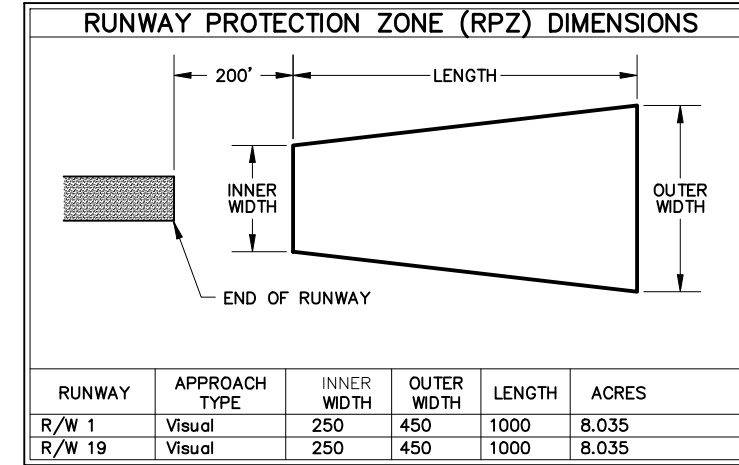
MIDDLEBURY STATE AIRPORT
 MIDDLEBURY, VERMONT
ENVIRONMENTAL ASSESSMENT
 SCALE: AS NOTED DATE: APRIL, 2008

PROJECT No. 38397022
 EXHIBIT
2

AIRPORT DATA	EXISTING	ULTIMATE
AIRPORT ELEVATION	494.3	
AIRPORT REFERENCE POINT	N 43° 59' 08" E 73° 05' 44"	
MEAN MAX. TEMP. (HOTTEST MO.)	80° F	
TAXIWAY LIGHTING	---	
TAXIWAY MARKING	---	
AIRPORT/TERMINAL NAVAIDS	None	
AIRPORT REFERENCE CODE (ARC)	B-I	
ACREAGE OWNED IN FEE SIMPLE	156 Acres	
ACREAGE OWNED IN EASEMENT	6 Acres	
USE/OWNERSHIP	General Aviation/State	

EXISTING	ULTIMATE	BUILDINGS
①		T-HANGAR
②		FUEL FARM
③		HANGAR
④		TERMINAL HANGAR
⑤		HANGARS
⑥		T-HANGARS
⑦		DOWNEY CORP. MAINTENANCE HANGAR
⑧		DOWNEY CORP. MAINTENANCE HANGAR
EXISTING	ULTIMATE	TERMINAL AREA PAVEMENT
Ⓐ		LOWER RAMP
Ⓑ		FUEL APRON
Ⓒ		UPPER RAMP
Ⓓ		AUTO PARKING

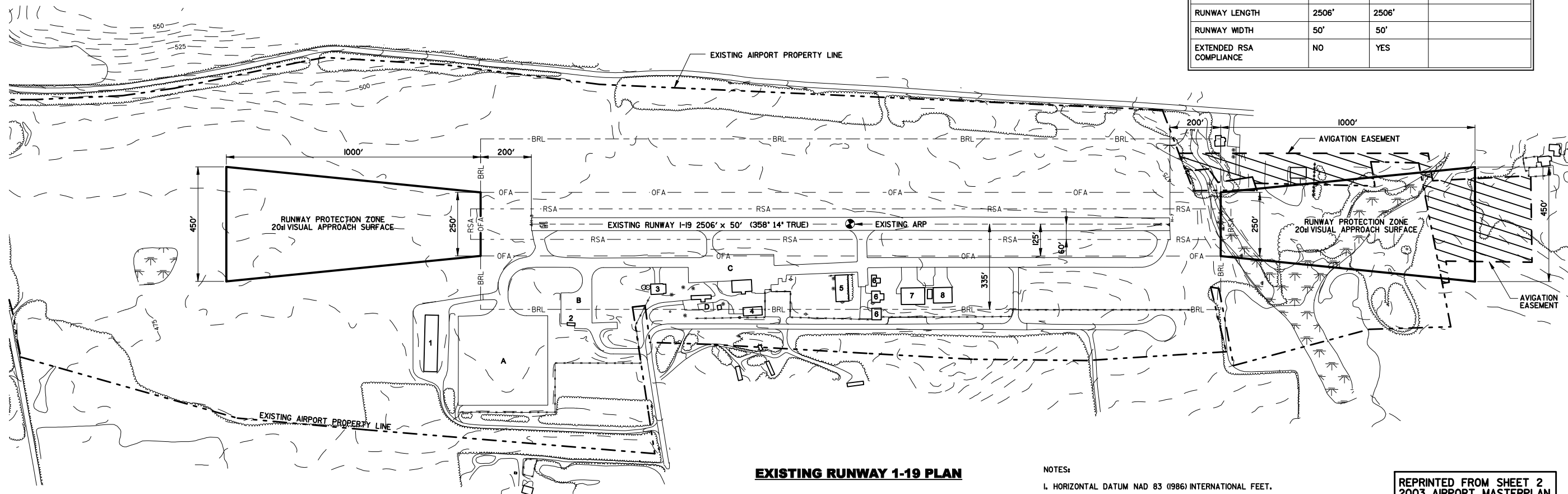
LEGEND	EXISTING	ULTIMATE
GROUND CONTOUR	190	
AIRPORT PROPERTY	---	
AVIGATION EASEMENT	///	
BUILDING RESTRICTION LINE (BRL) *	--- BRL ---	
PART 77 APPROACH SURFACE	N/A	
OBSTACLE FREE AREA (OFA)	--- OFA ---	
RUNWAY SAFETY AREA (RSA)	--- RSA ---	
RUNWAY SAFETY AREA IMPROVEMENTS	N/A	
RUNWAY PROTECTION ZONE (RPZ)	=====	
TREE LINE	~~~~~	
SECURITY FENCE	x-x-x-x-x-x	
AIRPORT REFERENCE POINT	⊙	
SWALE/DITCH	--->---	
R/W END IDENTIFIER LIGHTS (REIL)	△	
WETLAND BOUNDARY	~ ~ ~ ~ ~	
UNIMPROVED ROADWAYS	=====	
PAVEMENT	=====	
AIRPORT BUILDINGS	▭	



RUNWAY DATA	EXISTING	ULTIMATE
	1	19
PAVEMENT STRENGTH	12,500 SW	12,500 SW
APPROACH SURFACES	Visual 20:1	Visual 20:1
RUNWAY MARKINGS	Visual	Visual
RUNWAY LIGHTING	None	None
RUNWAY NAVAIDS	None	None
EFFECTIVE GRADIENT	0.3%	
RUNWAY END ELEVATIONS	484.7	492.0
RUNWAY END COORDINATES	N 43° 58' 55" W 73° 05' 43"	N 43° 59' 20" W 73° 05' 44"
RUNWAY LENGTH	2506'	2506'
RUNWAY WIDTH	50'	50'
EXTENDED RSA COMPLIANCE	NO	YES

NOTE:

BUILDING RESTRICTION LINE (BRL) WAS ESTABLISHED IN ACCORDANCE WITH FAA DESIGN AND FAR PART 77 CRITERIA. ITS LOCATION UTILIZES A 30 FT. VERTICAL OBJECT HEIGHT. THE BRL LOCATION MAY CHANGE DUE TO GROUND CONTOURS OR DIFFERENT OBJECT HEIGHTS, BUT ALWAYS IN ACCORDANCE WITH FAR PART 77 AND FAA DESIGN CRITERIA.



EXISTING RUNWAY 1-19 PLAN



NOTES:

- HORIZONTAL DATUM NAD 83 (1986) INTERNATIONAL FEET.
- VERTICAL DATUM NAVD 88 INTERNATIONAL FEET
- EXISTING EASEMENT AND PROPERTY LINES BASED ON "AIRPORT PROPERTY MAP" PREPARED FOR VAOT BY CLOUGH HARBOUR ASSOCIATES, MARCH 1999.

REPRINTED FROM SHEET 2
2003 AIRPORT MASTERPLAN
UPDATE, PREPARED BY
DUFRESNE-HENRY, INC.

SECTION 1 **PURPOSE AND NEED**

1.1

PURPOSE AND NEED FOR THE PROPOSED PROJECTS

The proposed projects included in the EA involve the construction of standard RSAs and OFAs, the removal of penetrations to the existing Runway 1 approach surface, and the extension and widening of Runway 1-19 and associated parallel taxiway. These projects were proposed in the Master Plan Update to allow the Airport to meet FAA design criteria and to achieve its objective of providing continued safe and efficient aviation services to the traveling public.

The proposed Airport improvements are needed for the following reasons:

CONSTRUCT RSAs FOR RUNWAY 1 THAT MEET FAA DESIGN STANDARDS: Currently the RSA for Runway 1 is listed as a non-conforming condition on the ALP. FAA policy is that all RSA's comply with FAA standards.

CONSTRUCT OFA FOR RUNWAY 1 THAT MEET FAA DESIGN STANDARDS: Currently the OFA for Runway 1 only extends 200 feet beyond the Runway end and to be in accordance with FAA design standards, the OFA needs to extend to 240 feet.

REMOVE PENETRATIONS TO 14 CFR PART 77 APPROACH SURFACE: Currently, there are at least eight obstructions within the approach to Runway 1.

EXTEND RUNWAY AND ASSOCIATED TAXIWAY: In order to serve the existing and projected fleet mix, the runway and taxiway should be extended to serve the design aircraft. The Master Plan Update and the recently completed *Runway 1-19 Extension Analysis* recommend that the runway be extended to serve aircraft in ARC B-I. Lengths ranging from 3,100 feet to 3,700 feet will be analyzed in Section 2.

WIDEN RUNWAY FROM 50 FEET TO 60 FEET: FAA standards recommend a minimum width of 60 feet for runways serving aircraft in ARC B-I.

1.2

REQUESTED FEDERAL ACTION

VTrans has submitted an ALP depicting the proposed action to the FAA for review and approval in July 2005 (refer back to **Exhibit 3**). The FAA may approve the ALP depicting the proposed projects with conditions; but unconditional approval is not possible until the environmental investigation represented in this EA has been completed. This EA is being prepared on behalf of VTrans and presents an evaluation of impacts on the environment and provides a detailed review of the proposed development actions as required by FAA Order 5050.4B. Appropriate Federal actions will be documented in an environmental finding that the FAA will prepare before it makes a decision on the proposed projects under its specific purview, or consideration of funding for the proposed project. This EA is being submitted in accordance with the Council on Environmental Quality (CEQ) regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. If a Finding of No Significant Impact is granted from the FAA for these proposed projects, Federal

financial participation for the design and construction may be requested by VTrans, as the Airport Sponsor.

1.3 EXISTING AIRPORT DEFICIENCIES

1.3.1 RUNWAY LENGTH

The airfield includes a single runway, Runway 1-19, which is 50 feet wide and 2,506 feet in length. The current fleet mix at 6B0 typically includes Beechcraft (King Air B-100, Baron), Cessna [Businessliner (402), Golden Eagle (421)], Mitsubishi (MU-2), Piper (Navajo, Cheyenne, Aerostar), and Rockwell (Turbo Commander). Many of these (or similar) aircraft are currently using the Airport; albeit, under ideal weather conditions and at reduced weight. The FBO has indicated that larger aircraft often depart with less than a full load of fuel to reduce weight during takeoff. The Master Plan Update for the Airport depicted a 1,200-foot extension for Runway 1-19 to serve the aviation needs of Addison County, which would result in a total runway length of 3,700 feet. However, it should be noted that a runway extension to 3,700 feet was not fully justified in the Master Plan Update; the FAA required additional analyses be performed. As a result, a *Runway 1-19 Extension Analysis* (URS Corporation 2007) was recently completed for the Airport to determine the length of runway feasible at the Airport (see **Appendix B**). It was determined that a runway length between 3,100 feet and 3,700 feet would be required at 6B0 to accommodate aircraft in Airport Reference Code (ARC) B-I. Also, the 2007 Vermont Airport System Plan (VASP) recommends standards for Local Service Airports, as a recommend runway length of 4,000 feet and a width of 75 feet. In addition, local aviation interests support a minimum length of 3,700 feet.

1.3.2 RUNWAY WIDTH

The Master Plan Update also recommended widening the existing runway from 50 feet to 60 feet to meet ARC B-I standards.

1.3.3 RUNWAY SAFETY AREA

The RSA required for any airport is based on the characteristics of the design or critical aircraft. These defining characteristics are expressed in the ARC. According to FAA design criteria set forth in FAA Advisory Circular 150/5300-13, Runway 1-19, which is included under ARC B-I, requires a RSA 120 feet wide (60 feet on either side of the runway centerline) and 240 feet in length beyond the threshold. The current RSA for Runway 1 is 120 feet wide (meets FAA design criteria) and 100 feet in length (does not meet FAA design criteria) and the current RSA for Runway 19 is 120 feet wide and 240 feet in length, which meets FAA design criteria.

1.3.4

RUNWAY OBJECT FREE AREA

FAA design standards require an OFA that is 250 feet wide and 240 feet beyond the runway end. As noted in the Master Plan Update, Runway 1 OFA is 250 feet in width; however it only extends 200 feet beyond the Runway 1 end due to existing obstructions (trees).

1.3.5

TITLE 14 OF THE CODE OF FEDERAL REGULATIONS PART 77 SURFACES

There are several existing penetrations to the 14 CFR Part 77 approach surface of Runway 1-19. There are at least eight obstructions within the approach to Runway 1; the obstructions consist of trees. Based on the Airport property boundary and avigation easements depicted in the current Master Plan Update, at least seven groups of these trees are located on property controlled or owned by the Airport.

SECTION 2 **ALTERNATIVES**

2.0 INTRODUCTION

Section 1 identified the nature and extent of existing conditions at 6B0 and the proposed improvements required to keep pace with future aviation activity. This section provides a description and evaluation of alternatives considered in terms of meeting the identified purpose and need for the proposed improvements at 6B0: extension of Runway 1-19 to accommodate the existing and future fleet mix; extension of the parallel taxiway to the proposed runway end; widening of the runway to meet FAA design standards; removal of obstructions to the Runway 1 14 CFR Part 77 surfaces; and construction of a standard RSA and OFA for Runway 1 to meet FAA design standards. The range of alternatives developed for the proposed projects are based on requirements contained in FAA Order 5050.4B.

2.1 RUNWAY WIDENING

Each of the Build Alternatives discussed for the construction of a standard RSA and OFA, removal of 14 CFR Part 77 obstructions, and extension of the runway will include the widening of the runway. As mentioned in Section 1, Runway 1-19 is a B-I runway and should be 60 feet in width to adhere to FAA design standards. The runway is currently 50 feet in width.

2.2 RSA AND OFA UPGRADE AND 14 CFR PART 77 OBSTRUCTION REMOVAL

ARC B-1 standards requires a RSA 120 feet wide (60 feet on either side of the runway centerline) and 240 feet in length beyond the runway threshold. The current RSA for Runway 1 is 120 feet in width, which meets standards; however, given the topography off the runway end and the presence of a wetland, the RSA is only 100 feet in length beyond the runway threshold.

FAA design standards require an OFA that is 250 feet wide and 240 feet beyond the runway end. Runway 1 OFA is 250 feet in width; however, it only extends 200 feet beyond the Runway 1 end due to existing trees.

In addition, there are at least eight obstructions to the 14 CFR Part 77 surfaces of Runway 1.

Although a wide range of alternatives could be developed by varying the length of the relocated threshold of Runway 1 to provide a standard RSA and OFA as well as clear the Runway 1 14 CFR Part 77 surfaces, the goal of this assessment is to evaluate the potential impacts of all the project elements as a cumulative group of actions to be implemented at 6B0. Therefore, the alternatives herein will address standard RSAs and OFAs as well as 14 CFR Part 77 surfaces.

2.2.1

ALTERNATIVE 1 - RELOCATE RUNWAY 1 THRESHOLD 140 FEET

Alternative 1 would relocate the Runway 1 threshold 140 feet northerly, resulting in a RSA that is 120 feet in width by 240 feet in length and an OFA that is 240 feet in length (see **Exhibit 2.2-1**). In addition, this option would include the removal of all of the trees located on Airport controlled property that are obstructions to the 14 CFR Part 77 surfaces to Runway 1 and the widening of the runway to 60 feet. Two trees located off-Airport would remain as penetrations to the 14 CFR Part 77 surfaces to Runway 1 and would require the acquisition of additional off-Airport easements. No wetlands would be impacted by this proposed alternative.

It should be noted that should the runway not be extended as proposed in Section 2.3, the resultant runway length with this alternative would be 2,366 feet.

This alternative meets the purpose and need of a standard RSA, OFA, and runway width; however, this alternative would not allow for the 14 CFR Part 77 surfaces of Runway 1 to be clear of penetrations unless additional avigation easements were obtained. It has been noted that VTrans prefers an alternative that minimizes the need to acquire additional easements or property for the purpose of obstruction removal.

2.2.2

ALTERNATIVE 2 - RELOCATE RUNWAY 1 THRESHOLD 341 FEET

Alternative 2 would relocate the Runway 1 threshold 341 feet northerly, resulting in a RSA that is 120 feet in width and 240 feet in length and an OFA that is 240 feet beyond the runway end (see **Exhibit 2.2-2**). In addition, this option would include the removal of all of the trees located on Airport controlled property that are obstructions to 14 CFR Part 77 surfaces to Runway 1 and the widening of the runway to 60 feet. By relocating the threshold an additional 201 feet, the existing off-Airport obstructions would not penetrate any 14 CFR Part 77 surfaces to Runway 1. Therefore, no additional easements would be needed. No wetlands would be impacted by this proposed alternative.

If the runway is not extended as proposed in Section 2.3, the resultant runway length with this alternative would be 2,165 feet.

This alternative meets the stated purpose and need of a standard RSA, clear approach surface, and standard runway width.

2.2.3

NO BUILD ALTERNATIVE

This alternative would maintain the current non-standard RSA and OFA on Runway 1 and therefore, would not be in compliance with FAA design standards.

The No Build Alternative would also allow the penetrations to the existing 14 CFR Part 77 surfaces to Runway 1 to remain. The runway would remain at a non-standard width of 50 feet and therefore, not

in compliance with FAA design standards for ARC B-I. Therefore, the No Build Alternative is not a feasible alternative.

2.2.4 *PREFERRED ALTERNATIVE – RSA, OFA, AND 14 CFR PART 77 OBSTRUCTION REMOVAL*

Alternative 2 is the Preferred Alternative for creating a standard RSA and OFA for Runway 1, providing a standard runway width, and providing a clear approach surface to Runway 1. This alternative would not require any additional land acquisition or impact any wetlands. It should be noted, however, that should the runway not be extended as discussed in the following section and the Runway 1 threshold is relocated 341 feet to provide for a standard RSA, the resultant runway length would be 2,165 feet.

2.3 **RUNWAY EXTENSION**

The alternatives contained herein were developed as part of the *Runway 1-19 Extension Analysis* (September 2007) and were developed with the assumption that additional easements would not be obtained to clear obstructions within Runway 1 14 CFR Part 77 surfaces and that the Runway 1 threshold would then be relocated 341 feet to provide for a standard RSA and OFA as well as clear surfaces (see Section 2.2.4).

2.3.1 *ALTERNATIVE 1 – EXTEND RUNWAY 19 BY 1,194 FEET*

Alternative 1 involves the extension of the Runway 19 and associated taxiway by 1,194 feet at a gradient of 0.00% (see **Exhibit 2.3-1**). With the relocation of the Runway 1 threshold 341 feet as discussed in the subsection above, the resultant runway length would be of 3,359 feet and the width would be 60 feet. With this alternative, several trees located both on and off-Airport property would be located within the proposed 14 CFR Part 77 surfaces to Runway 19; therefore, avigation easements would be required to clear the trees off-Airport. This alternative would impact 0.02 acres of wetland and 0.18 acres of wetland buffer.

This alternative meets the stated purpose and need of providing a runway length and width to accommodate a portion of the existing and future aircraft fleet mix; however, a runway length of 3,359 would not provide sufficient length to accommodate the majority of aircraft with the ARC that desire to use the airfield. In addition, it has been noted that VTtrans prefers an alternative that minimizes the need to acquire additional easements or property for the purpose of obstruction removal.

2.3.2 *ALTERNATIVE 2 – EXTEND RUNWAY 19 BY 935 FEET*

Alternative 2 involves the extension of the Runway 19 and associated taxiway by 935 feet at a gradient of 0.20% (see **Exhibit 2.3-2**). With the relocation of the Runway 1 threshold 341 feet, this alternative would result in a runway length of 3,100 feet and the width would be 60 feet. Several trees

located on Airport would be located within the proposed 14 CFR Part 77 surfaces to Runway 19 and would require removal; however no additional properties or easements would need to be acquired. In addition, no wetlands would be impacted.

This alternative meets the stated purpose and need of providing a runway length and width to accommodate a portion of the existing and future aircraft fleet mix; however, a runway length of 3,100 feet would not provide sufficient length to accommodate the majority of aircraft with the ARC that desire to use the airfield.

2.3.3 ALTERNATIVE 3 – EXTEND RUNWAY 19 1,050 FEET

Alternative 3 involves the extension of Runway 19 and associated taxiway by 1,050 feet at a gradient of 0.70% (see **Exhibit 2.3-3**). With relocating the Runway 1 threshold 341 feet, this alternative would result in a runway length of 3,215 feet and a width of 60 feet. Several trees located on Airport would be located within the proposed 14 CFR Part 77 surfaces to Runway 19 and would require removal; however, no additional properties or easements would need to be acquired. This alternative would not impact any wetlands; however, temporary impacts would occur to the wetland buffer during construction.

This alternative meets the stated purpose and need of providing a runway length and width to accommodate a portion of the existing and future aircraft fleet mix; however, a runway length of 3,215 feet would not provide sufficient length to accommodate the majority of aircraft with the ARC that desire to use the airfield.

2.3.4 ALTERNATIVE 4 – EXTEND RUNWAY 19 BY 1,535 FEET

Alternative 4 involves the extension of Runway 19 and associated taxiway by 1,535 feet at a gradient of 2% (see **Exhibit 2.3-4**). Coupled with the relocation of the Runway 1 threshold, this alternative would result in a runway length of 3,700 feet and a width of 60 feet. Several trees located on Airport would be located within the proposed 14 CFR Part 77 surfaces to Runway 19 and would require removal; the 2% gradient is required to clear the obstructions off-Airport property to the north. Note: the 2% gradient will result in a threshold elevation approximately 45 feet above the existing ground elevation. This alternative would impact 0.9 acres of wetlands and 0.54 acres of wetland buffer.

This alternative meets the stated purpose and need of providing a runway length and width to accommodate all of the existing and future aircraft fleet mix.

2.3.5

ALTERNATIVE 5 – EXTEND RUNWAY 19 BY 1,535 FEET WITH DISPLACED THRESHOLDS

Runway 1 could be extended 1,535 feet at a gradient of 0.20% to provide 3,900 feet of runway pavement, and incorporating displaced thresholds to allow for clear approaches (see Exhibit 2.3-5).

The threshold for Runway 1 will be placed at station 476+34 (displaced 341 feet) to allow for a 20:1 clear approach to Runway 1 from the south. The Runway 19 threshold will be placed at Station 509+35 to provide for a 20:1 clear approach to the north. Both Runways 1 and 19 will be displaced as shown in Exhibit 2.3-5. Displacing the thresholds as described will provide the usable runway lengths shown in Table 2.3-1:

TABLE 2.3-1: ALTERNATIVE 5 WITH DISPLACED THRESHOLDS

	RUNWAY 1 (FEET)	RUNWAY 19 (FEET)
LANDING	3,700	3,300
TAKEOFF	3,900	3,900

Source: URS Corporation (2007).

The displaced thresholds can be removed when additional easements are obtained and the obstructions in the approaches removed. The resultant runway length would be 3,900 feet.

As with Alternative 4, this alternative would not require additional properties or easements to be acquired at this time; but would require the removal of trees on Airport controlled land to clear the Runway 1 14 CFR Part 77 approach surface. In addition, this alternative would impact 0.62 acres of wetlands and 0.76 acres of wetland buffer.

2.3.6

NO BUILD ALTERNATIVE

The No Build Alternative was assessed consistent with Section 1502.14(d) of CEQ Regulations (40 CFR 1500-1508), which requires that the No Build Alternative be considered in all development projects. The No Build Alternative assumes that no alteration of the existing airfield would occur other than routine maintenance and equipment upgrading.

This alternative would maintain Runway 1-19 at its current width and length. The current runway length is 2,506 feet, which is insufficient for aircraft currently using the runway. FAA standards recommend a runway length up to 3,700 feet for ARC B-I aircraft such as those currently or projected to use the runway. In addition, the current runway width is 50 feet, which is a 10 feet less than current FAA standard.

Therefore, the No Build Alternative is not a feasible alternative as it does not meet the stated purpose and need.

2.3.7

SPONSOR'S PREFERRED ALTERNATIVE FOR RUNWAY 1-19 EXTENSION

Alternative 5 is the Sponsor's Preferred Alternative for providing a runway extension that would serve the existing and future aircraft fleet mix and operations at the Airport. Runway 19 would be extended 1,535 feet; however, with the use of displaced thresholds. The landing distance available would be 3,700 feet and 3,300 feet for Runway 1 and 19, respectively. The take off distance available would be 3,900 feet for both Runway 1 and 19. The displaced thresholds could be removed if additional easements were obtained and obstructions removed; the resultant runway length would be 3,900 feet without displaced thresholds. This alternative assumes that the Runway 1 threshold is displaced 341 feet to provide for a standard RSA and OFA and obstructions on Airport controlled property would be removed. No additional properties or easements would need to be acquired. Approximately 0.62 acres of wetlands and 0.76 acres of wetland buffer would be impacted.

2.3.8

FAA'S PREFERRED ALTERNATIVE FOR RUNWAY 1-19 EXTENSION

It should be noted the FAA has indicated that Alternative 3 is the Preferred Alternative. This involves the extension of Runway 19 and associated taxiway by 1,050 feet to an ultimate length of 3,215 feet, with the assumption that the Runway 1 threshold is relocated 341 feet to provide for a standard RSA and OFA. Obstructions on existing Airport property would need to be removed; however, no additional properties or easements would need to be acquired for obstruction removal. No wetlands would be impacted with the exception of temporary impacts to the wetland buffer during construction (approximately 0.08 acres).

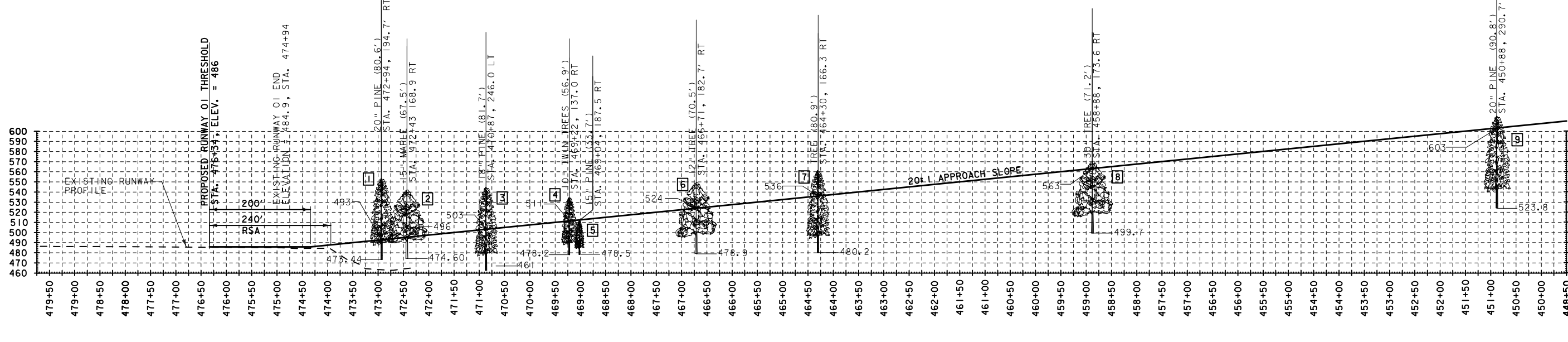
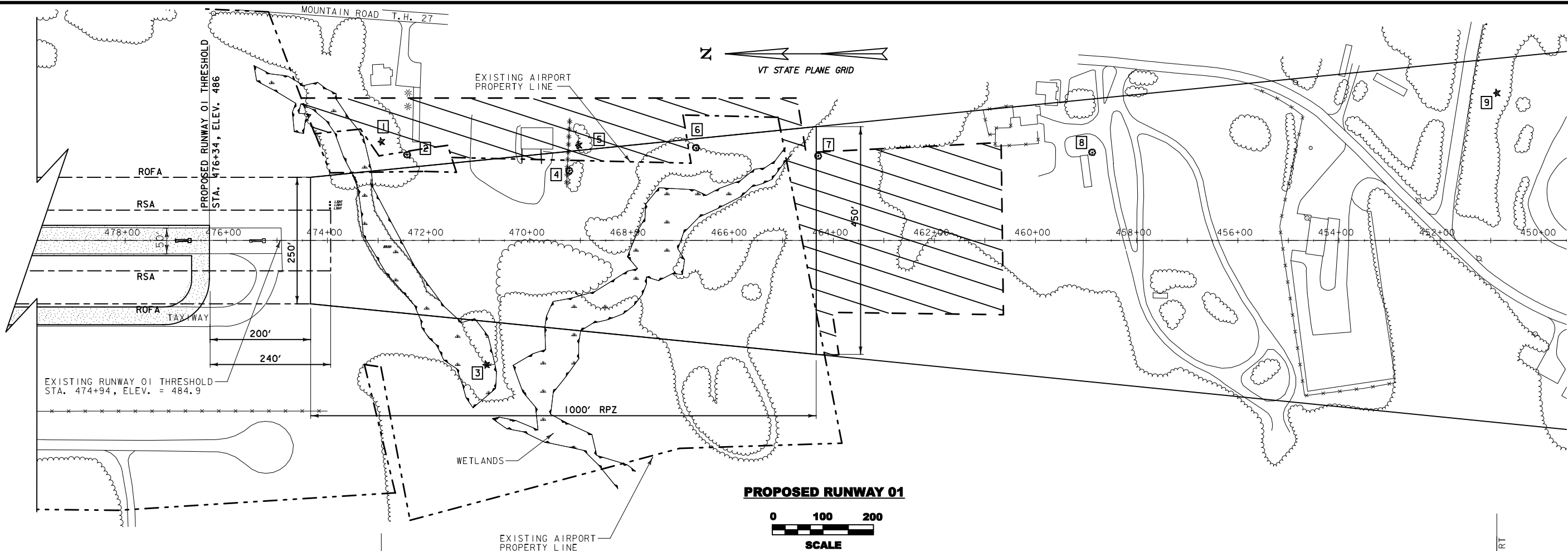
2.4

SUMMARY OF PREFERRED PROJECT COMPONENTS

A preferred option has been identified for each of the projects identified above. These projects are listed below (refer back to **Exhibit 3**):

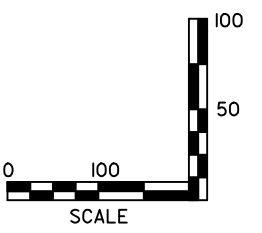
- Widen Runway existing 1-19 from 50 feet to 60 feet;
- Relocate Runway 1 threshold 341 feet to provide a standard RSA and OFA and clear 14 CFR Part 77 surfaces for Runway 1; and
- Extend Runway 1-19 and associated taxiway 1,535 feet (Sponsor's Preferred).

Note: **Exhibit 3** is the current ALP for the Airport. The ALP depicts a 3,700 foot runway but without the use of displaced thresholds. The ALP does not depict the relocation of the Runway 1 threshold by 341 feet.

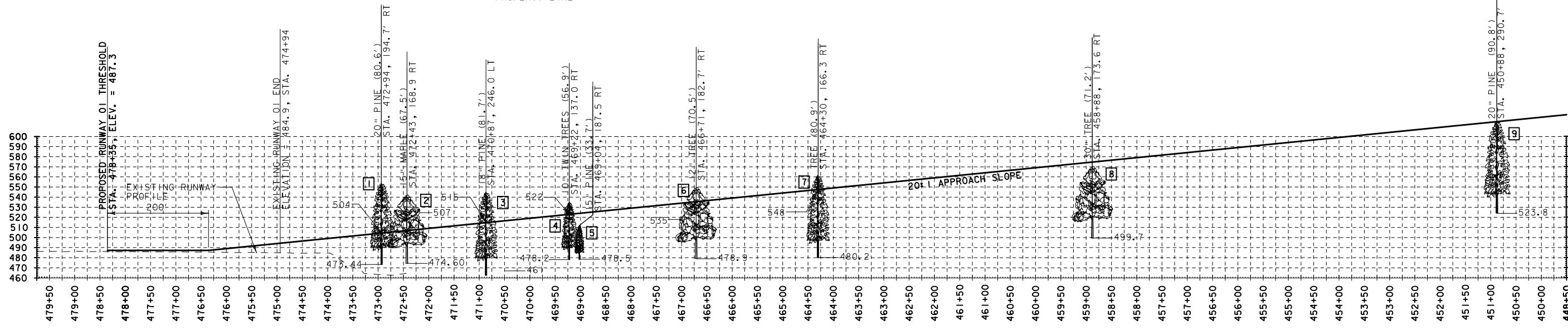
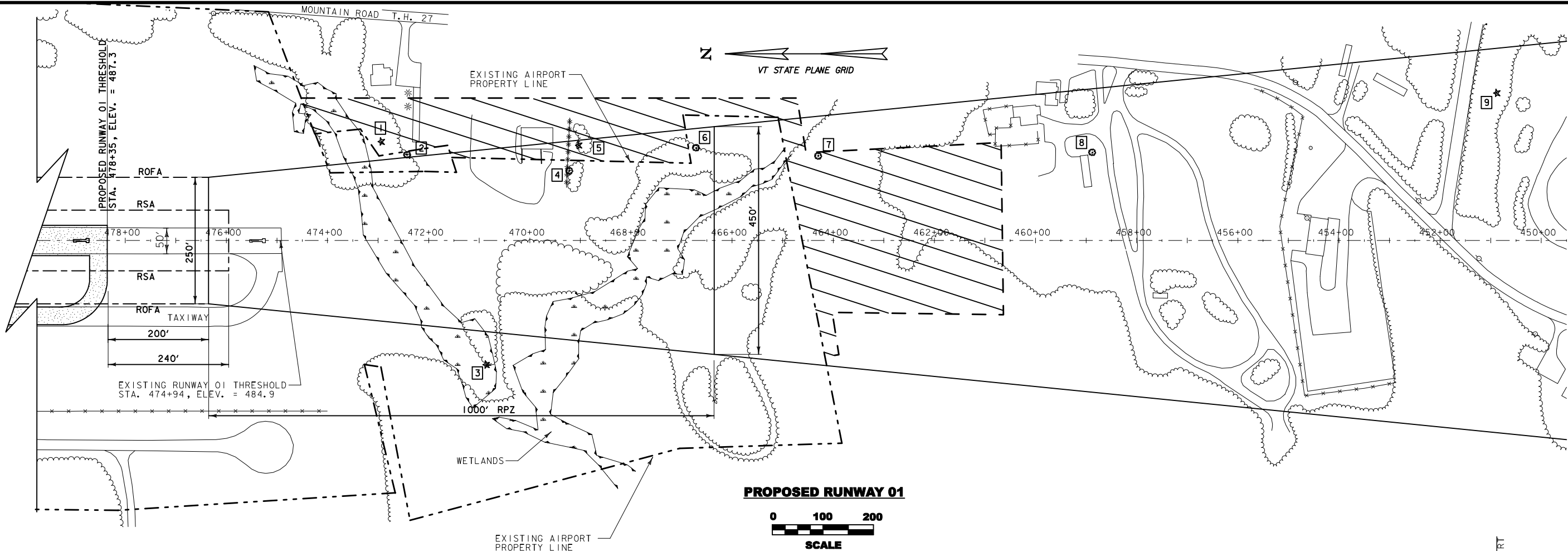


- NOTES:**
- 1.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 1, 2, 5 AND 7 LIE WITHIN THE AVIGATION EASEMENT.
 - 2.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTION 3 IS ON AIRPORT PROPERTY.
 - 3.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTION 6 IS ON AIRPORT PROPERTY .
 - 4.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 8 AND 9 ARE OFF AIRPORT PROPERTY, NOT IN AVIGATION EASEMENT.
 - 5.) WETLANDS DELINEATED BY THE SMART ASSOCIATES, INC. NOVEMBER 2005

- LEGEND**
- EXISTING AIRPORT PROPERTY LINE
 - - - - - LIMIT OF DELINEATED WETLANDS
 - EDGE OF RUNWAY PROTECTION ZONE (RPZ)
 - - - - - RUNWAY OBJECT FREE AREA (ROFA)
 - - - - - RUNWAY SAFETY AREA (RSA)



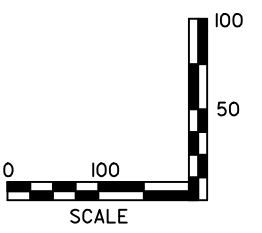
DESIGNED BY: R.P.D. DRAWN BY: A.R.Z. CHECKED BY: G.M.D. APPROVED BY: G.W.D.	
Scales AS SHOWN Date: April, 2008	
EXHIBIT 2.2-1	
MIDDLEBURY STATE AIRPORT ENVIRONMENTAL ASSESSMENT MIDDLEBURY, VERMONT ALTERNATIVE 1 RELOCATE RUNWAY 1 140 FEET	
REV. DATE Job No. 38397022	DESCRIPTION File No.



- NOTES:**
- 1.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 1, 2, 5 AND 7 LIE WITHIN THE AVIGATION EASEMENT.
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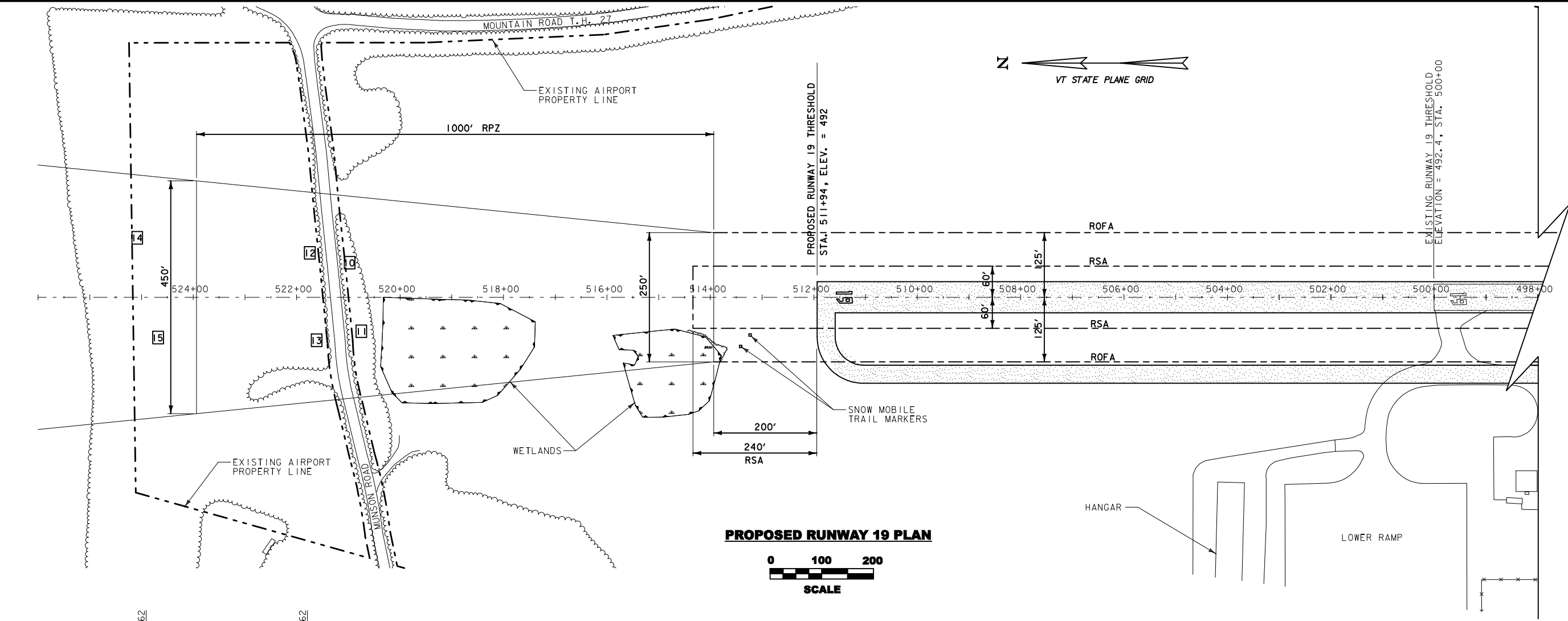
LEGEND

---	EXISTING AIRPORT PROPERTY LINE
---	LIMIT OF DELINEATED WETLANDS
---	EDGE OF RUNWAY PROTECTION ZONE (RPZ)
---	RUNWAY OBJECT FREE AREA (ROFA)
---	RUNWAY SAFETY AREA (RSA)

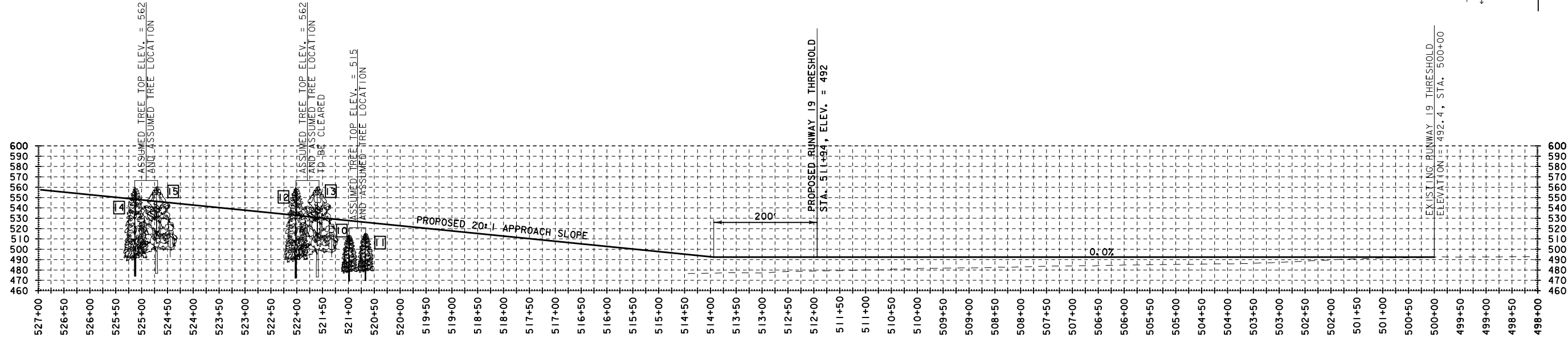
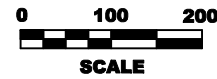


MIDDLEBURY STATE AIRPORT ENVIRONMENTAL ASSESSMENT MIDDLEBURY, VERMONT										
ALTERNATIVE 2	RELOCATE RUNWAY 1 341 FEET									
URS 28 CORPORATE DRIVE SUITE 200 CLIFTON PARK, NEW YORK										
Designed by: R.P.D.	Scale: AS SHOWN									
Drawn by: A.R.Z.	Date: April, 2008									
Checked by: G.M.D.	EXHIBIT 2.2-2									
Approved by: G.W.D.										
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REV.	DATE	DESCRIPTION								
Job No. 38397022 File No.										

7/7/2008
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PROPOSED RUNWAY 19 PLAN



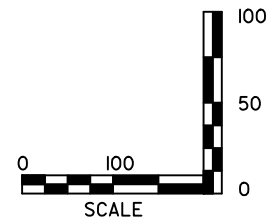
PROPOSED RUNWAY 19 APPROACH PROFILE

LEGEND

- EXISTING AIRPORT PROPERTY LINE
- LIMIT OF DELINEATED WETLANDS
- EDGE OF RUNWAY PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)

NOTES:

- 1.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 10, 11, 12 AND 13 ARE ON AIRPORT PROPERTY
- 2.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 14 AND 15 ARE ON APPROXIMATE EDGE OF AIRPORT PROPERTY
- 3.) WETLANDS DELINEATED BY SMART ASSOCIATES, NOVEMBER 2005



**MIDDLEBURY STATE AIRPORT
 ENVIRONMENTAL ASSESSMENT
 MIDDLEBURY, VERMONT**



Designed by: R.P.D.
 Drawn by: A.R.Z.
 Checked by: G.M.D.
 Approved by: G.W.D.

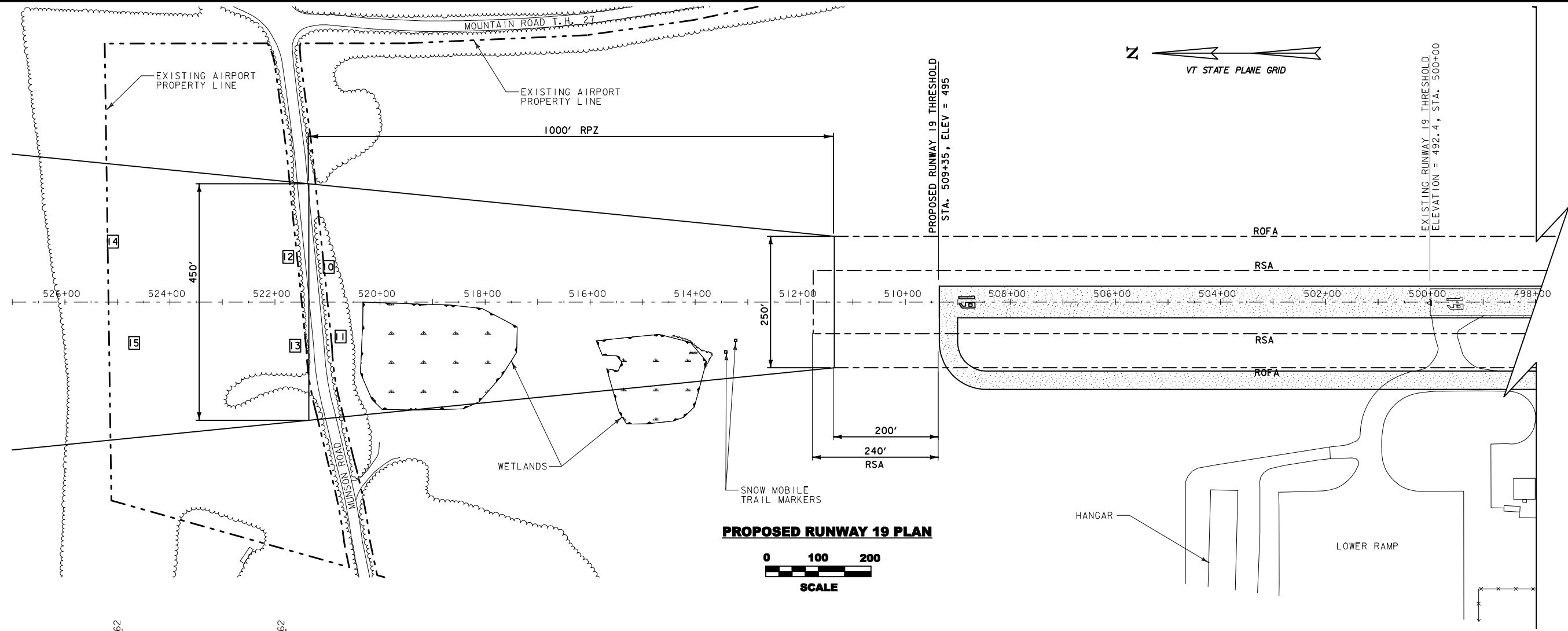
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 Date: April, 2008

EXHIBIT
2.3-1

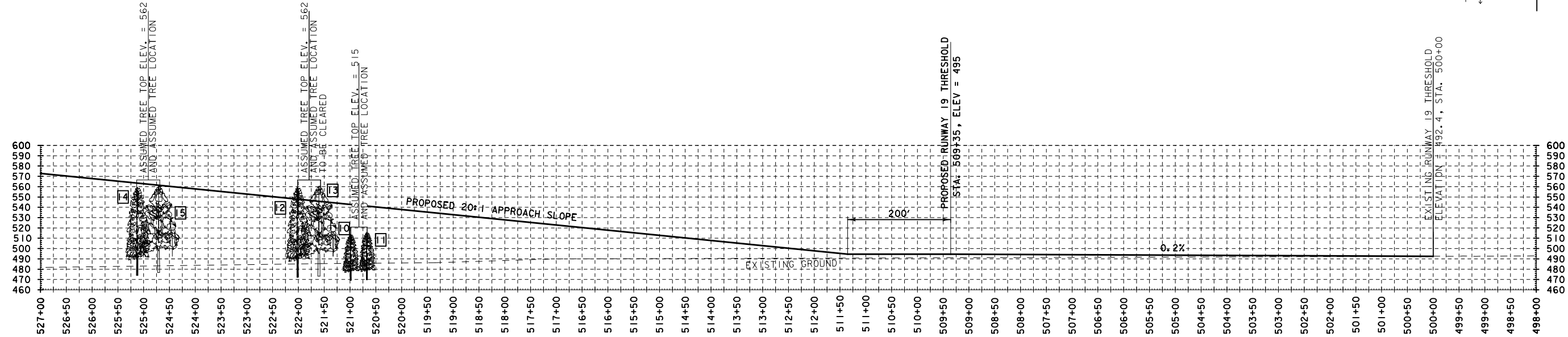
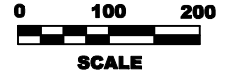
ALTERNATIVE 1
 EXTEND RUNWAY 1,194 FEET

REV.	DATE	DESCRIPTION

Job No. 38397022
 File No.



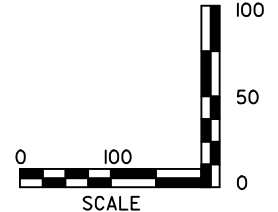
PROPOSED RUNWAY 19 PLAN



PROPOSED RUNWAY 19 APPROACH PROFILE

LEGEND

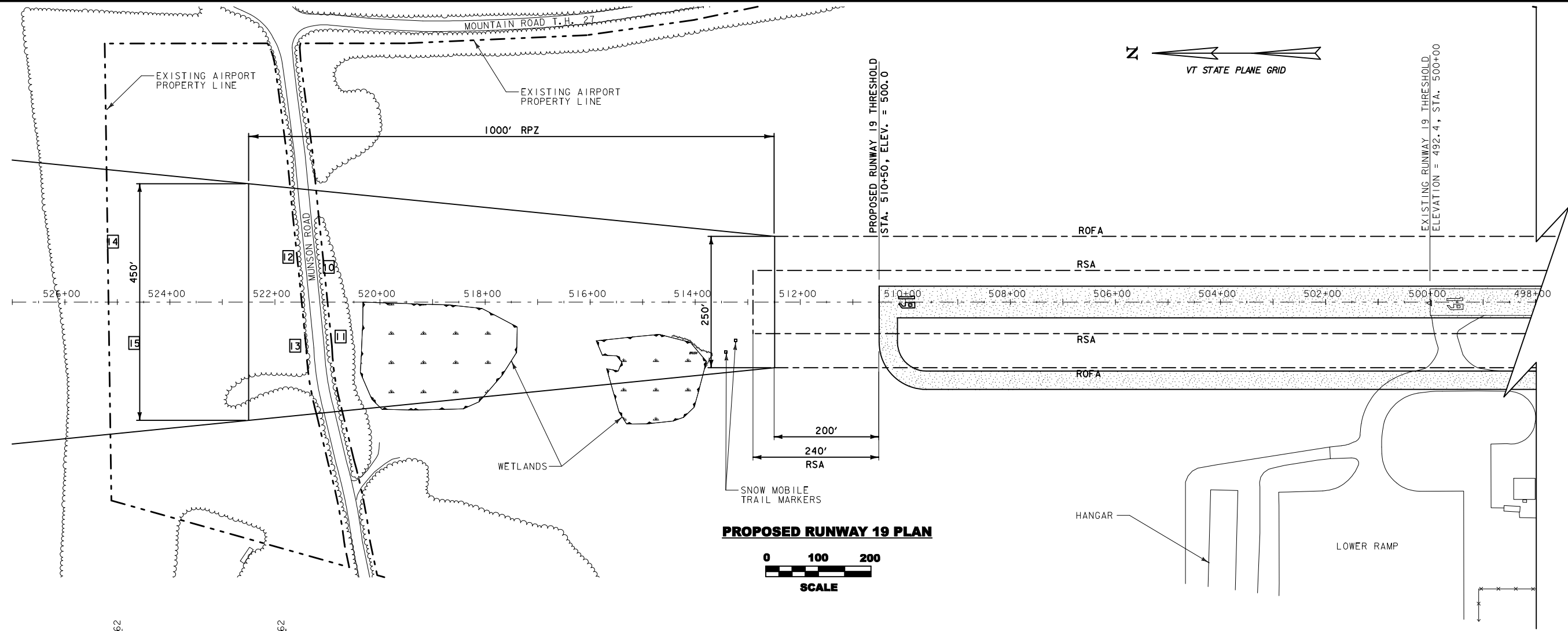
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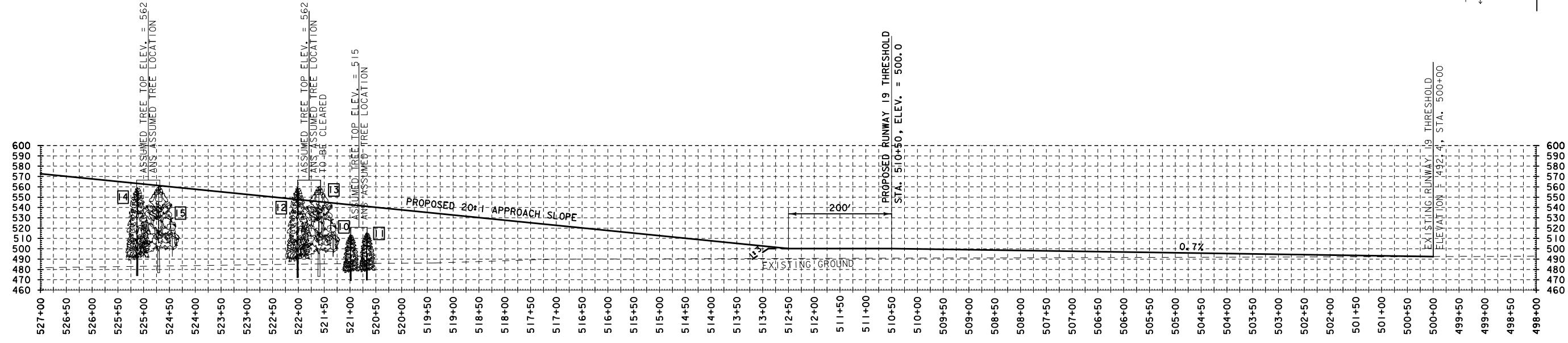
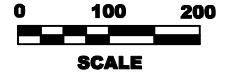
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- 1.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 10, 11, 12 AND 13 ARE ON AIRPORT PROPERTY
- 2.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 14 AND 15 ARE ON APPROXIMATE EDGE OF AIRPORT PROPERTY
- 3.) WETLANDS DELINEATED BY SMART ASSOCIATES, NOVEMBER 2005

MIDDLEBURY STATE AIRPORT ENVIRONMENTAL ASSESSMENT MIDDLEBURY, VERMONT	
ALTERNATIVE 2 EXTEND RUNWAY 935 FEET	Job No. 38397022
URS 28 CORPORATE DRIVE, SUITE 200 CLIFTON PARK, NEW YORK	File No.
Designed by: R.P.D.	DESCRIPTION
Drawn by: A.R.Z.	DATE
Checked by: G.W.D.	REVISIONS
Approved by: G.W.D.	
Scale: AS SHOWN	
Date: April, 2008	
EXHIBIT 2.3-2	



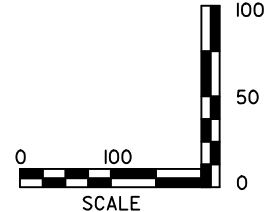
PROPOSED RUNWAY 19 PLAN



PROPOSED RUNWAY 19 APPROACH PROFILE

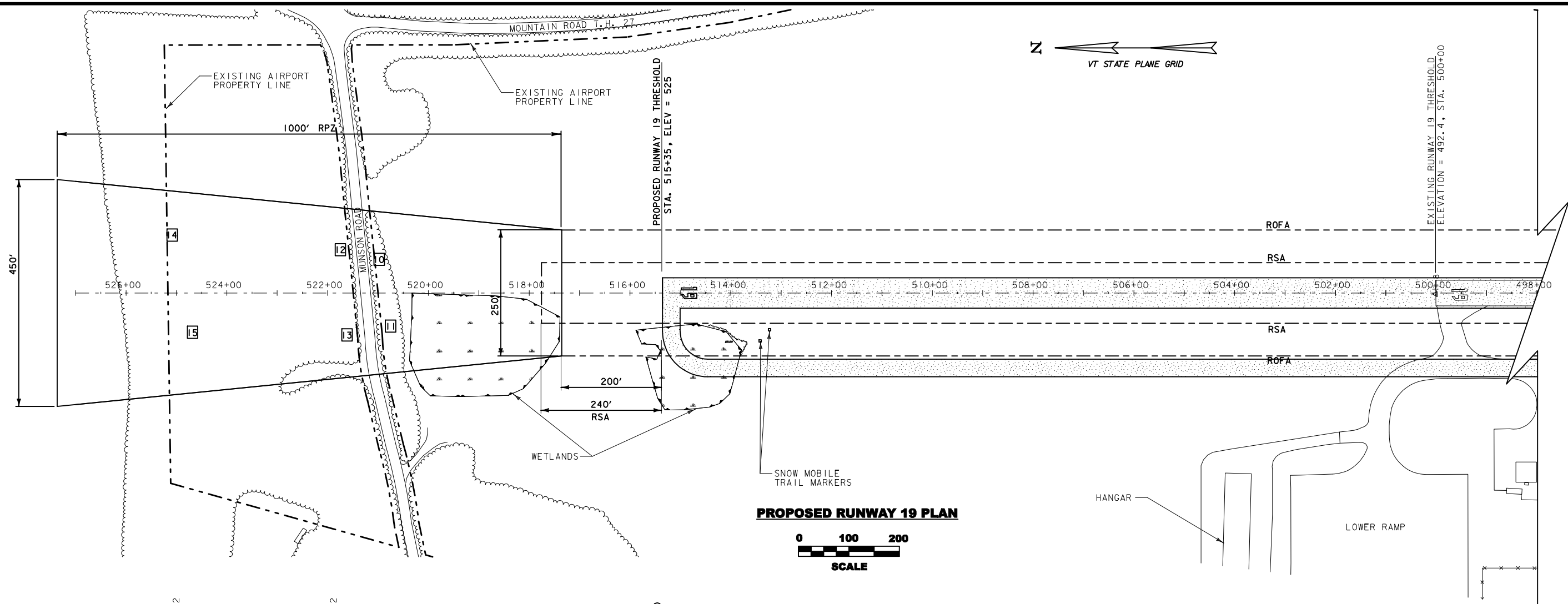
LEGEND

-----	EXISTING AIRPORT PROPERTY LINE
~~~~~	LIMIT OF DELINEATED WETLANDS
-----	EDGE OF RUNWAY PROTECTION ZONE (RPZ)
-----	RUNWAY OBJECT FREE AREA (ROFA)
-----	RUNWAY SAFETY AREA (RSA)

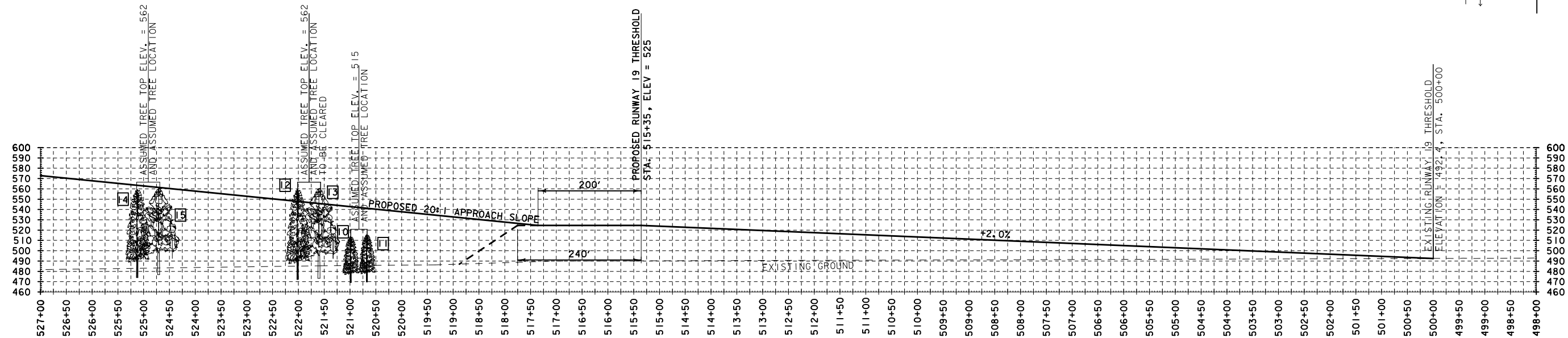
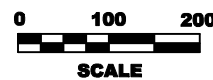


- NOTES:**
- 1.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 10, 11, 12 AND 13 ARE ON AIRPORT PROPERTY
  - 2.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 14 AND 15 ARE ON APPROXIMATE EDGE OF AIRPORT PROPERTY
  - 3.) WETLANDS DELINEATED BY SMART ASSOCIATES, NOVEMBER 2005

<b>MIDDLEBURY STATE AIRPORT ENVIRONMENTAL ASSESSMENT MIDDLEBURY, VERMONT</b>							
<b>ALTERNATIVE 3 EXTEND RUNWAY 1050 FEET</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">REV.</th> <th style="width: 50%;">DATE</th> <th style="width: 50%;">DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REV.	DATE	DESCRIPTION			
REV.	DATE	DESCRIPTION					
URS 28 CORPORATE DRIVE, SUITE 200 CLIFTON PARK, NEW YORK							
Designed by: R.P.D. Drawn by: A.R.Z. Checked by: G.W.D. Approved by: G.W.D.	Scales: AS SHOWN Date: April, 2008 EXHIBIT <b>2.3-3</b>						
Job No. 38397022 File No.							



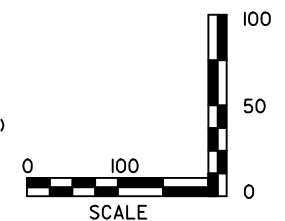
**PROPOSED RUNWAY 19 PLAN**



**PROPOSED RUNWAY 19 APPROACH PROFILE**

**LEGEND**

- EXISTING AIRPORT PROPERTY LINE
- LIMIT OF DELINEATED WETLANDS
- EDGE OF RUNWAY PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)



**NOTES:**

- 1.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 10, 11, 12 AND 13 ARE ON AIRPORT PROPERTY
- 2.) ACCORDING TO THE EXHIBIT "A" (MARCH 2005), OBSTRUCTIONS 14 AND 15 ARE ON APPROXIMATE EDGE OF AIRPORT PROPERTY
- 3.) WETLANDS DELINEATED BY SMART ASSOCIATES, NOVEMBER 2005

**MIDDLEBURY STATE AIRPORT  
 ENVIRONMENTAL ASSESSMENT  
 MIDDLEBURY, VERMONT**

**ALTERNATIVE 4  
 EXTEND RUNWAY 1535 FEET**



28 CORPORATE DRIVE, SUITE 200  
 CLIFTON PARK, NEW YORK

Designed by: R.P.D.  
 Drawn by: A.R.Z.  
 Checked by: G.W.D.  
 Approved by: G.W.D.

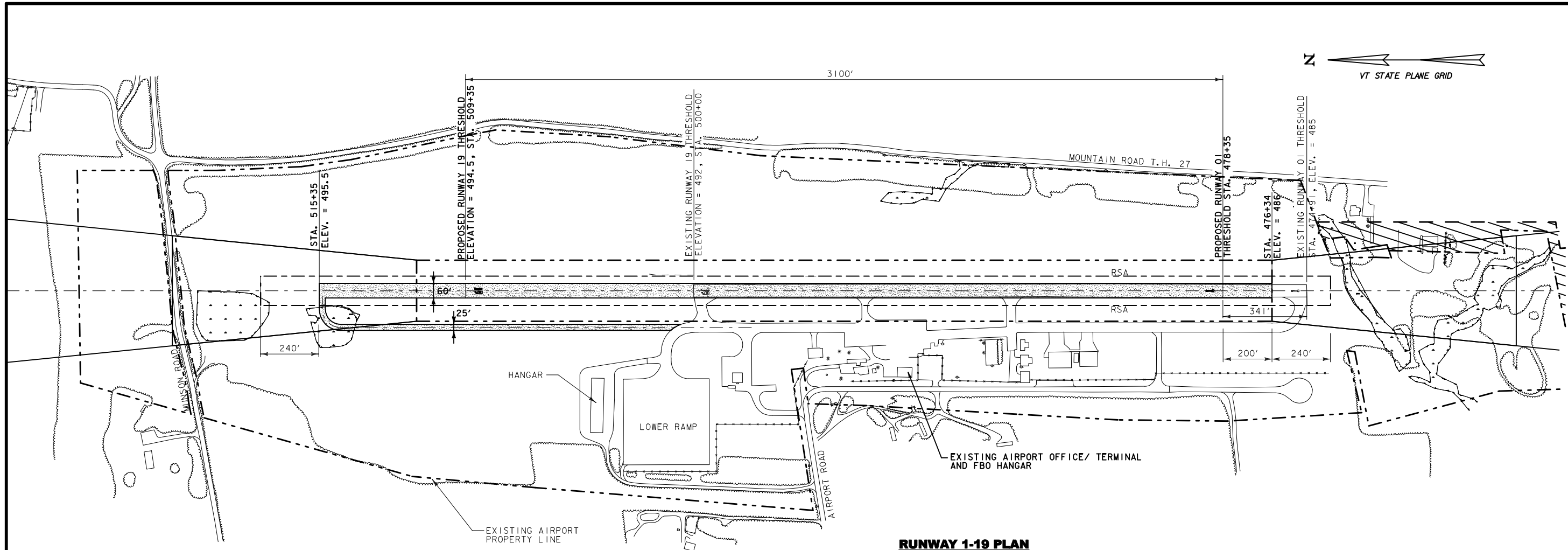
Scales AS SHOWN

Date: April, 2008

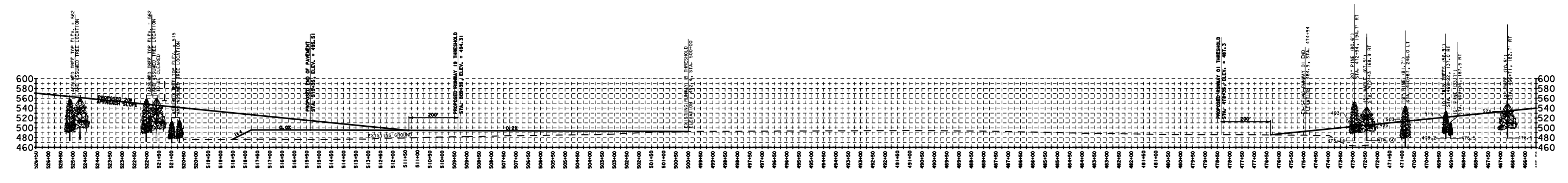
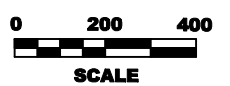
EXHIBIT  
**2.3-4**

REV.	DATE	DESCRIPTION

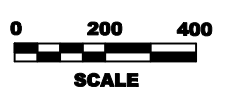
Job No. 38397022  
 File No.



**RUNWAY 1-19 PLAN**



**RUNWAY 1-19 PROFILE**



- LEGEND**
- EXISTING AIRPORT PROPERTY LINE
  - - - LIMIT OF DELINEATED WETLANDS
  - EDGE OF RUNWAY PROTECTION ZONE (RPZ)
  - RUNWAY PRIMARY SURFACE
  - RUNWAY SAFETY AREA (RSA)
  - SLOPE LIMITS
  - ▨ LIMITS OF IMPACTED WETLANDS

	RUNWAY 1 (FEET)	RUNWAY 19 (FEET)
LANDING	3700	3300
TAKEOFF	3900	3900

**MIDDLEBURY STATE AIRPORT**  
 MIDDLEBURY, VERMONT  
**ALTERNATIVE 5 - EXTEND RUNWAY**  
**1,535 FT W/ DISPLACED THRESHOLDS**

**URS**  
 28 CORPORATE DRIVE, SUITE 200  
 CLIFTON PARK, NEW YORK

Designed by: R.P.D.  
 Drawn by: A.R.Z.  
 Checked by: G.M.D.  
 Approved by: G.W.D.

Scales AS SHOWN  
 Date: April, 2008

EXHIBIT  
**2.3-5**

REV.	DATE	DESCRIPTION

Job No. 38397022  
 File No.



**SECTION 3**  
**AFFECTED ENVIRONMENT**

*3.0 INTRODUCTION*

This section provides a description of the existing environmental conditions of the physical, natural, and human environment at the Airport. To provide a basis for evaluating existing conditions at 6B0, a study area was established. The study area encompasses the physical limits of disturbance of the proposed projects, all of which are located within Airport property or Airport-controlled aviation easements. The categories presented reflect the environmental disciplines identified in FAA Order 1050.1E. Section 4 will examine the potential impacts that would result from implementation of the proposed projects.

*3.1 EXISTING LAND USE*

The Airport is located in Addison County, approximately 3 miles southeast of the Town of Middlebury. 6B0 encompasses approximately 156 acres, which are used for primarily aviation related uses. The northern portion of Airport property is currently leased for the production of corn. The majority of property surrounding the Airport is forested and undeveloped with rural residential land uses scattered throughout the area.

The Middlebury Town Plan, adopted 2007, identifies the Airport for recreational use, occasional charters, flight training, and light delivery/shipment.

Zoning, which is the primary tool to control the land use component of the surrounding Airport property, is controlled by the Town of Middlebury. The Airport is zoned Airport District and Agricultural Rural Residential. Zoning districts surrounding the Airport include Medium Density Residential and Forest Conservation Areas.

*3.2 SOCIOECONOMIC, ENVIRONMENTAL JUSTICE, AND CHILDREN'S HEALTH AND SAFETY RISKS*

**SOCIOECONOMIC:** A review of US Bureau of Census (2000) data shows that the Airport is located in US Census Block Group 4, Tract 9607, which has a total population of 816 people.

**ENVIRONMENTAL JUSTICE:** Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, was enacted in 1994 and directed each Federal agency to develop a strategy to address environmental justice concerns in its programs, policies, and regulations. The purpose of Executive Order 12898 is to avoid disproportionately high and adverse impacts on minority and low-income populations with respect to human health and the environment. On July 16, 1997 the US Department of Transportation (DOT) issued its final order on Environmental Justice as Order 5610.2.

To comply with the goals of this Order, the 2000 US Bureau of Census data was reviewed to determine the presence of minority and/or low-income populations within Block Group 4, Census Tract 9607. US DOT Order 5610.2 defines a minority population as “any readily identifiable group of minority persons who live in geographic proximity.” CEQ regulations state that if the percentage of minority population within a given area within the proposed project area is 50 percent or greater, then these areas would be considered minority. Of the 816 people in Block Group 4, Census Tract 9607, the minority population totals 55 persons (6.7 percent). Therefore, the Census Block Group in which the Airport is located does not contain a minority population, according to the 2000 census information.

The US Bureau of Census follows the Office of Management and Budget’s Statistical Policy Directive 14 and uses a set of money income thresholds that vary by family size and composition to determine the poverty threshold and who is poor. If a family’s total income is less than that family’s threshold, then that family, and every individual in it, is considered poor. The poverty threshold for 2007, as established by the US Bureau of Census, was used to determine the low-income populations within Block Group 4, Census Tract 9607. The average household size is 2.5 persons per household. For this analysis, the poverty threshold was established using the Bureau of Census information for a 3-person household, with one person being a child under the age of 18. Using this criterion, the average poverty threshold is \$17,170. The median household income for Block Group 4, Census Tract 9607 is \$44,706. Therefore, the Census Block Group in which the Airport is located is not considered to be a low-income area, according to the 2000 census information.

**CHILDREN’S HEALTH AND SAFETY RISKS:** Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 21, 1997), the FAA recently revised their policies and procedures for compliance with NEPA to include the assessment of environmental health and safety risks resulting from airport development projects that may disproportionately affect children. According to FAA Order 1050.1E, these risks include “risks to health or to safety that are attributable to products or substances that a child is likely to come into contact with or ingest, such as air, food, drinking water, recreational waters, soil or products they might use or be exposed to.” Currently, operations at 6B0 have not been identified by any known source as adversely impacting the health or safety of children in the Middlebury area.

### 3.3

### NOISE

**NOISE TERMINOLOGY:** The cumulative noise metric used to describe an airport’s noise environment is the Average Annual Day-Night Sound Level (DNL). In simple terms, DNL is the average noise level over a 24-hour period except those noises occurring at night (defined as 10:00 p.m. through 7:00 a.m.), which are artificially increased by 10 decibel (db). The weighting reflects the added intrusiveness of nighttime noise events attributable to the fact that community background noise levels decrease at night. The use of DNL to assess aircraft noise exposure has proven to be an effective and appropriate metric to determine the relative compatibility of noise-sensitive land uses adjacent to airports. Many federal agencies dealing with noise have formally adopted DNL as a

means to assess aircraft noise exposure. FAA Order 1050.1E provides the recommended guidelines for land use compatibility evaluation. These guidelines represent a compilation of the results of extensive scientific research into noise-related activity interference and attitudinal response. As an individual's response to noise is highly subjective, special circumstances can affect tolerance.

The FAA land use compatibility guidelines can be applied to the DNL contours to identify the potential types, degrees, and locations of incompatibility. Measurement of the land areas involved can provide a quantitative measure of impact that allows a comparison of at least the gross effects of existing or forecast operations. The FAA guidelines indicate that all land uses are normally compatible with aircraft noise at exposure levels below DNL 65 db. This limit is supported formally by standards adopted by the US Department of Housing and Urban Development (HUD). The HUD standards address whether sites are eligible for federal funding support. These standards, set forth in 24 CFR Part 51, define areas with DNL exposure not exceeding 65 db as acceptable for funding. Areas exposed to noise levels between DNL 65 and 75 are "normally unacceptable," and require special abatement measures and review. Those at 75 and above are "unacceptable" except under very limited circumstances.

**NOISE ANALYSIS:** According to FAA Order 1050.1E, a noise analysis is not required for airports that serve Design Group I or II aircraft and whose forecasted operations do not exceed 90,000 annual propeller operations or 700 jet operations. These numbers of propeller and jet operations result in DNL 60 dB contours of less than 1.1 square miles that extend no more than 12,500 feet from the start of takeoff roll. The DNL 65 dB contour areas would be 0.5 square mile or less and extend no more than 10,000 feet from the start of the takeoff roll.

Therefore, since the forecasted operations at the Airport is expected to reach approximately 14,700, well below the threshold of 90,000 annual operations established in FAA Order 1050.1E, no noise analysis was conducted.

### *3.4 AIR QUALITY*

The US Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for ambient (outdoor) concentrations of the following six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), lead (Pb), and particulate matter with a diameter of 10 microns or less (PM₁₀). The Clean Air Act Amendments of 1977 designated an attainment status for all areas within the US. In general terms, areas that meet the NAAQS are designated as attainment areas and areas that do not meet the NAAQS are designated as non-attainment areas.

Addison County is in attainment for all criteria pollutants.



Section 4(f) of the DOT Act of 1966 [recodified in 1983 as Title 49, Section 303(c) of the USC] provides the protection of publicly owned recreational resources and requires analysis of potential impacts to these resources arising from DOT actions. Resources protected under Section 4(f) include public parks and recreation areas and wildlife and waterfowl refuges or management areas of national, state, and local significance. Section 4(f) allows the DOT to use the publicly owned land only if there are no feasible or prudent alternatives. Section 4(f) also applies to historic sites of national, state, or local significance as determined by the official that has jurisdiction over these historic resources. Such sites include those that are listed or eligible for inclusion in the National Register of Historic Places (NRHP), as well as those identified by appropriate state or local agencies as having historic significance. In addition, Section 4(f) applies to all archaeological sites on or eligible for inclusion in the NRHP and which warrant preservation in place (including those discovered during construction).

According to the Master Plan Update, three hangars at the Airport date from the early 1950's and may be eligible for listing in the NRHP. Should these hangars be eligible for listing, they would be classified as Section 4(f) resources.

In addition, a Phase IB Archaeological Investigation was conducted in May 2006 for five archaeologically sensitive areas on Airport property that were previously identified in the Phase IA Archaeological Investigation for the Airport Layout Plan of Six State Airports in 1999. The archaeological testing and walkover survey of these five areas identified no precontact cultural material or archaeological sites or historic features or sites. VTrans concurred with this investigation and finding (see **Appendix D**).

Consideration to the effects of cultural resources is mandated by Section 106 of the National Historic Preservation Act (NHPA), as amended (16 USC 470-470w-6). Section 106 requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council of Historic Preservation (ACHP) an opportunity to comment. The procedures for implementing Section 106 are contained in the ACHP regulations 36 CFR Part 800, *Protection of Historic Properties*. These regulations define a Federal undertaking as an action that is proposed by a Federal agency or a project that will receive funding, permits, licenses, or authorization from Federal Agencies that has the potential to affect historic properties. Historic properties are defined as properties that are either listed in or eligible for listing in the NRHP, including buildings, structures, historic districts, objects, sites, or archaeological resources. The regulations implementing the NRHP may be found in 36 CFR 60.4.

According to the Master Plan update (2003), there are three hangars on Airport property that date from the early 1950's and may be eligible for listing in the National Register.

As mentioned previously, a Phase IB Archaeological Investigation was conducted in May 2006 for five archaeologically sensitive areas on Airport property. The archaeological testing and walkover survey of these five areas identified no precontact cultural material or archaeological sites or historic features or sites. VTrans concurred with this investigation and finding (see **Appendix D**).

*3.7 FARMLANDS*

The Farmland Protection Policy Act (FPPA) (7 USC 4201-4209) was implemented to regulate Federal actions with the potential to convert existing important farmlands to non-agricultural use. However, the FPPA does not apply to land already committed to urban development (i.e., airport developed areas) or water storage, regardless of its importance as defined by the US Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS).

According to the USDA – NRCS's *Farmland Classification Systems for Vermont Soils* (June 2006), soils units are considered Prime Farmland if they have the best combination of physical and chemical characteristics for the production of food, feed, fiber, forage, and oilseed crops. Additional Farmland of Statewide Importance is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. In addition, some soils are designated as Local Importance. Soils at the Airport consist of Adams fine sandy loam, Colton gravelly sandy loam, and Rockland series (see **Table 3.7-1**).

**TABLE 3.7-1 SOILS AT MIDDLEBURY STATE AIRPORT**

<b>SYMBOL</b>	<b>SOIL NAME</b>	<b>PRIME FARMLAND</b>	<b>STATEWIDE IMPORTANCE</b>
AdA	Adams fine sandy loam, 0 to 5 percent slopes	No	Yes
Rk	Rock land	No	No
CtA	Colton gravelly sandy loam, 0 to 5 percent slopes	No	Yes
CtB	Colton gravelly sandy loam, 5 to 12 percent slopes*	No	Yes
CtD	Colton gravelly sandy loam, 12 to 30 percent slopes	No	No

Source: *Soil Survey of Addison County, Vermont*, March 13, 2008

* CtB is only considered to have Statewide Importance under certain criterion; however this soil unit is designated as Additional Farmland of Local Importance.

**GROUNDWATER:** The Airport is underlain by a variety of unconsolidated material, mostly of glacial origin, including sand and gravel, silt, clay, “hardpan”, boulders, and till. Well log data listed on the state geographic information system website show depths to bedrock ranging from 10 feet to greater than 270 feet below ground surface. The yields for these wells, derived from aquifer pump tests, ranged from 2.0 to 100.0 gallons per minute. The direction of groundwater flow will generally mimic the local topography. Therefore, the flow direction in the northern portion of the Airport will be toward the north and the wetlands associated with a tributary to the Muddy Branch, and flow in the southern portion of the Airport will be to the south and the wetlands associated with Beaver Brook. Pumping of water supply wells in proximity to the Airport may, however, causes localized depressions in the water table causing deflections in the flow directions towards the wells.

Virtually the entire Airport is located in an area designated as a groundwater Source Protection Area (SPA) by the Vermont Agency of Natural Resources (VANR).

**SURFACE WATER:** Surface water runoff from the Airport discharges to sub-basins within the Otter Creek drainage basin. A drainage divide roughly bisects the Airport property from west to east. Runoff from the northern portion of the Airport flows overland to an unnamed tributary to Muddy Branch that in turn flows into New Haven River, and eventually into Otter Creek. Runoff from the southern portion of the Airport flows overland and into drainage swales, discharging to wetlands associated with Beaver Brook. Beaver Brook flows from east to west, south of the active portion of the Airport before turning in a southerly direction and its confluence with Middlebury River. Middlebury River is a tributary of Otter Creek.

The Airport is situated in the Otter Creek Basin (Basin 3). Section 303(d) of the Clean Water Act requires that each state publish a list of impaired waters in need of a Total Maximum Daily Load (TMDL) every 24 months. The TMDL is used to establish the assimilative capacity of surface waters for a variety of contaminants and uses. The TMDL is contingent on the waters use (i.e. drinking water, recreation, fish consumption, etc.). Middlebury River is listed as impaired for contact recreation (swimming) due to *Escherichia coli*. This impairment extends from the mouth of the river upstream 2 miles. The impairment is due to agricultural runoff, livestock, and possible failed septic systems. Section 4-03 of the Vermont Water Quality Standards states the all waters in the Otter Creek Basin are Class B unless otherwise listed.

Neither Beaver Brook nor Muddy Branch is listed in the 2006 Section 303(d) list of impaired surface water.

**3.9.1****WETLAND REGULATIONS**

Both Federal and Vermont regulations address activities conducted in wetlands and Waters of the US. The fundamental intent of these regulations is to minimize the reduction and degradation of these resources, and strive to achieve “no net loss” of these wetlands. The Federal program is based on Section 404 of the Clean Water Act, and the Army Corps of Engineers (ACOE) implementation regulations (33 CFR, parts 320-330). In addition, Executive Order 11990 directs all Federal agencies to minimize the destruction, loss, and degradation of wetlands, and to preserve and enhance the natural and beneficial value of wetlands. These regulations define those lands that are considered wetlands and other “Waters of the US”, including lakes, ponds, rivers and streams. The regulations require an ACOE permit for the placement of dredge or fill material in wetlands or other “Waters of the US”. The Water Quality Division of the VANR is responsible for administering Section 404 of the Clean Water Act at the State level and coordinates with the ACOE to determine the jurisdictional status of wetlands and waterways.

It is the policy of the State of Vermont to identify and protect significant wetlands and the values and functions that they serve in such a manner that the goal of “no net loss” of such wetlands and their functions is achieved. State rules to facilitate the implementation of the policy are adopted under the authority of the Vermont Water Resources Board (Board) pursuant to Title 10 V.S.A. Chapter 37, Section 905 (7)-(9). This statute limits the applicability of these rules to those wetlands that are so significant that they merit protection in this program. Wetlands that are not designated as significant under these rules should be assumed to have public value, and therefore may merit protection under other statutory or regulatory authority.

The Vermont Wetland Rules also recognize that the “boundary between a wetland and an upland shall be delineated by the methodology set forth in the 1987 edition of the Federal Manual for Identifying and Delineating Jurisdictional wetlands”. The 1988 edition of The Wetland Plant List of the State of Vermont published by the US Fish and Wildlife Service (FWS) is also used to determine the frequency of vegetation occurrence in wetlands. These rules were adopted under the authority of the Board pursuant to Title 10 V.S.A. Chapter 37, Section 905 (7)-(9). This statute limits the applicability of these rules to those wetlands that are so significant that they merit protection in this program. Wetlands not designated as significant under these rules should be assumed to have public value, and therefore may merit protection under other statutory or regulatory authority.

The National Wetlands Inventory maps for the state of Vermont (1978), published by the FWS as revised to conform to these rules, are known as the Vermont Significant Wetland Inventory (VSWI) maps. The VSWI maps denote the approximate location and configuration of significant wetlands. The actual boundaries of wetlands shown on the VSWI maps are determined in the field in accordance with the 1987 Federal Manual.

### 3.9.2

### WETLAND DELINEATION AND FUNCTION AND VALUE ASSESSMENT

Field investigations were conducted at the Airport in October 2005 (see **Exhibit 3.9-1**). Identified wetlands were field delineated in accordance with the 1987 Corps of Engineers Wetland Delineation Manual. The delineation was performed using routine on-site methodology and all potential areas were examined for hydric soils, hydrophytic vegetation, and wetland hydrology. A field verification by the ACOE of the wetland boundaries occurred on April 21, 2008. Formal verification is pending.

The Function and Value Assessment were assessed based on the ACOE *Highway Methodology Workbook Supplement; Wetland Functions and Values: A Descriptive Approach* (1995) (see **Appendix E**).

Five distinct wetland areas were delineated and are herein referred to as Wetlands 1, 2, 3, 4, and 5 (see **Appendix E**). Wetlands 1 and 2 are isolated pockets of wetlands that are surrounded by agricultural fields and do not normally have enough surface water present to allow any off-site flow. Site topography and data collected from archival aerial imagery indicate an intermittent connection between Wetlands 1 and 2 with eventual discharge to an unnamed stream north of the Airport. Wetland 3 is an elongated wetland that runs generally from north to south in a grassy swale along the eastern edge of the Airport, where it enters a wooded area, and eventually discharges to Wetland 4. Wetlands 4 and 5 are on or near the southerly limits of the Airport and have streams flowing through them. These two wetland areas form some of the headwaters of Beaver Brook. Wetlands 4 and 5 are larger contiguous communities, while 1, 2, and 3 are more isolated.

#### **WETLAND 1**

Wetland 1 is an emergent and scrub-shrub wetland located north of the existing runway. The wetland plant community is largely palustrine emergent and/or scrub-shrub, deciduous (PEM/PSS1E) and is surrounded by agricultural fields (corn). Any surface water flow from this wetland appears to be intermittent and to the north towards Wetland 2. Hydrologic inputs to this site are limited to very minor overland flow from the surrounding fields and some groundwater discharge.

Vegetation within this wetland includes goldenrod (*Solidago spp.*), steeplebush, broad-leaved meadowsweet (*Spiraea latifolia*), and New England aster (*Aster novae-angliae*). This wetland is considered to be principal valuable for the functions of groundwater discharge and sediment/toxicant retention, and some wildlife habitat value for songbirds and small mammals. Other functions such as nutrient retention are present but are considered to be less important due to the size and location of the area.

#### **WETLAND 2**

Wetland 2 is very similar in nature to Wetland 1 and is located to the north of it. It is bordered by agricultural fields (corn) to the south and a forested area to the north along the northern limits of the Airport property. This emergent area appears to be associated with groundwater discharge along its south side and overland runoff flow from surrounding fields. An outlet is located on the north end

which connects to an unnamed stream to the north. The area is classified as palustrine emergent, persistent with areas of excavation influencing the hydrologic condition (PEM1Cx). Vegetation is mowed and includes species such as cattail (*Typha latifolia*) in the lowest pocket, wooly sedge (*Scirpus cyperinus*) and sensitive fern. Due to its proximity to runways, taxiways, and agricultural fields, and its connection to downstream wetlands, this wetland is considered to be principal valuable for the functions of nutrient retention and transformation sediment and toxicant retention. As with Wetland 1, Wetland 2 also provides some limited wildlife habitat, especially for song birds and small mammals.

### **WETLAND 3**

Wetland 3 is located in the southeast portion of the Airport in a grassy swale. Maintenance mowing has created an emergent community with a few clumps of shrubs in the wetter locations. The eastern portion of Wetland 3 extends into a wooded area. Functionally this wetland provides similar functions to the other communities adjacent to the runway including groundwater discharge, sediment and toxicant retention, and wildlife habitat.

### **WETLAND 4**

Wetland 4 is a large scrub-shrub and emergent wetland community, which is occasionally hydrologically connected to Wetland 5 during periods of high water. Some surface water flows across Wetland 4 but this flow is intermittent. Upslope areas appear to be influenced by groundwater discharge as well as surface runoff. This wetland is classified as palustrine scrub-shrub, broad-leaved deciduous and emergent, persistent, seasonally flooded/saturated (PSS1/SS1E). Wetland plant species include: speckled alder (*Alnus rugosa*), high bush blueberry (*Vaccinium corymbosum*), northern arrowwood (*Viburnum recognitum*), red maple (*Acer rubrum*), and steeplebush (*Spiraea tomentosa*). Functional values for this wetland are largely related to the plant community, and overall size of the wetland. Principal valuable functions include groundwater discharge, wildlife habitat, sediment/toxicant retention, and flood storage.

### **WETLAND 5**

Wetland 5 is the largest of the wetlands at the Airport and is comprised of forested areas along the southwesterly edge of the facility. This section continues well beyond the Airport property limits and is primarily populated by large mature eastern hemlock trees (*Tsuga canadensis*). The section of Wetland 5 extending to the south and east is a mixture of scrub-shrub, emergent, open water and forested wetland communities, and also includes some surface water during most times of the year. Surface water flow from both arms of this wetland merge and contributes to the headwaters of Beaver Brook.

Portions of this wetland are classified as palustrine, forested, needle-leaved evergreen, saturated/semi-permanent/seasonal (PFO4Y), as palustrine, scrub-shrub, broad-leaved deciduous, seasonally-flooded/saturated (PSS1E), and as palustrine, open water, intermittently exposed/permanent (POWZ). The dominant plant community includes eastern hemlock, speckled alder, gray birch (*Betula populifolia*), northern arrowwood, and broad-leaved cattails (*Typha latifolia*).

An abandoned beaver pond is located in Wetland 5 south of the RSA. Wetland 5 provides the principal functional values of wildlife habitat, sediment/toxicant retention, and some flood storage.

### **3.9.3 WETLAND CLASSIFICATION**

For purposes of the Vermont Wetland Rules, all wetlands in Vermont are designated as Class One, Class Two, or Class Three wetlands. Class One wetlands are those wetlands that, based on an evaluation of the wetland functions, are considered to be exceptional or irreplaceable in their contribution to Vermont's natural heritage and are, therefore, so significant that they merit the highest level of protection under these rules. Class Two wetlands are those wetlands, other than Class One wetlands that, based on an evaluation of the wetland functions, are so significant, either taken alone or in conjunction with other wetlands, that they merit protection under these rules. Class Three wetlands are those wetlands that have not been determined by the Board to be so significant that they merit protection under these rules either because they have not been evaluated or because when last evaluated were determined not to be sufficiently significant to merit protection under these rules.

Class One wetlands are officially designated and are listed in Appendix A of the Vermont Wetland Rules. Class Two wetlands are all those wetlands shown on the National Wetlands Inventory maps for the State of Vermont (1978) published by the FWS, and all wetlands contiguous to such mapped wetlands, which are presumed to be Class Two wetlands, unless determined otherwise by the Board except for the following:

(1) Those wetlands subsequently designated as Class One wetlands; and

(2) The following categories of wetlands shown on the National Wetlands Inventory maps:

- Riverine Lower Perennial Open Water (R20W)
- Riverine Lower Perennial Beach/Bar (R2BB)
- Riverine Upper Perennial Open Water (R30W)
- Riverine Upper Perennial Beach/Bar (R3BB)
- Lacustrine Limnetic Open Water (L10W)
- Lacustrine Littoral Open Water (L20W)
- Lacustrine Littoral Beach/Bar (L2BB)

Class Three Wetlands are those wetlands that are not designated as Class One or Class Two wetlands.

VSWI maps were utilized to determine the Class designation for each wetland resource area and are detailed below.

Wetlands 1 and 2 are Class Two wetlands that provide functions and values including groundwater discharge and sediment/toxicant retention, and some wildlife habitat value for songbirds and small mammals. Wetland 2 also provides nutrient removal due to the size of the wetland.

Wetland 3 is a Class Two wetland that provides principal functions and values including groundwater discharge, sediment and toxicant retention, and wildlife habitat.

Wetland 4 is not identified on the VSWI maps, but is contiguous to Wetland 5, which is designated as a Class Two wetland. Principal functions and values provided by this wetland include groundwater discharge, wildlife habitat, sediment/toxicant retention, and flood storage.

Wetland 5 is a Class Two wetland that provides principal functions and values including wildlife habitat, sediment/toxicant retention, and some flood storage.

### *3.10 FLOODPLAINS AND FLOODWAYS*

Federal, State, and local zoning bylaws regulate development within floodplains and floodways. Executive Order 11988, *Floodplain Management*, defines floodplains as the "lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of off shore islands, including at a minimum, the area subject to a one percent or greater chance of flooding in a given year." The Order also directs Federal agencies to take action to reduce the risk of flood loss, minimize the impact of human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. Under Executive Order 11988 and DOT Order 5650.2, *Floodplain Management and Protection*, the FAA must make a finding that there is no practicable alternative before taking action that would cause the 100 year water surface profile to rise by one foot or more. The Federal Emergency Management Agency has adopted the 100-year floodplain as the base flood for floodplain management.

The Town of Middlebury has enacted Flood Hazard Area Regulations as part of their zoning regulations the purpose of which is:

- "To prevent new development in flood hazard areas and to thereby minimize the need for rescue or relief efforts associated with flooding, which, which are generally undertaken at the expense of the public; and
- To meet the requirements for community eligibility in the National Flood Insurance Program and to thereby ensure continued availability of flood insurance to building owners who are situated in flood hazard areas" (Town of Middlebury, 1995).

Flood hazard areas are defined in the Town zoning ordinance as "the 100 year Flood Hazard Area identified by the Federal Insurance Administration in a report entitled 'Flood Insurance Study' for the



Town of Middlebury, Vermont, dated July 3, 1984, together with accompanying Flood Insurance Rate Maps (FIRM) and Flood Boundary Maps dated January 3, 1985.”

A review of the Federal Emergency Management Agency (FEMA) Flood Boundary and Floodway Map (Community Panel Number 500008 0014) for the area in proximity to the Airport showed no flood hazard areas in proximity to Airport property.

### *3.11 WILD AND SCENIC RIVERS*

The Wild and Scenic Rivers Act (PL 90 542 as amended) was implemented to facilitate the protection of rivers possessing "outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or similar values." The United States Department of Interior maintains a national inventory of river segments, which appear to qualify for inclusion in the National Wild and Scenic River System.

There are no Federal designated, nor potentially eligible, Wild and Scenic Rivers in the vicinity of the Airport. The State of Vermont does not have a State designated program.

### *3.12 COASTAL RESOURCES*

In 1972 Congress enacted the Coastal Zone Management Act (CZMA), as amended through PL 104-150, *The Coastal Zone Protection Act of 1996*, in order to “preserve, protect, develop and, where possible, to restore and enhance the resources of the nation’s coastal zone for this and succeeding generations.” The CZMA requires states with coastal boundaries to establish Coastal Zone Management Programs (CZMP). The State of Vermont does not have a Coastal Zone Management Program.

### *3.13 FISH, WILDLIFE, AND PLANTS*

Under Section 7 (c) of the Endangered Species Act of 1973 (16 USC 1531 *et seq.*) and FAA Order 5050.4B, Federal Agencies are required to consult with all Federal and State agencies regarding Federal and State listed threatened and/or endangered species of fish, wildlife, and plants in the proposed project area. The FWS and the VANR-Fish and Wildlife Department have been consulted in order to identify the presence of any federally or state listed rare or threatened and endangered species within the Airport and immediate vicinity.

Initial correspondence from FWS VANR indicated that no Federally-listed or State-listed, respectively, rare, threatened, or endangered species and/or associated habitat, respectively, are located within the project area (see **Appendix C**). However, subsequent correspondence has stated that there is recent documentation of the presence of the Indiana bat, a Federally and State-listed endangered species within the project area (see **Appendix C**). The VANR has indicated that the forested area north of the runway may be used by maternity colonies during the summer months.

Four primary laws have been passed that govern the handling and disposal of hazardous materials, chemicals, substances, and wastes: Resource Conservation and Recovery Act (RCRA), as amended by the Federal Facilities Compliance Act of 1992, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA or Superfund). RCRA governs the generation, treatment, storage, and disposal of hazardous wastes and CERCLA provides for consultation with natural resources trustees and cleanup of any release of a hazardous substance (excluding petroleum) into the environment.

A review of the EPA's database on-line indicates that there are no known sites within the study area that are listed or under consideration for listing on the National Priorities List established by the EPA in accordance with CERCLA. In addition, there are no known sites within the study area that have been designated RCRA Solid Waste Management Units.





## **SECTION 4**

### **ENVIRONMENTAL CONSEQUENCES**

#### *4.0*

#### *INTRODUCTION*

For the discussion of potential impacts to environmental resources, the alternatives discussed herein will include one Build Alternative for the RSA, OFA, 14 CFR Part 77 Obstruction Removal project (Alternative 2), one Build Alternative for the proposed Runway Extension project, and the No Build Alternative. The widening of the runway is included in all of the Build Alternatives.

**RSA, OFA, AND 14 CFR PART 77 OBSTRUCTION REMOVAL:** Alternative 2 would relocate the Runway 1 threshold 341 feet northerly, resulting in a RSA that is 120 feet in width and 240 feet in length and an OFA that is 240 feet beyond the runway end (refer back to **Exhibit 2.2-2**). In addition, this option would include the removal of all of the trees located on Airport controlled property that are obstructions to the 14 CFR Part 77 surfaces to Runway 1 and the widening of the runway to 60 feet.

**RUNWAY EXTENSION (FAA'S PREFERRED):** Alternative 3, the FAA's Preferred Alternative, involves the extension of Runway 19 and associated taxiway by 1,050 feet to an ultimate length of 3,215 feet, with the assumption that the Runway 1 threshold is relocated 341 feet to provide for a standard RSA and OFA (refer back to **Exhibit 2.3-3**).

**RUNWAY EXTENSION (SPONSOR'S PREFERRED):** Alternative 5, the Sponsor's Preferred Alternative, would extend Runway 19 1,535 feet with displaced thresholds. The landing distance would be 3,700 feet and 3,300 feet for Runway 1 and 19, respectively (refer back to **Exhibit 2.3-5**). This alternative assumes that the Runway 1 threshold is displaced 341 feet to provide for a standard RSA and OFA and obstructions on Airport controlled property would be removed.

**NO BUILD ALTERNATIVE:** The No Build Alternative assumes that no alteration of the existing airfield would occur other than routine maintenance and equipment upgrading.

The following resource categories are not affected by the projects proposed in this EA. As a result, no further impact analyses were conducted for these categories beyond the evaluations that follow:

- **COMPATIBLE LAND USE:** The land use analysis considered both existing and future land use plans and zoning within the area surrounding the Airport. The proposed improvements would occur on entirely on land owned by the Airport or controlled by the Airport through avigation easements. The proposed projects proposed in this EA are consistent with the goals outlined in both the 2007 VASP and Middlebury Town Plan (2007). The VASP recommends a runway length of 4,000 feet and a width of 75 feet. The Middlebury Town Plan supports Master Plan studies which recommend a runway extension from 2,500 feet to 3,700 feet. Therefore, the proposed improvements are compatible with existing and future land uses.

- **SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS:** The proposed projects would not involve the need to relocate any residence or business, alter surface transportation patterns, divide or disrupt established communities, disrupt

orderly, planned development, or create an appreciable change in employment. According to 2000 census data, the Census Block Group in which the Airport is located is not considered minority and does not contain low income populations. The proposed projects would not impact the health and or safety of children in the Middlebury area.

- **DEPARTMENT OF TRANSPORTATION: SECTION 4(f) RESOURCES:** The EA investigated the direct and indirect impacts of the proposed projects upon resources such as parks, recreation areas, wildlife refuges, and historic structures, which are protected under Section 4(f) of the DOT Act of 1966. Although three hangars on Airport may be eligible for listing on the NRHP, the proposed projects would not impact these resources. In addition, archaeological investigations revealed that no precontact cultural material or archaeological sites or historic features or sites are located within the study area. No parks, recreation area, or wildlife refuges would be impacted by the proposed projects; therefore, no Section 4(f) resources would be impacted by the proposed projects.

- **AIR QUALITY:** Addison County is in attainment for all criteria pollutants. According to *Air Quality Procedures for Civilian Airports and Air Force Bases* (1997), since the Airport is located in an attainment area and forecasted operations do not exceed 180,000 operations, an air quality analysis is not required.

- **WILD AND SCENIC RIVERS:** There are no Federal or State designated, nor potentially eligible, Wild and Scenic Rivers in the vicinity of the Airport.

- **FLOODPLAINS:** There are no floodplains or floodways at the Airport. Therefore, the proposed projects would not impact any regulated floodplain.

- **NOISE:** Since the Airport is designed to accommodate aircraft in Design Group I and II only and forecasted operations are well under the threshold of 90,000 operations as stipulated in FAA Order 1050.1E, no noise analysis was conducted.

- **COASTAL RESOURCES:** Vermont does not have a CZMP, as it does not contain land subject to the provisions of the CZMA of 1972, recently amended as the Coastal Management Enhancement Act of 1999.

- **NATURAL RESOURCES AND ENERGY SUPPLY:** Energy requirements associated with the projects fall into two categories: those relating to increased consumption from stationary facilities and those involving substantial increases in aircraft and ground vehicle movement and their related fuel consumption. Increases in energy consumption directly and indirectly caused by the proposed projects would not result in significant impacts to the energy supply or to natural resources because the proposed projects do not involve additional energy sources to be added at the Airport, would not increase aircraft operations, or involve the use of scarce or unusual materials.

- **LIGHT EMISSIONS AND VISUAL IMPACTS:** Proposed lighting systems at the Airport include lights on hangars, the FBO, and storage sheds. The proposed projects do not involve any additional light sources and are visually congruent with the current development at the Airport. No large stands of trees are proposed for removal; therefore the existing viewshed would remain intact. Therefore, the proposed projects would not create any adverse visual impacts.

#### *4.1 FARMLANDS*

Correspondence from the USDA-NRCS has indicated that since the proposed project area is committed to urban development, it is not considered farmland, as defined by the FPPA. A completed Farmland Conversion Impact Rating Form is located in **Appendix C**.

The proposed improvements would occur on soils designated as Soil of Statewide Importance. Impact to this Soil of Statewide Importance will be addressed within the ACT 250 process (Vermont's Land Use and Development Law).

#### *4.2 WATER QUALITY*

##### **4.2.1 FEDERAL REGULATIONS**

The Clean Water Act (CWA) is the primary federal regulation of surface water protection. Signed into law in 1972, the CWA made it unlawful to pollute from point sources without proper permits. Since 1972 there have been many amendments to the CWA to provide better protection of surface waters. Under the CWA, the National Pollutant Discharge Elimination System (NPDES) was created. Under Vermont's NPDES program, any construction project that will result in a total land disturbance of one acre or more is subject to the requirements of Vermont General Permit 3-9029 (2006), *Stormwater Runoff from Construction Sites*, as amended in February 2008. Under the terms of this permit, the project proponent must file a Notice of Intent form with the VANR and prepare, submit, and implement a comprehensive Erosion Prevention and Sediment Control Plan.

##### **4.2.2 STATE REGULATIONS**

Title 10, Chapter 47 of the Vermont Statutes states the rules and regulations for Water Pollution Control for Vermont. According to § 1250, State Water Quality Policy, the goal of these regulations is to:

- Protect and enhance the quality, character and usefulness of its surface waters and to assure the public health;
- Maintain the purity of drinking water;
- Control the discharge of wastes to the waters of the state, prevent degradation of high quality waters and prevent, abate or control all activities harmful to water quality;

- Assure the maintenance of water quality necessary to sustain existing aquatic communities;
- Provide clear, consistent and enforceable standards for the permitting and management of discharges;
- Protect from risk and preserve in their natural state certain high quality waters, including fragile high-altitude waters, and the ecosystems they sustain; and
- Manage the waters of the state to promote a healthy and prosperous agricultural community, to increase the opportunities for use of the state's forest, park and recreational facilities, and to allow beneficial and environmentally sound development.

It is further the policy of the state to seek, over the long term, to upgrade the quality of waters and to reduce existing risks to water quality.

On February 9, 2006 Vermont implemented the new Vermont Water Quality Standards. These new standards were adopted to "... reduce waste through promotion of water conservation". They apply to waters of the state as defined by 40 CFR § 122.2 (1995) of the CWA. The Vermont Water Quality Standards satisfy the conditions of the CWA and the Vermont state rules.

#### **4.2.3 LOCAL REGULATIONS**

The entire Airport is located in a groundwater Source Protection Area. Section 680 – Aquifer/Wellhead Protection Areas in the Town of Middlebury's zoning ordinance addresses activities in Source Protection Areas as follows:

"Any use of land, change of use including but not limited to storage or handling of fuels, chemicals, salt or other materials, or similar activities or other land development which, in the opinion of the Administrative Officer, could have an adverse effect upon the Town wells or the aquifer, shall be prohibited"(Town of Middlebury, 1995).

However, the Airport and its associated fuel use and storage/handling predates the prohibitions in the zoning ordinance, and are therefore allowed.

Section 660 of the Town zoning ordinance establishes shoreland protection regulations:

"In order to protect water quality, prevent erosion, protect fish and wildlife habitat and preserve the natural beauty of shorelands, there are hereby established shoreland protection areas abutting all rivers and year-round flowing stream in Middlebury as shown on the USGS maps. The protection areas shall extend from the edge of the river or stream back a minimum of 25 ft..." (Town of Middlebury, 1995).

No work is being proposed with the 25 foot setback from any stream on Airport property.



#### 4.2.4

#### GROUNDWATER IMPACTS

Currently, approximately 15.1 acres of the 156 acres are covered by impervious surfaces. **Table 4.2-1** lists a summary of the amount of new impervious surface and the percent increase to be constructed for each proposed project. The increases would result from the construction of the runway extension and associated parallel taxiway, and the widening of the entire runway by 10 feet.

**TABLE 4.2-1: INCREASES IN IMPERVIOUS SURFACES**

ALTERNATIVE	ADDITIONAL IMPERVIOUS SURFACE (ACRES)	PERCENT INCREASE IN TOTAL AREA OF IMPERVIOUS SURFACES
RSA, OFA, 14 CFR Part 77 - Alternative 2	0.0	0.0
Runway Extension - Alternative 3	2.0	1.3
Runway Extension - Alternative 5	2.9	1.9
No Build	0.0	0.0

**RSA, OFA, AND 14 CFR PART 77 OBSTRUCTION REMOVAL:** There would be no new impervious surfaces created by this alternative; therefore, there not be a reduction in groundwater recharge to the underlying aquifer and no increases in the quantity of atmospherically deposited water quality constituents.

Potential impacts to groundwater quality resulting from incidental or accidental releases of contaminants during construction activities are not likely to be significant. Furthermore, the severity of such impacts would be reduced by developing and implementing a spill response plan and by conducting construction vehicle maintenance and refueling operations on impervious surfaces.

**RUNWAY EXTENSION (FAA'S PREFERRED):** Construction of the FAA's Preferred Alternative (Alternative 3) would result in minor increases in impervious surfaces at the Airport. Any increase of impervious surfaces could result in a corresponding decrease in infiltration of precipitation, thus reducing recharge to the underlying aquifer system. In general, however, impacts to groundwater quantity caused by the proposed projects would be localized and minor in nature. Alternative 3 would add approximately 2.0 acres of impervious surface (a 13.0% increase over current conditions) to the current total of 15.1 acres out of the total Airport-owned 156 acres. This would result in a 1.3% increase in total impervious surface and is not likely to adversely impact groundwater recharge to the underlying aquifer.

Potential impacts to groundwater quality resulting from incidental or accidental releases of contaminants during construction activities are not likely to be significant. Furthermore, the severity of such impacts would be reduced by developing and implementing a spill response plan and by conducting construction vehicle maintenance and refueling operations on impervious surfaces.

While this alternative will add impervious surface area on which atmospherically deposited contaminants may be deposited and subsequently carried off by runoff, the quantities of such contaminants will be minor and are not likely to adversely impact groundwater quality. Portions of the property on which these alternatives would be constructed are currently being used to grow corn and are subject to applications of fertilizer and possibly herbicides. It is likely, therefore, that any increase in contaminant load from atmospherically deposited water quality constituents would be offset by decreases in agricultural chemicals.

**RUNWAY EXTENSION (SPONSOR'S PREFERRED)**: Construction of the Sponsor's Preferred Alternative (Alternative 5) would add approximately 2.9 acres of impervious surface (a 19.2% increase over current conditions) to the current total of 15.1 acres out of the total Airport-owned 156 acres. This would result in a 1.9% increase in total impervious surface. This increase is not likely to adversely impact groundwater recharge to the underlying aquifer.

Alternative 5 would add impervious surface area on which atmospherically deposited contaminants may be deposited and subsequently carried off by runoff. The quantity of such contaminants, however, will be minor and is not likely to adversely impact groundwater quality. Portions of the property on which Alternative 5 would be constructed are currently being used to grow corn and are subject to applications of fertilizer and possibly herbicides. It is likely, therefore, that any increase in contaminant load from atmospherically deposited water quality constituents would be offset by decreases in agricultural chemicals.

**NO BUILD ALTERNATIVE**: No new impervious surfaces would be constructed as part of the No Build Alternative. There would be no new construction in proximity to surface water resources. Potential impacts from the No Build Alternative to study area groundwater resources are not likely to be significant.

#### **4.2.5 SURFACE WATER IMPACTS**

Runway construction and routine operation may affect surface water resources in several ways:

- Erosion and sedimentation during construction and post-construction stabilization of exposed surfaces may increase turbidity and water temperature, and decrease dissolved oxygen.
- Any significant increase in aircraft operations may result in the release of petroleum-related compounds or metals from the aircraft. These water quality constituents may subsequently be transported by runoff to surface water resources.
- Alteration of local hydrology may result from an increase in impervious surfaces. Increased runoff during storm events results in a corresponding increase in peak flows in receiving streams. Conversely, the increase in impervious surfaces may decrease groundwater recharge and subsequent groundwater discharge to streams during low flow periods.

- Contaminants, incidentally deposited on the runway from atmospheric sources and carried to surface waters by runoff, may cause degradation of the receiving water quality, with possible impairment of beneficial uses and harm to aquatic biota.
- Routine maintenance of the runways may introduce contaminants such as, petroleum products and heavy metals from maintenance vehicles, and paint from runway striping may wash off in storm water runoff.
- The release of potentially hazardous materials may occur as the results of aircraft or maintenance vehicle accidents.

Potential surface water impacts from each alternative are included below. Potential long term benefits, associated with all the build alternatives, will likely be realized by shifting the paved portion of the runway to the north away from wetlands associated with Beaver Brook. Once the expanded RSA has been stabilized there will be a broader expanse of vegetated ground over which runoff from the runway will flow. As the runoff flows over the vegetated ground, the nutrients, suspended solids, and other potential contaminants will be attenuated. Shifting the runway to the north will have a positive impact of reducing the amount of land currently used for agricultural purposes, and the associated application of nutrients (fertilizer) and other agriculturally related products (herbicides and pesticides) that can have adverse impacts to surface water quality.

**RSA, OFA, AND 14 CFR PART 77 OBSTRUCTION REMOVAL:** Potential adverse impacts to surface water resources resulting from sedimentation and erosion during the construction phase of the project are not likely to be significant and will be addressed in a site specific erosion and sedimentation control plan.

Potential impacts to surface water quality resulting from incidental or accidental releases of contaminants during construction activities are not likely to be significant. Furthermore, the severity of such impacts would be reduced by developing and implementing a spill response plan and by conducting vehicle maintenance and refueling operations on impervious surfaces.

There would be no increases in total impervious surface resulting from the construction of this proposed project and therefore, no significant changes in local drainage patterns or flow rates, no increase in atmospherically deposited contaminants, and no changes in the current runway maintenance procedures.

**RUNWAY EXTENSION (FAA'S PREFERRED):** As mentioned above, potential adverse impacts to surface water resources resulting from sedimentation and erosion during the construction phase of the project are not likely to be significant and will be addressed in a site specific erosion and sedimentation control plan.

Potential impacts to surface water quality resulting from incidental or accidental releases of contaminants during construction activities are not likely to be significant. Furthermore, the severity of such impacts would be reduced by developing and implementing a spill response plan and by conducting vehicle maintenance and refueling operations on impervious surfaces.

Construction of Alternative 3 would result in minor increases in the total area of impervious surfaces at the Airport (see **Table 4.2-1**). The increased impervious areas would not significantly impact local drainage patterns or flow rates. Any increases in surface water quality constituents in runoff from the new impervious surfaces, either resulting from atmospherically deposited contaminants or from aircraft or maintenance vehicle operations, are not likely to be significant. Any increases in surface water quality constituents could be mitigated through the construction of best management practices, such as vegetated treatment swales.

**RUNWAY EXTENSION (SPONSOR'S PREFERRED):** As mentioned above, potential adverse impacts to surface water resources resulting from sedimentation and erosion during the construction phase of the project are not likely to be significant and will be addressed in a site specific erosion and sedimentation control plan.

Potential impacts to surface water quality resulting from incidental or accidental releases of contaminants during construction activities are not likely to be significant. Furthermore, the severity of such impacts would be reduced by developing and implementing a spill response plan and by conducting vehicle maintenance and refueling operations on impervious surfaces.

Construction of Alternative 5 would result in minor increases in the total area of impervious surfaces at the Airport (see **Table 4-2-1**). The increased impervious areas would not significantly impact local drainage patterns or flow rates. Increases in surface water quality constituents in runoff from the new impervious surfaces, either resulting from atmospherically deposited contaminants or maintenance vehicle operations, are not likely to be significant. Any increases in surface water quality constituents could be mitigated through the construction of best management practices such as vegetated treatment swales.

**NO BUILD ALTERNATIVE:** The No Build Alternative would not increase the acreage of impervious surface in either of the study area drainage basins. Therefore, there would be no anticipated increase or decrease to the volume of runoff reaching the receiving waters.

#### *4.3 WETLANDS*

Section 404 of the CWA of 1977 requires consideration of the impacts of dredge and fill activities on wetland acreage, as well as on their functions and values. Other impacts considered include habitat fragmentation, drainage, the effects of runoff (erosion, sedimentation, flooding, etc.), hydrologic modifications, and temporary disturbances incurred during construction activities.

During the preliminary design phase of the project, the design engineers examined the comparative benefits of two alternative side slopes: 2:1 and 4:1.

**RSA, OFA, AND 14 CFR PART 77 OBSTRUCTION REMOVAL:** The relocation of the Runway 1 threshold approximately 341 feet to the north would result in no adverse impacts to wetland resources or wetland buffer zones.

**RUNWAY EXTENSION (FAA'S PREFERRED):** With 2:1 Embankment Slopes, Alternative 3 would not result in any impacts to wetland resources or wetland buffer zones. 2:1 embankment slopes are preferred.

With 4:1 Embankment Slopes, this alternative would not result in any permanent impacts to wetland resources, but would require work within the wetland buffer zone. This would result in temporary impacts (0.05 acres) to the wetland buffer of Wetland 1.

**RUNWAY EXTENSION (SPONSOR'S PREFERRED):** With 2:1 Embankment Slopes, this alternative would involve a total of approximately 0.62 acres of wetland impact. This would include approximately 0.47 acres of impact to Wetland 1 and 0.15 acres of impact to Wetland 2. Impacts to the wetland buffer zone would include approximately 0.52 acres of Wetland 1 and 0.24 acres of Wetland 2. Temporary wetland impacts resulting from construction would include approximately 0.04 acres to Wetland 2. Principal wetland functions and values provided by Wetland 1 and affected by this alternative include groundwater recharge/discharge and sediment/toxicant retention. Other functions and values provided by Wetlands 1 and 2 and affected by this alternative include flood storage, nutrient retention, nutrient export, and wildlife habitat. 2:1 embankment slopes are preferred.

With 4:1 Embankment Slopes, this alternative would involve a total of approximately 0.79 acres of wetland impact. This would include approximately 0.59 acres of impact to Wetland 1 and 0.20 acres of impact to Wetland 2. Impacts to the wetland buffer would include 0.64 acres of Wetland 1 and 0.29 acres of Wetland 2. Temporary wetland impacts resulting from construction would include approximately 0.04 acres to Wetland 1 and 0.04 acres to Wetland 2. Principal wetland functions and values provided by Wetland 1 and affected by this alternative would be groundwater recharge/discharge and sediment/toxicant retention. Other functions and values provided by Wetlands 1 and 2 and affected by this alternative would include flood storage, nutrient retention, nutrient export, and wildlife habitat.

According to correspondence received from VANR, the two isolated wetlands located within the proposed project area are mapped Class Two and, therefore, require a CUD. The size and location of the location of the wetlands limit the amount of functions and values they provide. According to VANR, mitigation could be accomplished by the creation of depressions in the meadow; this would preserve the limited functions and values (see **Appendix C**).

The ACOE conducted a field visit on April 21, 2008. According to correspondence received from the ACOE, the two wetlands at the north end of Runway 1-19 (Wetlands 1 and 2) do not meet the definition of a water of the US and are, therefore, not within federal jurisdiction (see **Appendix C**).

**No BUILD ALTERNATIVE:** The No-Build alternative would result in no changes to existing conditions and would have no adverse impacts to wetland resources.

#### **4.4** *FISH, WILDLIFE, AND PLANTS*

Initial correspondence received from the FWS and the VANR indicated that no Federally-or State – listed, respectively, rare, threatened, or endangered species would be impacted by the proposed projects (see **Appendix C**). However, further coordination during the preparation of the EA with both the FWS and VANR revealed that there has been recent documentation of Indiana bat, a state and federally-listed endangered species, within the proposed project vicinity (see **Appendix C**). Further coordination with the VANR revealed that the wooded area north of the proposed runway extension, north of Munson Road contains Indiana bat habitat.

**RSA, OFA, AND 14 CFR PART 77 OBSTRUCTION REMOVAL:** The relocation of the Runway 1 threshold approximately 341 feet to the north would result in no adverse impacts to rare, threatened, or endangered species.

**RUNWAY EXTENSION (FAA’S PREFERRED):** The extension of Runway 19 and associated taxiway by 1,050 feet would result in no adverse impacts to rare, threatened, or endangered species.

**RUNWAY EXTENSION (SPONSOR’S PREFERRED):** The extension of Runway 19 and associated taxiway by 1,535 feet with the use of displaced thresholds would require the forested area on Airport property north of Munson Road to be cleared in order to provide a clear approach surface. Approximately 4 acres of hardwood trees north of the proposed runway extension would have to be removed during the runway construction.

A field visit was performed by the VANR and FWS in January 2009. The area proposed for clearing on the north side of Munson Road contains mostly young hardwoods. During this field visit, it was discussed that this area does contain valuable bat habitat and should be preserved to the extent feasible. A wooded corridor is proposed between the forested areas on the east and west side of the runway approach. This wooded corridor would be a minimum of 25 feet in width and would contain trees that are 20 to 30 feet in height. This corridor would allow the bats to travel between these forested blocks. During the design of the extension, the profile of the runway will be determined. This will determine the maximum height that the trees could be based on the approach. At that time, the location, width, and maximum height of the trees to be planted and/or maintained in the corridor will be analyzed.

In order to ensure the effectiveness of the strategy to maintain bat movement through the forested parcels, the FWS and VANR stated that a monitoring program should be implemented for two years prior to and after project development. *An Acoustic Bat Monitoring Study Plan* has been prepared and accepted by the FWS and VANR (see **Appendix F**). Acoustic detectors would measure bat activity within the forested tract for two to three months, preferably June, July, and the first two weeks of August. The acoustical detectors were installed and monitoring commenced on June 1, 2009.

Additional consultation under the Section 7 of the US Endangered Species Act will continue as needed through the design/construction phases of the project.

#### **4.5** *HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION*

Implementation of the any of the Preferred Alternatives would require documentation that all hazardous materials would be disposed of in accordance with State and Federal requirements. Discovery during construction of any solid waste that has evidence of any hazardous waste/material would be disposed of in accordance with the appropriate regulations. In addition, the implementation of any of the Preferred Alternatives would be in accordance with Executive Order 12088, as amended, which directs Federal agencies to comply with applicable pollution control standards, in the prevention, control, and abatement of environmental pollution.

The proposed improvements would not generate additional solid waste.

#### **4.6** *CONSTRUCTION IMPACTS*

Implementation of any of the Build Alternatives would cause temporary construction impacts to noise, water quality, wetlands, and air quality.

**NOISE:** If applicable, noise from construction equipment and related activities would be regulated through development of construction noise specification to minimize exposure outside the construction area.

**WATER QUALITY:** As mention in Section 4.2, potential impacts to surface water quality resulting from incidental or accidental releases of contaminants during construction activities are not likely to be significant. Furthermore, the severity of such impacts would be reduced by developing and implementing a spill response plan and by conducting vehicle maintenance and refueling operations on impervious surfaces.

**WETLANDS:** As mentioned in Section 4.3, the FAA's Preferred Alternative with 4:1 Embankment Slopes, would require work within the wetland buffer zone and temporarily impact 0.05 acres to the wetland buffer of Wetland 1. The Sponsor's Preferred Alternative with 2:1 Embankment Slopes would require work within the wetland buffer zone and temporarily impact approximately 0.04 acres to

Wetland 2. The Sponsor's Preferred Alternative with 4:1 Embankment Slopes would require work within the wetland buffer zone and temporarily impact approximately 0.04 acres to Wetland 1 and 0.04 acres to Wetland 2.

**AIR QUALITY:** Fugitive dust emissions from construction activities and equipment would occur with the implementation of any of the Build Alternatives. However, best management practices would be implemented to reduce dust during construction activities.

#### *4.7 CUMULATIVE IMPACTS*

Cumulative impacts are defined by the CEQ in 40 CFR 1508.7 as "impacts on the environment which result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." CEQ suggests analyzing only those resources that are incrementally affected by the proposed action and other actions within the same geographic area and time period.

The geographic area of concern for a cumulative impacts analysis is typically defined by the extent of the influence of the proposed action and its alternatives. The geographic limits for this EA have been defined as Airport property, including all Airport-controlled aviation easements.

The extension of the runway and removal of obstructions were proposed within the five-year Capital Improvement Program for the Airport, which was 2000-2005. Since that time has passed, this EA will use the time period beginning with 2003 as that was the year that the Master Plan was completed and 2013 as this is the year that the runway extension should be operational.

The resources that are affected by the proposed projects in this EA include: water quality and wetlands.

The only development projects that are proposed in the Master Plan Update within the same period in which the runway extension and obstruction removal are proposed include the construction of new T-hangars, security fencing, and a picnic area.

**WATER QUALITY:** Although the extension to the runway and the additional hangars at the Airport would increase the amount of impervious surface at the Airport, the impacts to groundwater quantity would be localized and minor in nature. The increase in total impervious surface is not likely to adversely impact groundwater recharge to the underlying aquifer. In addition, potential adverse impacts to surface water resources resulting from sedimentation and erosion during the construction phase of the project would not be significant and would be addressed in a Sediment and Erosion Control Plan during design.

**WETLANDS:** With 2:1 Embankment Slopes, the Sponsor's Preferred Alternative would involve a total of approximately 0.62 acres of wetland impact. Impacts to the wetland buffer zone would include



approximately 0.52 acres of Wetland 1 and 0.24 acres of Wetland 2. Principal wetland functions and values provided by Wetland 1 and affected by this alternative include groundwater recharge/discharge and sediment/toxicant retention. Other functions and values provided by Wetlands 1 and 2 and affected by this alternative include flood storage, nutrient retention, nutrient export, and wildlife habitat.

With 4:1 Embankment Slopes, this alternative would involve a total of approximately 0.79 acres of wetland impact. Impacts to the wetland buffer would include 0.64 acres of Wetland 1 and 0.29 acres of Wetland 2. Principal wetland functions and values provided by Wetland 1 and affected by this alternative would be groundwater recharge/discharge and sediment/toxicant retention. Other functions and values provided by Wetlands 1 and 2 and affected by this alternative would include flood storage, nutrient retention, nutrient export, and wildlife habitat.

A permit will be requested from the ACOE. In addition, a Conditional Use Determination (CUD) would be requested from the VANR for impacts to wetlands.

The construction of T-hangars would not impact any wetland resources.

**SUMMARY:** The total impact of the projects in this EA, combined with the other proposed projects at the Airport, will not cause a cumulative significant impact.



**SECTION 5**  
**LIST OF PREPARERS**

The following personnel have had primary responsibilities in the preparation of this document.

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